Lending Club Case Study Submission

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Problem Statement

- You work for a **consumer finance company** which specialises 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
- Data given contains 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.

Activities Performed

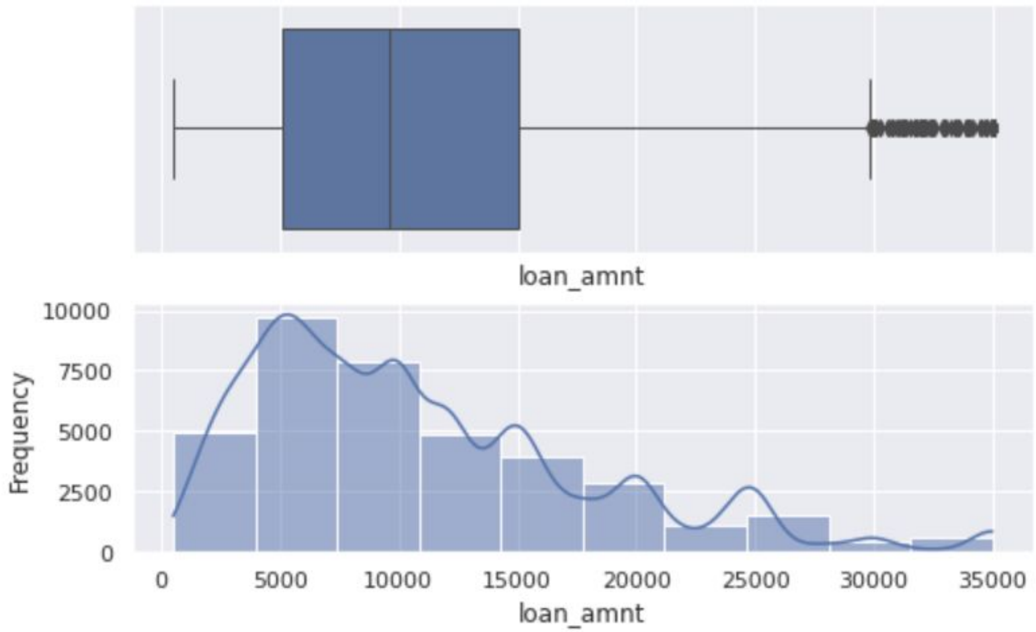
- Data Understanding
- Data Cleaning & Manipulation
- Data Analysis
- Recommendations

Data Cleansing Approach

- Removal of irrelevant rows based on loan status = “current”
- Removal of Columns with all Null Values count % > 30%.
- Removing Columns using their description in metadata which seems to be not so useful for our analysis.
- Data Type Conversions.
- Finding Missing Values/Data Imputation through KNN imputation .
- Removing certain elements from values to create numbers or ranges.
- Checking outliers and removing them.
- Removing highly correlative features with help of correlation matrix

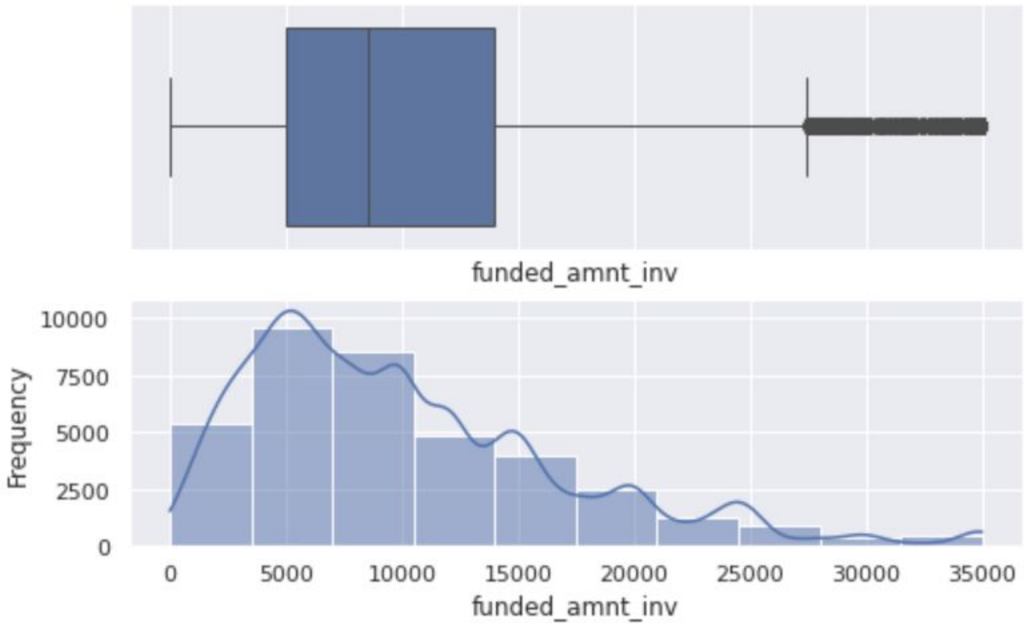
Data Analysis Inferences

Average loan amount by borrower is between 5000 to 15000.



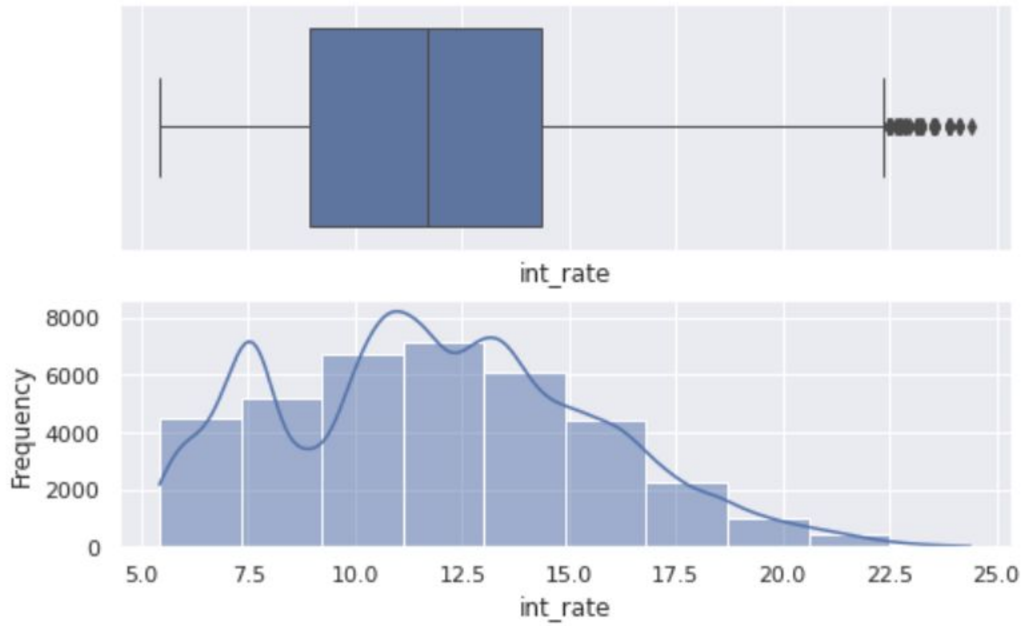
Data Analysis Inferences

Average funded amount by investors is between 5000 to 15000.



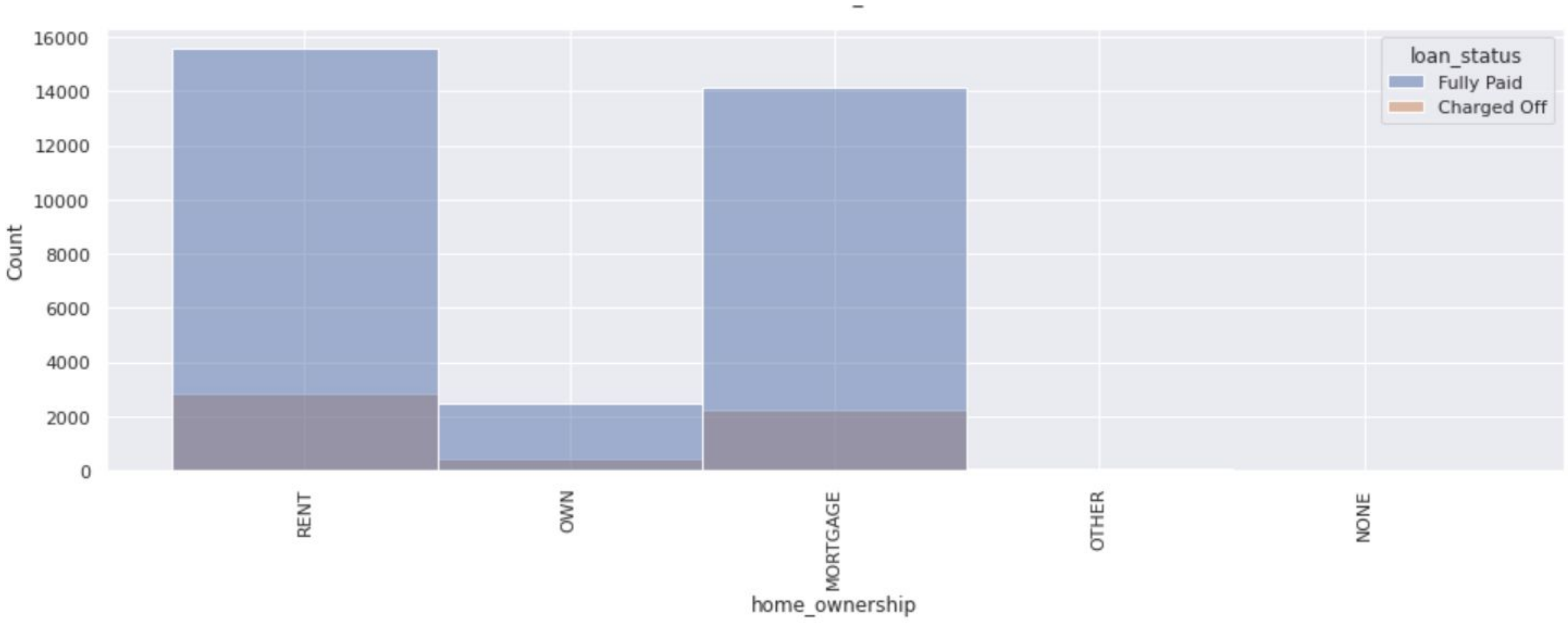
Data Analysis Inferences

Average interest rate is between 10-15 percentage.



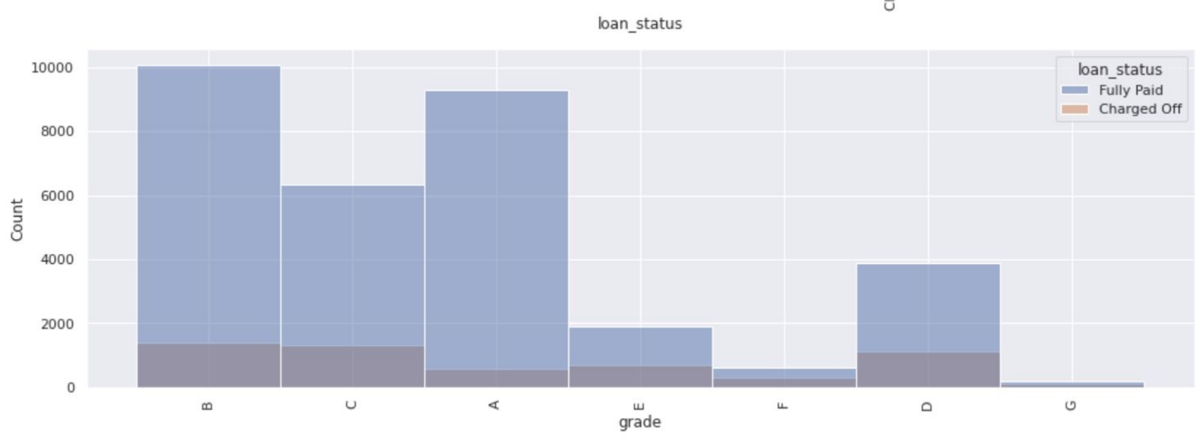
Data Analysis Inferences

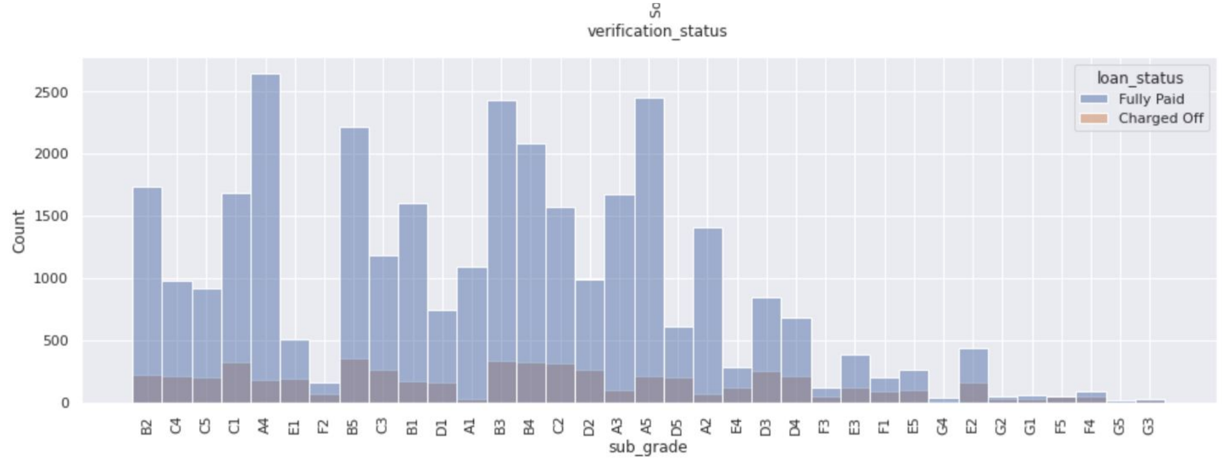
More number of people taking loan ,who are staying in rented or mortgage accommodation are more likely to be charged off.



Data Analysis Inferences

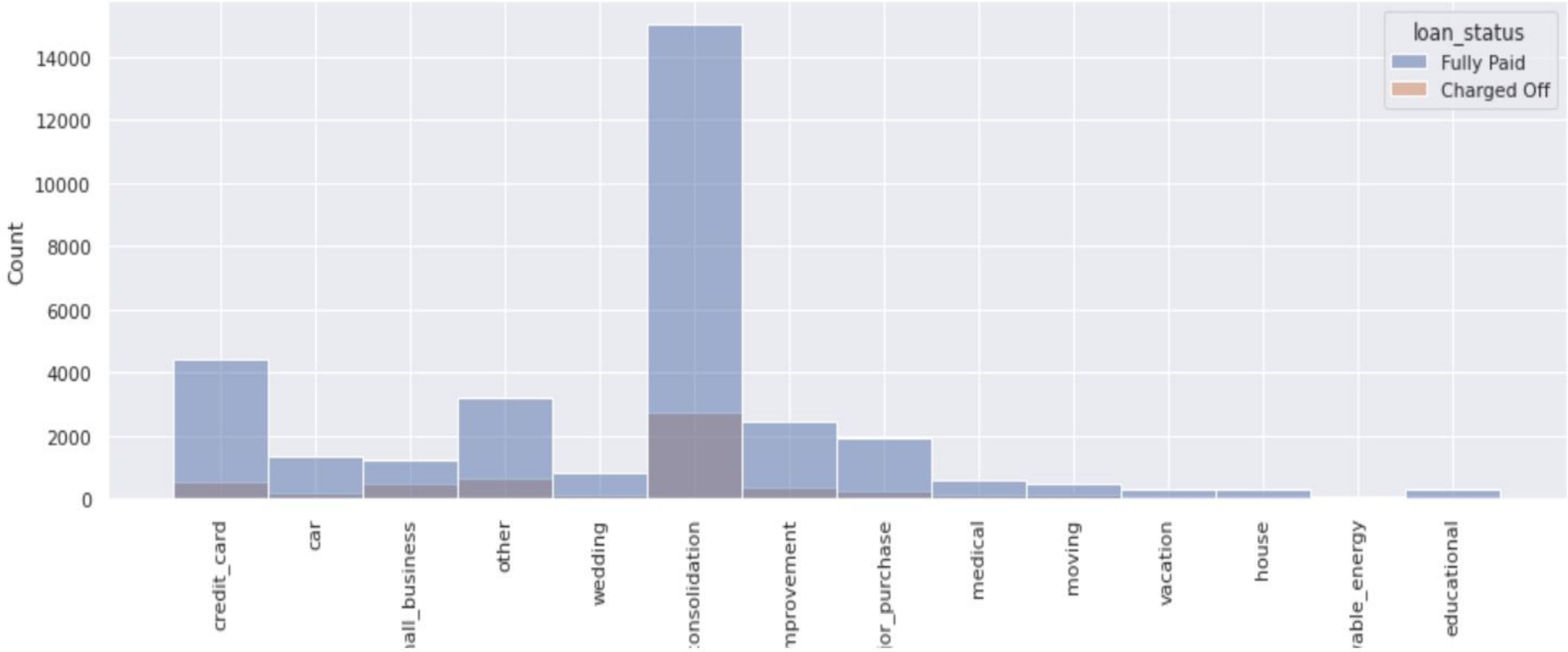
As the grade moves from A to F number of loan decreased and charged off Percentage increased. So it is more likely people with D, E & F are more likely to be Charged off.





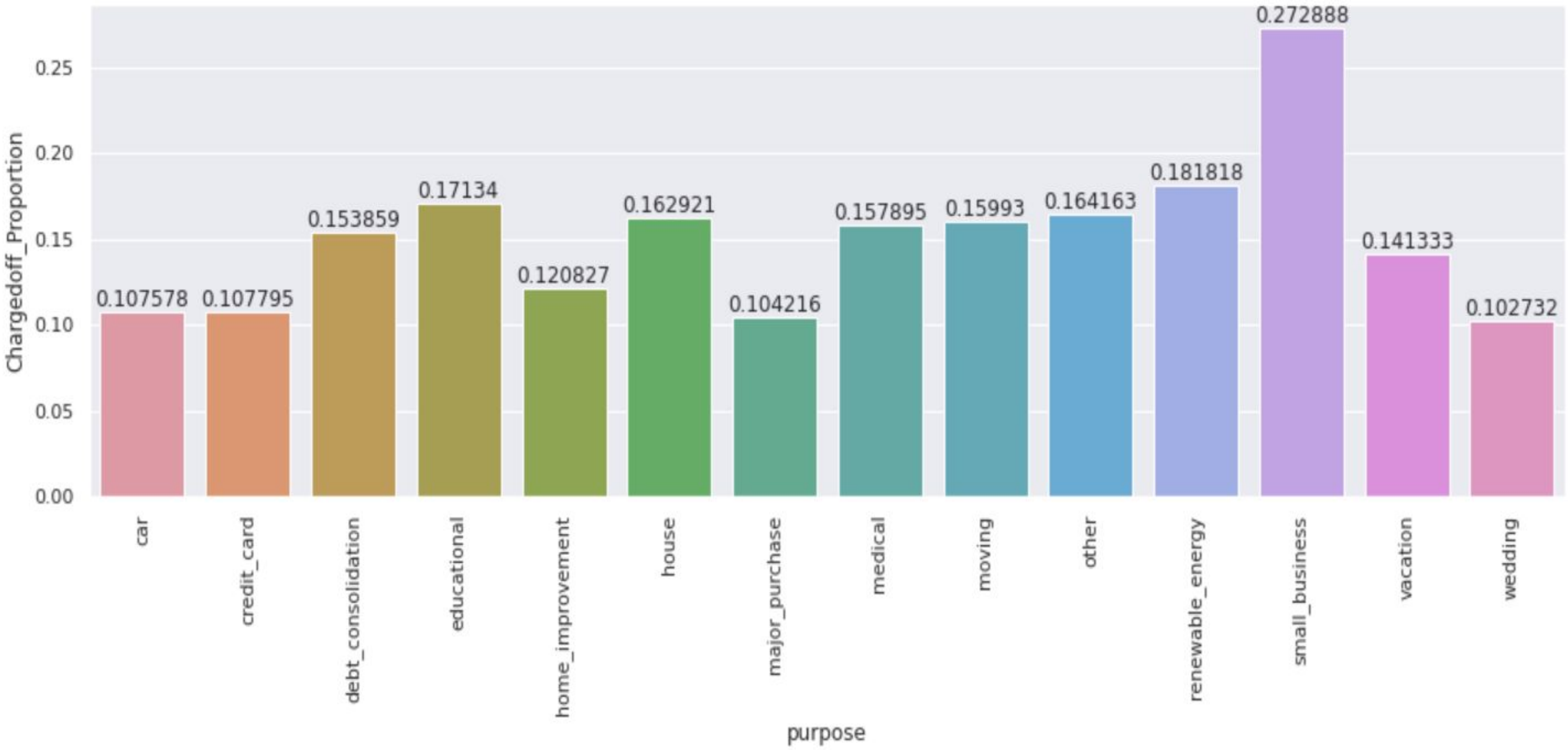
Data Analysis Inferences

More loans were taken for debt consolidation and credit card payment.
It is more likely due to high numbers there are more chances of charged off in these segments.



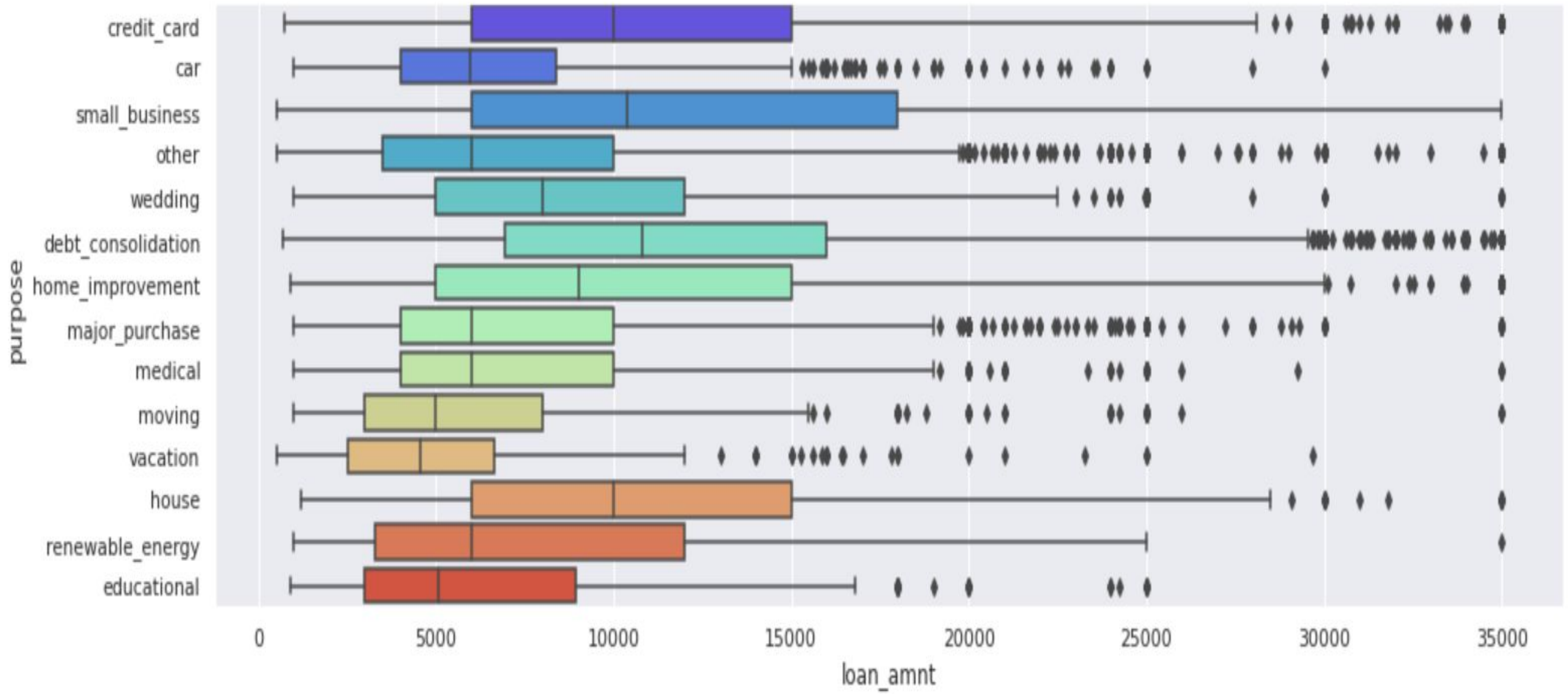
Data Analysis Inferences

This analysis between purpose of income vs charged off shows that people with Small business have relatively more risk of getting charged off.



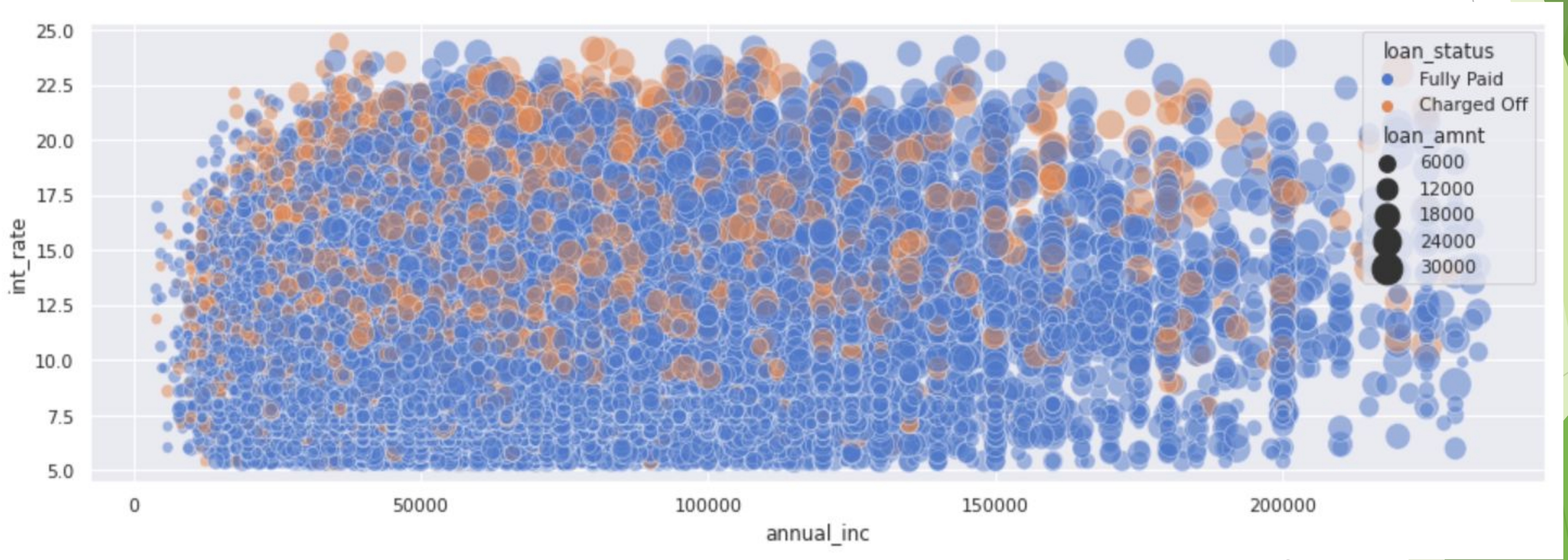
Data Analysis Inferences

This analysis between loan_amount and purpose shows small business, credit card bill, Debt consolidation and home improvement are top reasons of credit.



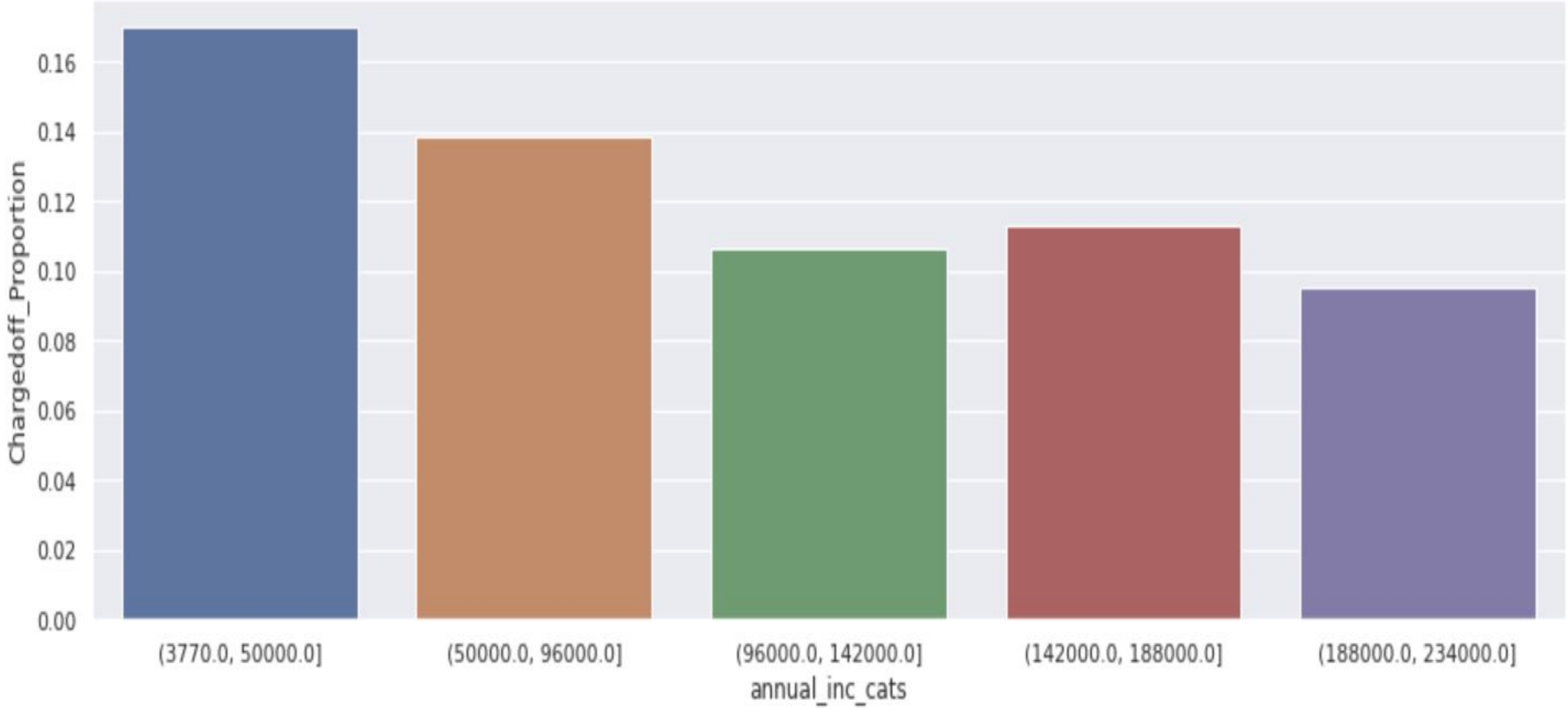
Data Analysis Inferences

This analysis between annual_income and interest rate shows that it is more probable that less income people are more likely to be charged off and more interest rate people are more likely to be charged off



Data Analysis Inferences

This analysis between annual_income categories vs charged off shows that people with More income are less likely to default w.r.t to people with less income.



Summary and Recommendations

1. Average amount of loan value is between 5000-15000.
2. Average interest rate is between 10-15 percentage.
3. Out of all people getting loans, it is more likely people with rented or mortgage homes will be not able to repay back.
4. People with lower grades such as D, E & F are having more probability of getting charged back.
5. Analysis shows people have taken loans mainly for small business, credit card bills and debt consolidation.
6. It is more probable people with less income or more interest rate are having more chances to not being able to pay back.
7. People with small business are having maximum chances of getting charged off.

So above mentioned category of customers should have strict credit profiling

Thank You