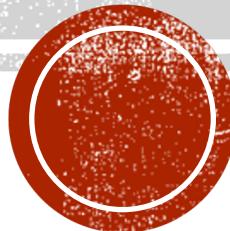


LENDING CLUB CASE STUDY

Group Members:

1. Raina Sharma
2. Rahul Madan





understand the **driving factors** (or **driver variables**) behind loan default, i.e. the variables which are strong indicators of default.



identify risky loan applicants using EDA. The company can utilise this knowledge for its portfolio and risk assessment.

CASE STUDY OBJECTIVES



DATA CLEANING STEPS

1

Fix rows
and
columns

2

Fix missing
values

3

Standardise
values

4

Fix invalid
values

5

Filter data



PRE PREPARATORY STEPS

Removed columns having null values >40%

Dropped columns not required in analysis

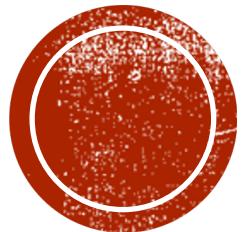
Handled Null values and imputed the missing data

Corrected data types of columns

Created Derived Columns required for the analysis

Found outliers and removed





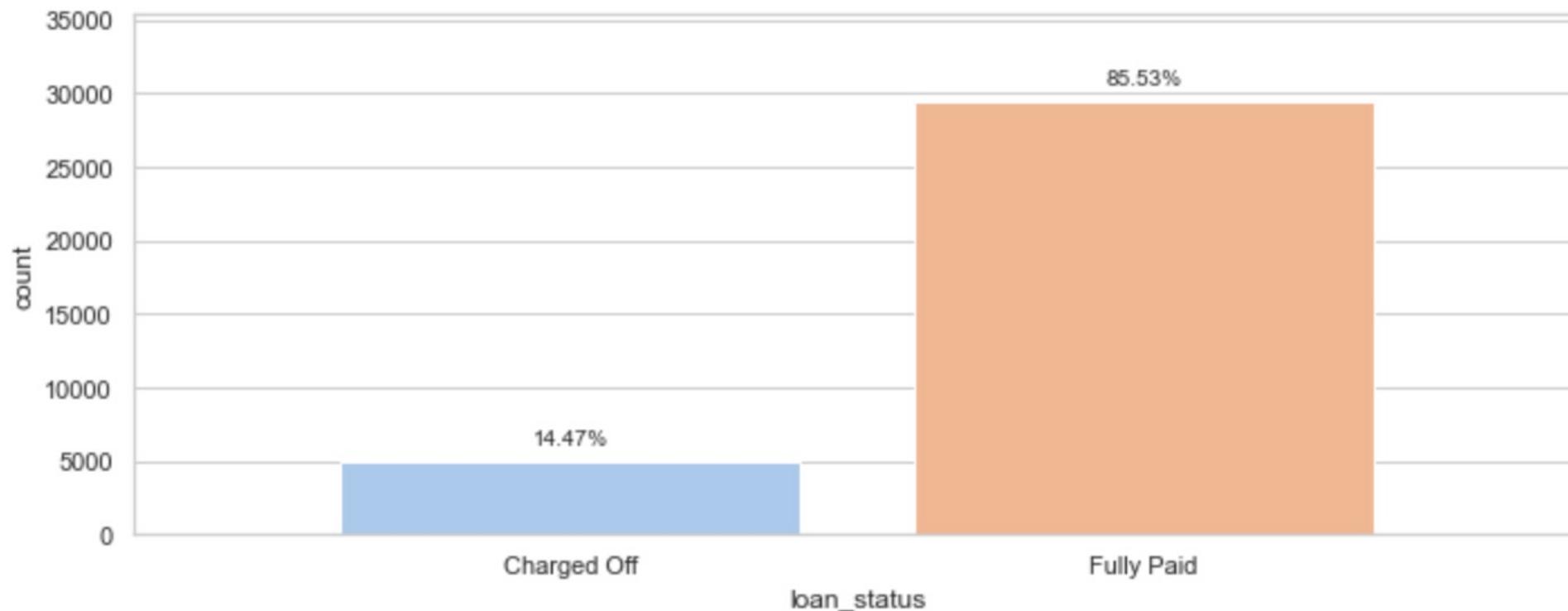
UNIVARIATE ANALYSIS



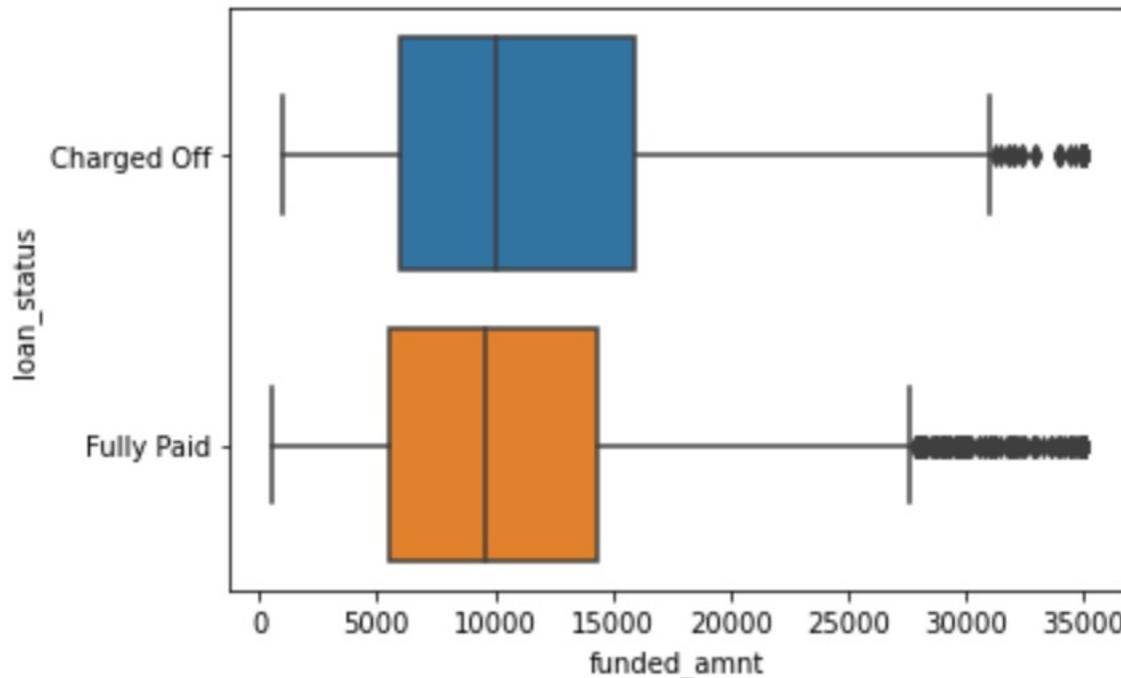
LOAN STATUS

Observation:

- 85% of the loans are successfully paid and only 15% of the loans are defaulted



FUNDED AMOUNT



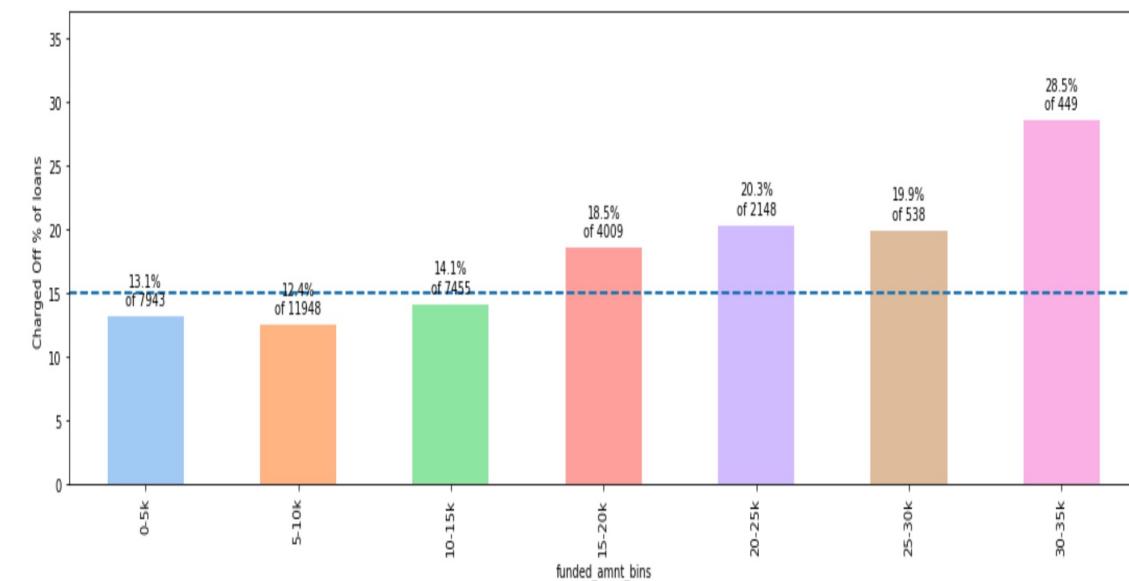
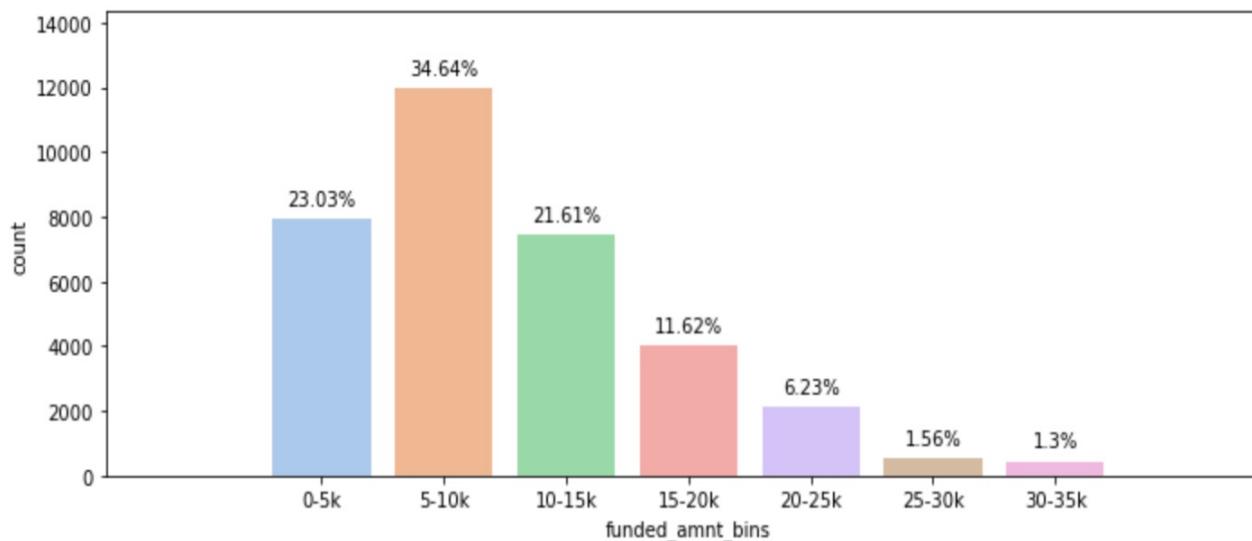
***Considering Funded amount for analysis as that is the actual loan amount funded*

Observation:

- ❖ Overall, the funded amount distribution is slightly right-skewed with mean greater than the median. Most of the loans granted are below 16000 (75 percentile value)
- ❖ Charged off loans have higher average of funded amount than the paid off loans.



FUNDED AMOUNT

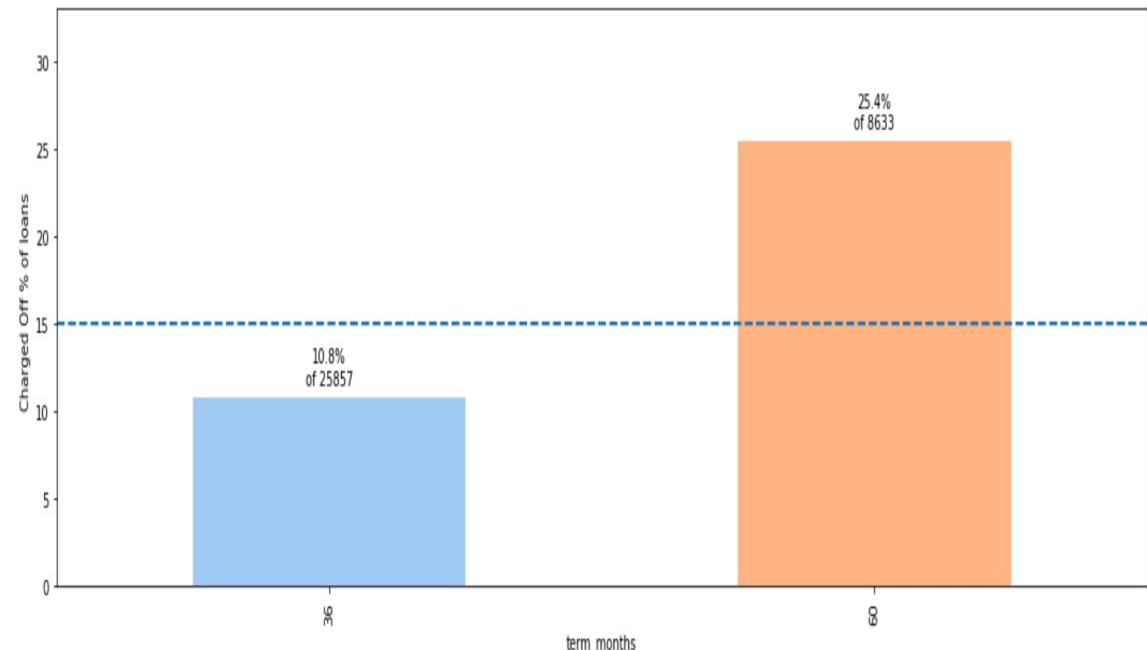
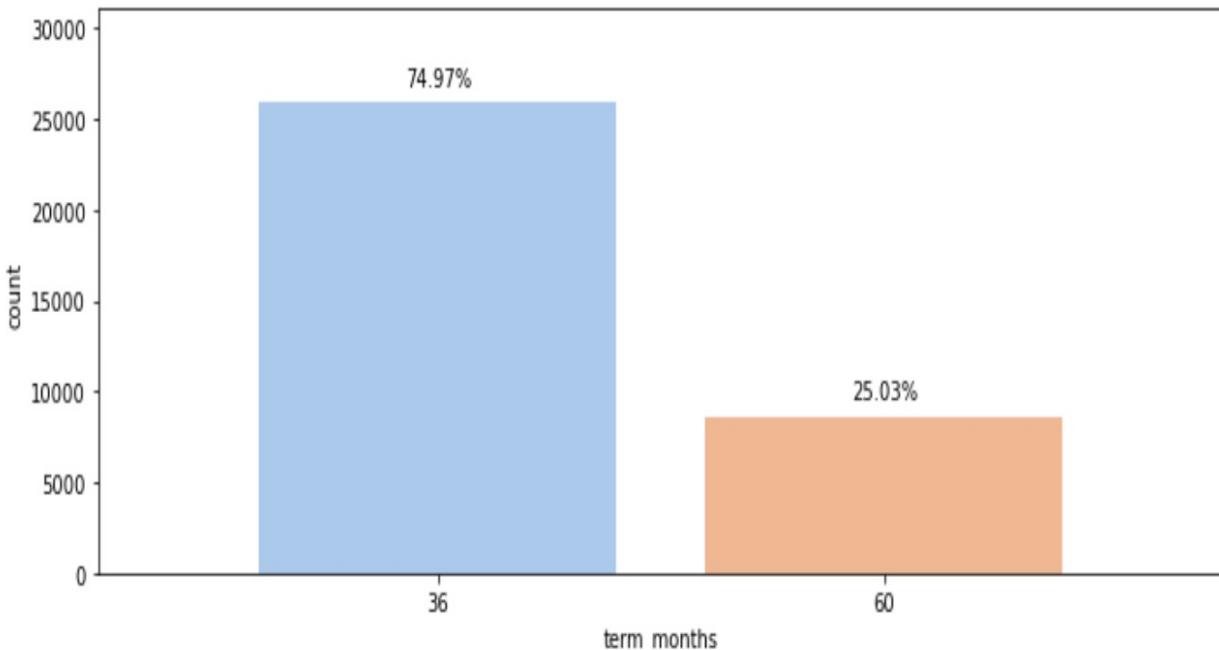


Observation:

- ❖ The % of charged off loans increases substantially with increase in funded amount



LOAN TENURE

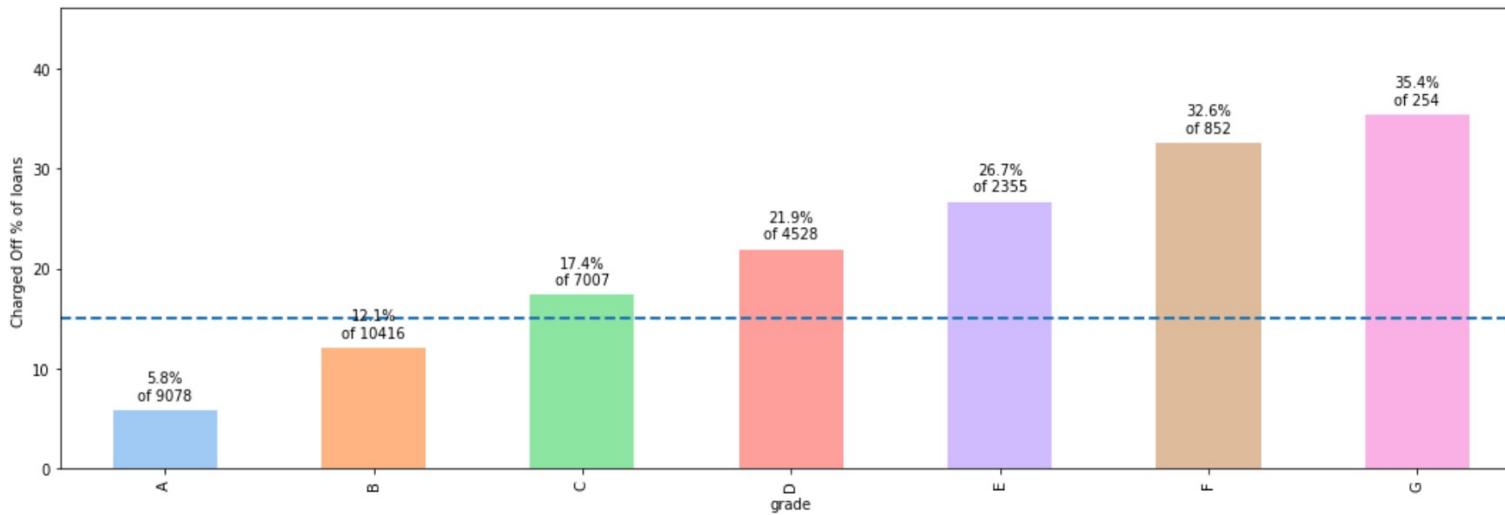


Observation:

- ❖ Most of the loans are of 3 years tenure
- ❖ The charged off % is significantly high for loans of longer tenure(5 years)

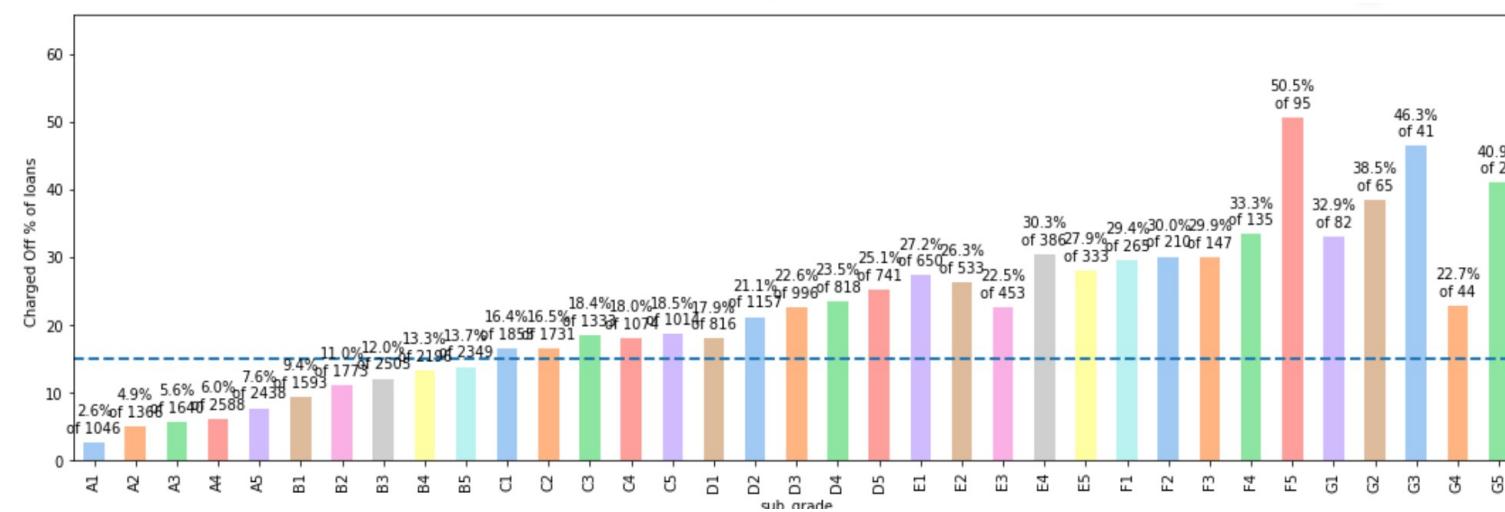


GRADE & SUB GRADE

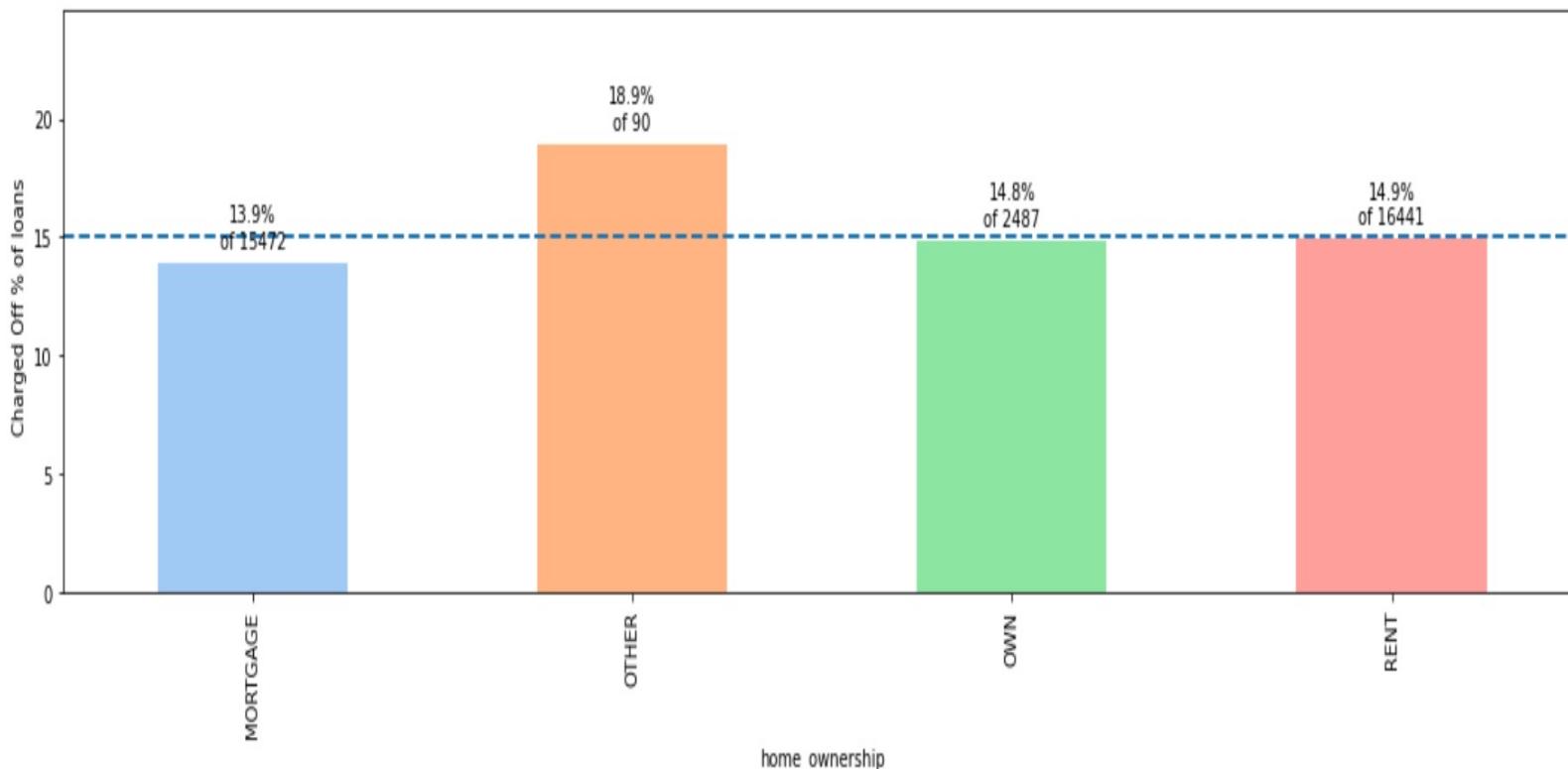


Observation:

- ❖ Chances of defaulting increases with grade from A to G and subgrade from A1-A5, B1-B5, & so forth



HOME OWNERSHIP

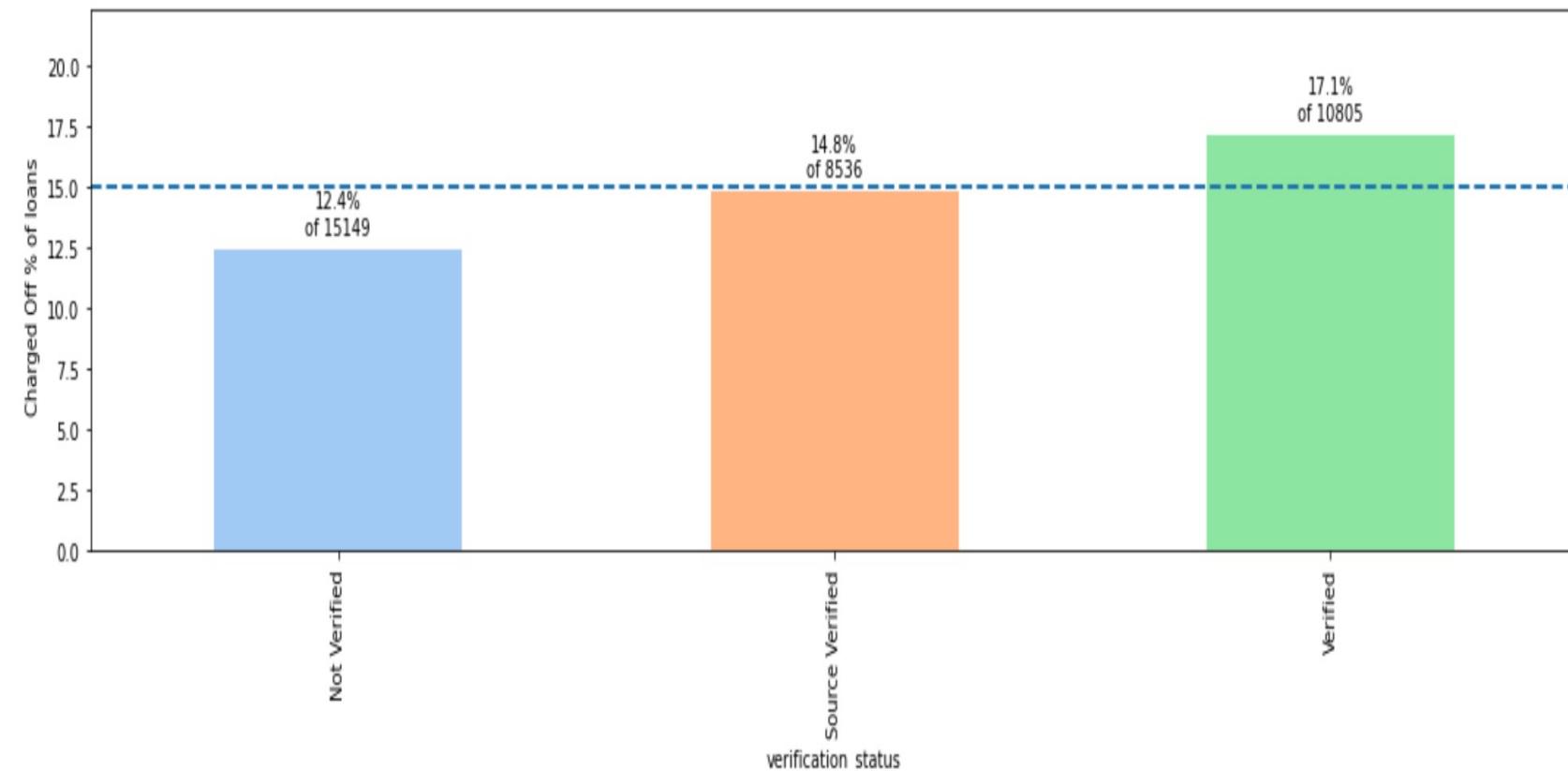


Observation:

- ❖ People with ownership type as Mortgage and Rent are the most who take loans.
- ❖ The default rate is high for people having home ownership as other.
- ❖ The default rate is not significantly impacted by the home ownership status - Mortgage/Owned/Rent



VERIFICATION STATUS

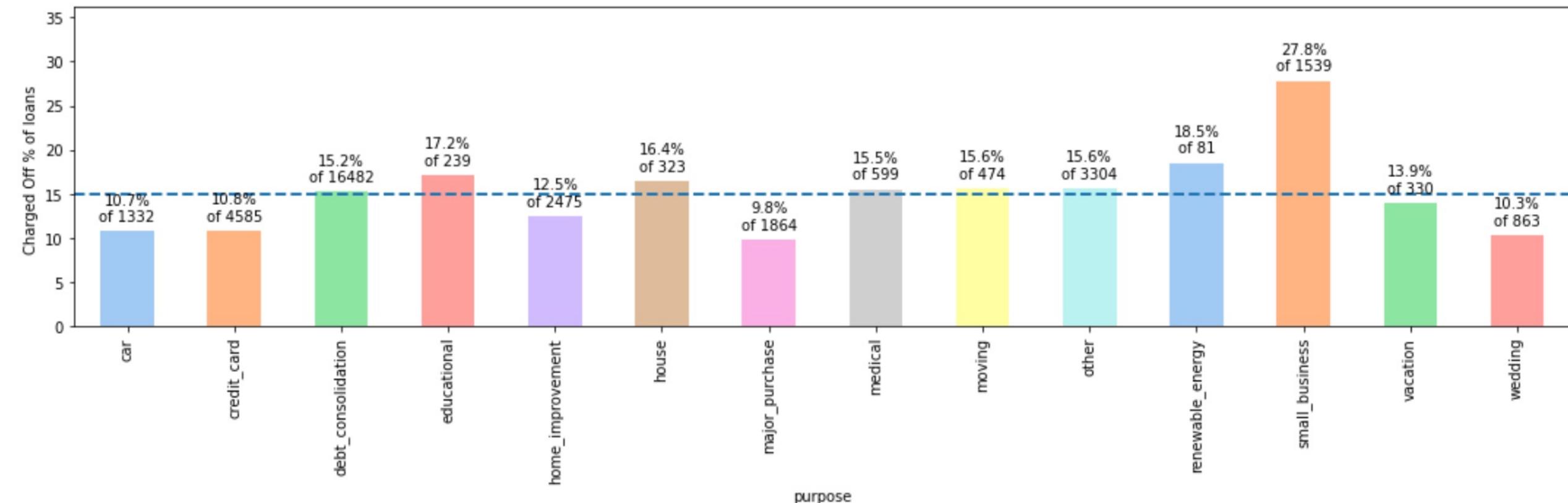


Observation:

- ❖ Majority of people taking loans are not verified.
- ❖ Chances of Defaulting is higher even with the verification status as verified.



PURPOSE

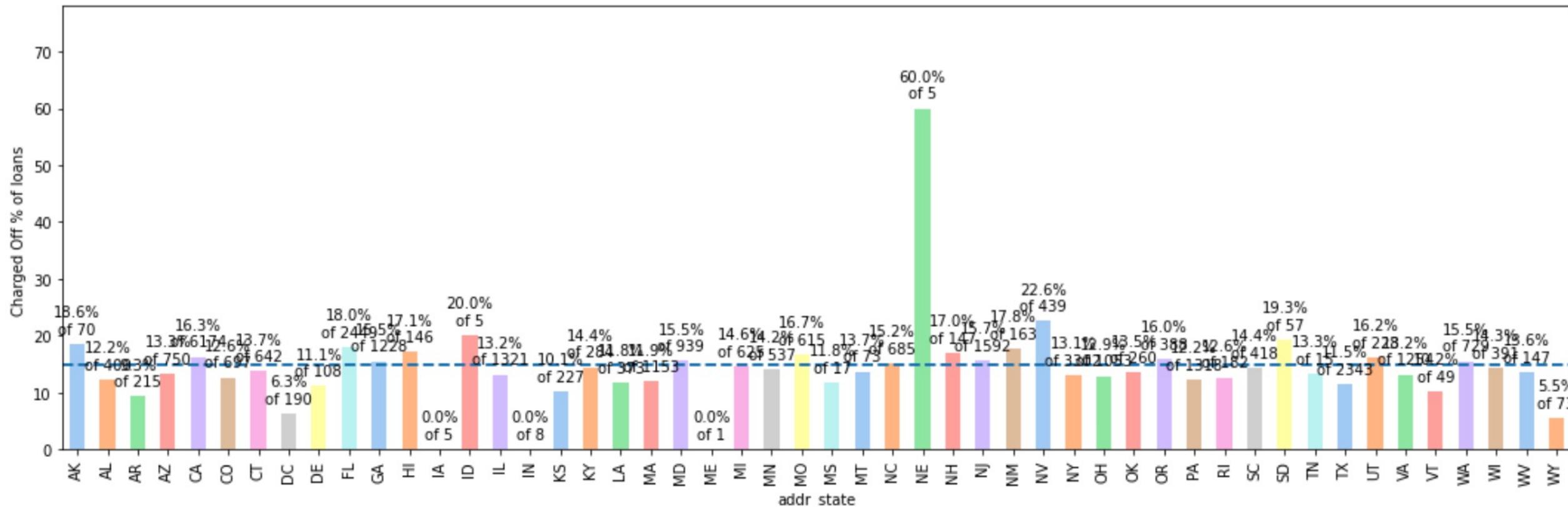


Observation:

- ❖ Majority of people taking loans have credit card or debt consolidation as purpose.
- ❖ Default rate is higher for small business, renewable energy, educational categories.



BORROWER STATE

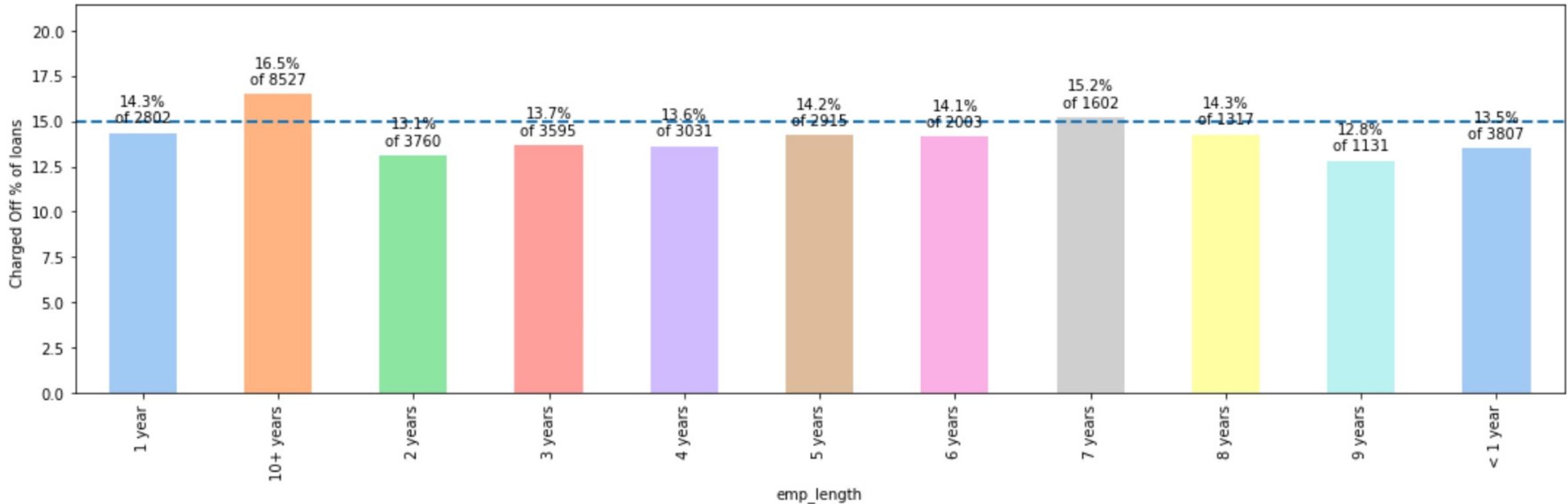


Observation:

- ❖ Most of the borrowers are from California, New York, Florida.
- ❖ Although Nebraska(NE) has high default rate but can be ignored since it had insignificant number of borrowers.
- ❖ Nevada and South Dakota have high default rate and with significant % of borrowers.



EMPLOYMENT LENGTH

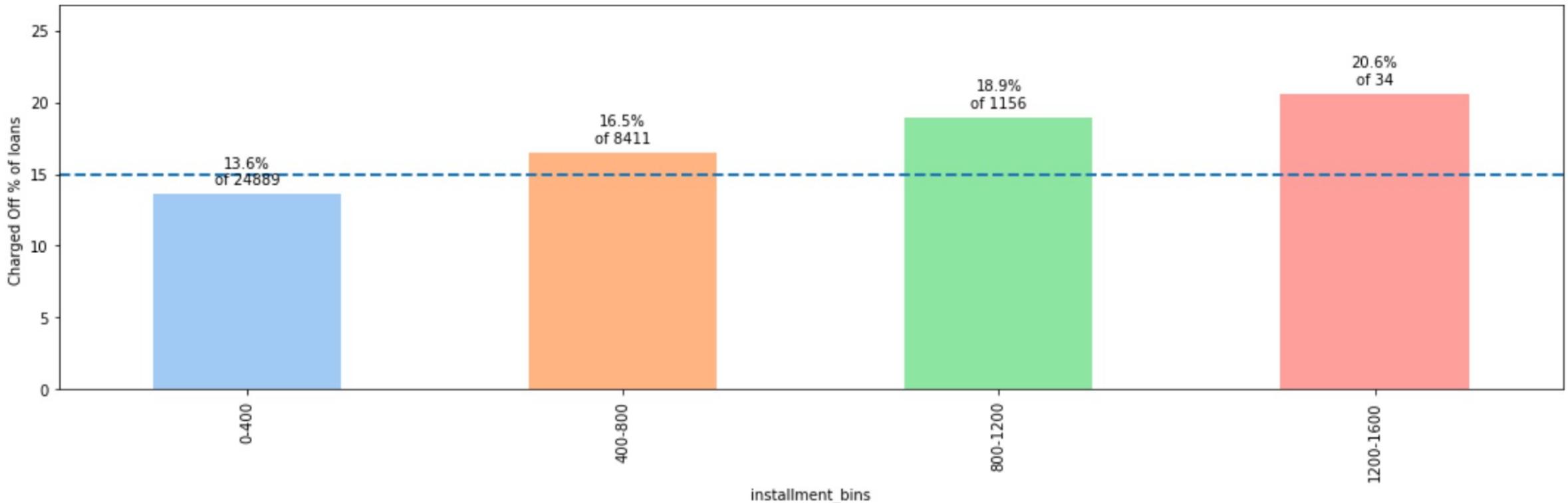


Observation:

- ❖ Most of the borrowers either have experience >10 or are freshers.
- ❖ Chances of defaulting is higher for people with experience > 10 years.



LOAN INSTALLMENT

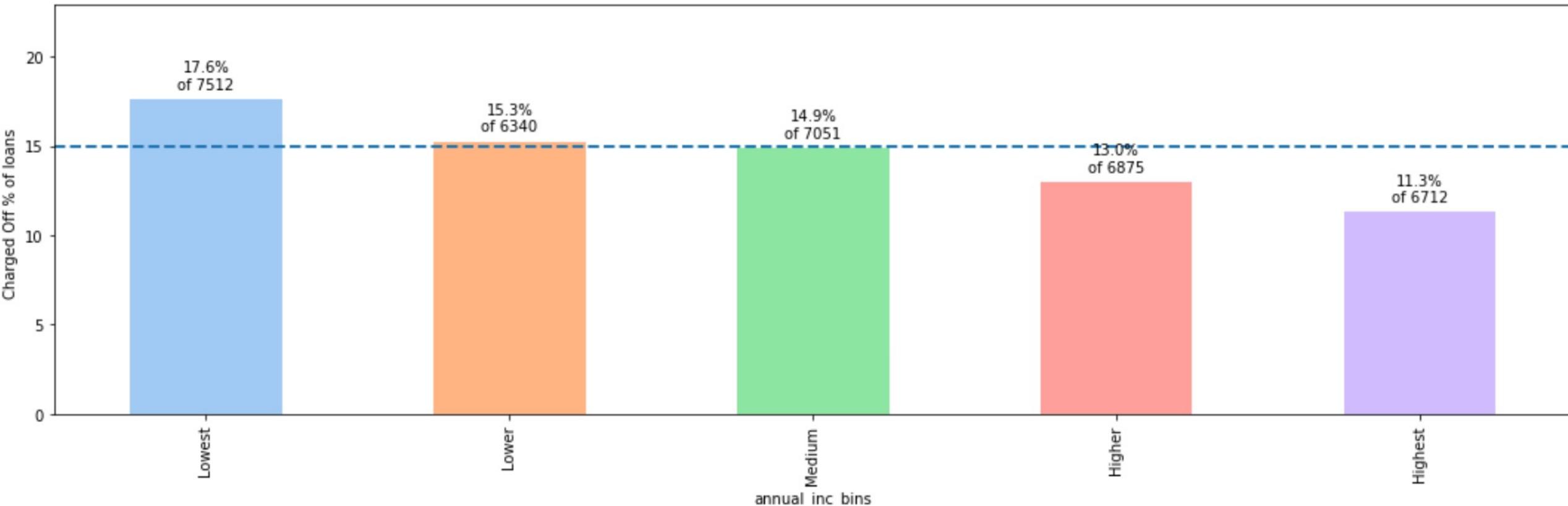


Observation:

- ❖ Chances of defaulting are higher for loans with higher amount of instalment



ANNUAL INCOME

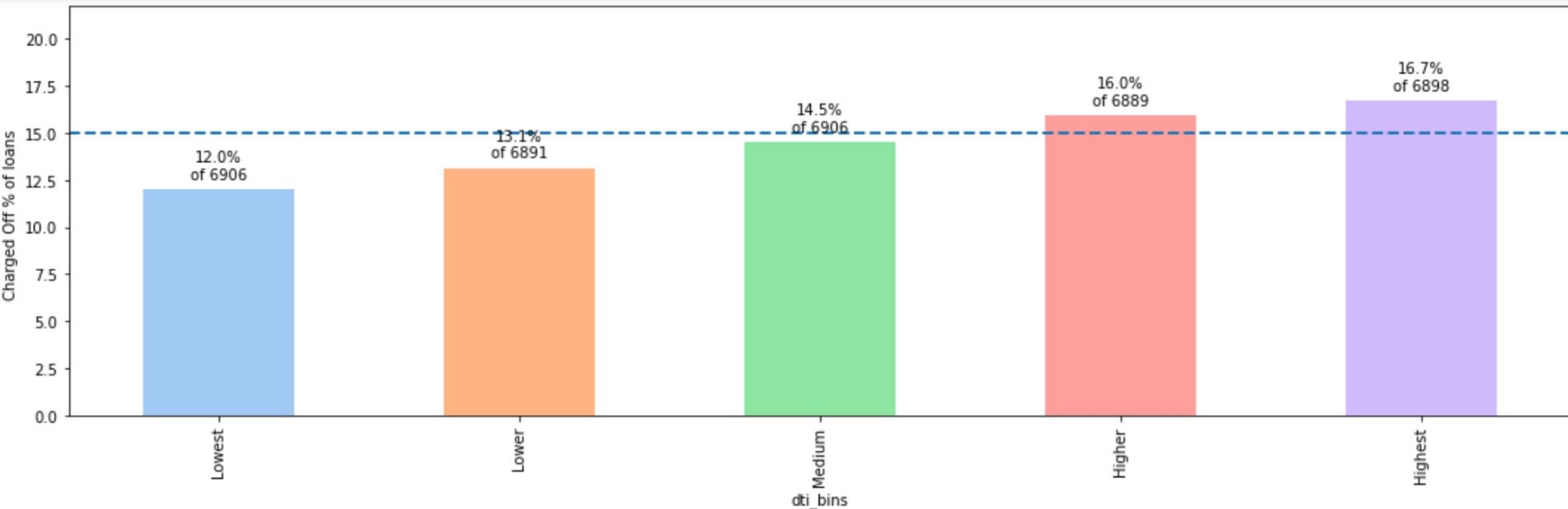


Observation:

- ❖ People with low annual income have high chances of defaulting.



DEBT TO INCOME RATIO

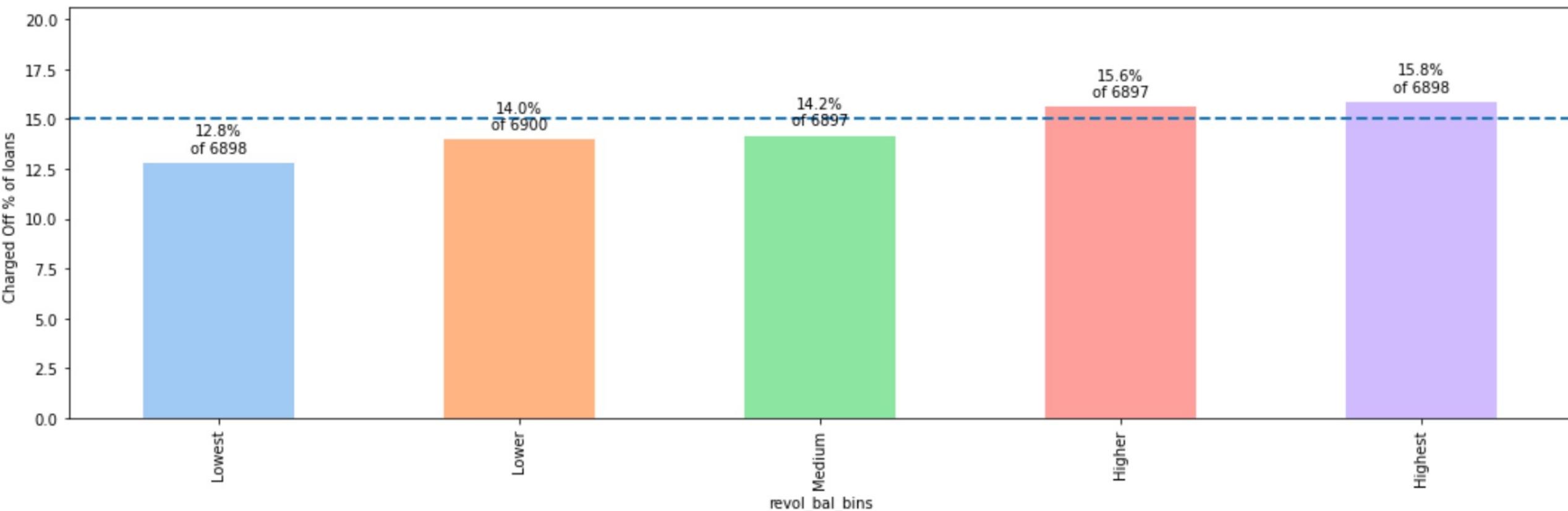


Observation:

- ❖ High DTI (debt to income ratio) results in higher charged off % for loans.



REVOLVING BALANCE

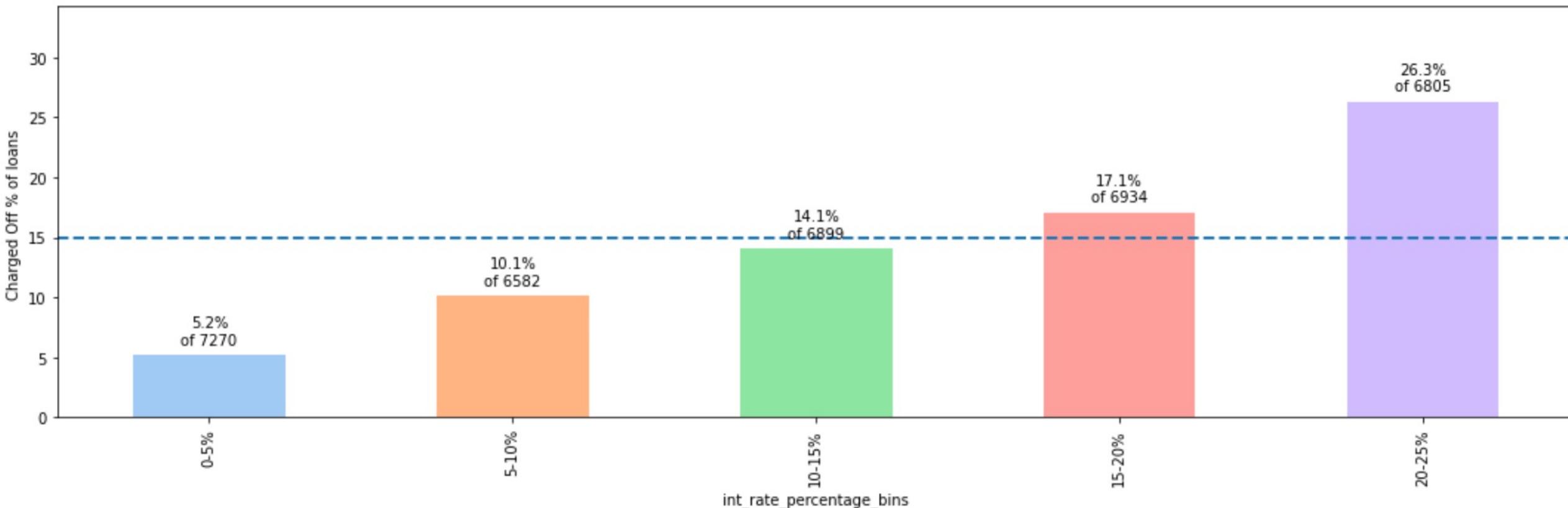


Observation:

- ❖ Higher the revolving balance, bigger the chance of the loan getting defaulted.



INTEREST RATE

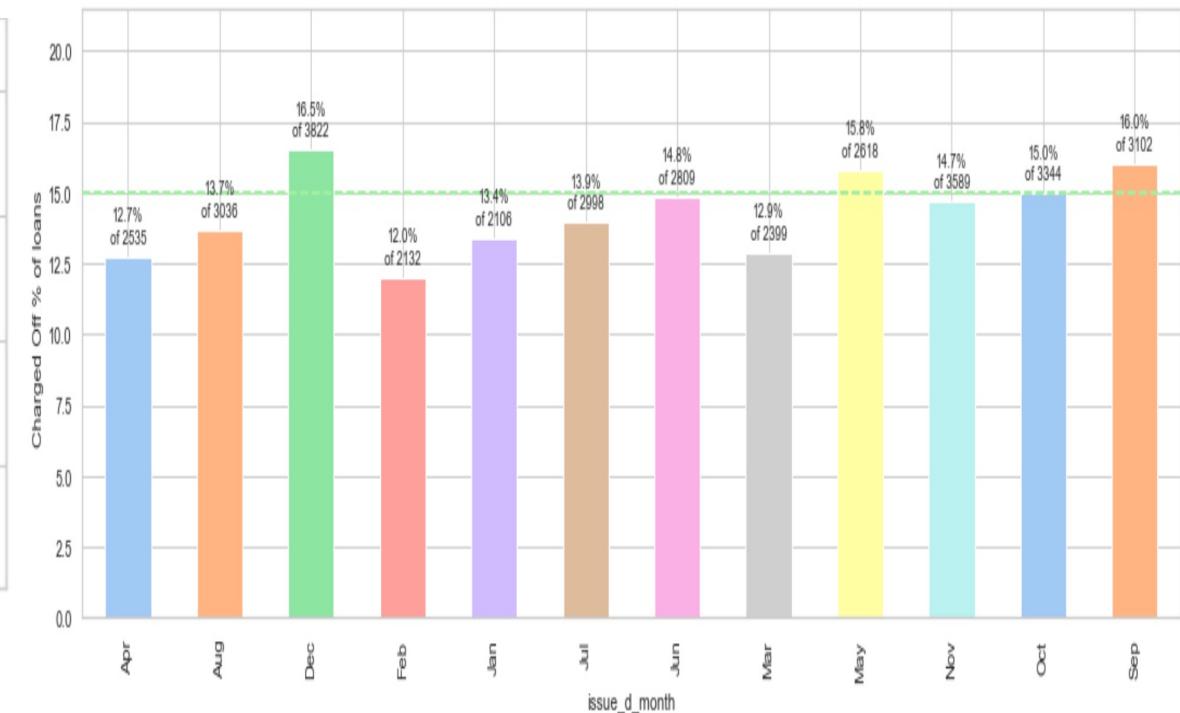
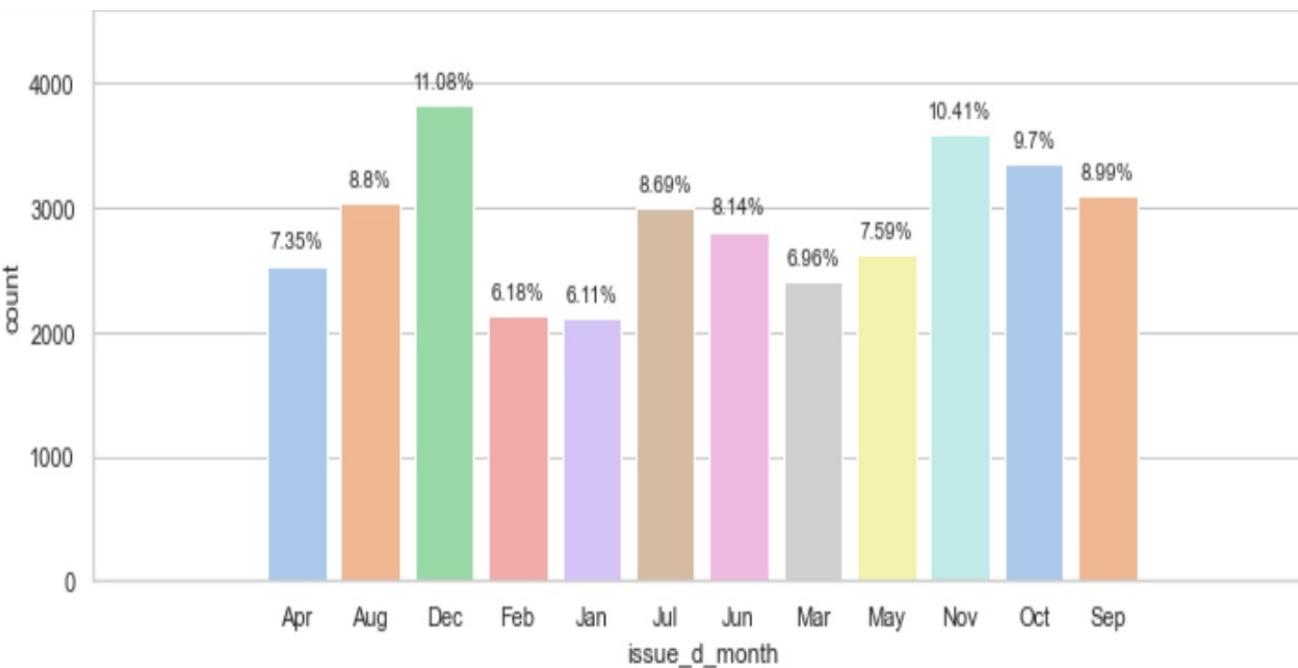


Observation:

- ❖ Loans with high interest rates results into high default rates.



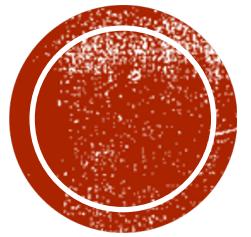
ISSUE DATE



Observation:

- ❖ December has the highest charged off ratio.
- ❖ Upward trend in number of borrowers from Jan to Dec.





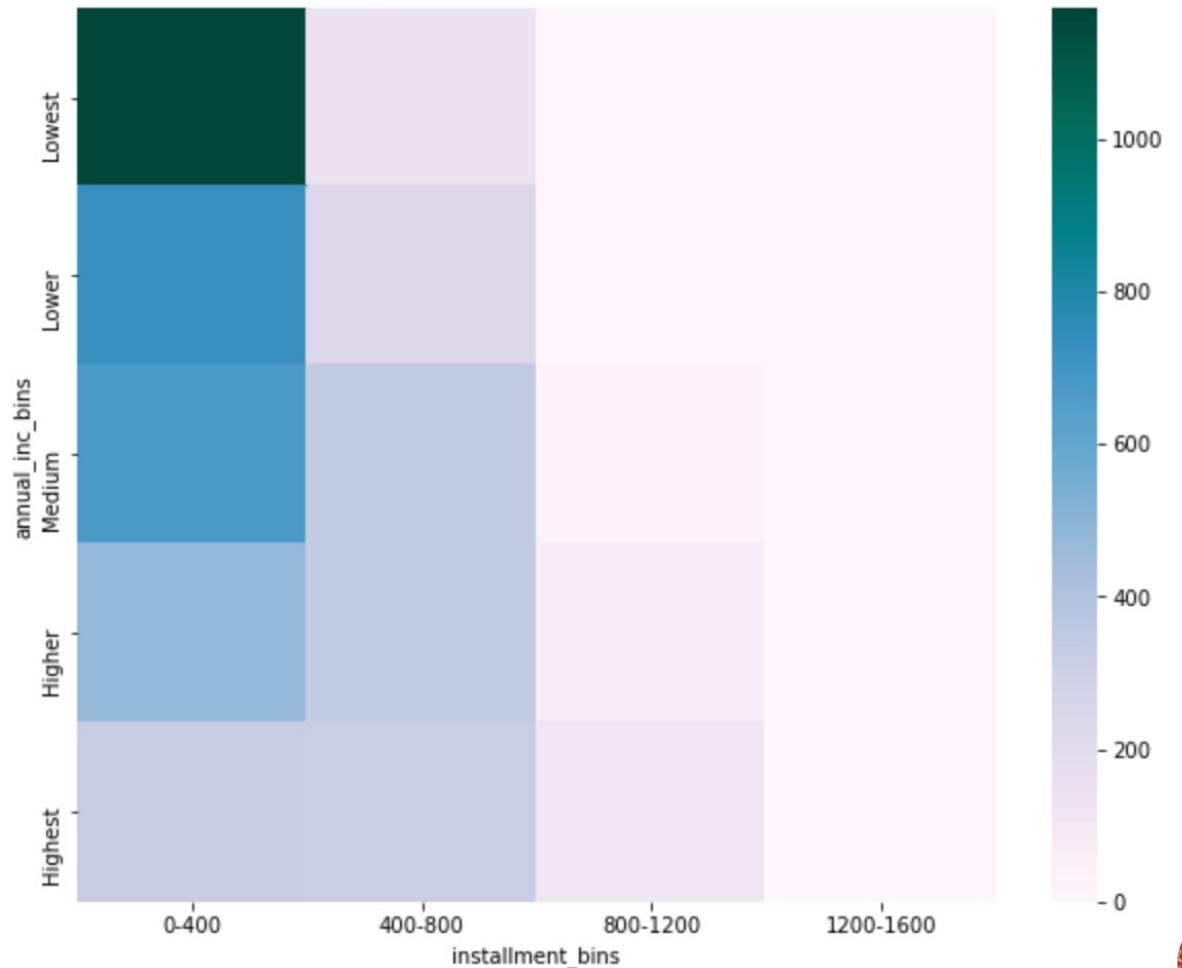
BIVARIATE ANALYSIS



ANNUAL INCOME AND INSTALMENT

Observation:

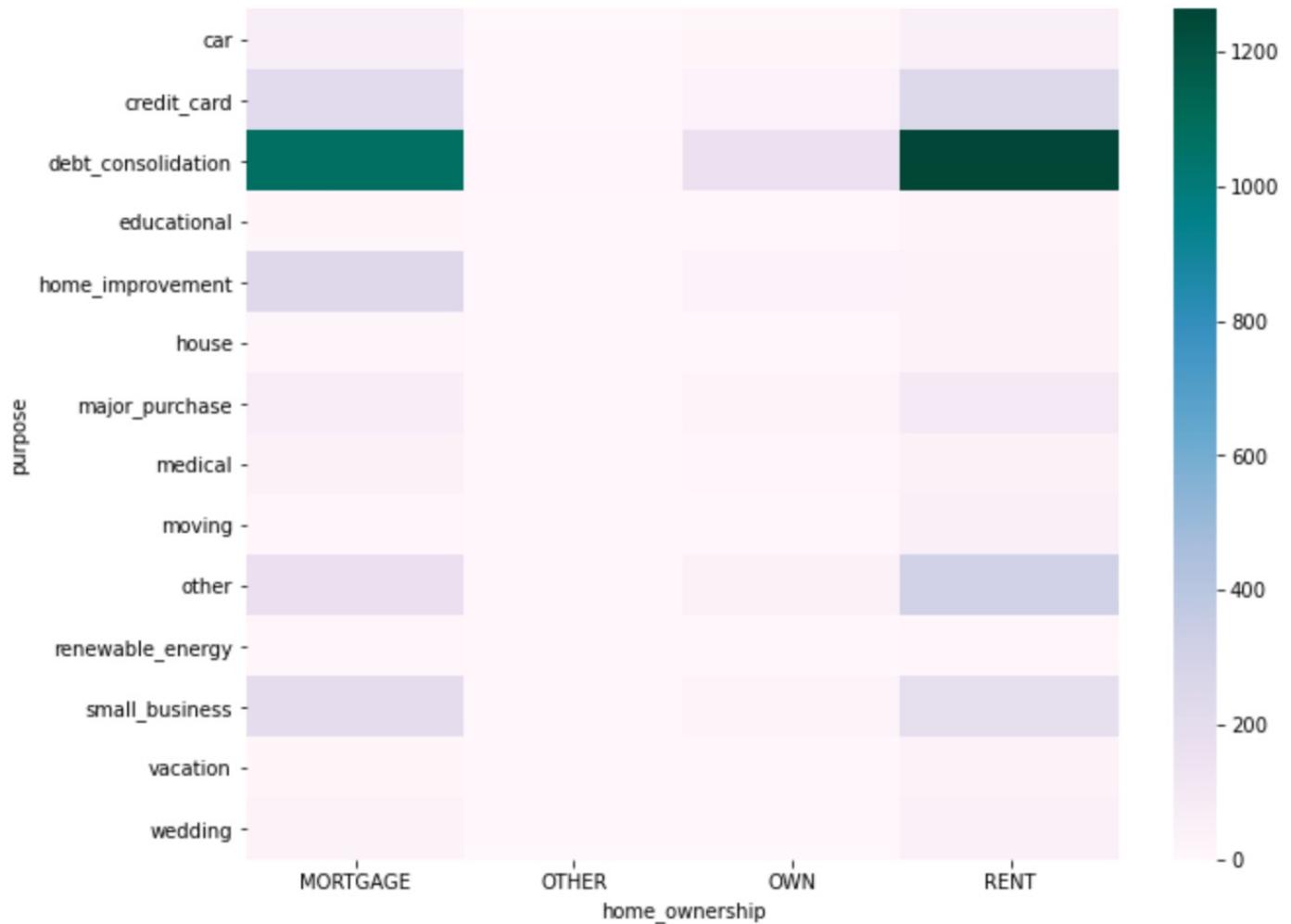
- ❖ Chances of defaulting is high when the borrower has annual income in the lowest segment, even though the instalment is lowest too.



HOME OWNERSHIP AND PURPOSE

Observation:

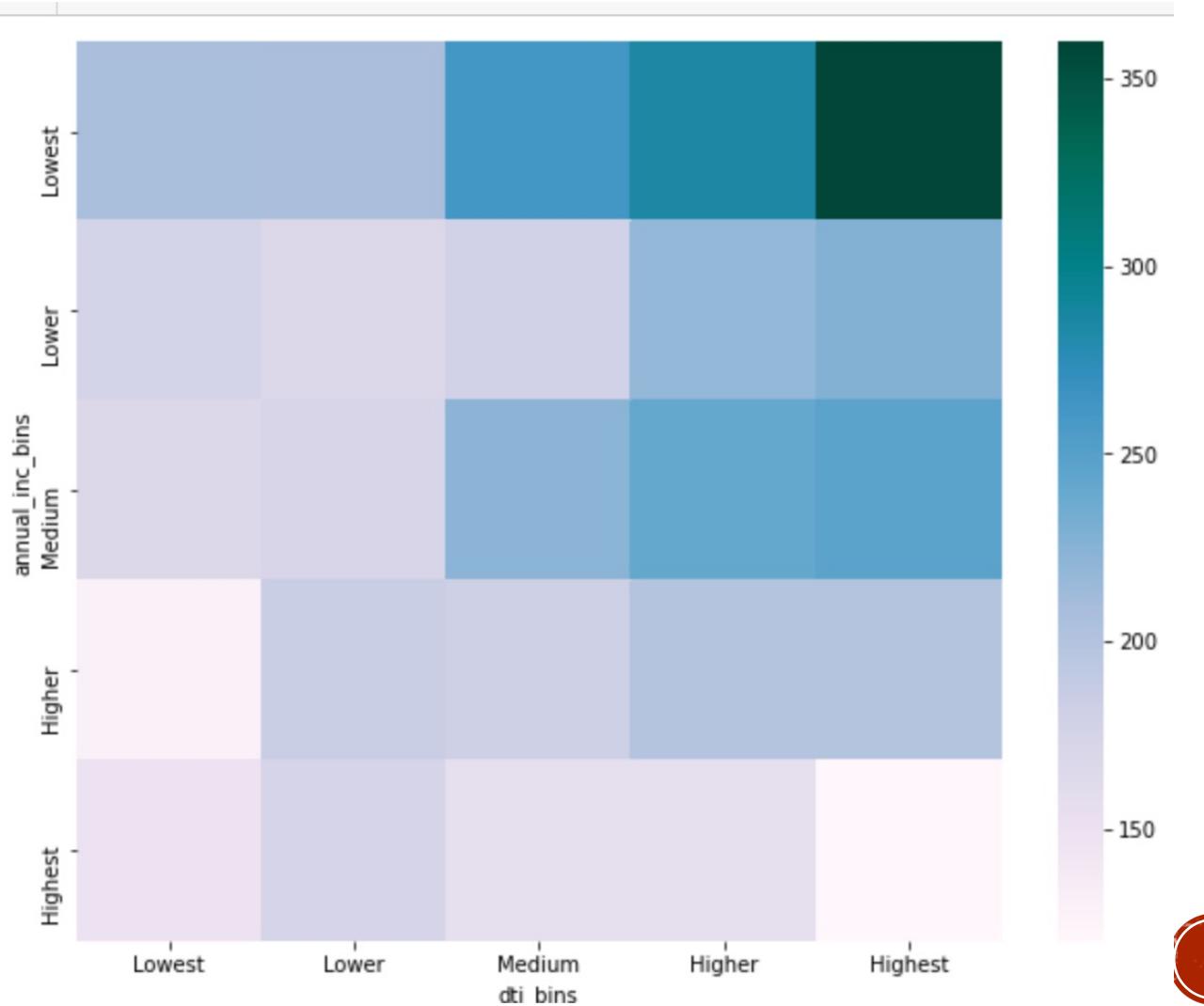
- ❖ Chances of defaulting is high when the borrower living in mortgage or rented home takes loan for the purpose of debt consolidation.



DTI AND ANNUAL INCOME

Observation:

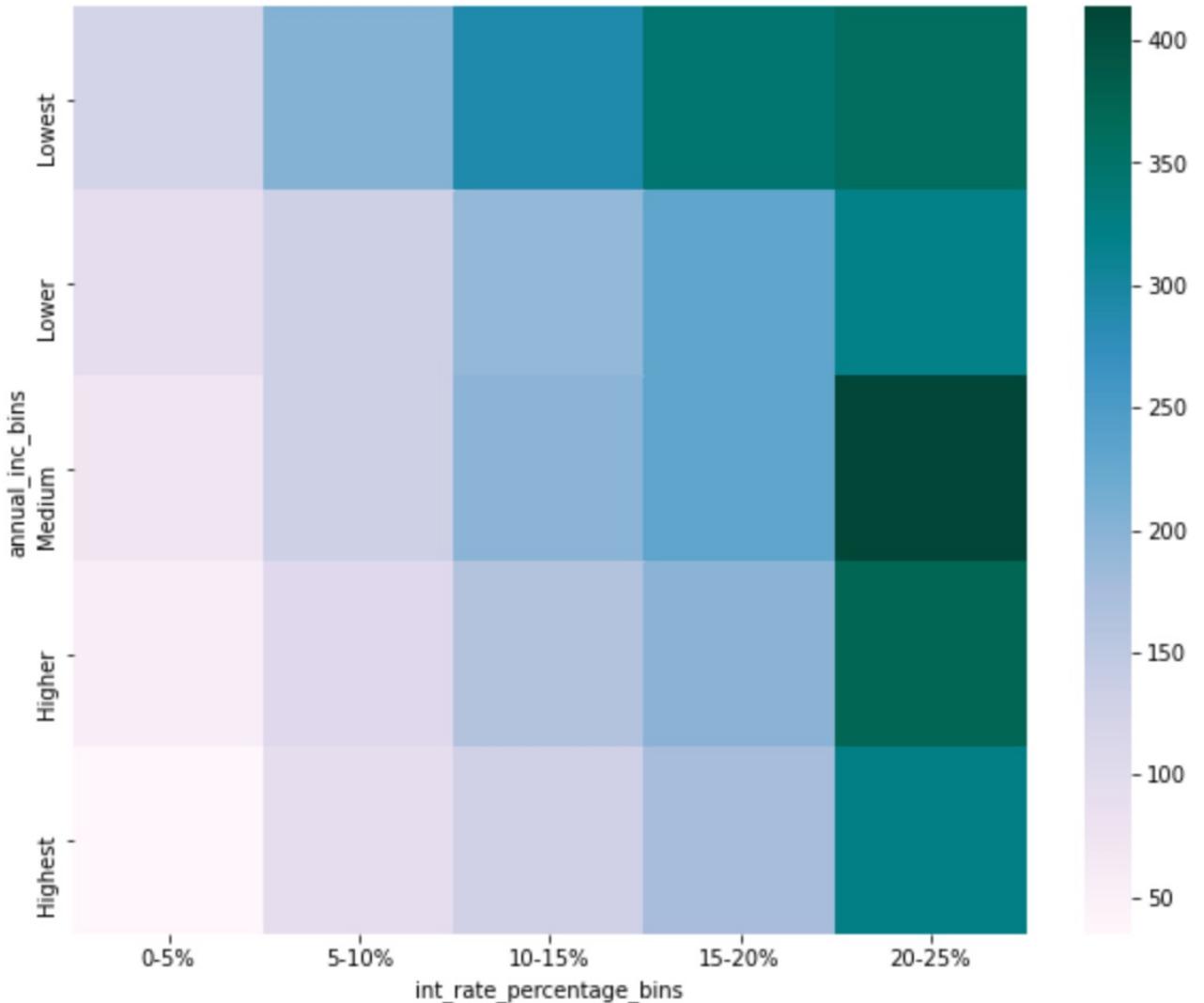
- ❖ Chances of defaulting is high for the borrower with lowest income and high dti(debt to income ratio)



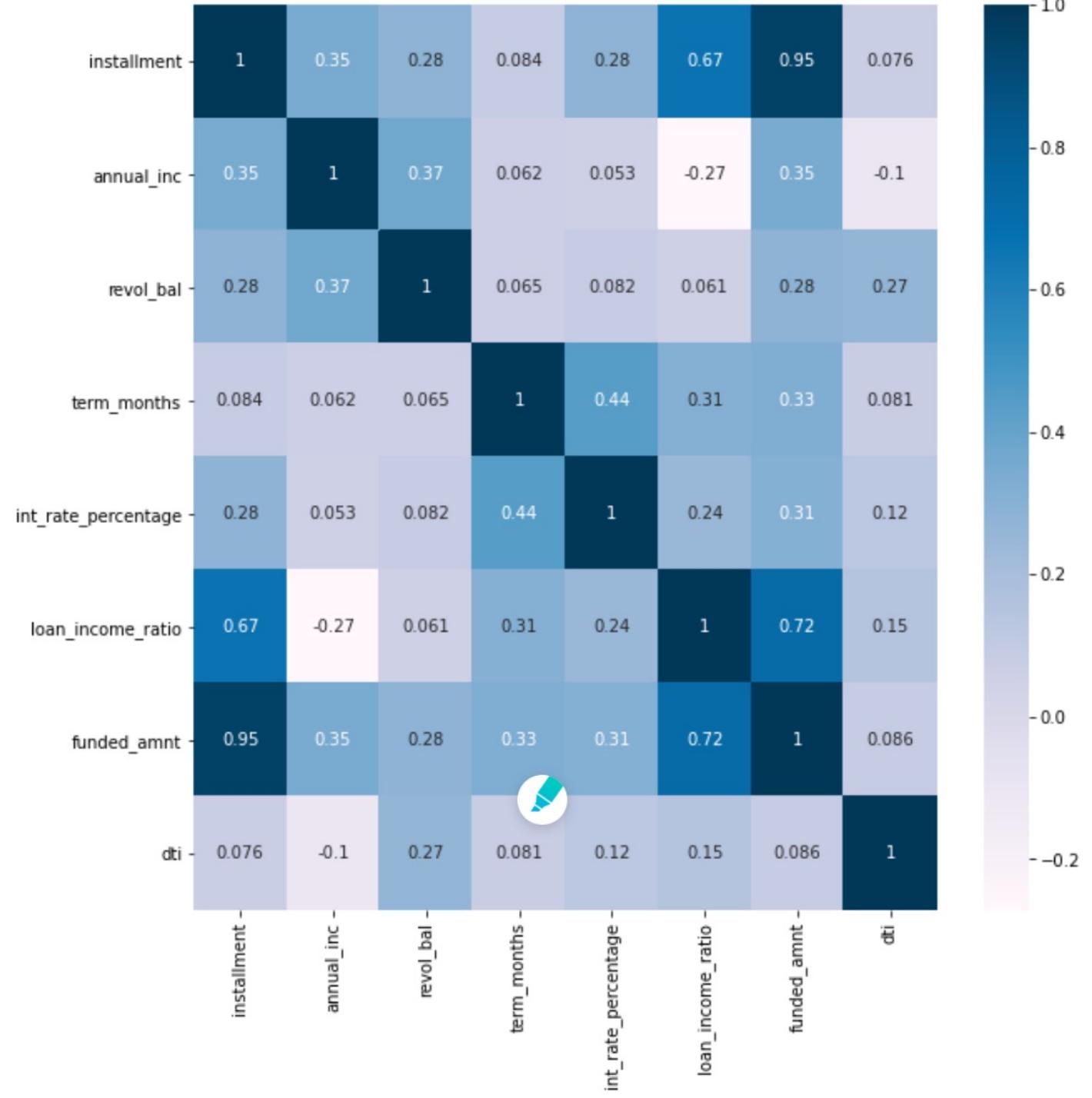
INTEREST RATE AND ANNUAL INCOME

Observation:

- ❖ High interest rate for lower and medium income groups lead to high default rate



CORRELATION MATRIX



Observation:

- ❖ Funded amount have very high correlation with the loan income ratio.
- ❖ Term months and interest rate are positively correlated

CONCLUSION

- On the basis of the analysis made above, the Lending club should bring more guard rails for loans given with following factors
 - ❖ when loans are given for the purpose --> small business, renewable energy, education
 - ❖ for higher grade category loans especially E,F and G
 - ❖ for loans of longer tenure(5 years).when loan amount is higher
 - ❖ when the instalment amount is high.
 - ❖ when the customer has lower income and high debt to income ratio
 - ❖ when interest rate charged is higher
 - ❖ when the borrower living in mortgage or rented home takes loan for the purpose of debt consolidation.
- There is an opportunity to expand the business in states other than California, New York, Florida. Though more caution has to be paid while lending loans to Nevada and South Dakota as they have high default rate with significant % of borrowers.
- Analysing the data , it can be observed that the loan disbursement increases towards the end of the year. So, it is an opportunity for the Lending Club to increase its business in the early part of the year.





Thank you

