



Lending Club Case Study

Group Members:

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Case Study Description:

Lending Club is a marketplace for personal loans that matches borrowers who are seeking a loan with investors looking to lend money and make a return. When the company receives a loan application, the company has to decide 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. So, company wants to understand the driving factors (or driver variables) behind loan default, i.e., the variables which are strong indicators of default. The company can utilize this knowledge for its portfolio and risk assessment.

Objective of the Case Study:

The objective of the case study is to implement EDA techniques on a business problem to understand the insight of the data and how businesspeople can take decision from the outcome of the analysis.

PROBLEM SOLVING METHODOLOGY:

1. Data Loading
2. Data Cleaning
3. Data Manipulation
4. Univariate Analysis
5. Segmented Univariate Analysis
6. Bivariate Analysis
7. Recommendation

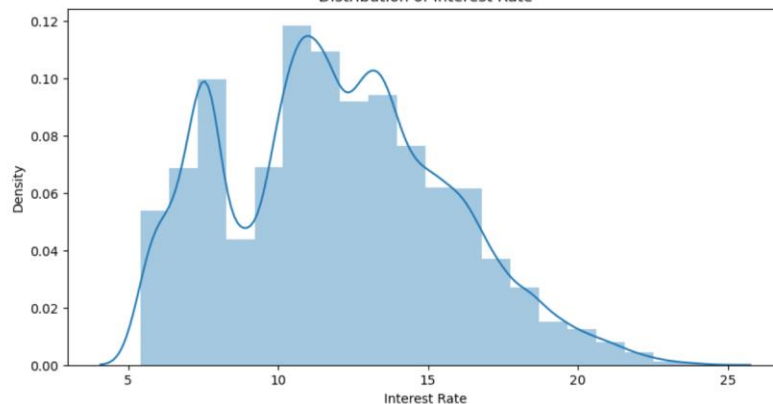
Univariate Analysis

Distribution of Loan Amount



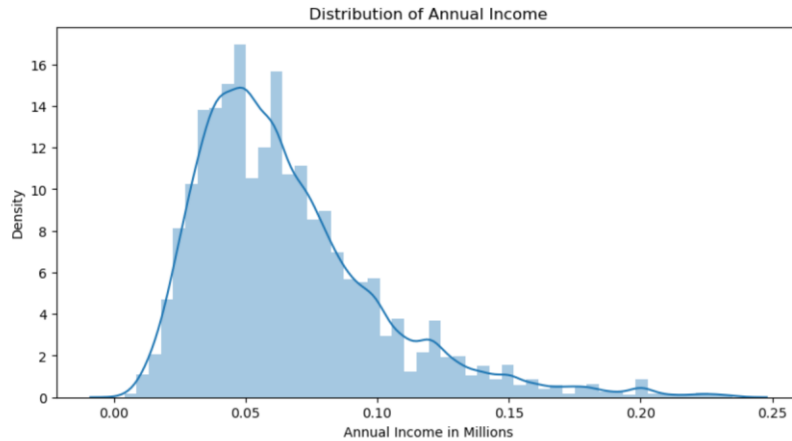
The loan amount varies from 500 to 35000 with a mean of 11119.

Distribution of Interest Rate

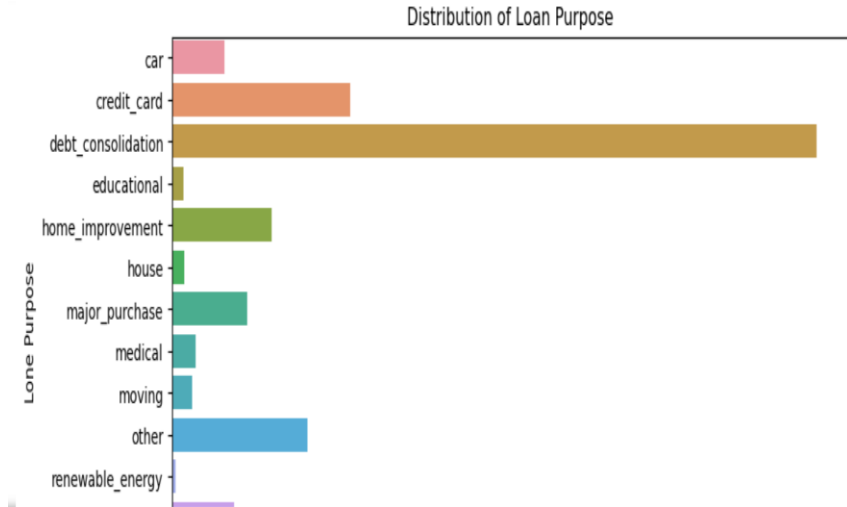


The interest rate is more accumulated around 5-8 and 10-17 with a drop near 10.

Univariate Analysis



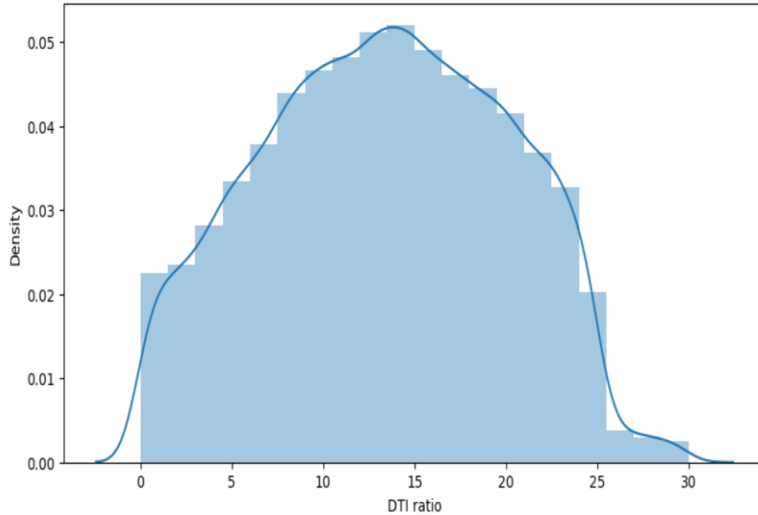
Majority of borrowers have very low annual income compared to rest.



A large percentage of loans are taken for debt consolidation followed by credit card.

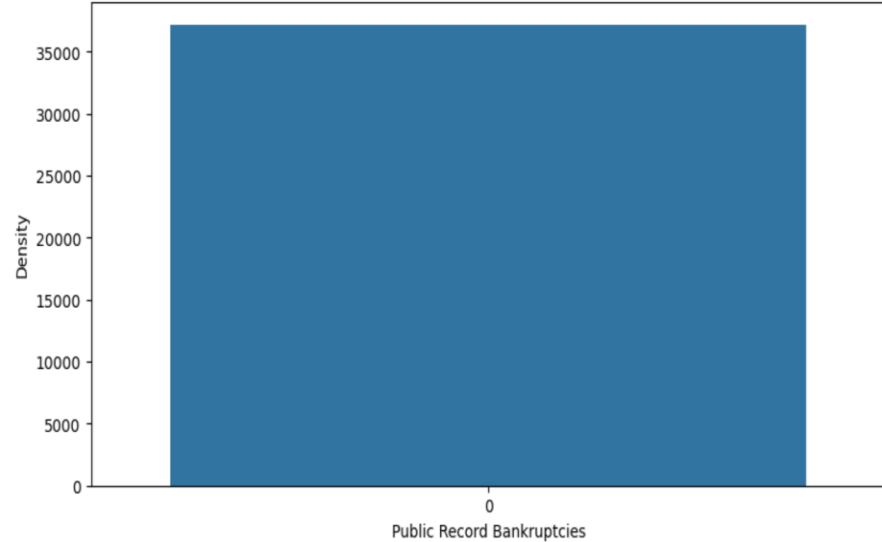
Univariate Analysis

Distribution of DTI ratio



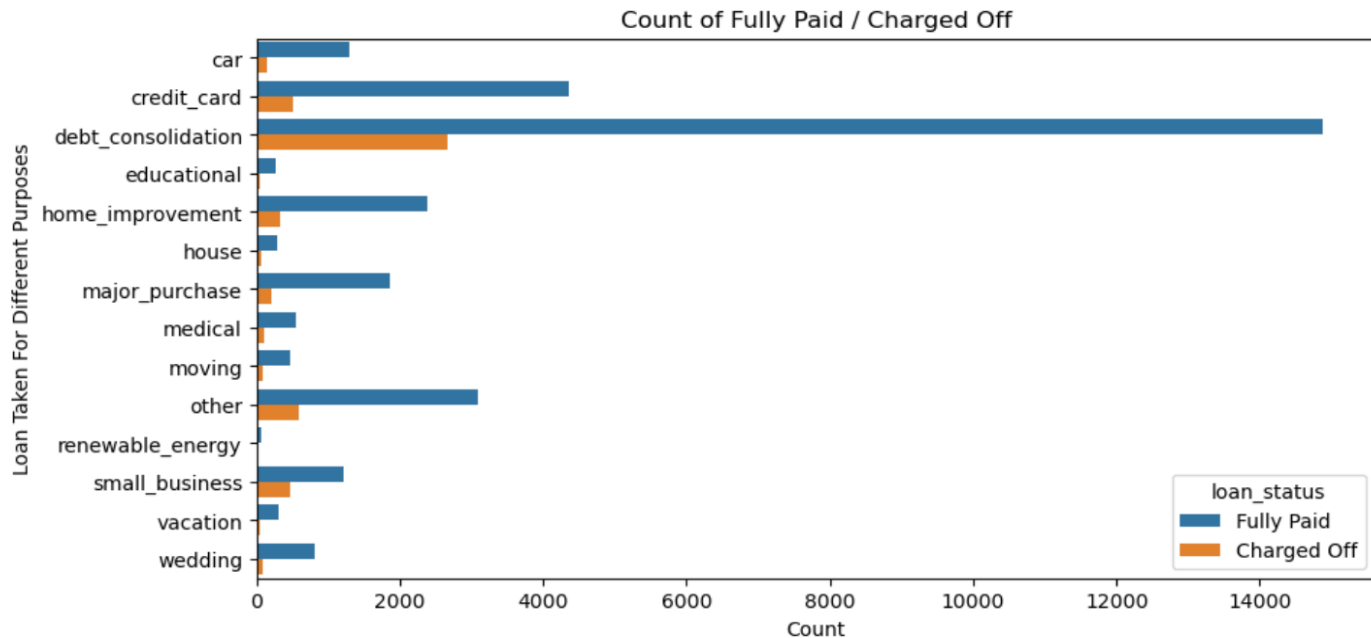
Majority of the borrowers have very large debt compared to the income registered, concentrated in the 10-20 DTI ratio.

Distribution of Public Record Bankruptcies



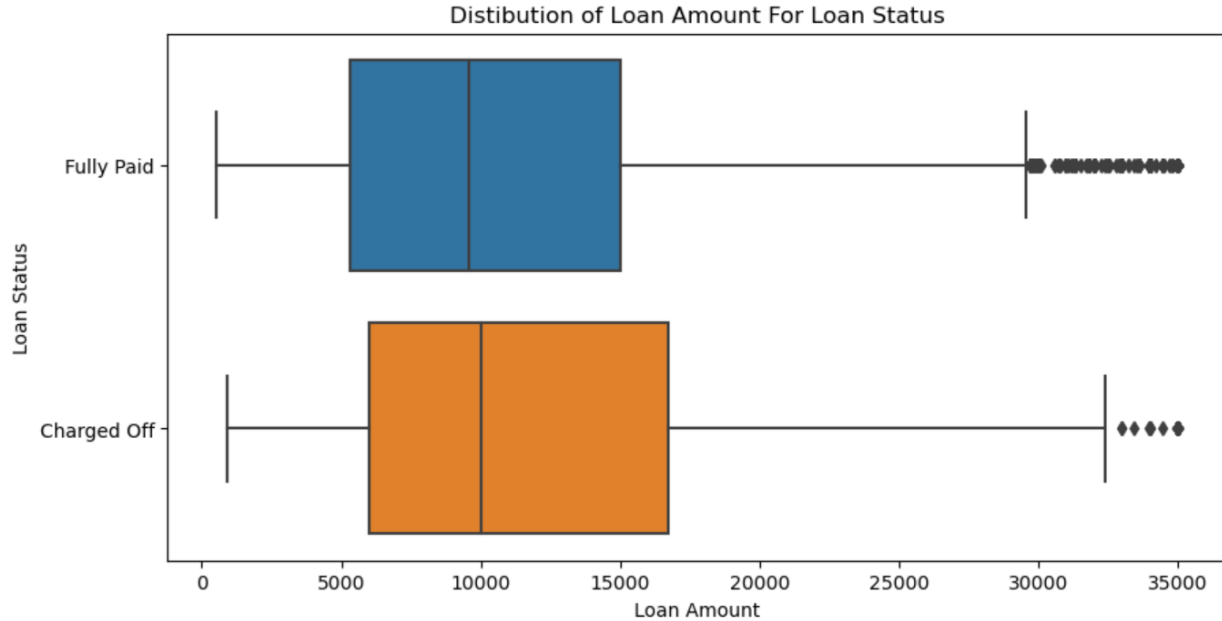
Majority of the borrowers have no record of Public Recorded Bankruptcy.

Segmented Univariate Analysis



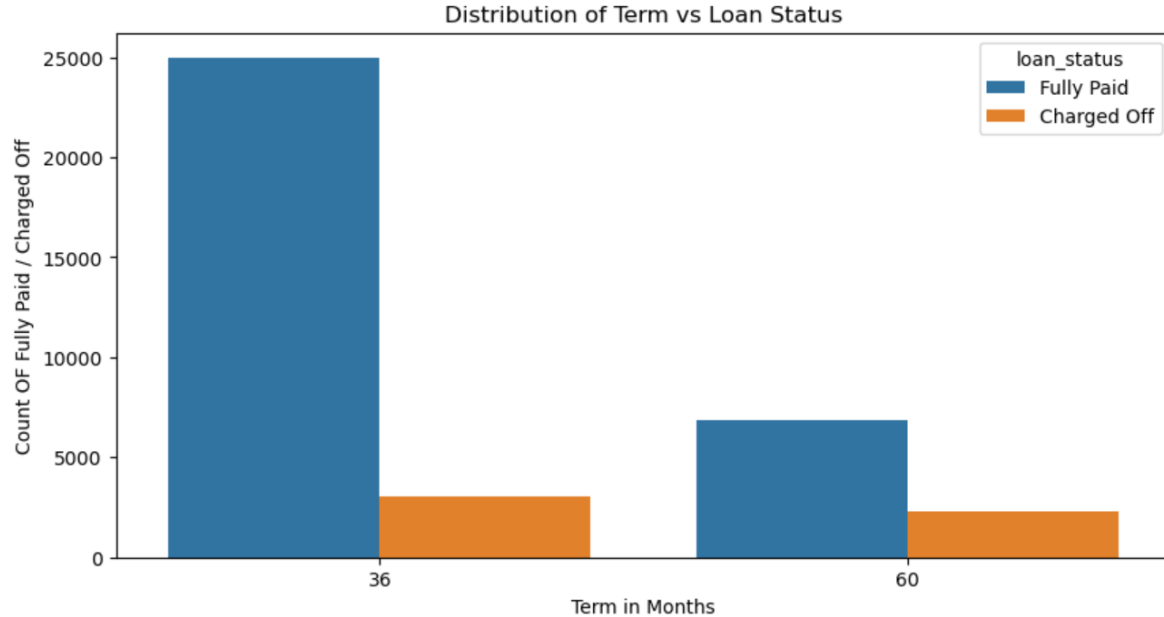
Debt Consolidation is the most popular loan purpose and has highest number of fully paid loan and defaulted loan.

Segmented Univariate Analysis



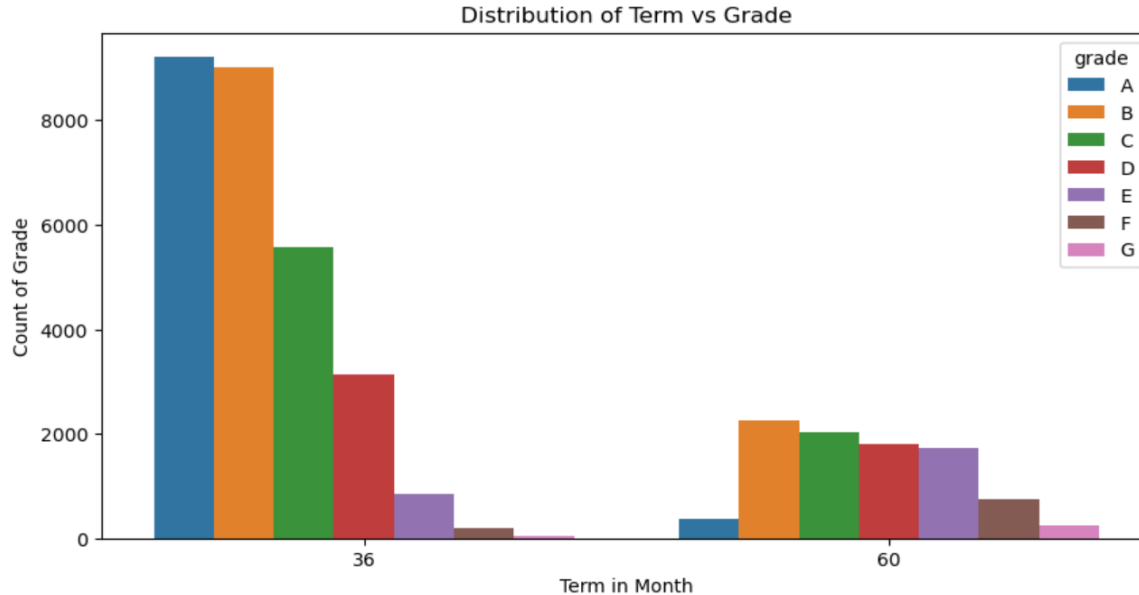
Large amount of loan has higher chance of defaulting.

Segmented Univariate Analysis



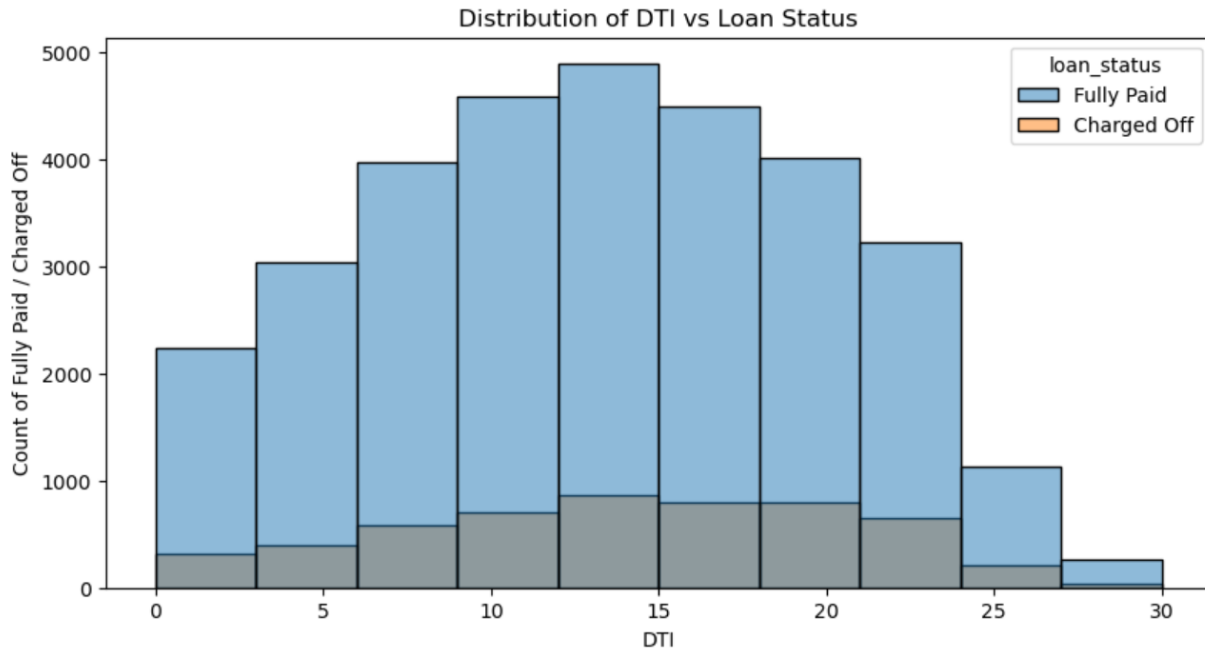
The 60 months term has higher chance of defaulting than 36 months term whereas the 36 months term has higher chance of fully paid loan.

Segmented Univariate Analysis



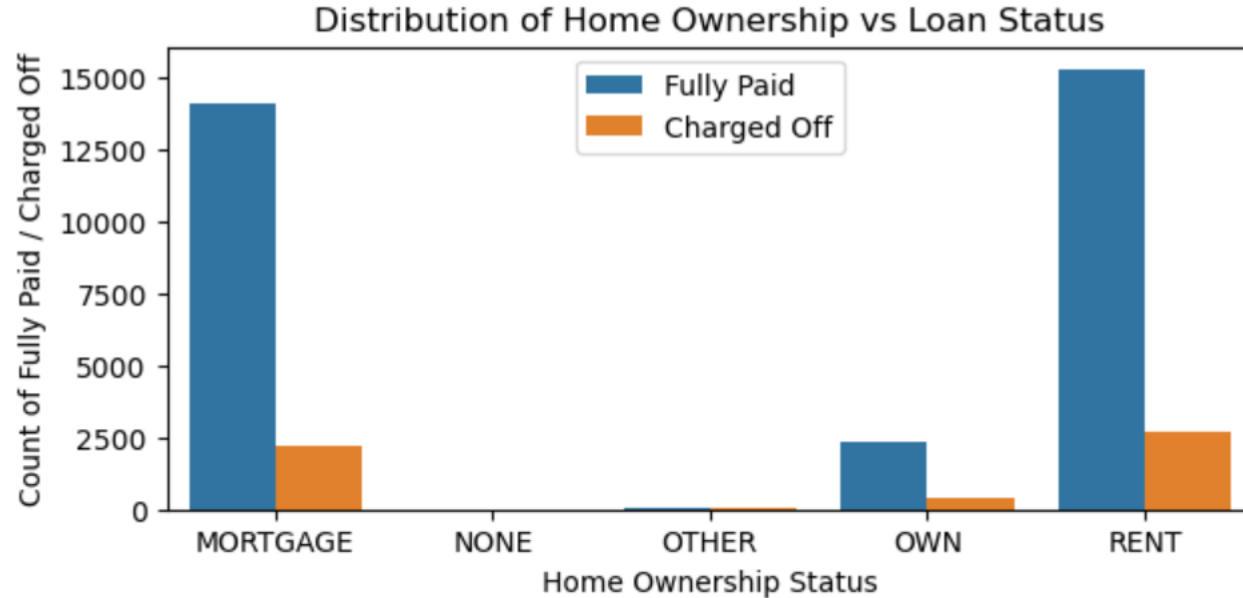
The loans in 36 months term majority consist of grade A and B loans whereas the loans in 60 months term mostly consist of grade B, C and D loans.

Segmented Univariate Analysis



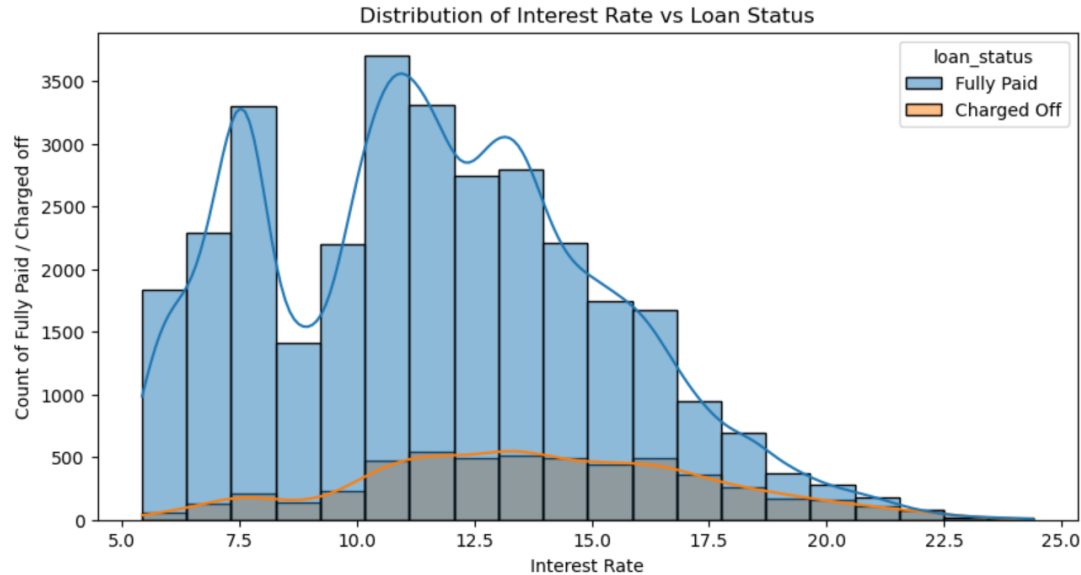
The Loan Status varies with DTI ratio, we can see that the loans in DTI ratio 10-20 have higher number of defaulted loan but higher dti has higher chance of defaulting.

Segmented Univariate Analysis



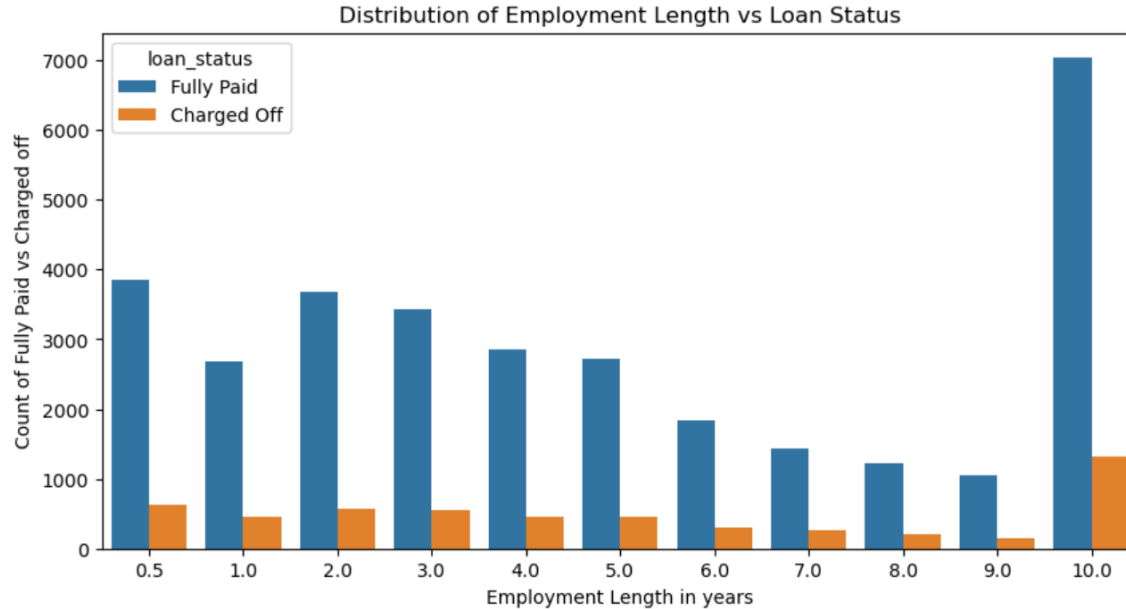
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Segmented Univariate Analysis



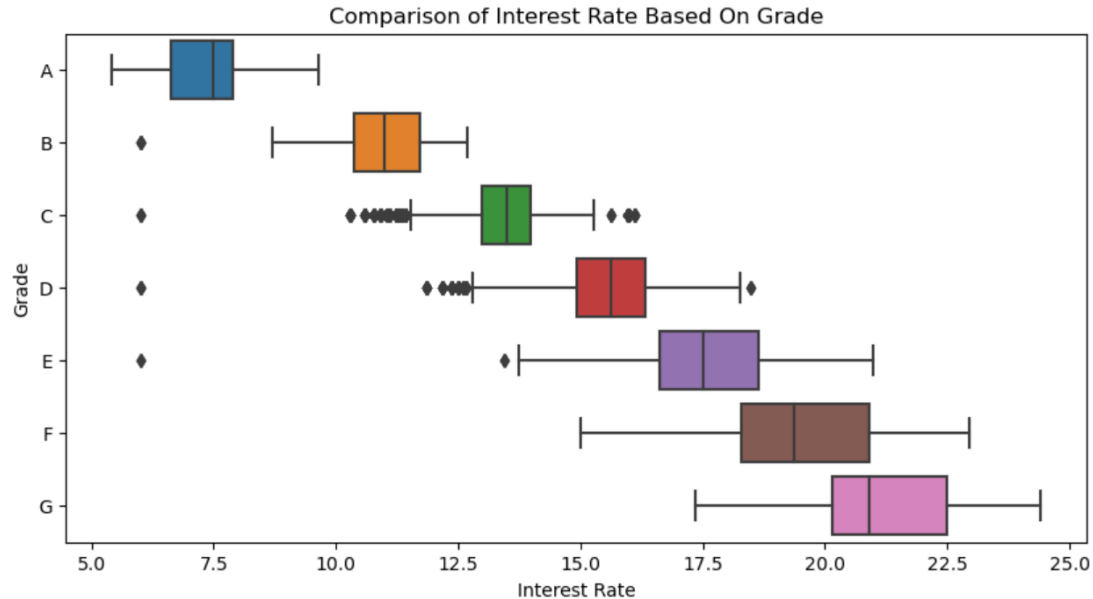
The default loan amount increases with interest rate and shows a decline after 17.5% interest rate.

Segmented Univariate Analysis



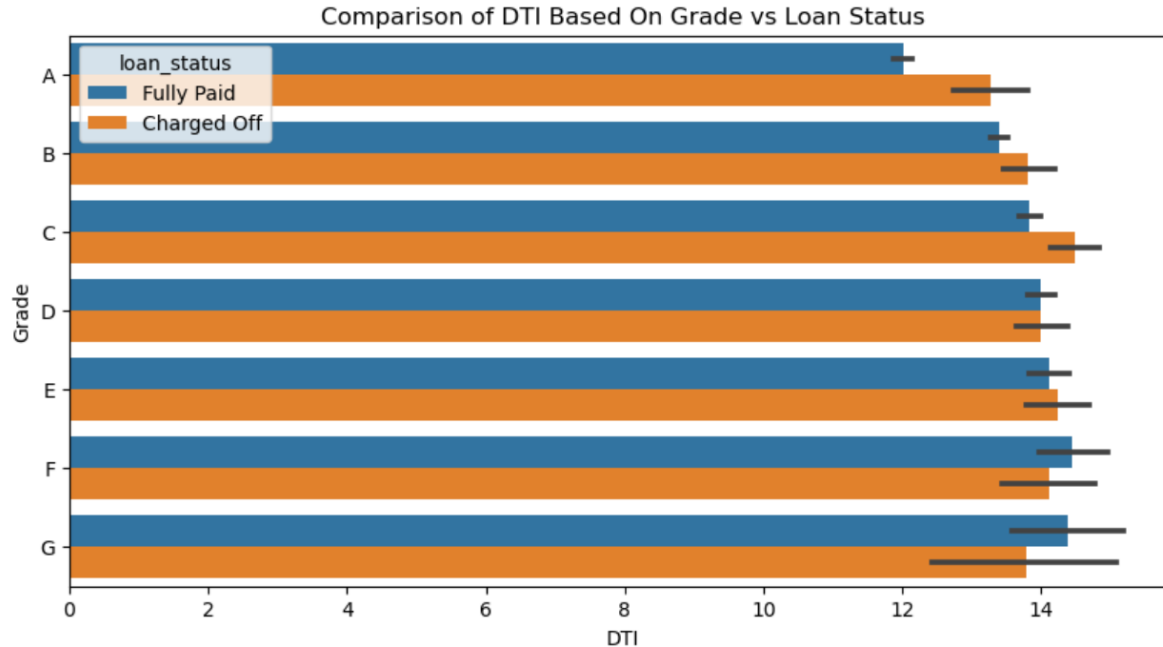
The Employees with 10+ years of experience are likely to default and also have higher chance of fully paying the loan.

Bivariate Analysis



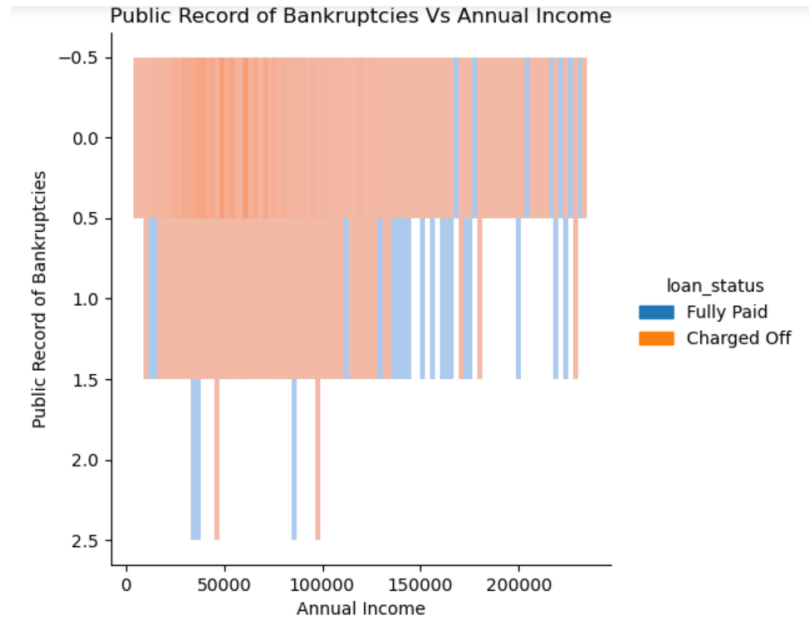
The Grade decreases and at the same time, interest rate increases with the risk.

Bivariate Analysis



The Grade A which is lowest risk also has lowest DTI ratio which we can say that higher grade has lower rate of default.

Bivariate Analysis



The borrowers are mostly having no record of Public Recorded Bankruptcy and are safe choice for loan issue.

Recommendations

Driving factors (or driver variables) which are strong indicators of default:

- DTI
- Grades
- Interest Rate
- Annual income
- public record bankruptcies
- Employment Length
- Loan Term

Other observation on the loan dataset:

- Borrowers with more annual income, having less public record of Bankruptcy.
- Borrowers having more Public Recorded Bankruptcy are more prone for defaulting.
- Borrowers with lower grades like E,F,G are likely to default.
- Very high Debt to Income value ratio are more likely to default.



Thank You!

[rajat-haldar/lending_club_case_study](https://github.com/rajat-haldar/lending_club_case_study): Lending Club Case Study using EDA technique and python code.
(github.com)