Lending Club Case Study

Group Members:

Abhishek Das

Abhilash Awasthi

Overview

Largest Online Loan Marketplace

- Facilitates personal, business loans, and medical procedure financing
- Provides borrowers with easy access to lower interest rates through a fast online platform.

Challenge of Credit Loss

- Lending to 'risky' applicants leads to significant financial losses.
- Credit loss occurs when borrowers default, resulting in 'charged-off' loans.

Objective

- Identify risky loan applicants using Exploratory Data Analysis (EDA) to minimize credit loss.
- Understand key factors that predict loan default for better portfolio and risk assessment.

Importance of Risk Analytics

- Helps in identifying strong indicators of default.
- Enhances decision-making for lending strategies and risk management.

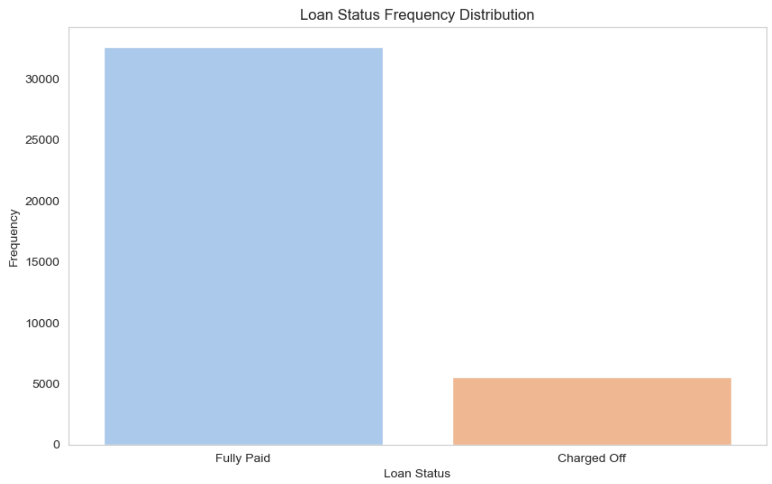
Business Understanding

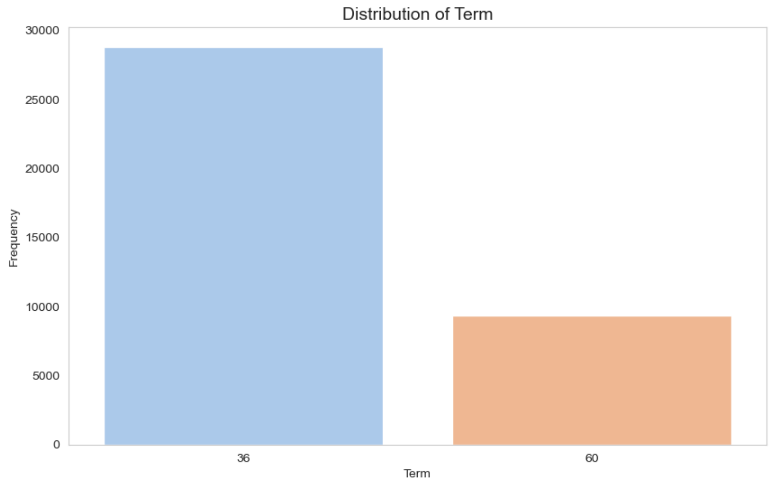
- This case study involves analysing loan data to identify key factors that influence loan default. The goal is to provide insights into borrower behaviour and improve loan approval processes by understanding the factors that contribute to loan repayment or default.

EDA Methodology

Data Understanding → Data Cleaning → Univariate Analysis → Segmented Univariate Analysis → Bivariate Analysis → Conclusions

Univariate Analysis

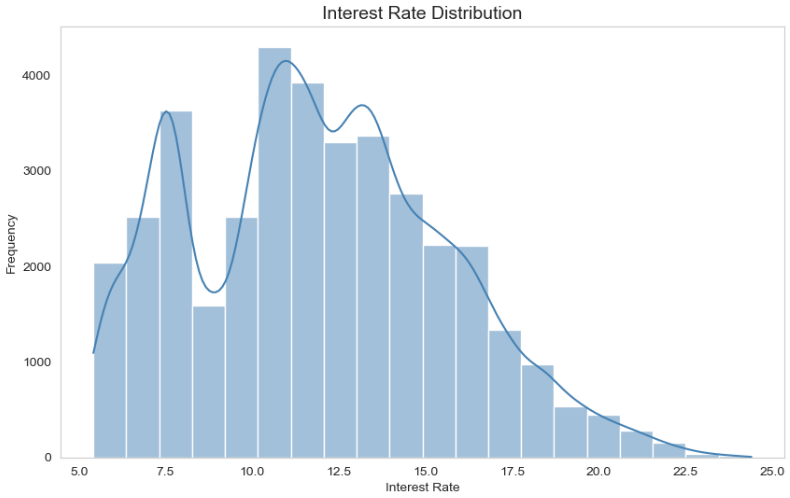




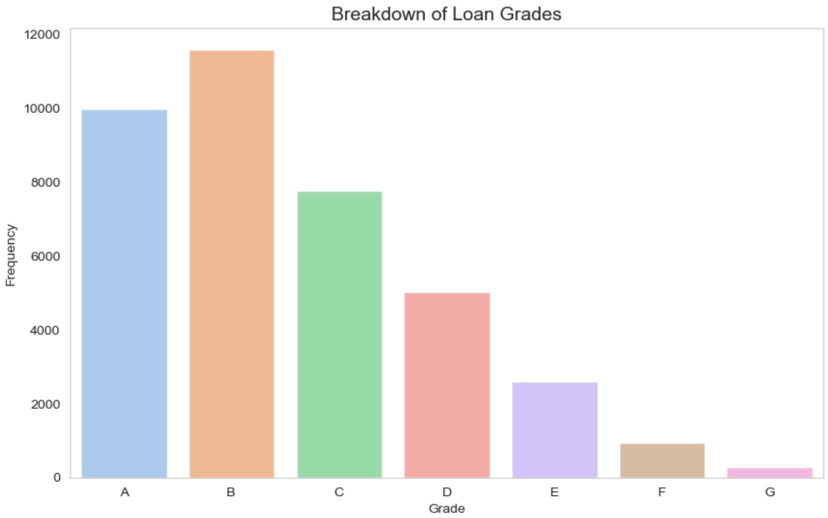
- Loans that defaulted are fewer in number compared to those that were fully paid.

- More loans were taken for 36 months compared to 60 months.

Univariate Analysis

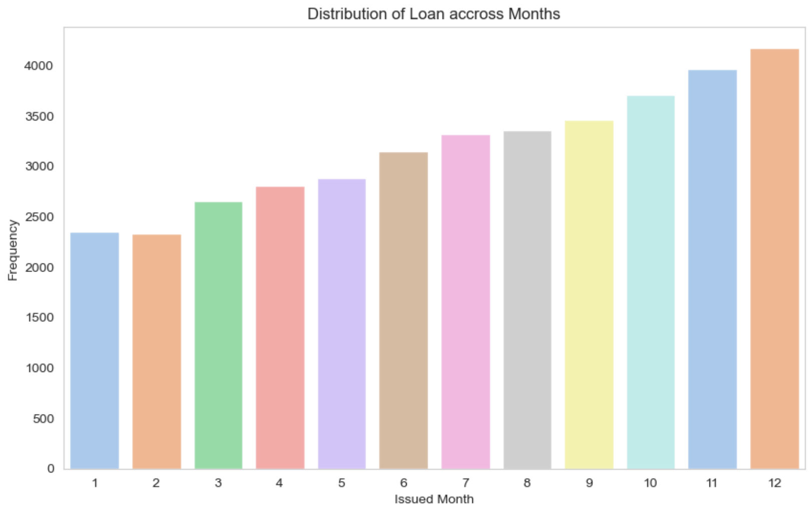


- The interest rates are most concentrated around 8%, with another peak between 10% and 15%.

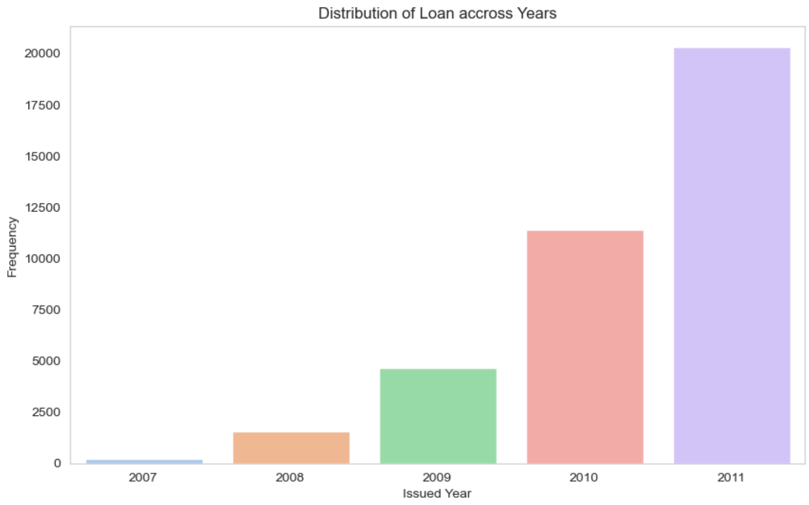


- A significant portion of loans are graded 'A' and 'B', indicating that most loans are of high quality compared to the others.

Univariate Analysis

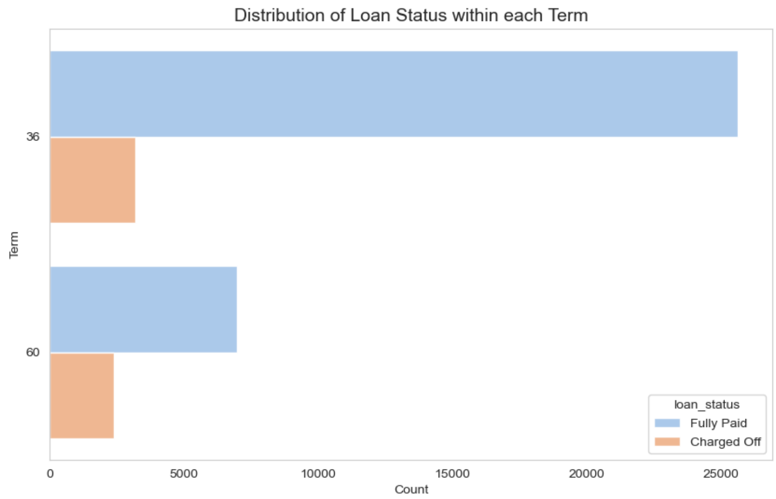


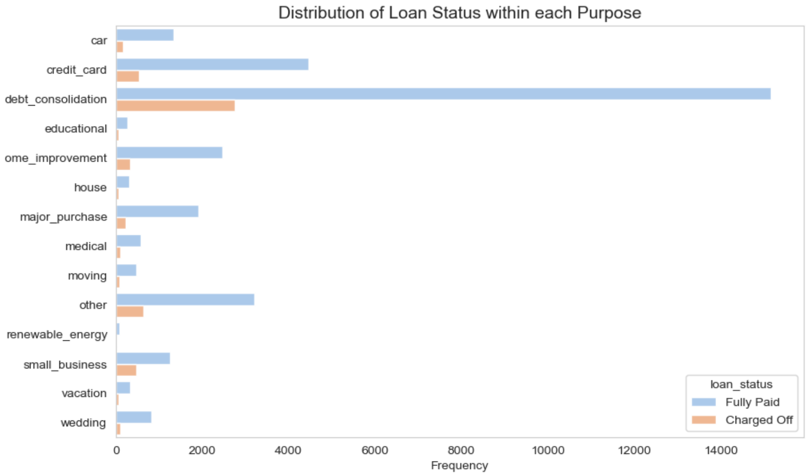
- Majority of the loans are given in last 6 months of the year.



- The number of loans approved has been increasing at an exponential rate over time, indicating that the loan approval rate is rising steadily.

Segmented Univariate Analysis

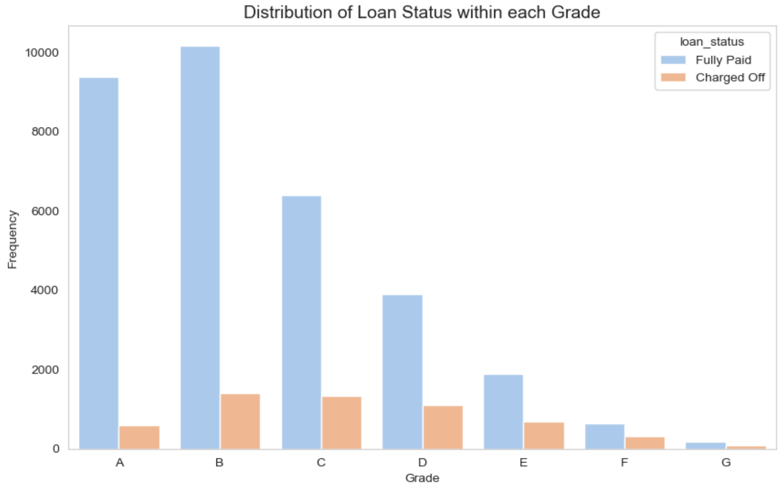


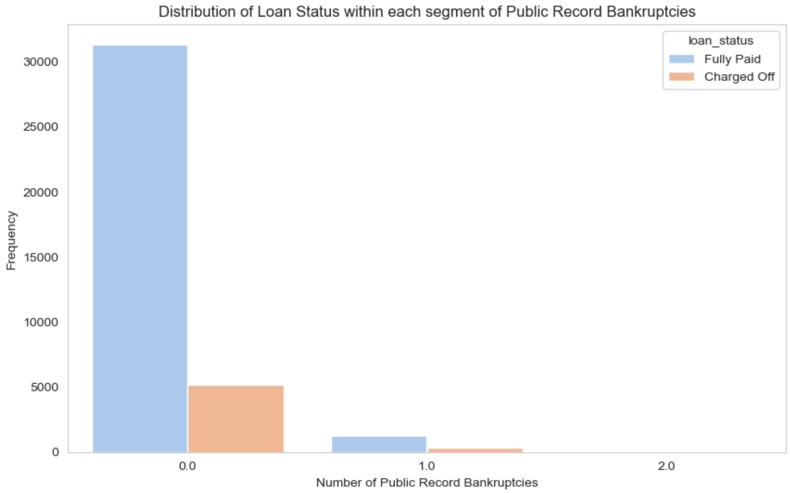


- 25% of borrowers default on loans with a term of 60 months, compared to only 11% for loans with a term of 36 months. This indicates that a longer loan term is associated with a higher likelihood of default.

- Loan purpose like small business has higher default rates compared to other purposes, indicating that loans for this purpose is more likely to end in default.

Segmented Univariate Analysis

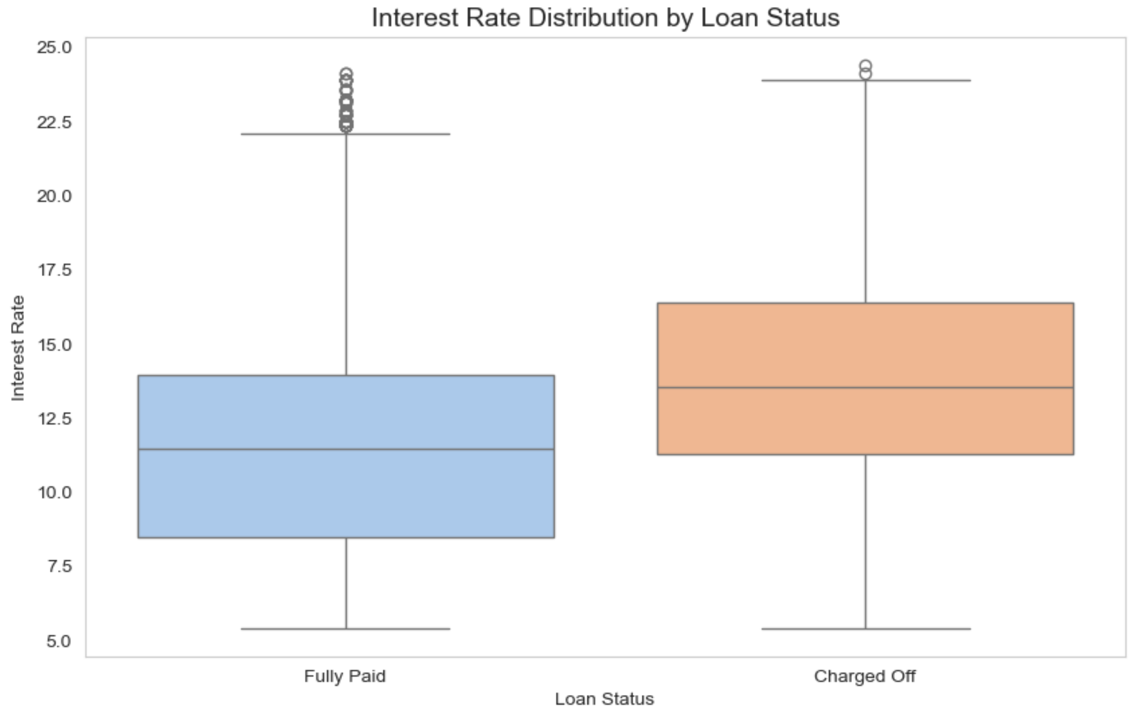




- As the grade decreases from A to G, the likelihood of a loan being charged off increases, while the likelihood of it being fully paid decreases.
- Borrowers with a public record of bankruptcies have a higher likelihood of defaulting.

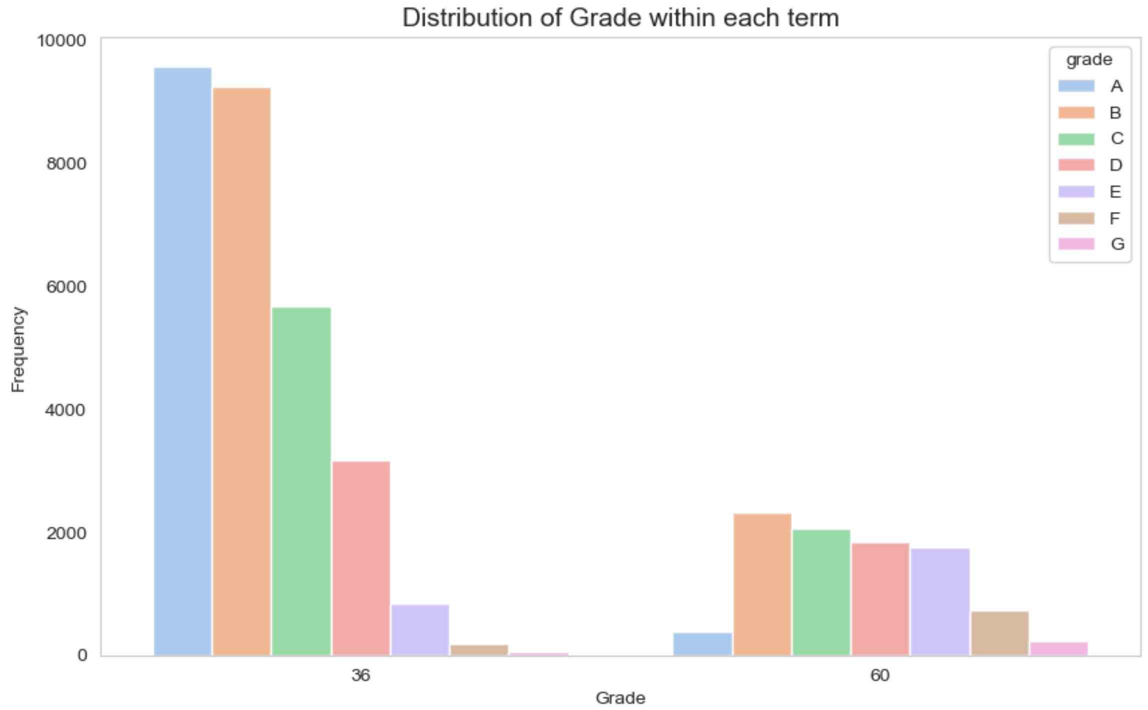
Bivariate Analysis

- Median of interest rate is higher for Charged Off. It indicates that loans with higher interest rates are more likely to default.



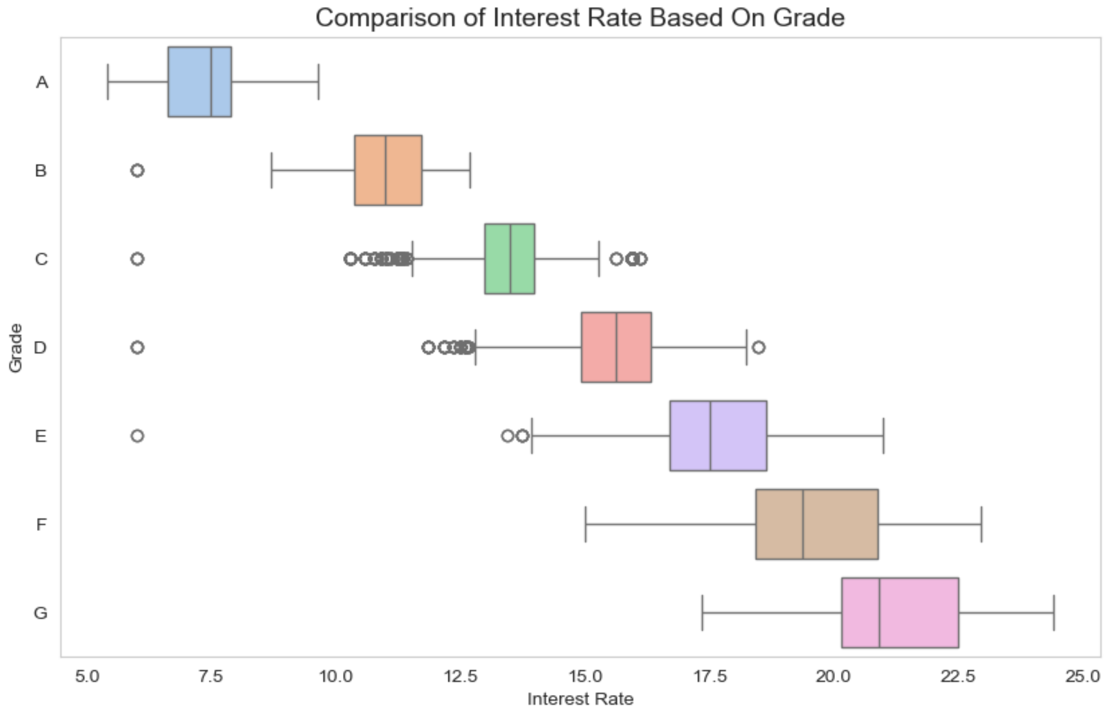
Bivariate Analysis

- Higher-grade loans are more prevalent in shorter terms, while lower-grade loans are more common in longer terms, suggesting that lower-grade borrowers are often given longer terms.



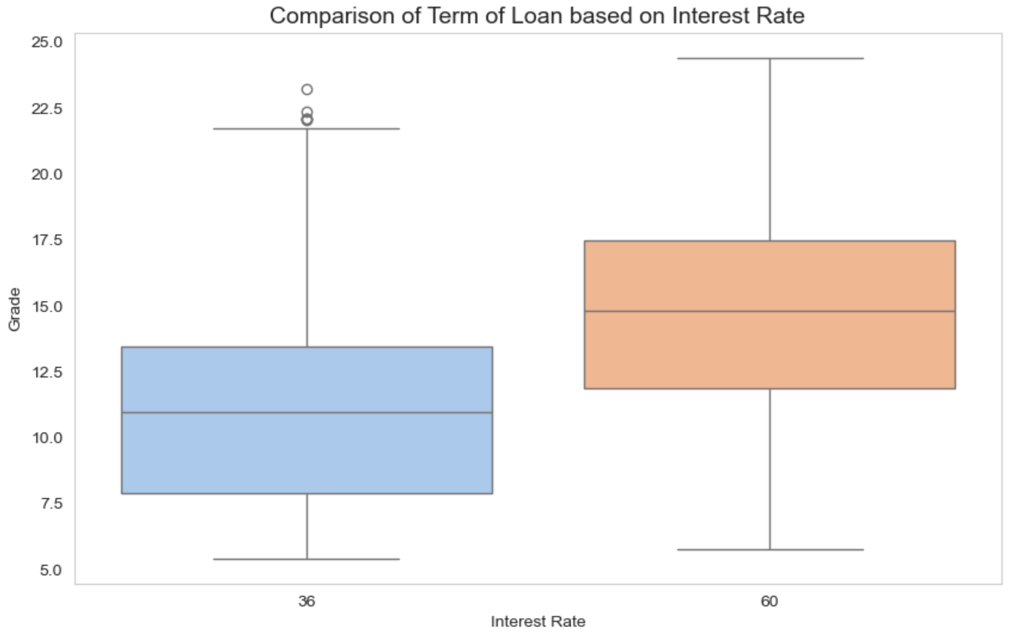
Bivariate Analysis

- Higher-grade loans are considered riskier, which leads to increased interest rates.



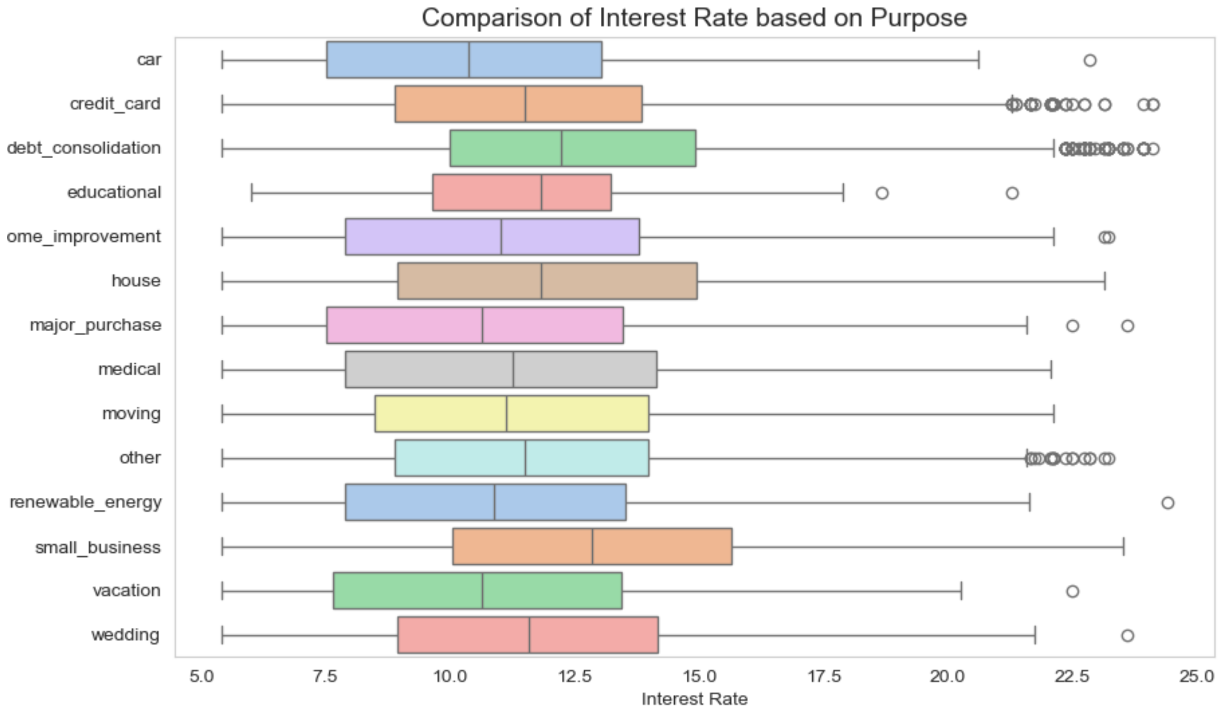
Bivariate Analysis

- The average interest rate is higher for 60-month loans, and most long-term loans are issued at higher interest rates. Higher-grade loans are more prevalent in shorter terms, while lower-grade loans are more common in longer terms, suggesting that lower-grade borrowers are often given longer terms.



Bivariate Analysis

- The median and 75th percentile values of loans are highest for small business purposes, followed by debt consolidation and credit card loans.



Conclusions

- The following factors are critical in predicting the likelihood of loan default and mitigating potential losses:
  - Loans with shorter terms (36 months) tend to have a higher likelihood of being fully paid compared to longer-term loans (60 months).
  - Borrowers with lower grades (e.g., D, E, F, G) have a higher chance of defaulting on their loans compared to those with higher grades (A, B).
  - Interest rates above 15% are correlated with a higher probability of loan default.
  - Public Records of Bankruptcies and Purpose are significant indicators of loan repayment behavior.