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Lending Club Case Study

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Group Members

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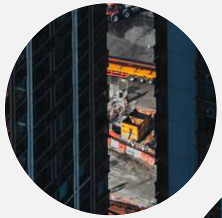
About the Company

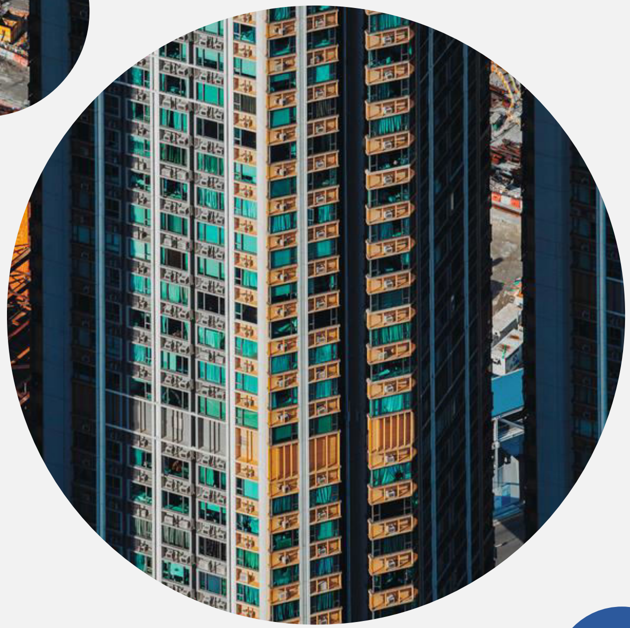
A leading consumer finance firm specializing in urban loan services, offering personal loans, business loans, and financing for medical procedures.

Decision Challenges

•**Risk of Denial:** Loss of business when a reliable applicant is denied a loan.

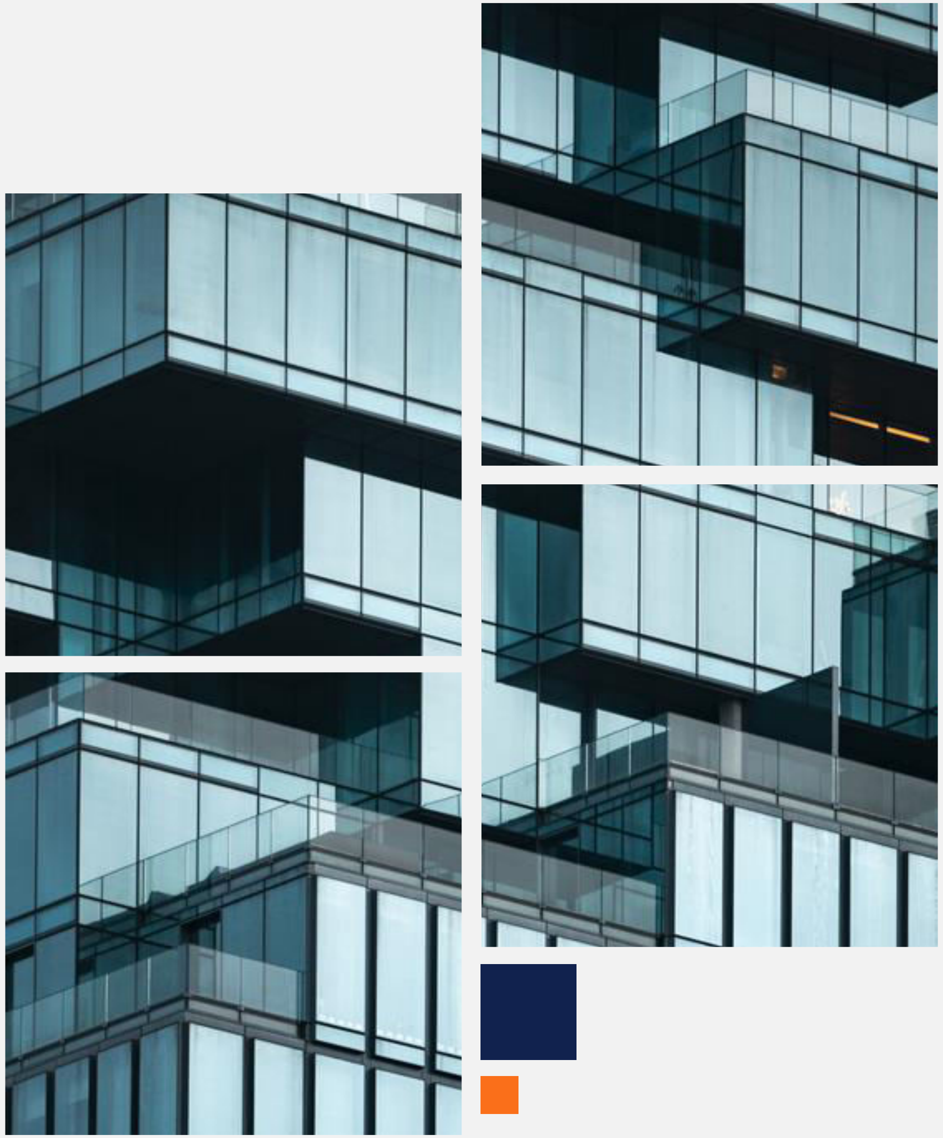
•**Risk of Default:** Financial losses when loans are approved for unreliable applicants.





Objective

- Use historical data to analyze patterns of loan default.
- Enhance decision-making for approving or rejecting loans.
- The focus of the analysis is on identifying patterns among the "charged-off" borrowers to mitigate financial risk.
- Identify Driving Factors which can be used to predict the chance of defaulting and avoiding Credit Loss.



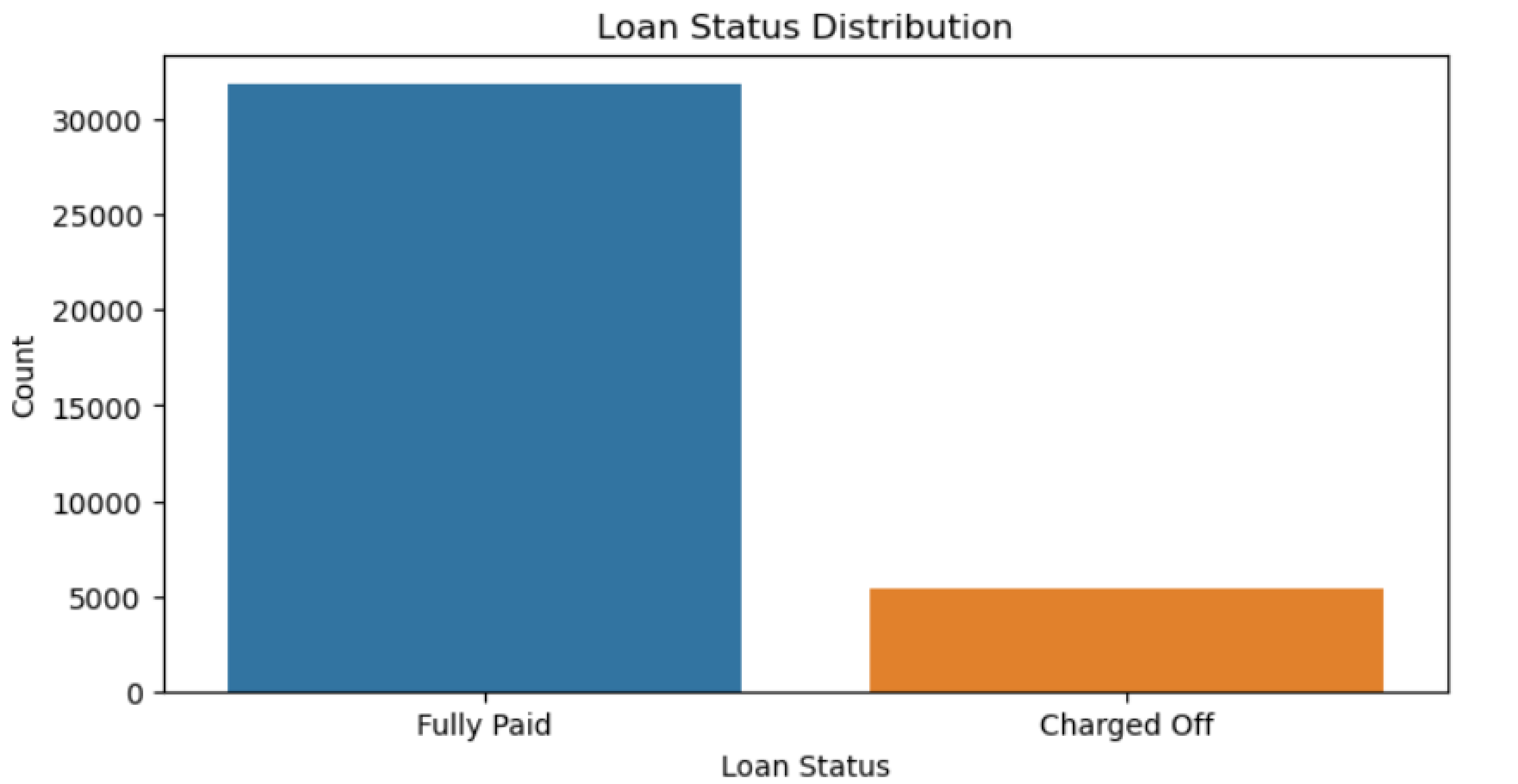
Problem Solving Methodology

Data Analysis

Data Understanding	Data Cleaning	Univariate Analysis	Segmented Univariate Analysis	Bivariate Analysis	Recommendations
Understanding the data and getting domain specific knowledge	Removing null values, unnecessary columns, fixing the datatypes of columns	Analysing each column and plotting the distributions of each column	Analysing the continuous columns with respect to categorical columns	Analysing two variables to understand the driving factors behind loan defaults	Analysing the plots and determining the risk factors associated with consumer attributes

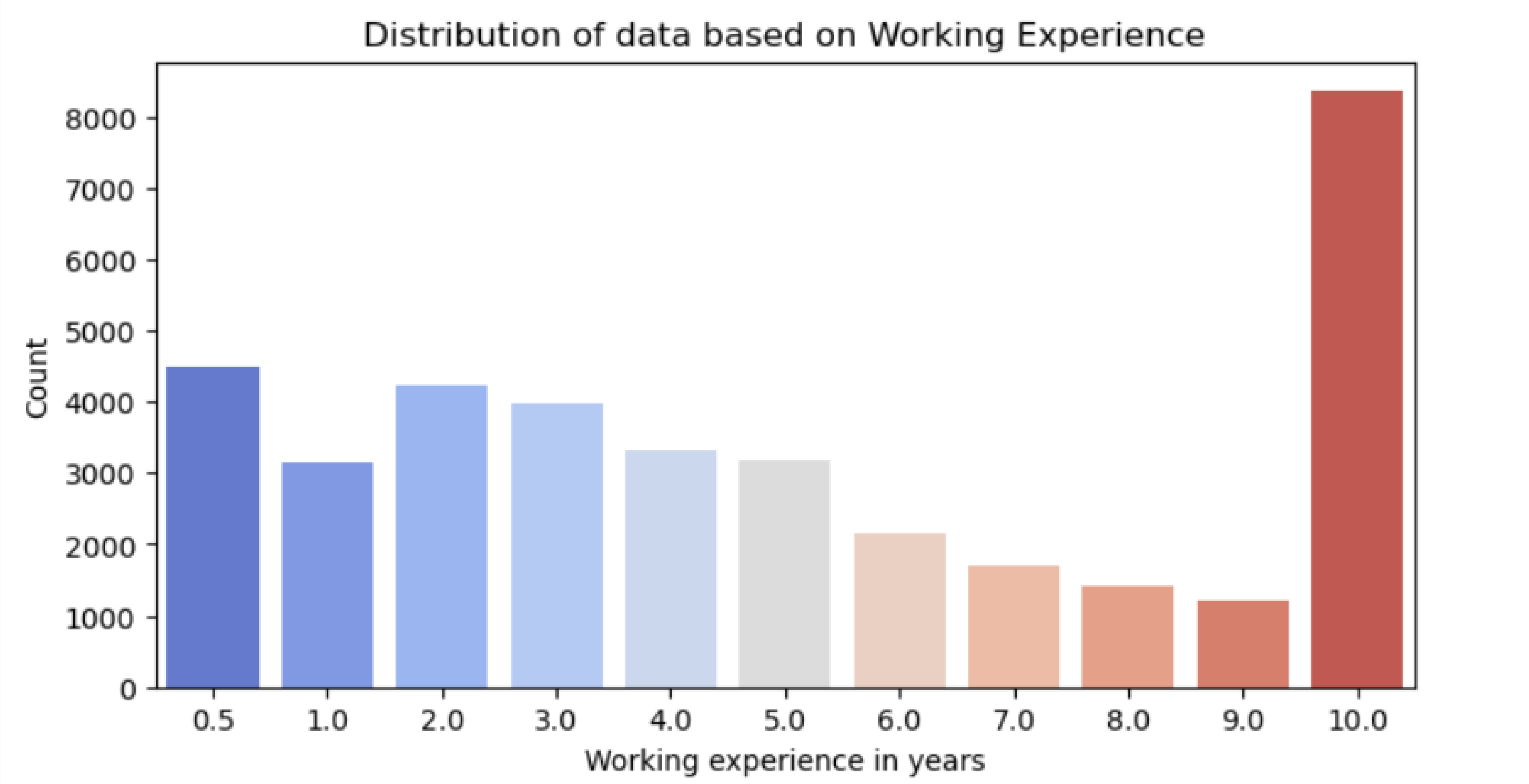
Observations

Fully paid loans were much more as compared to the defaulted ones.



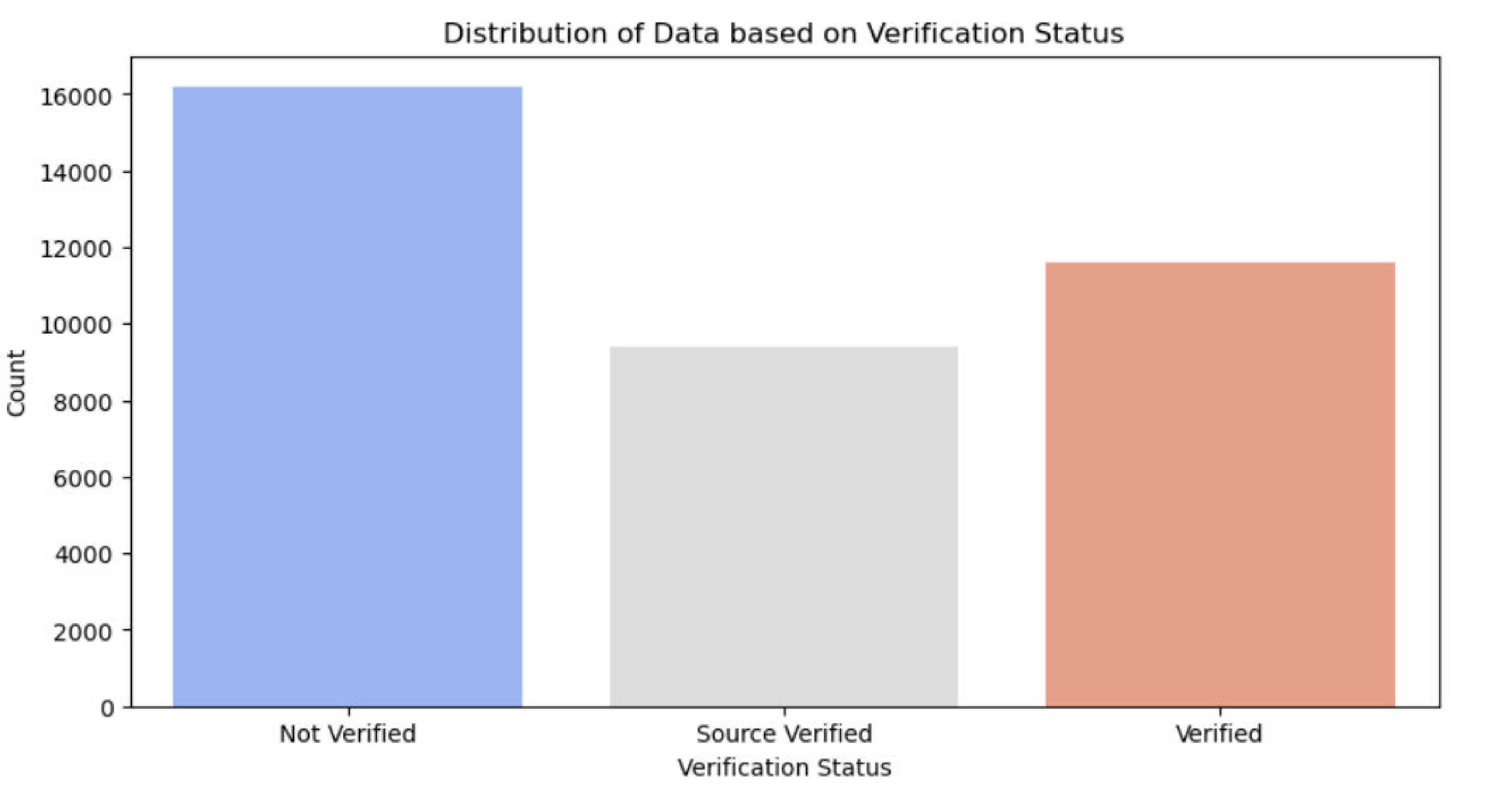
Observations

We can see that most of the borrowers were having the working experience of more than 10 years.



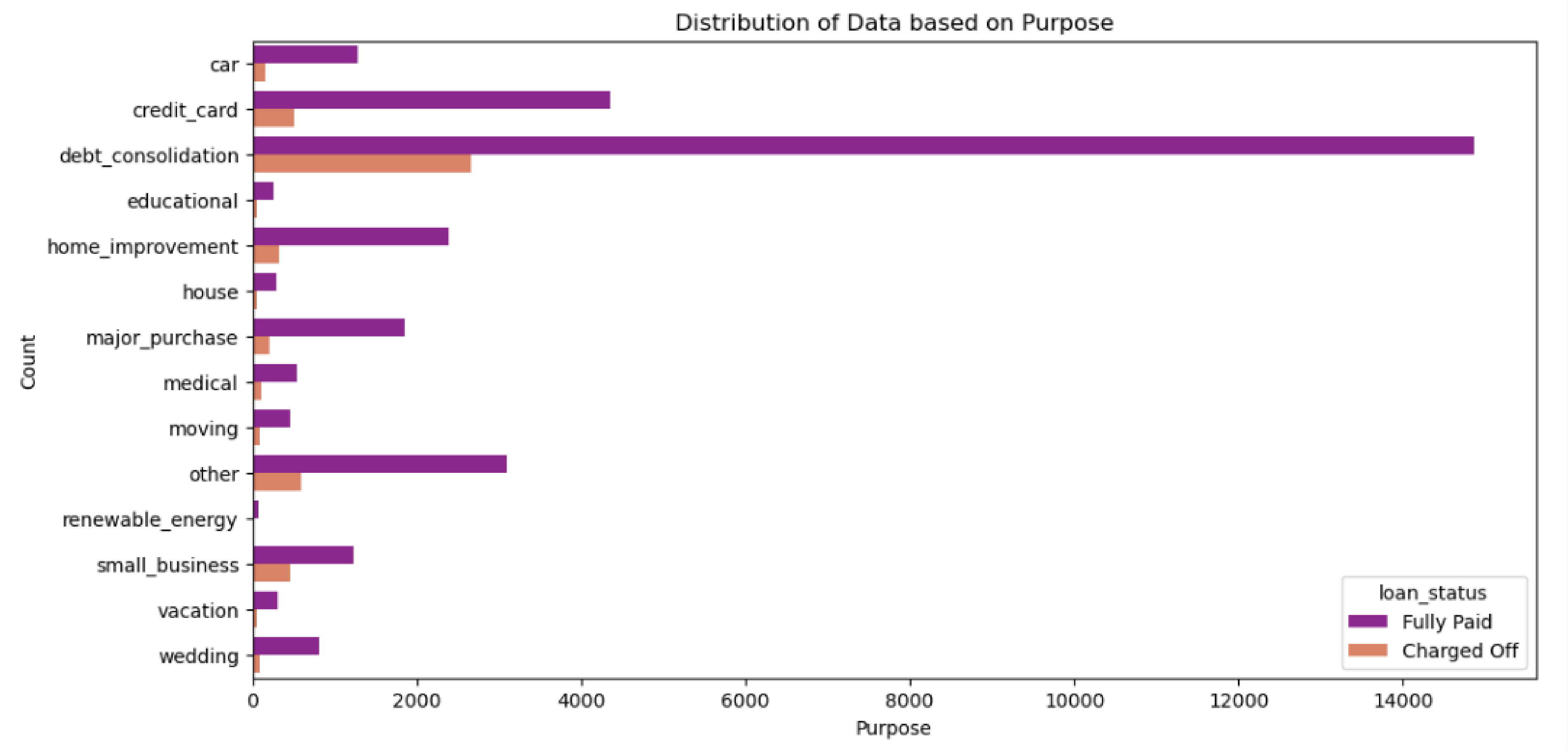
Observations

A large number of loans were not verified (Approximately 43.5 %).



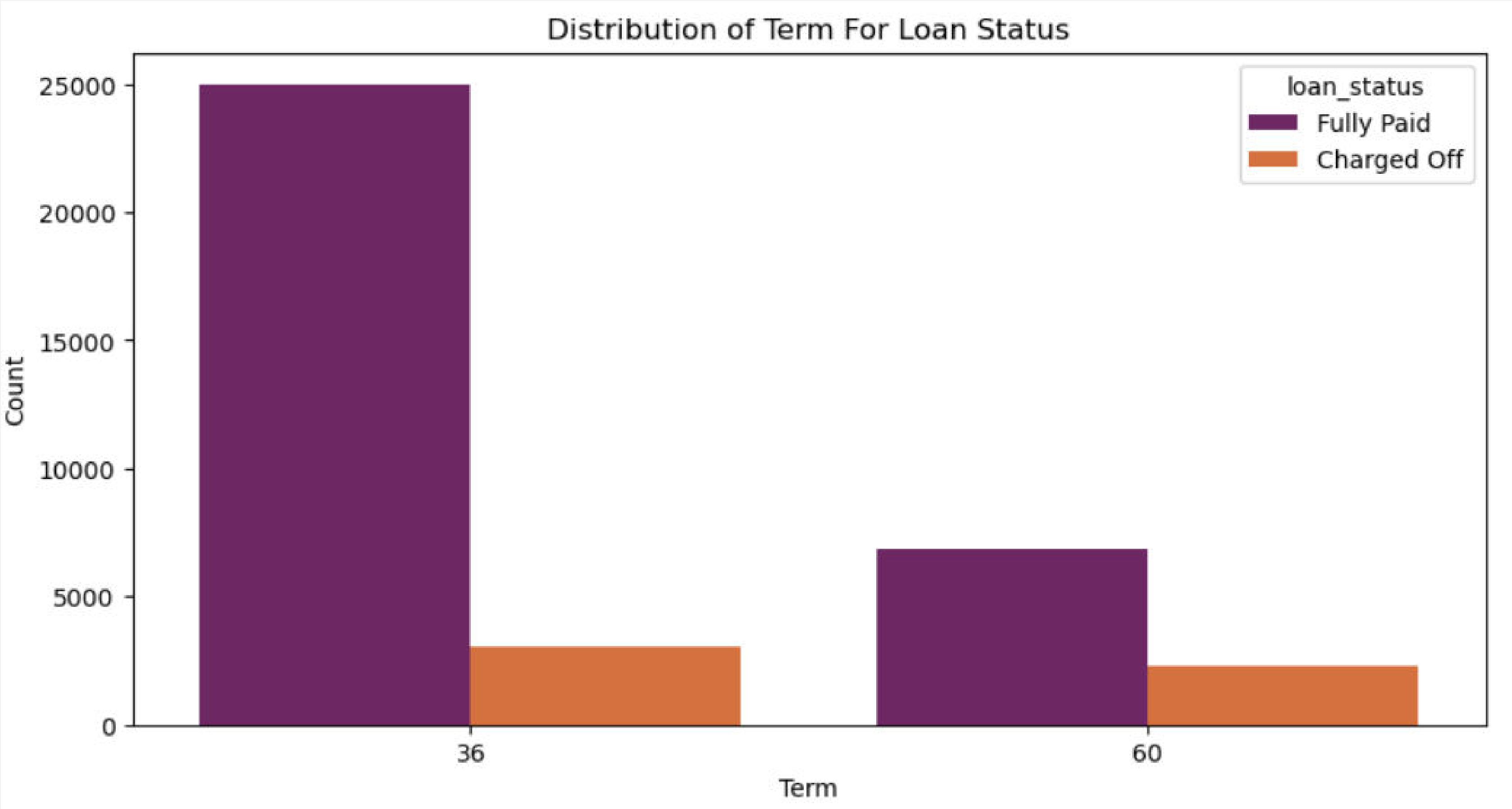
Observations

As we can see, most of the borrowers borrowed loan for Debt Consolidation, Credit Card purposes and are mostly fully paid or charged off as compared to other purposes.



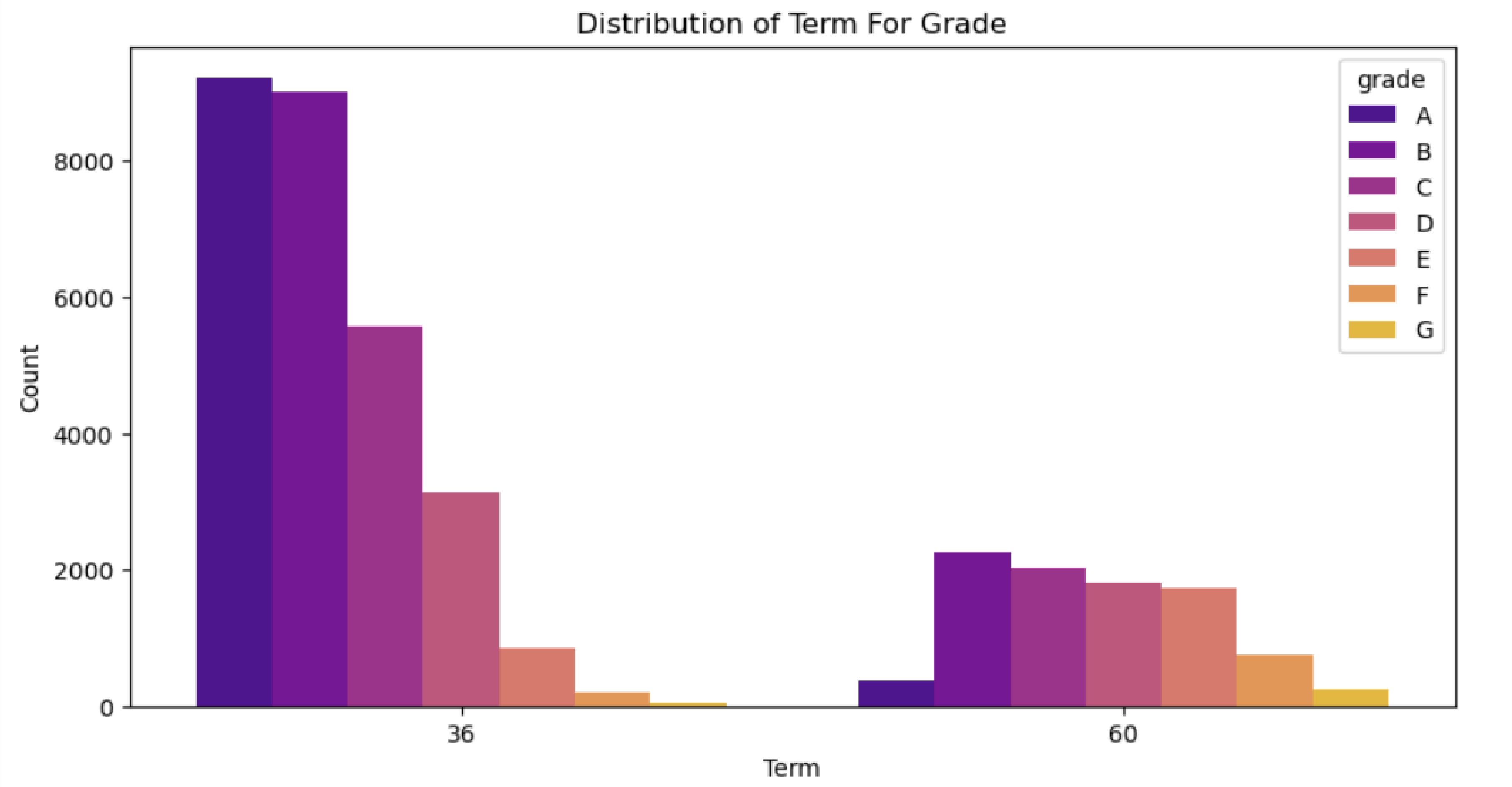
Observation

As we can see, 60 months tenure loans are having higher chance to get defaulted while the 36 months tenure loans are having higher chance to get fully paid.



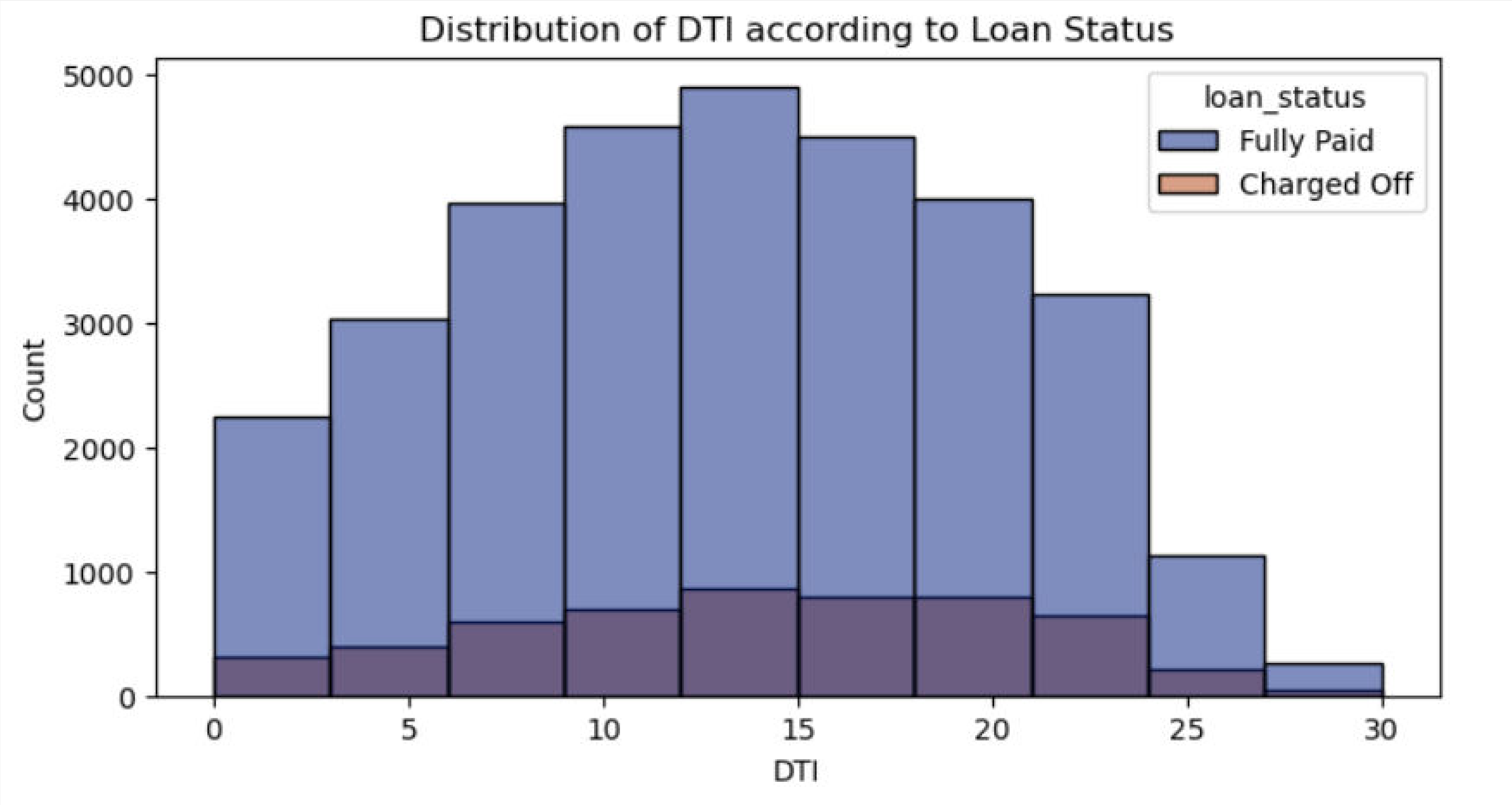
Observations

Loans in 36 months tenure majorly consist of A and B grades while 60 months tenure majorly consist of B, C,D and E grade loans.



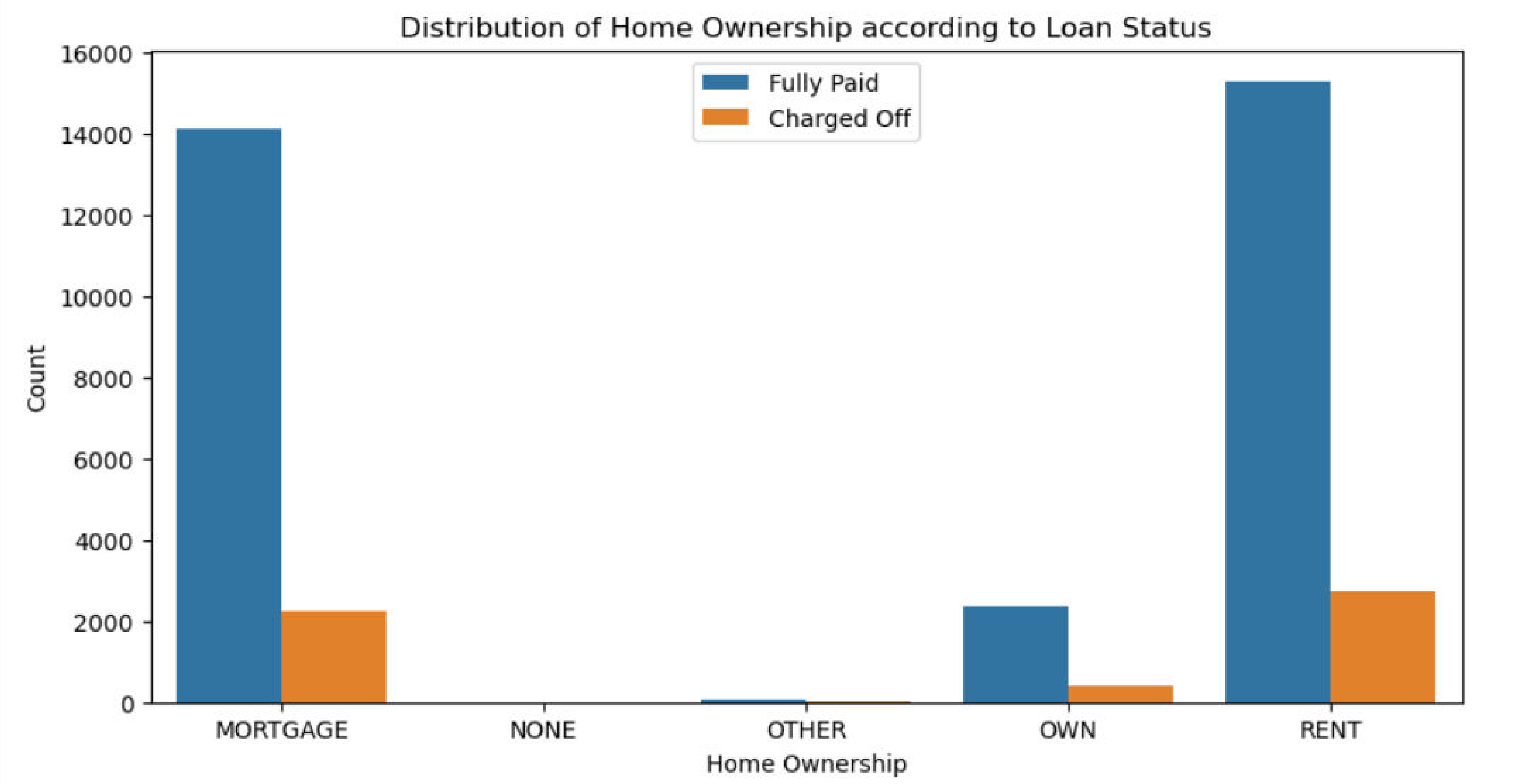
Observations

As we can see most number of defaulted loan are between 10 to 15 debt to income ratio, hence we can infer that higher debt to interest leads to higher defaulted loans and less fully paid loans.



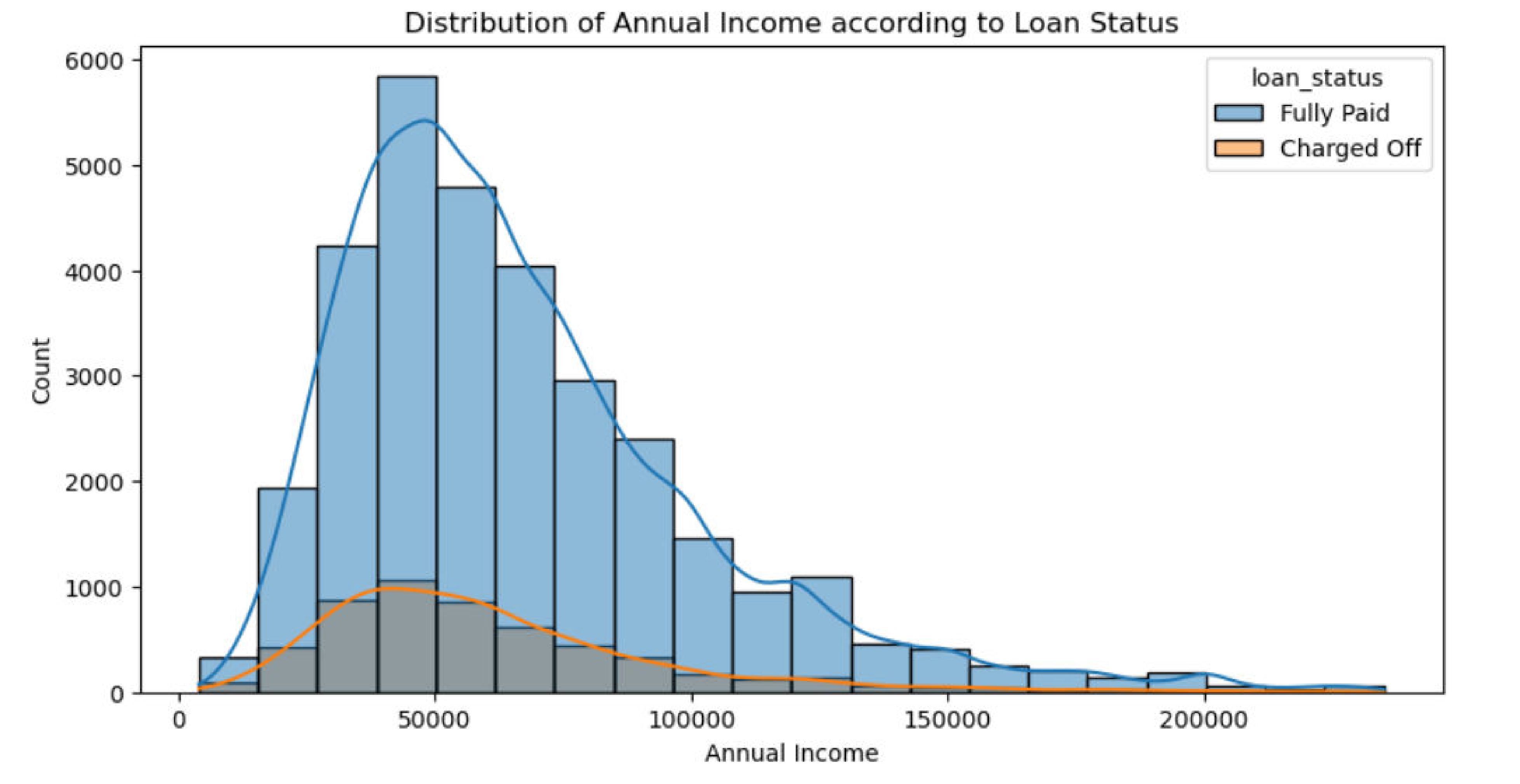
Observations

Defaulted loans are less for those borrowers who own the property as compared to rent or mortgage.



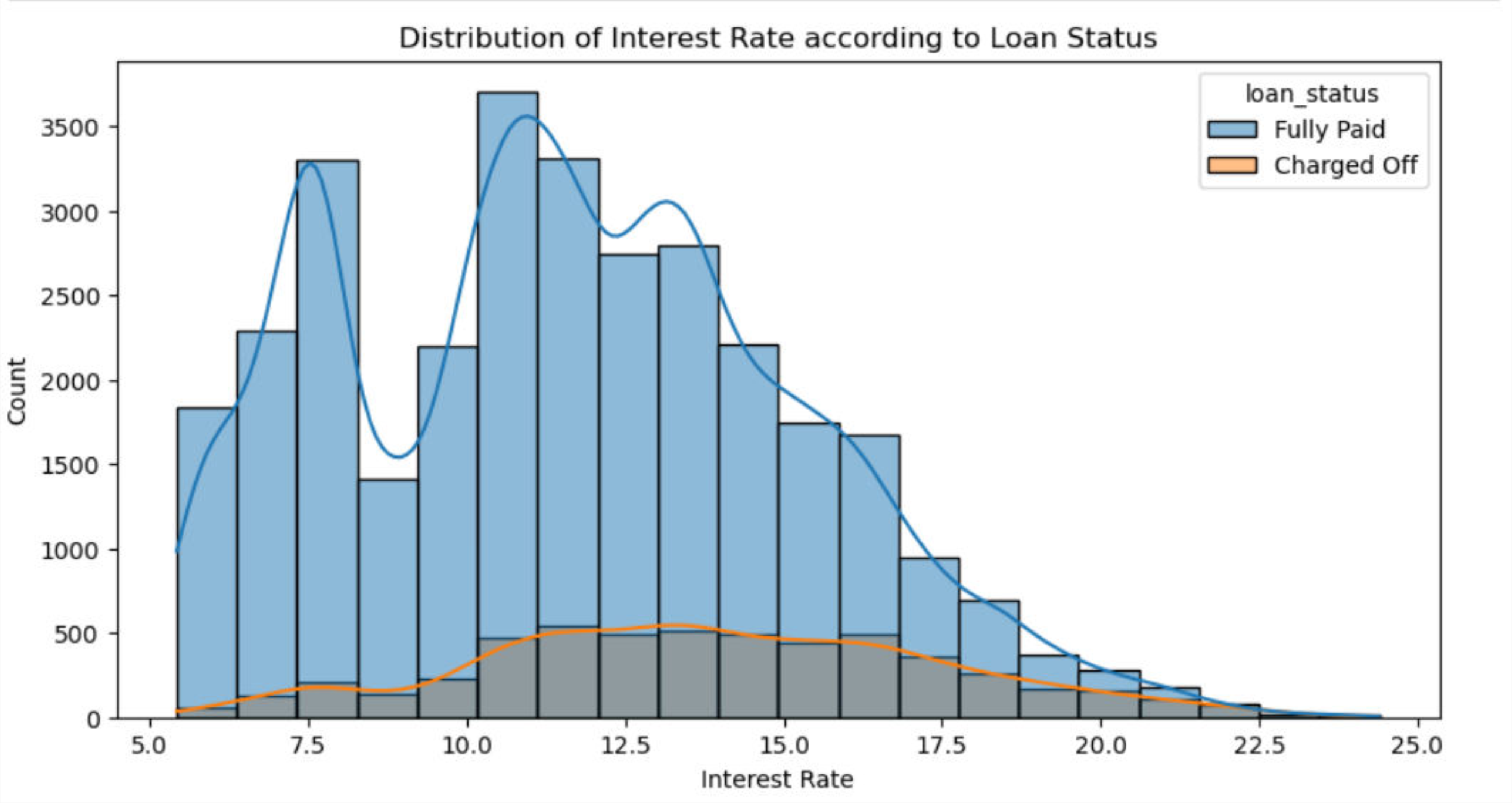
Observations

Borrowers with less than 50000 annual income are more likely to default and higher annual income are less likely to default as we can see in chart that the default loan count decreases as the income increases.



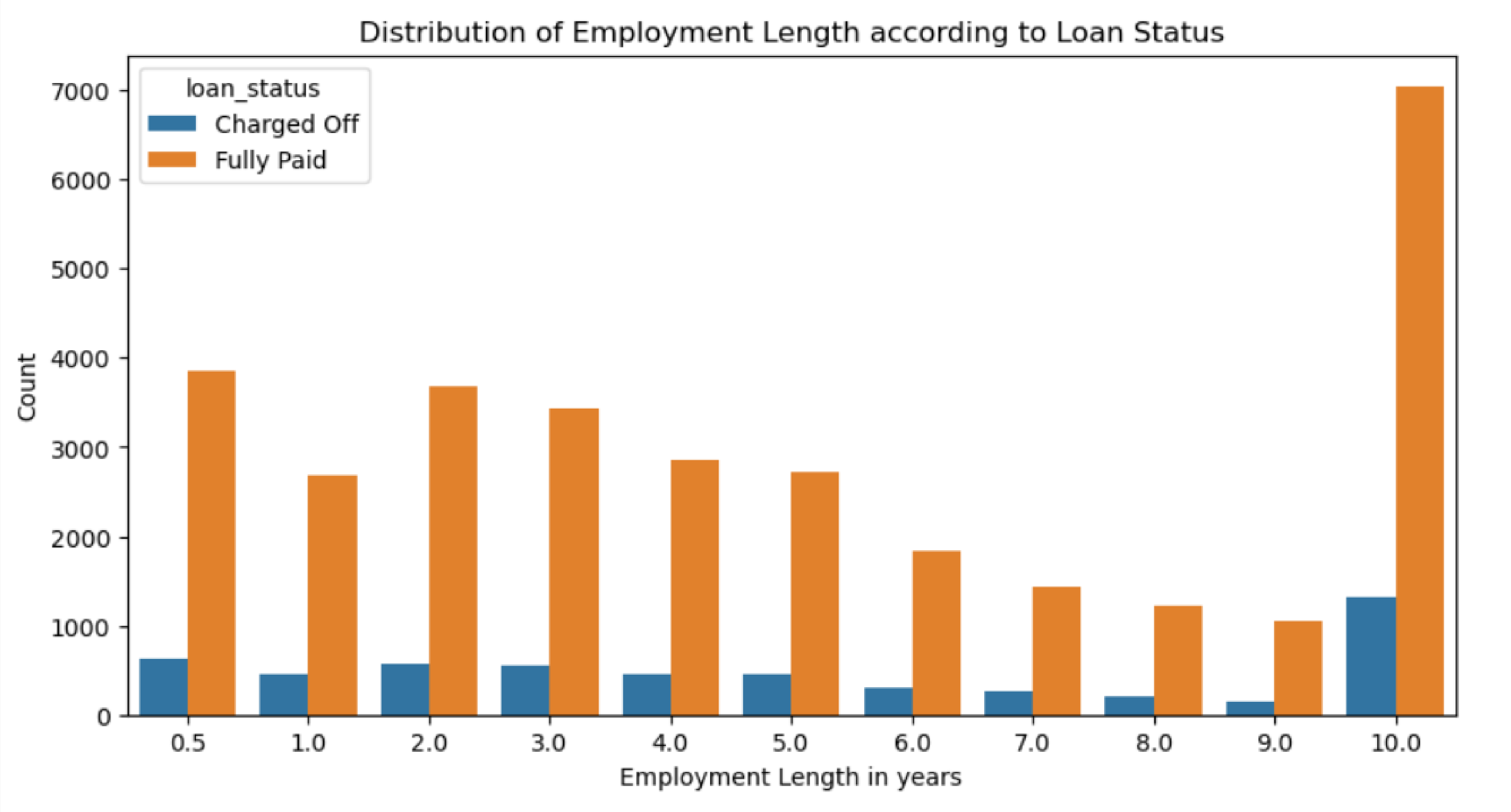
Observations

The default loan amount increases with interest rate at 10 % and shows a decline after 175 % interest rate.



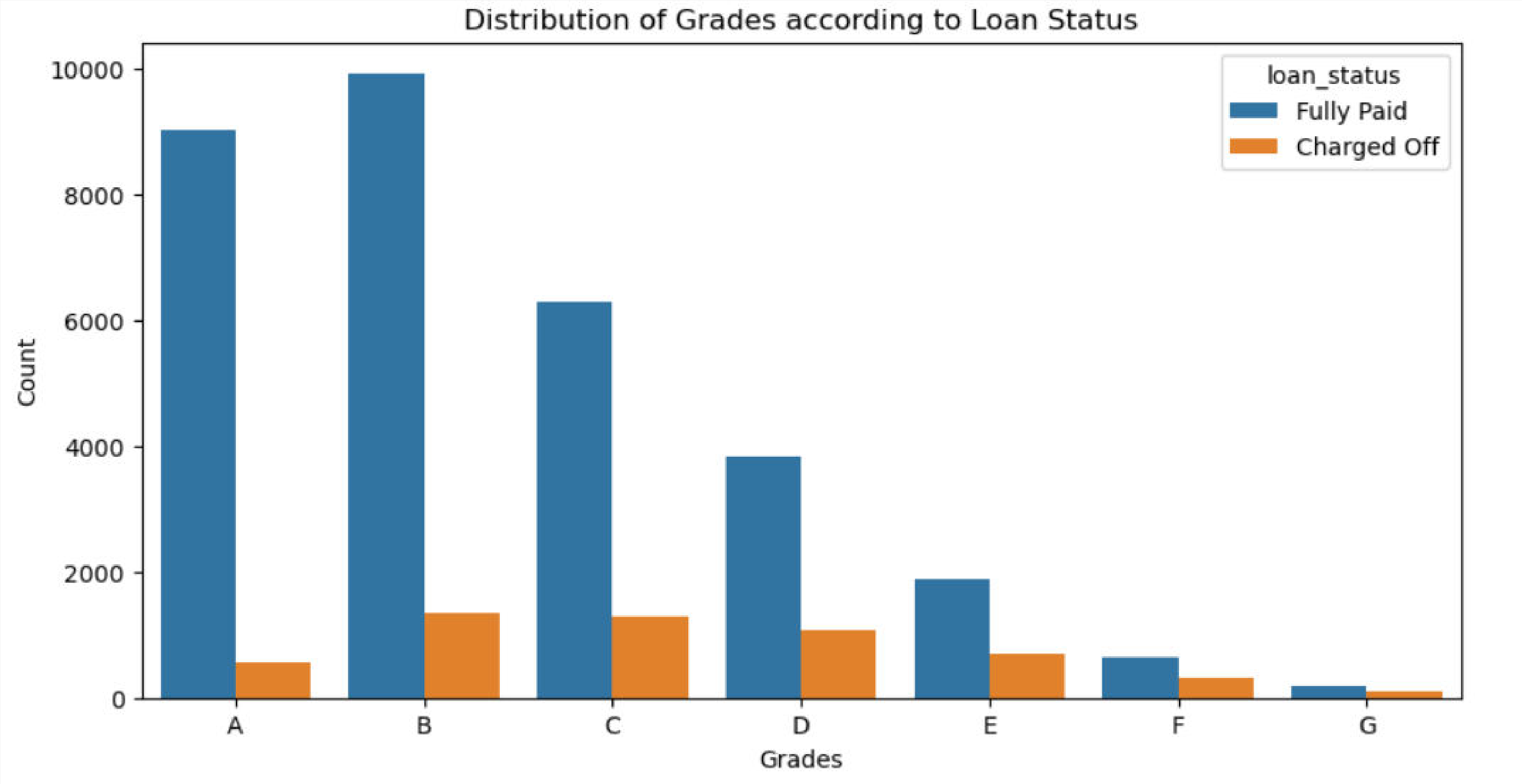
Observations

The Employees with 10+ years of experience are likely to default more but they have a far higher chance of fully paying the loan.



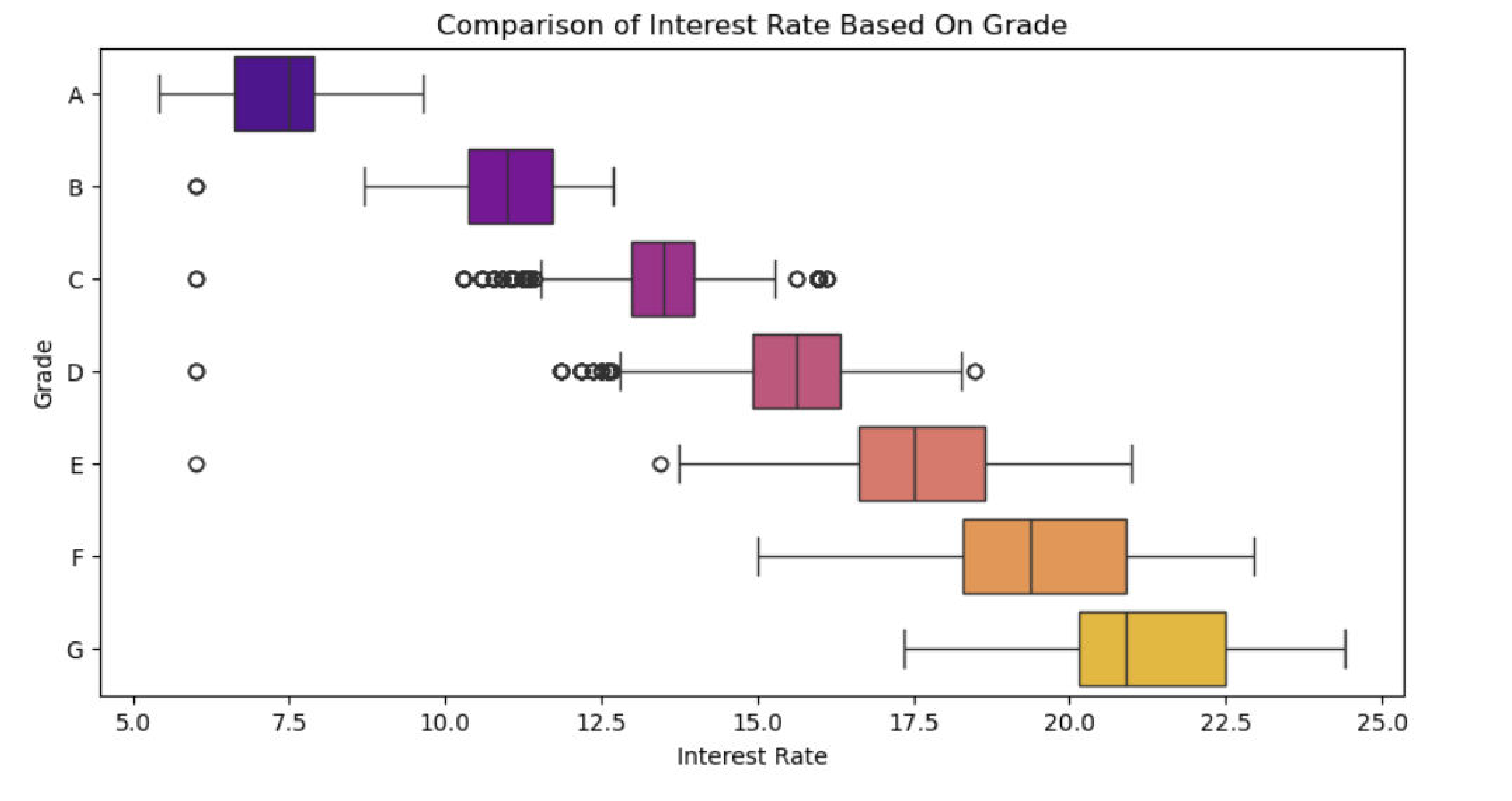
Observations

Most number of fully paid loans are of Grade A and B while the grades D,E,F,G are having most number of defaulted loans.



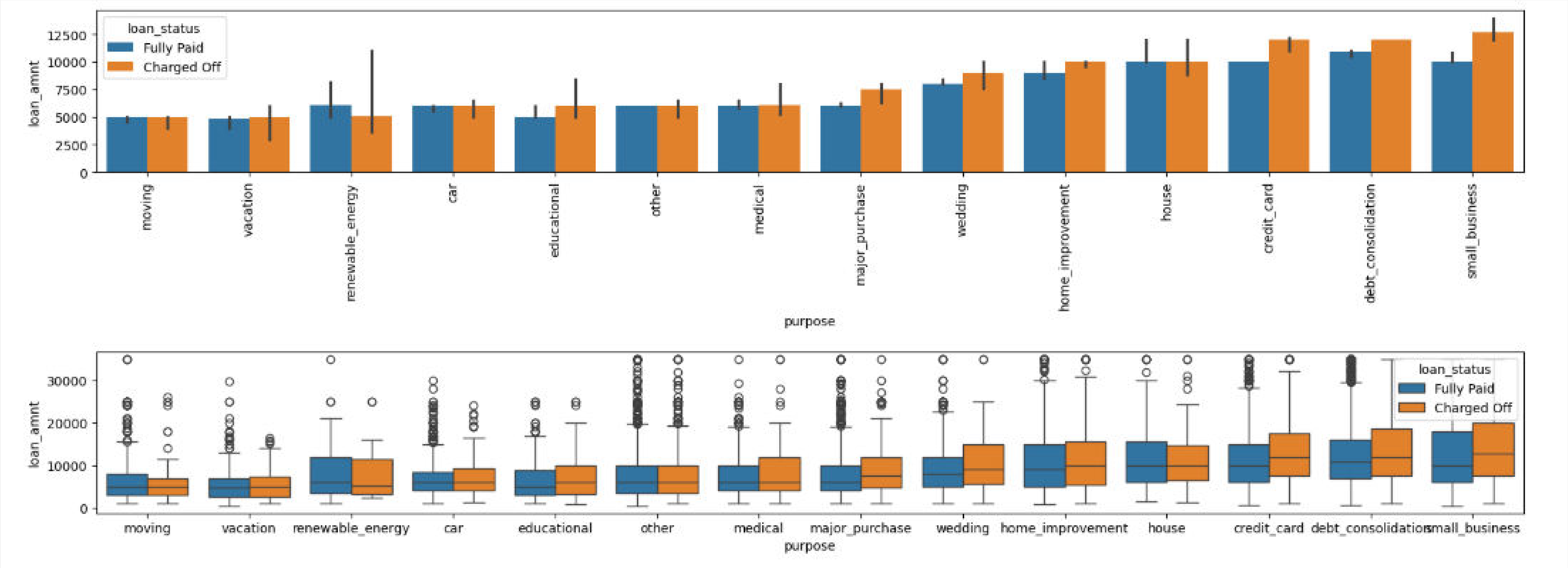
Observations

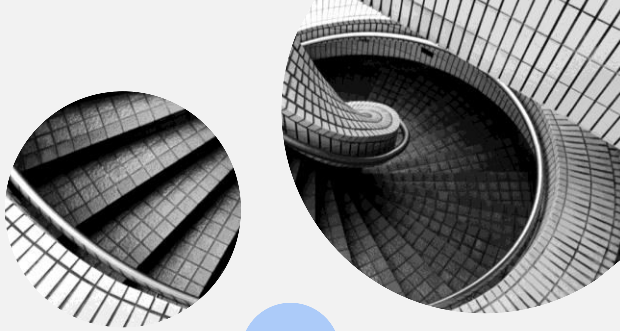
- Borrowers in Grade A receive the lowest and most consistent interest rates, indicating they are likely the most creditworthy.
- Borrowers in Grades F and G receive significantly higher and more varied interest rates, likely due to higher credit risk.
- The trend aligns with the assumption that higher grades are associated with better credit profiles and lower loan risks.



Observations

Smaller Businesses have more default loans and also higher loan amounts.





Driving Factors

These can be used to predict the chance of defaulting and avoiding Credit Loss

- Debt to Income Ratio
- Interest Rate
- Grades
- Verification status
- Annual Income
- Public Record Bankruptcies
- Home Ownership

Conclusion

Likely to repay loan

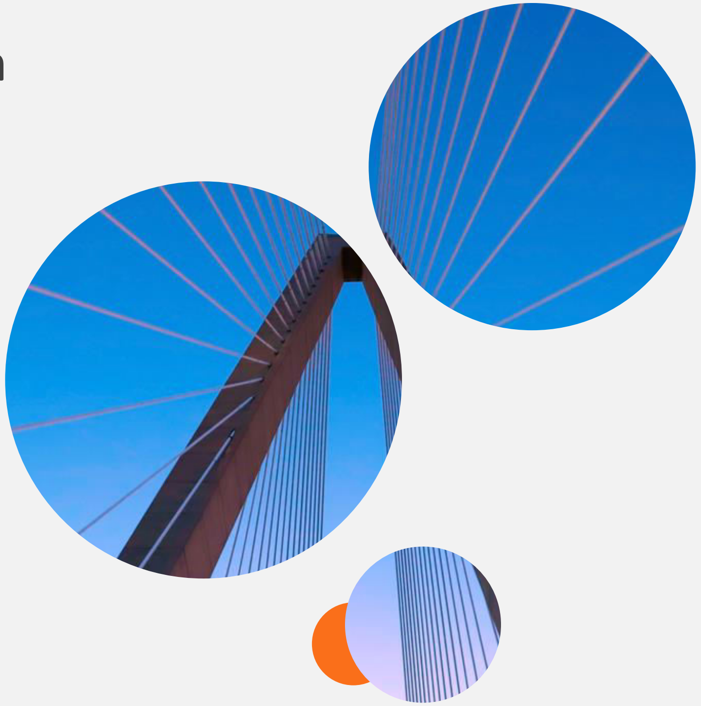
- Borrowers with low debt to income ratio
- Borrowers with no Public Record Bankruptcy
- Borrowers with A or B grades
- Borrowers who took loans on low interest rates
- Borrowers with income greater than 100000
- Loans with verified status
- Borrowers who own the property

Not likely to repay loan

- Borrowers with high debt to income ratio
- Borrowers with Public Record Bankruptcy
- Borrowers with E,F or G grades
- Borrowers who took loans on high interest rates
- Borrowers with income greater than 50000 and less than 100000
- Loans with non verified status
- Borrowers who do not own the property

Recommendations

To reduce credit loss, Lending Club should avoid high-risk applicants with poor credit grades, high debt-to-income ratios, bankruptcy history, or non-verified loans. Focus on low-risk borrowers with strong financial profiles, such as high incomes, property ownership, and good credit. For moderate-risk applicants, apply stricter terms like higher interest rates or smaller loans to mitigate potential defaults.



Thankyou

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