

LENDING CLUB CASE STUDY SUBMISSION

GROUP MEMBERS

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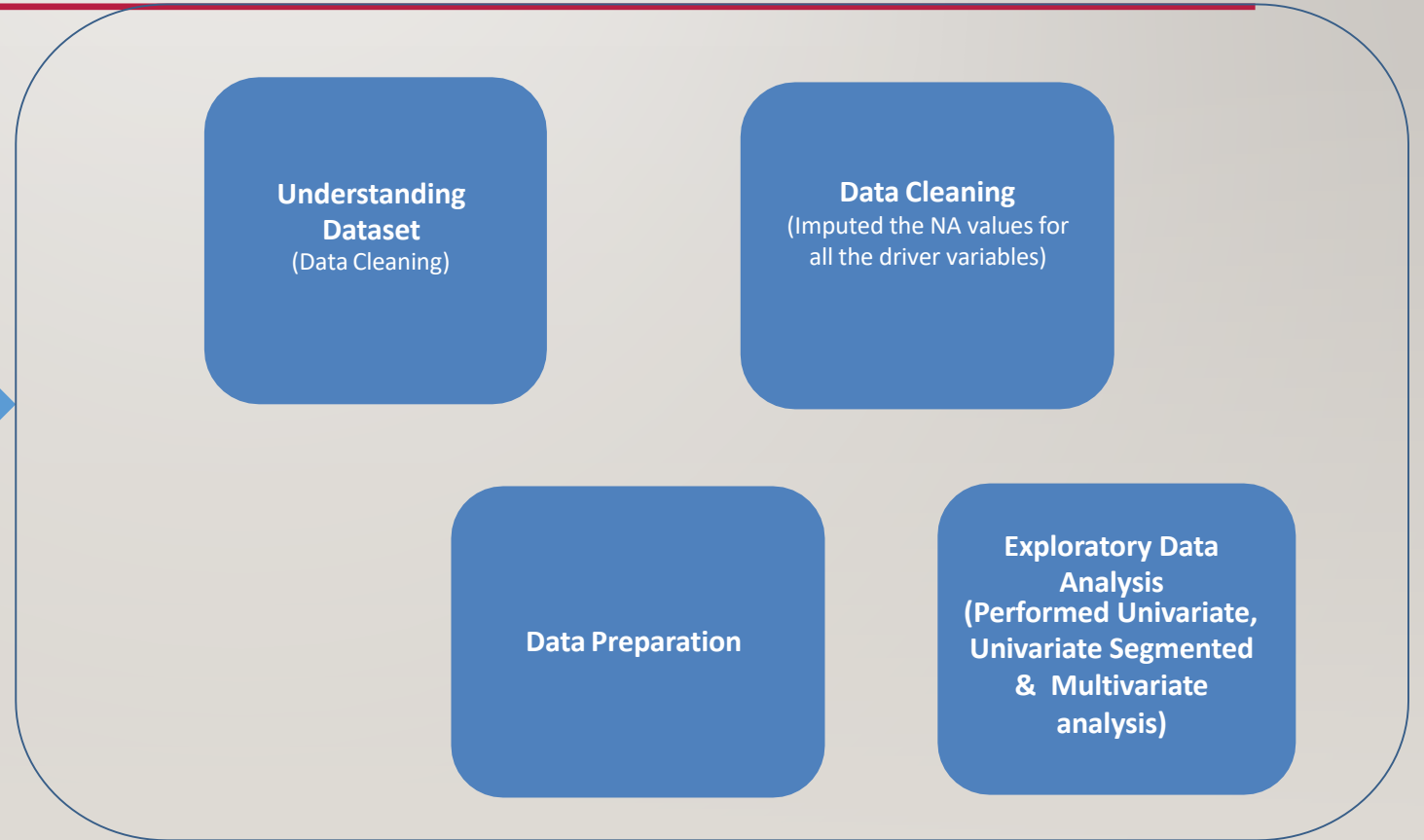
CASE STUDY OBJECTIVES

Identification of
Loan Applicant
traits that tend to
'default' paying
back

Understand the
'Driving Factors'
or 'Driver
Variables' behind
Loan Default
phenomena

Loan Lending
Organizations
may choose to
utilize this
knowledge for its
portfolio and risk
assessment of
new loan
applicants

PROBLEM SOLVING METHODOLOGY USING EDA



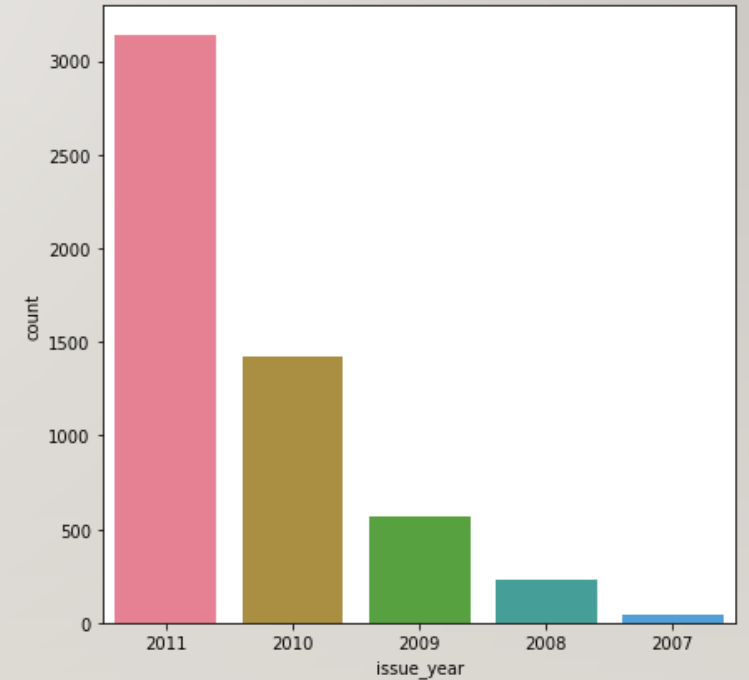
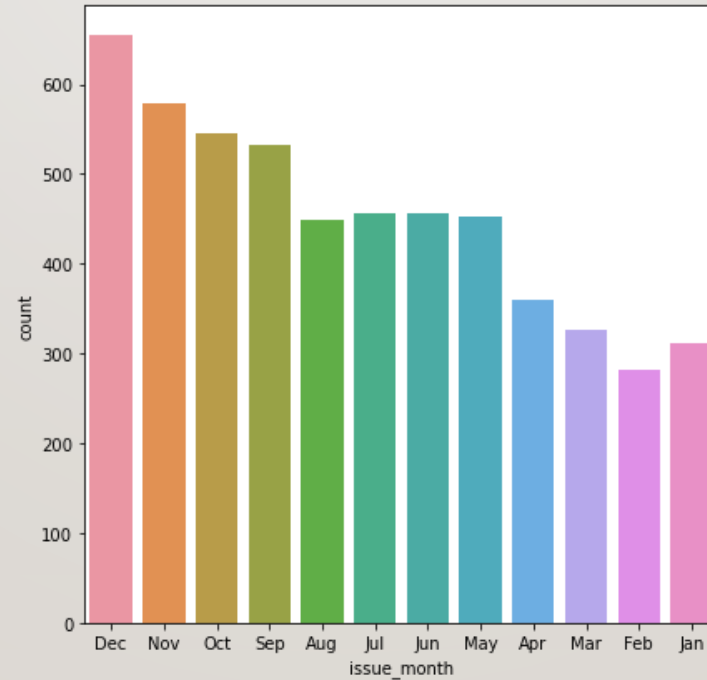
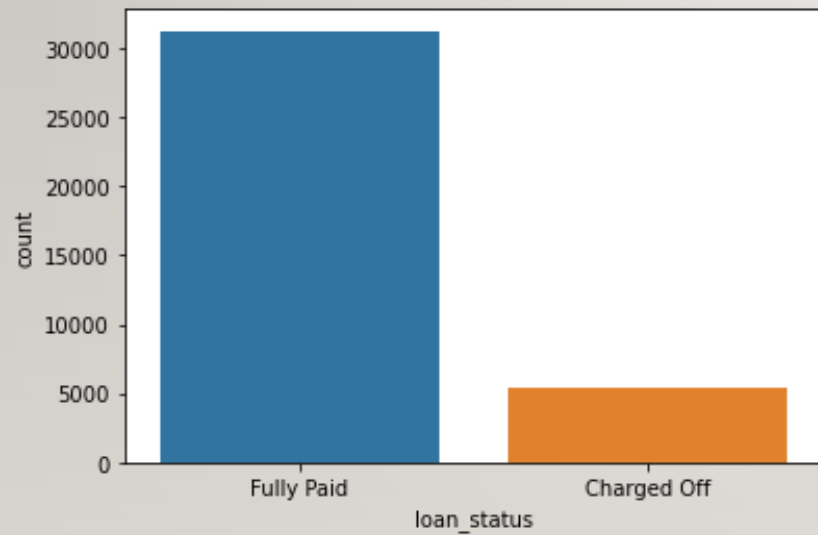
DATA CLEANING STEPS

- **Delete columns:** Delete unnecessary columns.
- **Remove outliers:** Remove high and low values that would disproportionately affect the results of your analysis.
- **Missing values:** Treat missing values with appropriate approach.
- **Duplicate data:** Remove identical rows, remove rows where some columns are identical.
- **Filter rows:** Filter by segment, filter by date period to get only the rows relevant to the analysis.

ANALYSIS

- The essence of the whole project is to analyze and understand how consumer attributes and loan attributes are influencing the tendency of defaulting.
- We performed **data cleaning and preparation** on the Loan dataset:
 - Imputed the NA values for all the variables
 - Removed unwanted columns which does not derive anything for the analysis
 - Reduced the columns size to 21 which were all effective in driving the analysis much better
- During **univariate analysis** we have created:
 - Histograms and Bar charts to check out the distribution of all the driver variables
 - Box plots to detect the Outliers
 - Performed

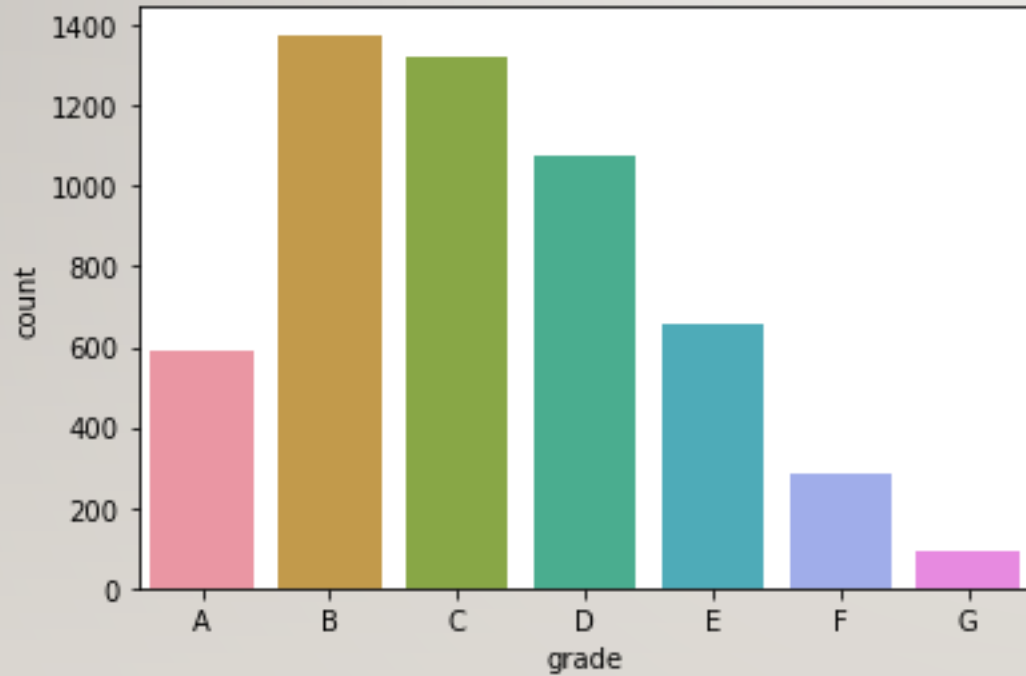
LOAN STATUS ANALYSIS



Observations:

1. Most of the loans are Fully Paid.
2. About 14% of loan are having status as defaulters.
3. Maximum number of loan defaults occurred when the it was sanctioned/issued in the month of Dec.

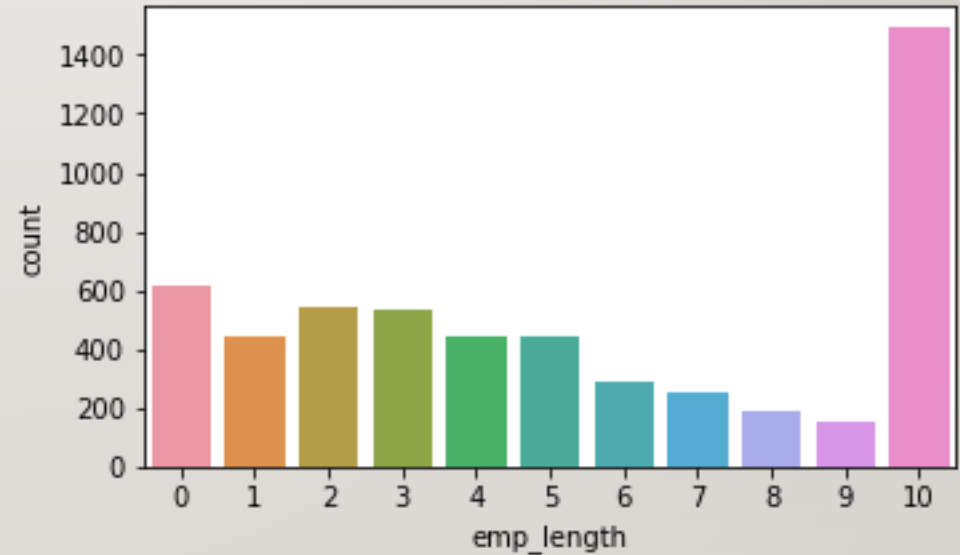
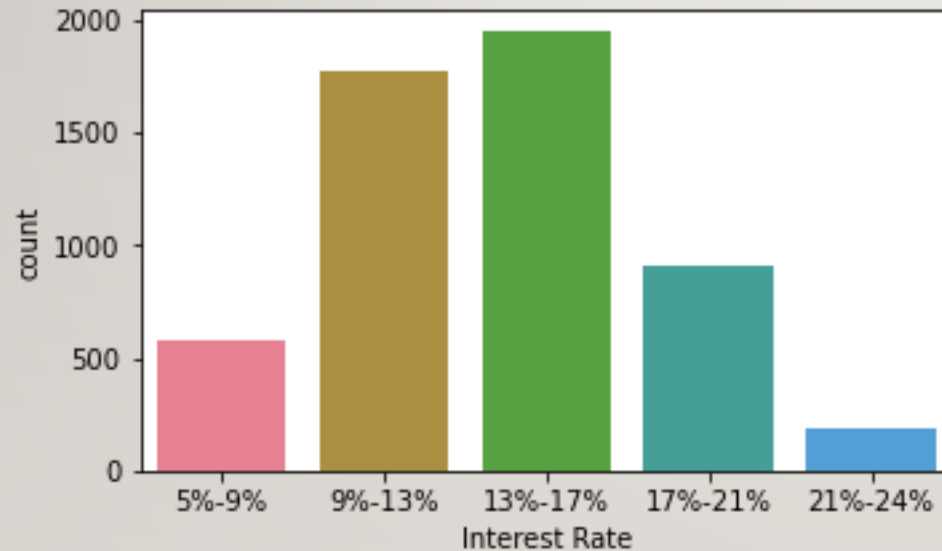
LOAN GRADE ANALYSIS



Observation:

1. Most of the loans have grade of B and C.

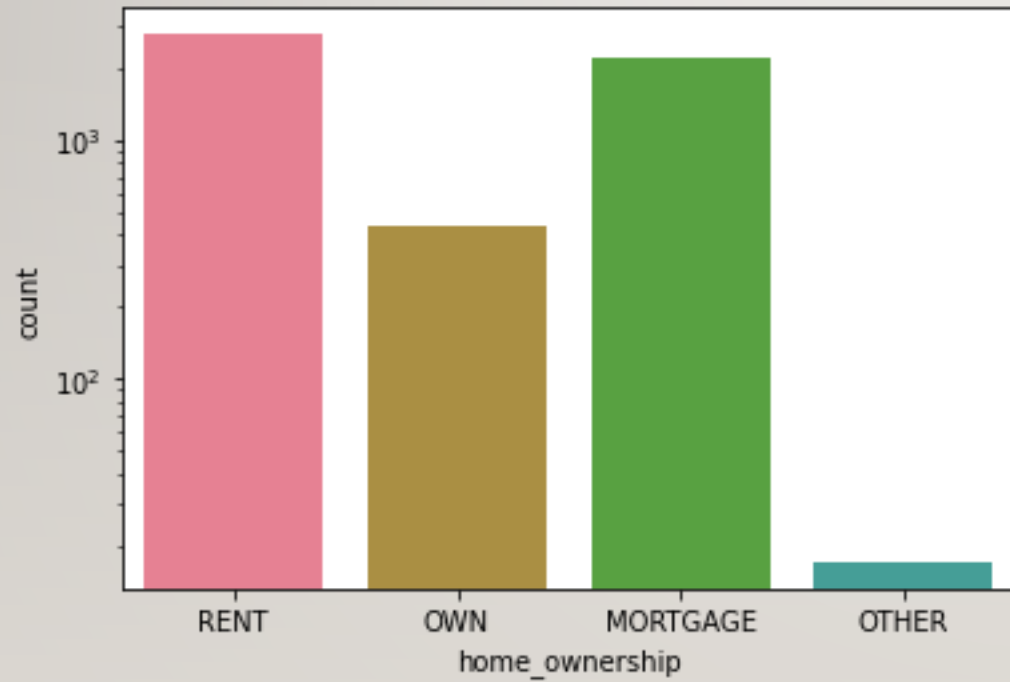
LOAN APPLICANTS WORK EXPERIENCE AND INTEREST RATE ANALYSIS



Observation:

1. Majority of employees applying for the loan have more than 10 years of experience.
2. Interest Rate is between 13-17%.
3. Tendency of person to default the loan with 10 years of experience is also high. So company need to be careful when granting loan.

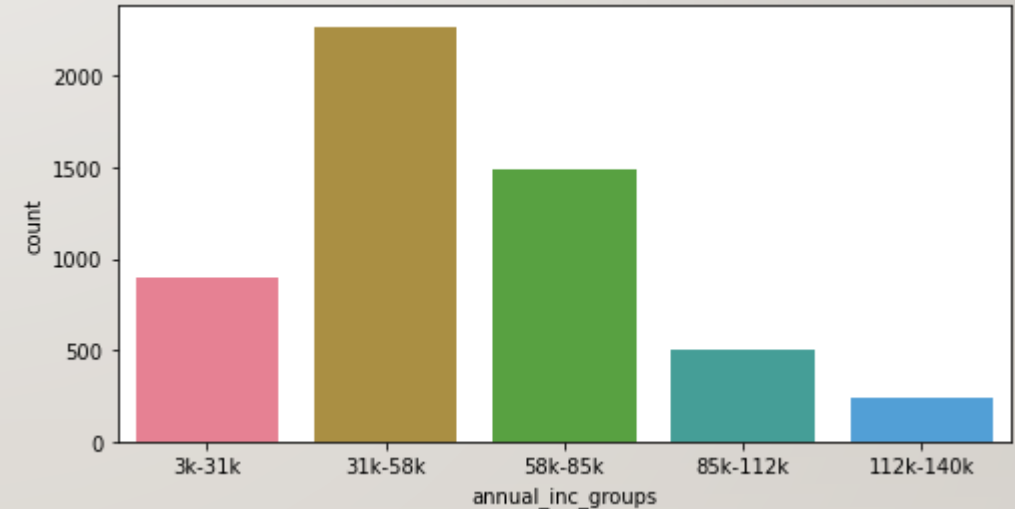
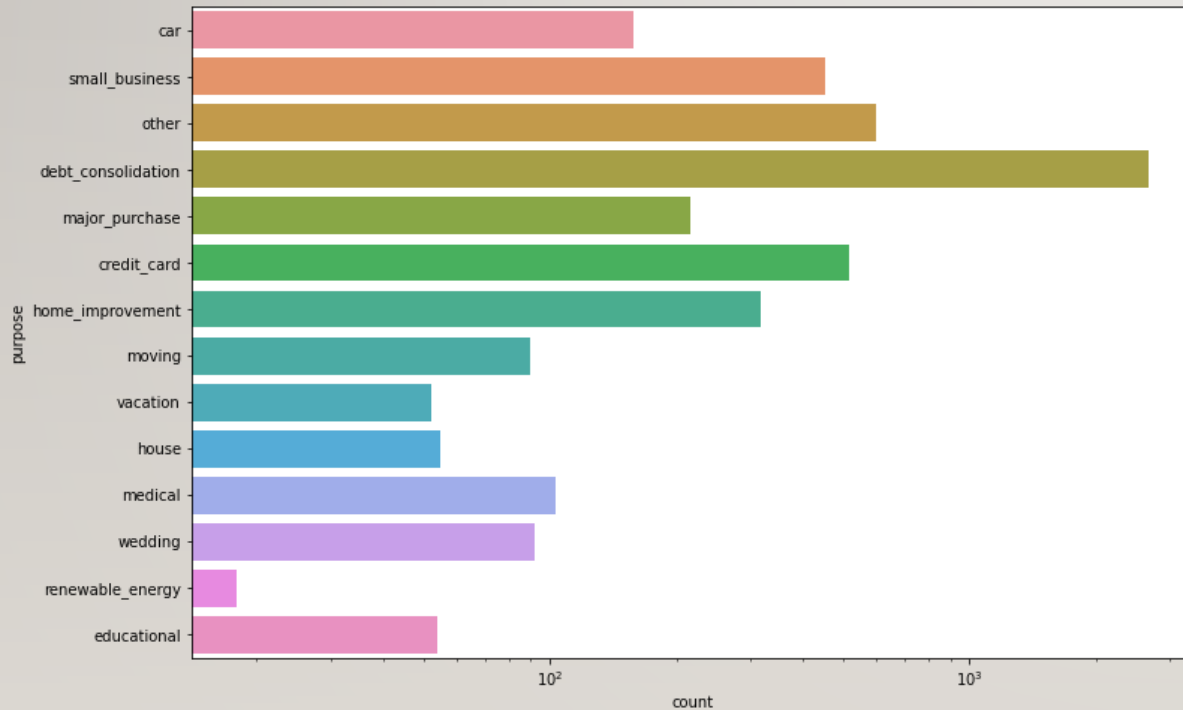
LOAN APPLICANTS HOME OWNERSHIP ANALYSIS



Observation:

1. Majority of people who apply loan are rented.
2. Followed by people who are mortgaging.

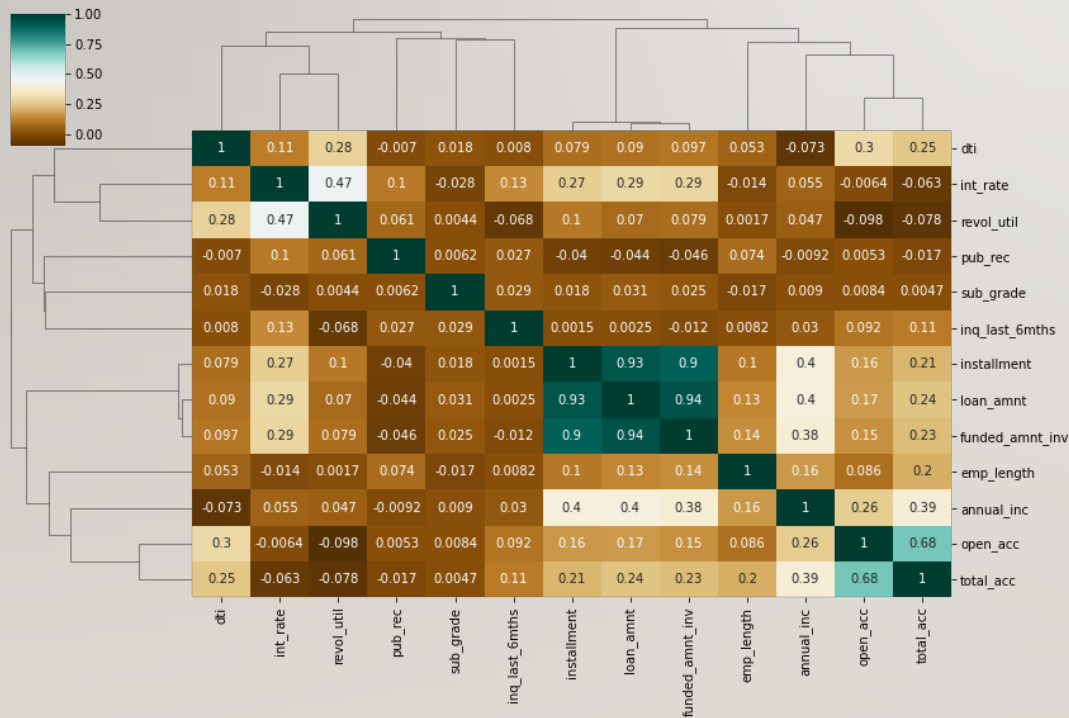
LOAN PURPOSE AND ANNUAL INCOME ANALYSIS



Observation:

1. Majority of people who apply loan are Applicants who use the loan to clear other debts.
2. Applicants who have an income of range 31201 - 58402.

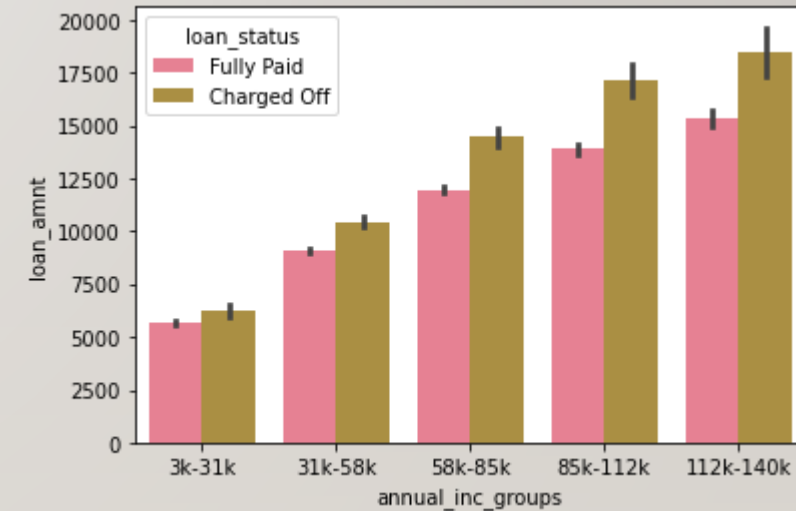
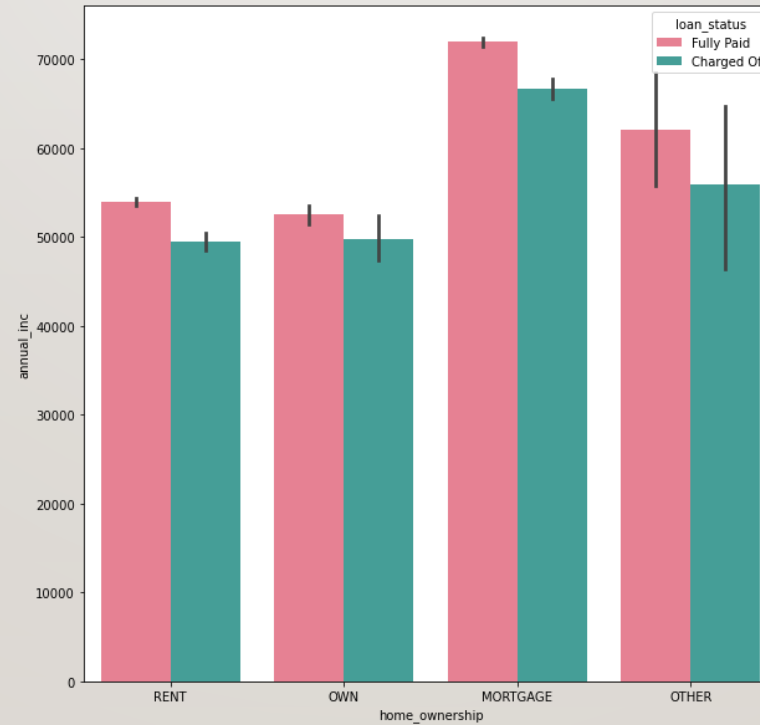
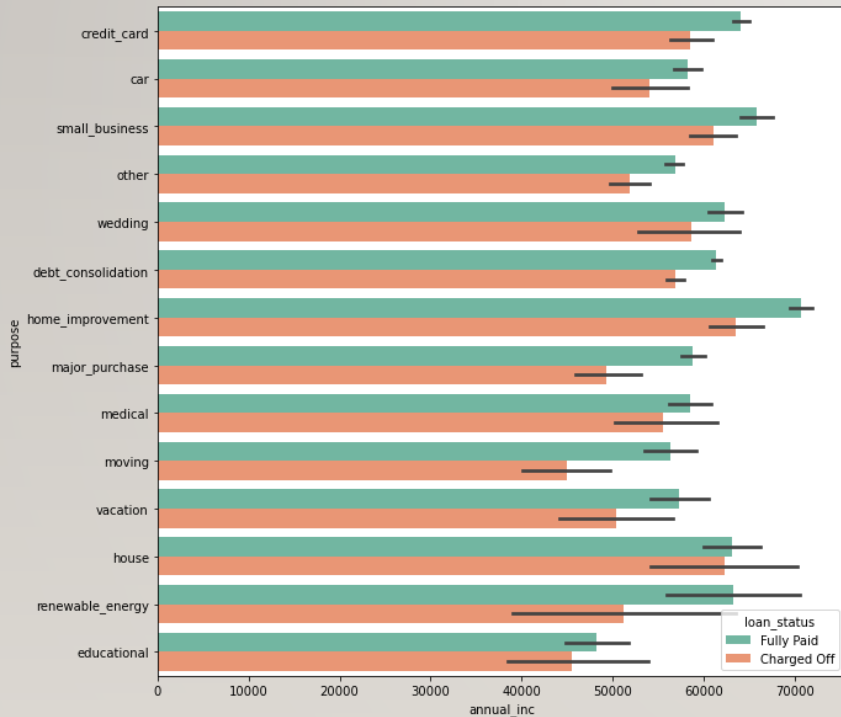
CORRELATION MATRIX -W.R.T QUANTITATIVE VARIABLES



Observation:

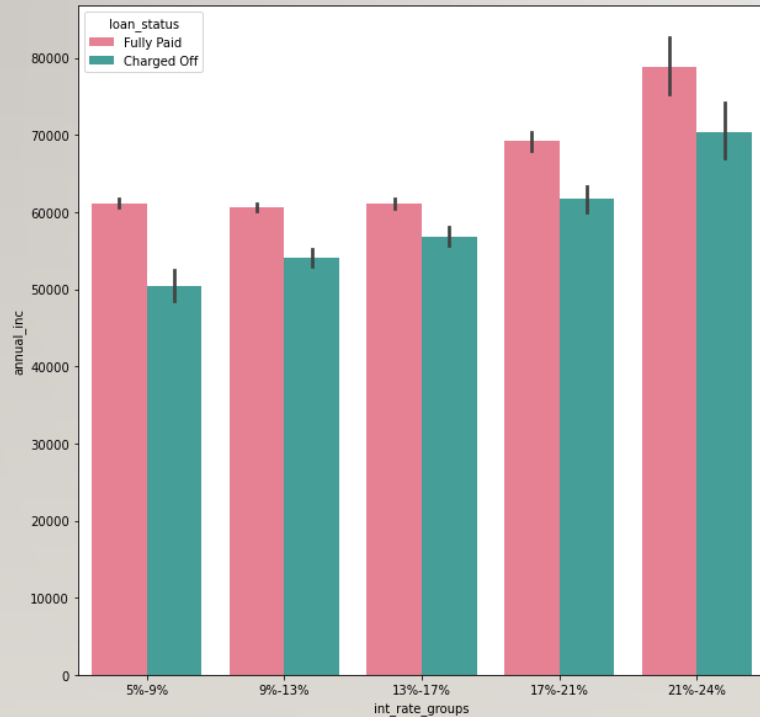
1. Based on the above correlation graph it seems that Loan amount, investor amount, funding amount are strongly correlated.
2. Annual income with DTI(Debt-to-income ratio) is negatively correlated.
3. Debt income ratio is the percentage of a consumer's monthly gross income that goes toward paying debts.\
4. When annual income is low DTI is high & vice versa.
5. Positive correlation between annual income and employment years

ANNUAL INCOME WITH OTHER VARIABLES ANALYSIS FOR THE LOAN APPLICANTS



ANNUAL INCOME WITH OTHER VARIABLES

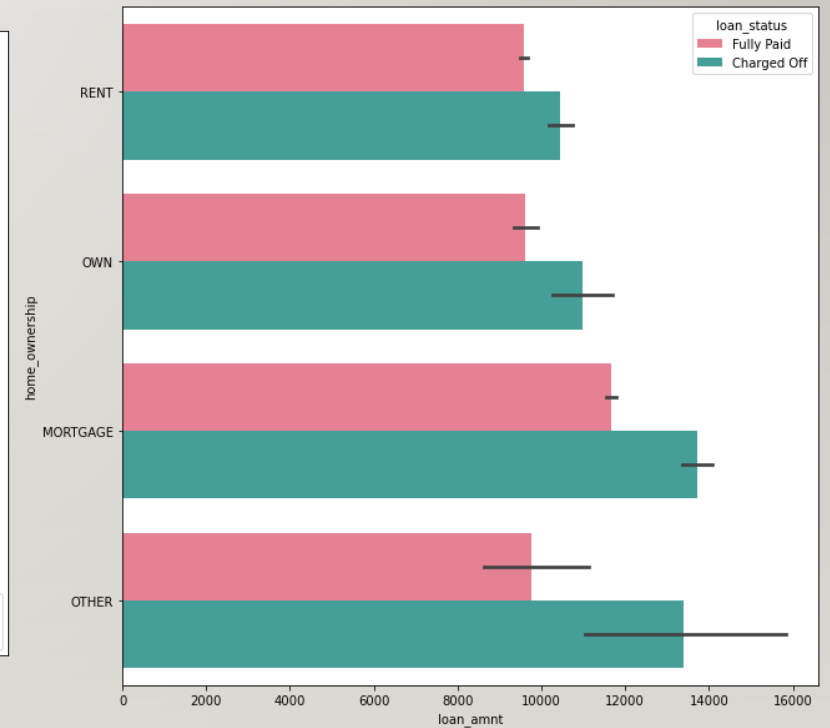
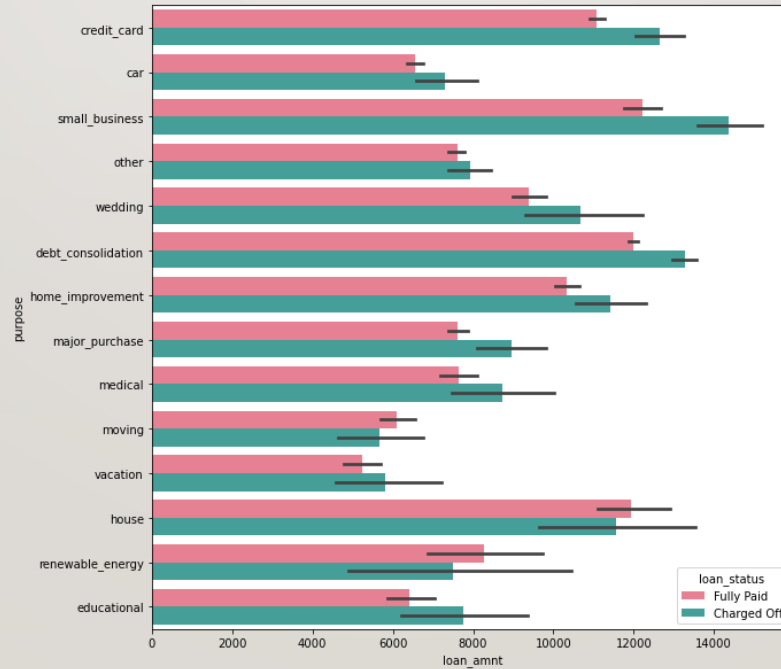
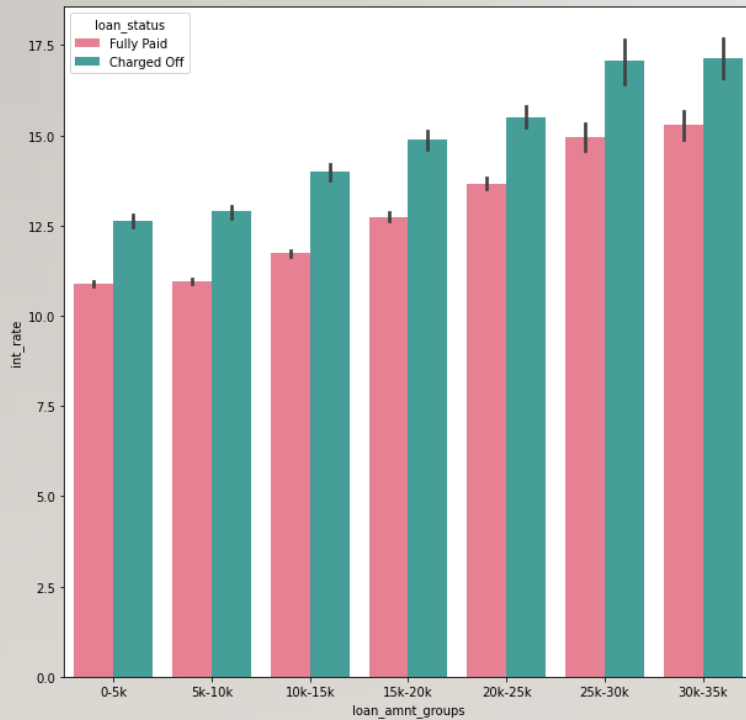
ANALYSIS FOR THE LOAN APPLICANTS



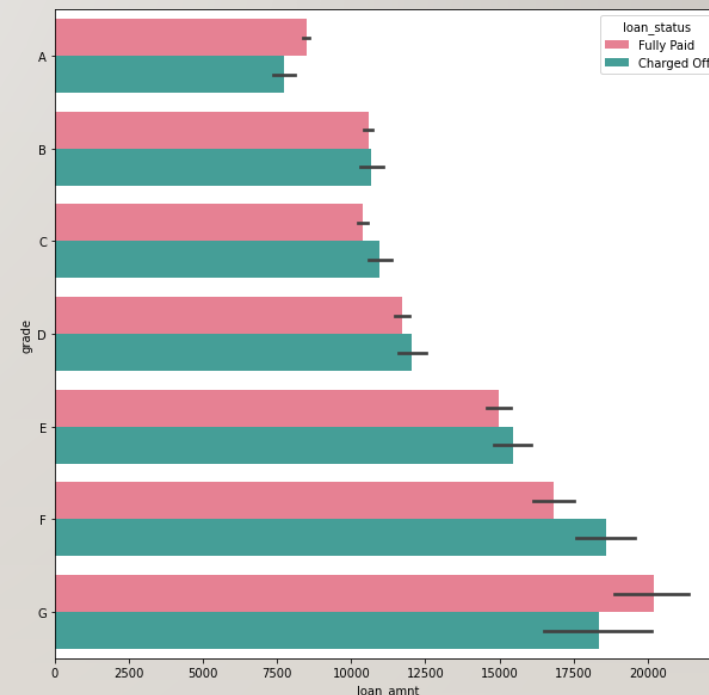
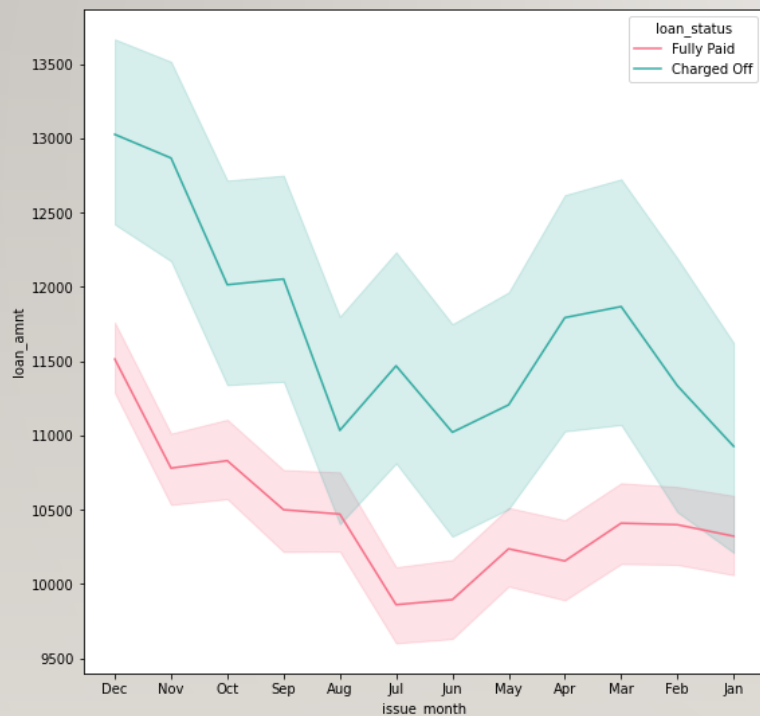
Final Observation:

1. Applicants with higher salary mostly applied loans for "home_improvement", "house", "renewable_energy" and "small_businesses".
2. Across all the income groups, the loan_amount is higher for people who defaulted.
3. Interest rate is higher for the people who are having annual income higher.

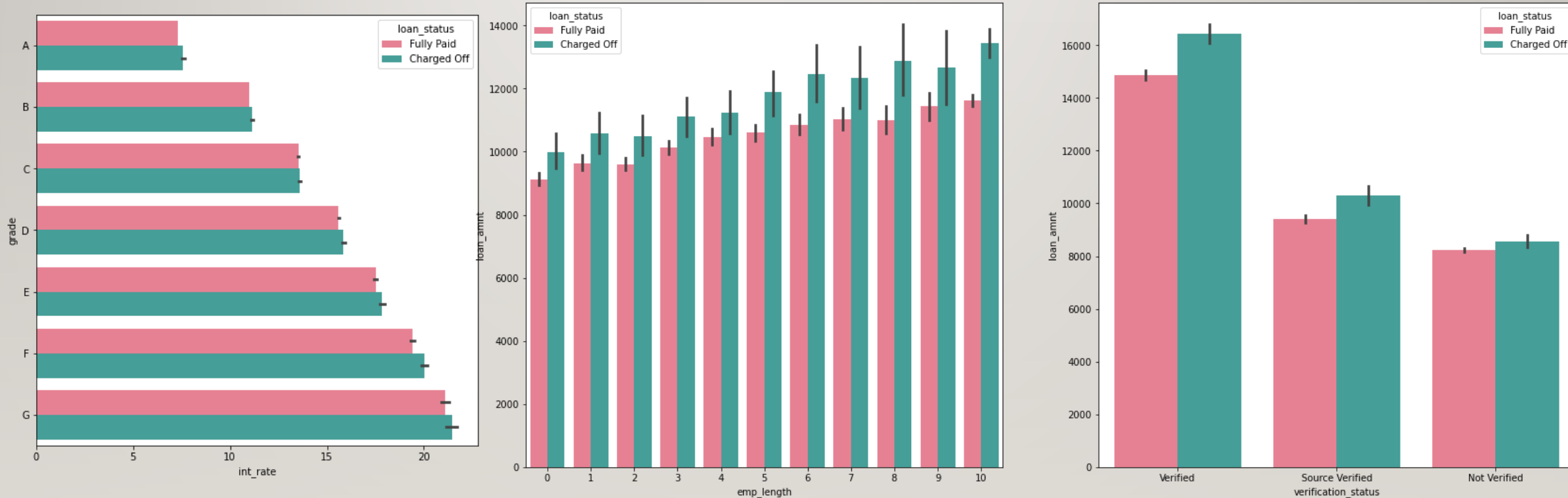
LOAN AMOUNT WITH OTHER VARIABLES ANALYSIS



LOAN AMOUNT WITH OTHER VARIABLES ANALYSIS



LOAN_AMOUNT VS EMP_LENGTH AND VERIFICATION_STATUS



CONCLUSION



- Users who take loan for 'home improvement' have income of 60k -70k
- Users whose home ownership type is of 'MORTGAGE, have income of 60-70k
- Users who receive interest at the rate of 21%-24%, have an income of 70k-80k
- Users who have taken a loan in the range 30k - 35k and are charged interest rate of 15%-17.5%
- Users who have taken a loan for small business, the loan amount is greater than 14k
- Users whose home ownership is 'MORTGAGE, have loan of 14-16k
- When grade is F then loan amount is between 15k-20k
- When employment length is 10yrs, loan amount is 12k-14k
- When the loan is verified and loan amount is above 16k
- For grade G, the interest rate is above 20%