

LENDING CLUB CASE STUDY

Final Submission

Case Study Group:

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Problem Statement :

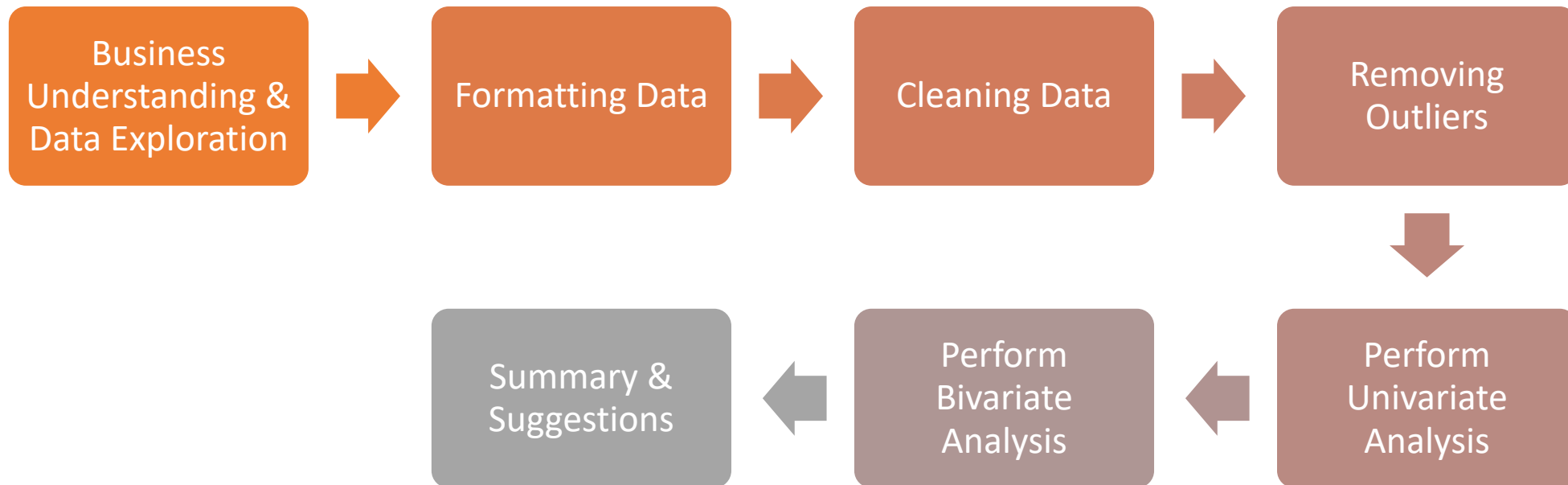
You work for a consumer finance company which specializes in lending various types of loans to urban customers. When the company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile. Two types of risks are associated with the bank's decision:

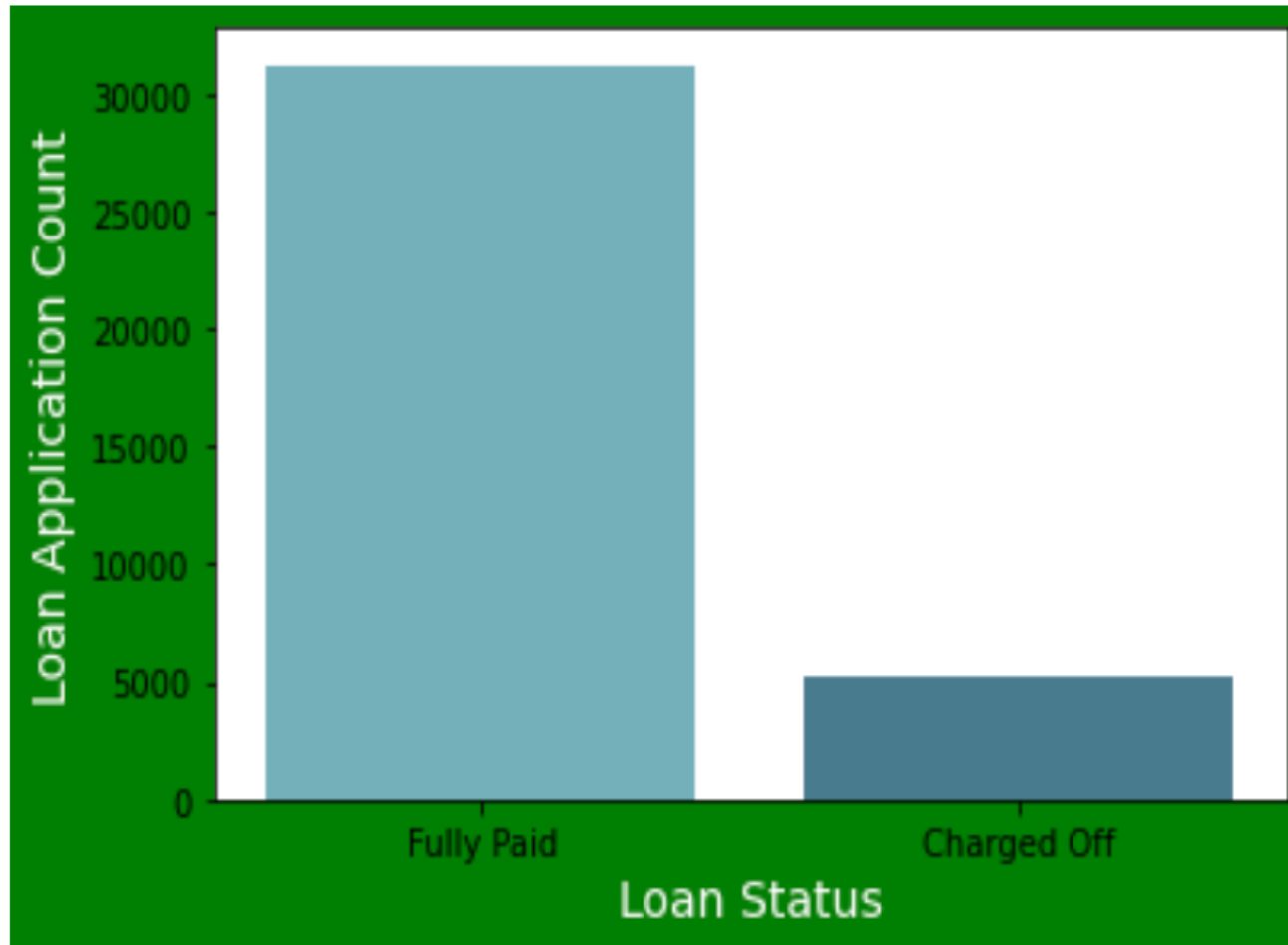
- If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company.
- If the applicant is not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company
- The data given below contains the information about past loan applicants and whether they 'defaulted' or not.
- The aim is to identify patterns which indicate if a person is likely to default, which may be used for taking actions such as denying the loan, reducing the amount of loan, lending (to risky applicants) at a higher interest rate, etc.



Overall Approach of the Analysis :

- Like most other lending companies, lending loans to 'risky' applicants is the largest source of financial loss (called credit loss).
- If one is able to identify these risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss. Identification of such applicants using EDA is the aim of this case study.

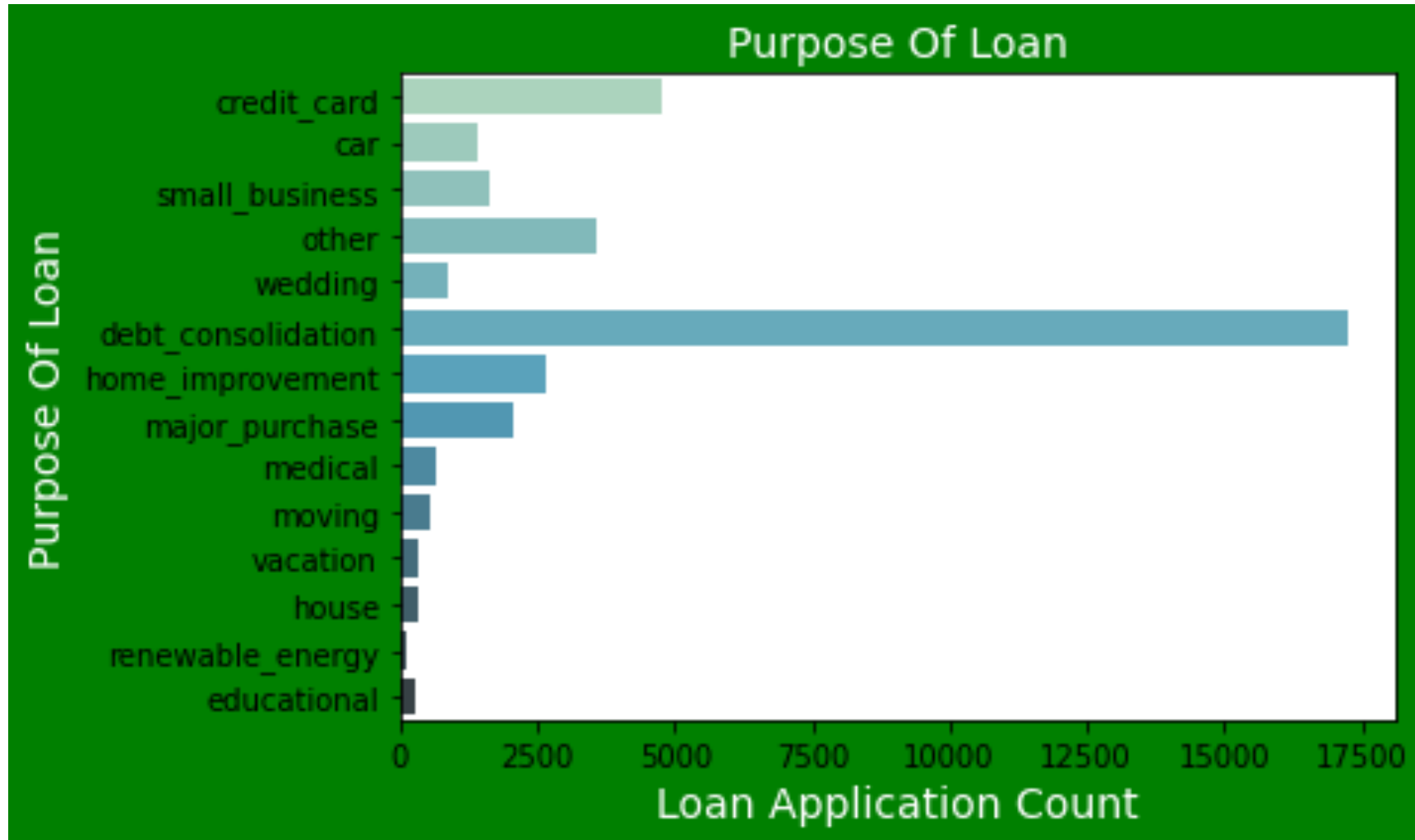




Plot and Data shows that :

- 14% loans were charged off out of total loan issued.
- 85% loans were fully paid out of total loan issued.
- Fully Paid 85.69 %
- Charged Off 14.30 %

Lets analyze the loan status those who are charged off due to various other factors



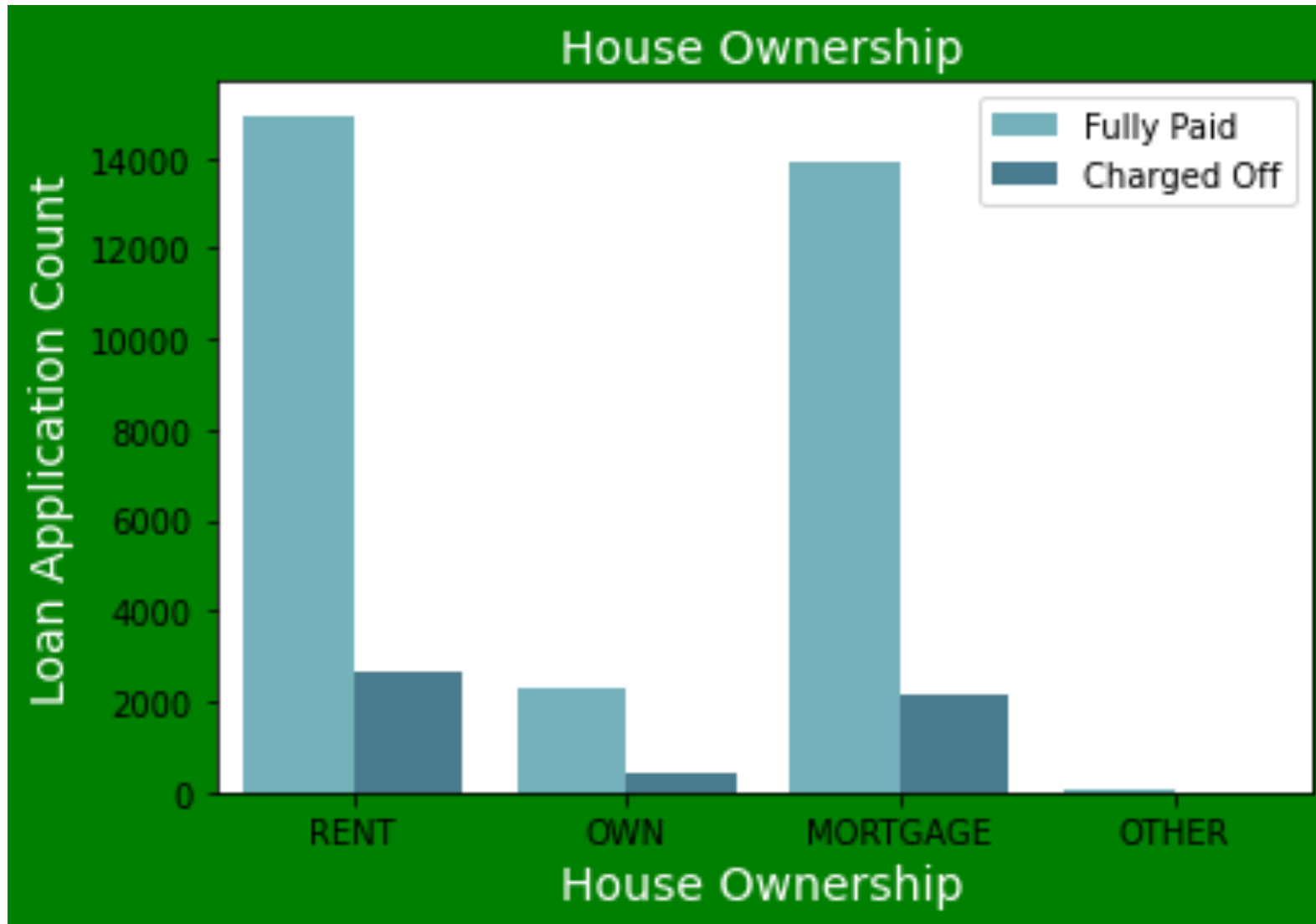
Purpose of Loans:

- Most of the loans were taken for the purpose of debt consolidation & paying credit card bill.
- Number of charged off count also high too for these loans.

Loan Purpose Percentage:

- **debt_consolidation** 46.93%
- **credit_card** 12.92%
- **other** 10.05%
- **home_improvement** 7.49%
- **major_purchase** 5.51%
- **small_business** 4.60%

Home Ownership:



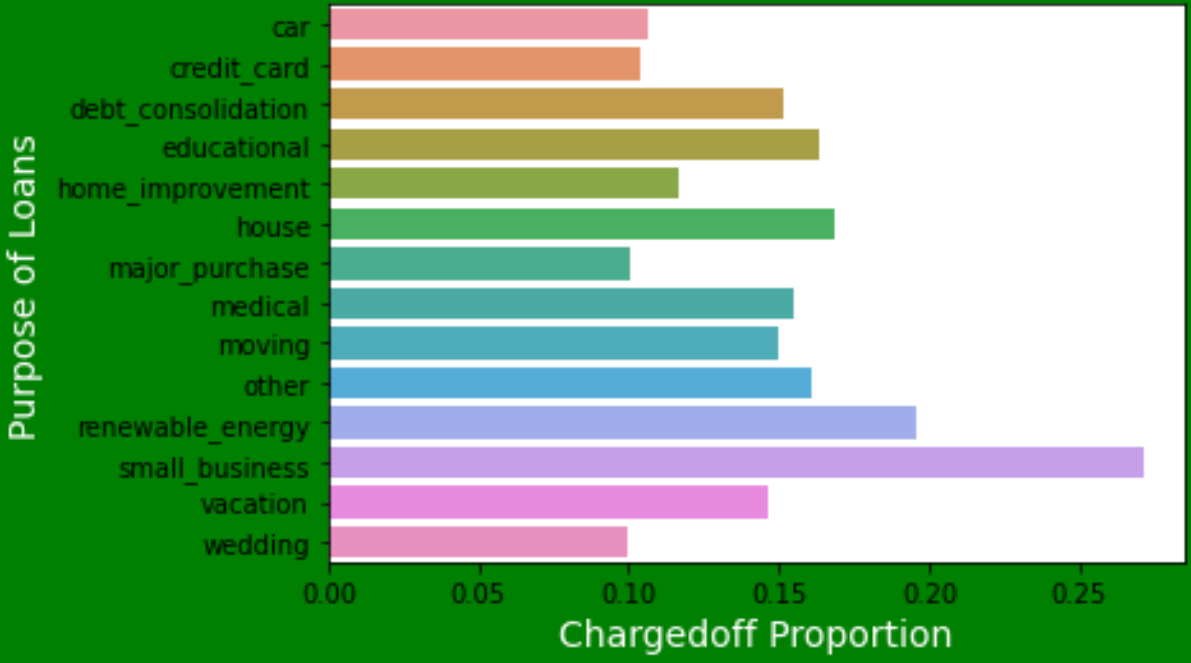
Hone Ownership:

- Applicants who stays at rented and mortgaged house are more likely to be charged off.

Home Ownership Percentage:

- rent. **48.23%**
- mortgage **44.12%**
- own **0.73%**

Purpose of Loans vs Chargedoff Proportion



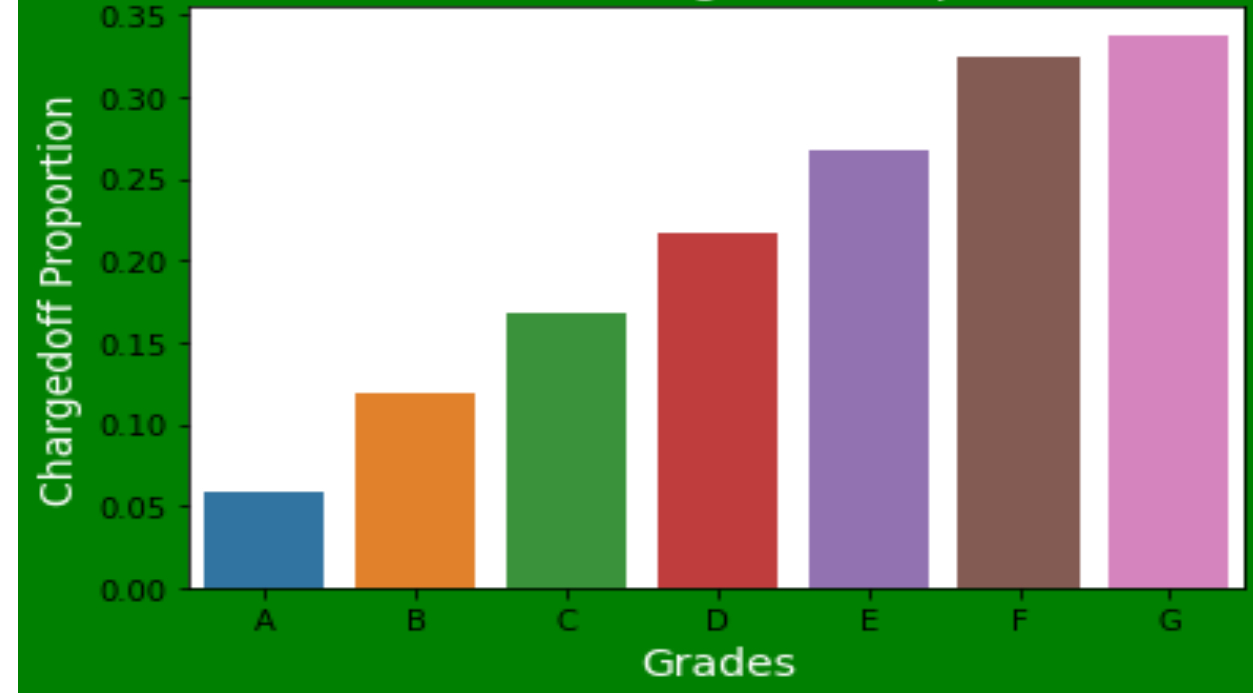
Purpose of Loans v/s Loan charged off Proportion :

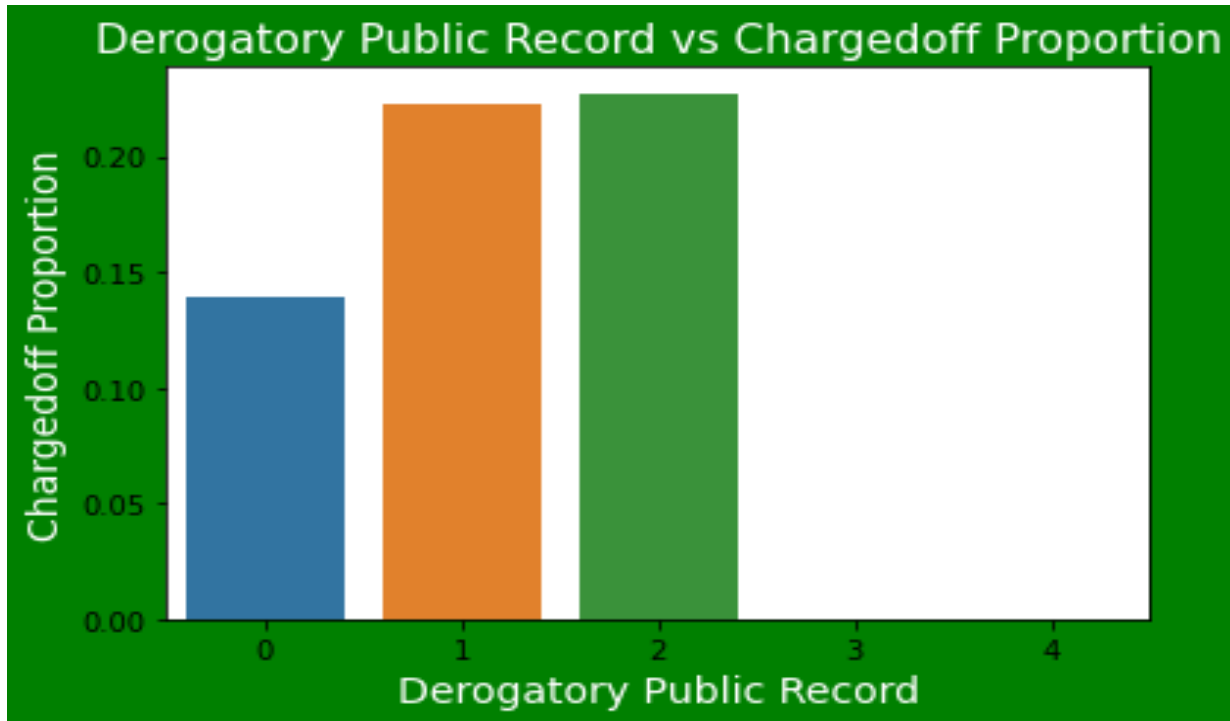
- Small Business applicants have high chances of getting charged off.
- Renewable energy & Educational purpose have charged off proportion high as compare to other categories.

Grades v/s Loan charged off Proportion:

- Grade "A" has very less chances of charged off.
- Grade "F" and "G" have very high chances of charged off.
- Chances of charged of is increasing with grade moving from "A" towards "G"

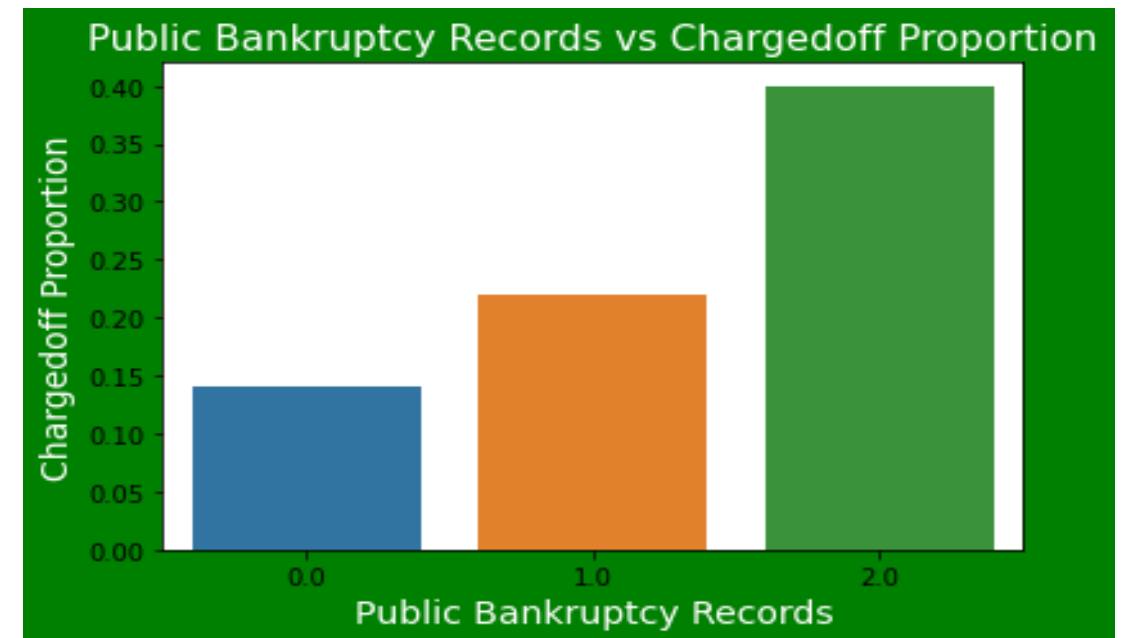
Grades vs Chargedoff Proportion





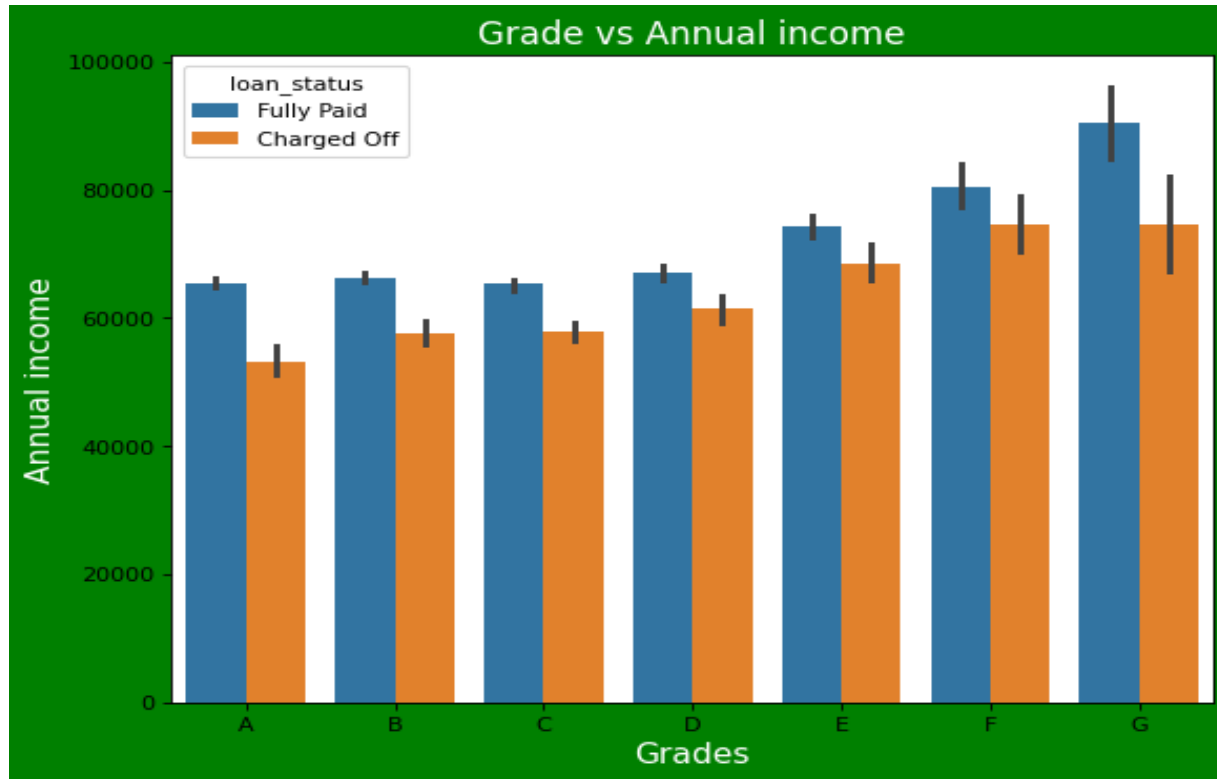
Derogatory Record v/s Loan charged off Proportion :

- A derogatory item is an entry that may be considered negative by lenders because it indicates risk and hurts your ability to qualify for credit or other services.
- Those who already have Derogatory Public Record value as 1 or 2 have higher charged off chances than others.



Bankruptcy Records v/s Loan charged off Proportion :

- Higher the public bankruptcy record greater the Charged Off proportion.
- Not known is the column for which we don't have any information about borrower.

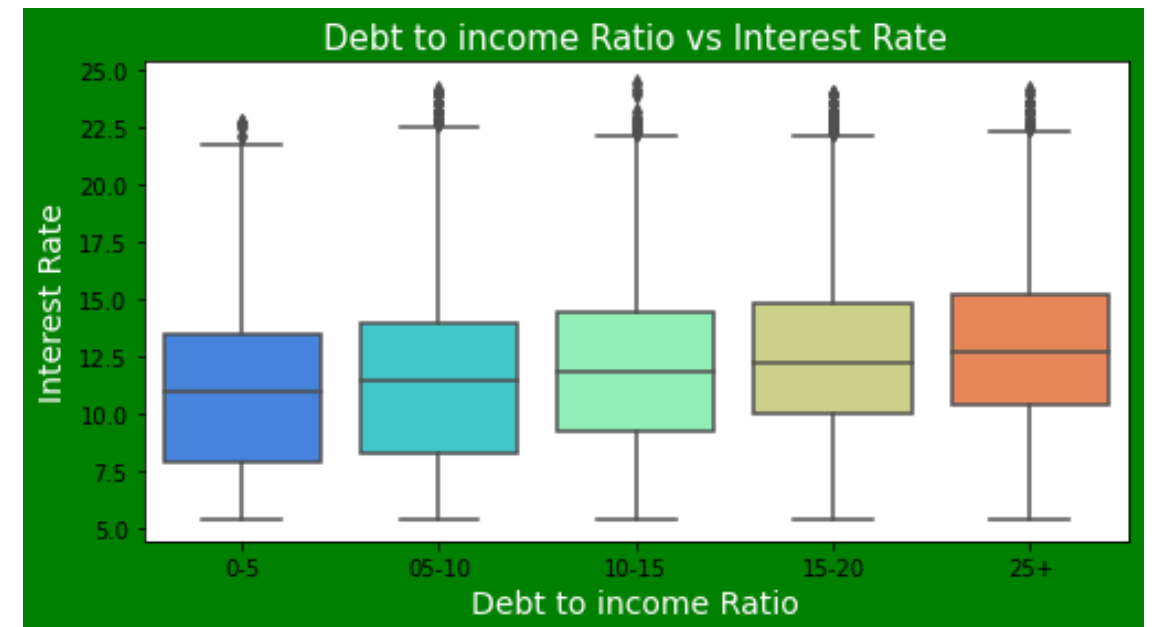


Debt to Income (DTI) v/s Interest Rate:

- If your DTI is low enough you may get a lower interest rate.
- Plot shows no significant variation but there is slight increase in interest rate with increase in DTI.

Loan Amount v/s Interest Rate:

- From this we can conclude that the ones getting 'charged off' have lower annual incomes than the ones.



Summary & Suggestions:

Based on the Analysis done on the Variables, we conclude the below mentioned points :-

- Small Business Applicants have high chances of getting charged off.
- Charged off proportion increases with grades moving from “A” towards “G”.
- Charged off proportion increases as Interest Rate Increases.
- Higher the public bankruptcy record greater the charged-off proportion.
- The loan amounts are bigger on average for small business purpose among all purposes of Loan.
- Those who already have Derogatory Public Records have higher charged off chances than others.

Suggestions to Lending Club:

- Loans for Small Business Applicants should be checked properly.
- Loan approval should be avoided for those who already have Derogatory Public Records.
- Loan approval should be avoided for those who already have Public Bankruptcy Records.
- Lower annual income applicants should be avoided for big loan amounts with higher interest Rates.
- Loan approval should be avoided for applicants who doesn't have a source of income.