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LENDING CLUB CASE STUDY

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BUSINESS OBJECTIVE

Lending loans to ‘risky’ applicants is the largest source of financial loss called credit loss. The main objective is to be able to identify these risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss. Identification of such applicants using EDA is the aim of this case study.

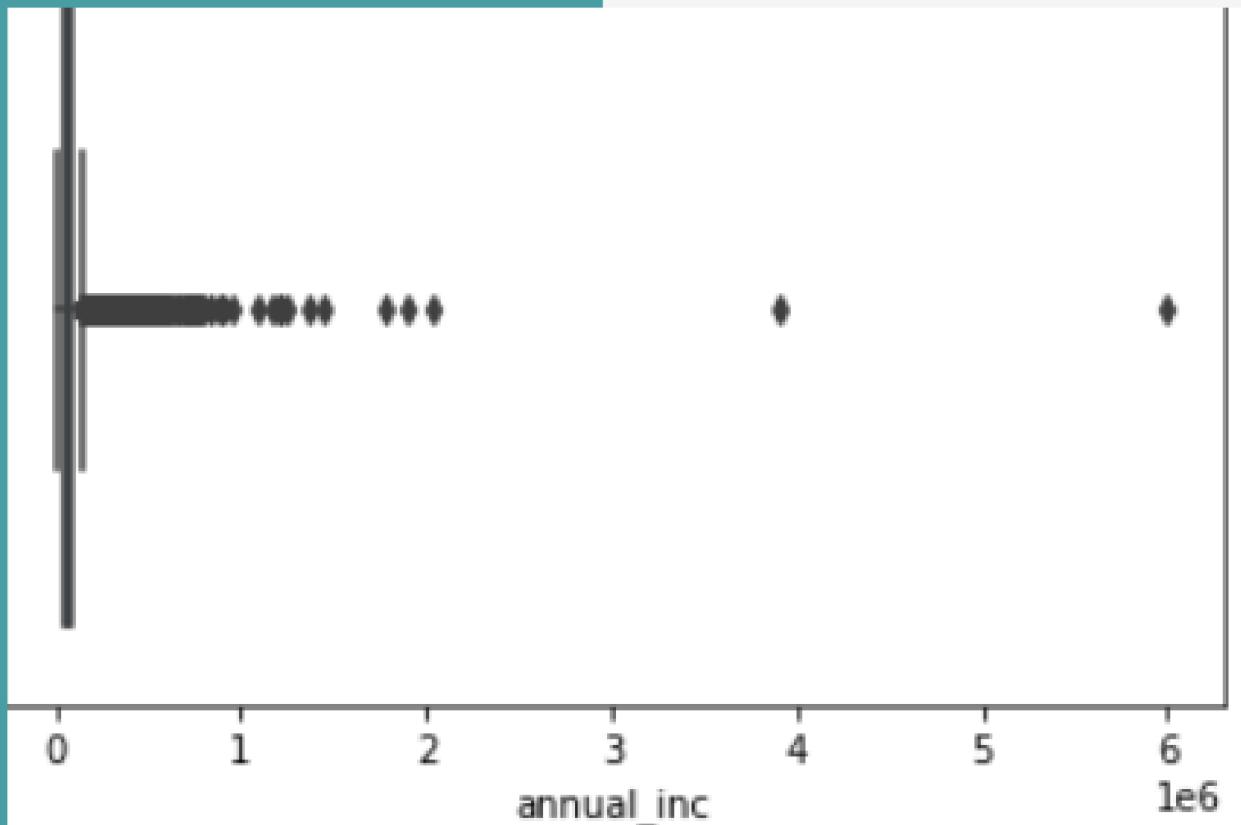


STEPS FOR ANALYSIS

1. Analyze data quality issue
2. Data Preprocessing
3. Data manipulation
4. Univariate analysis
5. Segmented Univariate analysis
6. Driven metrics analysis
7. Bivariate analysis
8. Recommendation

DATA PREPROCESSING

In data preprocessing we checked duplicacy and removed duplicate rows and also removed or impute null values from data frame. Also find out outliers and removed them





Data Manipulation

We derived new matrices from
existing variables like
`loan_issue_year,loan_amnt_bins` etc.

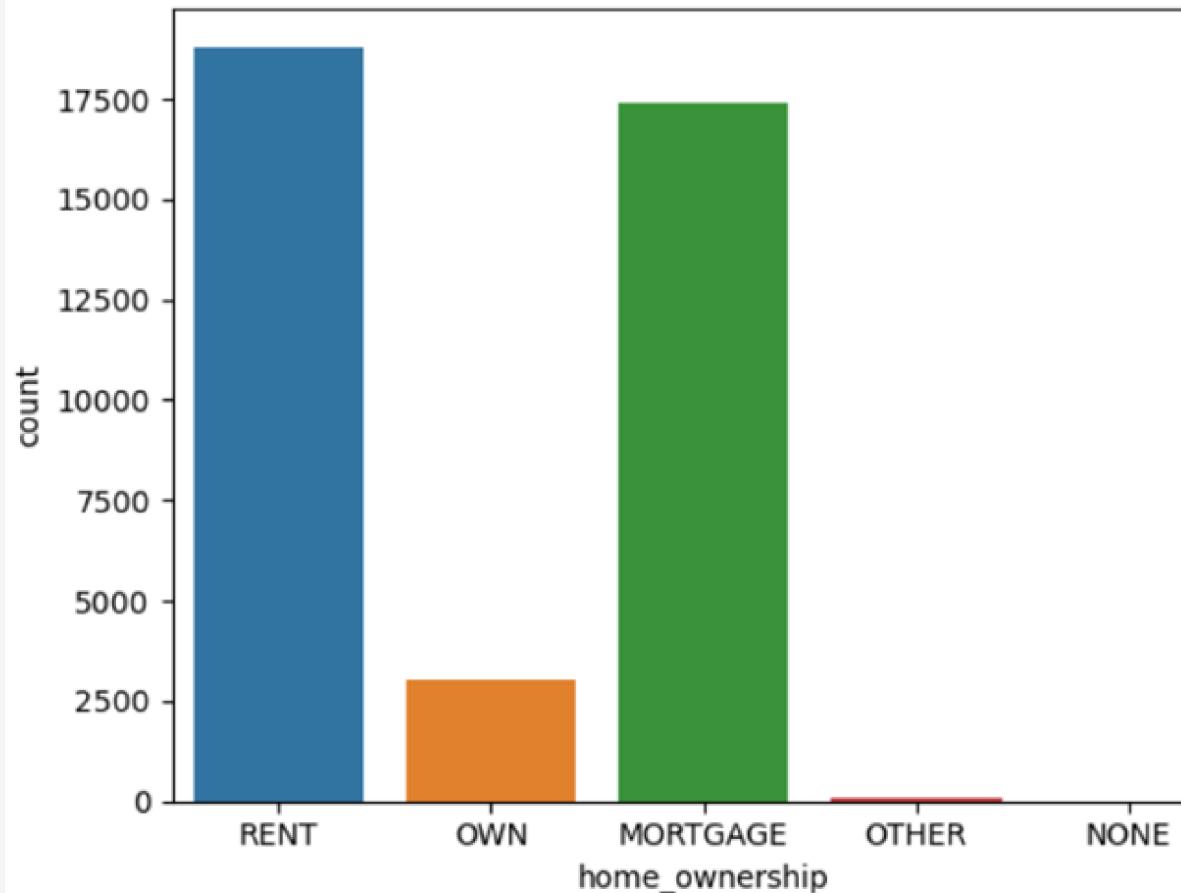
UNIVARIATE ANALYSIS

- HOME OWNERSHIP
- VERIFICATION STATUS
- LOAN ISSUE YEAR
- LOAN STATUS
- DISTRIBUTION OF LOAN AMOUNT AND TOTAL PAYMENT.

UNIVARIATE ANALYSIS- CATEGORICAL

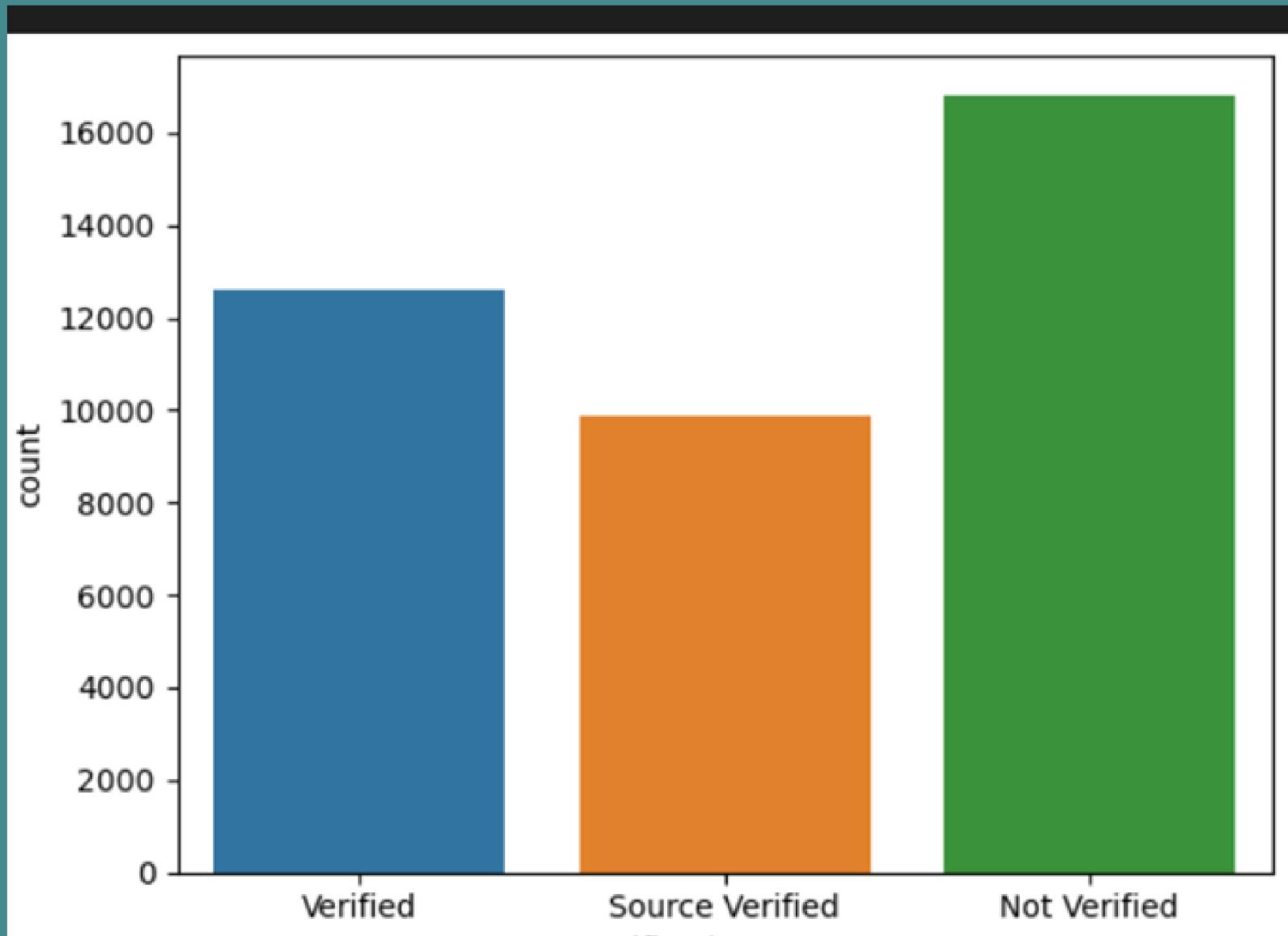
Home ownership

- Mostly Borrowers who are taking loans lives in rented home



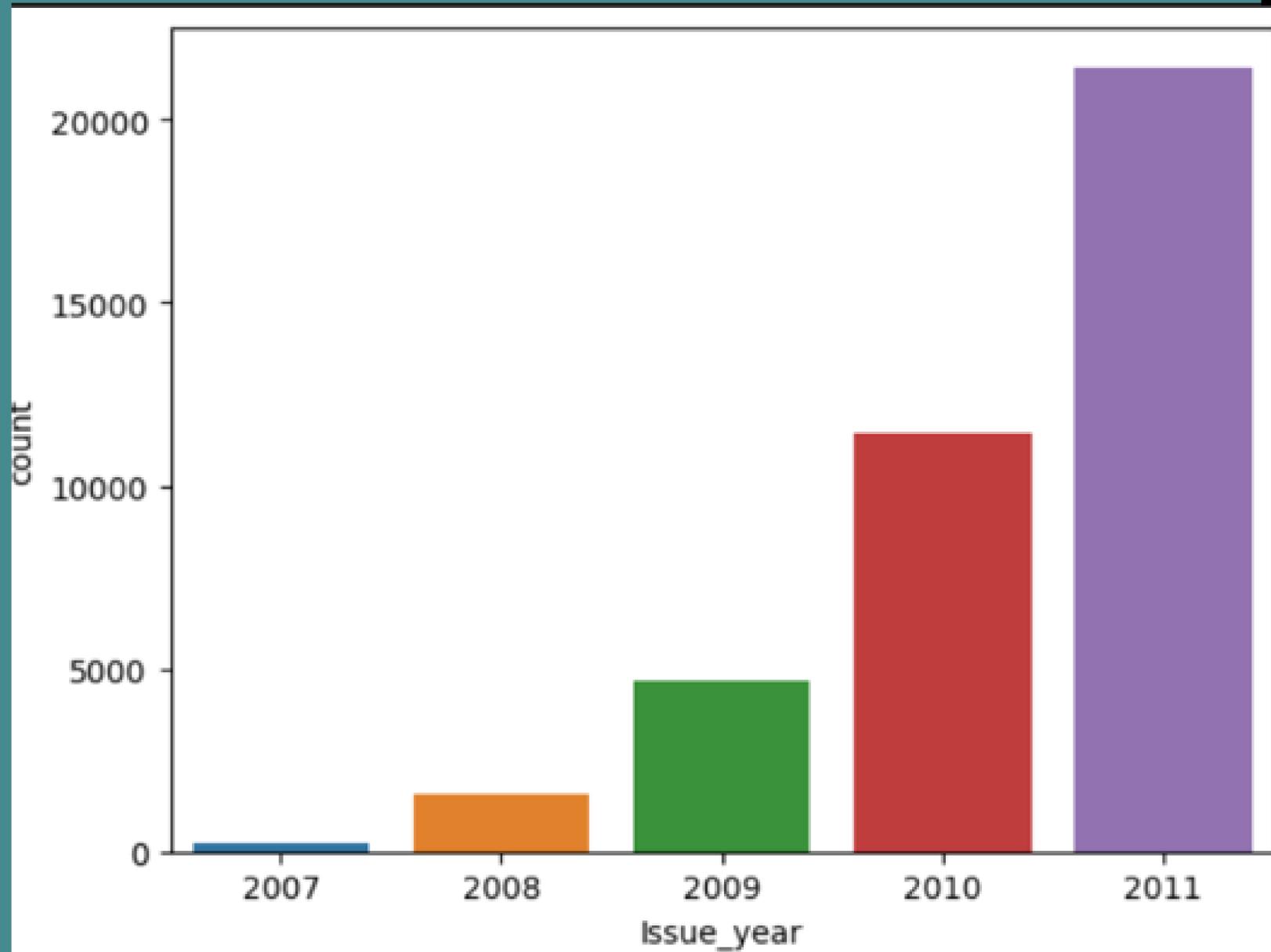
VERIFICATION STATUS

Mostly Borrowers are Not verified that could leads to increase number of "Risky applicants".



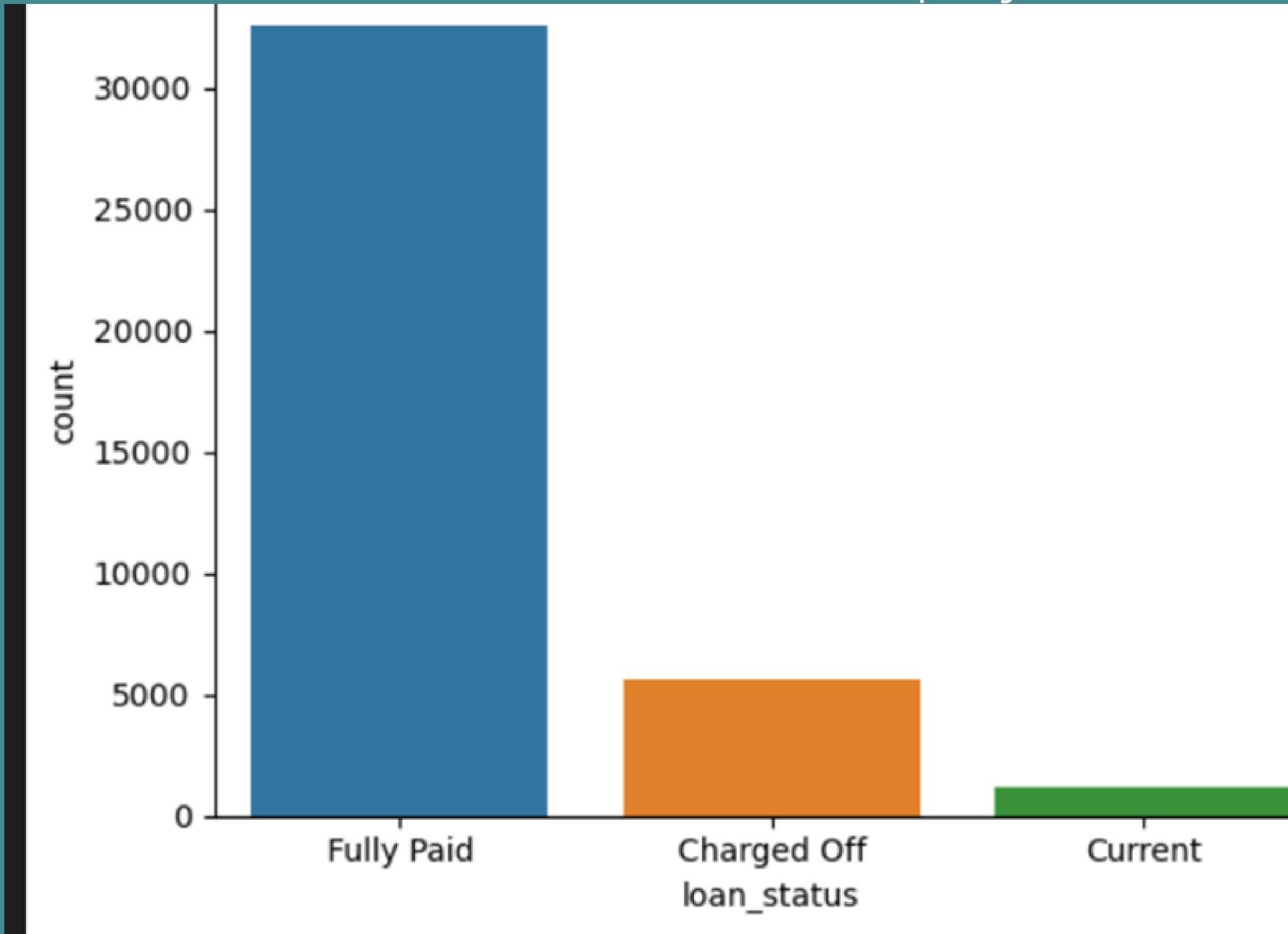
LOAN_ISSUE_YEAR

- We can see number of loans issued exponentially increased over the years



Loan Status

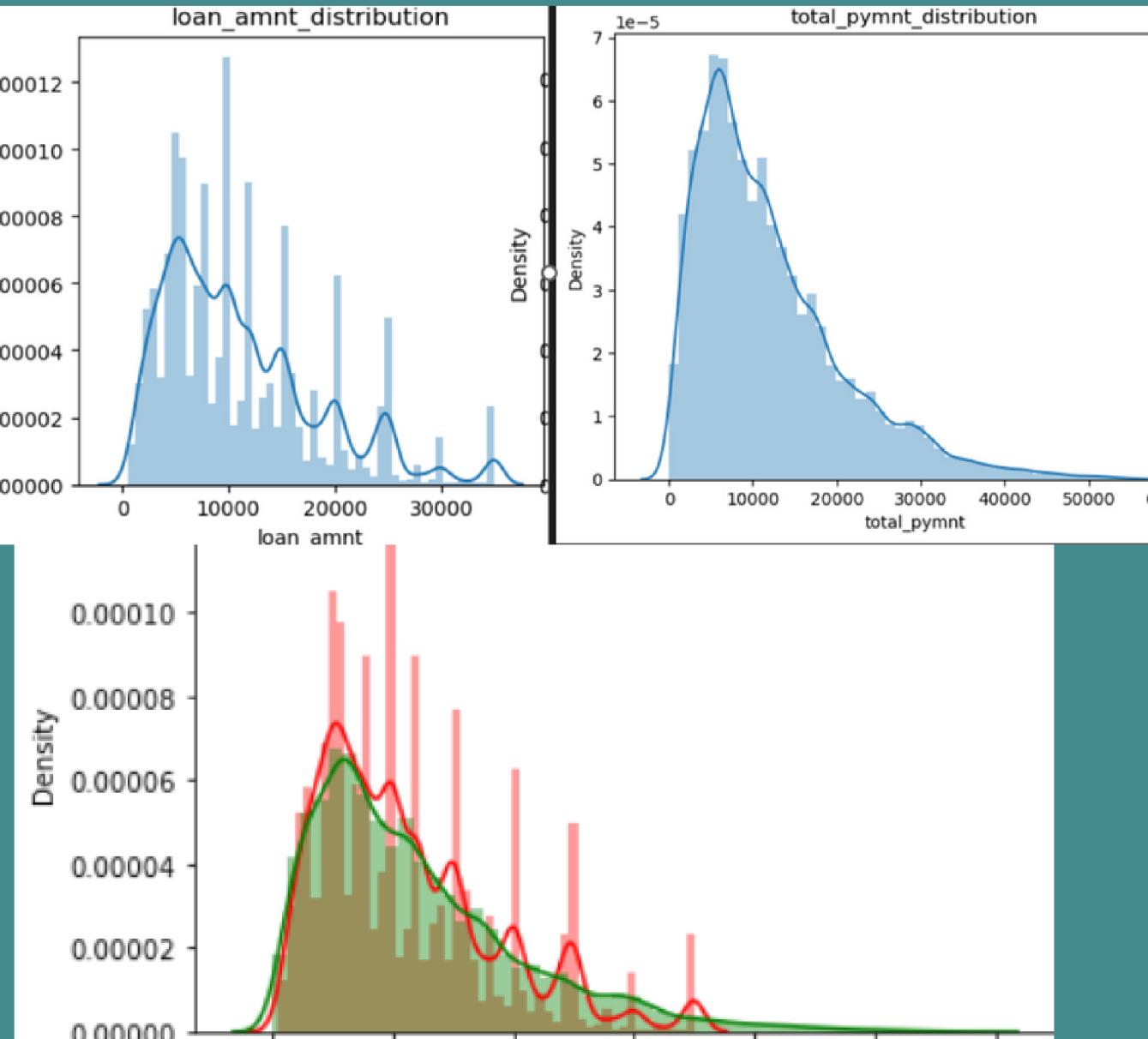
We can see mostly borrower fully paid the loan but still there are around 14% borrowers who didn't pay the loan. These are risky applicants which causes credit loss to the company.



Continuous Univariate analysis

Distribution of loan amount and total payment

- We can see in below graphs that loan amount and total payment distribution is quite same .

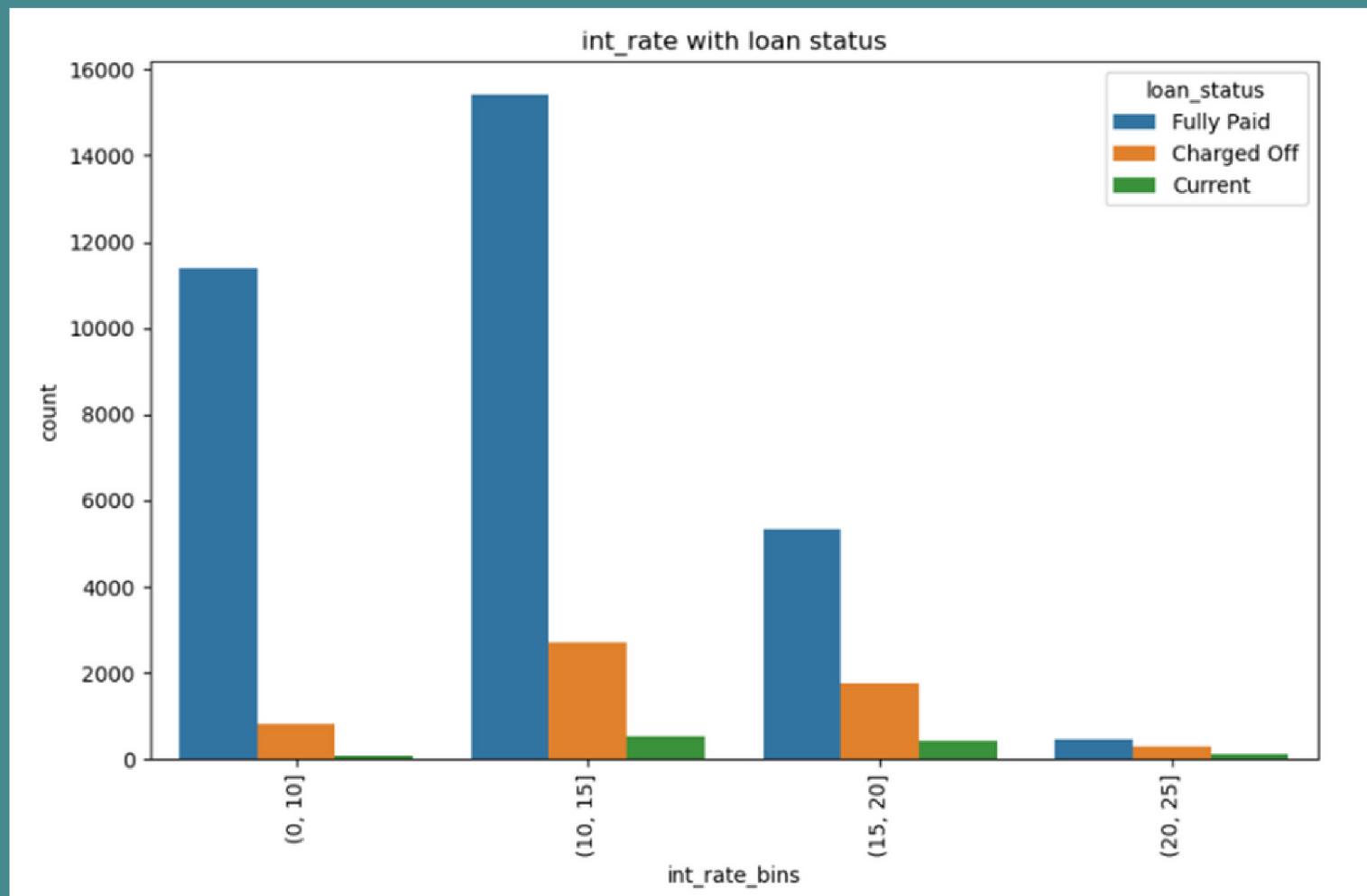


SEGMENTED UNIVARIATE ANALYSIS

- INT_RATE
- STATE
- HOME OWNERSHIP

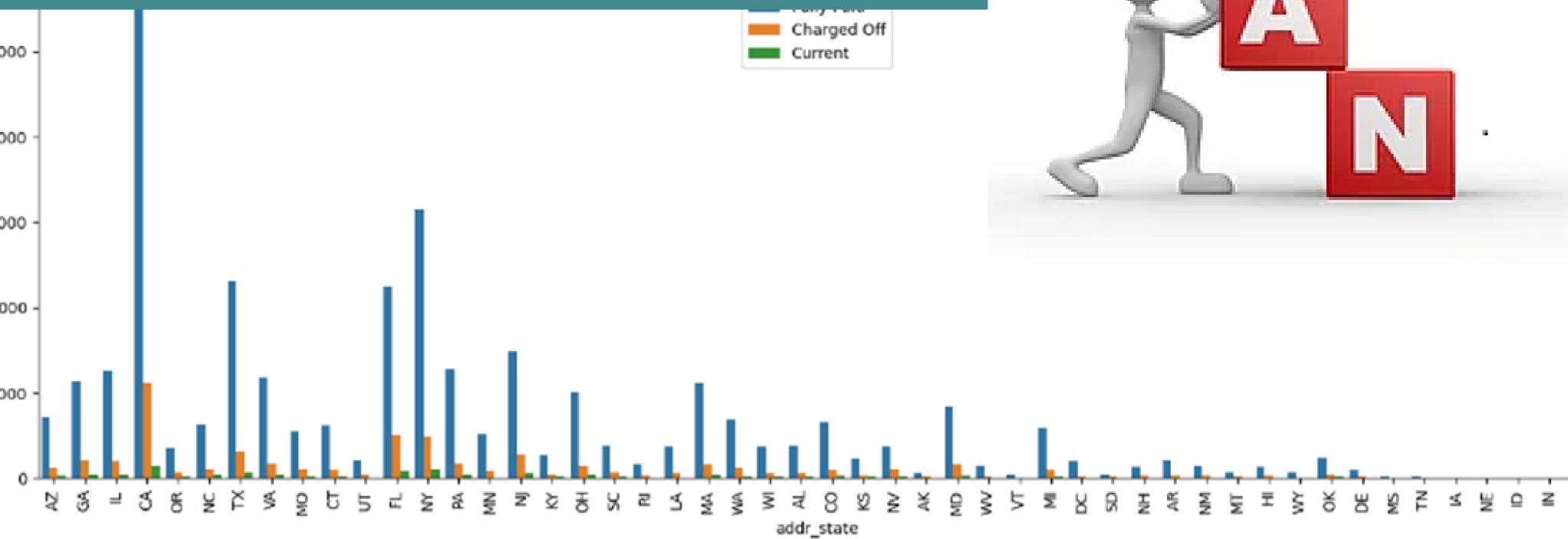
INT_RATE

We can observe higher interest rate leading the possibility of higher charged off.



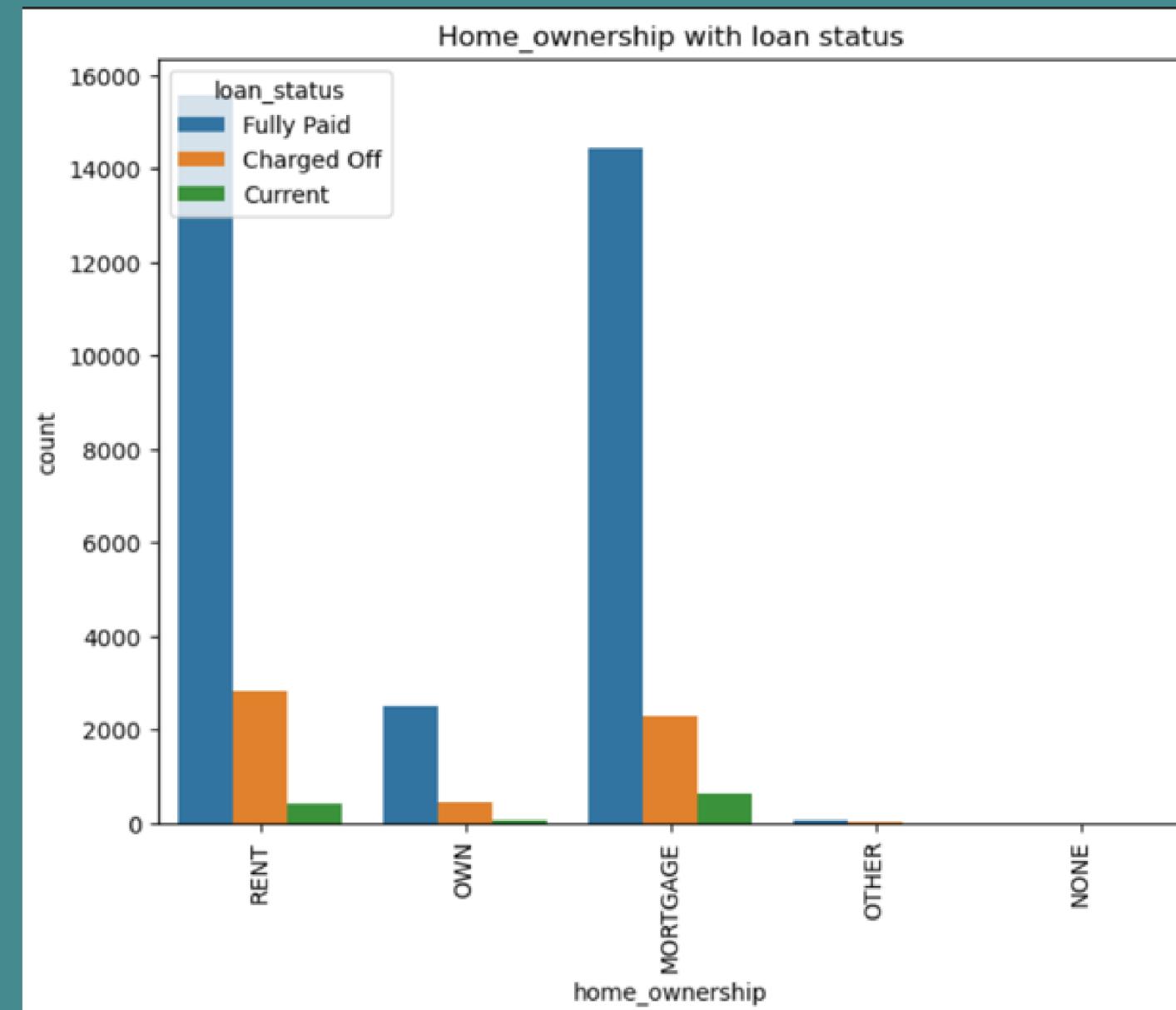
STATE

We can see mostly borrowers are from state "CA" so their is higher chance of charged off borrower also from "CA".



Home ownership

Borrowers who lives in a rented house have more possibility to be charged off in compare to borrowers who own a house.

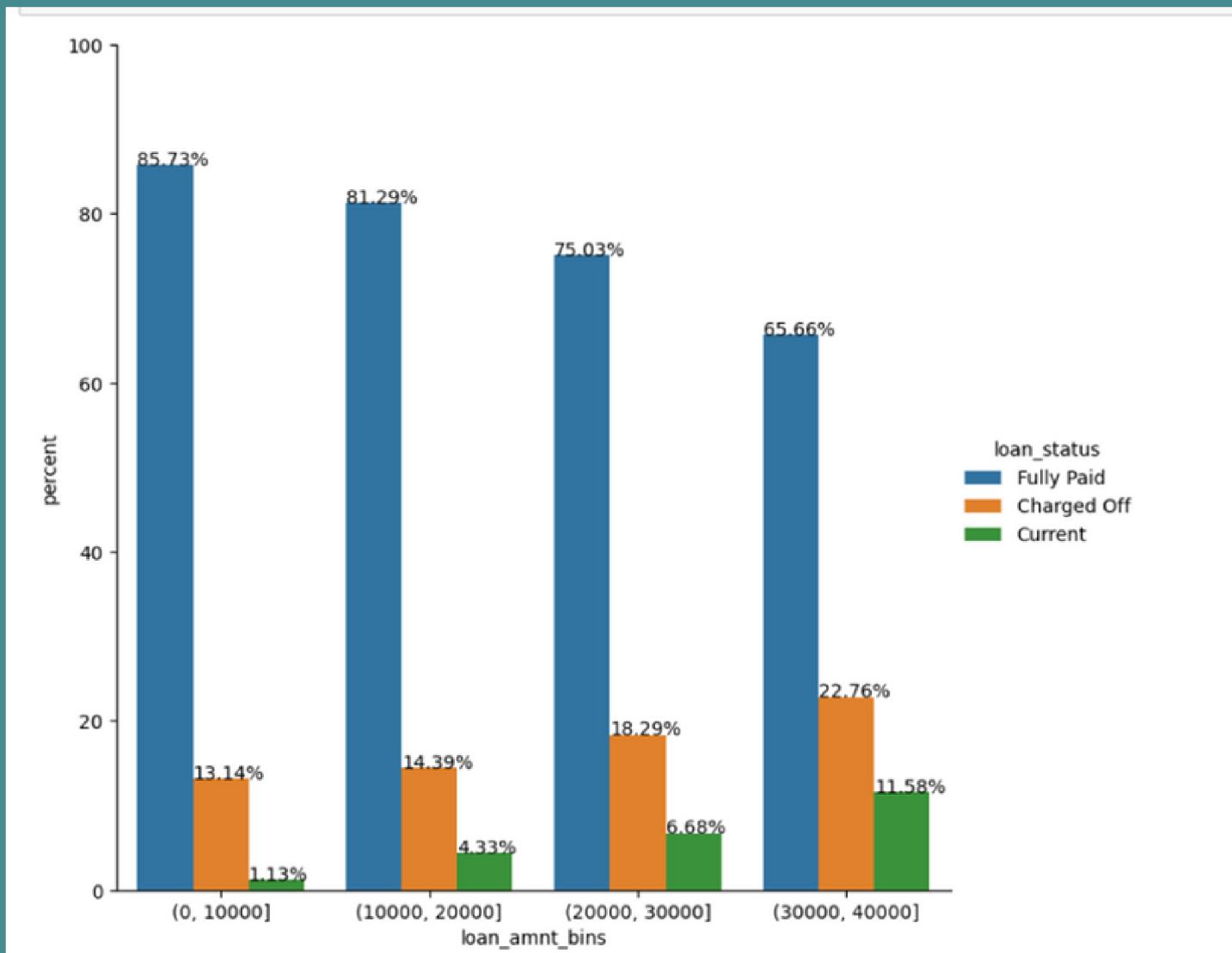


BIVARIATE ANALYSIS

- LOAN AMOUNT VS LOAN STATUS
- ANNUAL INCOME VS LOAN STATUS
- HOME OWNERSHIP VS LOAN STATUS
- INTEREST_RATE VS LOAN STATUS

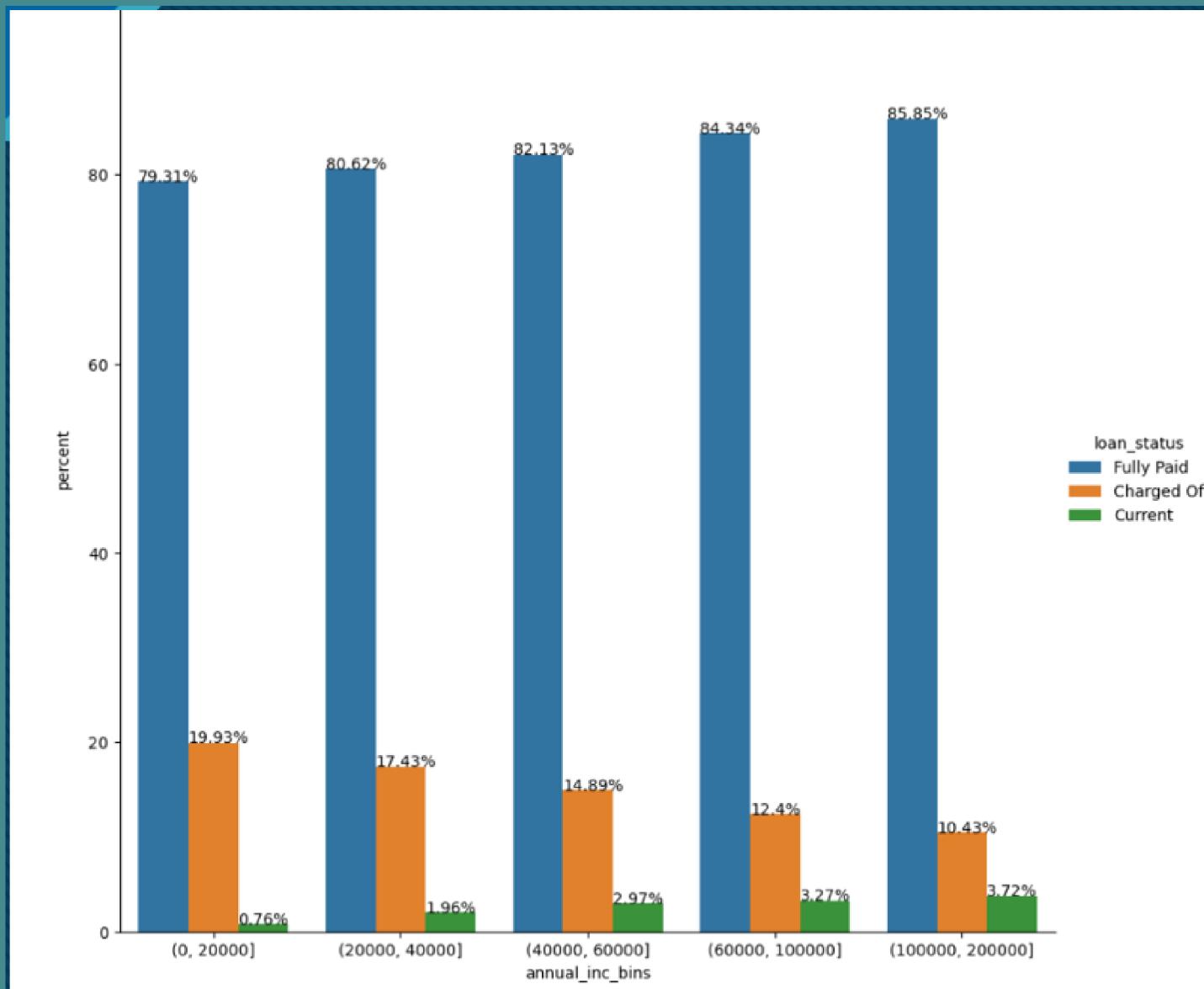
LOAN AMOUNT VS LOAN STATUS

We can see there are higher chances of charged off when loan amount is more than 20000



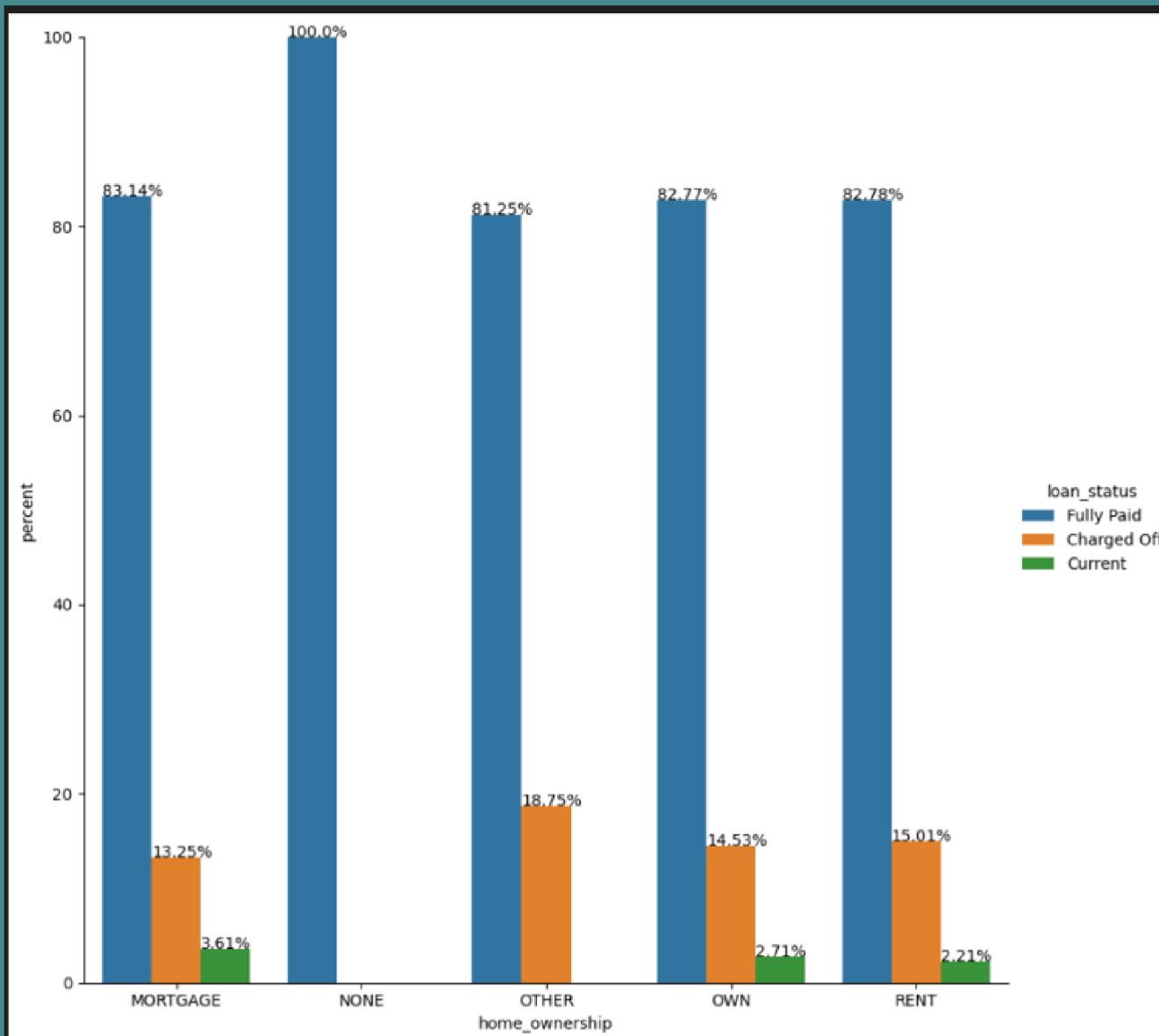
Annual Inc vs Loan status

We can observe that when borrowers annual income is high then there is less chance of charged off and vice versa.



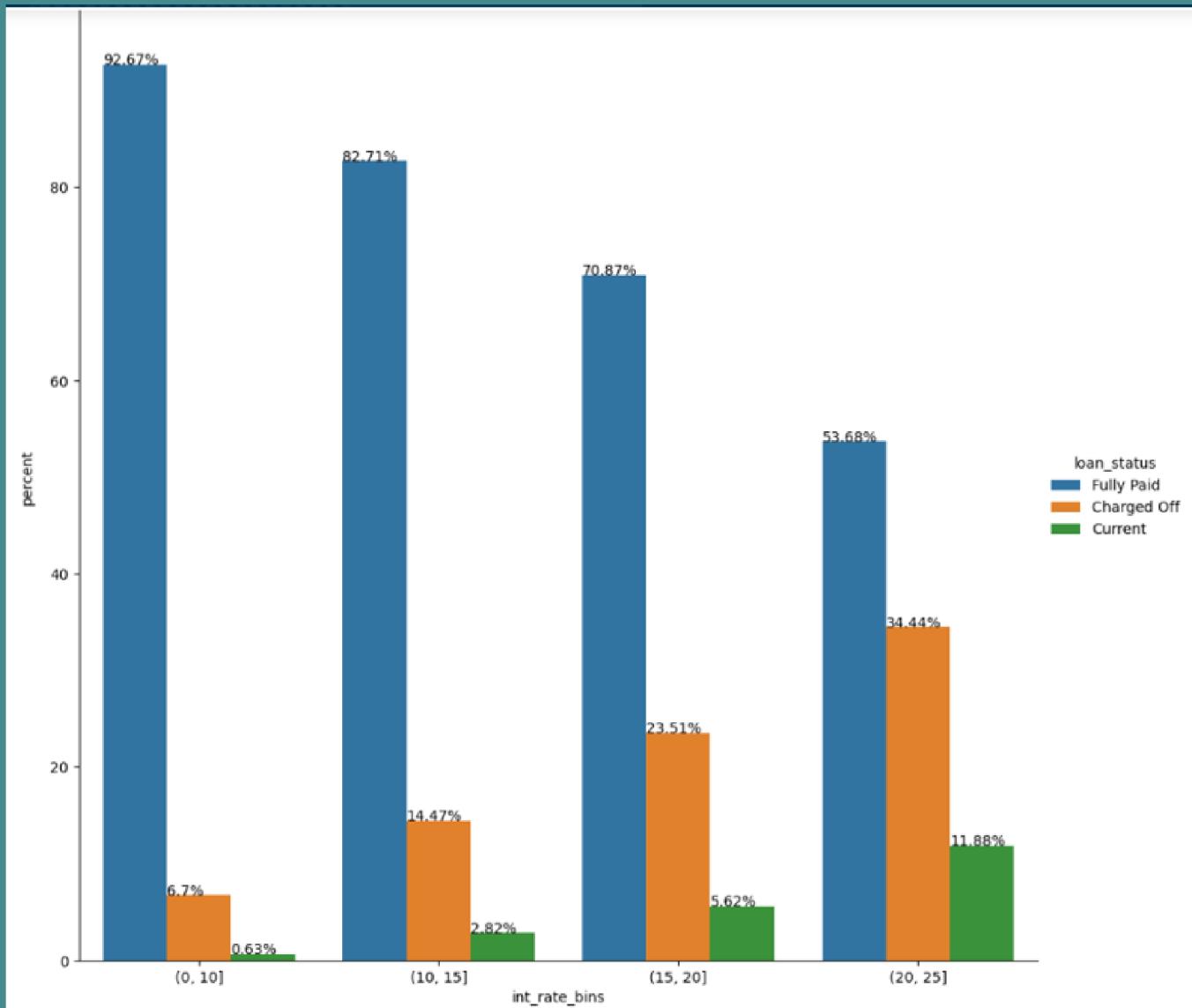
Home Ownership vs Loan Status

We can see borrower who is living in rented house having more possibility to be charged off.



Interest rate vs Loan Status

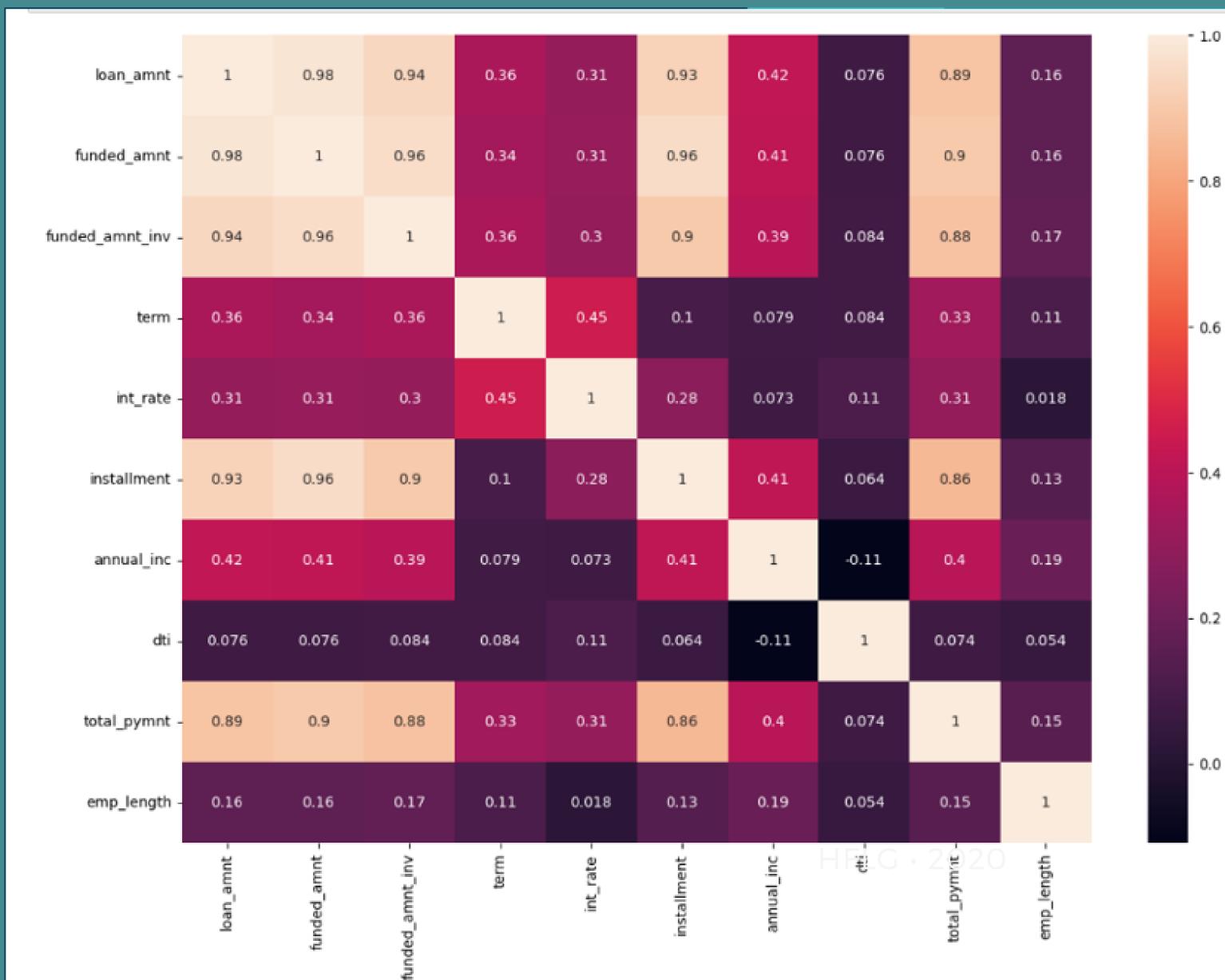
We can observe in graph that higher int_rate leads to increase in charged off.



CORRELATION MATRICES

1. LOAN AMOUNT, FUNDED AMOUNT, FUNDED AMOUNT INV, TOTAL PAYMENT AND INSTALLMENT ARE HIGHLY POSITIVE CORRELATED

2. DTI AND ANNUAL INCOME HAVE NEGATIVE CORRELATION WHICH SHOWS AS THE INCOME INCREASES DEBT TO INCOME RATIO DECREASES AND VICE VERSA.



Important Indicators to charged-off(Default)

LOAN AMOUNT

Higher Loan amount leads higher possibility to charged off.

TERM

Longer term period leads to high risk to charged off.

INTEREST RATE

High Int rate leads to high risk to charged off.

ANNUAL INCOME

Less annual income leads to high risk to charged off.

EMPLOYEE LENGTH

Less Emp_length leads high risk to charged off



HOME OWNERSHIP

If borrower lives in rented house then there is high risk of charged off.



RECOMMENDATIONS

- Lending companies should understand borrower's profile and make robust agreement
- Lending Company should track the payments.
- Lending companies can lower the EMI by increasing the loan tenure.
- They can ask to collection agencies for loan repayment.