Leading Case study

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Introduction

- This project is about a consumer finance company specializing in lending various types of loans to urban customers. The aim is to identify patterns that indicate if a person is likely to default, which may be used for actions such as denying the loan, reducing the amount of loan, lending (to risky applicants) at a higher interest rate, etc. When the company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile.
- However, there are 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

Explanation of data taken for analyzing

- The borrowers whose loan status is 'Current' were not considered as they may be fully paid in the future or default.
- The data provided by the company was more than required. However, for achieving the aim we required only certain data.
- The data was divided into three types of variables
  - Demographic
  - Loan characteristics
  - Customer behaviors variable.

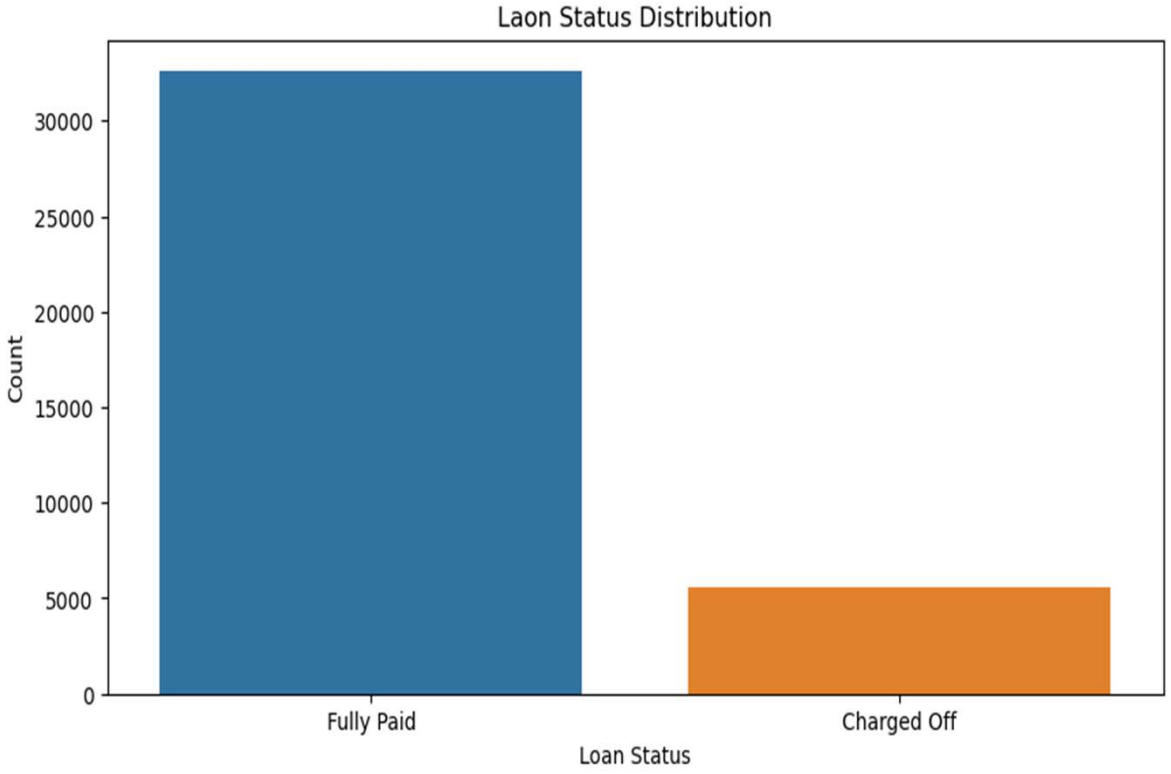
  The customer behavior variable cannot be used as a predictor for credit approval. Hence they were dropped off.

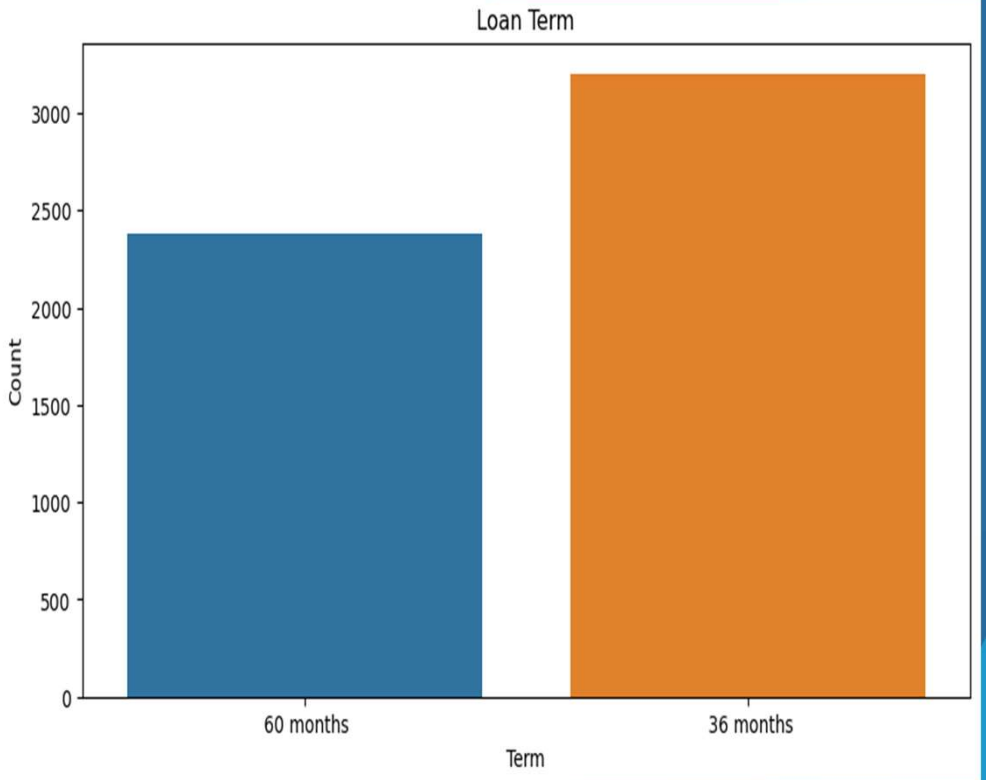
The Data has been divided into Univariate and Bi-Variant Analysis

Univariate analysis – it deals with analyzing variables one at a time.

Bivariate Analysis- It deals with analysing the relationship between two variables.

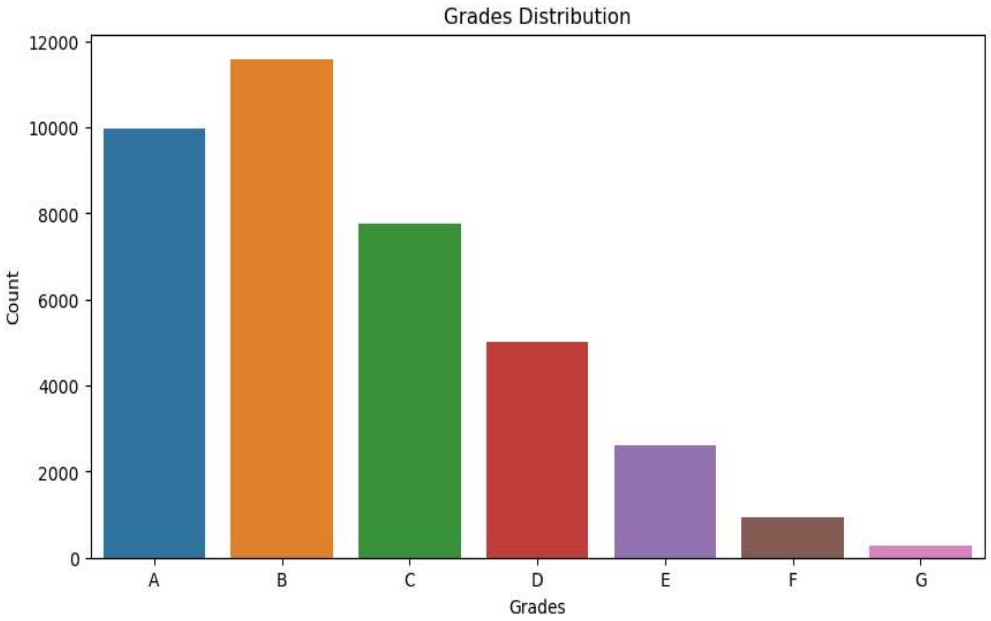
Uni-Variant Analysis

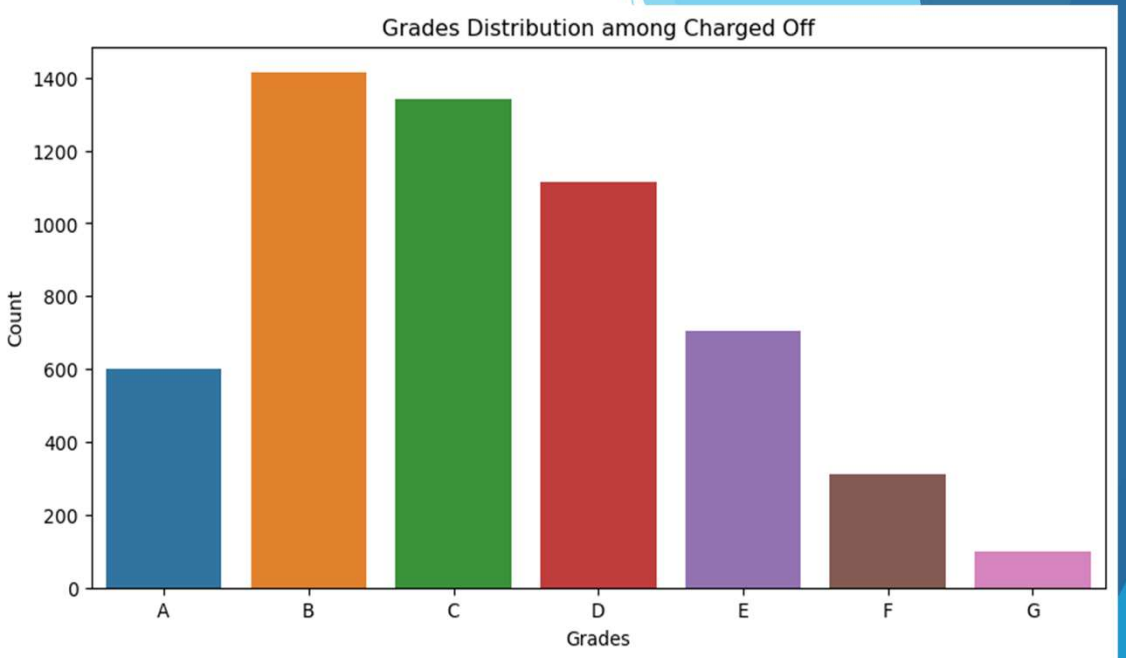




Observation

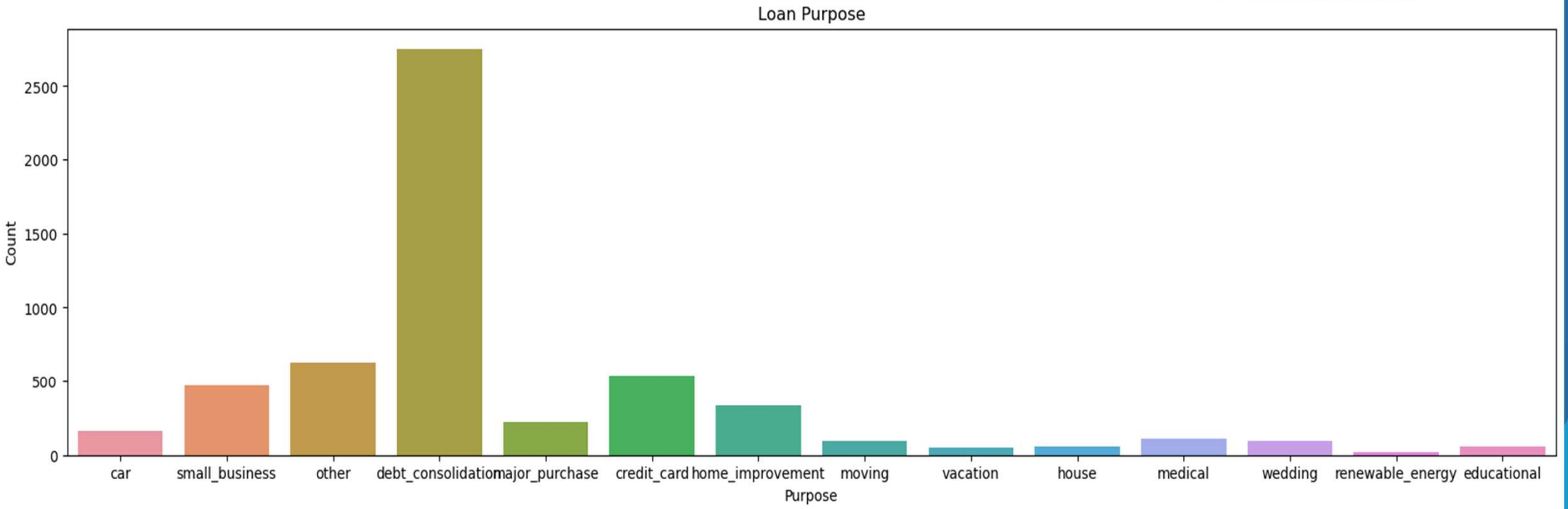
- Around 85% of loans are fully paid
- Around 14% of loan are charged Off or defaulters
- Loans having term as 36 months are having more defaulters





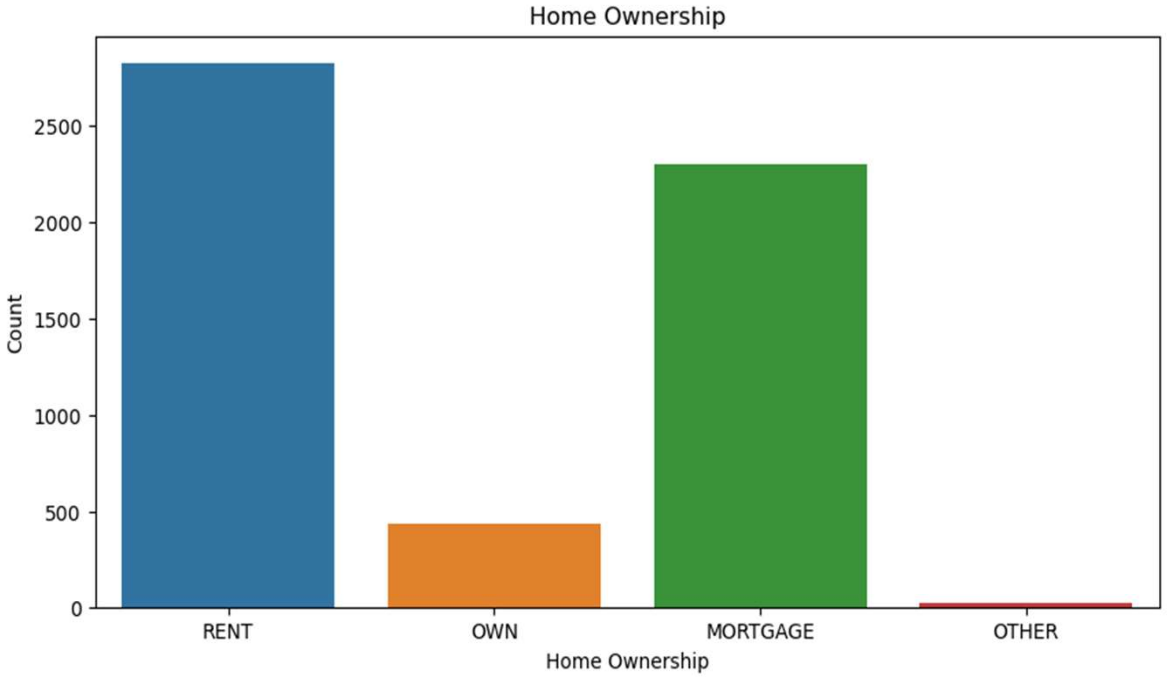
Observation

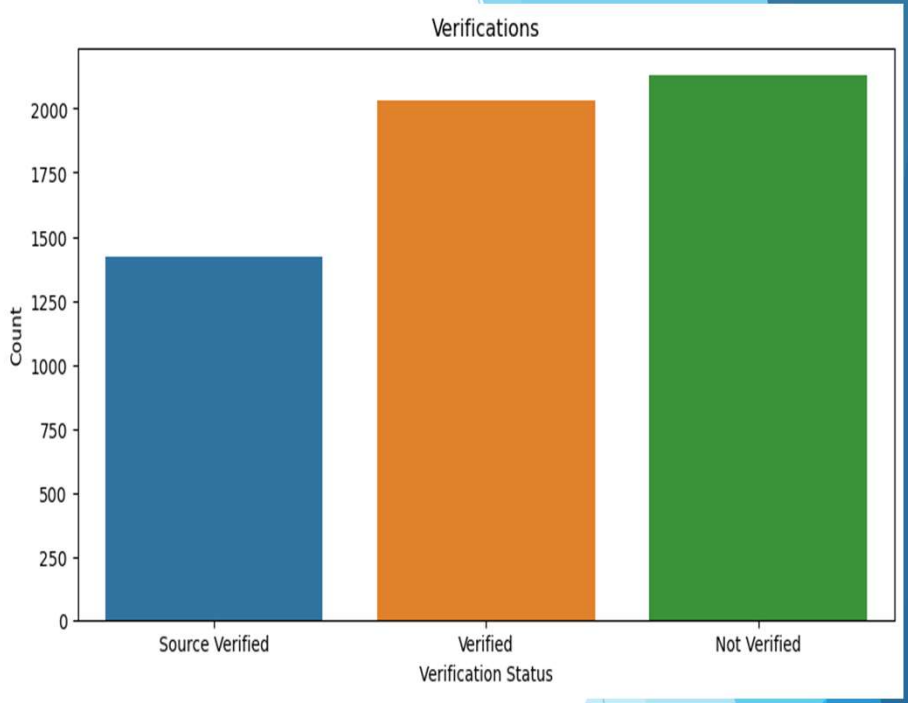
- Loans with grade A and B are highly issued
- Loans with Grade B are having high defaulters



Observation

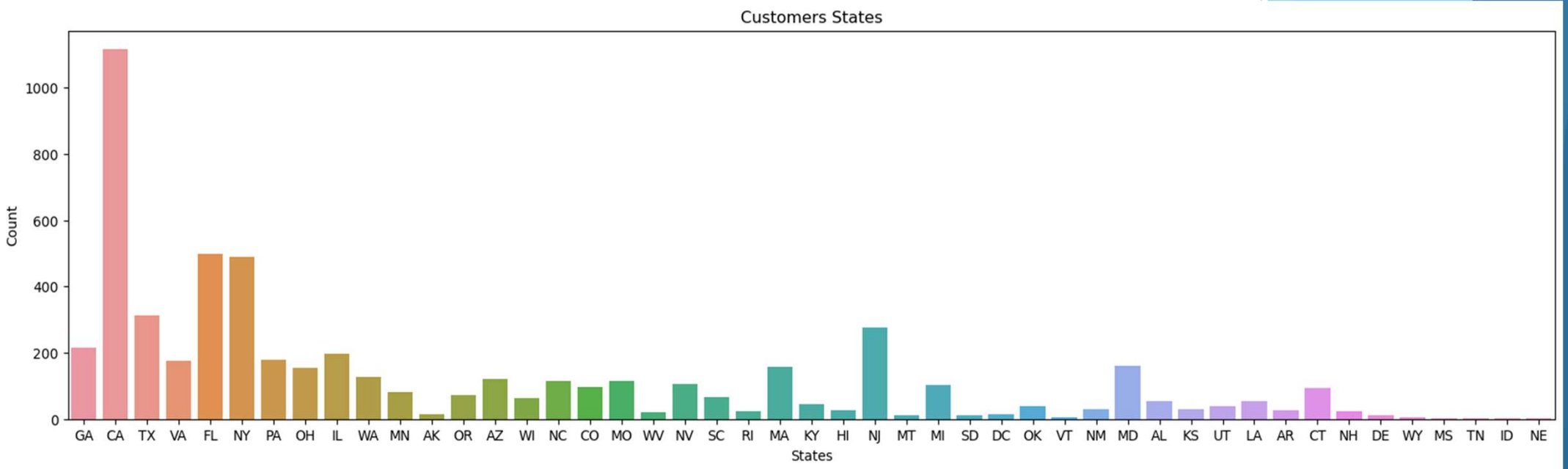
- Defaulters are more when the purpose of loan taken is debt_consolidation i.e. customers are taking loans for clearing other debts





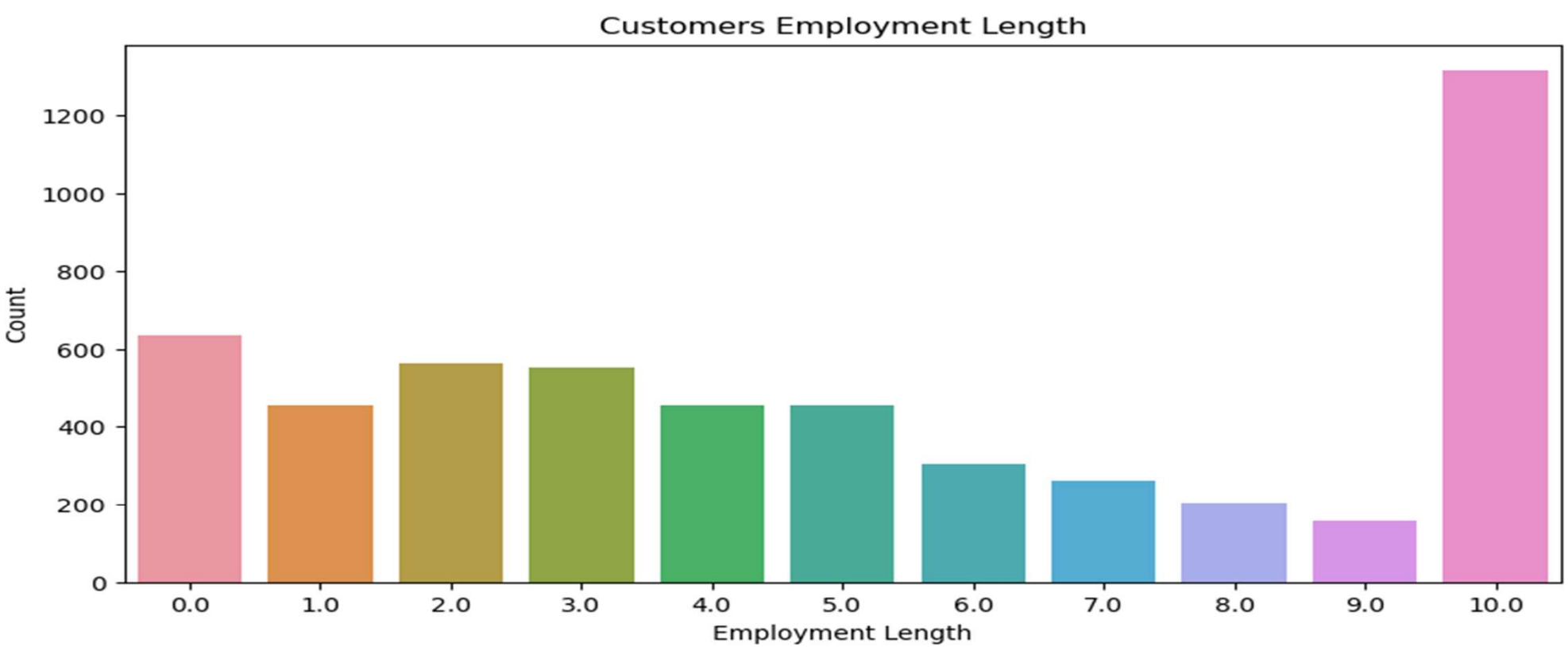
Observation

- Defaulters are more where they are staying in Rent i.e. where home_ownership is Rent
- There is very little difference between the verified and non-verified loans, that means even if the verification is done than also there are defaulters and are nearly same as those loans are not verified



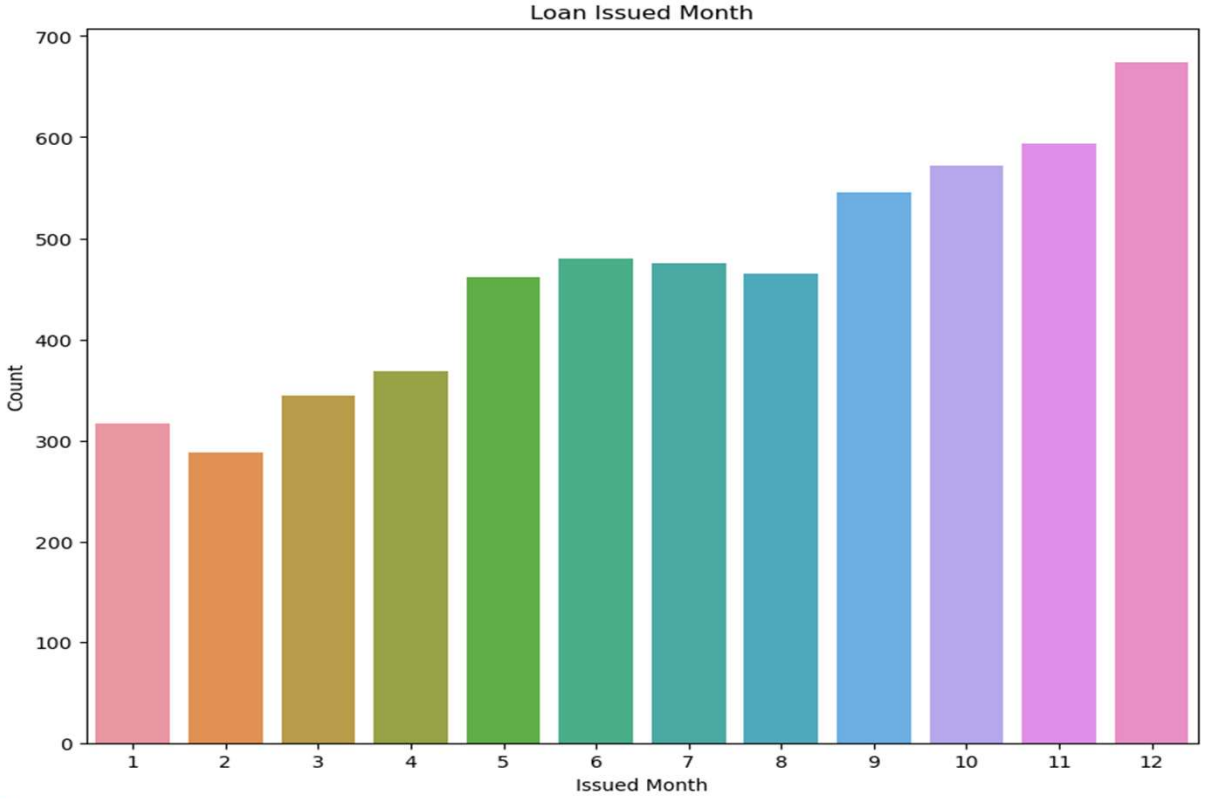
Observation

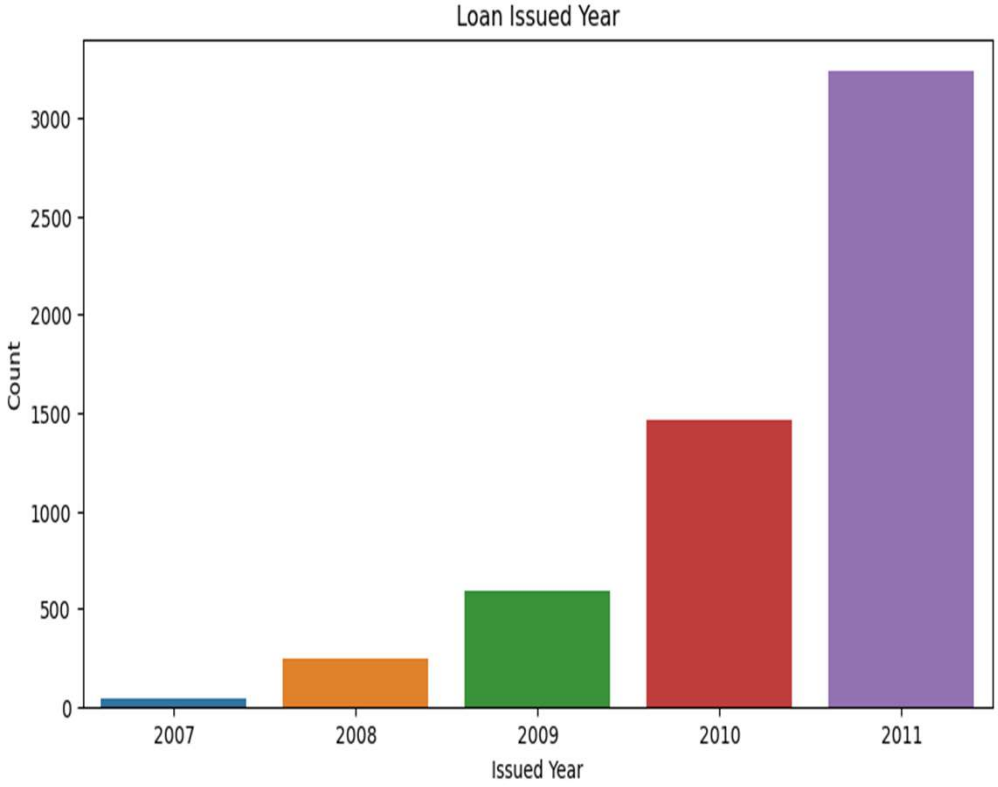
The graph shows various states, Defaulters are more where state is CA.



Observation

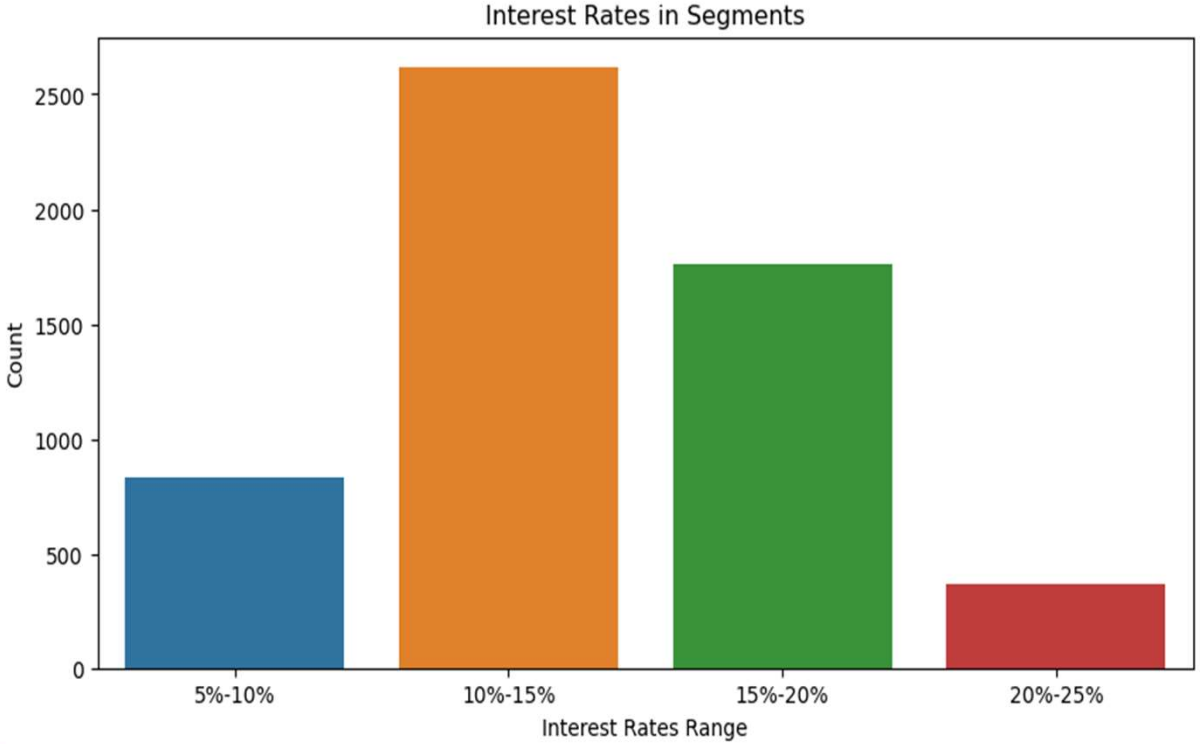
Customers who are having employment length 10 or above are more defaulters than others

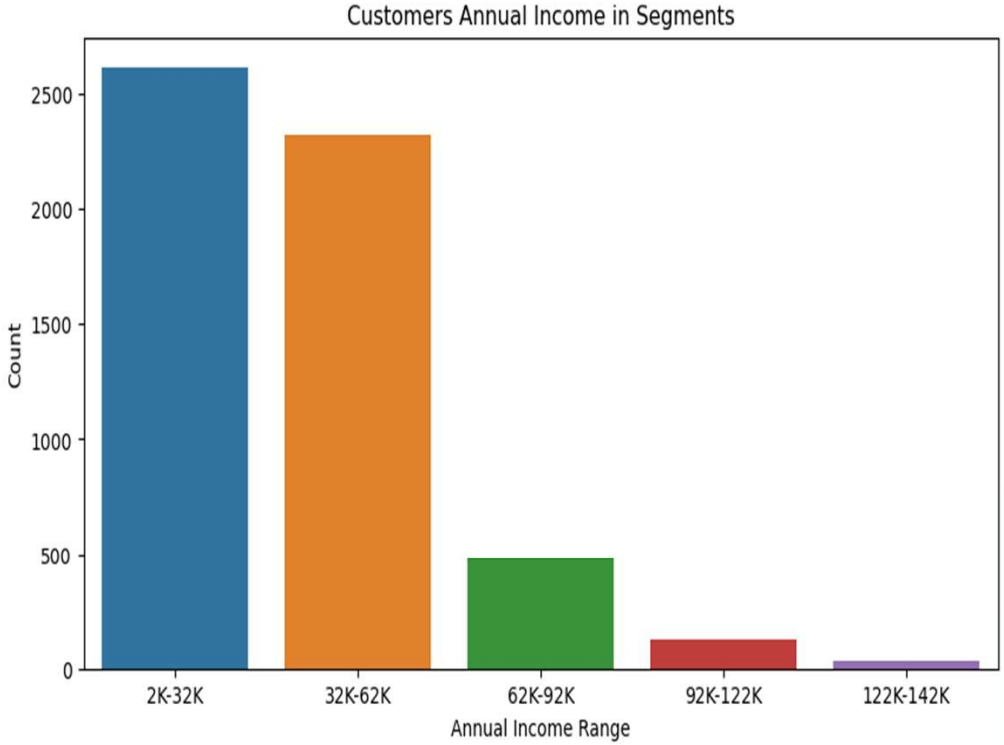




Observation

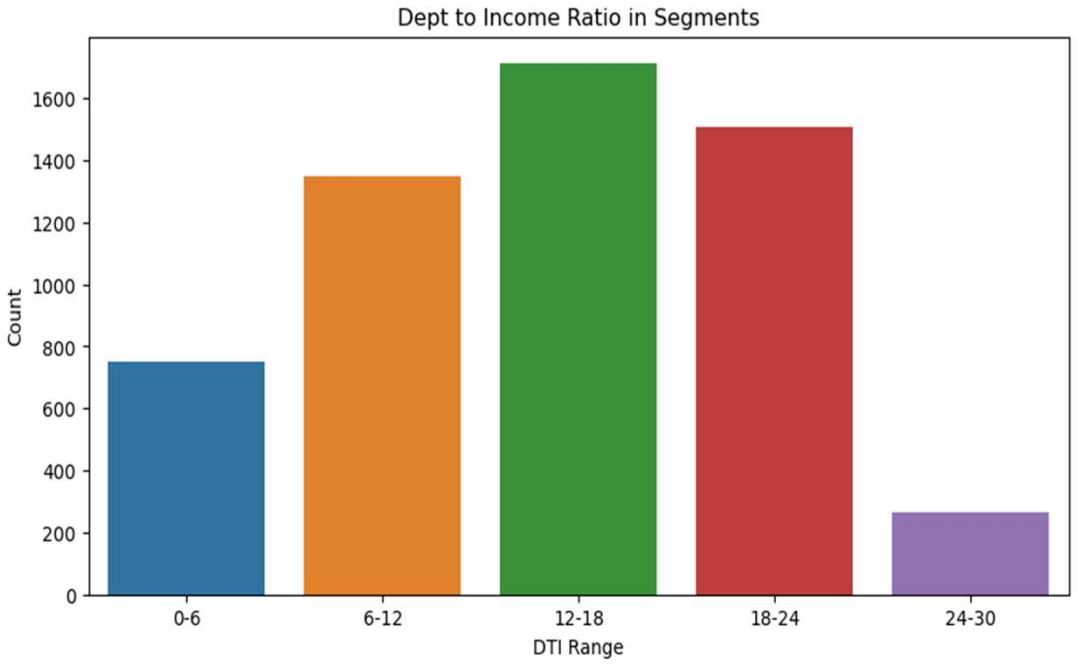
Loans were increasing year by year and loans those were issued in month of December are having maximum defaulters

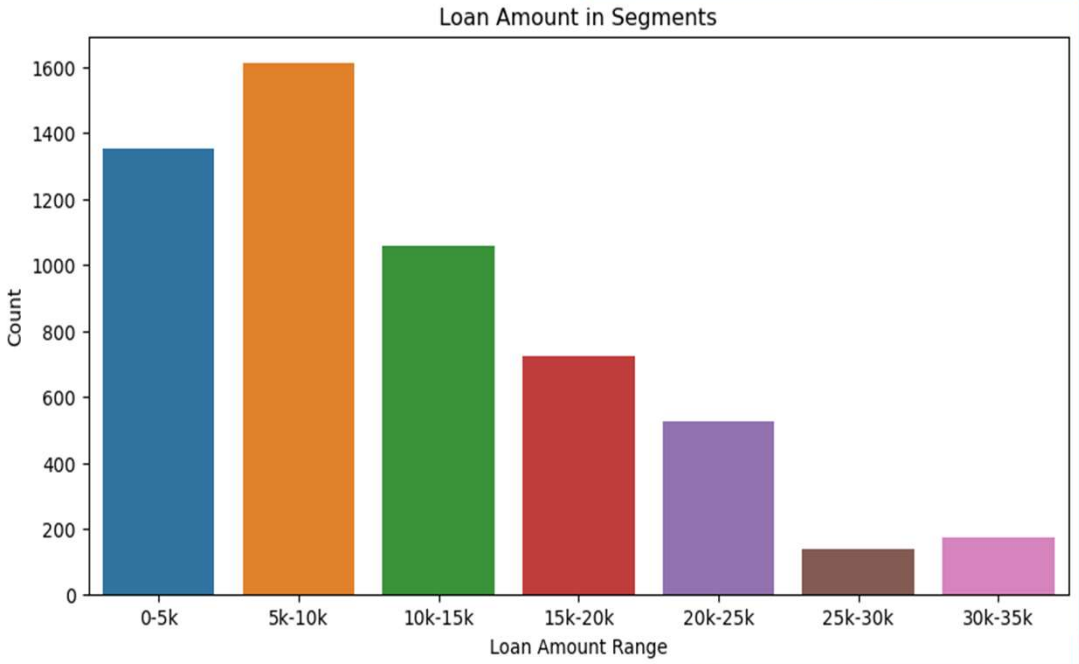




Observation

- Defaulter are more where the rate of interest lies between 10% to 15%
- Defaulter are more where their annual income lies between 2K to 32K

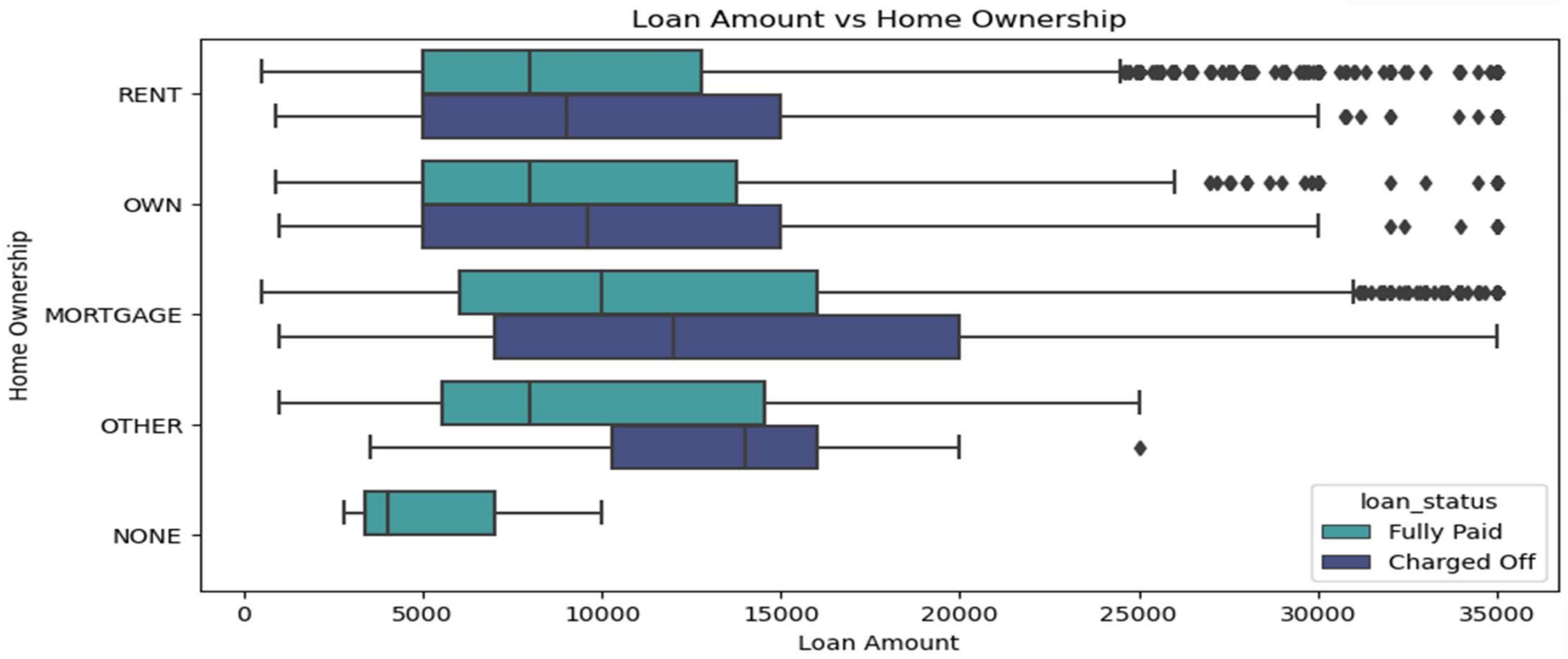




Observation

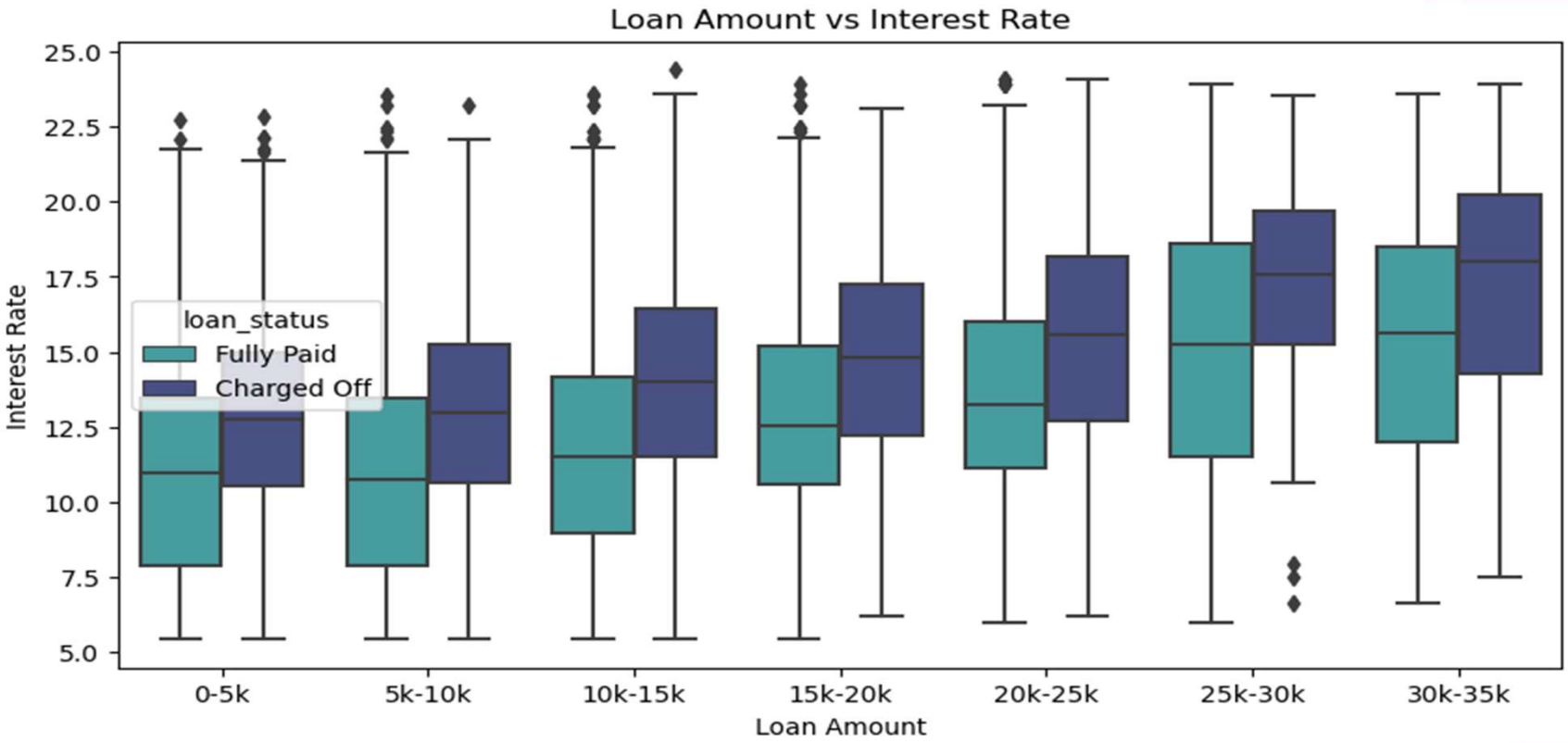
- Defaulter are more when their dept to income ratio lies between 12-18
- Defaulter are higher when loan amount lies between 5K and 10K

Bi-Variant Analysis



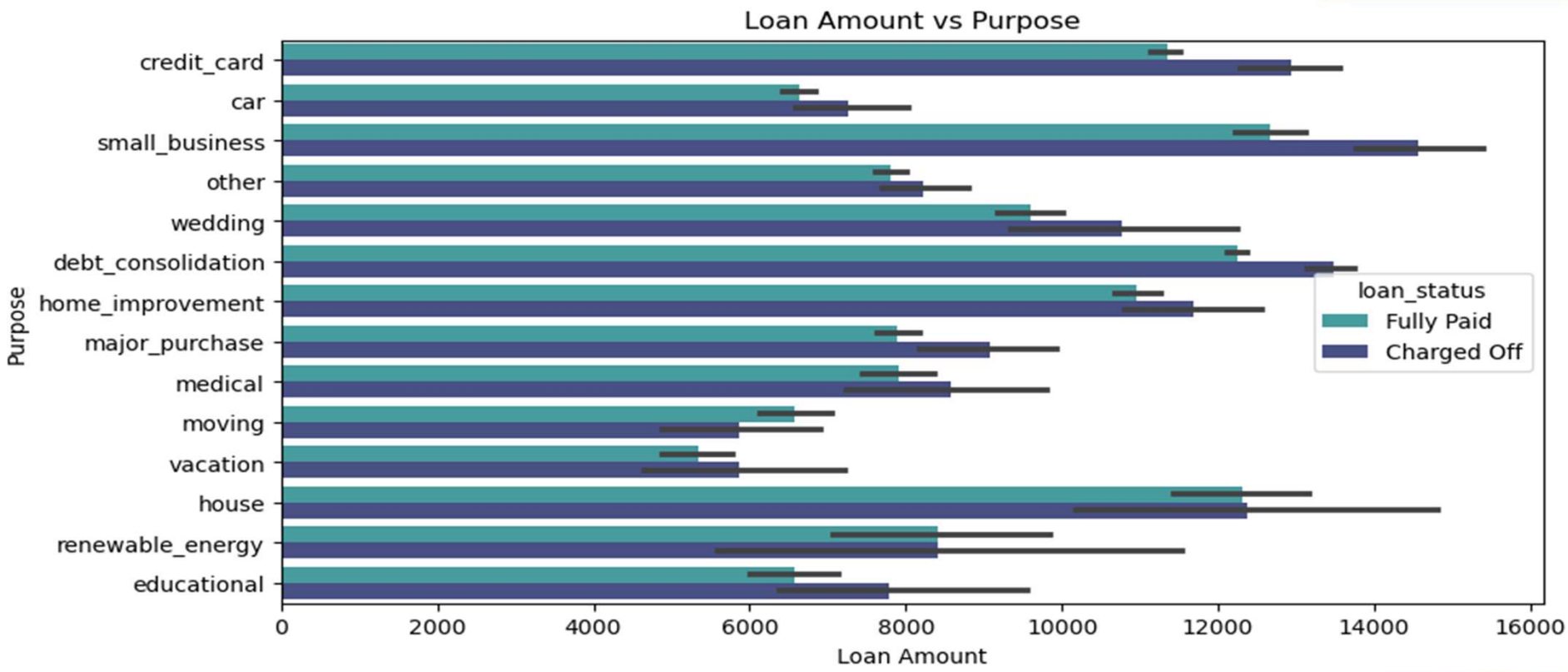
Observation

- Customers whose home ownership is mortgage and taken loan amount of 14K to 16K are more likely to default



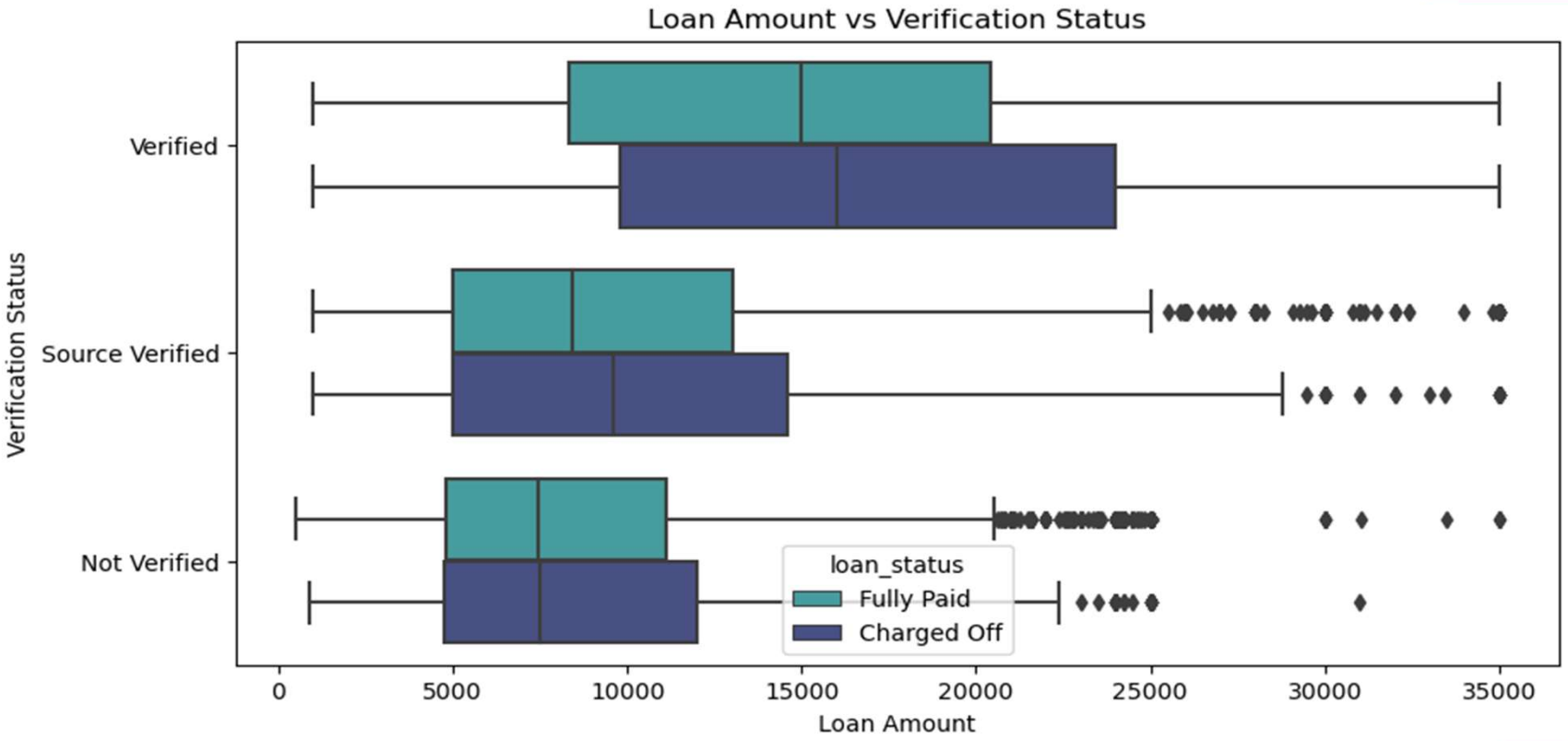
Observation

Customers who had loan amount between 30K to 35K with higher interest rate 17.5 are more likely to default



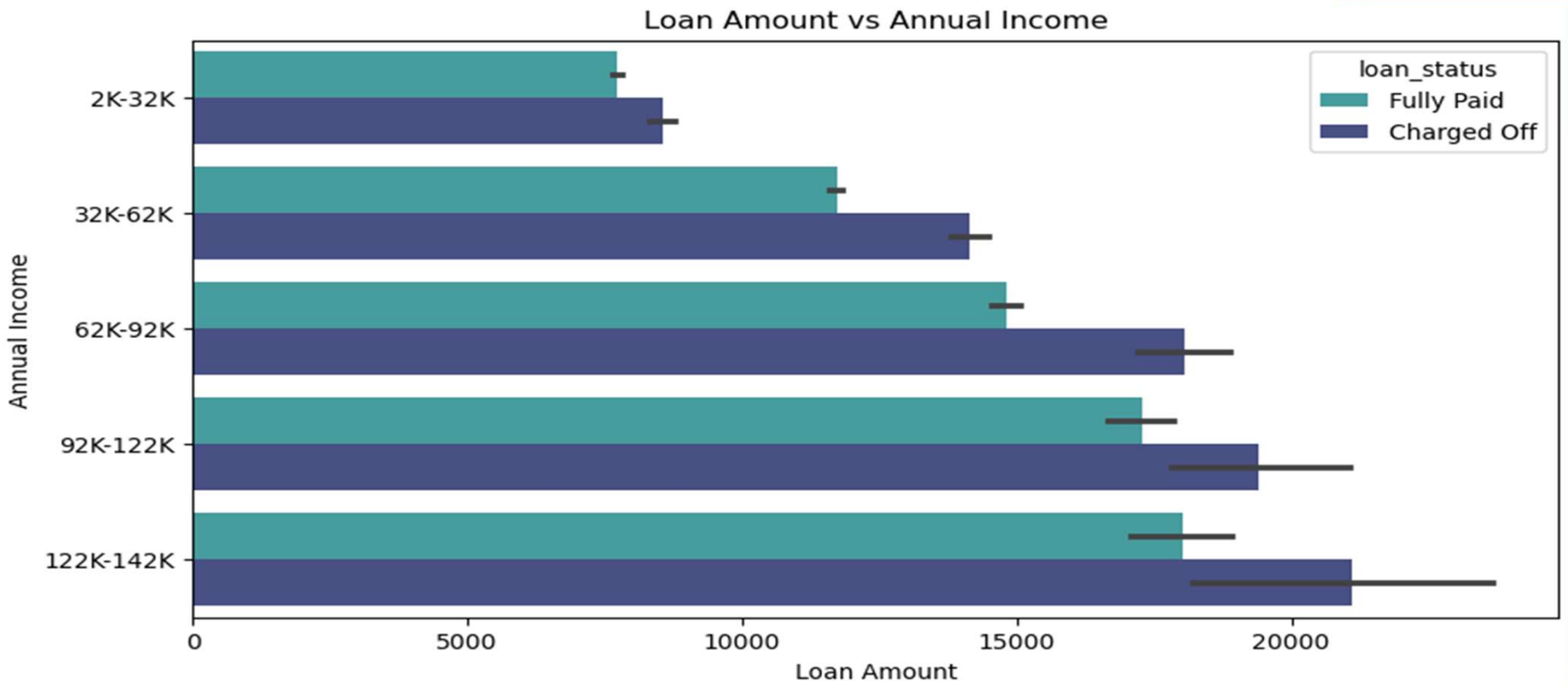
Observation

Customers who had taken loan for small business and the loan amount is greater than 14k are likely to default



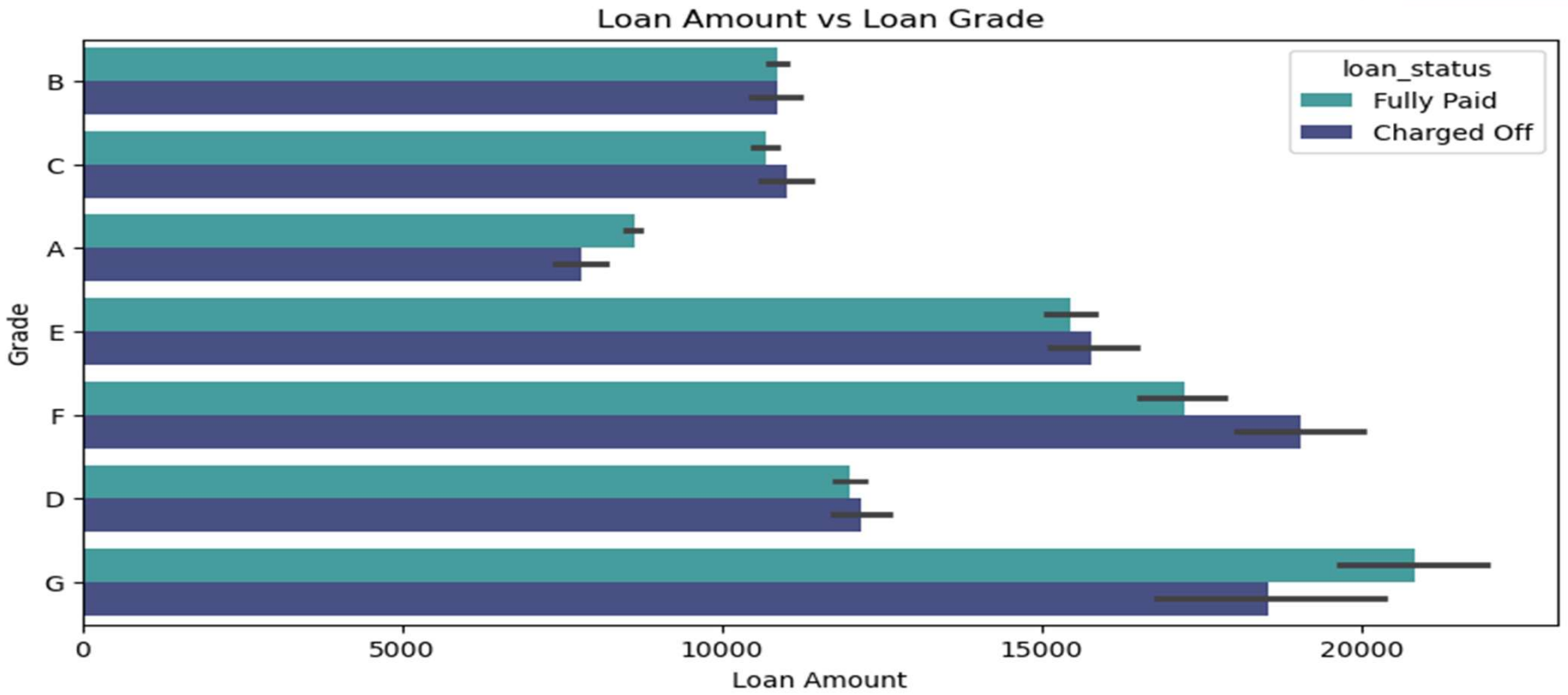
Observation

Applications whose loan is verified and loan amount is above 16k are more likely to default



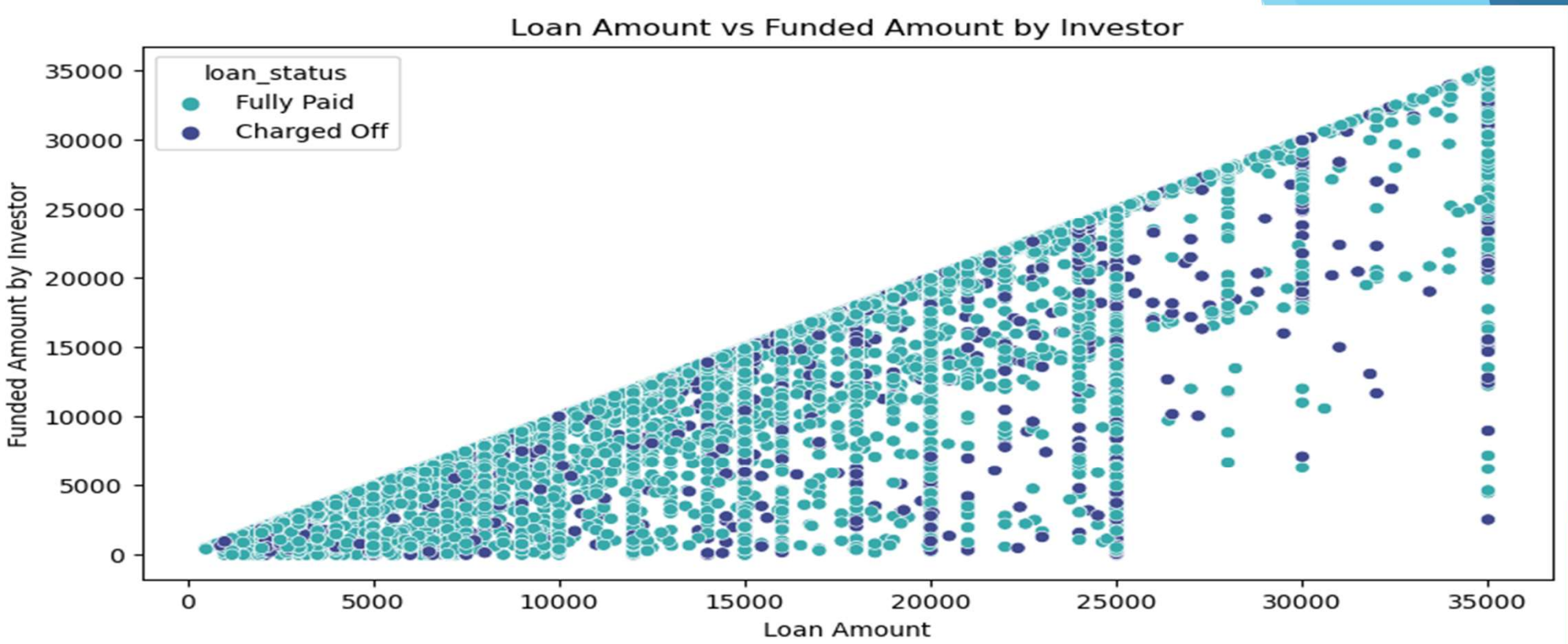
Observation

Across all the income groups, loan taken is greater than the annual income and hence there are defaulters in each income band, higher the income higher the loan amount and higher the charge off



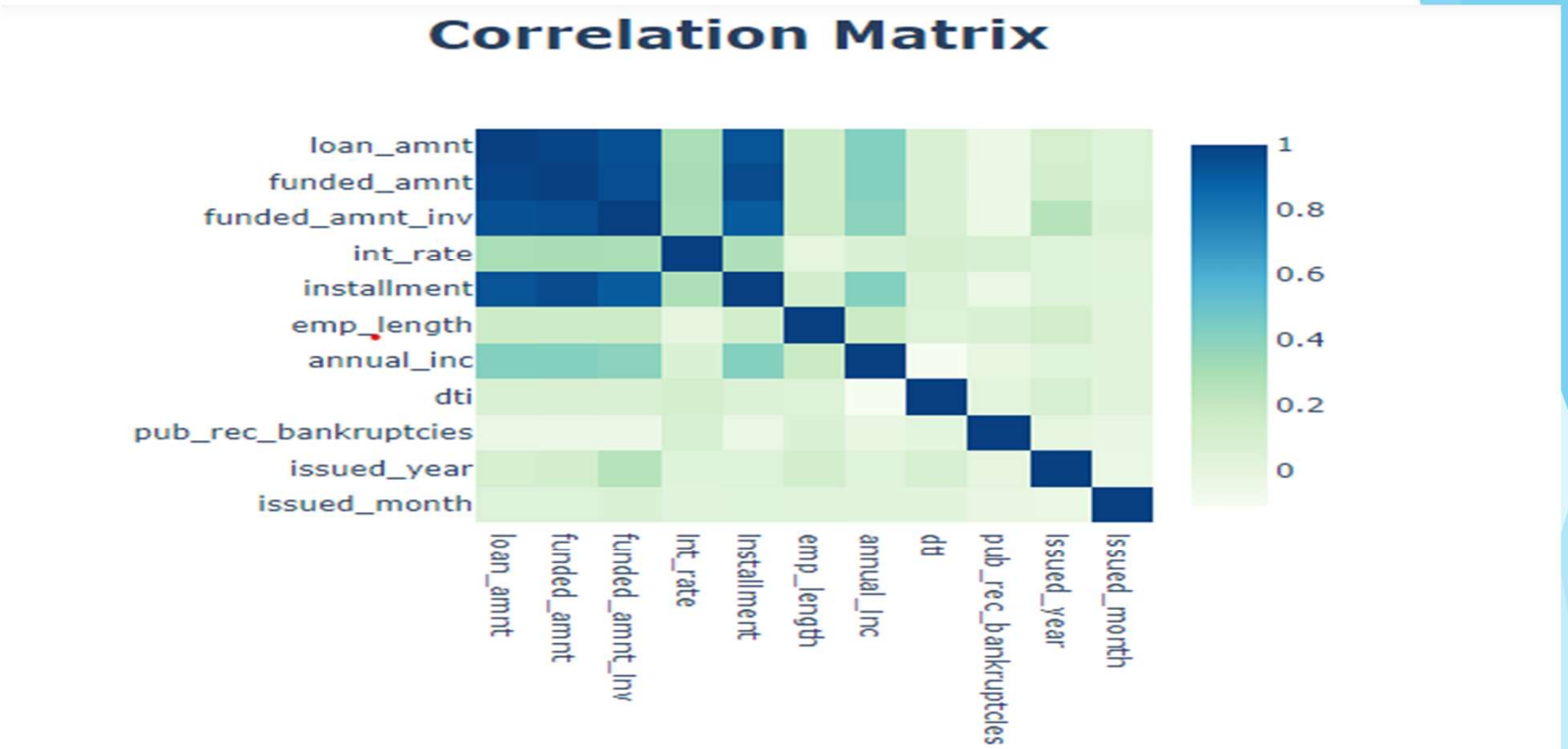
Observation

Customers who had taken loan of grade F and had loan amount between 15000-20000 are more likely to default



Observation

There are very less defaulters when Funded Amount by investor is same as the Loan Amount(linear relation)



Observation

- Strong correlation between loan_amnt, funded loan amount and funded loan amount by investor
- Strong correlation between loan_amnt, funded loan amounts and installments
- There is correlation between annual income with loan amount, funded loan amount and funded loan amount by investor

Recommendations

Before giving Loans to new customers Investors should check following :

- Verification System : From the analysis it came out that even if the verification is done than also there are defaulters and are nearly same as those of loans that are not verified, company can check its verification process
- State Verification : Most of the defaulters are from 'CA'
- Loan Purpose check : Loan taken for clearing other debts and for small business had high number of defaulters than in other categories
- Home Ownership : Customers who were on Rent or had mortgage and borrowed loan between 14K to 16K tend to default more than other categories
- Term : Customers who had Loan term as 36 months are tend to default more than with loan term of 60 months
- Loan Amount and Interest Rate : Customers who had taken loan amount between 30K to 35K with higher interest rate i.e.17.5% tend to default more than others having low interest rate.
- Grade : Loan grade B had higher number of defaulters and loan grade F with loan amount between 15000-20000 tend to default more than others.
- Employment Length : Customers who had employment length 10 years or above tend to default more than others.
- Customer Annual Income : Customers who had annual income between 2 K to 32 K tend to default more than others.
- Dept to Income Ratio : Customers who had their dept to income ratio lies between 12-18 tend to default more than others.

Thank you