Lending Club Case Study

Abstract

- Lending club is the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures.
- Borrowers can easily access lower interest rate loans through a fast online interface.
- The objective of analysis is to use the information about past loan applicants and find whether they ‘defaulted’ or not.

Problem solving methodology

Data Cleaning

Removing the null valued columns, unnecessary variables and checking the null value percentage and removing the respective rows.

Data Understanding

Working with the Data Dictionary and getting knowledge of all the columns and their domain specific uses

Univariate Analysis

Analysing each column, plotting the distributions of each column.

Segmented Univariate Analysis

Analysing the continuous data columns with respect to the categorical column

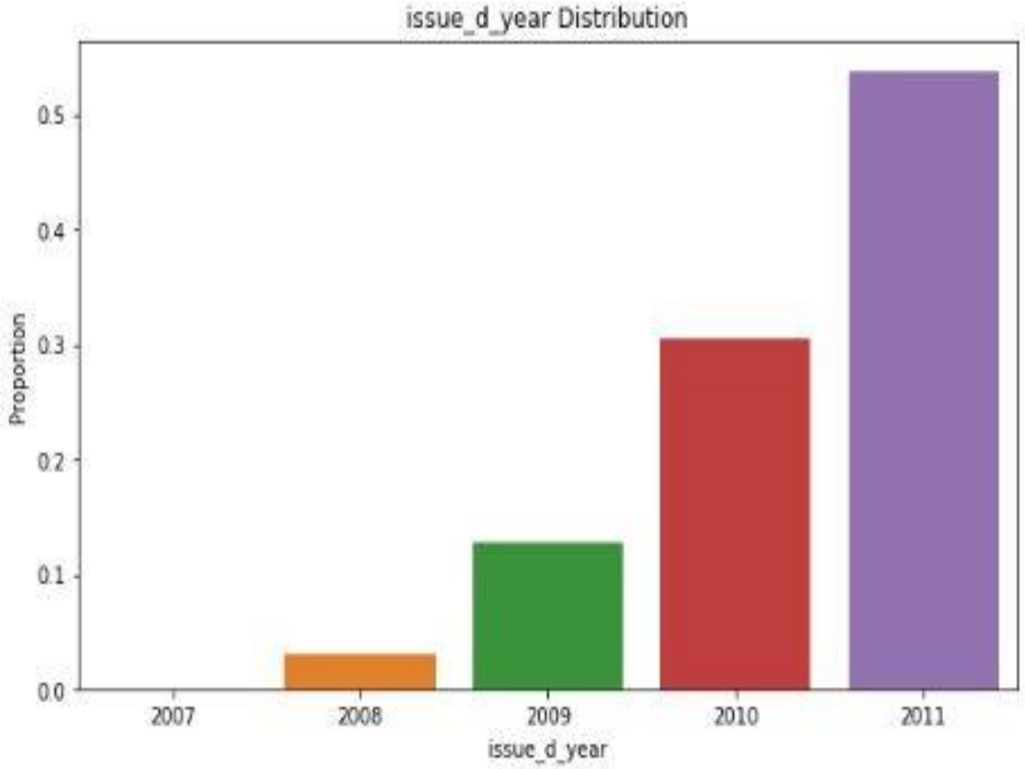
Bivariate Analysis

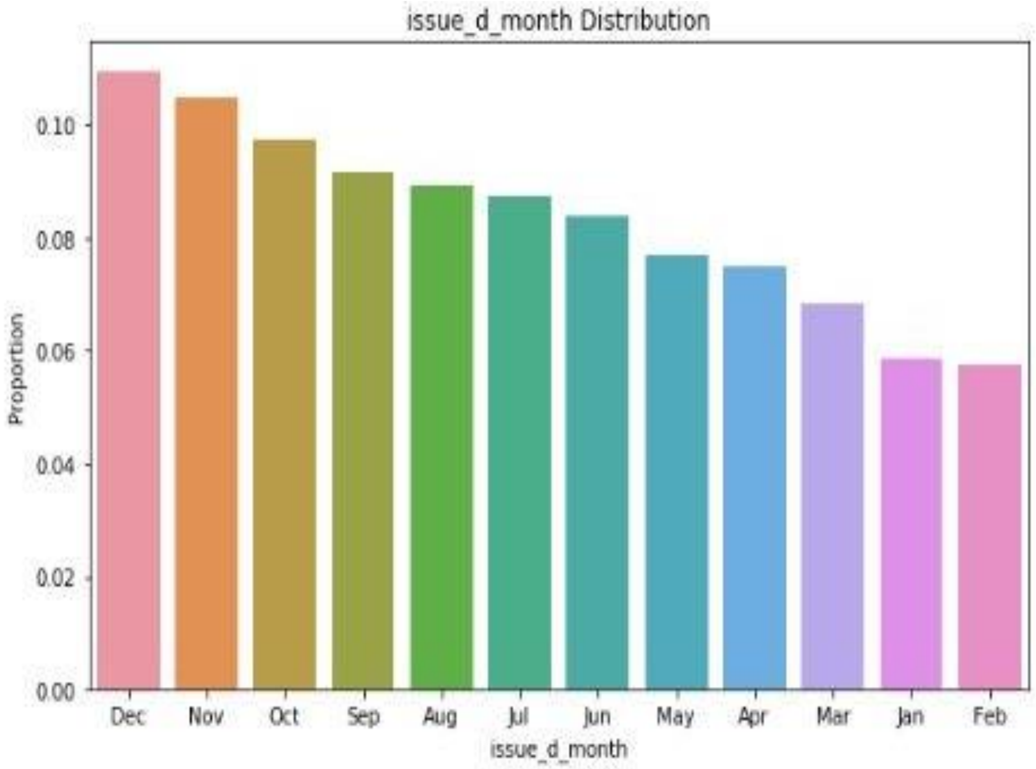
Analysing the two variable behaviour like term and loan status with respect to loan amount.

Recommendations

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

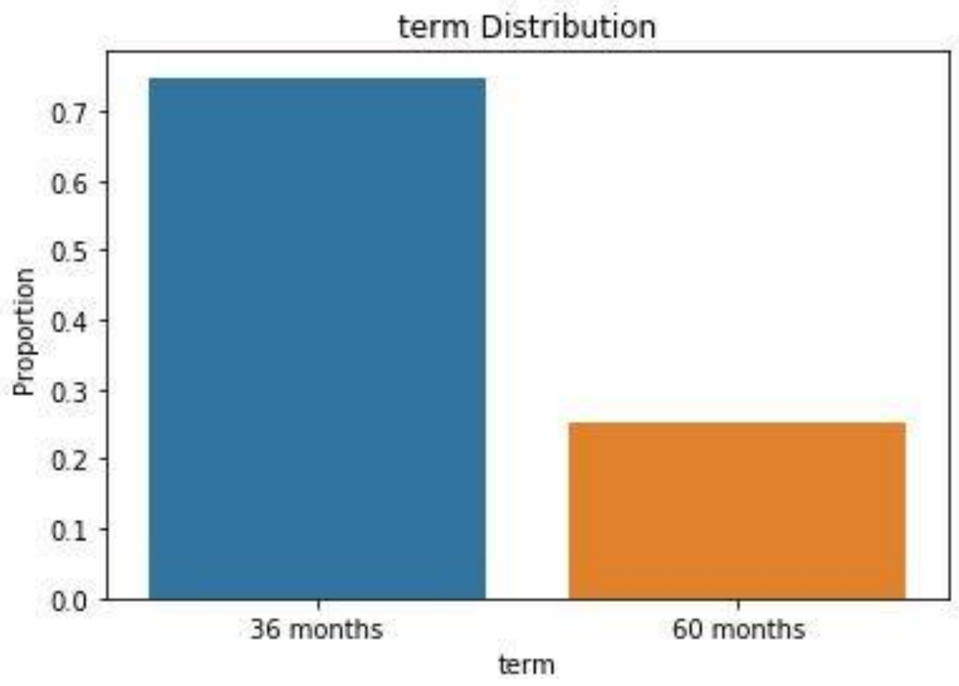
Analysis

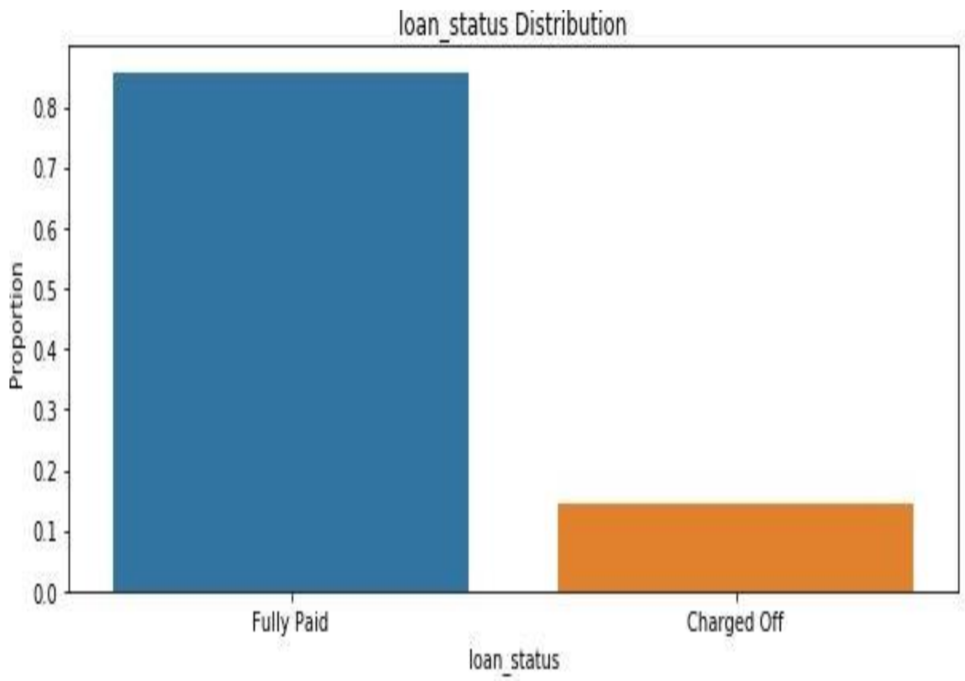




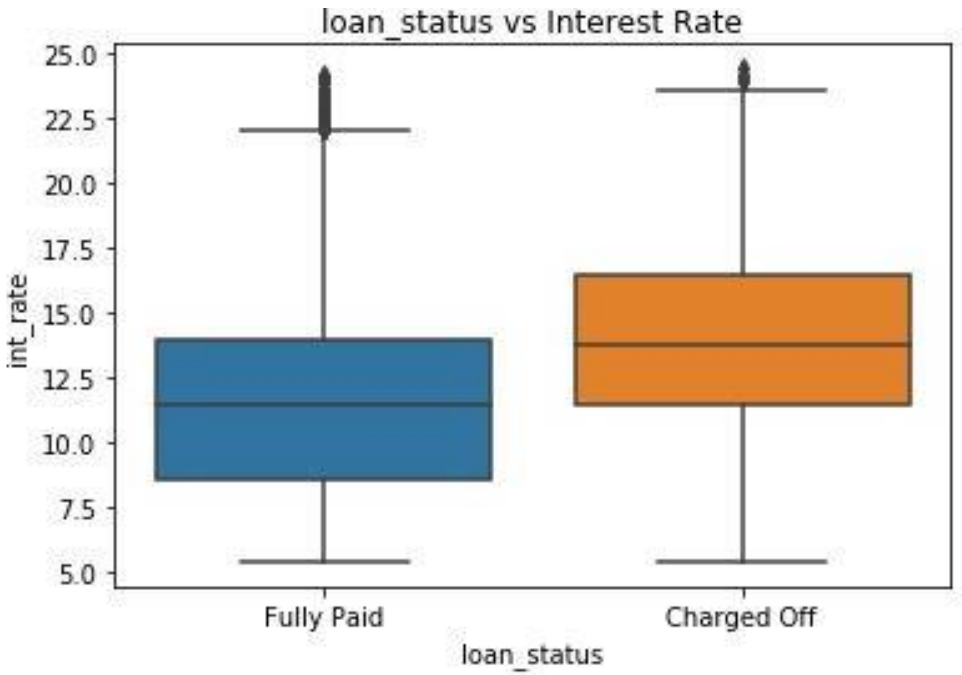
1. Lending Club has seen substantial year-over-year expansion, with the volume of loans issued doubling annually.
2. Loan issuance spans the entire calendar year, with a gradual increase observed from January to December. There is a significant uptick in loan issuance during the final quarter of the year, likely influenced by holiday-related spending such as vacations and Christmas.

Analysis



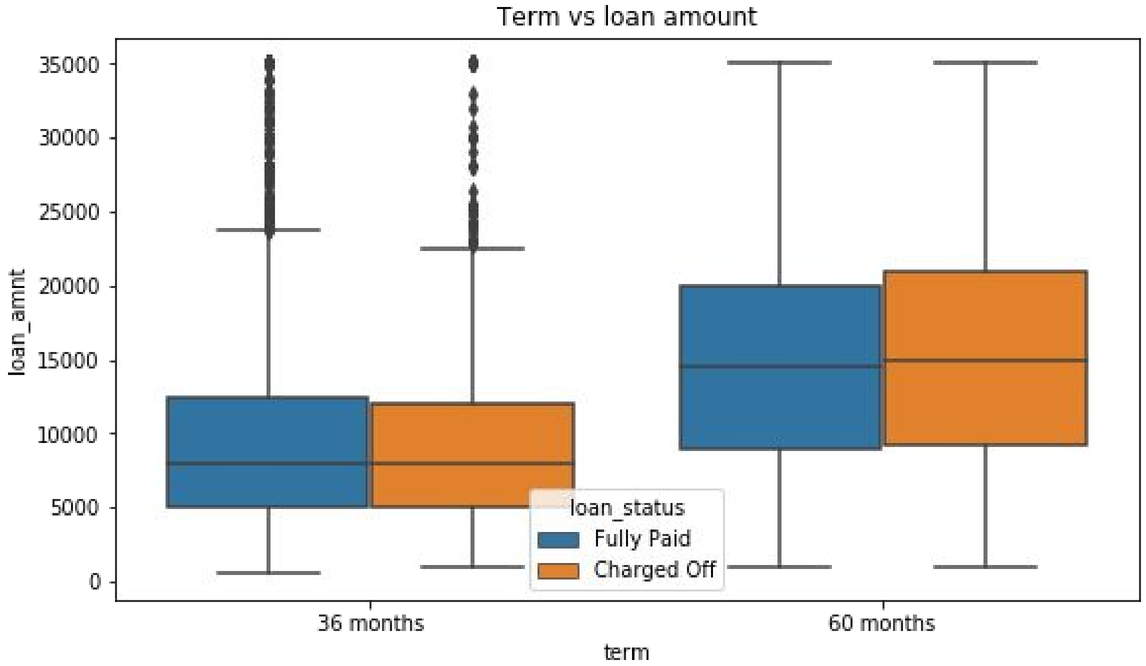


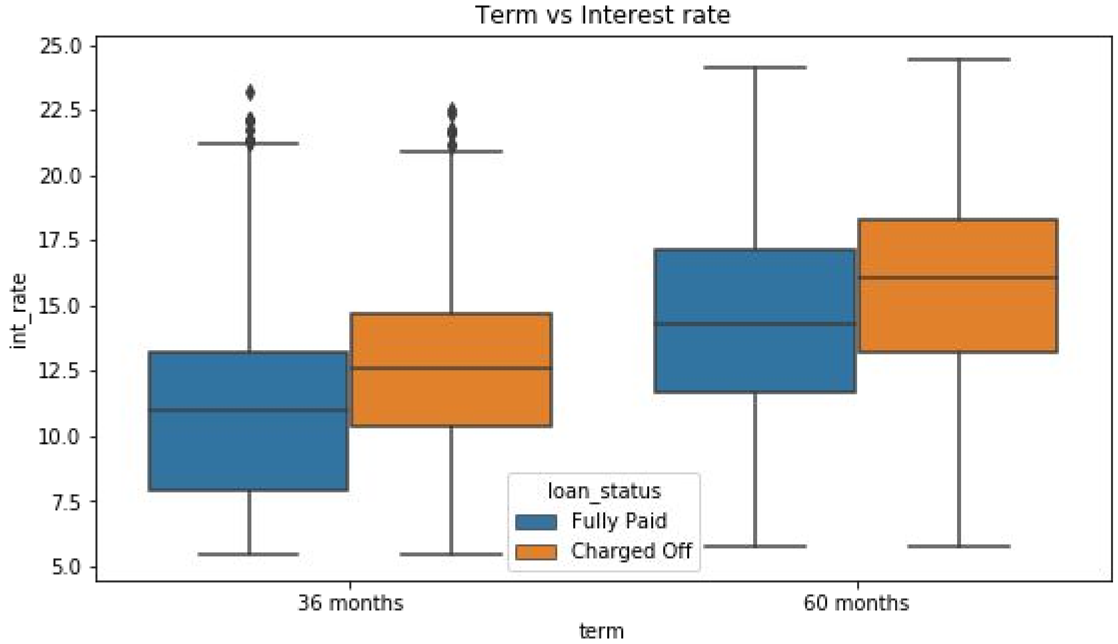
1. Only two loan terms are available: 36 months and 60 months.
2. 2. Approximately 75% of borrowers opt for the 36-month term.
3. 3. Within the dataset, around 15% of borrowers are classified as charged off, while approximately 85% are marked as fully paid.

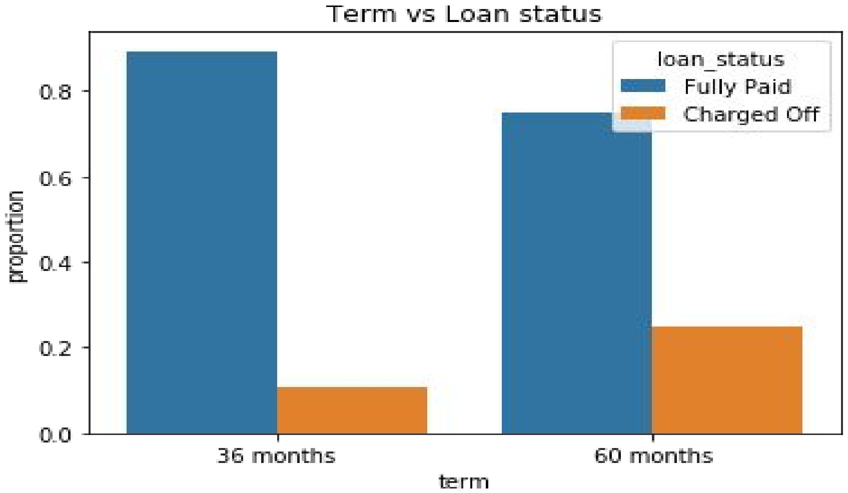


loan interest rate is positively correlated loan getting defaulted.

Analysis

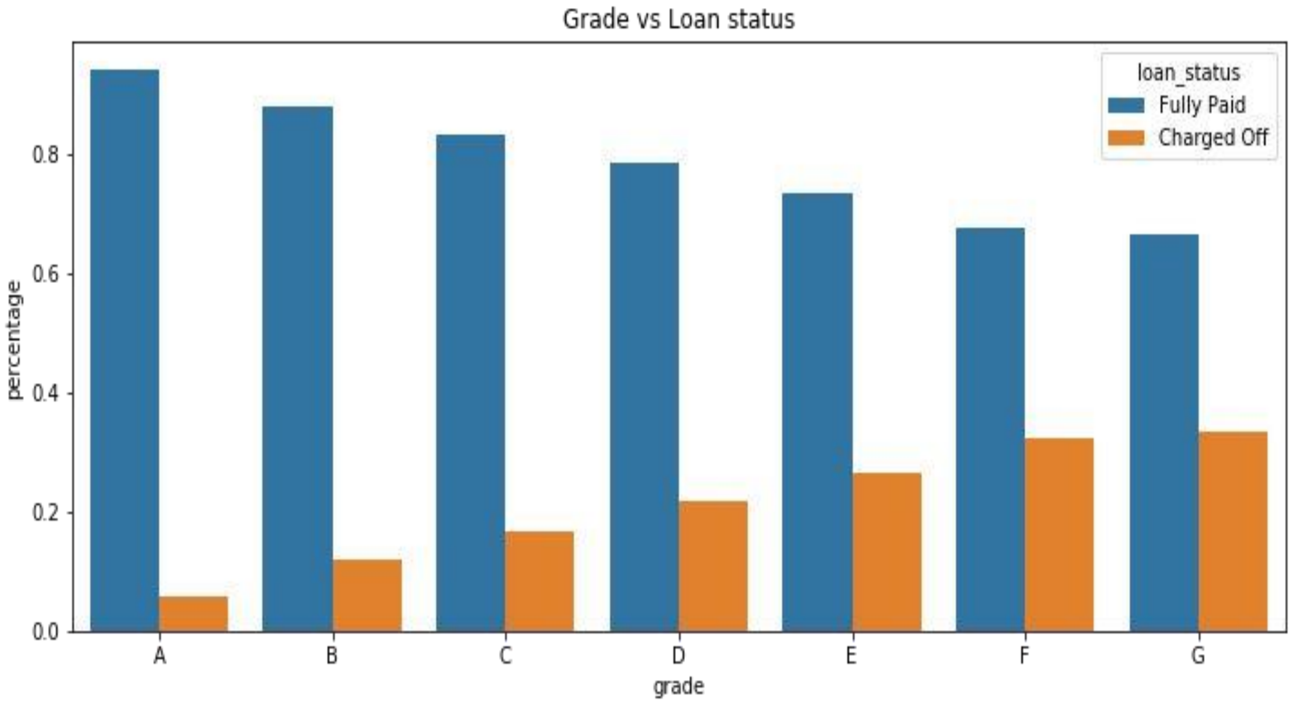


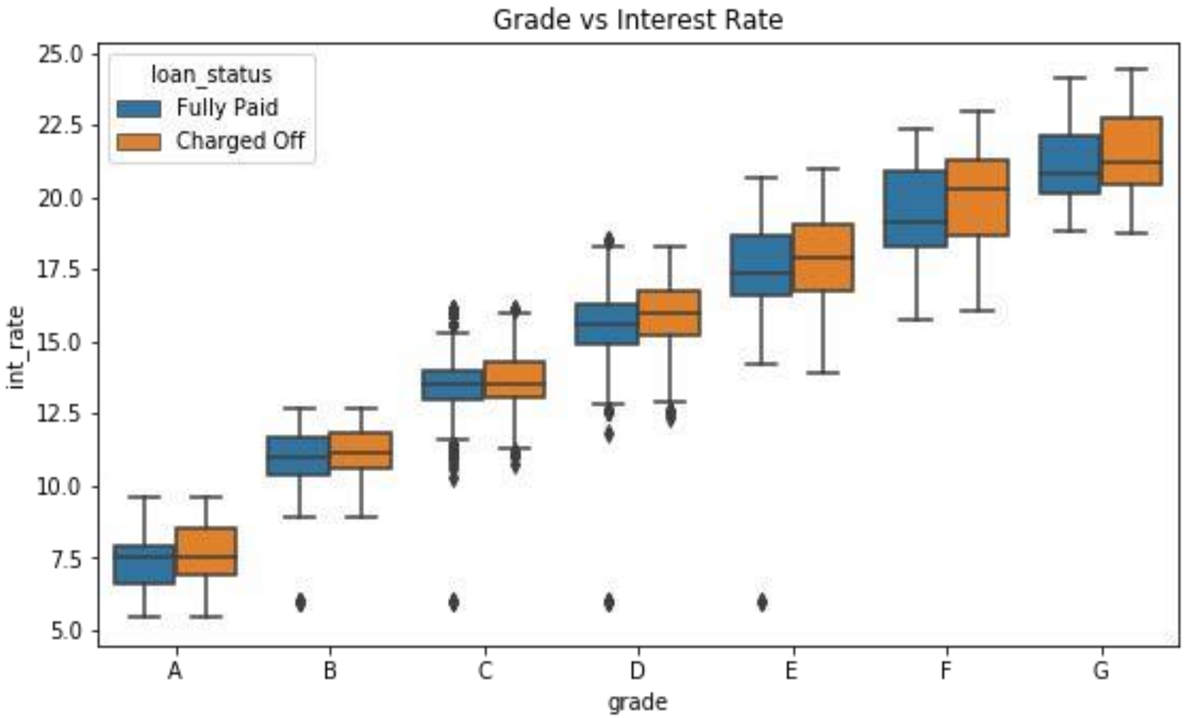




The high default rate in the 60-month tenure can be attributed to the fact that many individuals took out loans with high loan amounts and consequently, high-interest rates. This made it challenging for them to repay the borrowed sum to the bank.

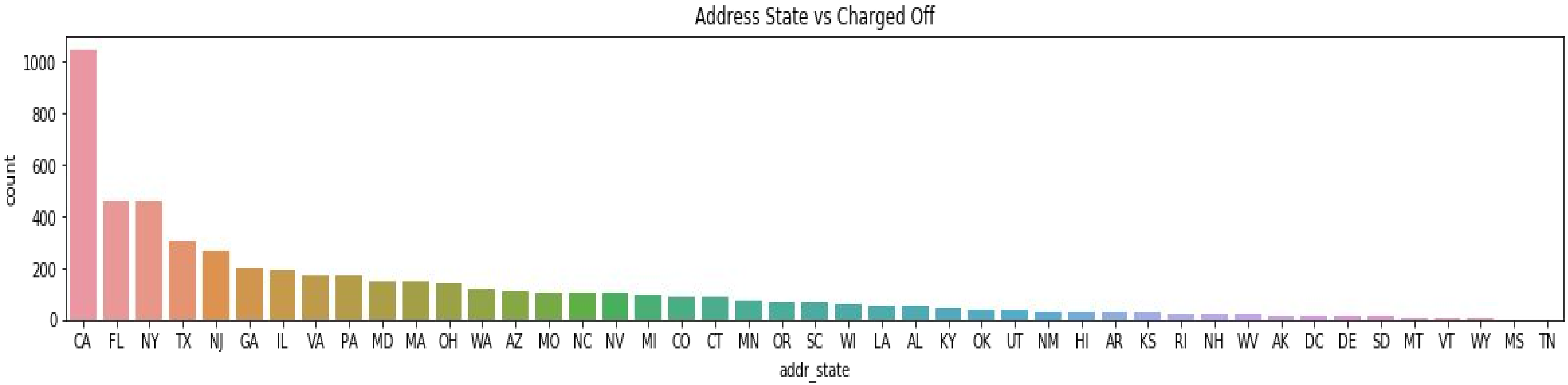
Analysis





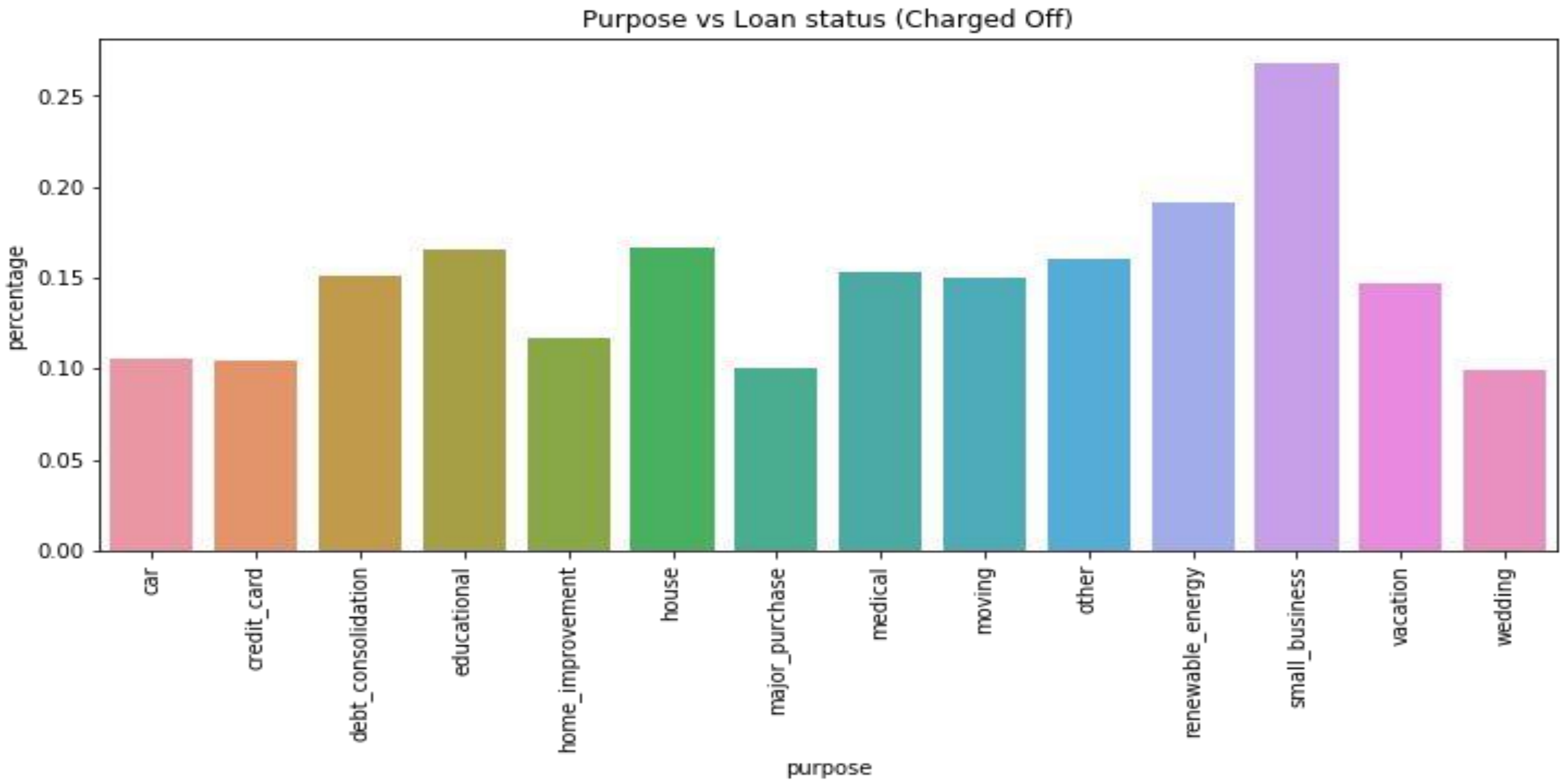
Grades serve as an effective indicator of a borrower's likelihood to default on a loan. Lower grades (E, F, G) are associated with higher chances of default compared to higher grades (A, B). Additionally, lower-grade borrowers often receive loans with higher interest rates, which could contribute to the increased likelihood of loan default.

Analysis



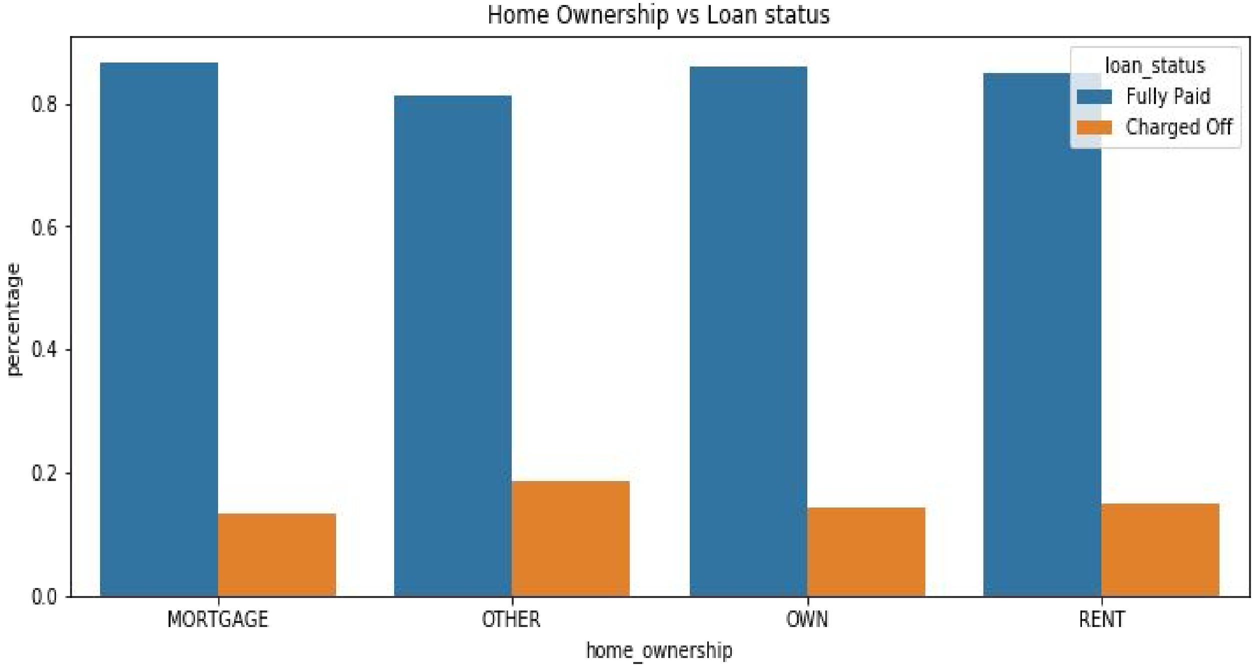
Loans provided to borrowers from California (CA), Florida (FL), and Texas (TX) states have a higher default rate compared to those from other states.

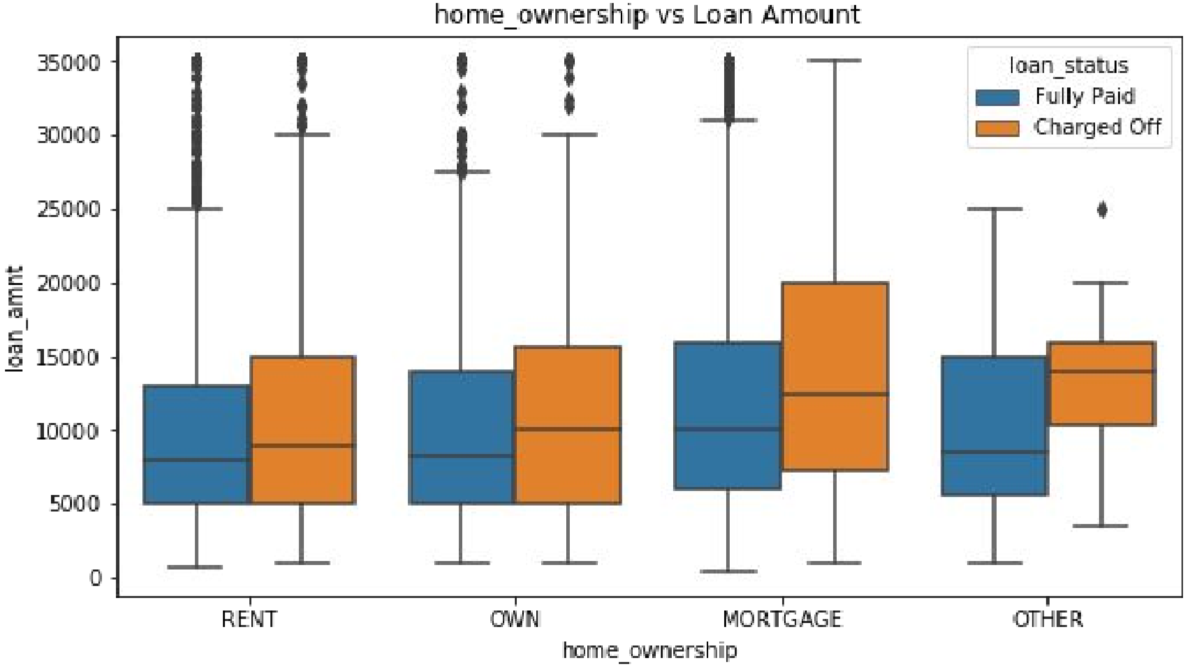
Analysis



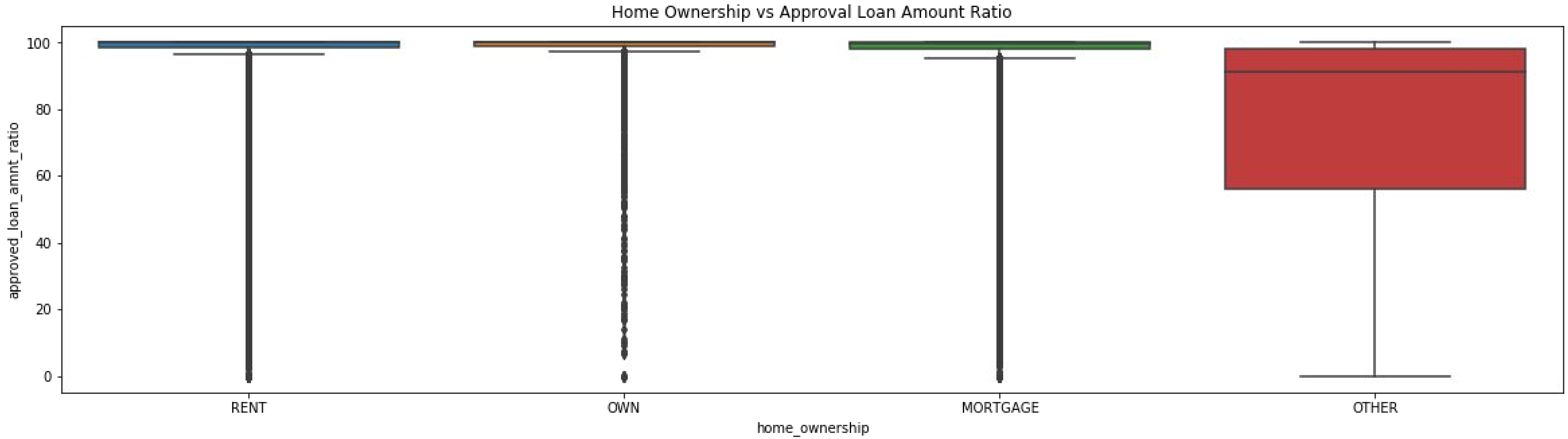
Borrowers who took loans for small businesses have more defaults.

Analysis





In each home ownership category, there is approximately a 20% chance of loan default. The second plot indicates that individuals with higher loan amounts in the mortgage home ownership category have a higher default rate compared to other categories.



The funded amount by investors is lower than the requested loan amount by borrowers for the "Other" home ownership category.

Conclusions

1. Lending Club ought to decrease the availability of high-interest loans with a 60-month tenure as they are susceptible to default.
2. Grades serve as a valuable metric for identifying potential defaulters. Lending Club should scrutinize additional borrower information, particularly for those with low grades (G to A), before approving loans.
3. To maximize profits, Lending Club should regulate the issuance of loans to borrowers from California (CA), Florida (FL), and New York (NY).
4. Small business loans exhibit a higher default rate. Lending Club should either cease or reduce the issuance of loans to small businesses.
5. Borrowers with mortgage home ownership tend to request higher loan amounts and default on approved loans. Lending Club should refrain from granting loans to this category when the requested loan amount exceeds $12,000.
6. Individuals with a greater number of public derogatory records are more likely to file for bankruptcy. Lending Club should ensure that borrowers have no public derogatory records on file.