



LENDING CLUB CASE STUDY SUBMISSION

Group Members:

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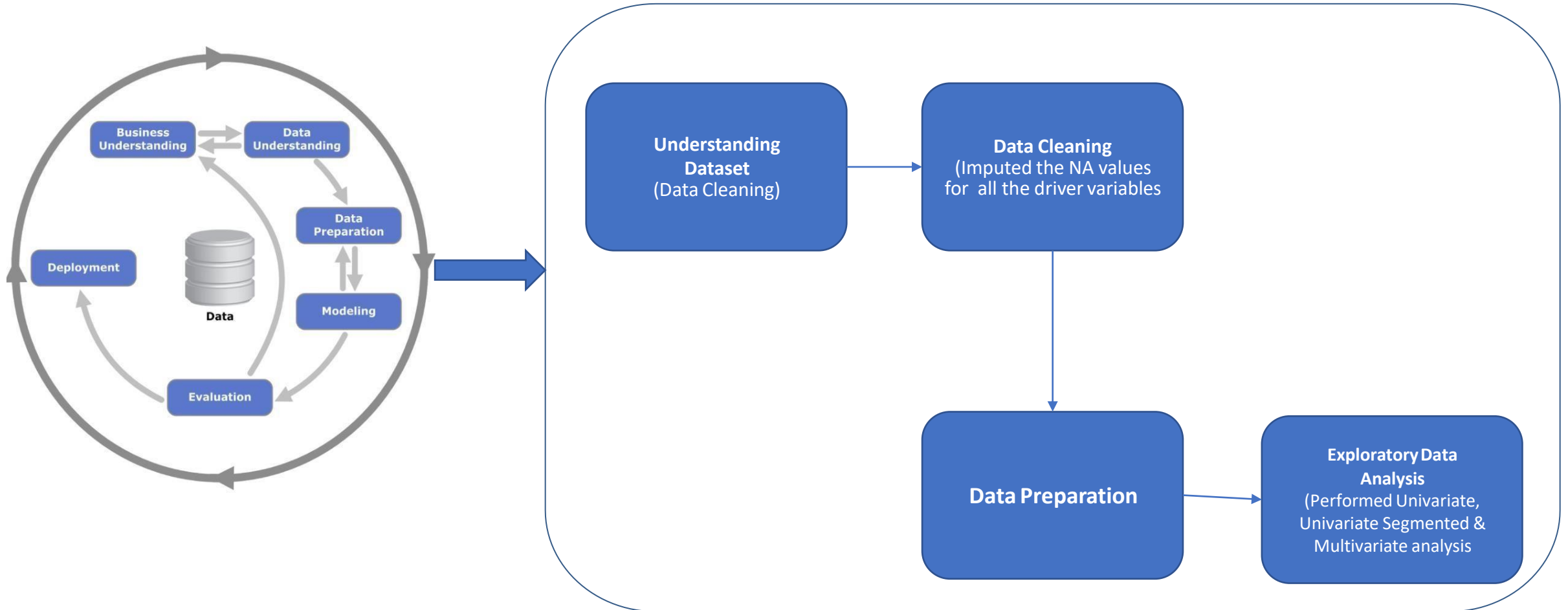
Case Study Objectives

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



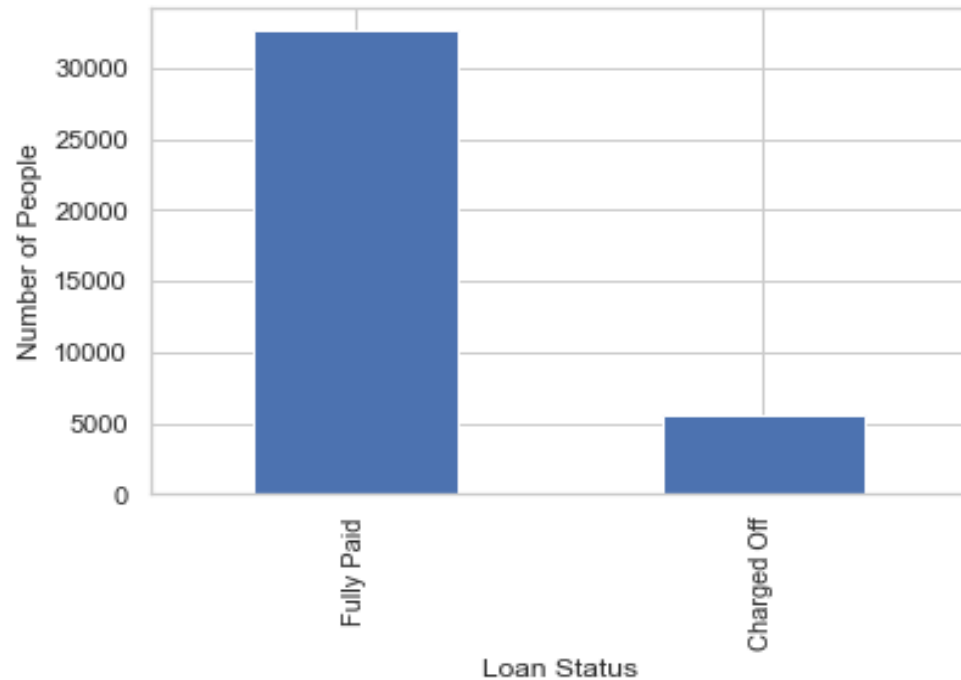
Data Cleaning Steps

- **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

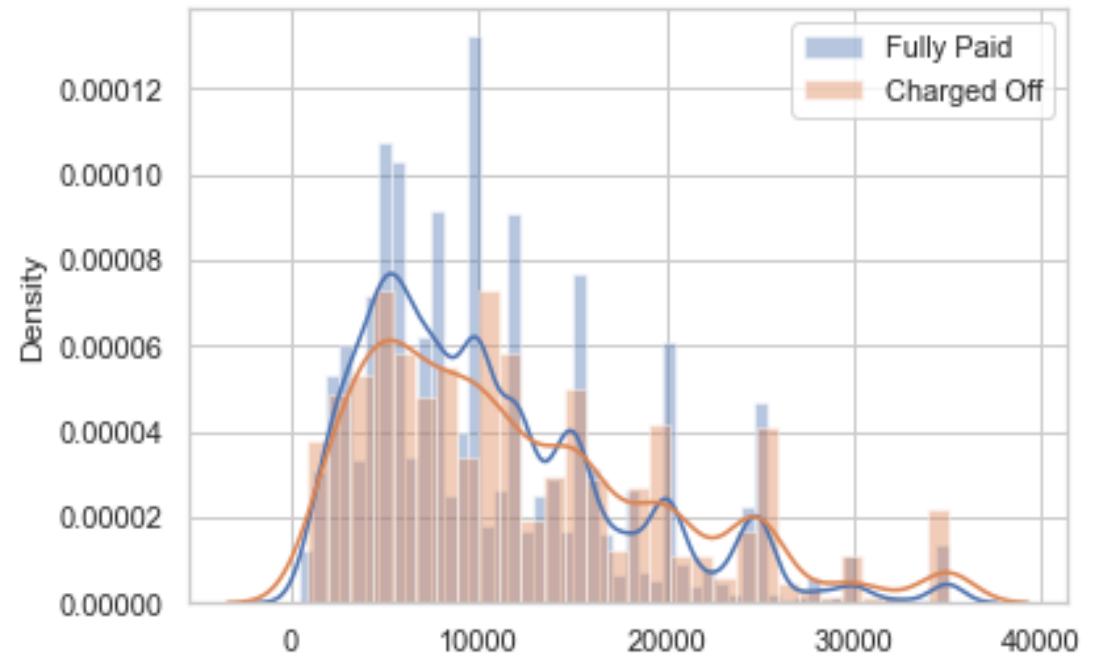
- The essence of the whole project is to analyze and understand how consumer attributes and loan attributes are influencing the tendency of defaulting.
- We performed **data cleaning and preparation** on the Loan dataset:
 - Imputed the NA values for all the variables
 - Created two new columns:
 - Profit and Loss column
 - Ratio of funded amount and annual income
- 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 the Multivariate analysis to understand how different variables interact with each other.

Loan Status Analysis



Observations :

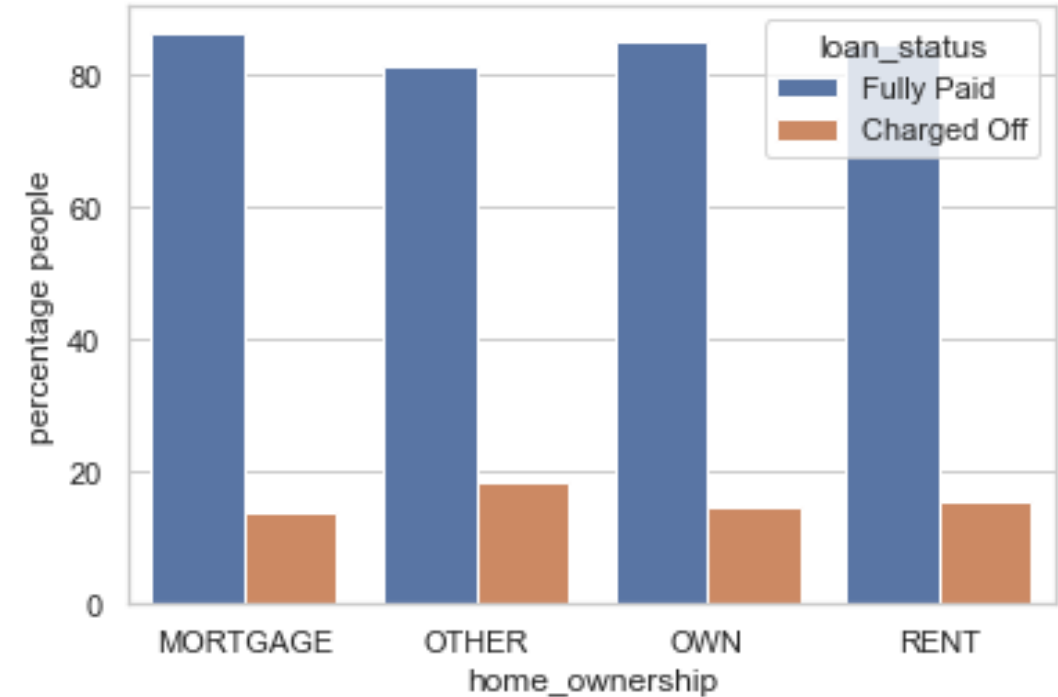
1. More than 30000 people have fully paid
2. 5000 people are Charged Off



Observations :

1. More people who borrow loan with amount lower around 13000 are able to fully pay their loan.
2. People applying for more amount tend to default more.

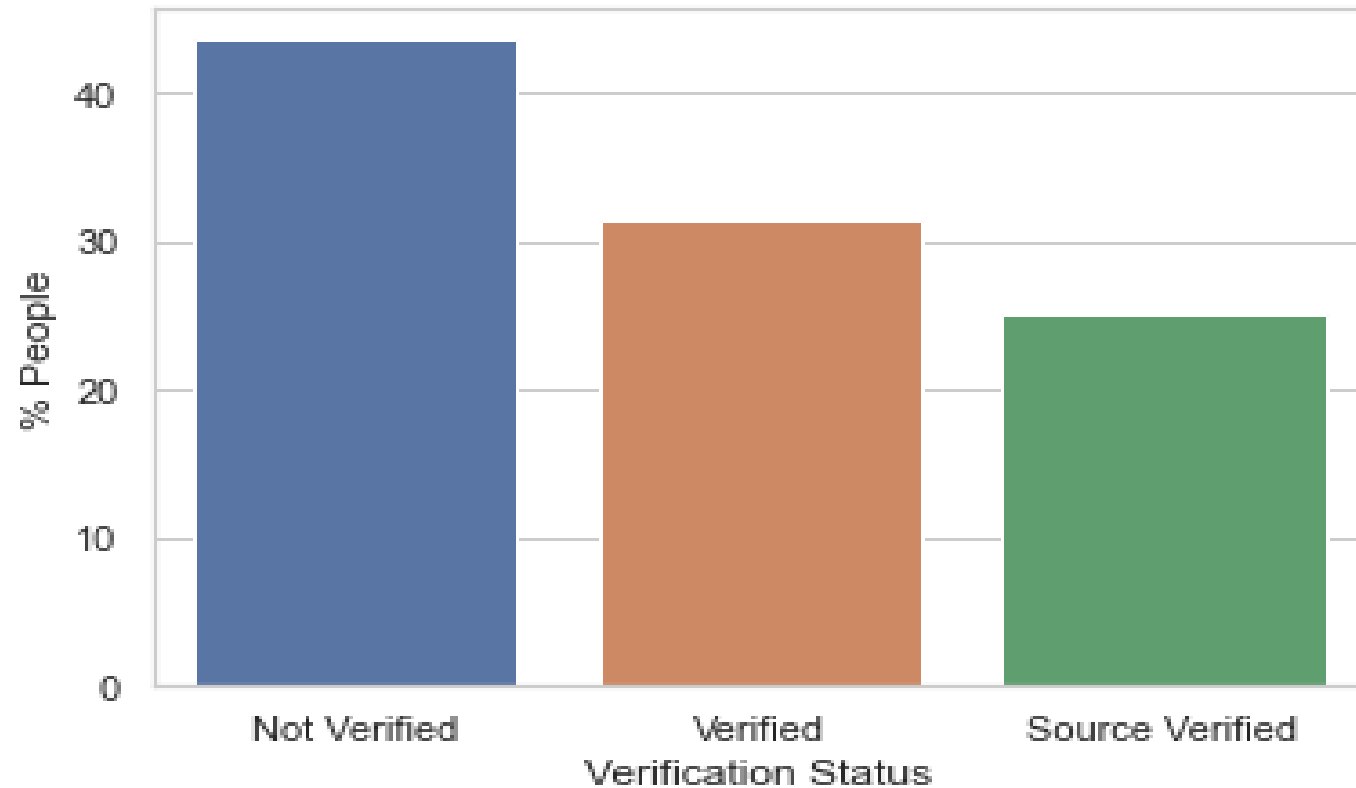
Loan Status by Home Ownership



Observation:

Applicants having there home rented or on mortgage have almost equal tendency to default the loan.

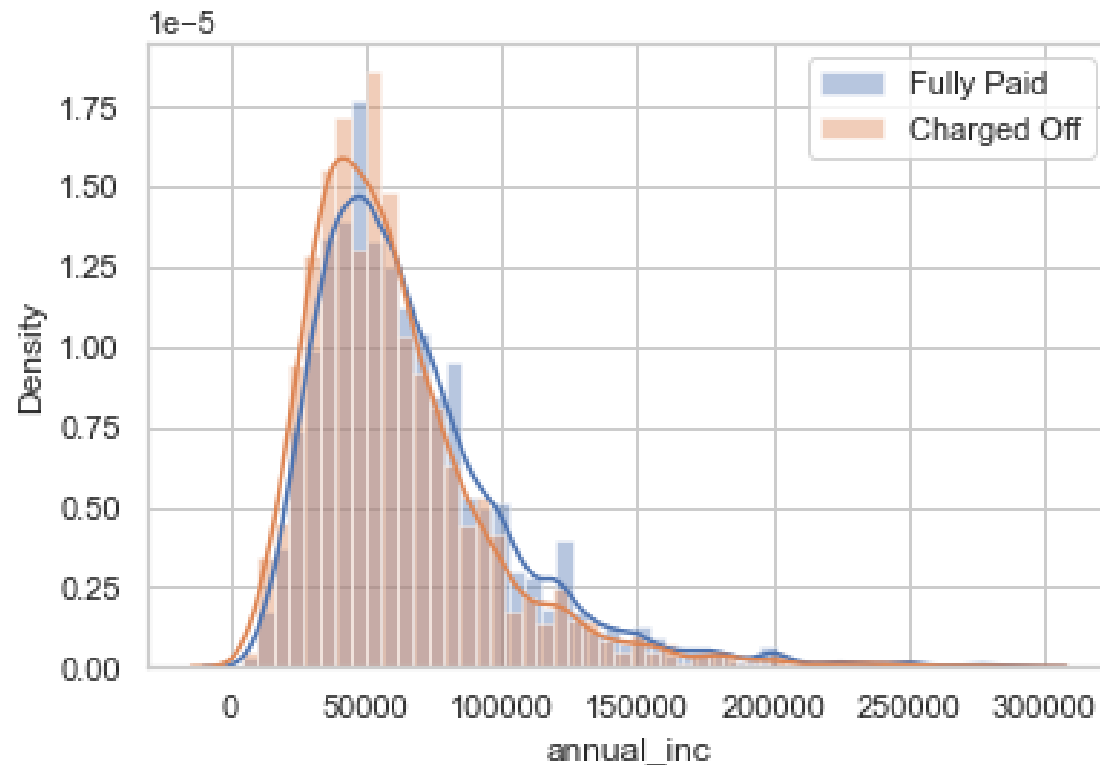
Univariate Analysis of Verification Status



Observations:

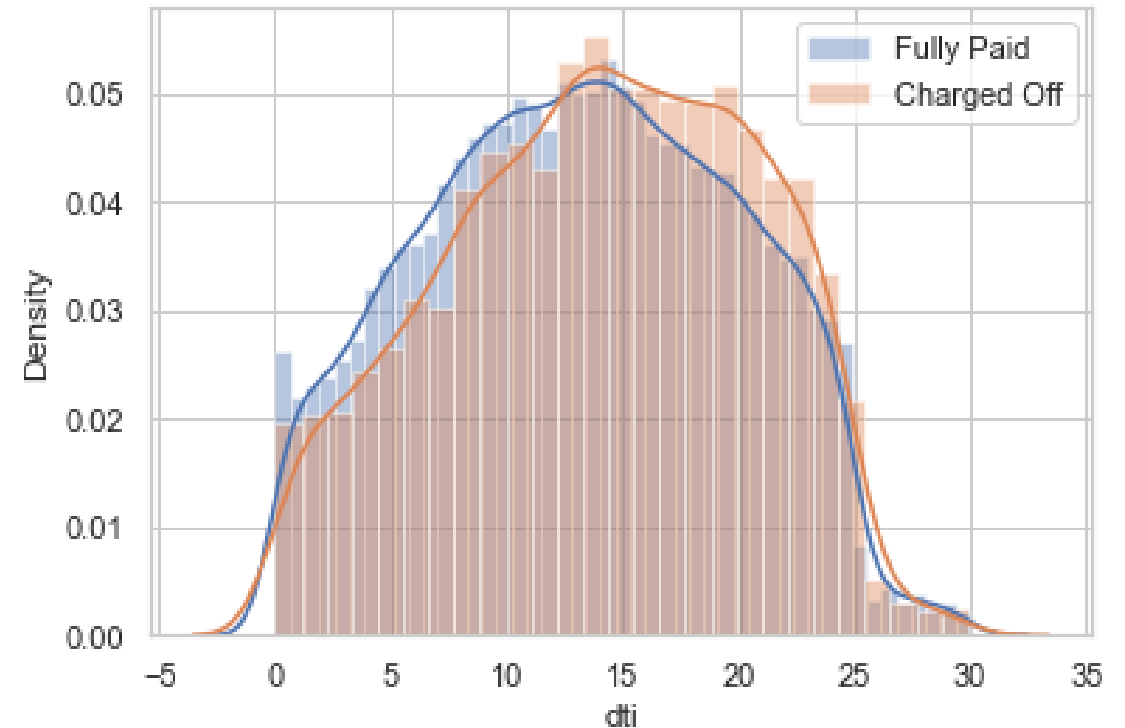
For majority of loans approved, the income of borrower was unverified by LC.

Income Analysis for the loan applicants



Observations:

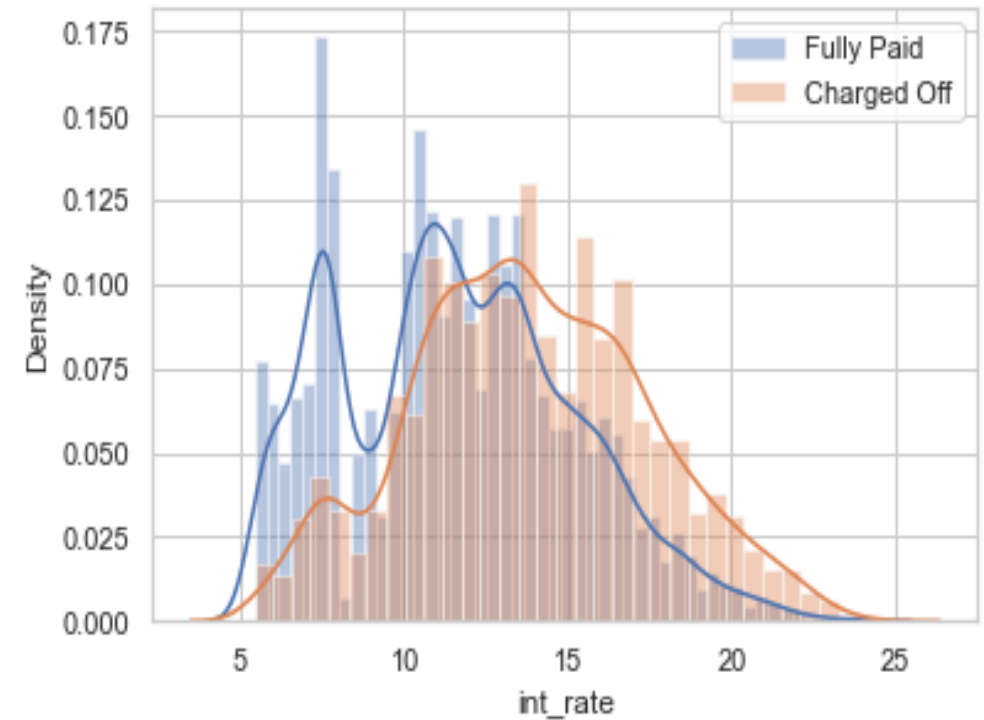
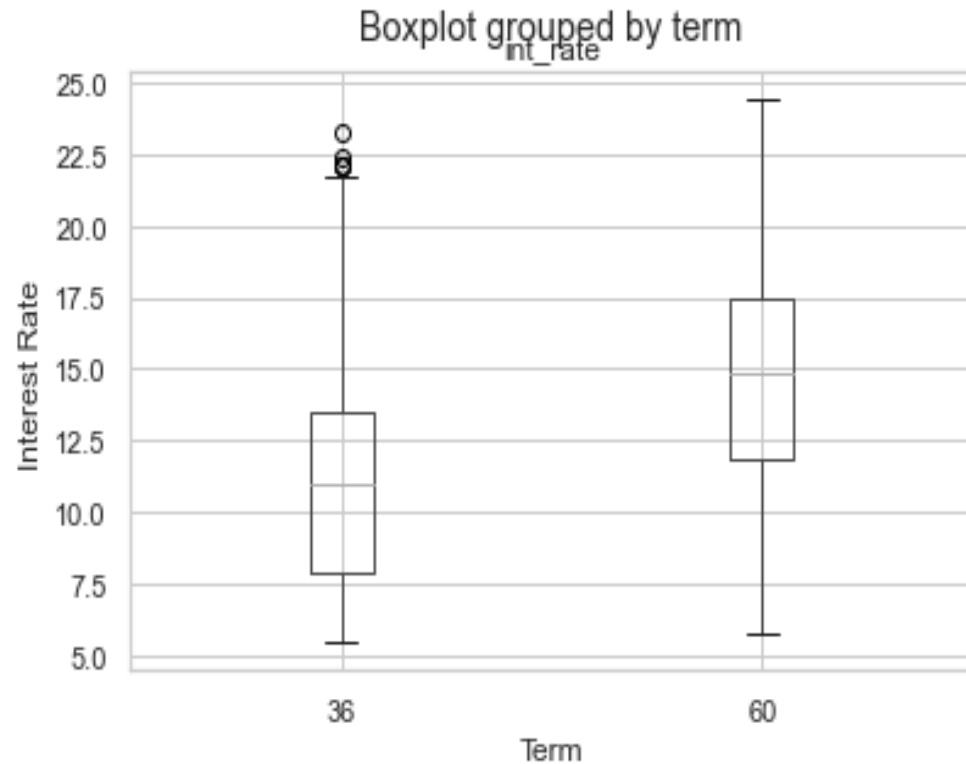
1. People having lower annual income (less than around 60000) have defaulted their loan more and the default rate decreases at high annual income level.



Observations:

People having lower debt to income ratio tend to fully pay their loan and vice versa.

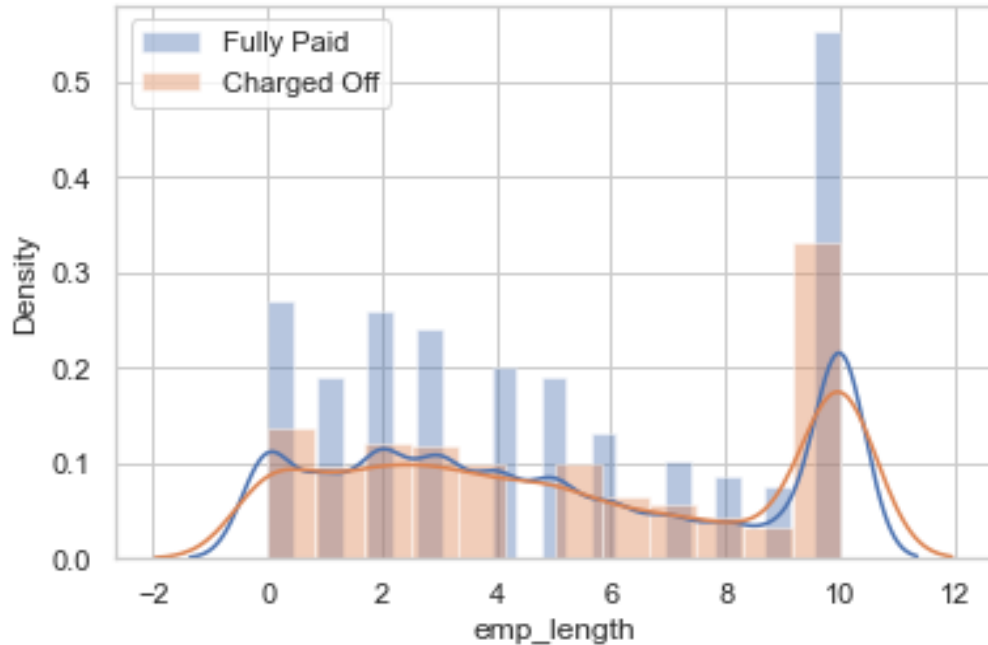
Loan Term Analysis



Observations:

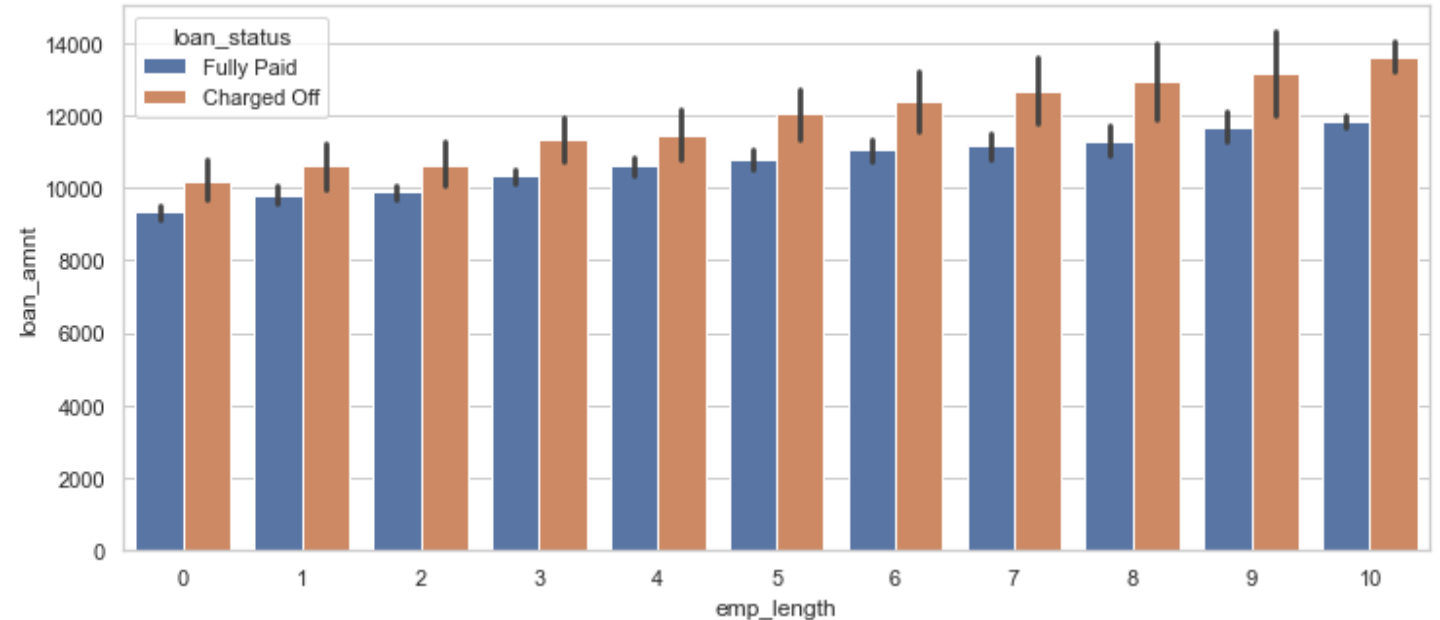
1. The interest rates are higher for 60 month term.
2. More no of defaulters for the loan having higher rate of interest (around 12% interest rate)

Loan Applicants work Experience Analysis



Observations:

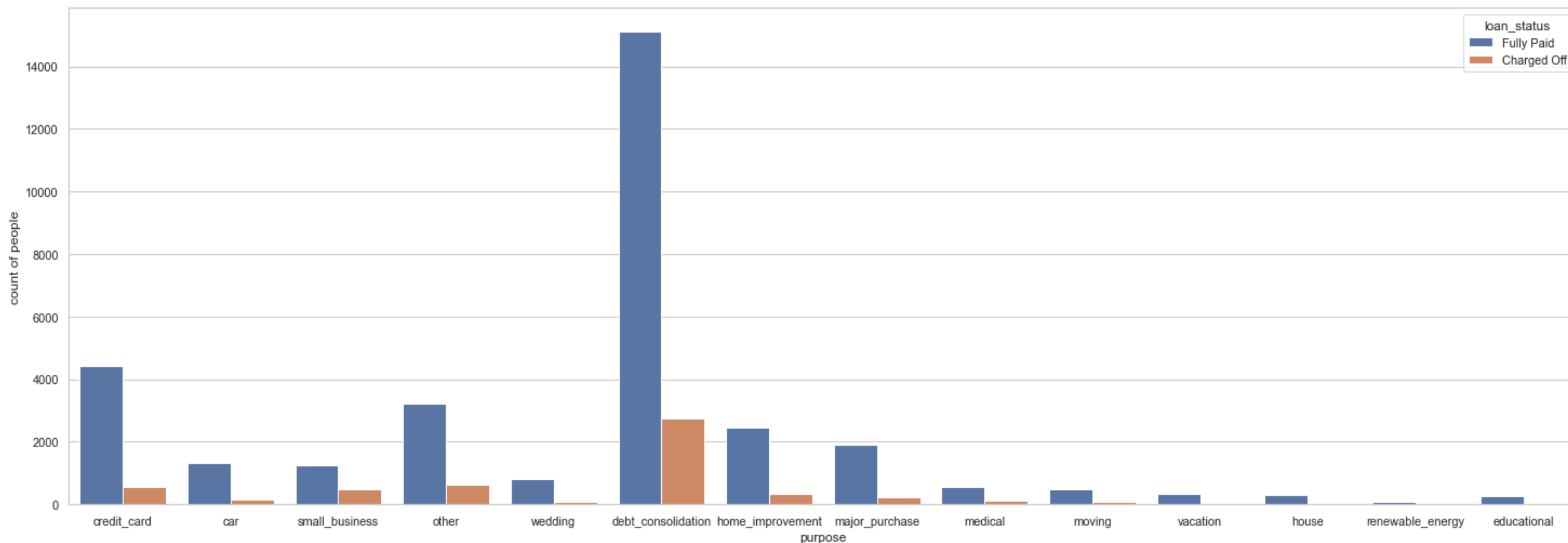
1. Majority of employees applying for the loan have more than 10 years of experience
2. Tendency of person to default the loan with 10 years of experience is slightly less .So company need to be careful when granting loan.



Observations:

1. People having more experience take loan for higher amount.
2. Loans having higher loan amount tend to be charged off more.

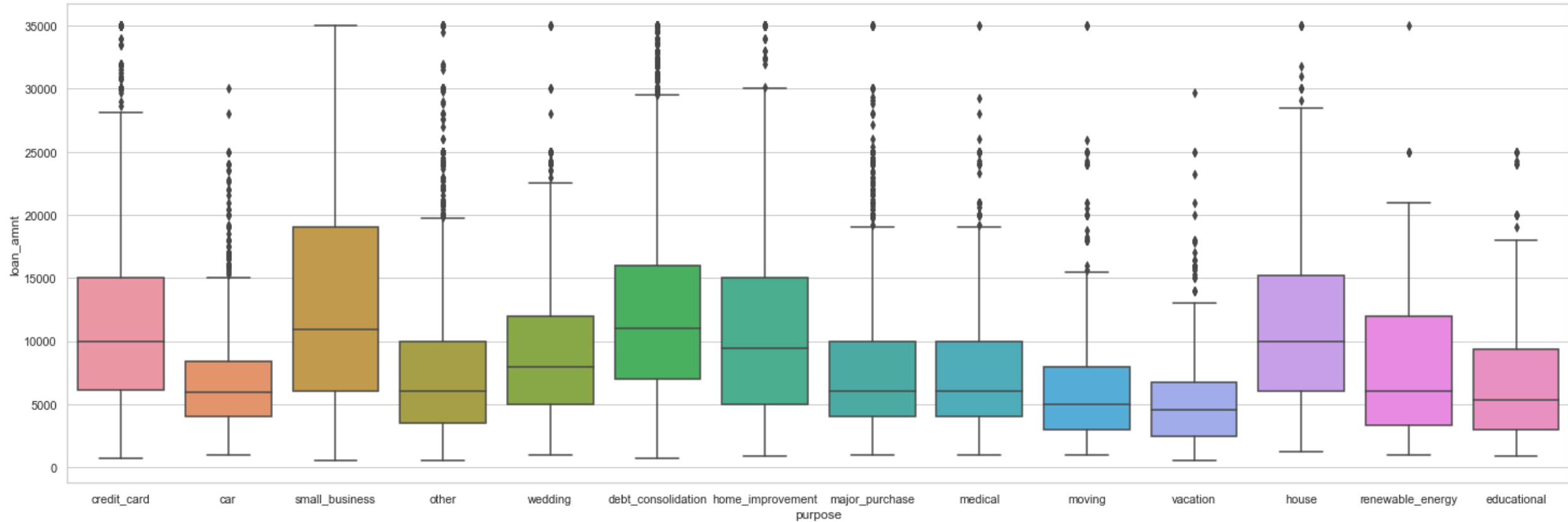
Purpose for applying Loan Analysis



Observation:

Most of the loans are granted were for debt consolidation.

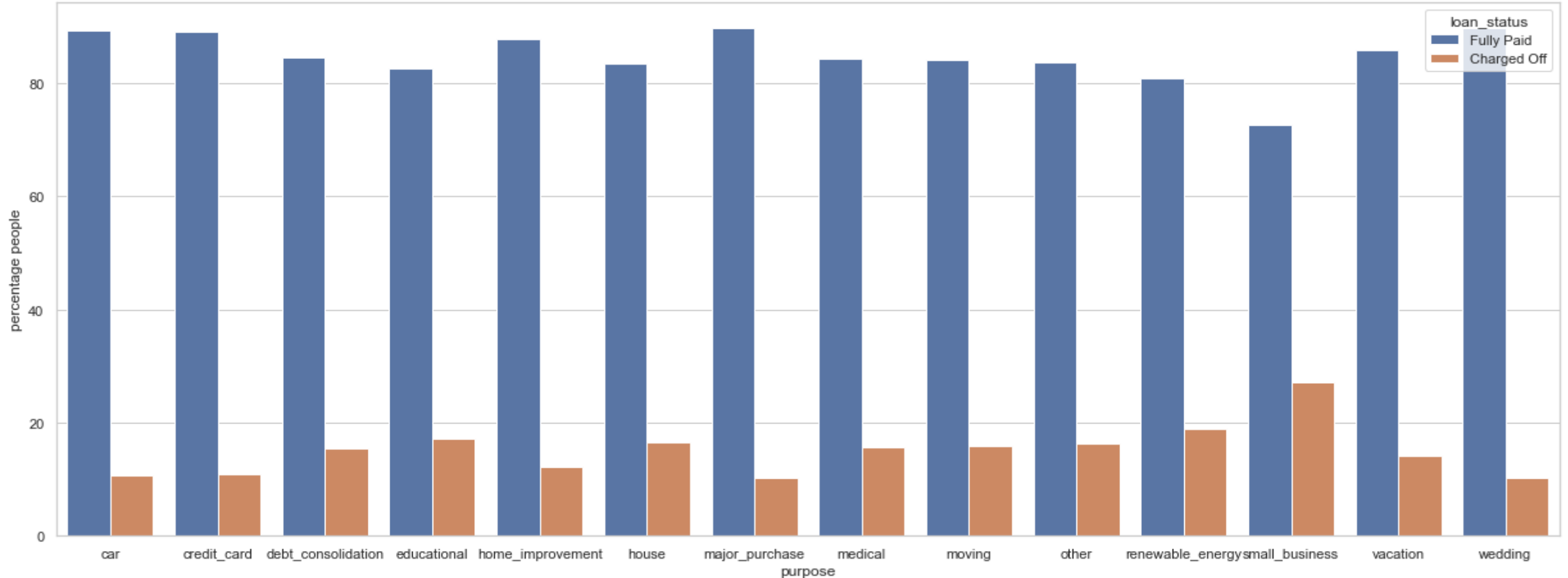
Amount of Loan applied for purpose



Observations:

Small Businesses have been the riskiest category. As large amount of loan is required for it.

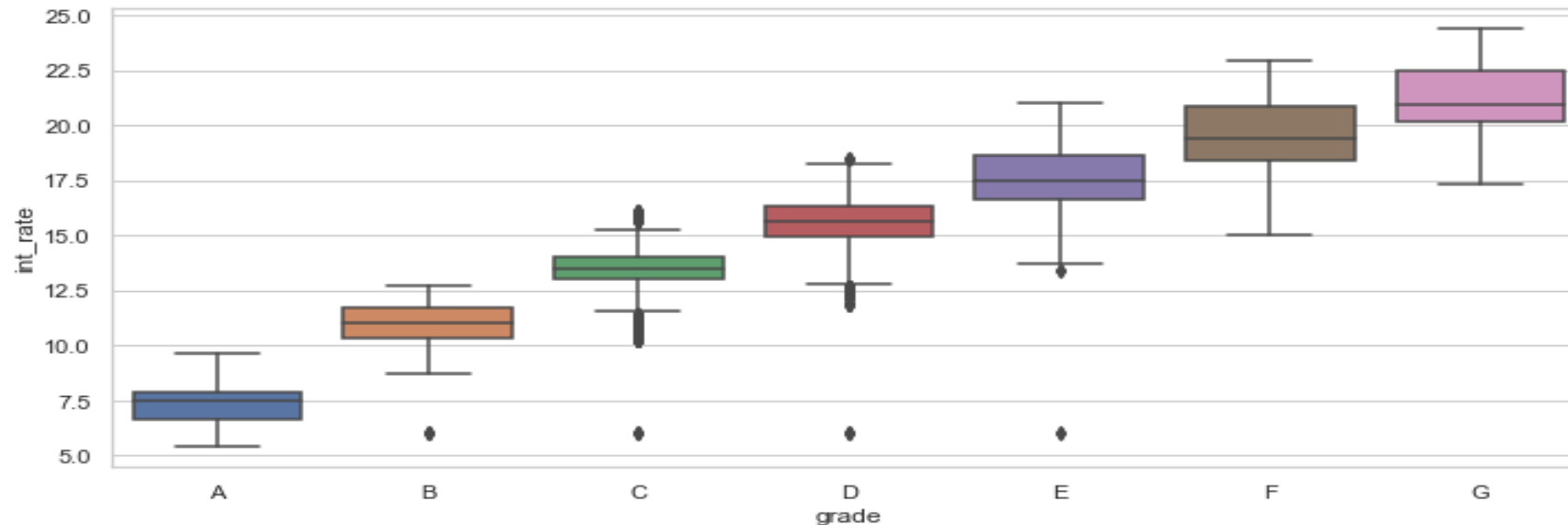
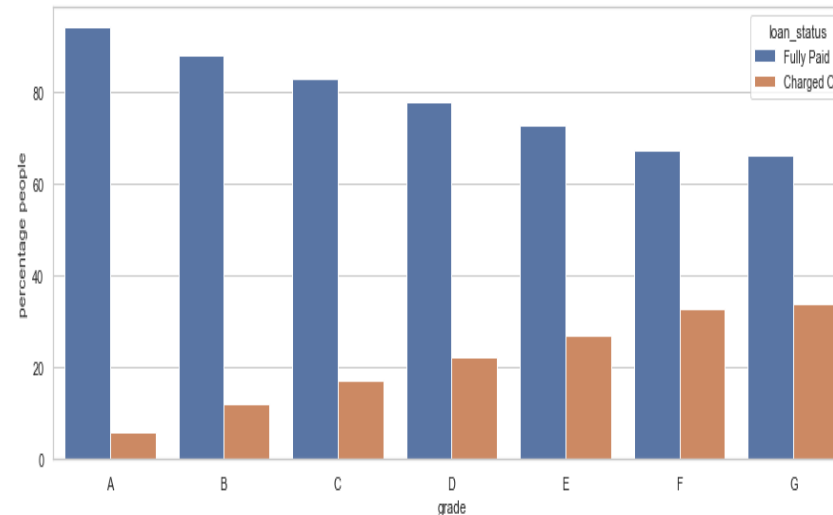
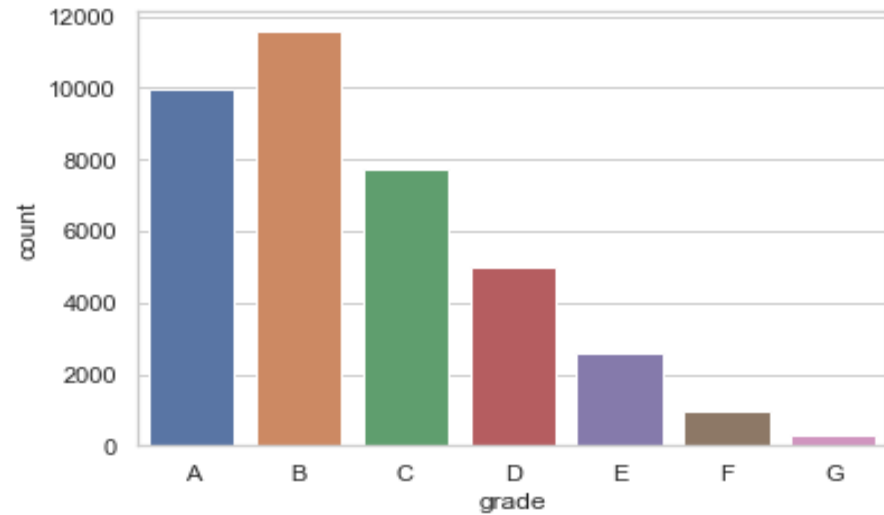
Loan Status , Purpose Vs Percentage of People



Observations:

People who take loan for small business-related purpose are most defaulters.

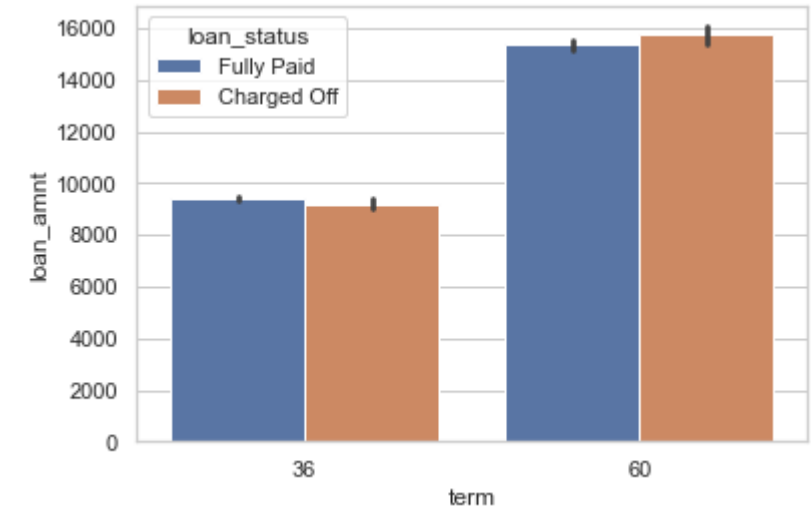
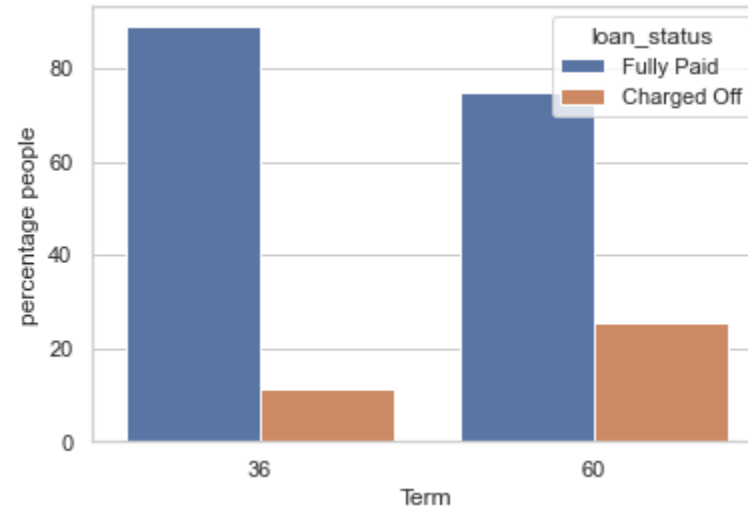
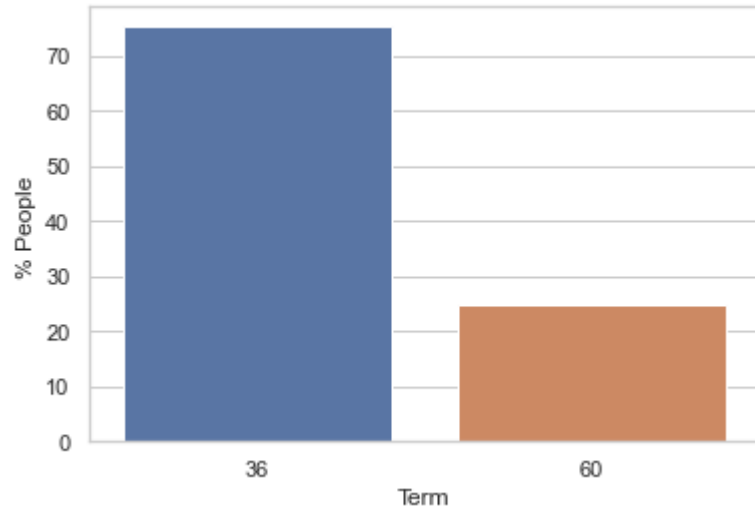
Loan Grade Analysis



Observation:

1. Most of the loans are applied by people of A and B grade category.
2. Most of the loans of grade of A and B people are fully paid.
3. These loans have a low interest rate.
4. Which depicts, higher interest rate have higher tendency to default the loan.

Loan Status vs Loan Tenure



Observations:

1. Most of the loans granted were of 36 months.
2. Higher percentage of defaulters who take 60 months term loan (more than 20%).
3. The average loan amount is similar for both the terms for both charged off and fully paid status.
4. The average loan amount is higher for the 60-month term.

Correlation Heat-Map

1. Loan amount is highly correlated to installment amount.
2. Loan amount is 40% positively correlated to annual income of the people.
3. Annual income is negatively correlated with DTI.



Conclusion



Results

1. Low grade loans have high tendency to default. Grading system is working as expected.
2. Loans having higher interest rate have more defaulters. Check the background of applicant thoroughly if interest rate is high.
3. Extra scrutiny must be done for the applicants whose annual income is low, as tendency to default is high.
4. When the purpose is debt consolidation check applicant thoroughly as it has high tendency to default.