

Lending Club Case Study

Presented by
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Problem Statement

- * Lending loans to 'risky' applicants is the largest source of financial loss.
- * If one is able to identify these risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss.
- * Aim of this case study is to understand the driving factors(attributes) behind loan default by analysing past data of Loans. We can utilise this knowledge for portfolio and risk assessment.
- * The data given for analysis is the complete loan data for all loans issued through the time period 2007 to 2011 and it contains information about past loan applicants and whether they 'defaulted' or not.

Analysis Approach

- * The loan data has a record for each loan and each record has attributes. The attributes can be broadly classified as consumer attributes and loan attributes.
- * We studied the data attributes and chose only certain attributes which will be useful for our further analysis.
- * We analysed individual attributes and found useful info about the attributes.
- * One of the attributes 'Loan Status' is our target attribute which tells us whether the loan has defaulted or not.
- * Using Exploratory Data Analytics(EDA) techniques we will analyse and find which consumer/loan attributes influence the 'Loan Status' (Default Rate) and how much impact does it have on Default Rate.
- * Finally we will identify which of these attributes are strong indicators of loan default .

Analysis Approach

We have identified the following attributes which influence the 'Default Rate'

- Loan Amount
- Loan Term (24/36 Months)
- Interest Rate
- Instalment (Monthly Instalment)
- Grade (LC assigned loan grade)
- Employment Length (Applicant employed years)
- Home Ownership (Own/Rent/Mortgage/Other)
- Annual Income (Applicants annual income)
- Verification Status (Whether Income Source was verified)
- Issued Month (Month/Year Loan was issued)
- Purpose (Loan Category)
- DTI (Debt to Income ratio)
- Public Record (Applicants Number of derogatory public records)

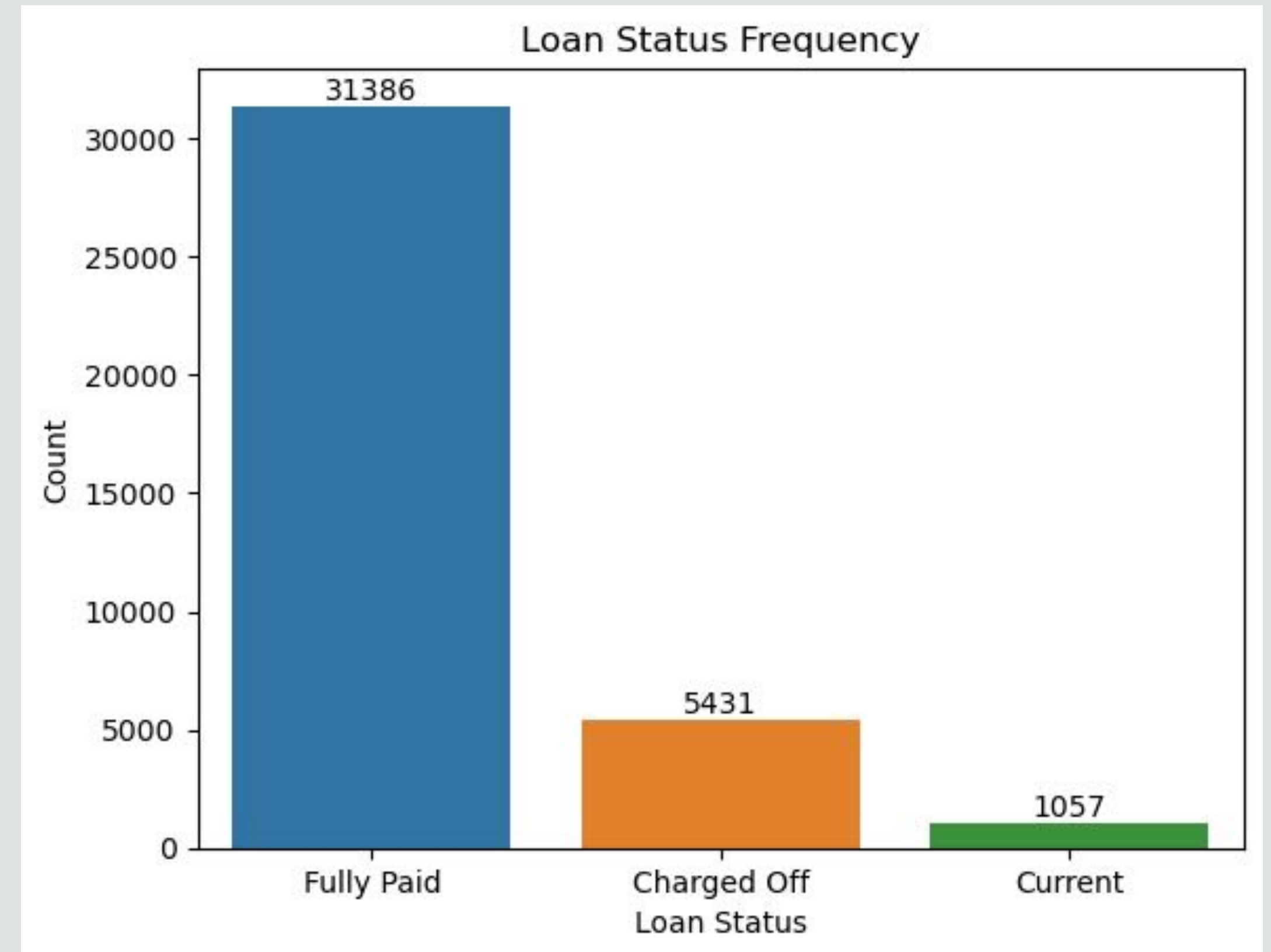
Analysis Approach

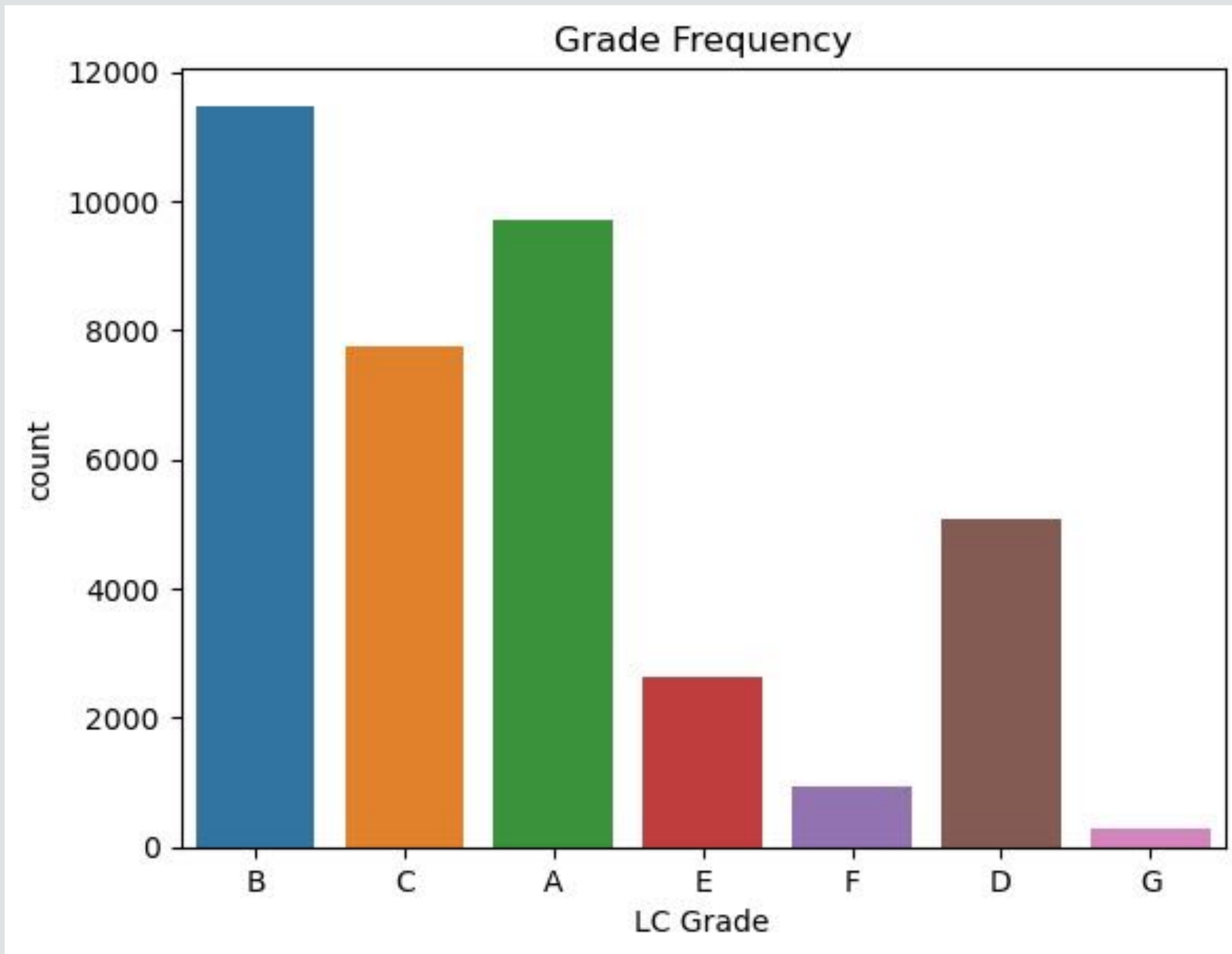
- * We will analyse some attributes individually and then see what influence each one separately has on the Default rate.
- * We will also Analyse influence on Default rate in context of more than one attributes.

Analysis Approach

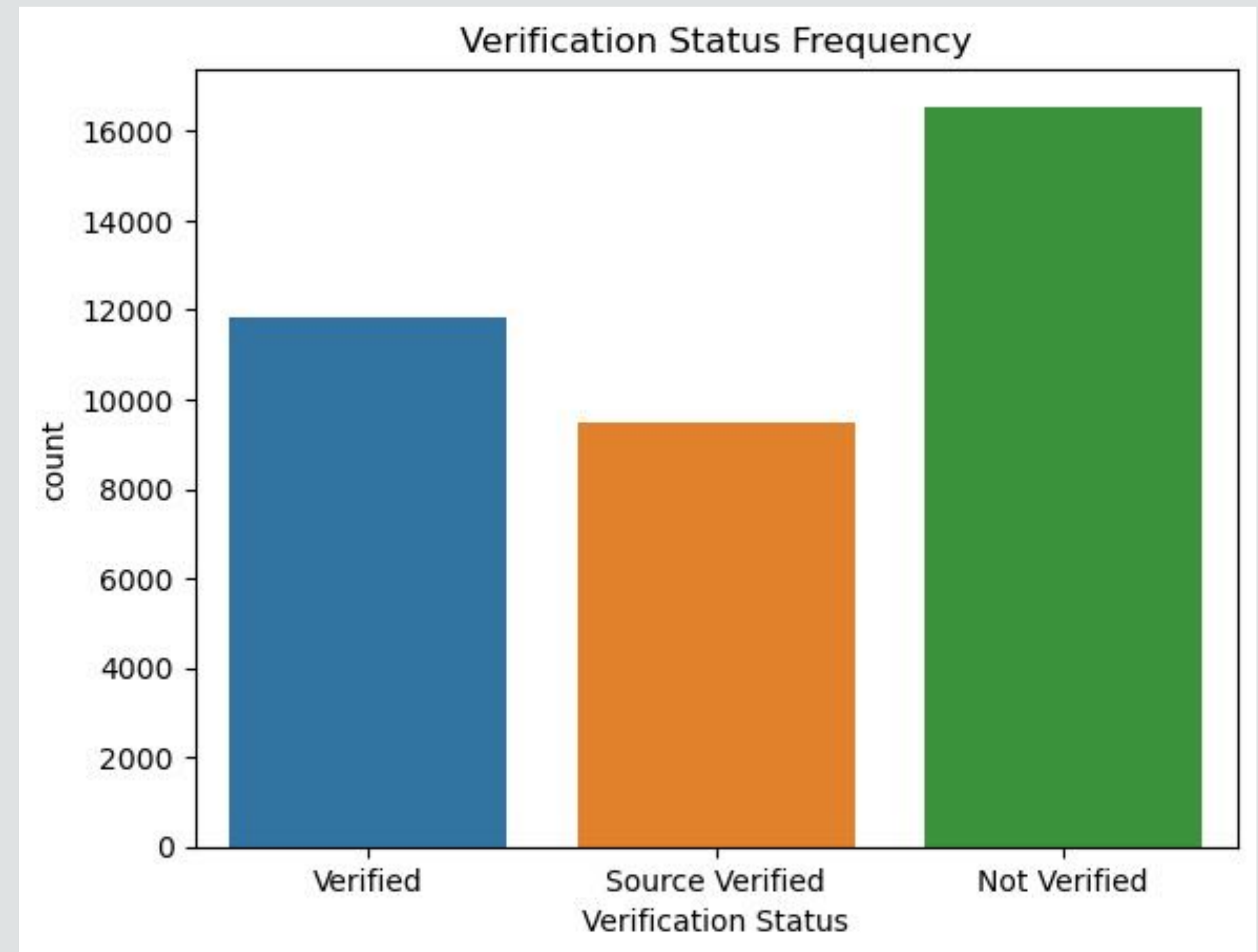
Target attribute Loan Status

- * 5431 number of loans have defaulted which is approx 14% of total loans.



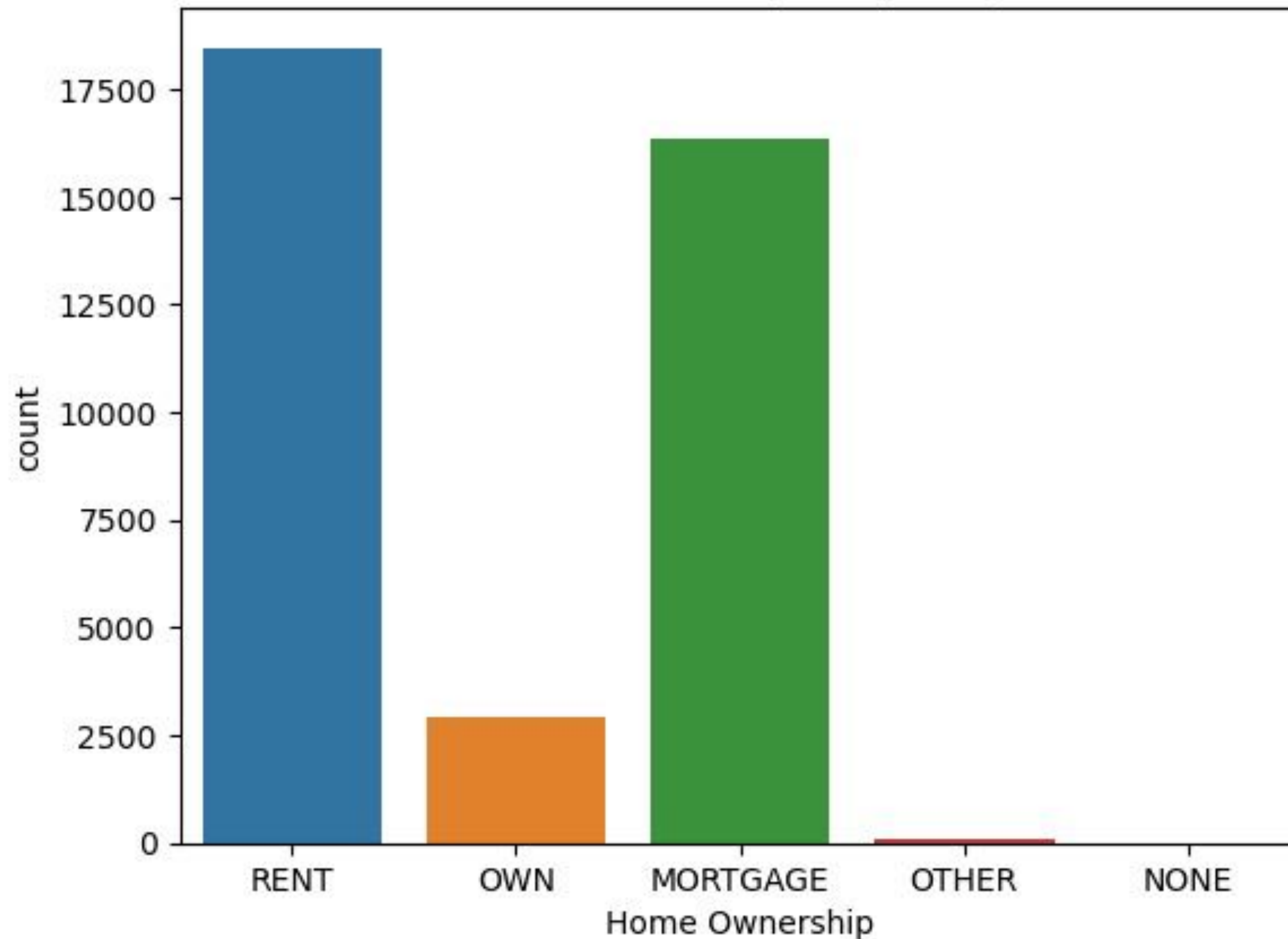


* Major number of the laons are graded as good by LC.



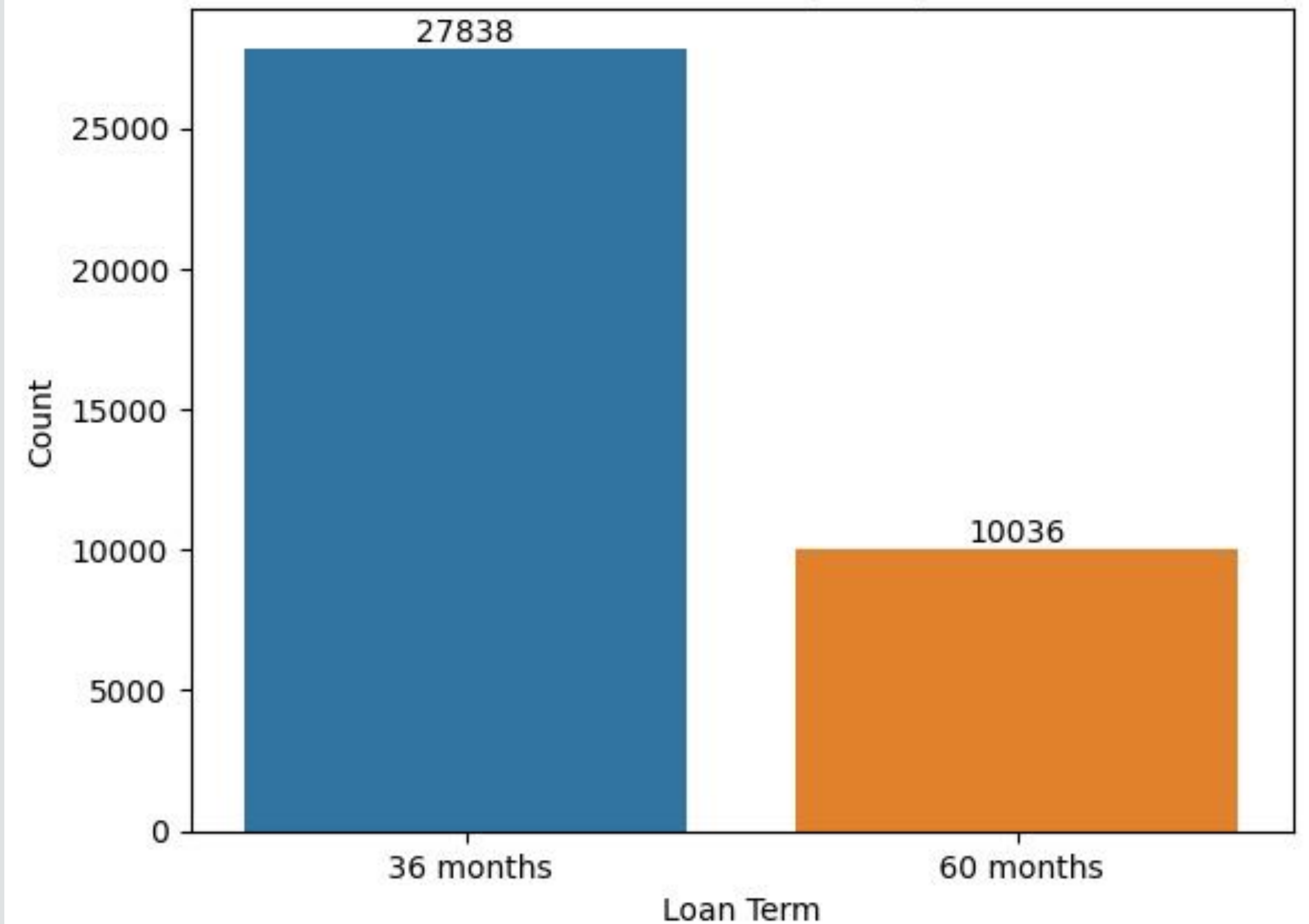
* Considerable number of loans are not verified.

Home Ownership Frequency

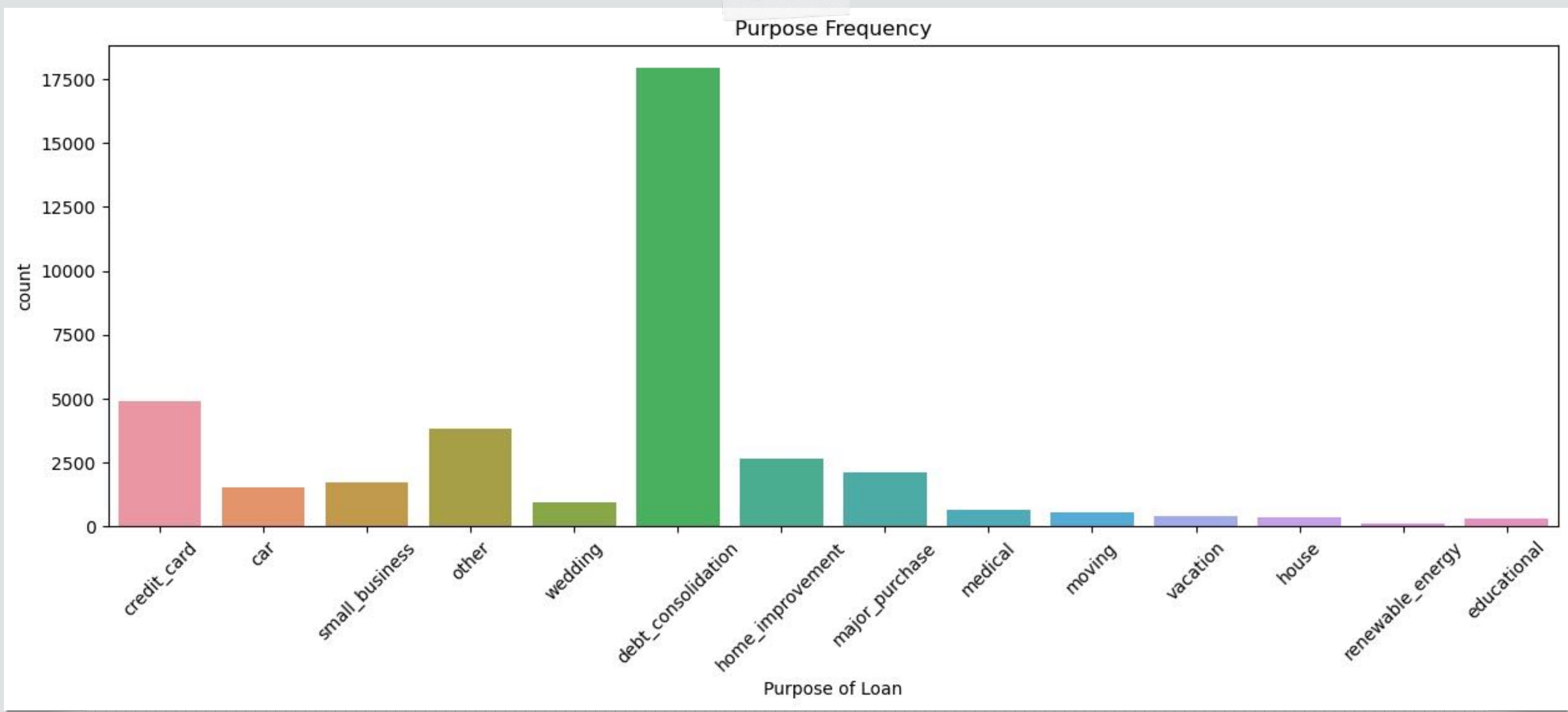


* People applying for loans mostly live on rent or have mortgaged homes. Those who own house are very less in number.

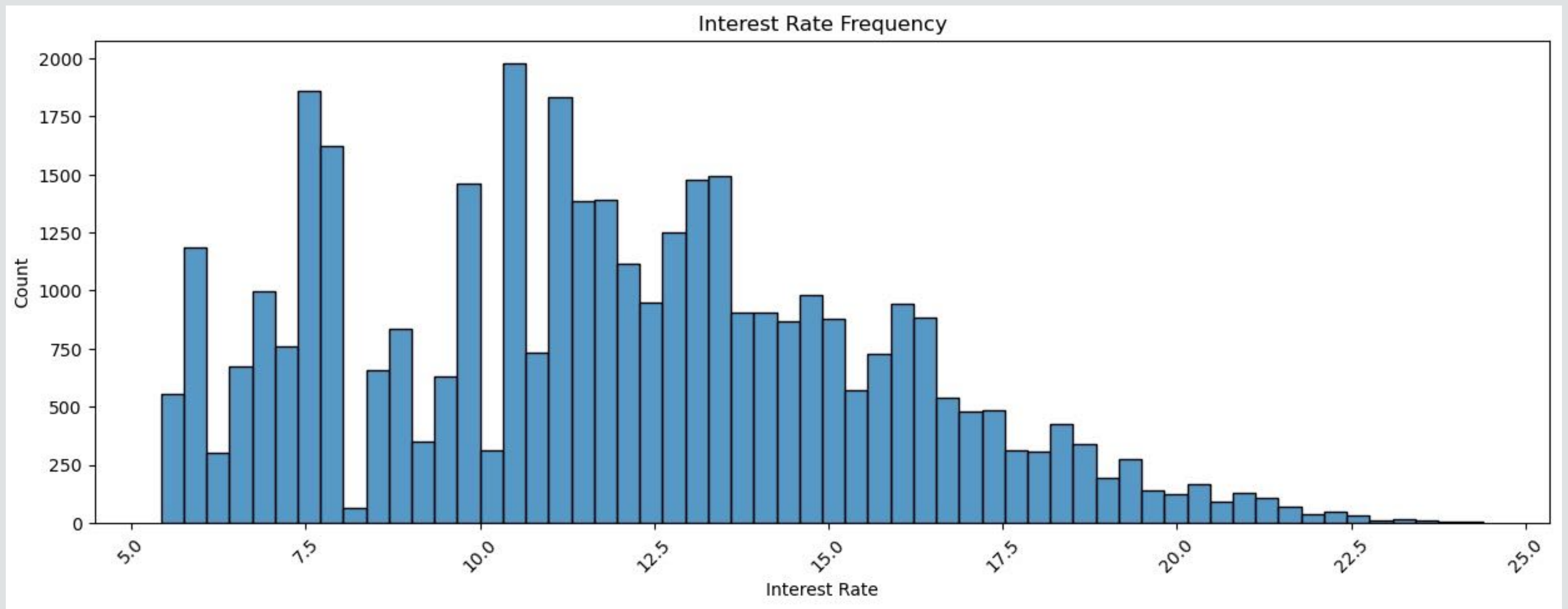
Loan Term Frequency



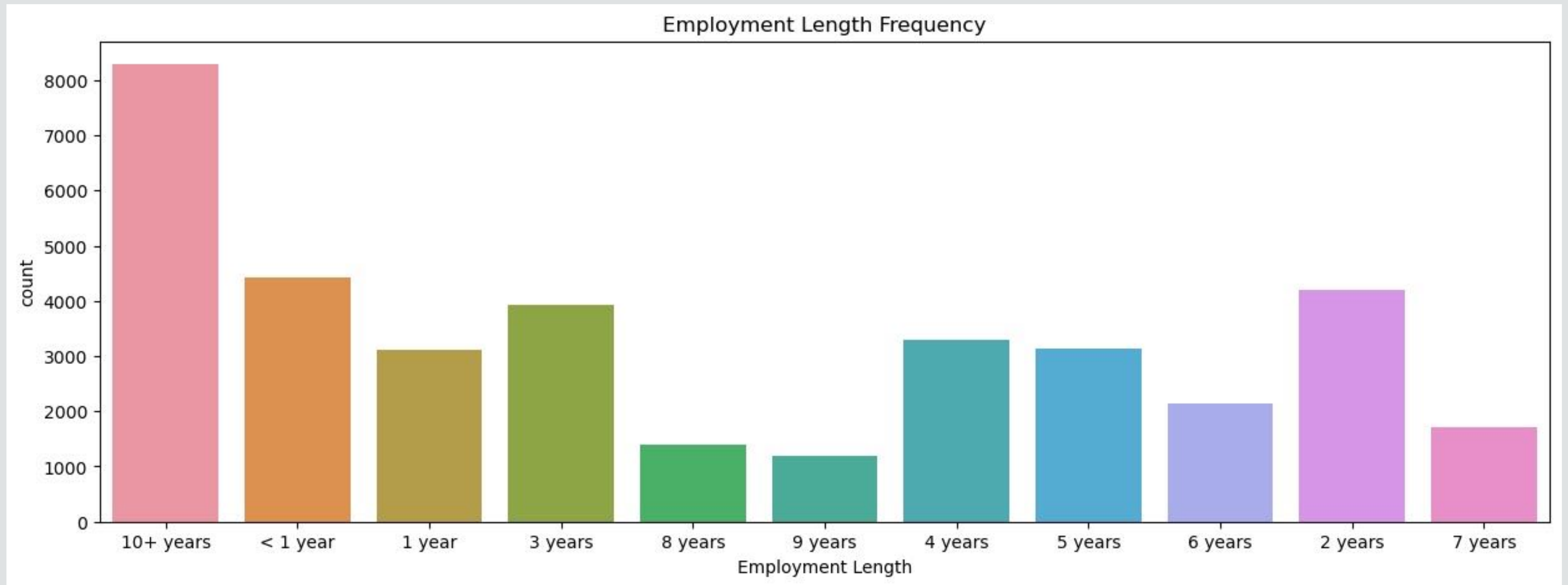
* Most loans taken are for shorter (36 months) term.



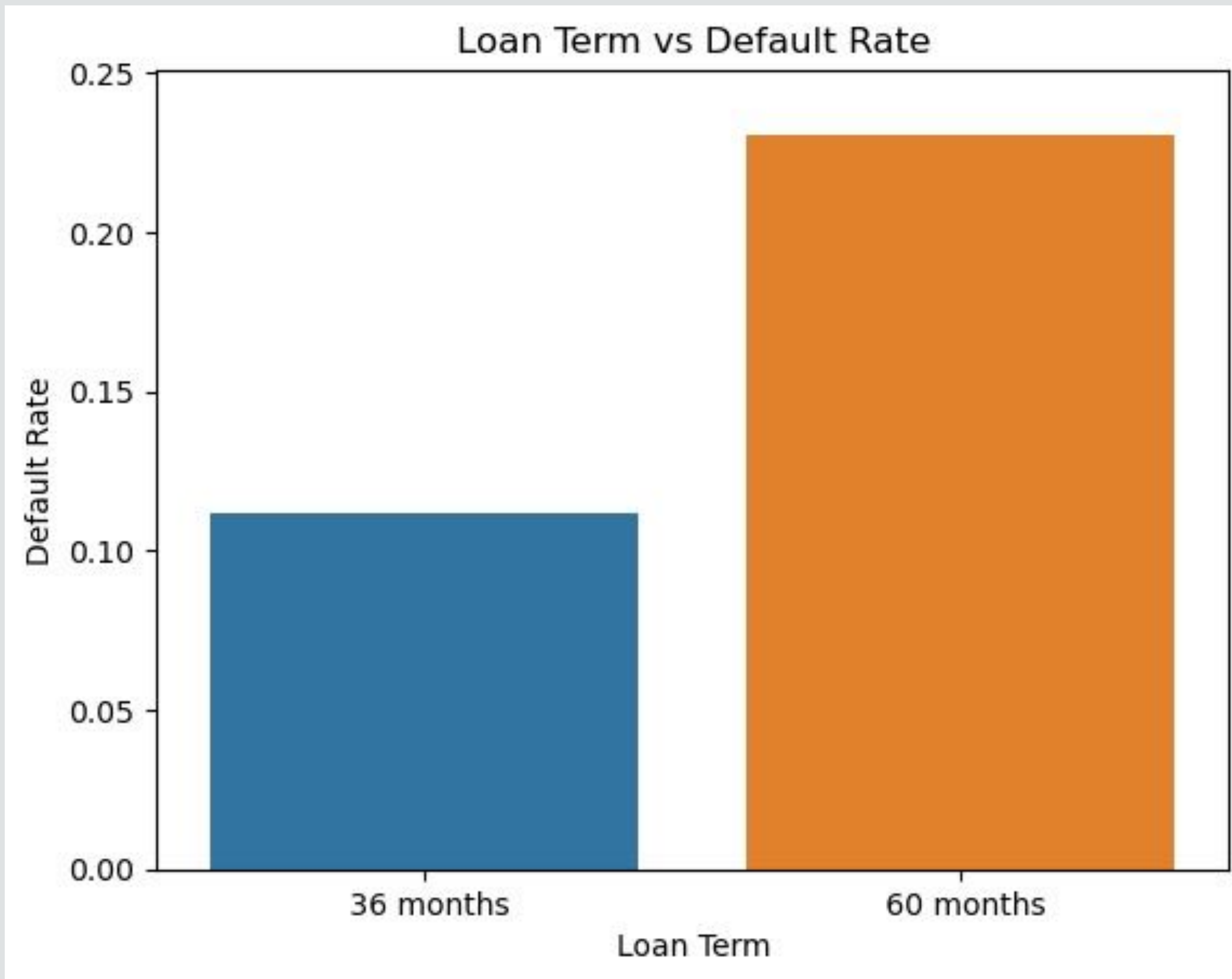
* The top reason for taking loan is 'Debt consolidation' and is way ahead of second top reason 'Credit Card'.



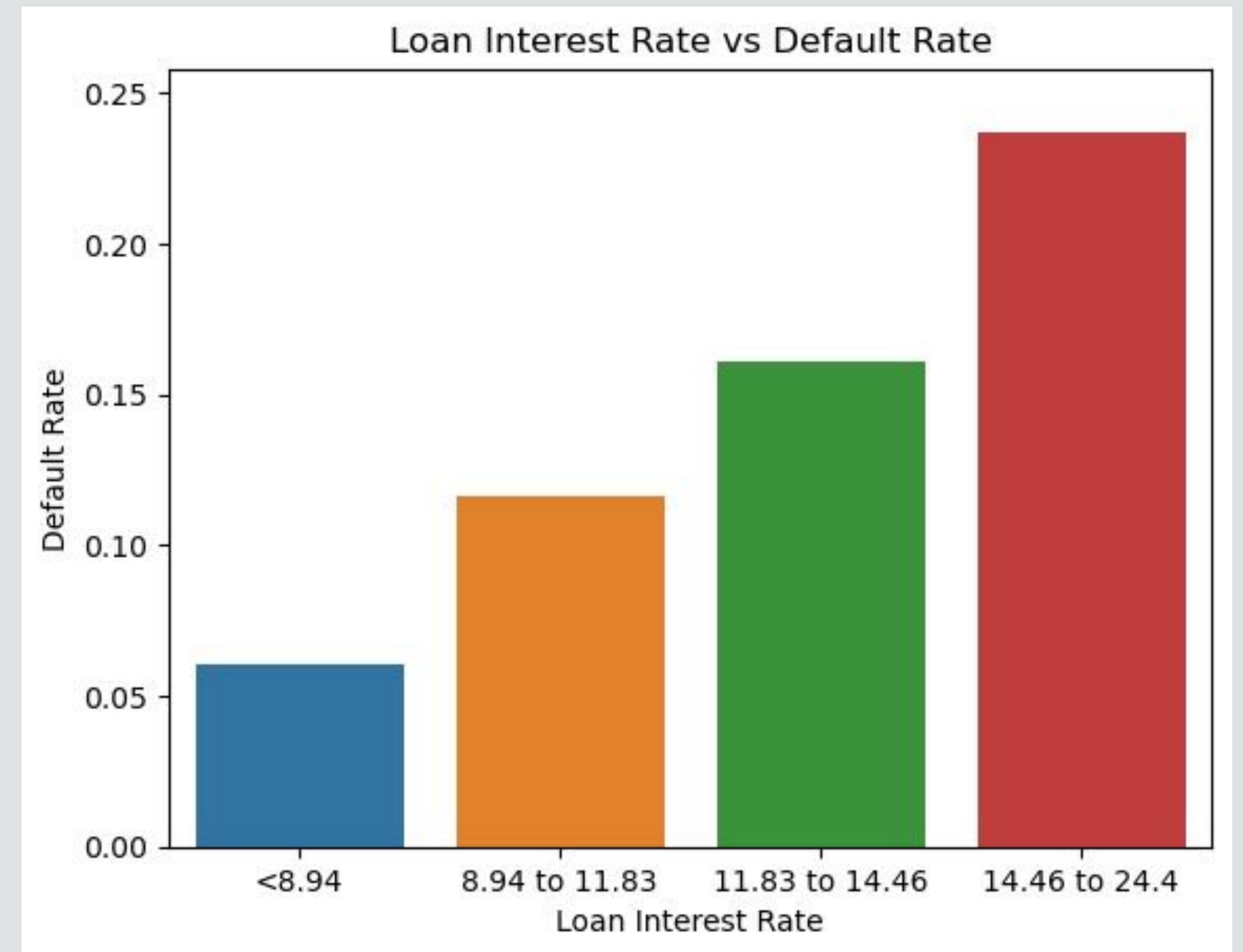
* Maximum loans have Interest rates between 6 to 16.



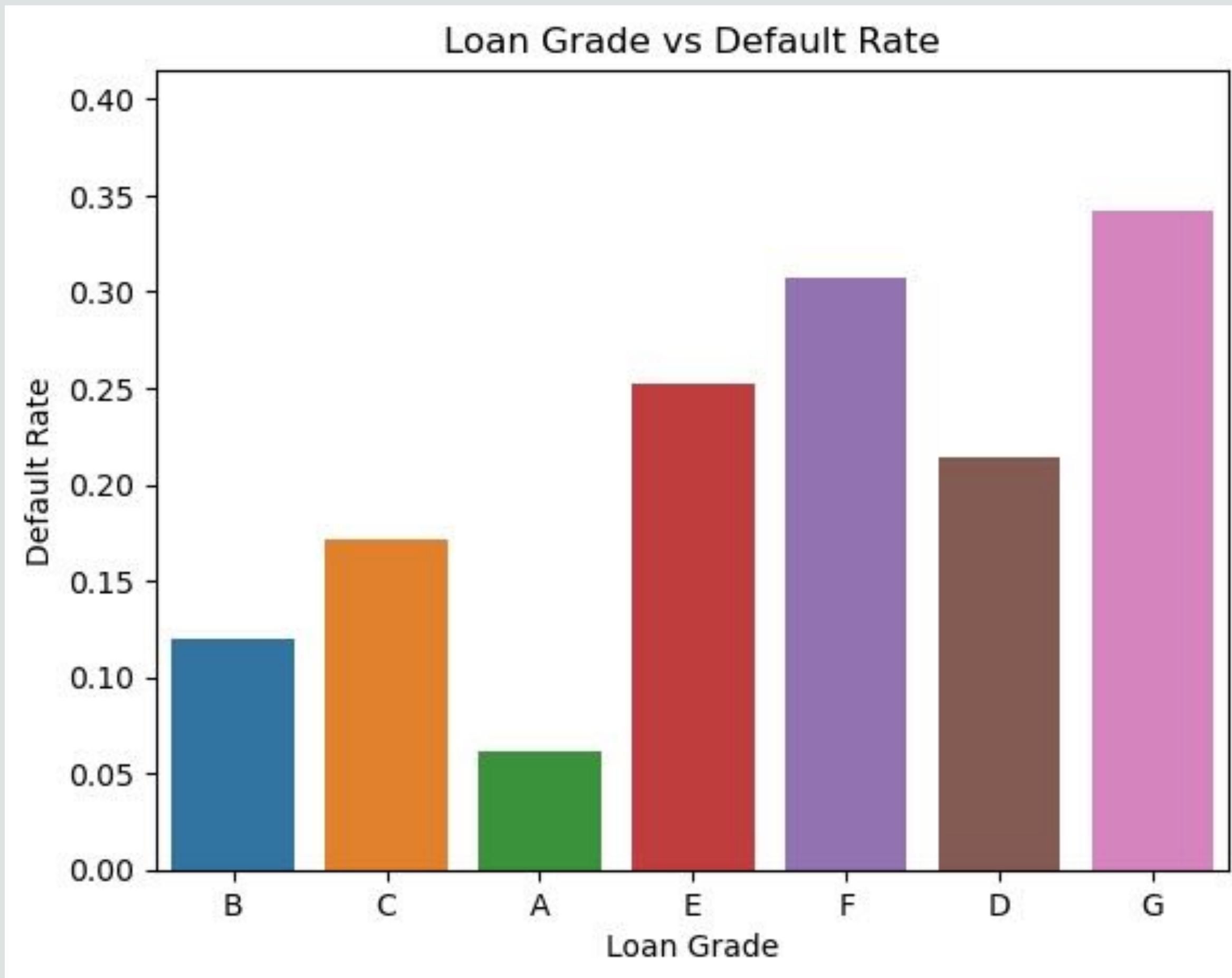
* Most loans taken are by people who have more than 10 years of experience.



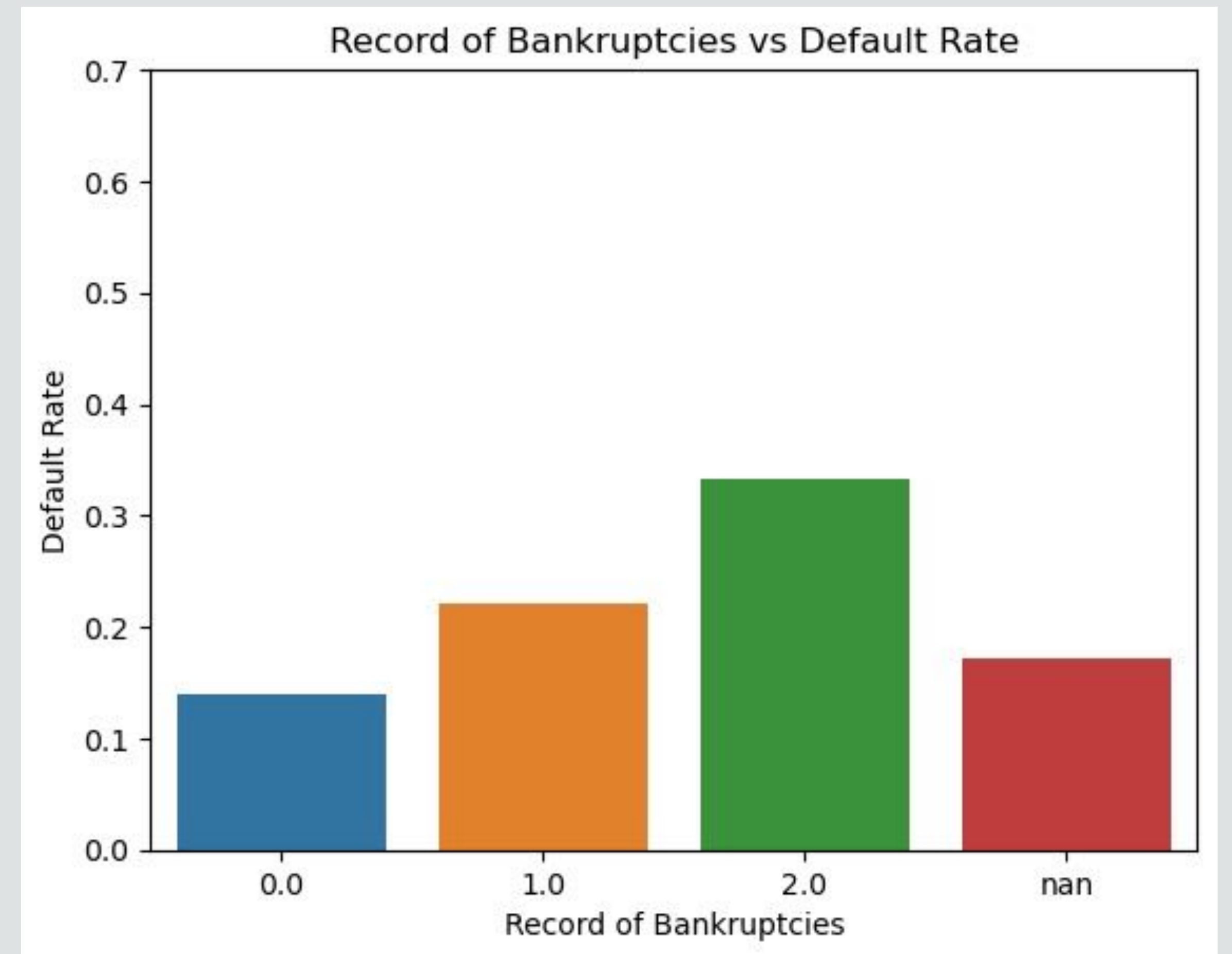
* Default rate is higher in Loans with higher terms(60 months).



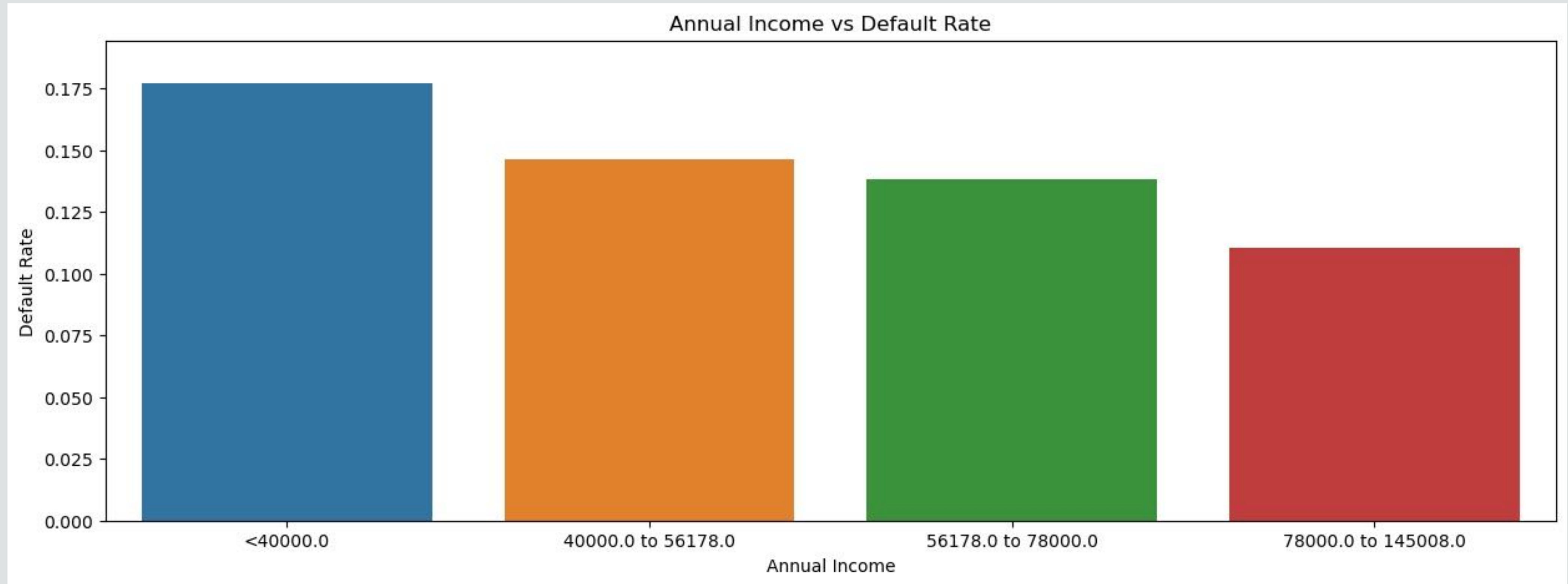
* Default rate increases with increase in interest rates.



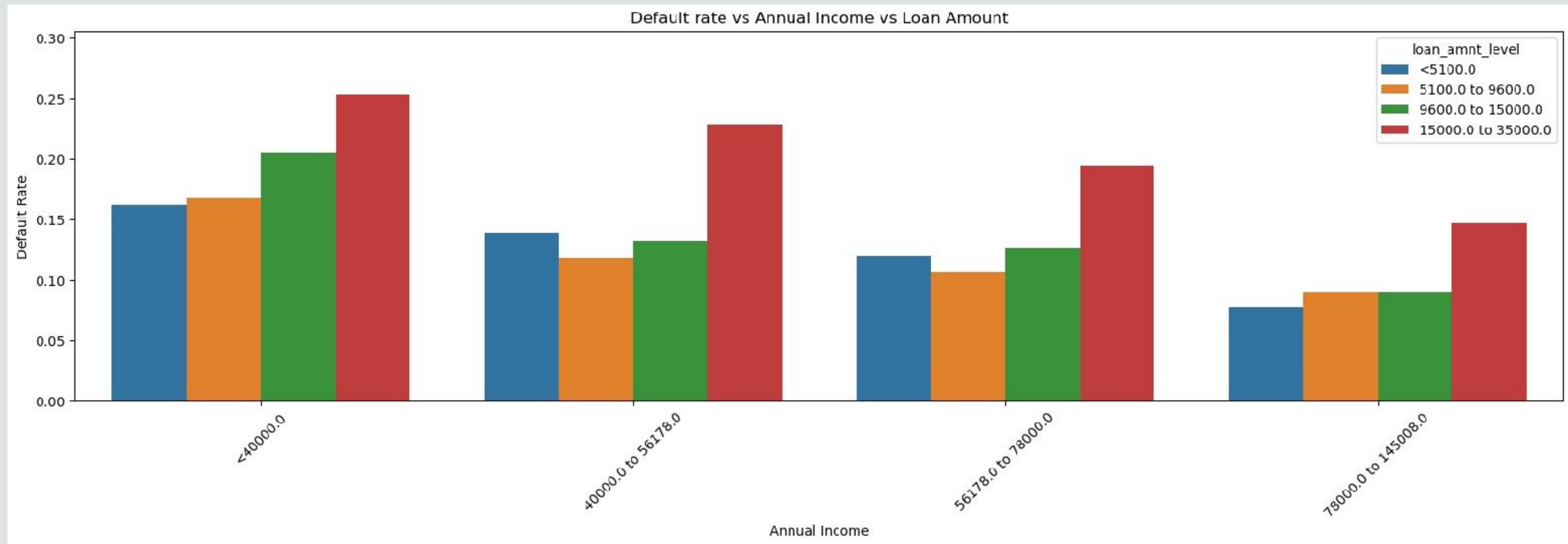
* Default rate increases with decrease in grades. As expected lower grade loans default more.



* As expected Default rate increases with increase in number of bankruptcy records.



* Default rate decreases with increase in Income.



* People having incomes less than 40000 are taking higher amount loans this is riskier as is shown by high default rates.

Recommendations

- * Low grade loans have highest impact on Default Rate so consider giving low amount loans and/or increasing interest rates.
- * Avoid giving loans to people with bankruptcy records.
- * Higher interest rate tend to default more so lower the loan Amount in such loans or lower interest for high grade loans.
- * Small Business loans are risky so increase interest or lower amount of loan.
- * Higher terms tend to default more so introduce more types of terms like 48 months and/or 42 months.
- * Lower income people are taking higher loan amount so reconsider the criteria of minimum income level for higher loans.

“Thanks”

-Prithviraj Pawar