Lending Club Case Study

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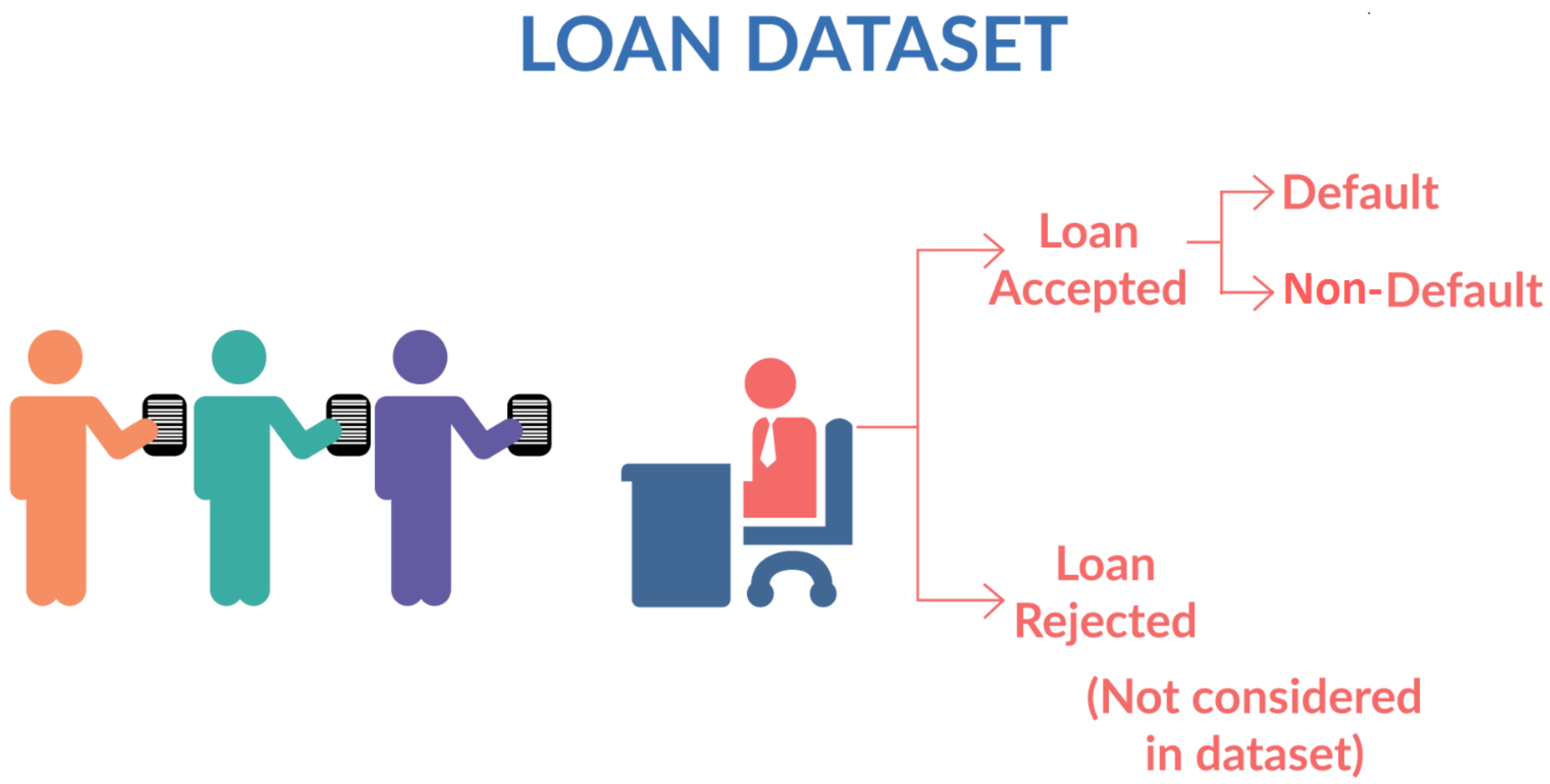
Objective

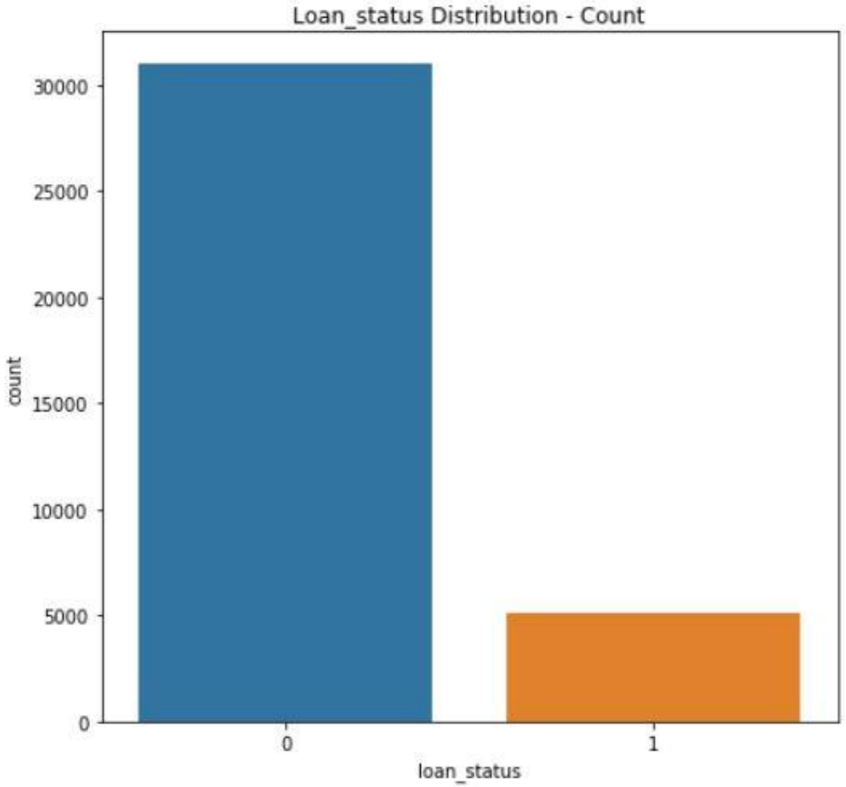
LC has the following Business objectives

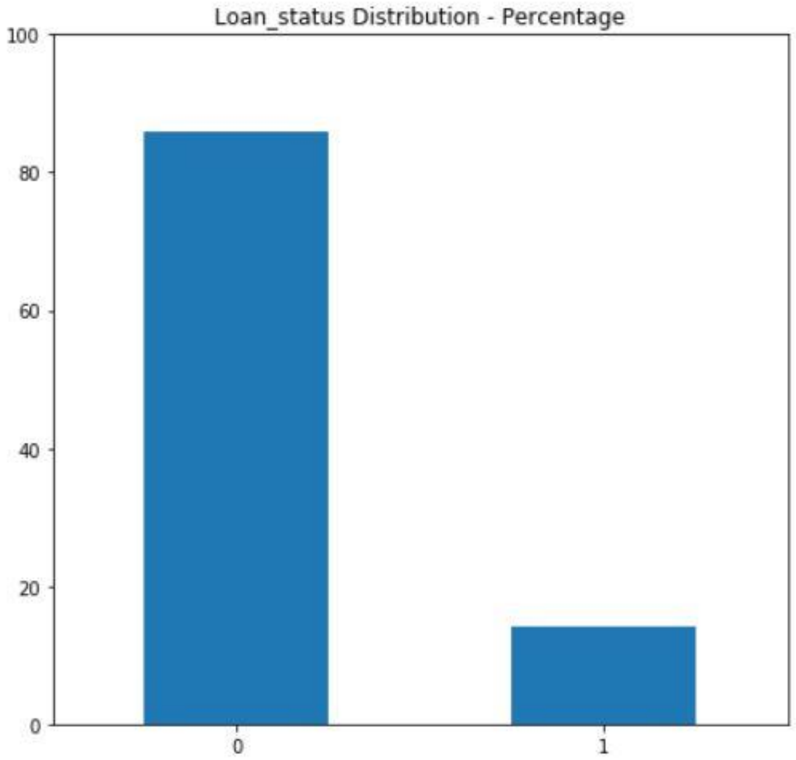
- Lending Club is online marketplace which connects Borrowers and Lenders
- Lending Club wants to find the Driver Variables which impacts Defaulting of Loans
- Identifying Driver Variables might help Lenders minimize the risk of Loan Default

Flow Chart


LOAN DATASET
Loan Accepted
Default
Non-Default
Loan Rejected
(Not considered in dataset)

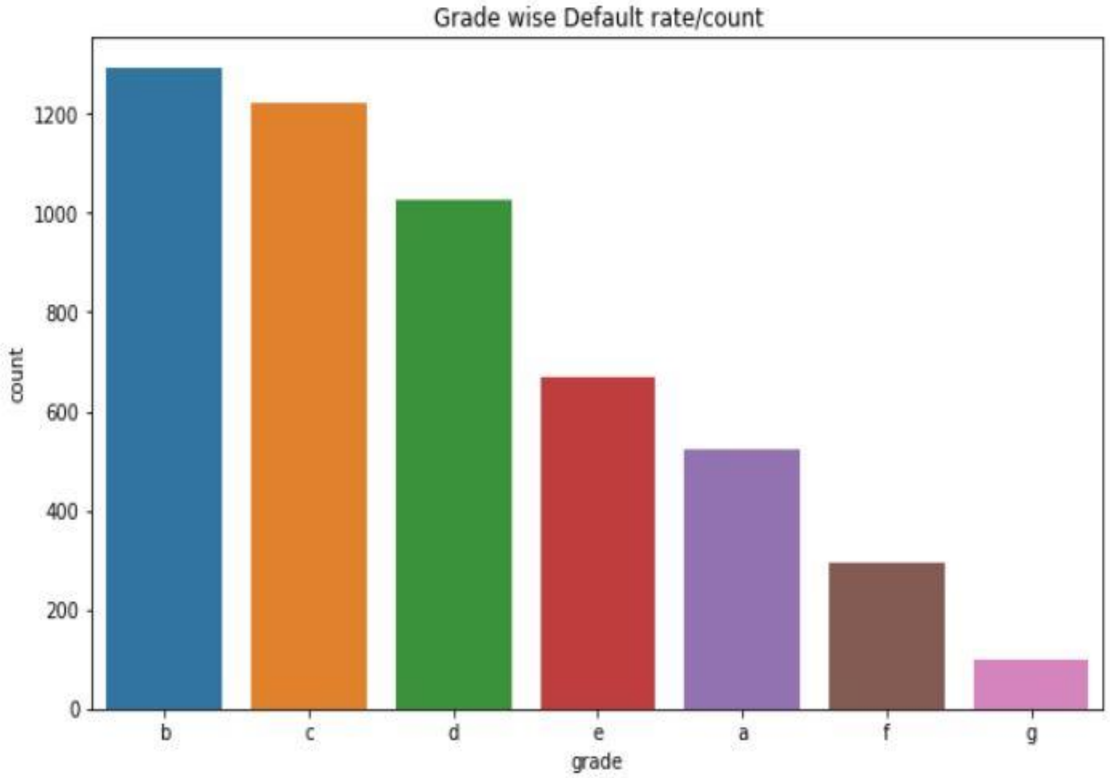
Rate of Loan Default

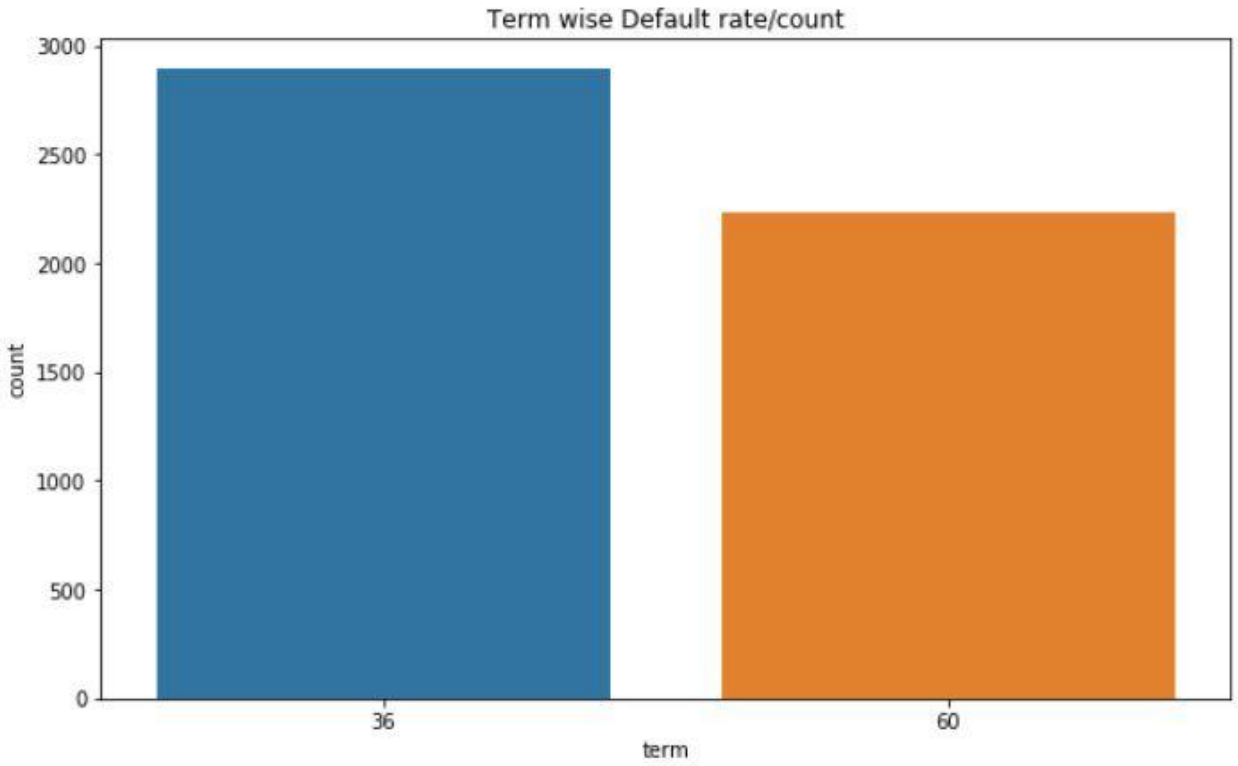




- **Based on the above graphs plotted with the applicant data, out of Total Loans (excluding current) 14.2 % of Loans have bee Defaulted/Charged off.**

Grade and Term wise Default Rate

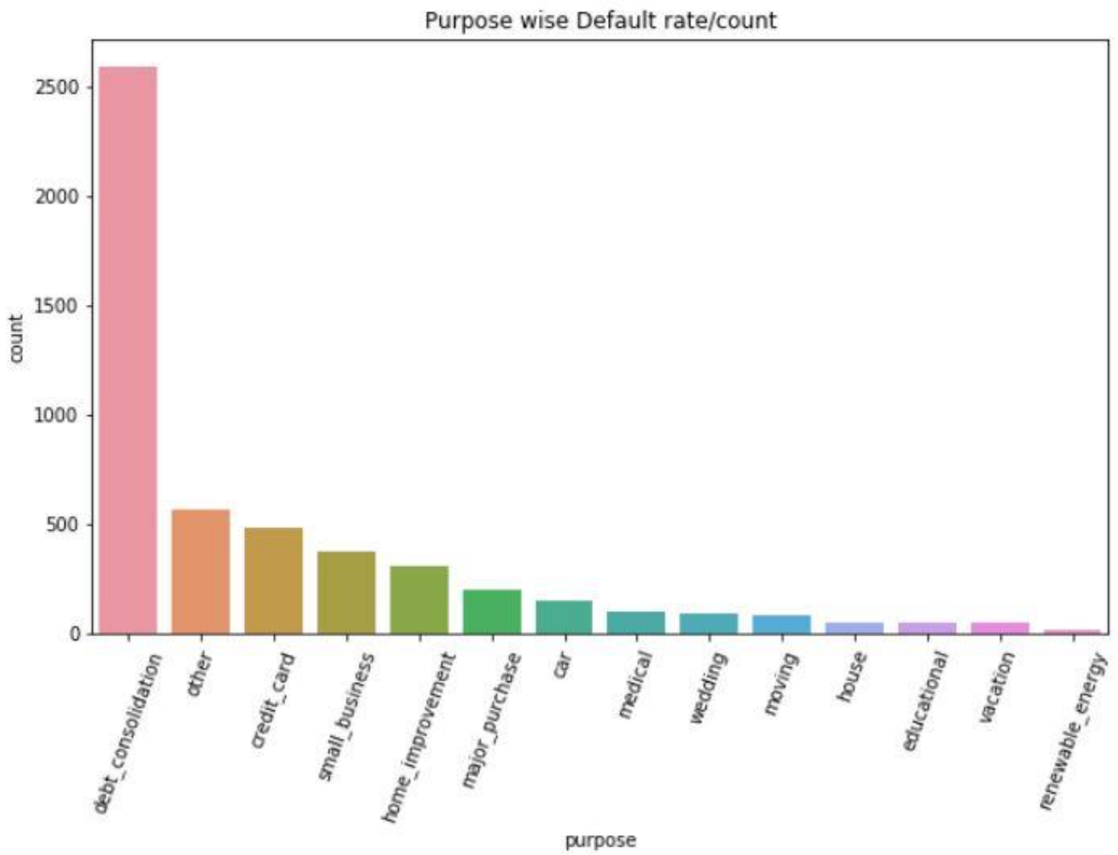


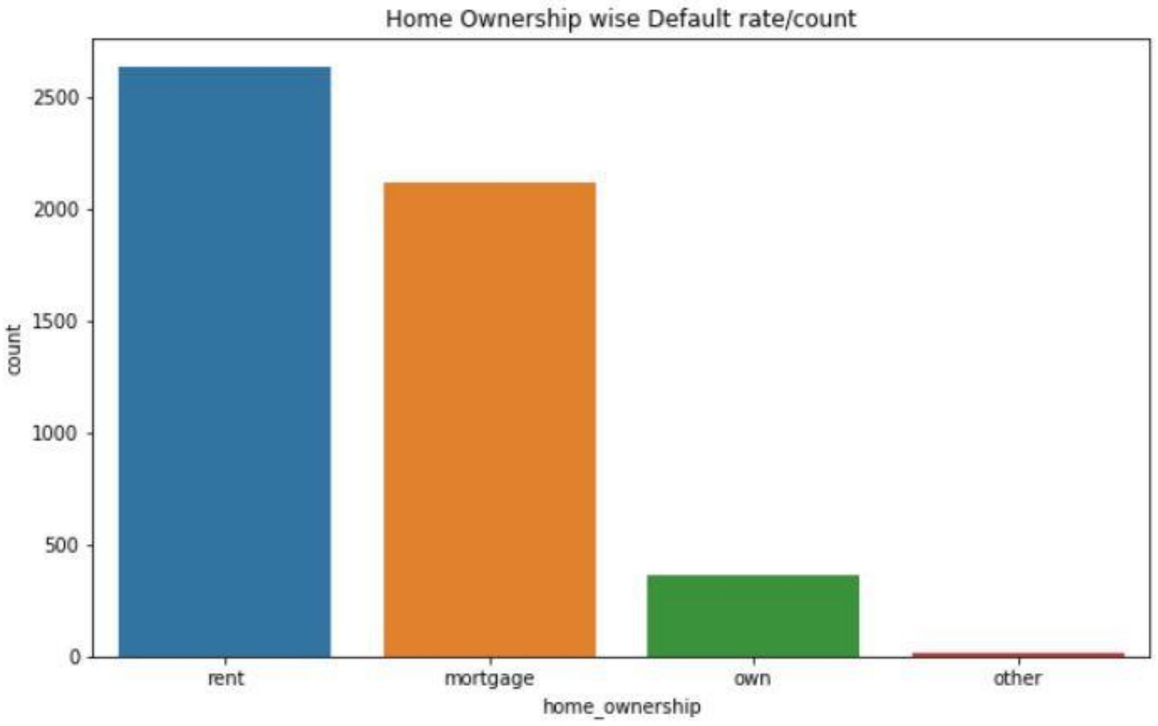


- **Based on the above graph, the applicants who fall under the Grade 'B' are most likely to default and the applicants from Grade 'G‘ are less likely to default**

- **People who take loans with 36 Months Term are more likely to default. It might be due to the reason that shorter term duration might means that EMI component might be higher.**

Purpose and Home Ownership wise Default Rate

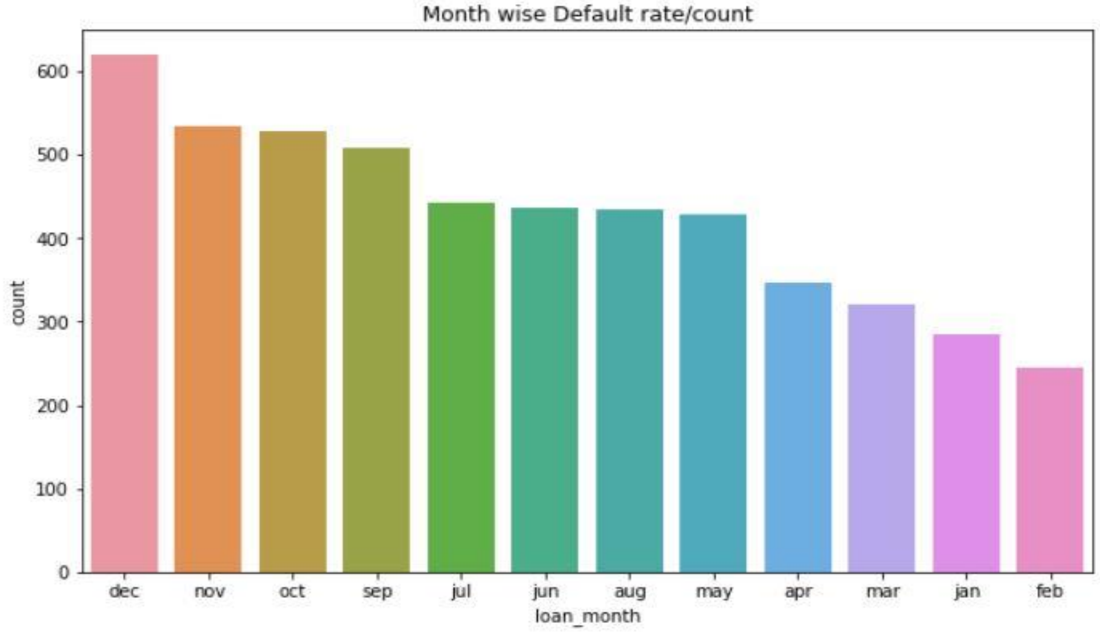


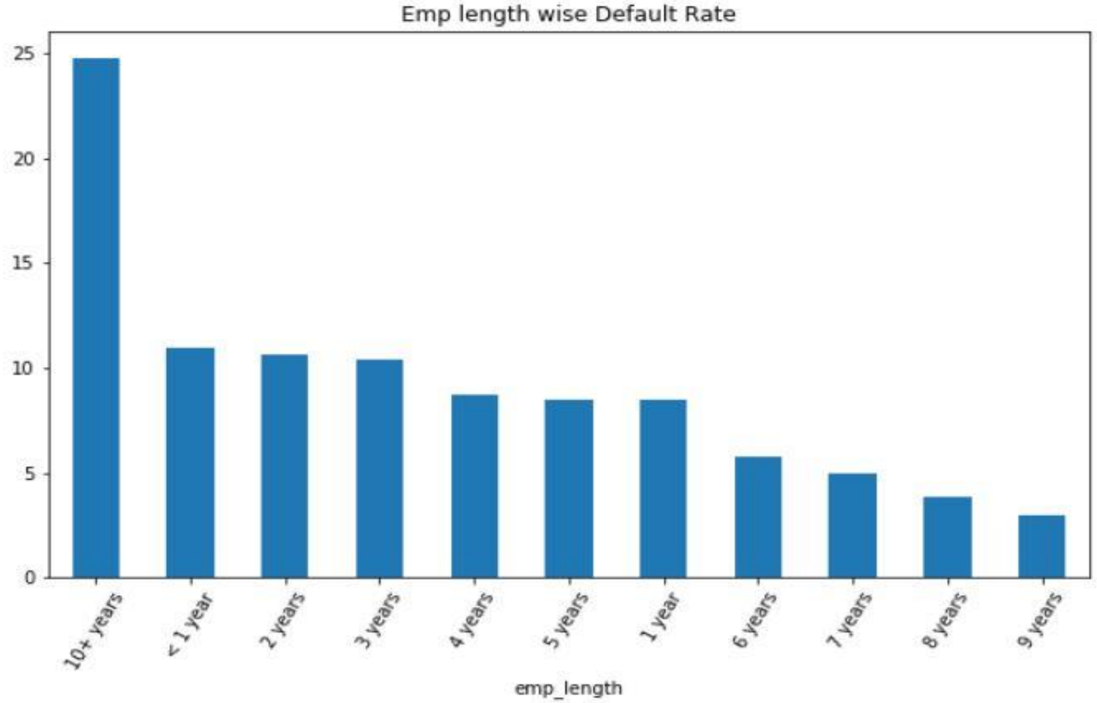


- **Based on the above graph Loans taken for purpose of ‘Debt_consolidation’ seems to have the highest risk of defaulting on Loan.**

- **Based on the above graph Loan applicants with rented Homes are more likely to default, followed by those who have Mortgage. Own Home owners are assumed to least likely for default as Others category seems negligible.**

Month and Experience wise Default Rate

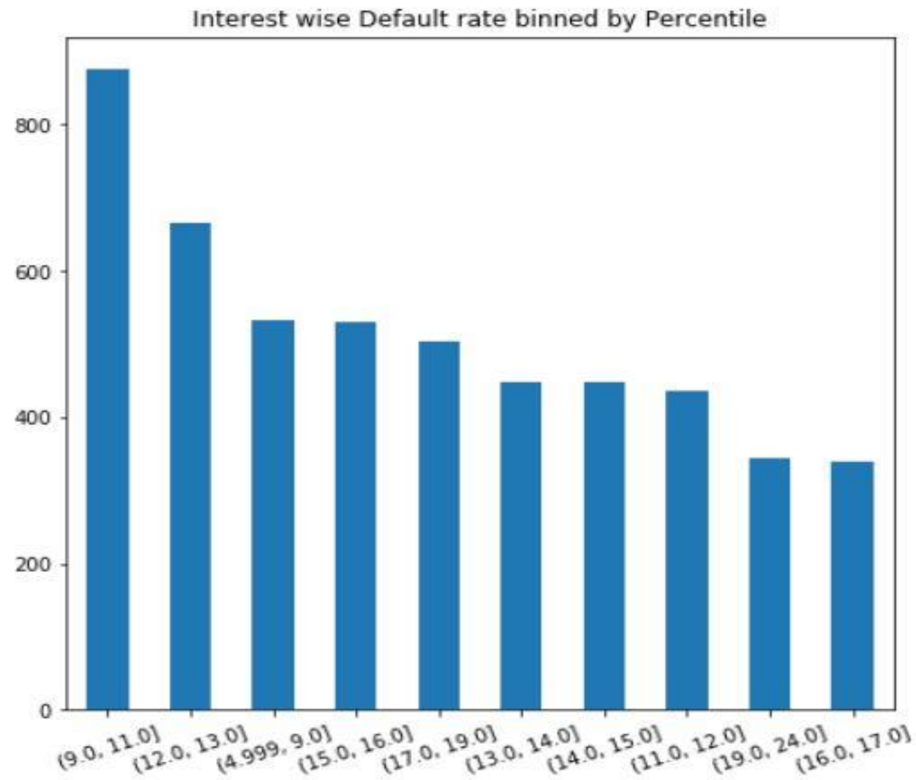


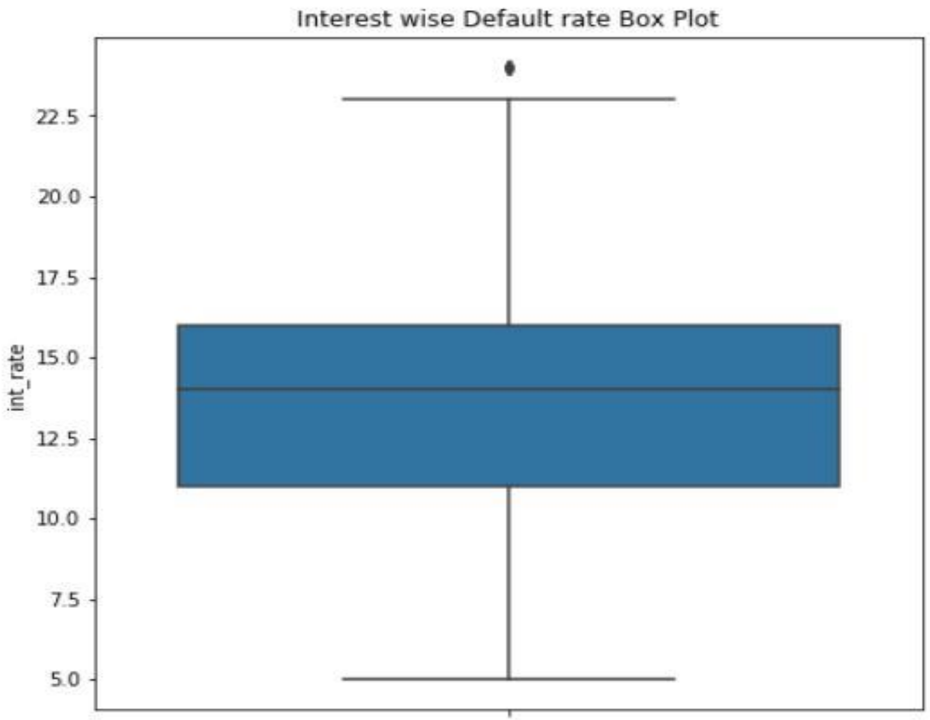


- **Based on the above graph the applicants who are issued loan in December month are more likely to default and the applicants who are issued loan in February are least likely to default.**

- **Based on the above graph Employees with more than 10+ Years of Experience seem to be the one who default the most, but Employees with 9 years of experience seem to be least likely to default. This might be because 10+ years of experience contains all the people with 10 and above years of experience. Therefore we might have to assume that People with less than 1 year of experience might default the most as seen on the trends. The rate of default goes down as the experience increases.**

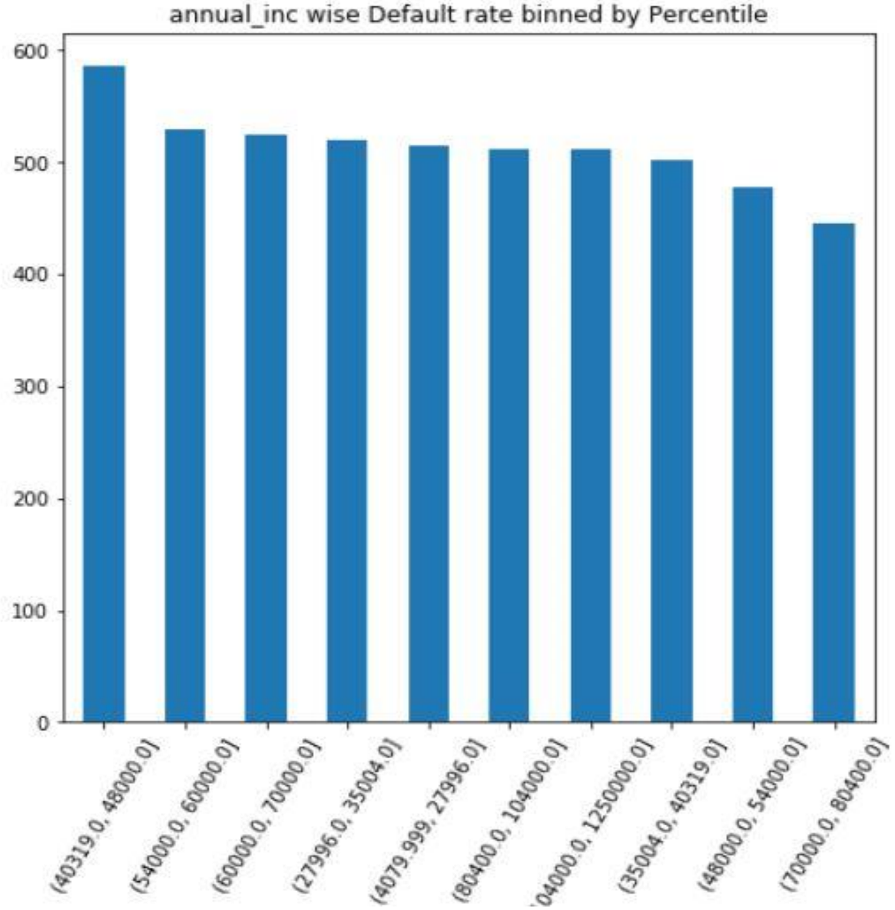
Interest wise Default rate – Binned by Percentile

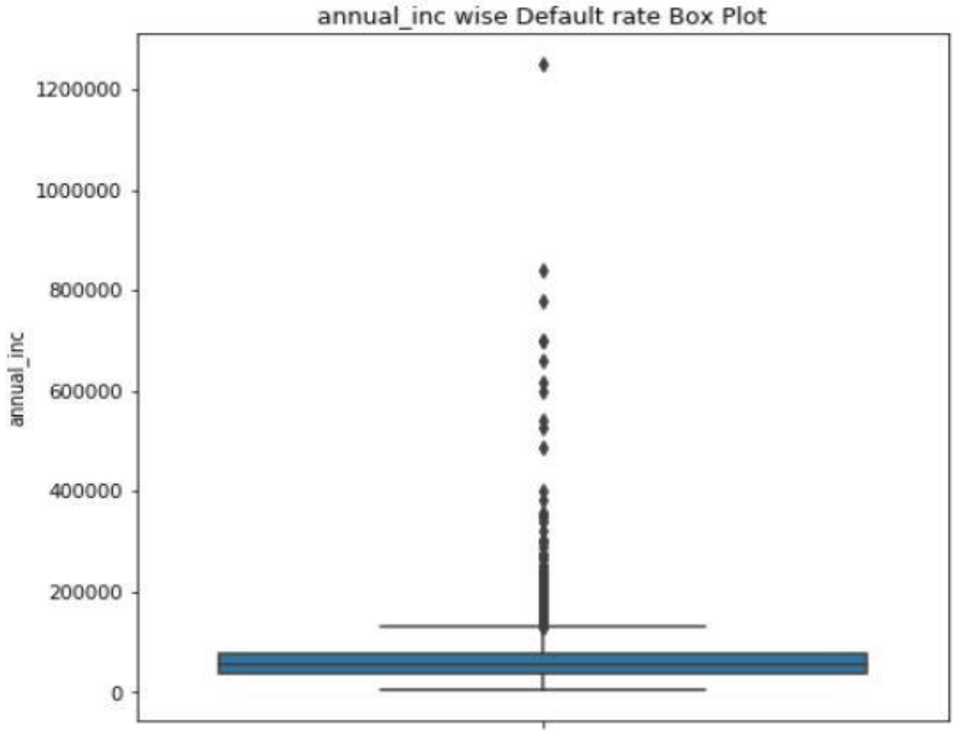




- **Based on above Plot interest rate range of 9% to 11% is the most likely to default. Also we could see that Distribution is normal and outliers are less.**

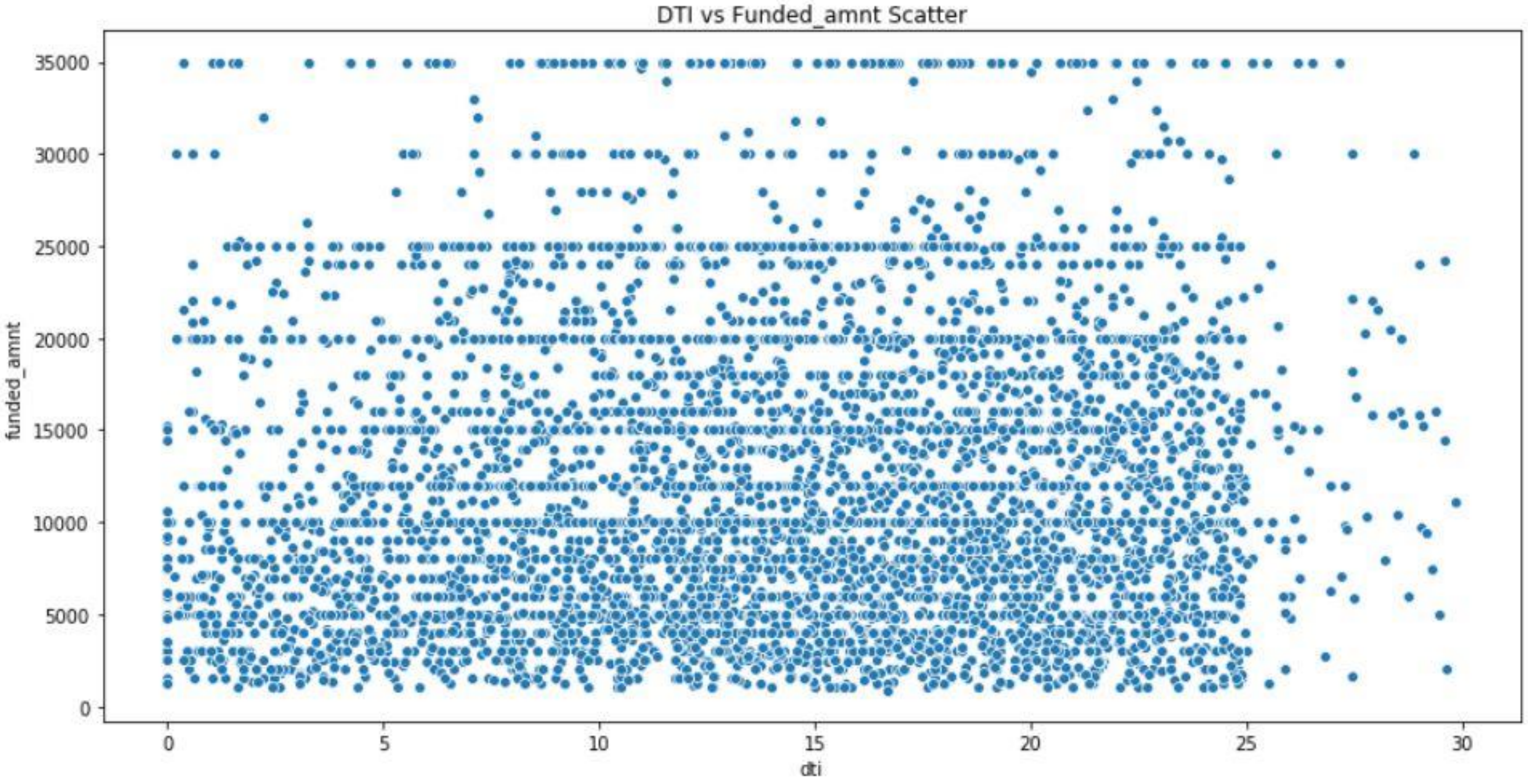
Annual Income wise Default rate – Binned by Percentile





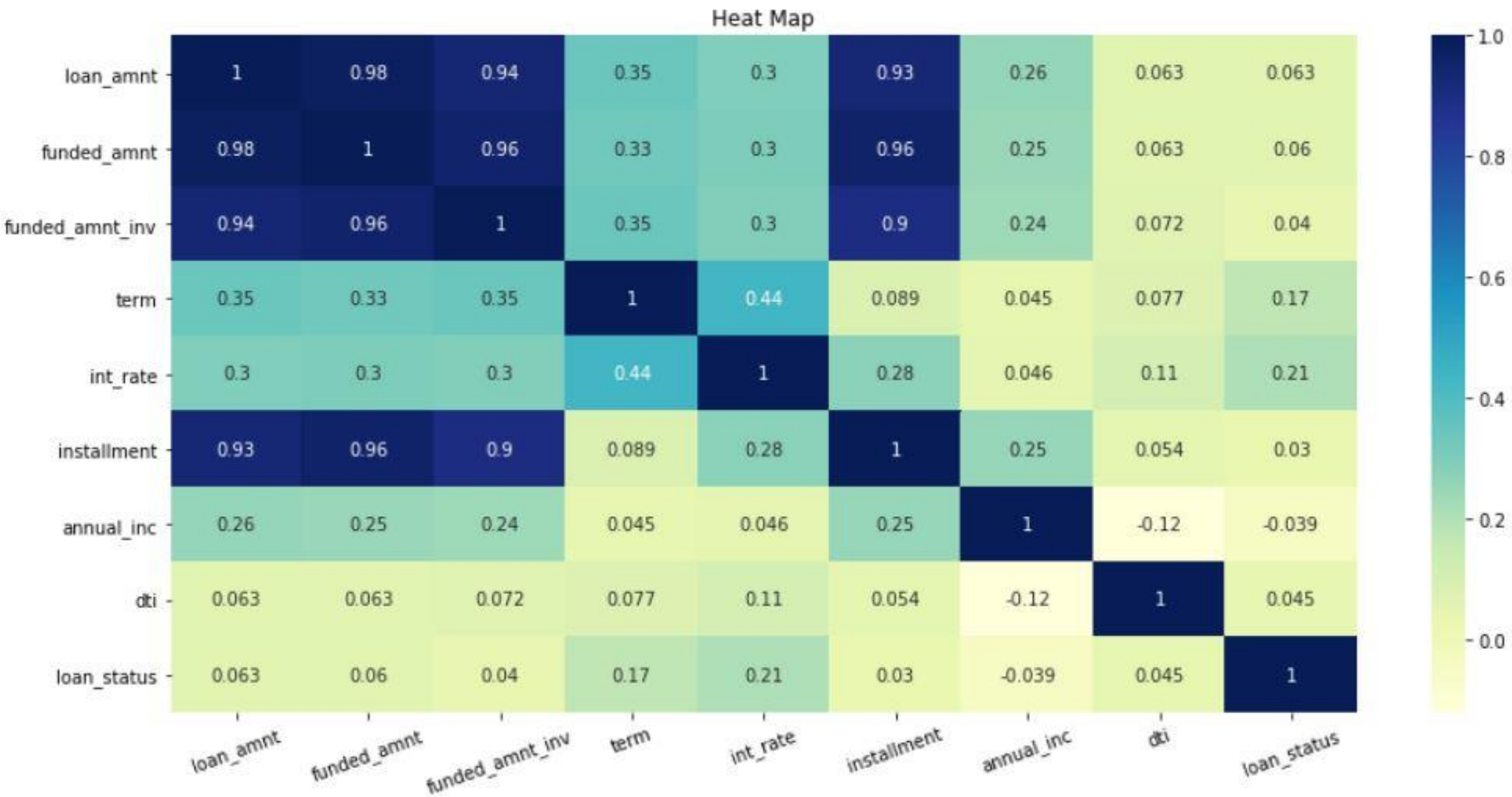
- **Based on above Plot we know that loan takers with Income range of 40300 to 48000 are the most likely to default. Also we could see that Distribution is skewed and outliers are more.**

DTI vs Funded Amount Scatter Plot



- **From above scatter plot slight trend can be observed in lower income range where Debt to Income ratio is High, Default rate density seems to be higher. As Income increases and DTI decreases the density of default rate also decreases.**

Heat Map



- **From Above Heatmap we can see that Term and Interest rate has a slight positive correlation with Default rate. Loan Amount, funded_amount and Amount_funded_inv have high correlation among themselves and also with installment which is expected. Income has positive correlation with Amount funded. Income also has slightly negative correlation with Default rate which would imply Higher Income groups would be less likely to default. DTI has negative correlation with Income, As Income increases DTI will decrease.**

Conclusions

Risk\Categories	Grade	Term	Purpose	Homeowner	Month	Experience	Interest	Annual Income
High Risk	B	36	Debt_Consolidation	Rent	Dec	< 1 Year	9% - 11%	40300 - 48000
Low Risk	G	60	Renewable_Energy	Own	Feb	> 9 years	16% - 17%	70000 - 80400

- Above Data for some of High Risk Driver Variables which Impacts Loan Default Rate