Lending Club Case Study

Group Members:
Jeet Barad
Kartikey Kunal

Abstract

- Lending Club stands as the leading online platform for loans, offering personal loans, business financing, and funding for medical expenses.
- Borrowers benefit from a user-friendly online system that provides quick access to loans with reduced interest rates.
- The goal of the analysis is to utilize data from previous loan applicants to determine whether they experienced a default.

Problem solving methodology

Data Analysis

Data Analysis

Data Analysis

Data Cleaning

Eliminate columns with null values, discard irrelevant columns which does not help any how in our analysis, like post loan approval data, columns with single value.

Data Understanding

With the Data Dictionary to gain an understanding of each column and its specific applications within the domain.

Univariate Analysis

Analysing each column, plotting the distributions of each column.

Segmented Univariate Analysis

Analyzing the continuous data columns by creating groups or segments of them for better understanding and bring something meaning full from it

Bivariate Analysis

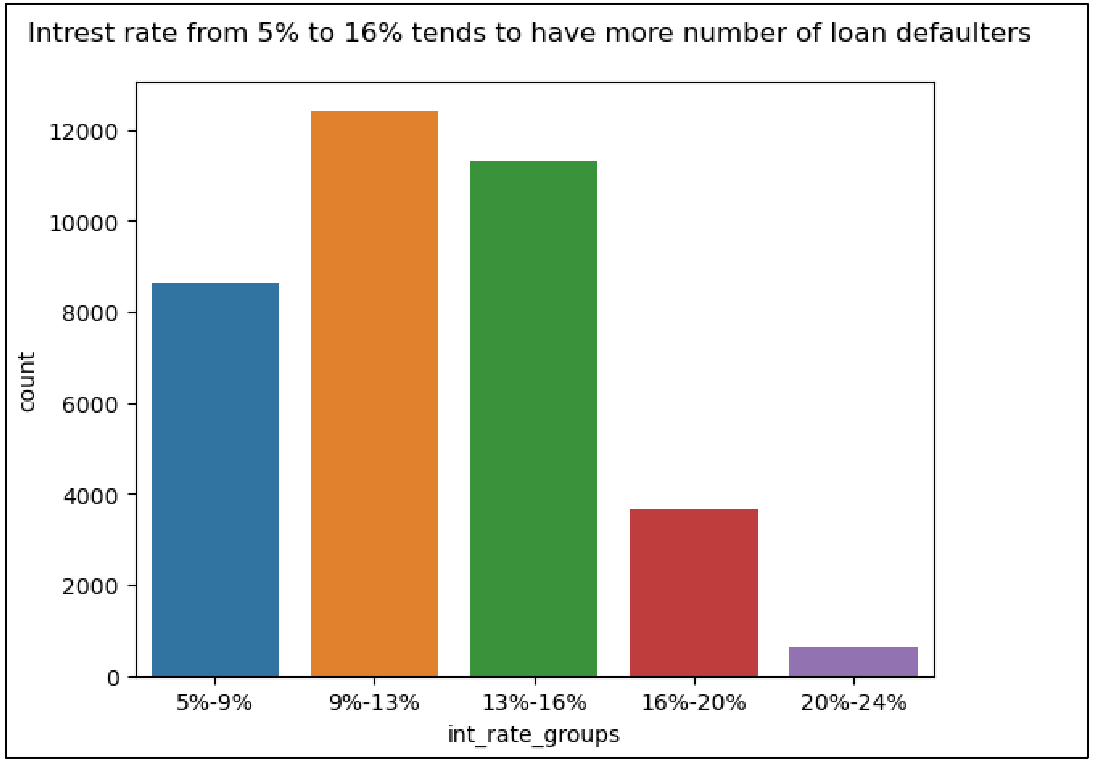
Analysing the two variable behaviour like interest rate and loan status with respect to loan amount and many more..

Recommendations

Analysing all plots and recommendations for reducing the loss of business by detecting columns best which contribute to loan defaulters.

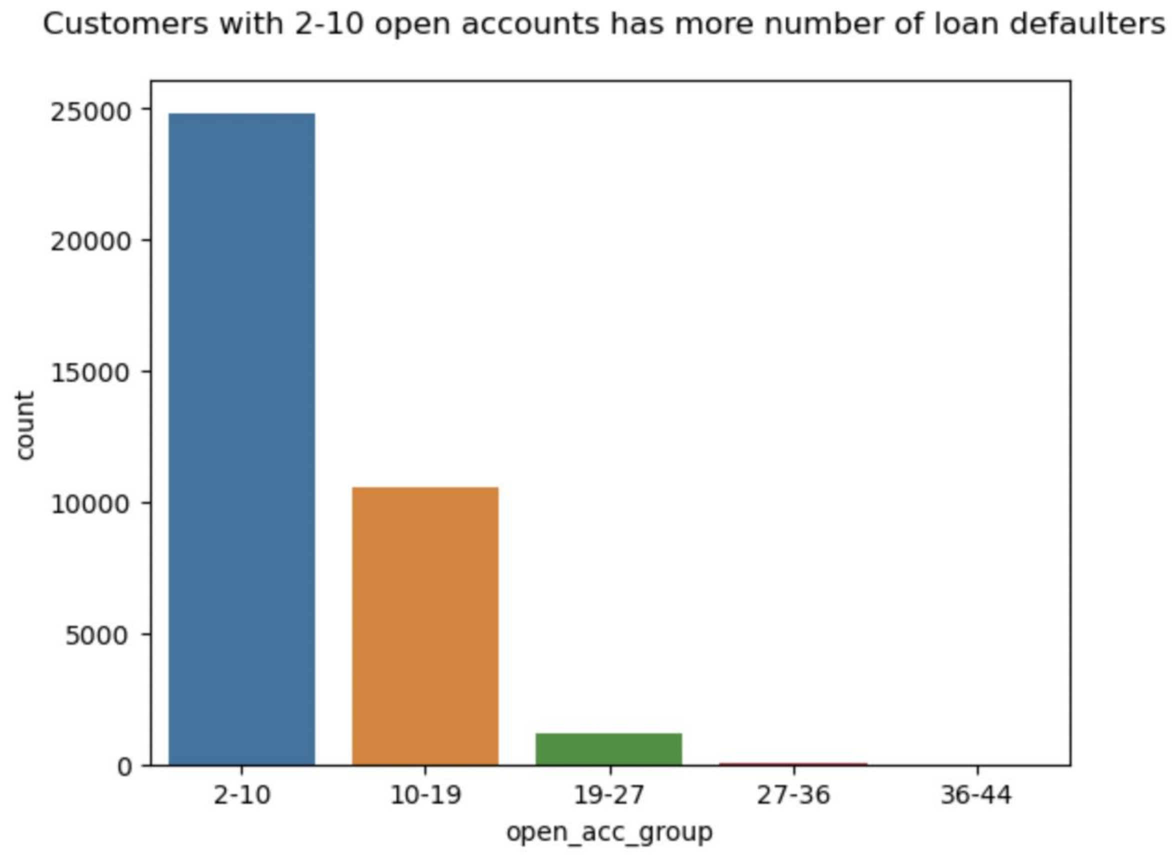
Note: No data in dropped in this analysis an bank data is a sensitive data. Replacement with most frequent occurrence and Imputation has been performed in this data set.

Univariate Analysis



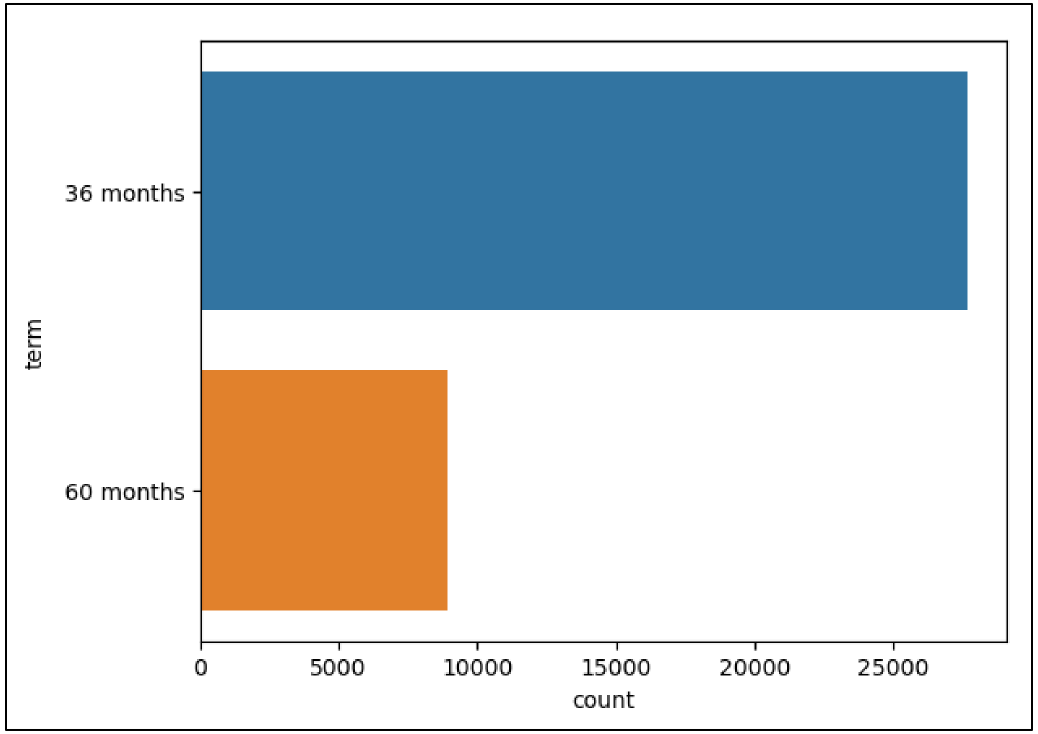
- Loan defaulters are more where the rate of interest is low. People defaults more loan in 5% to 16% interest rate ranges.

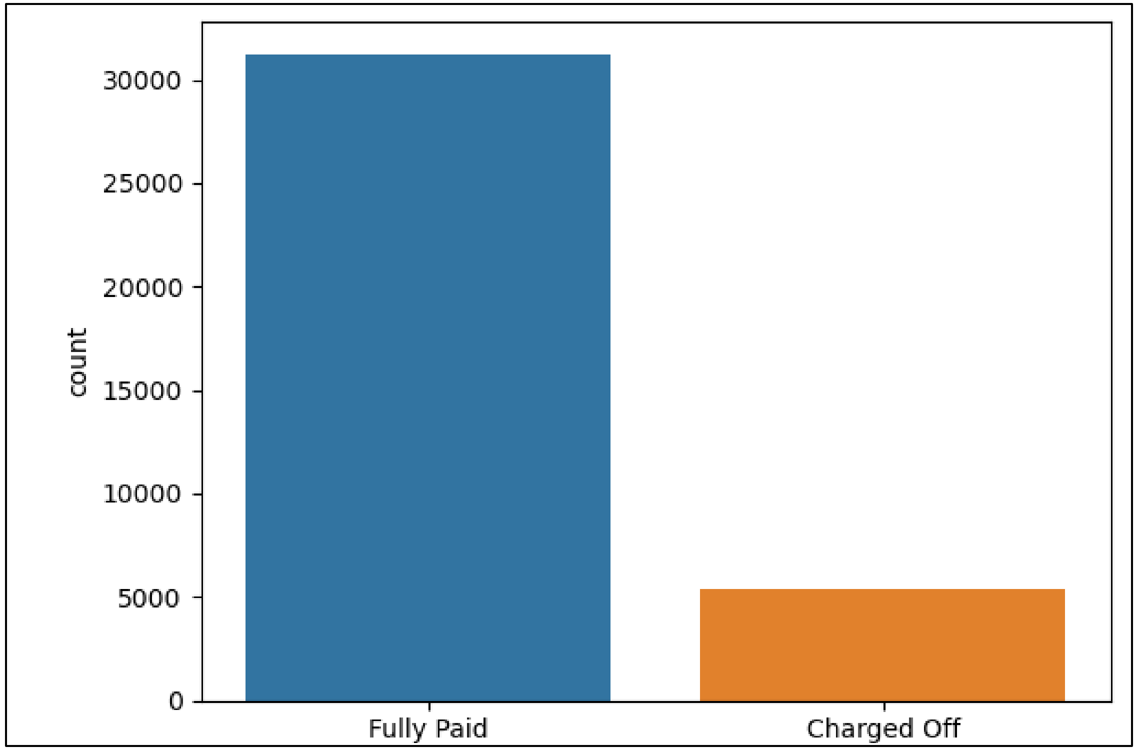
Univariate Analysis



- Customers with 2-10 open accounts has more number of loan defaulters as compared to 36-44 open accounts

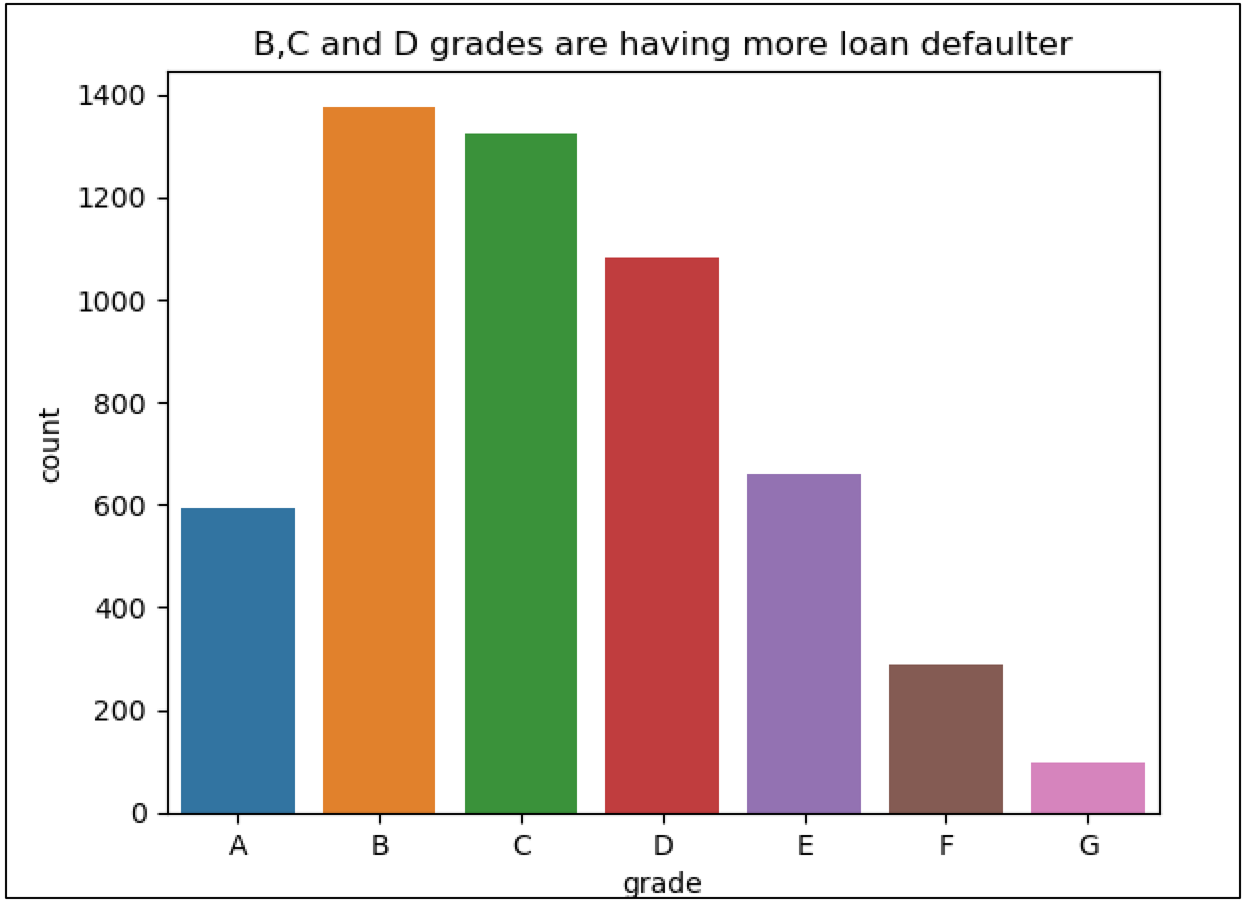
Univariate Analysis





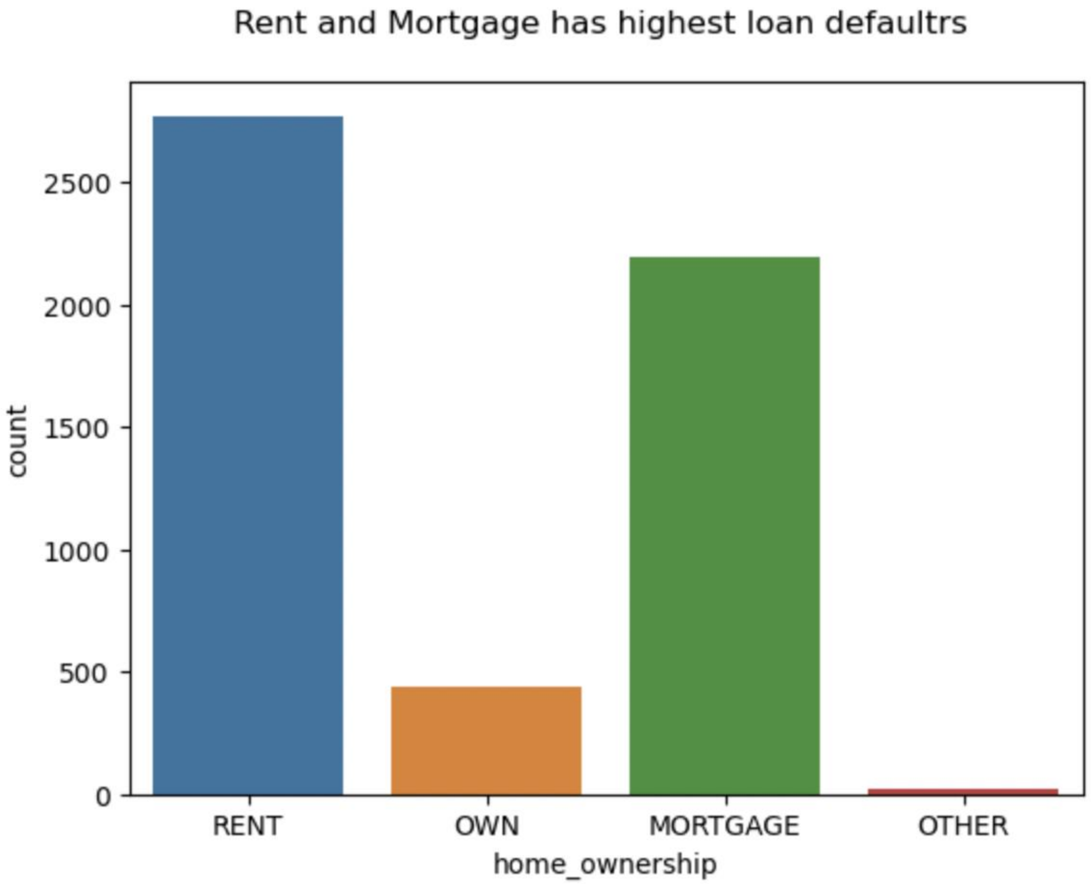
- There are two loan terms 36 months & 60 months around 75% borrowers took loan from 36 months.
- Charged off borrowers are 15% and 85% borrowers are fully paid.

Univariate Analysis



- From Lending Club Grades comparison it is clearly evident that B,C,D grades are having more loan defaulters.

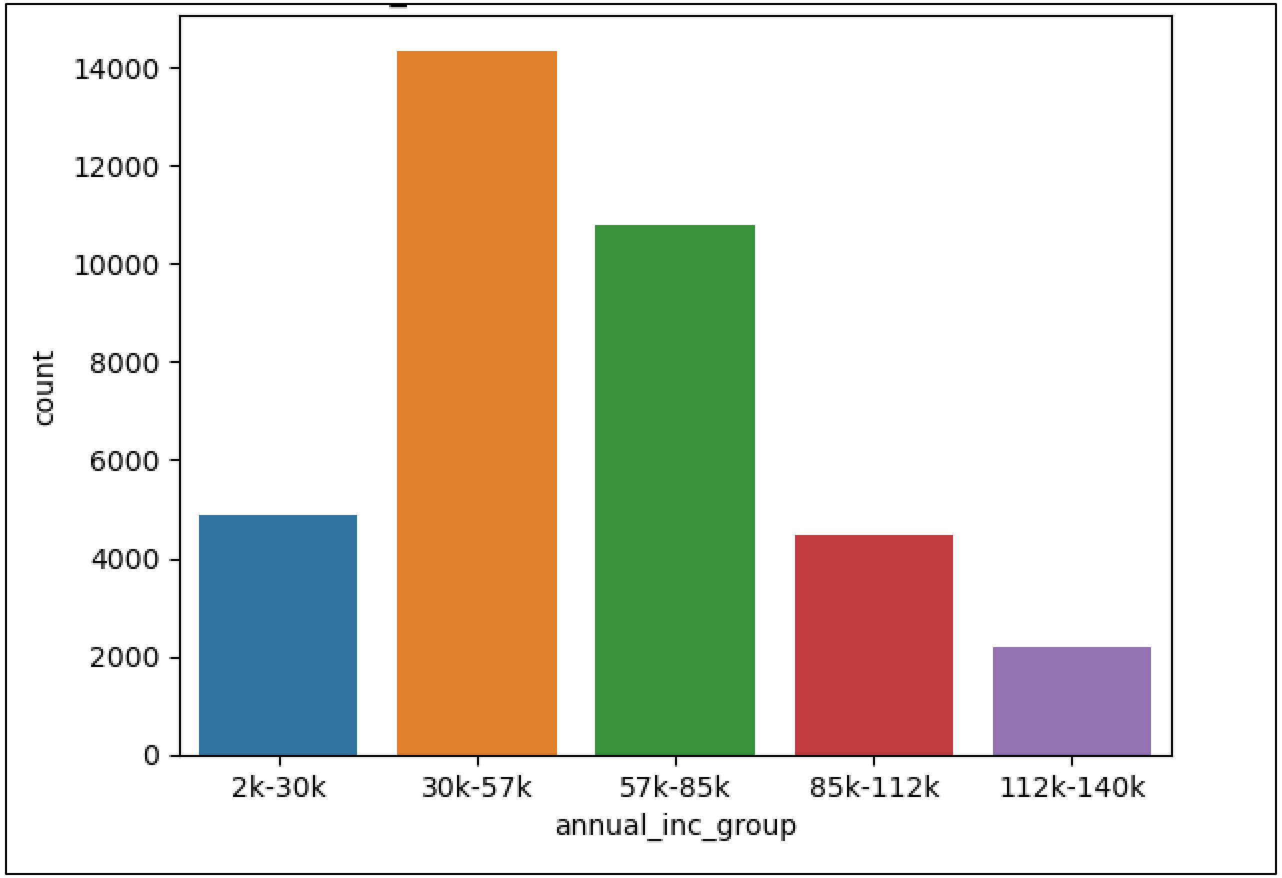
Univariate Analysis



- Rent and Mortgage from home_ownership have the more loan defaulters.

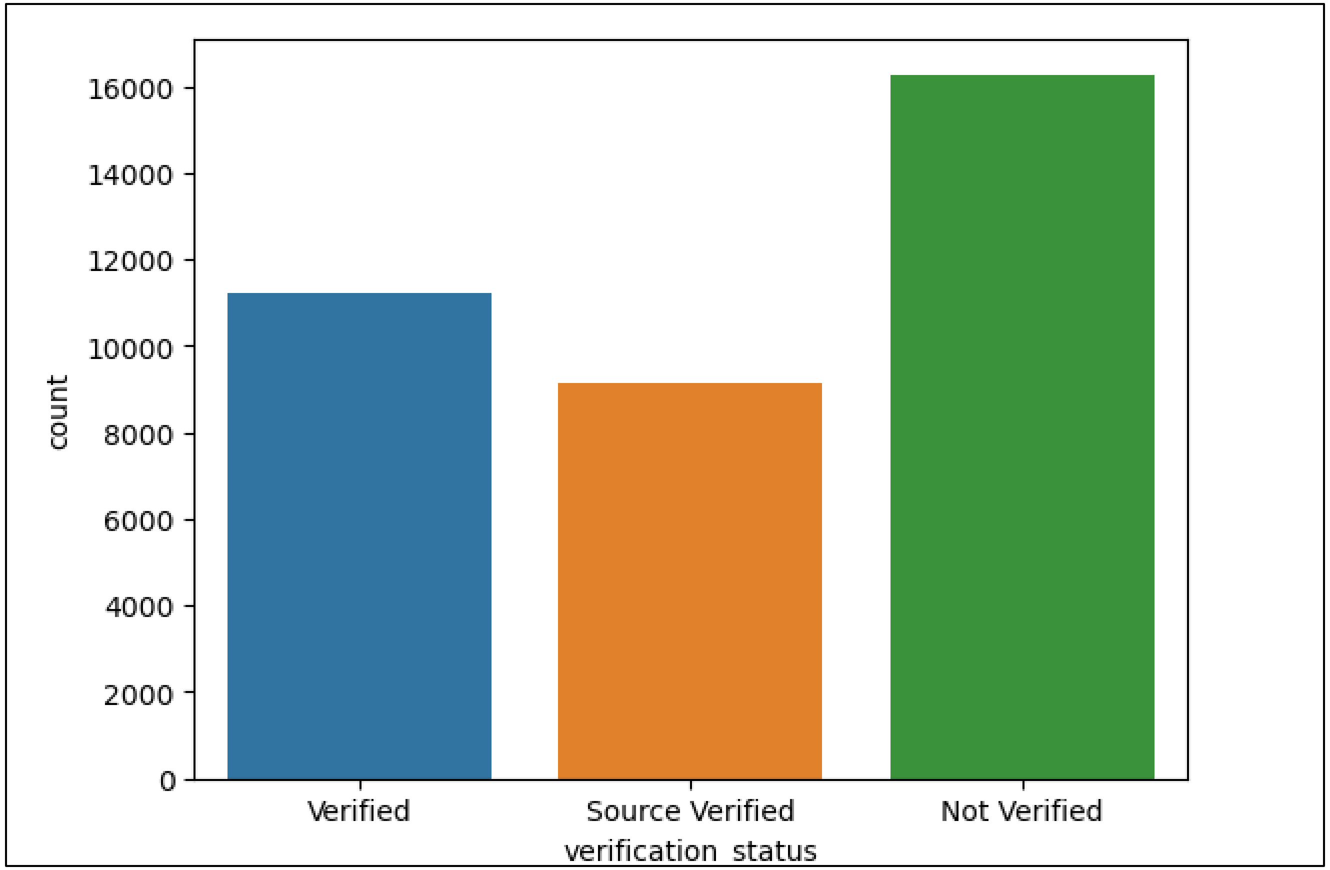
Note: None category in home_ownership are merged to other category as the count was only 3

Univariate Analysis



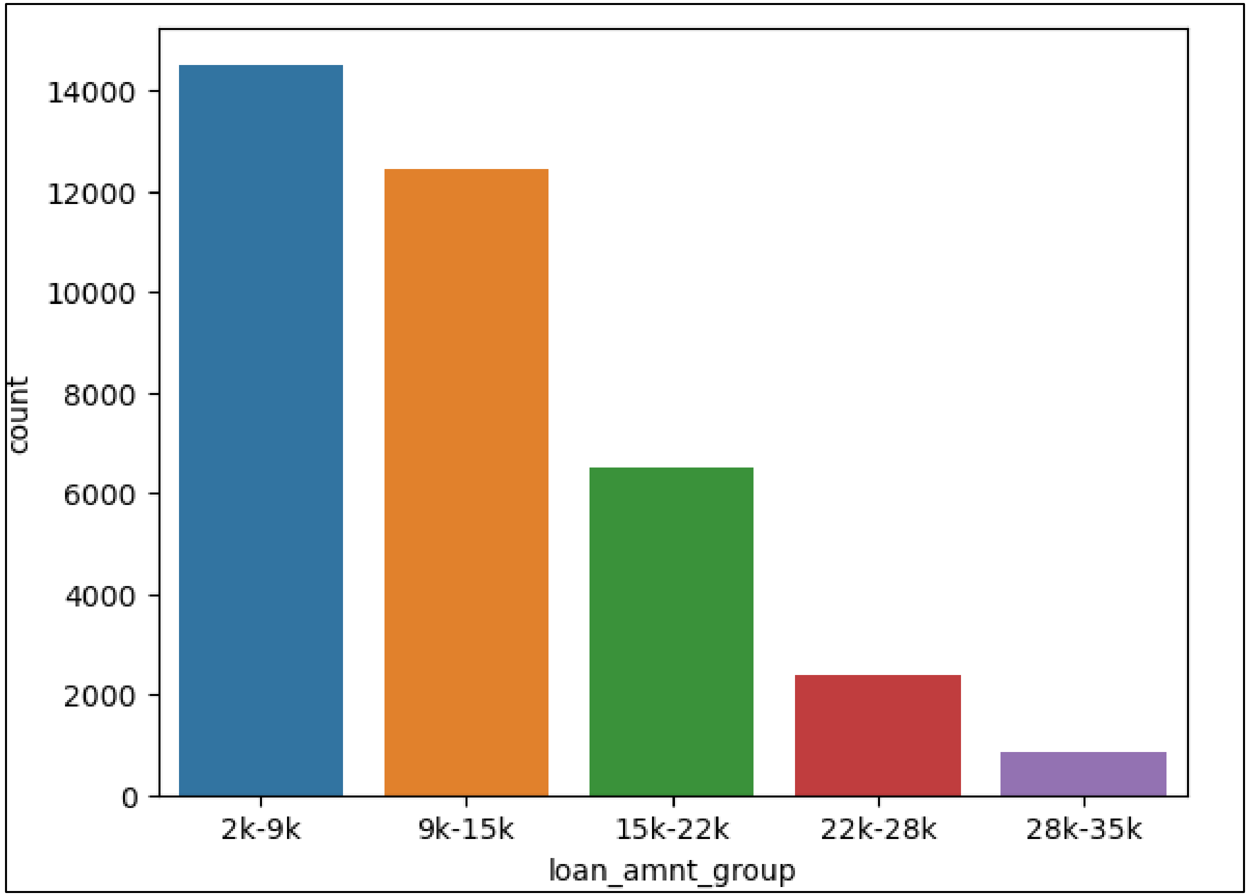
- Customers with annual income around from 30k to 85k are having more defaulters compare to other income groups.

Univariate Analysis



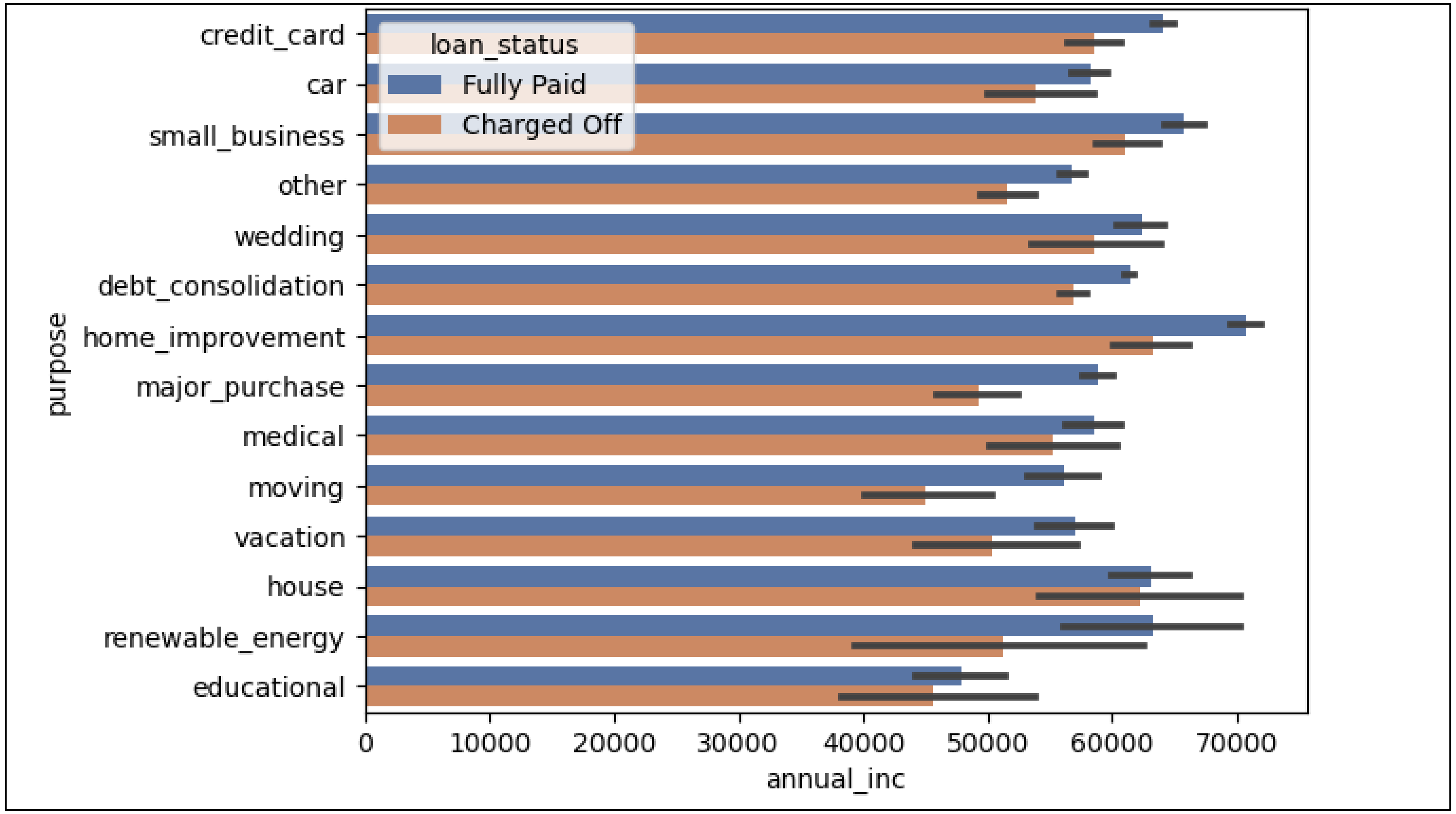
- Customers whose source of income is not verified is having more loan defaulters..

Univariate Analysis



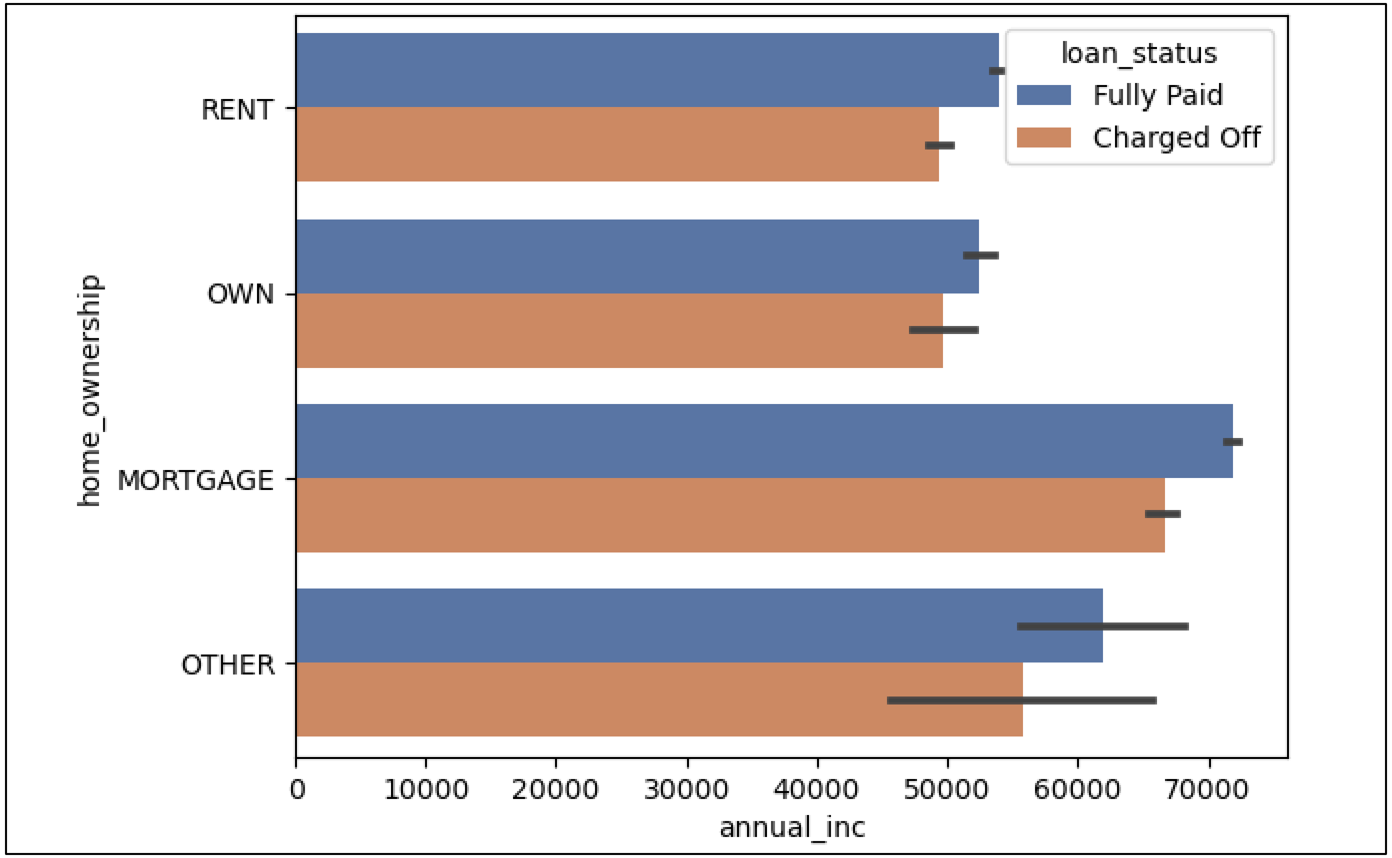
- Customers with small loans from 2k to 15k are the most defaulters.

Bivariate Analysis



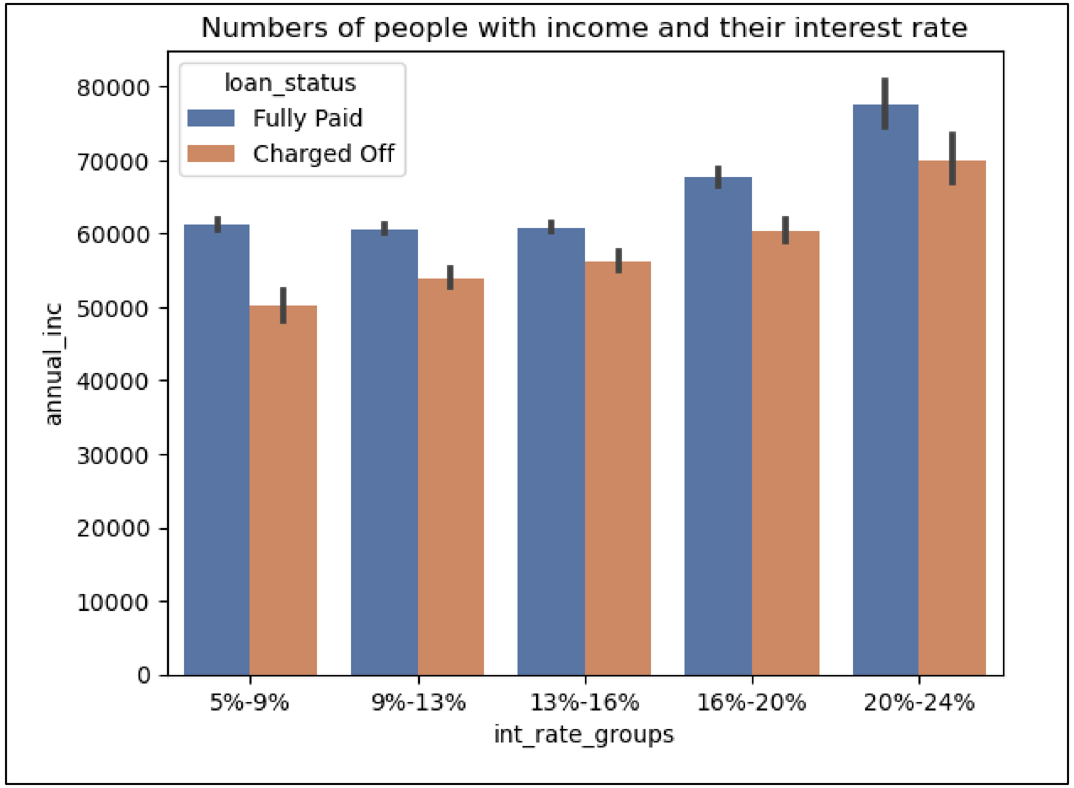
- We can see a trend that for each purpose people with high salary are most likely to pay there loans on compared with people with less salary

Bivariate Analysis



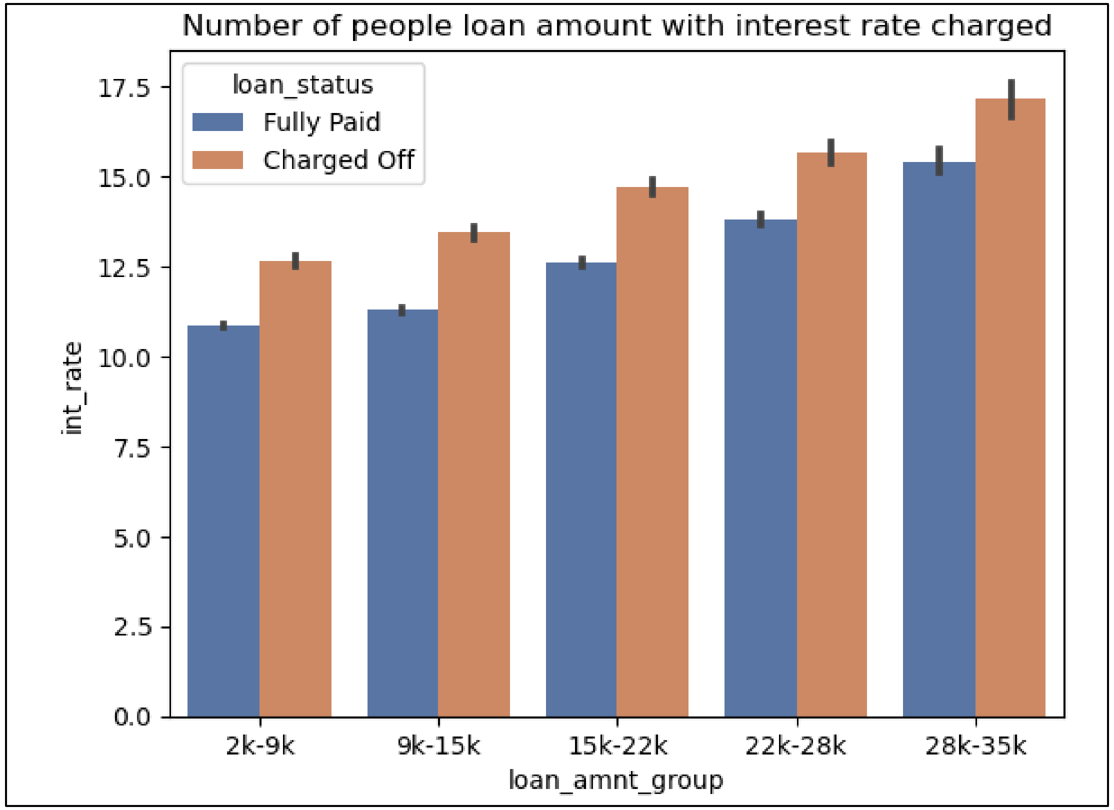
- We can see a trend that people with higher incomes, especially those who own homes or have mortgages, tend to have a better loan repayment record, while lower-income renters might have a higher likelihood of default or charged-off loans.

Bivariate Analysis



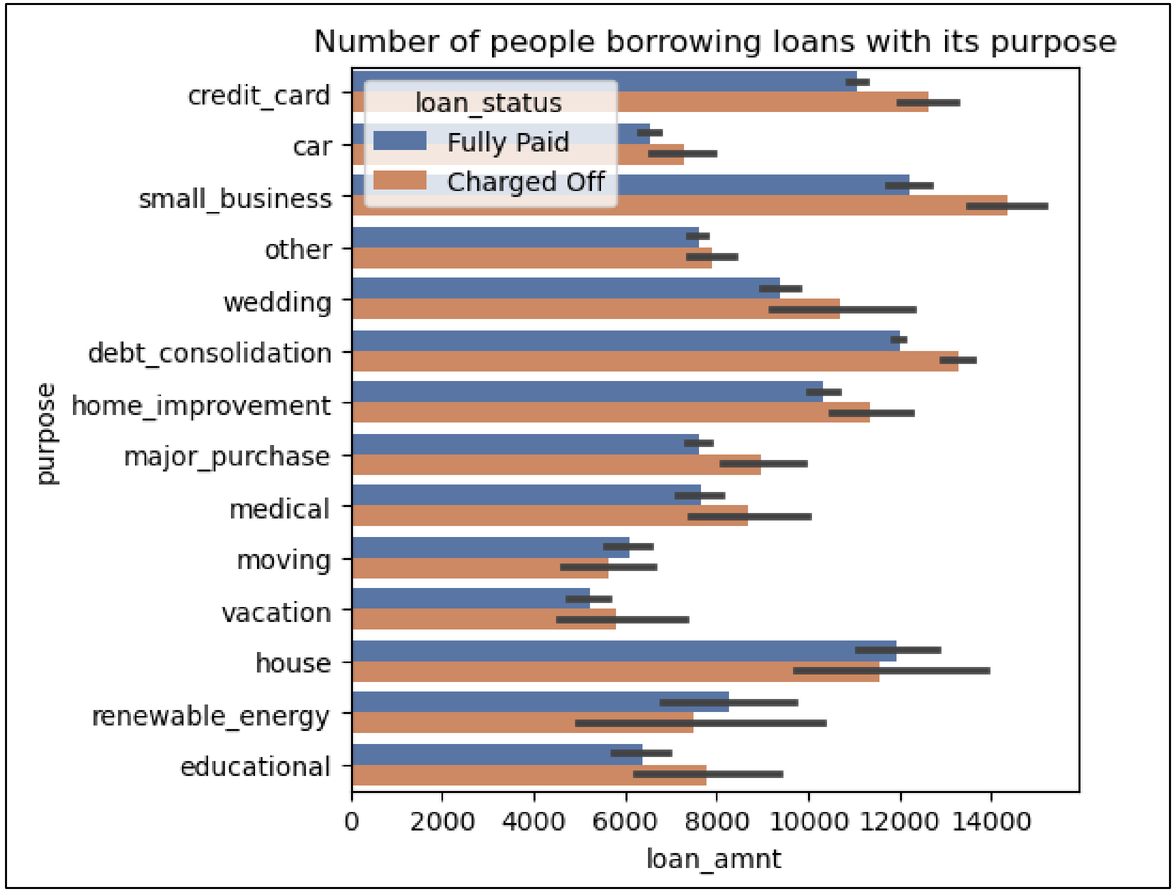
- This chart can give insights into the relationship between income levels, interest rates, and loan repayment performance. If most people with lower interest rates have higher incomes and more fully paid loans, it may indicate that lenders assign lower rates to more financially stable borrowers.

Bivariate Analysis



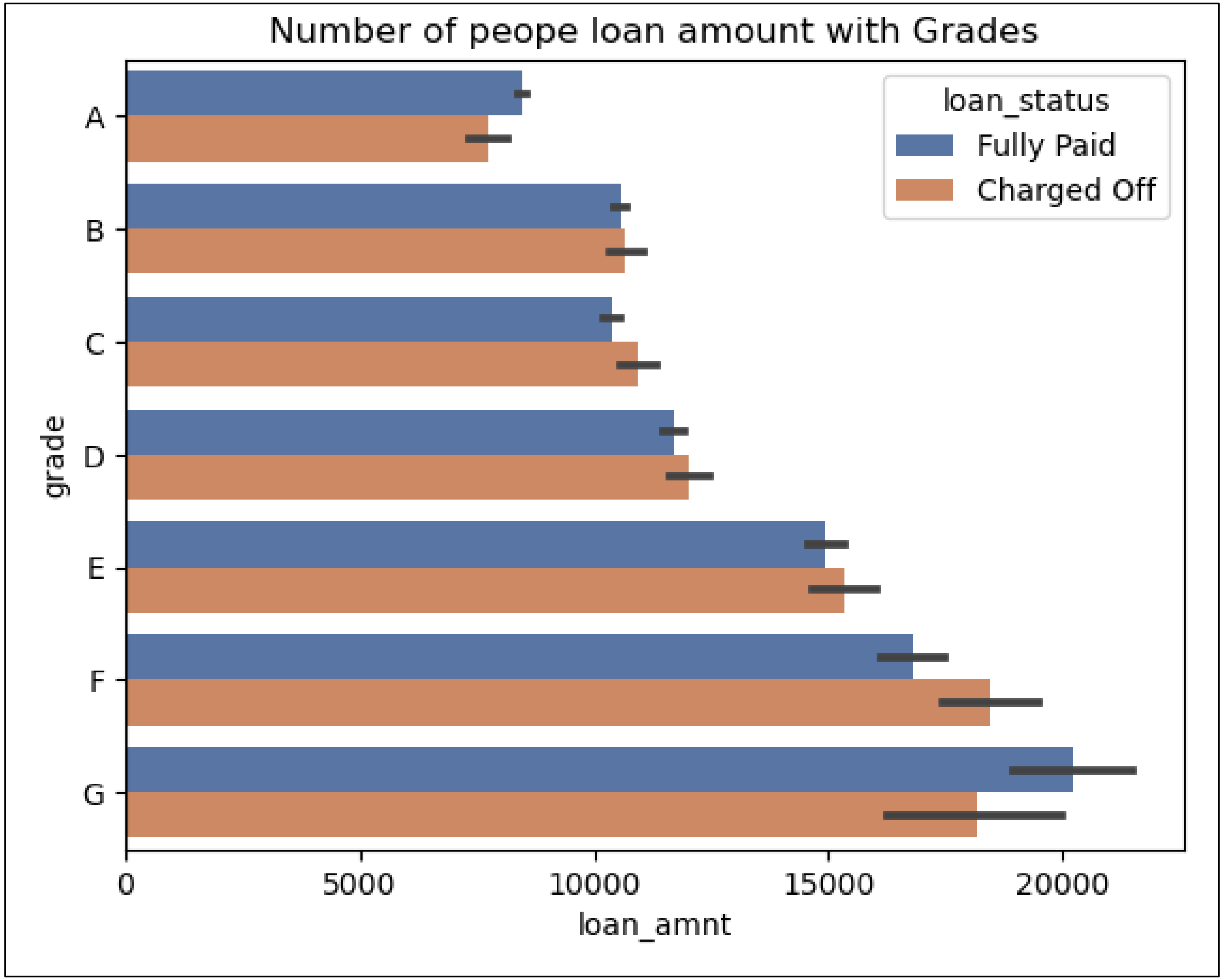
- Charged Off portion is larger for a 22k-28k,28k-35k loan amount group with high interest rates, it might suggest that higher interest rates could contribute to a higher likelihood of default, as borrowers may struggle to repay those loans.

Bivariate Analysis



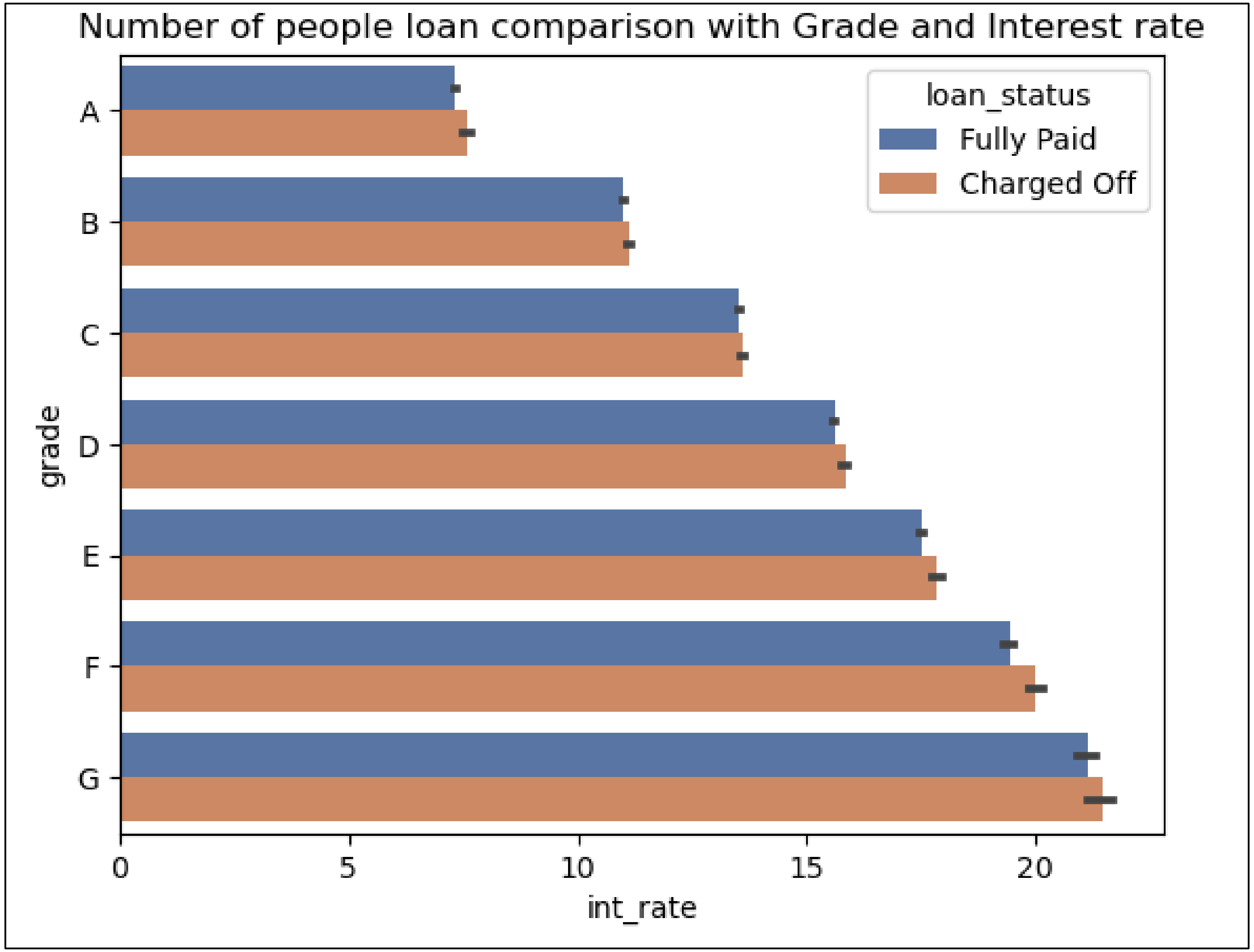
- We can see that small business, credit cards, house ,debt_consolditaion have higher charged off with high financial loan lending risk.

Bivariate Analysis



- Trend analysis shows Higher grades (A and B) are associated with lower loan amounts compared to lower grades (F and G), indicating that borrowers with better credit ratings may be borrowing less, possibly because they can obtain loans more easily and borrowers in lower grades may need to take larger loans due to higher interest rates or financial constraints.
- Loans in lower grades (F, G) show as Charged Off, it suggests that borrowers with lower credit grades may be struggling to repay their loans.

Bivariate Analysis



- Trend analysis shows large number of borrowers in a G & F grade are taking loans at high interest rates, it might suggest that these borrowers are willing to accept higher costs due to limited options or urgent financial needs.
- A,B,C grades are associated with lower interest rates, as these represent borrowers deemed less risky. Whereas, E,F,G grades taken loan on higher interest rates, indicating a higher risk of default.

Continuous Values Conclusions

- Customers with purposes like debt_consolidation, credit_card, home_improvement and other are likely defaulters list.
- Loans with interest rate from **5%** to **16%** are having most loan defaultes
- Customers with **2-10** open accounts are having most loan defaulters
- Customers with less number of credit lines are likely to be loan defaulters
- Customers with Annual income from **30k to 85k** are having more loan defaulters
- Short term loans **(36 Months)** are resulting in more defaulters
- Unverified income source are also having high defaulters list on compare with verified income source
- Sub grade loans like B3, B5, B4 from **B grade** , C1, C1, C3 from **C grade** and D2, D3 from **D grade** are having huge more loan defaulters
- Small loan amount like 2k to 15k are also going into defaulters list

Conclusions

- Individuals applying for loans aimed at 'home improvement' with an income between 60,000 and 70,000.
- Borrowers who own homes under a 'MORTGAGE' status, earning between 60,000 and 70,000.
- Applicants with an income ranging from 70,000 to 80,000 who are offered interest rates between 21% and 24%.
- Borrowers with incomes between 112,000 and 140,000 who have taken out loans of 15,000 to 20,000.
- Individuals who have secured loans in the range of 30,000 to 35,000, facing interest rates of 15% to 17.5%.
- Borrowers seeking loans for small business ventures that exceed 14,000.
- Applicants classified with a grade of F and taking loans ranging from 15,000 to 20,000.
- Individuals with a grade of G who are charged interest rates above 20%.

THANK YOU