Risk Analysis

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Problem Statement

▶ a **consumer finance company** specialises in lending various types of loans to urban customers.

▶ When the company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile.

▶ With the data we have about the past loan applicants, the aim is to identify patterns which indicate if a person is likely to default and reduce **financial loss** for the company.

Debt-to-Income ratio

▶ A ratio calculated using the borrower's total monthly debt payments on the total debt obligations, excluding mortgage and the requested LC loan, divided by the borrower's self-reported monthly income.

▶ The higher the dti the higher the risk for the lenders. lenders generally seek dti ratiio no more than 36%. lets check if there is any difference in the dti values between defaulters and fully paid users.

▶ The mean and median are comparable for defaulters and fully paid users.

▶ New_dti is calculated including the current loan and we see some difference here. The new_dti is higher for the defaulters than fully paid users.

```
loan_status
Charged Off    21.624743
Current        22.576889
Fully Paid     19.920270
Name: new_dti, dtype: float64
```
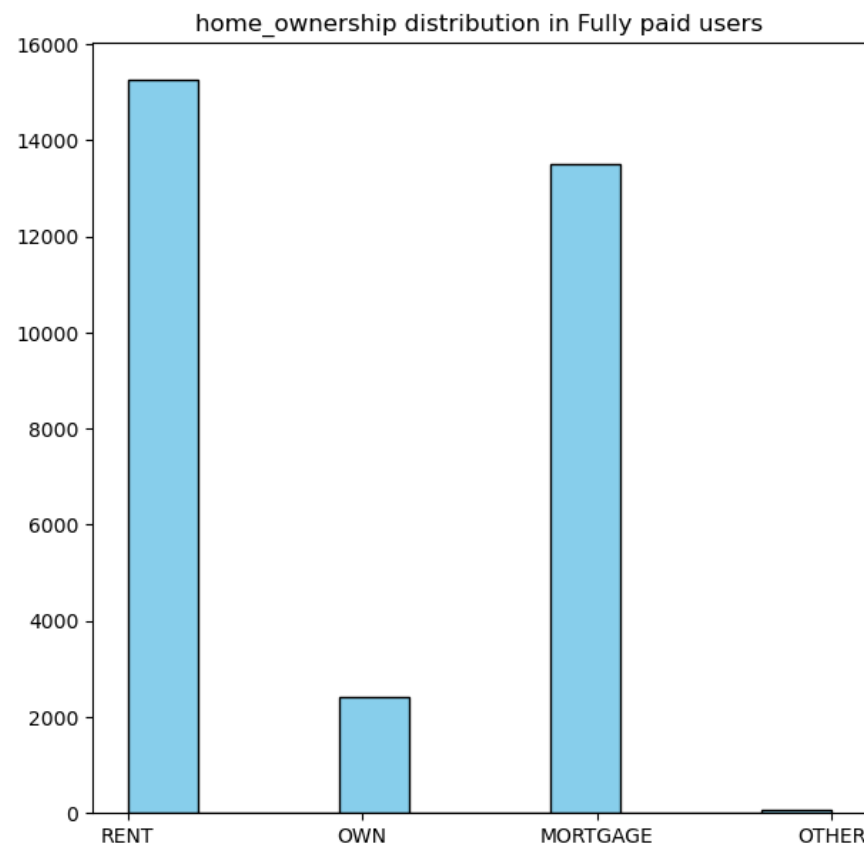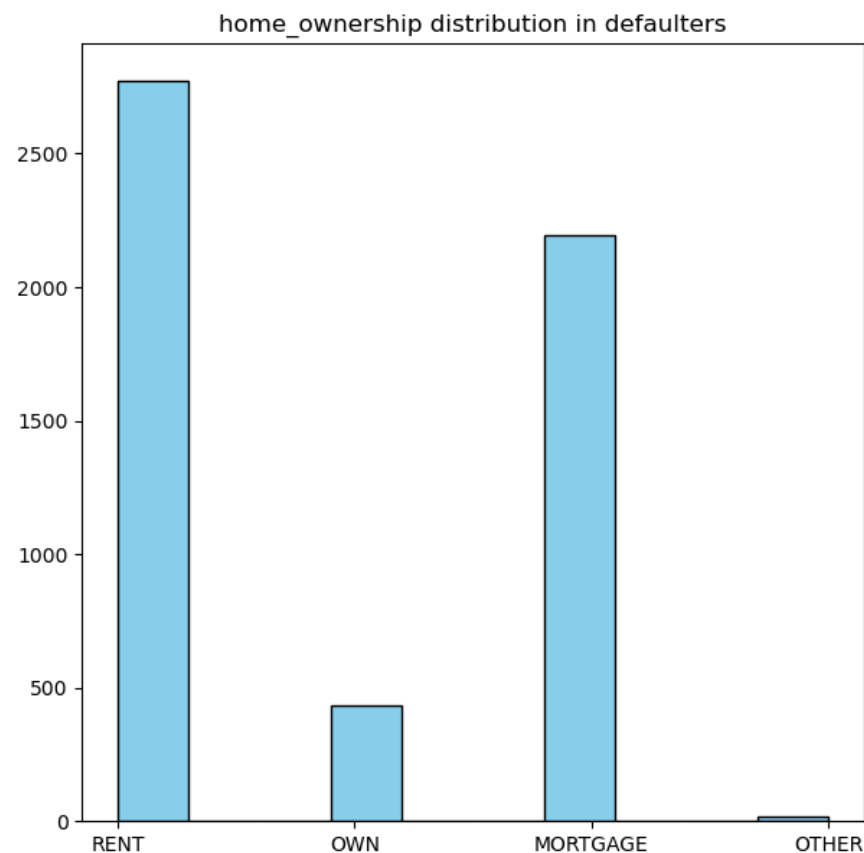
Interest Rate

We can clearly see that the interest rates have been higher for the defaulted loans consistently for all the loan amount ranges
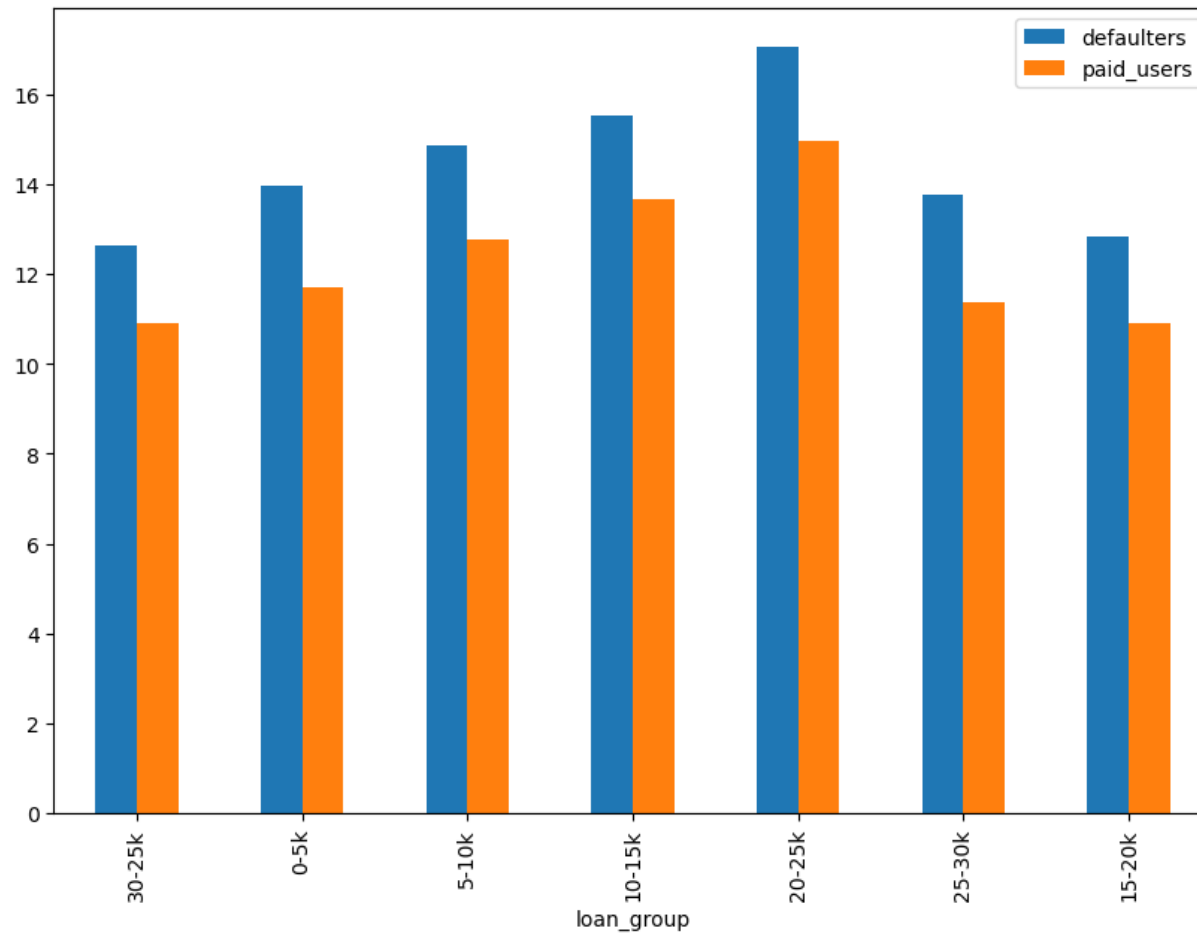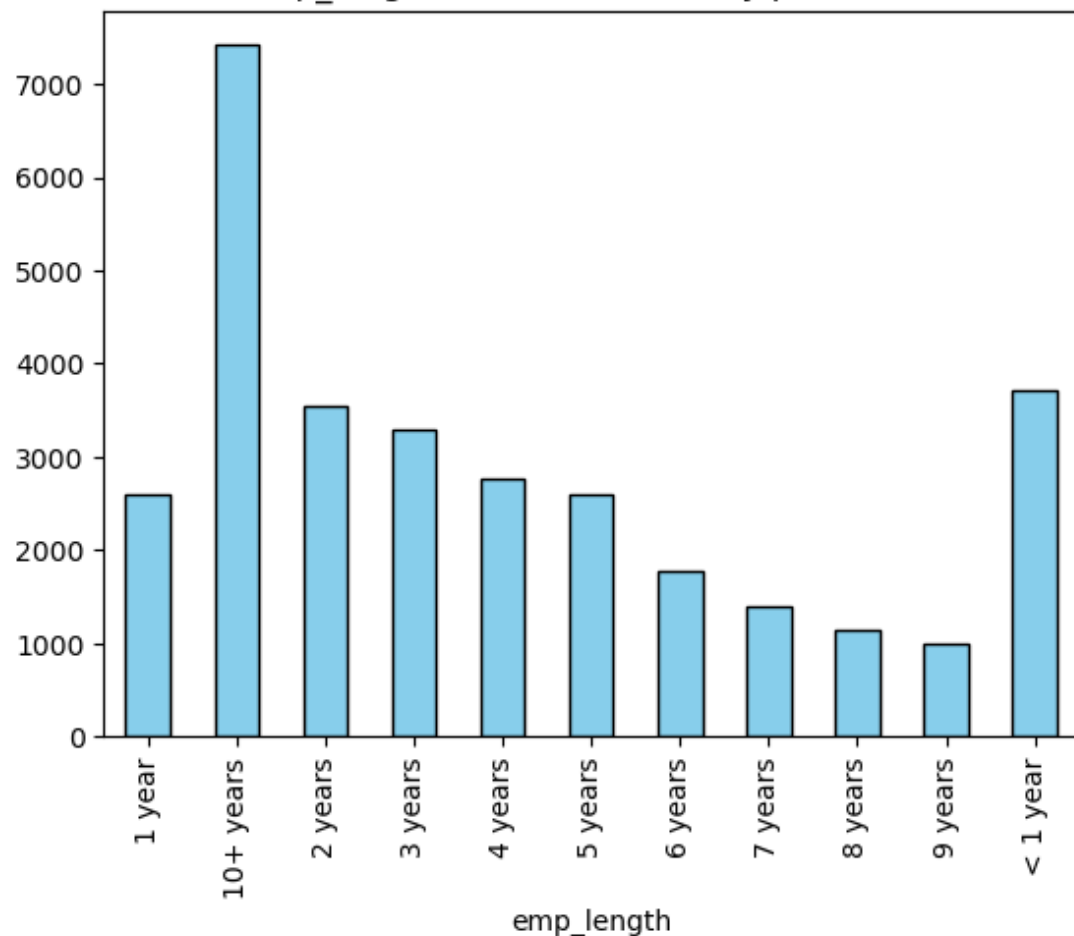
Categorical Variables

▶ **Home Ownership:** The distribution looks similar, so we can rule out the possibility of hoe ownership effecting the defaulting rate
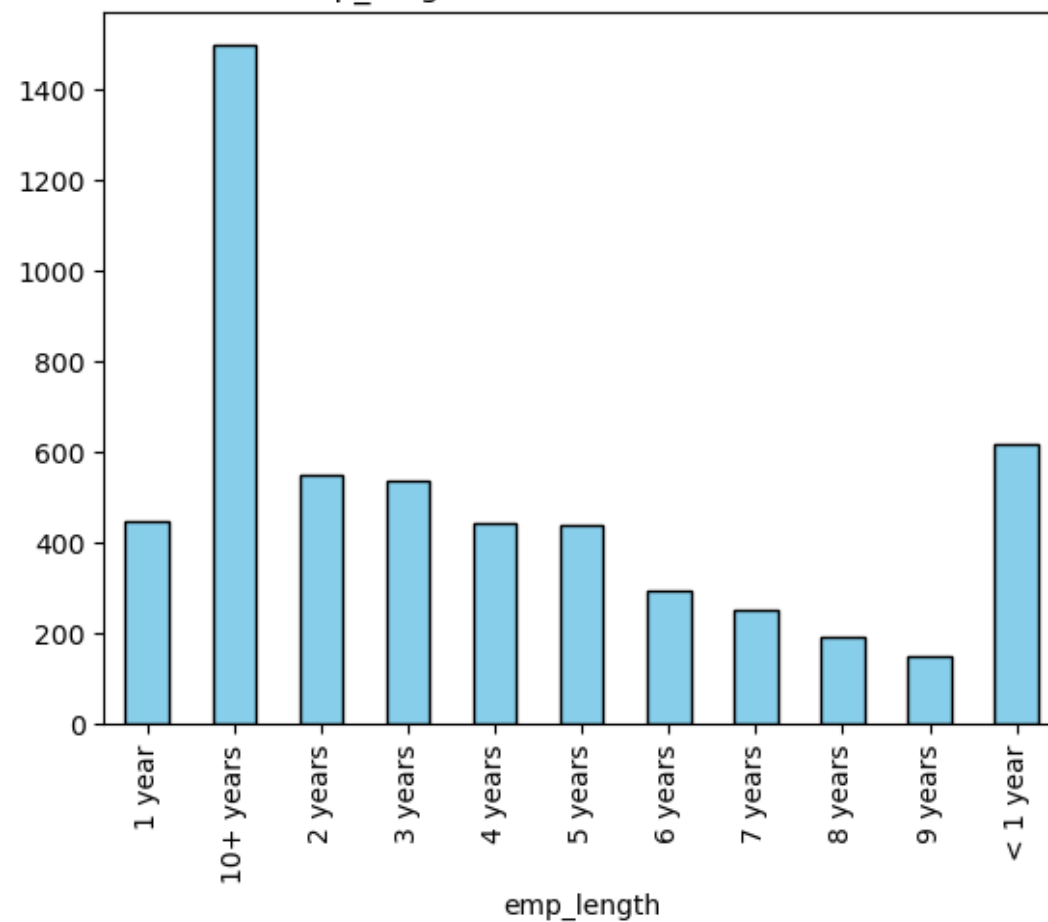
Employement Length

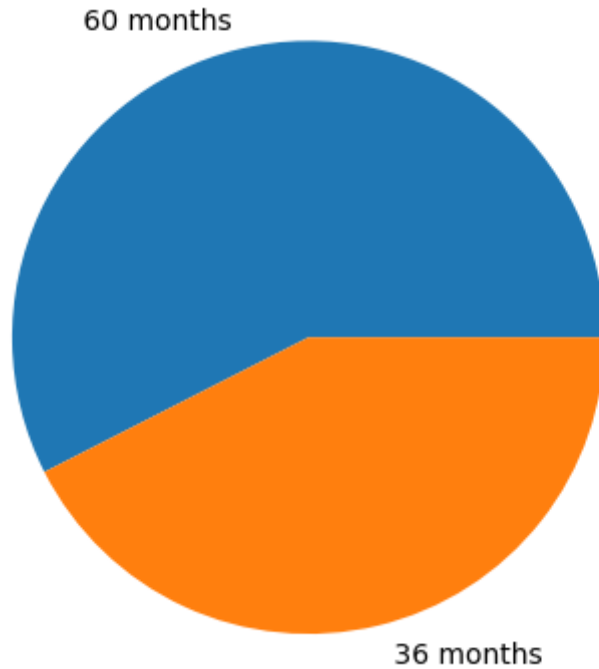▶ The distribution looks similar, so we can rule out the possibility of employment length effecting the defaulting rate
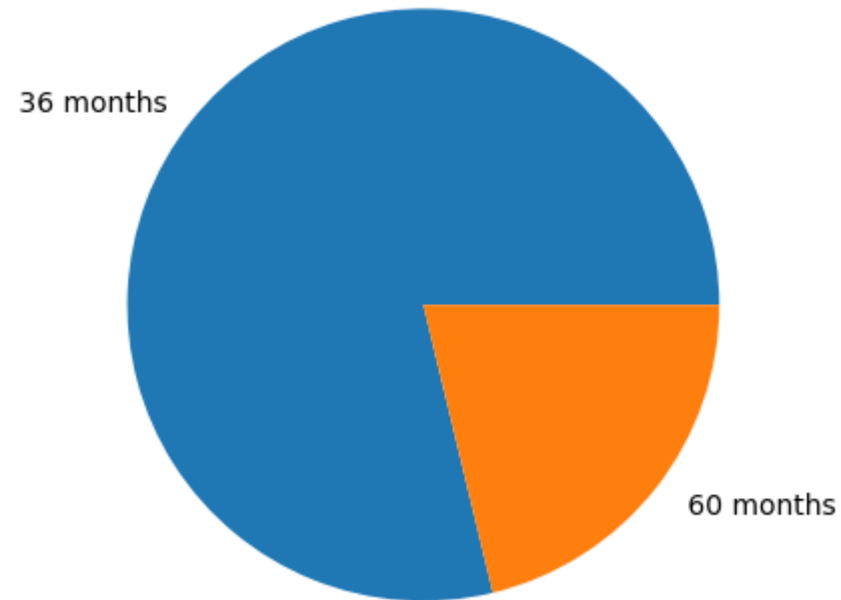
Term

- We can clearly see that loans with 60 months as term have a high chance of defaulting while most paid loans are with 36 months as term.
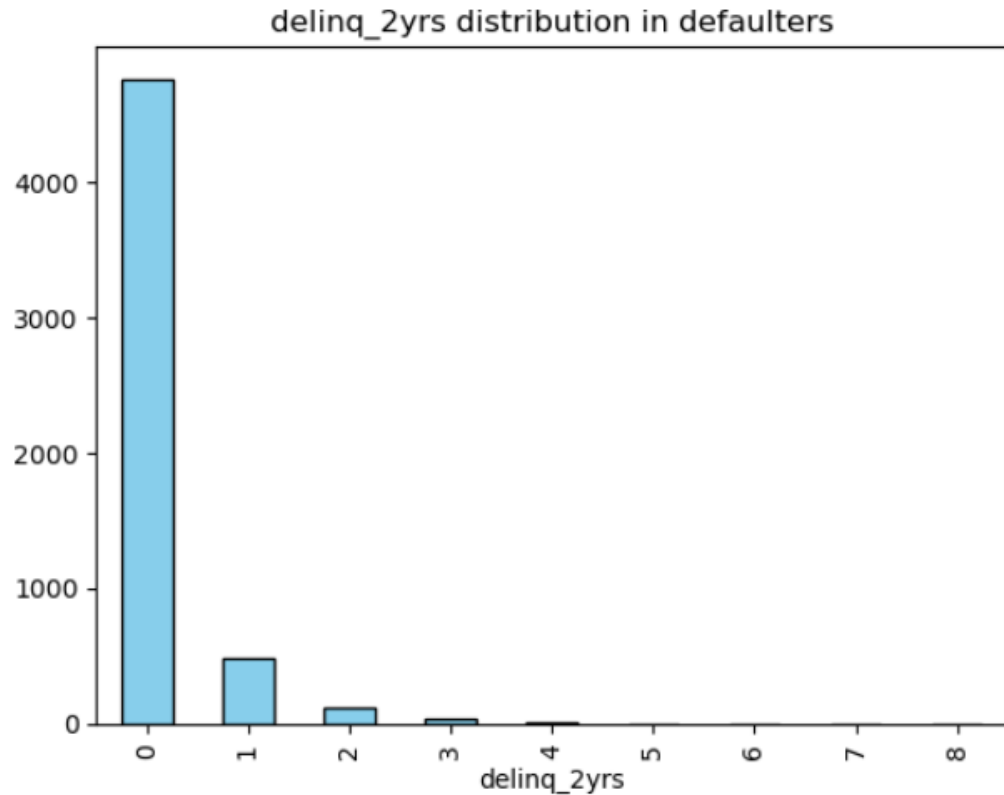
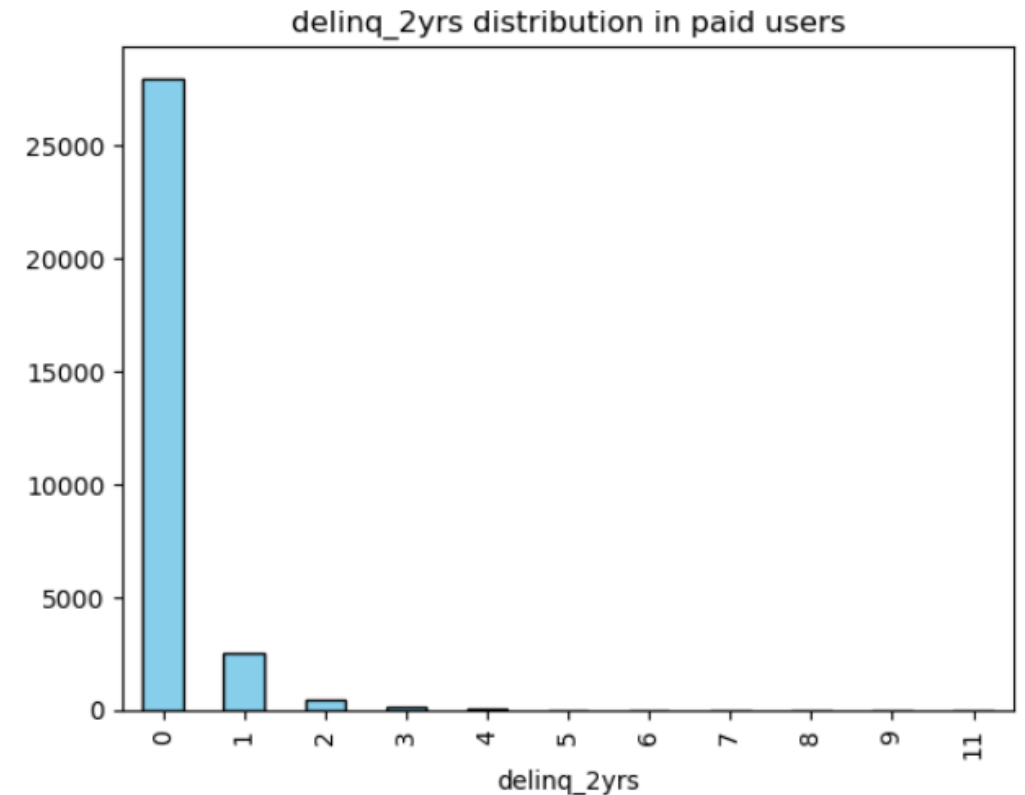- Defaulters   Fully Paid users

Numerical Variables

▶ analysis of delinq_2yrs(number of 30+ days past-due incidences of delinquency) shows that there is not much difference in the above charts for defaulters vs paid users. Thus delinq_2yrs does not have much impact.
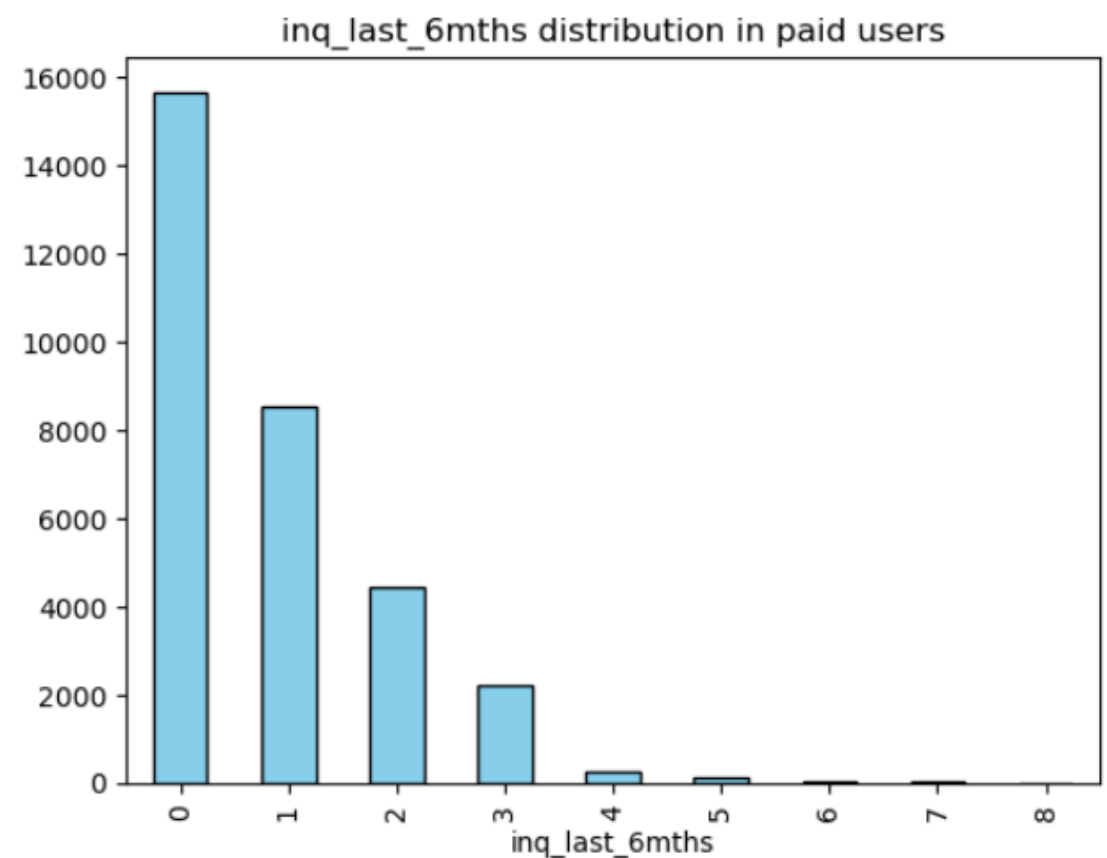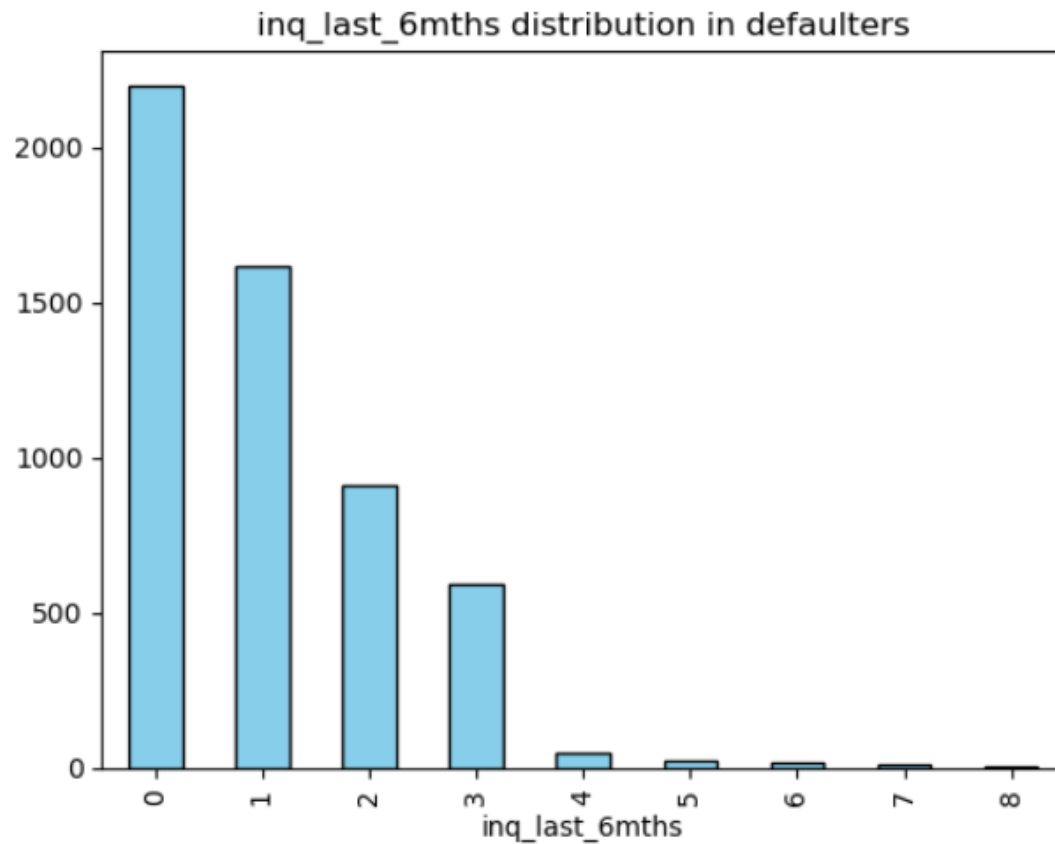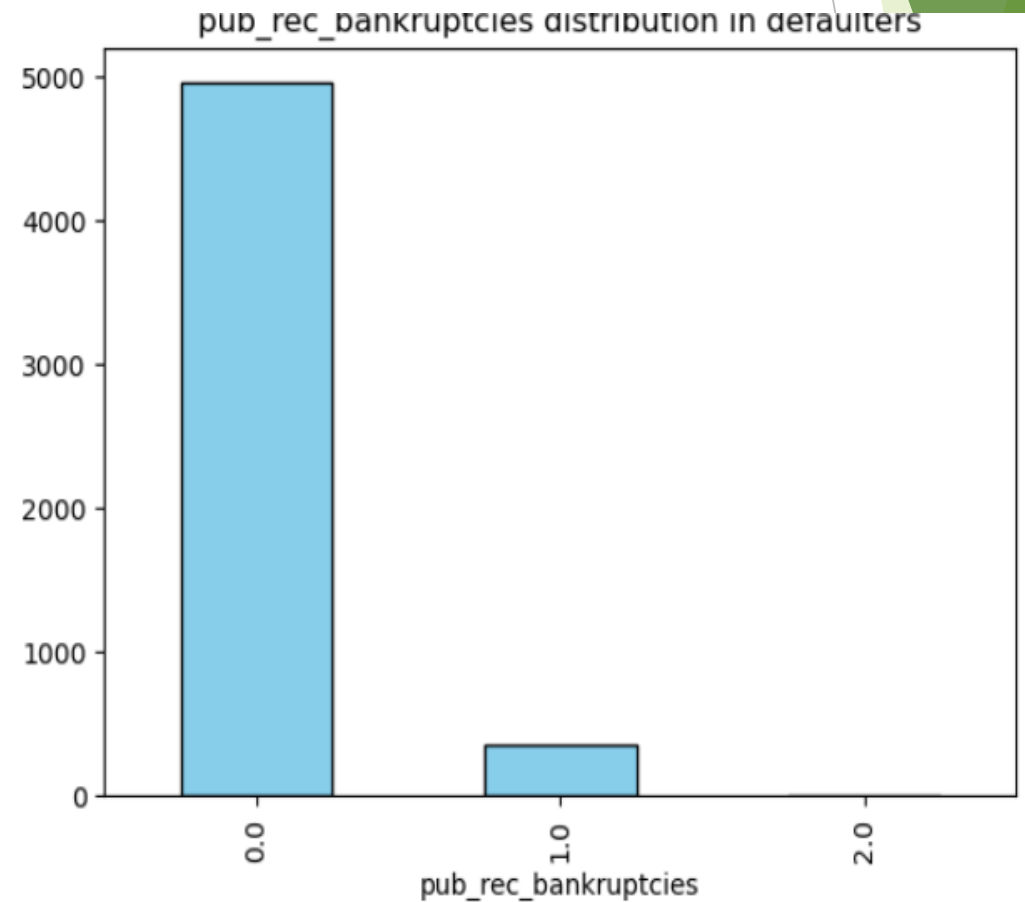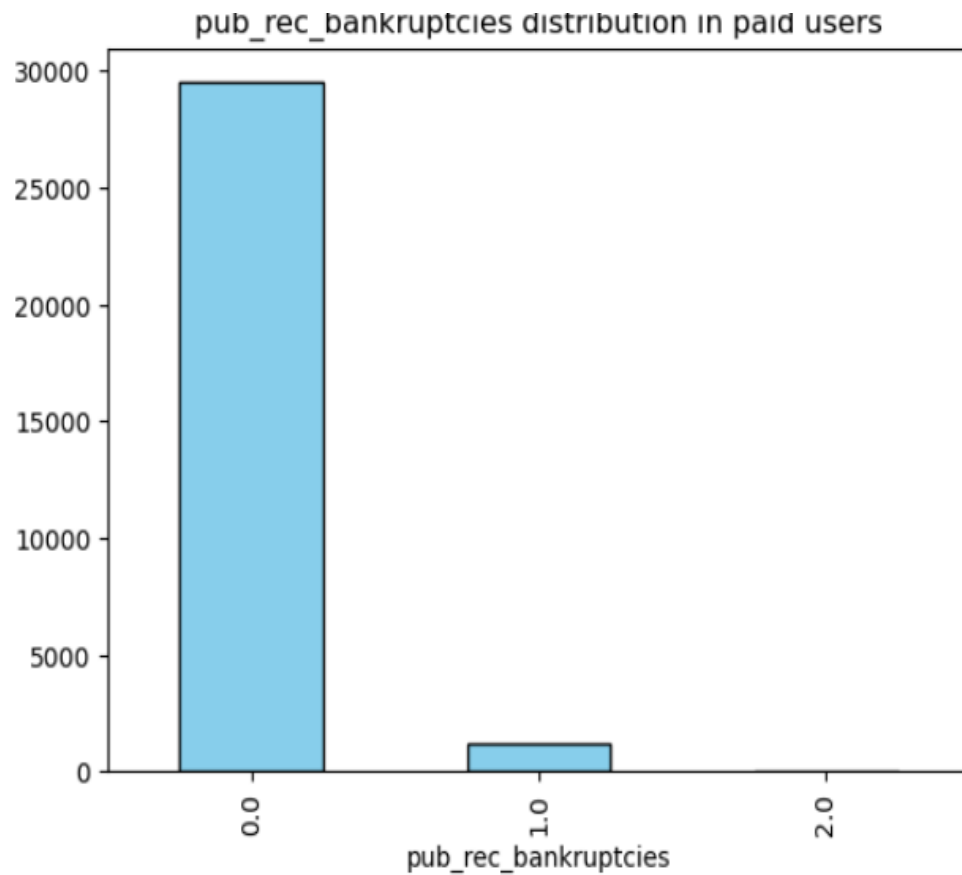
► analysis of inq_last_6mths (inquiries in past 6 months) shows that there is not much difference in the above charts for defaulters vs paid users. Thus inq_last_6mths does not have much impact.

Public recorded bankruptcies

▶ Above analysis of pub_rec_bankruptcies shows that pub_rec_bankruptcies does not have much impact on whether a borrower is going to default or not.
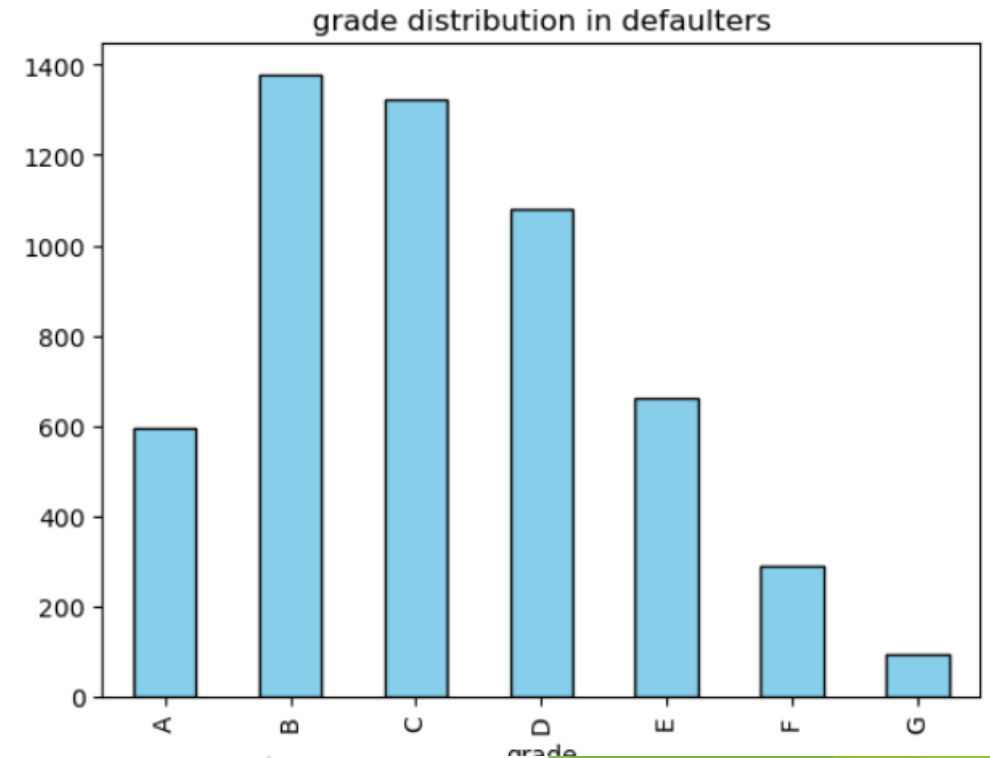
Grades

- The above bar charts and percentages shows that grade A has very less chance of defaulting where as grades C,D,E,F have comparatively higher chances of defaulting.

62]: Text(0.5, 1.0, 'grade distribution in paid users')
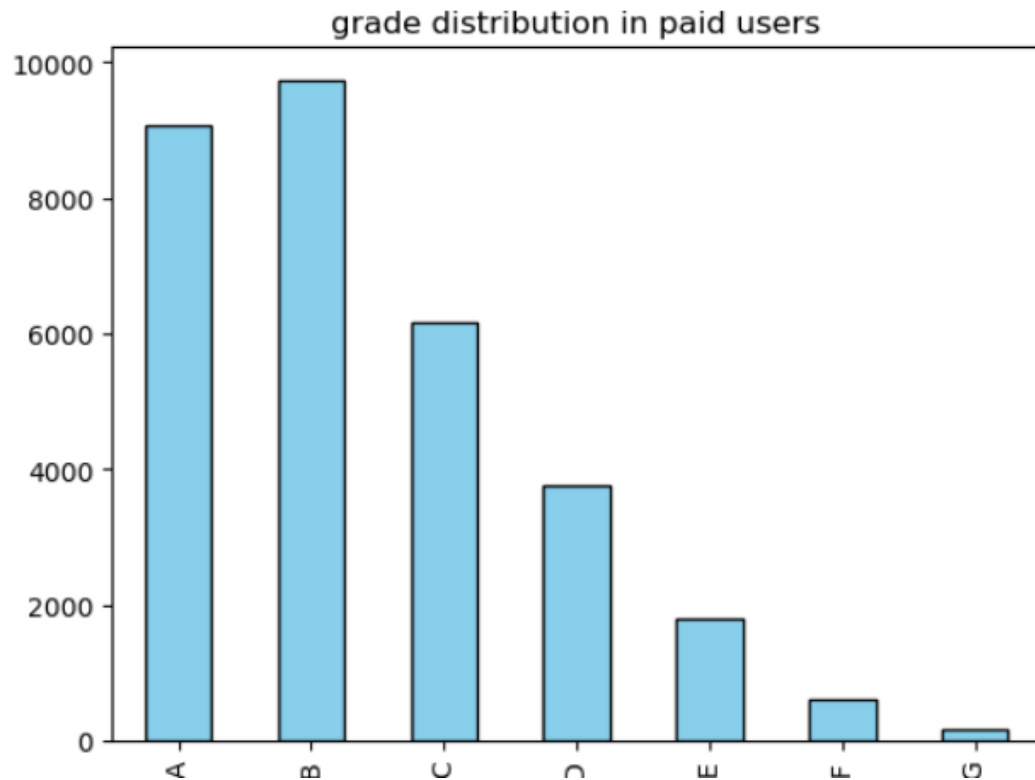
]: Text(0.5, 1.0, 'grade distribution in defaulters')

Observations

- It is found from our analysis that Term, grade and dti are the factors that can determine default rate for a loan.

- The other categorical and numeric variables seem to be similar in both defaulters and paid users distributions.