

Lending Club Case Study

Group Members:

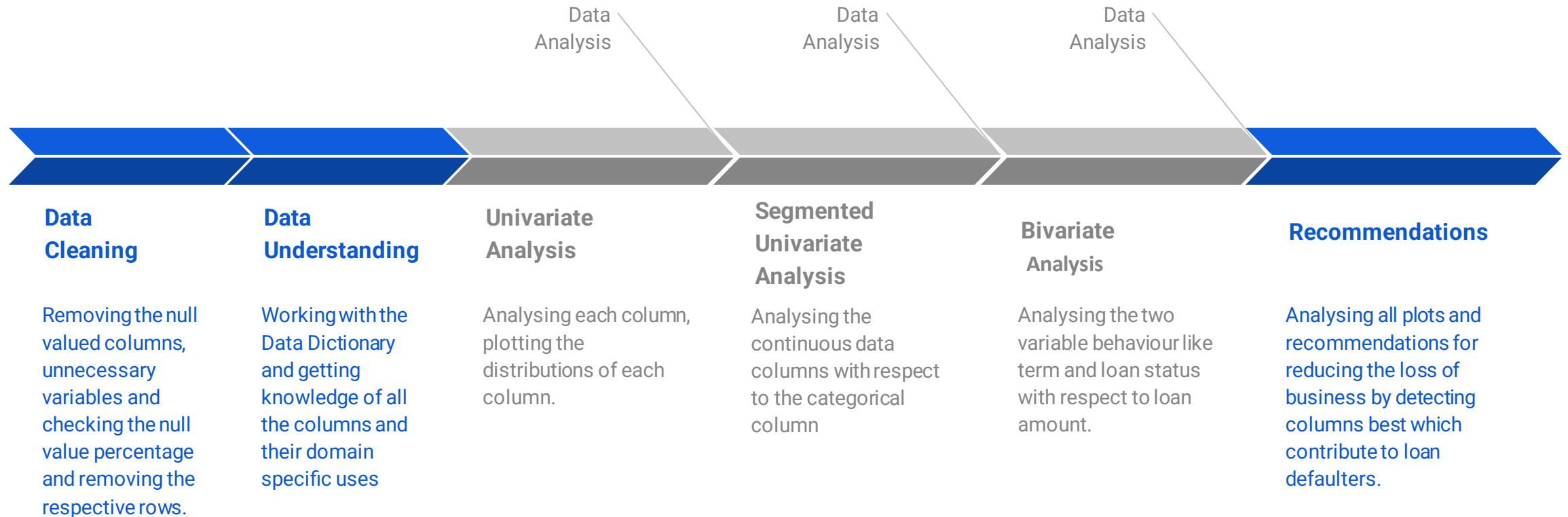
Jyotsna Sinha

Surya Umapathy

Abstract

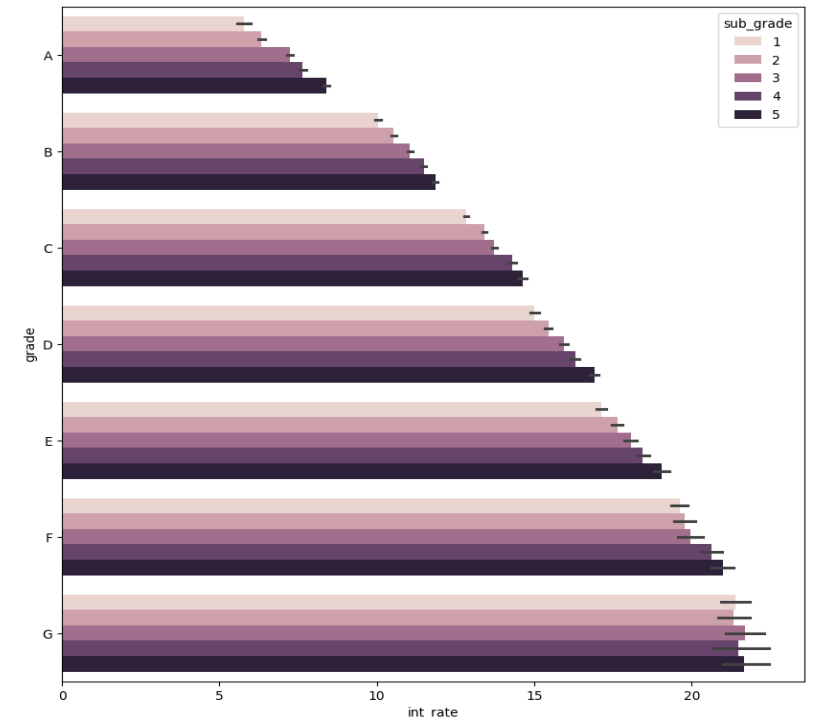
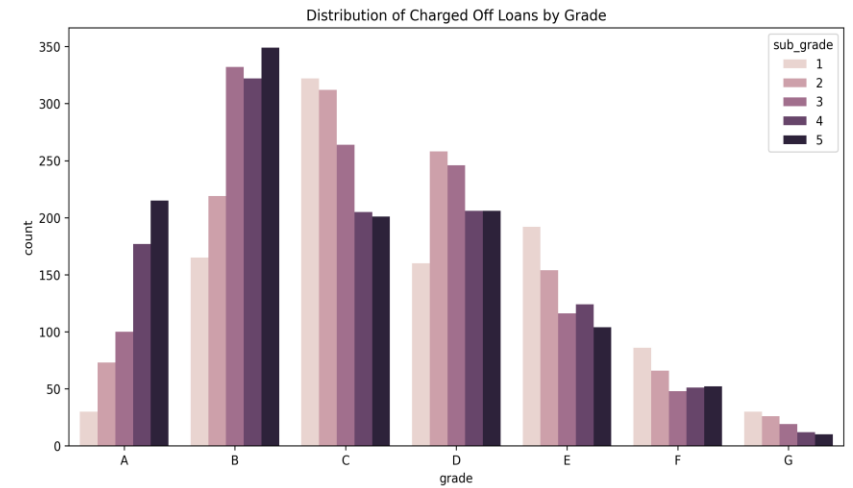
- Consumer finance company which specializes in lending various types of loans to urban customers.
- Lending loan to risky customers could lead to financial loss
- Borrowers can easily access lower interest rate loans through a fast online interface.
- The objective of this study to perform risk analysis based on past loan data provided to different customers

Problem solving methodology



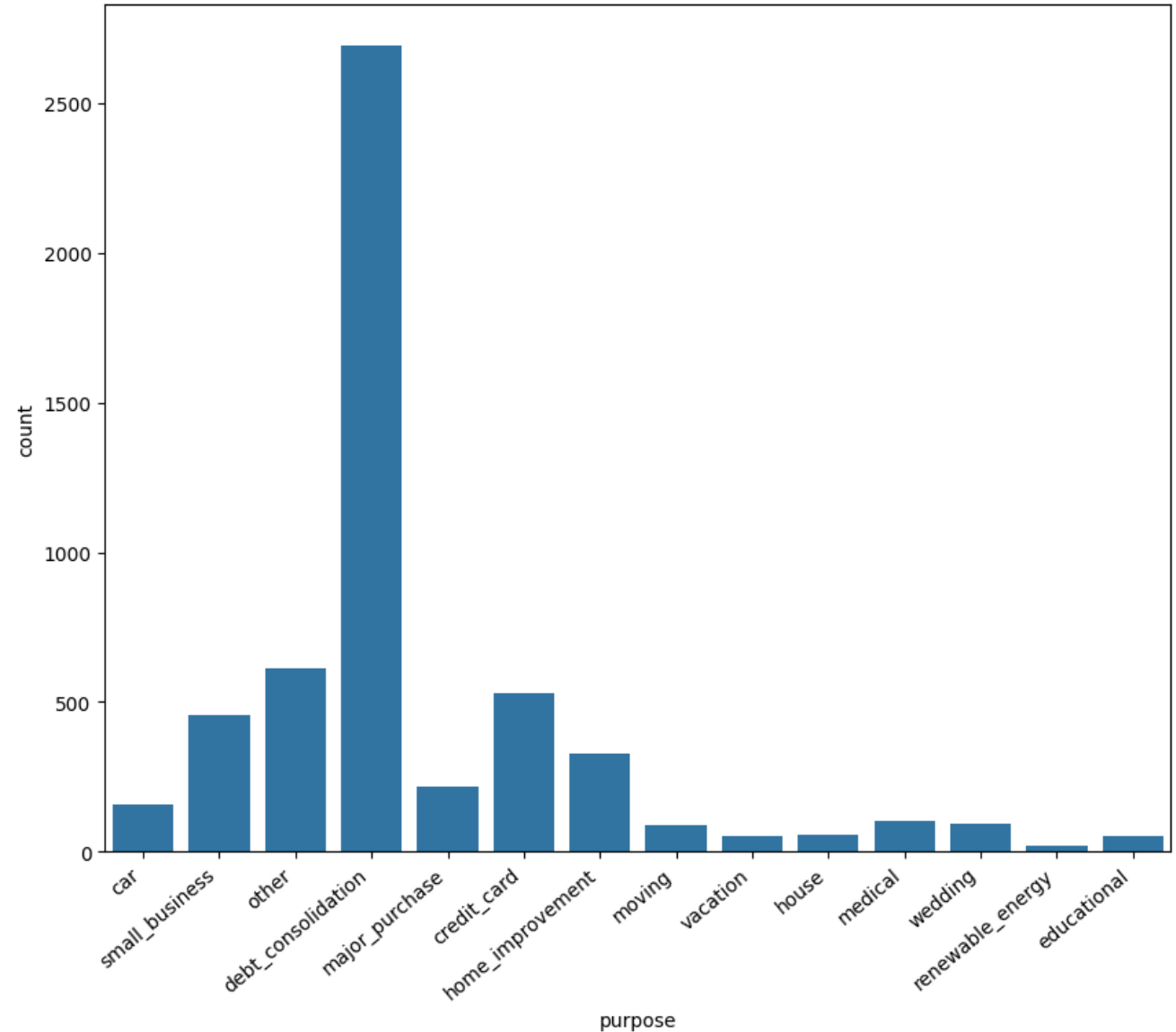
Categorical Univariate Analysis- Charged-Off Loan

- Grades have the potential to identify risky and non-risky borrowers
- In-general People in the 'B' grade (especially 'B5') tend to have the higher change of defaulting
- But, when the lower graded get loans with higher interest rate they tend to default more than the higher grades
- Univariate analysis for loans status against grade shows that grade 'B' has the most cases of "Charged-Off" loan status



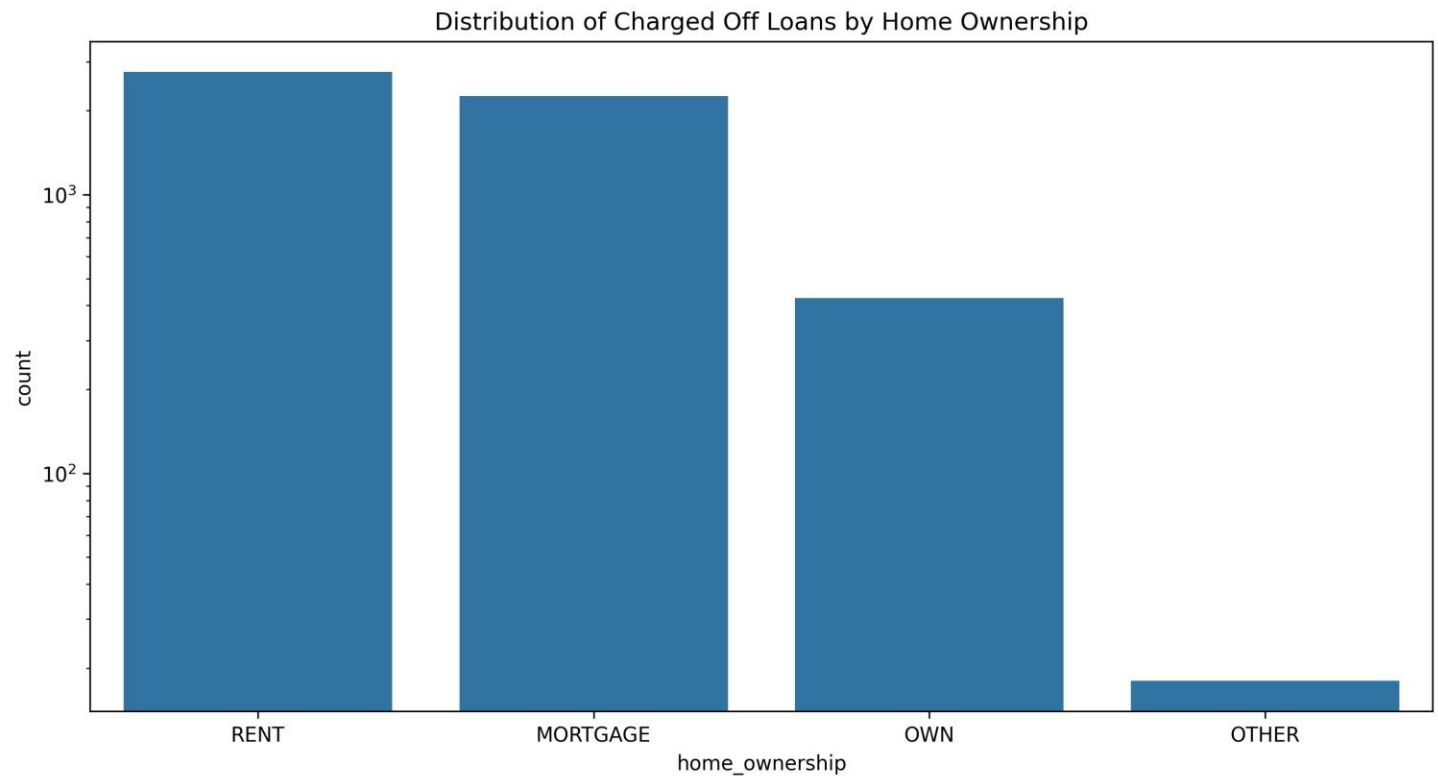
Categorical Univariate Analysis- Charged-Off Loan

- Borrower's whose purpose is 'debt-consolidation ' has the most number of loan charge-off



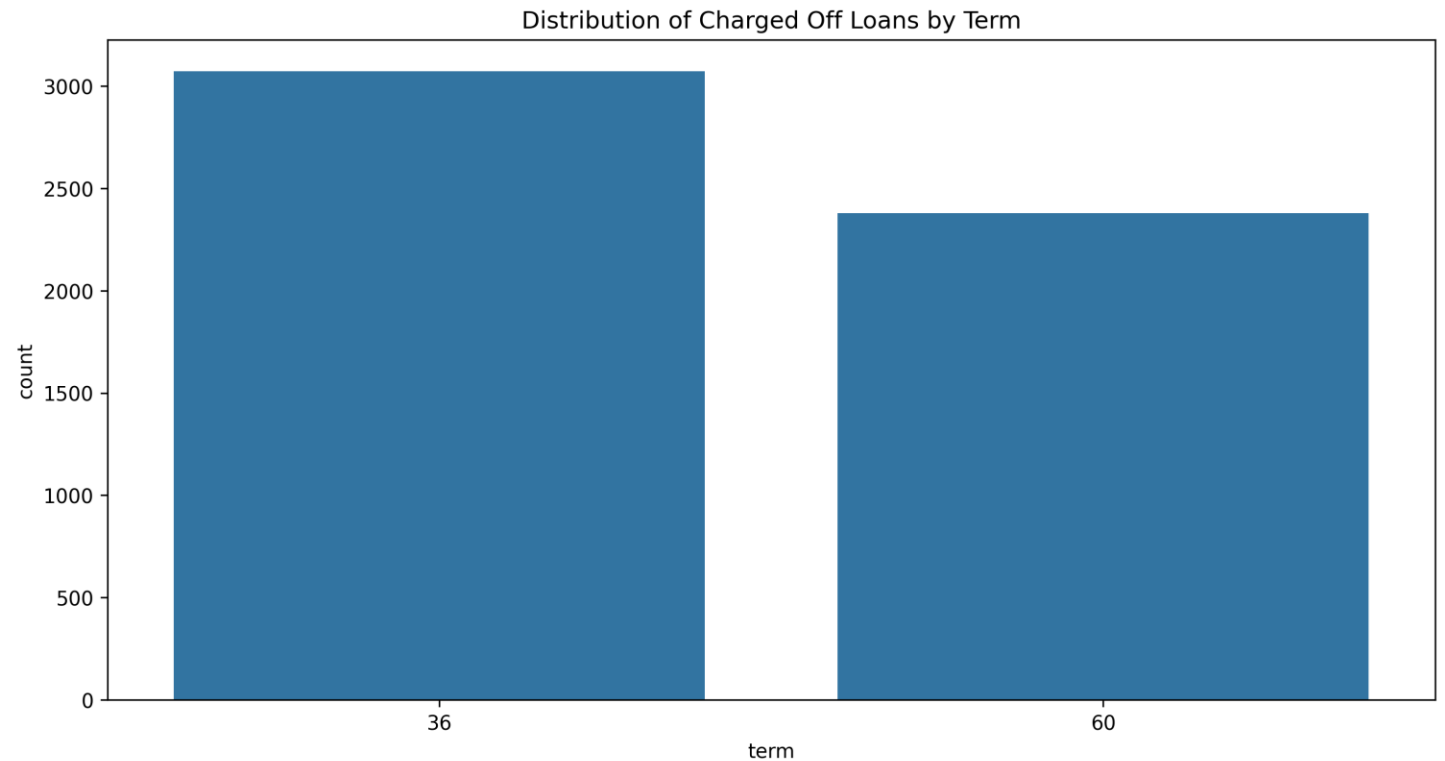
Categorical Univariate Analysis - Charged-Off Loan

- Borrowers tend to default the loan when the 'home ownership' is 'Rent'
- This thus increases their chances of becoming defaulters



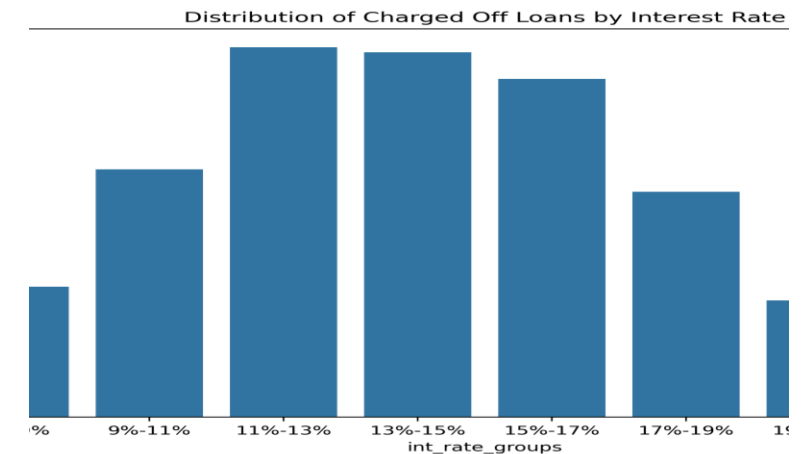
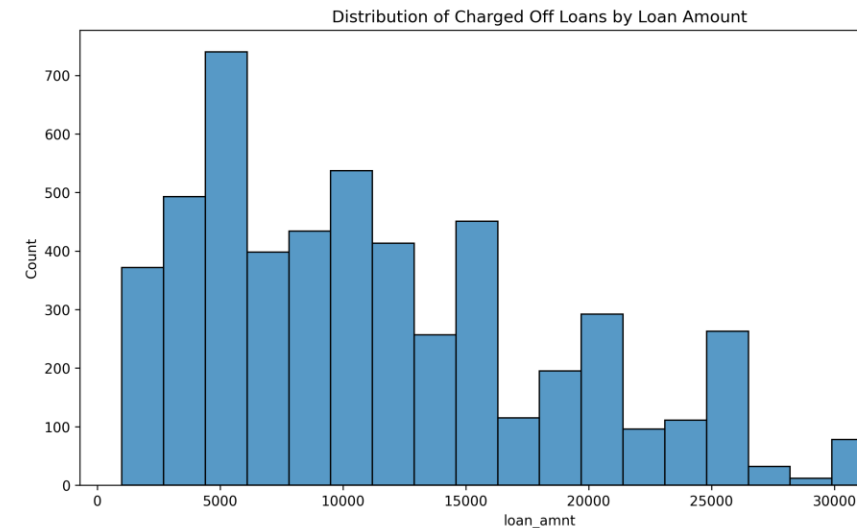
Categorical Univariate Analysis - Charged-Off Loan

- Borrowers tend to choose for lesser term for lesser interest payments
- The analysis shows that on less term the borrowers defaults the payment the most



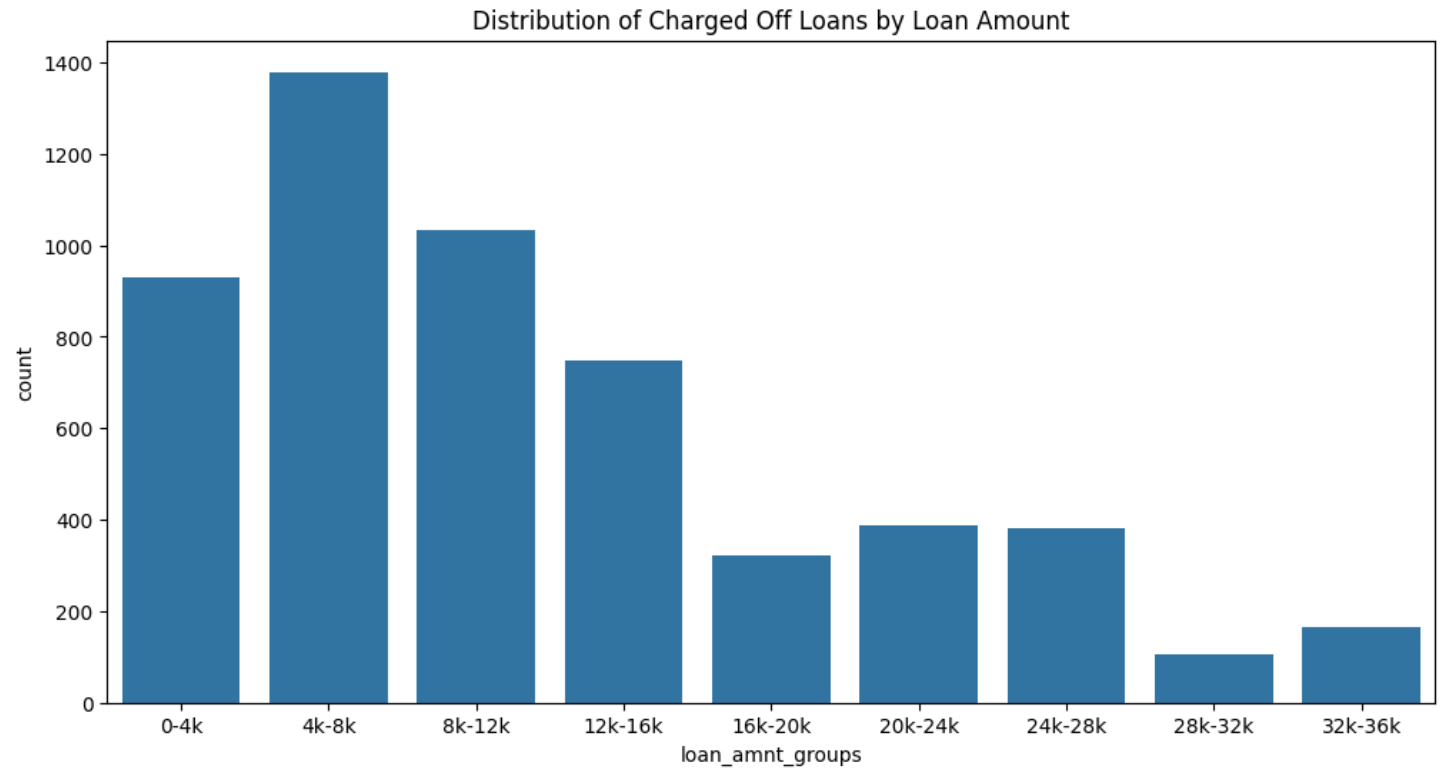
Categorical Univariate Analysis- Charged-Off Loan

- People who took high loan amount with high interest rate in it and they faced difficulties in returning the sum to bank.
- Here as per the analysis we can see that higher the loan amount more chances of defaulting
- With higher sum the rate of interest also increases due to term opted. Most people opt for 60 days term which increases the rate of interest
- When the interest is 11%-14% the default rate is high



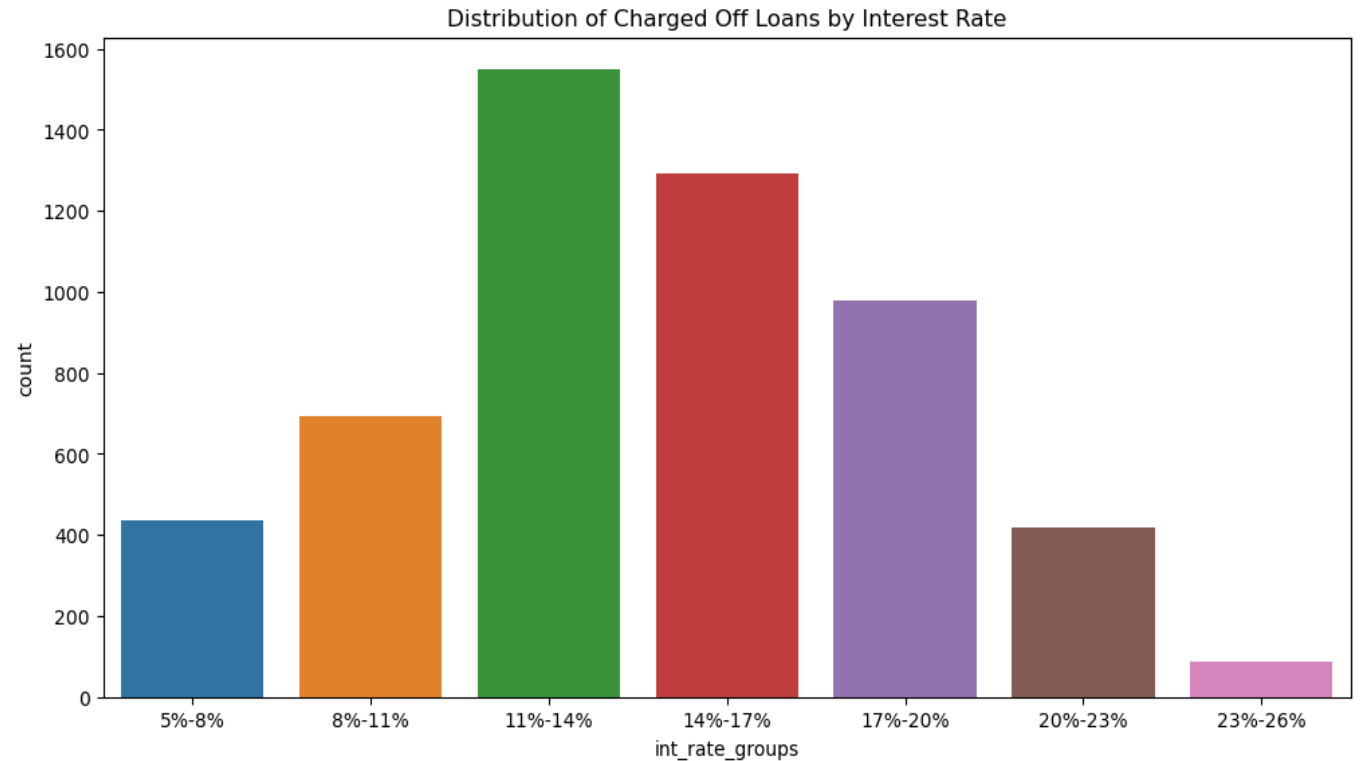
Categorical Univariate Analysis- Charged-Off Loan

- People who took loan amount within 4k-8k had more defaults than others



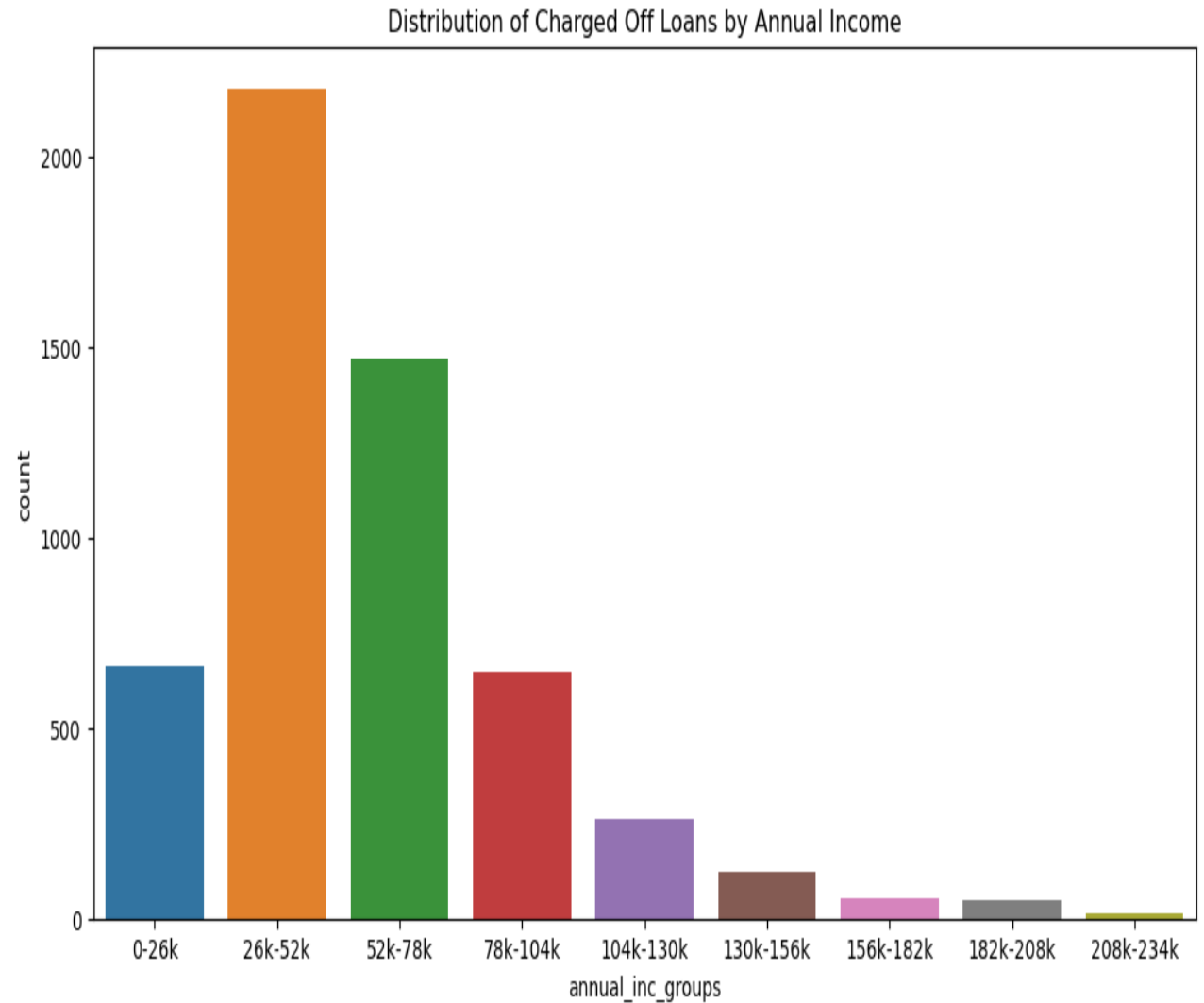
Categorical Univariate Analysis - Charged-Off Loan

- The figure shows that people who has taken the loan at the interest rate in the range of 11%-14% have the higher chances of defaulting



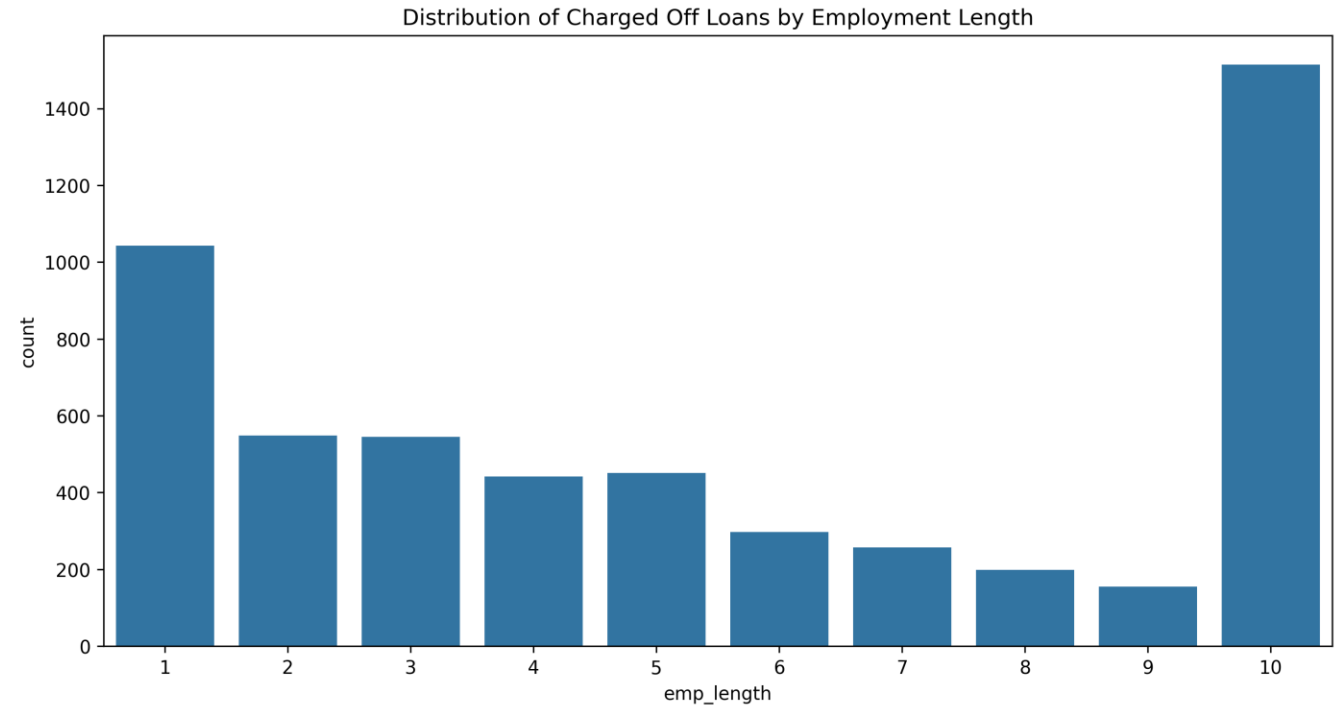
Categorical Univariate Analysis- Charged-Off Loan

- Other factors that also plays role in analyzing defaulters rate is annual income
- An employee whose annual income is 26K-52k has the most charge-offs



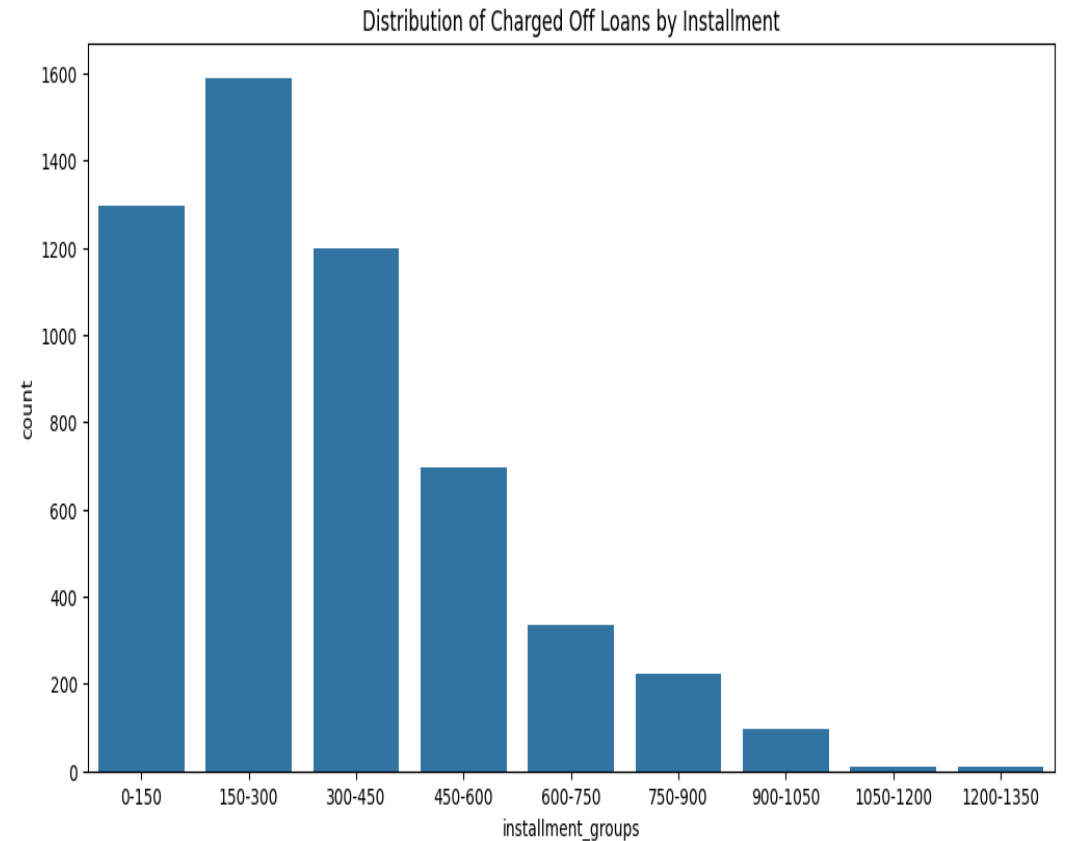
Categorical Univariate Analysis- Charged-Off Loan

- Other factors that also plays role in analyzing defaulters rate is employment length .
- As per the analysis an employee whose tenure is more the 10 years tend to default the most



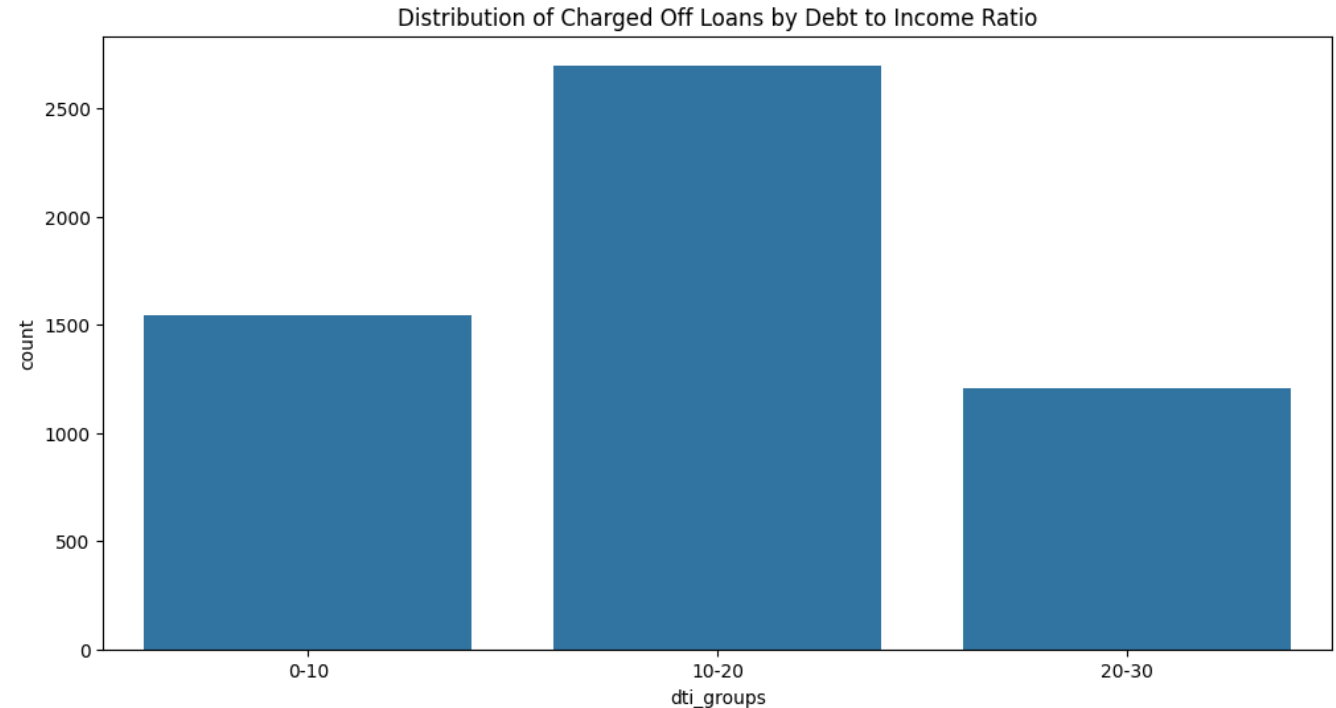
Categorical Univariate Analysis- Charged-Off Loan

- Other factors that also plays role in analyzing defaulters rate is installment one chooses.
- The installment chosen between 150-300 has more default chances



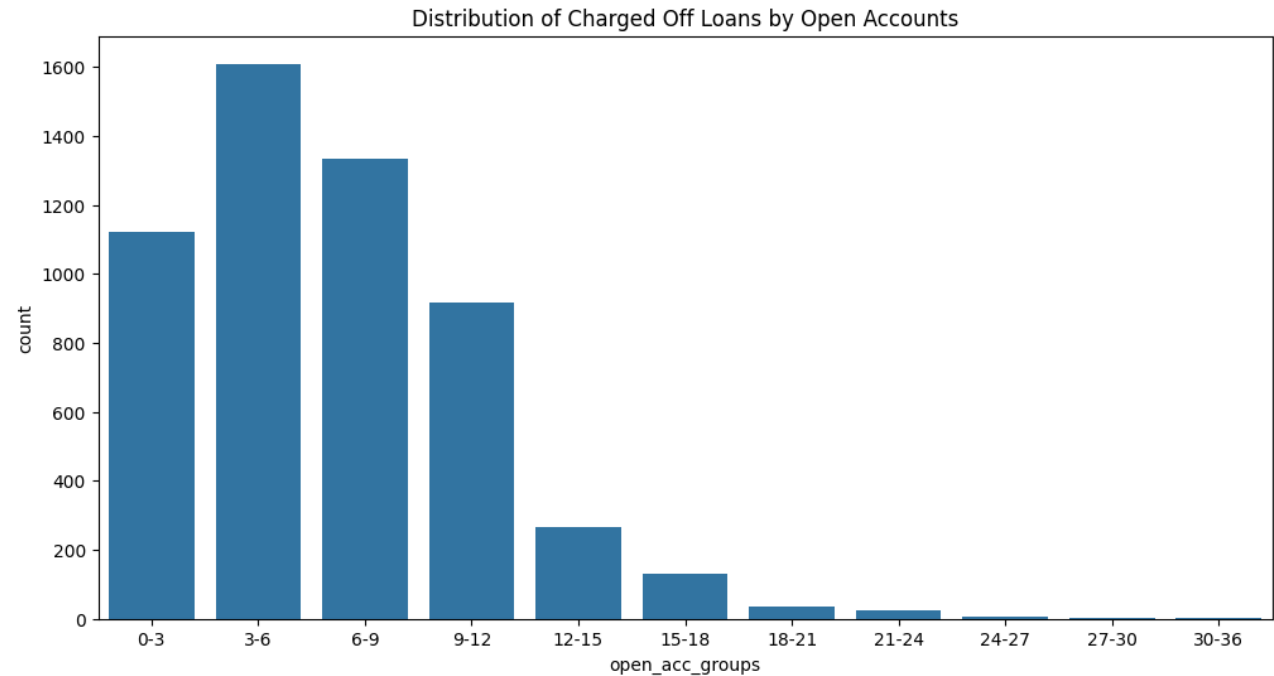
Categorical Univariate Analysis- Charged-Off Loan

- Other factors that also plays role in analyzing defaulters rate is debt-to-income ratio
- The defaulter are high when the ratio range is 10-20



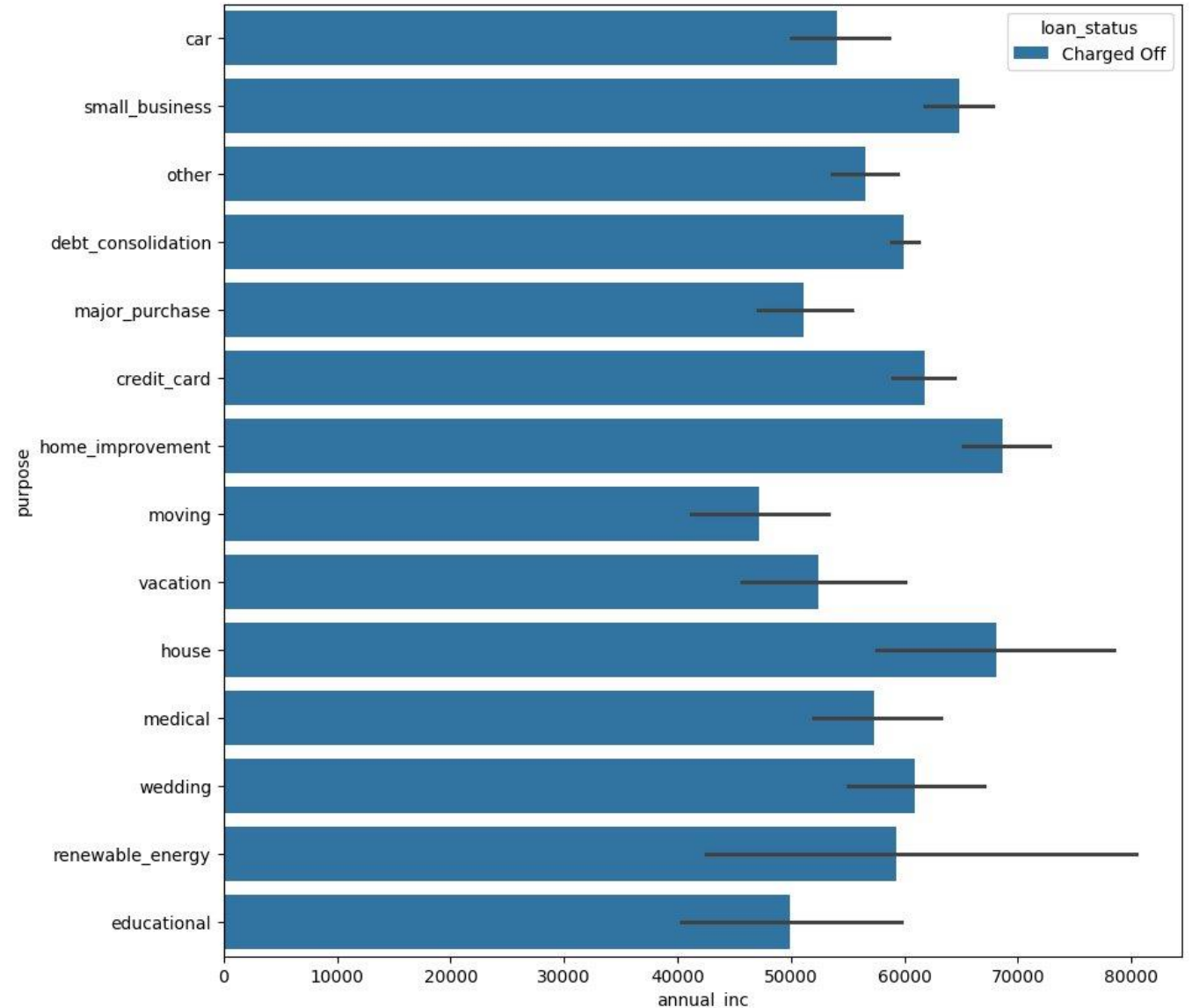
Categorical Univariate Analysis- Charged-Off Loan

- Other factors that also plays role in analyzing defaulters rate is open_acc
- The defaulter are high when open_acc range is 3-6



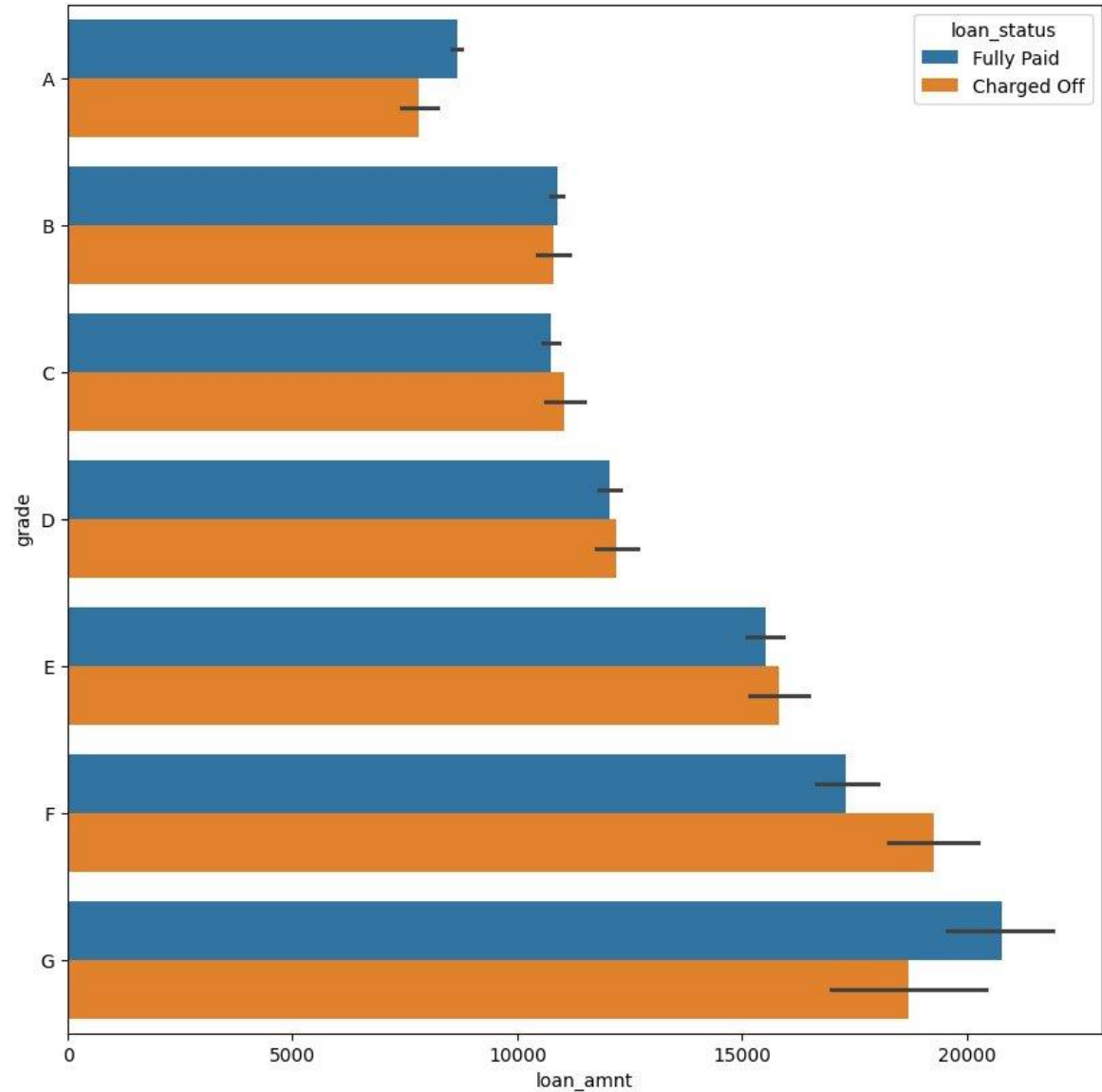
Bivariate Analysis

- When the annual income is between '60k-70k' and the purpose is home_improvement or house then the borrower has the high chance of charging off



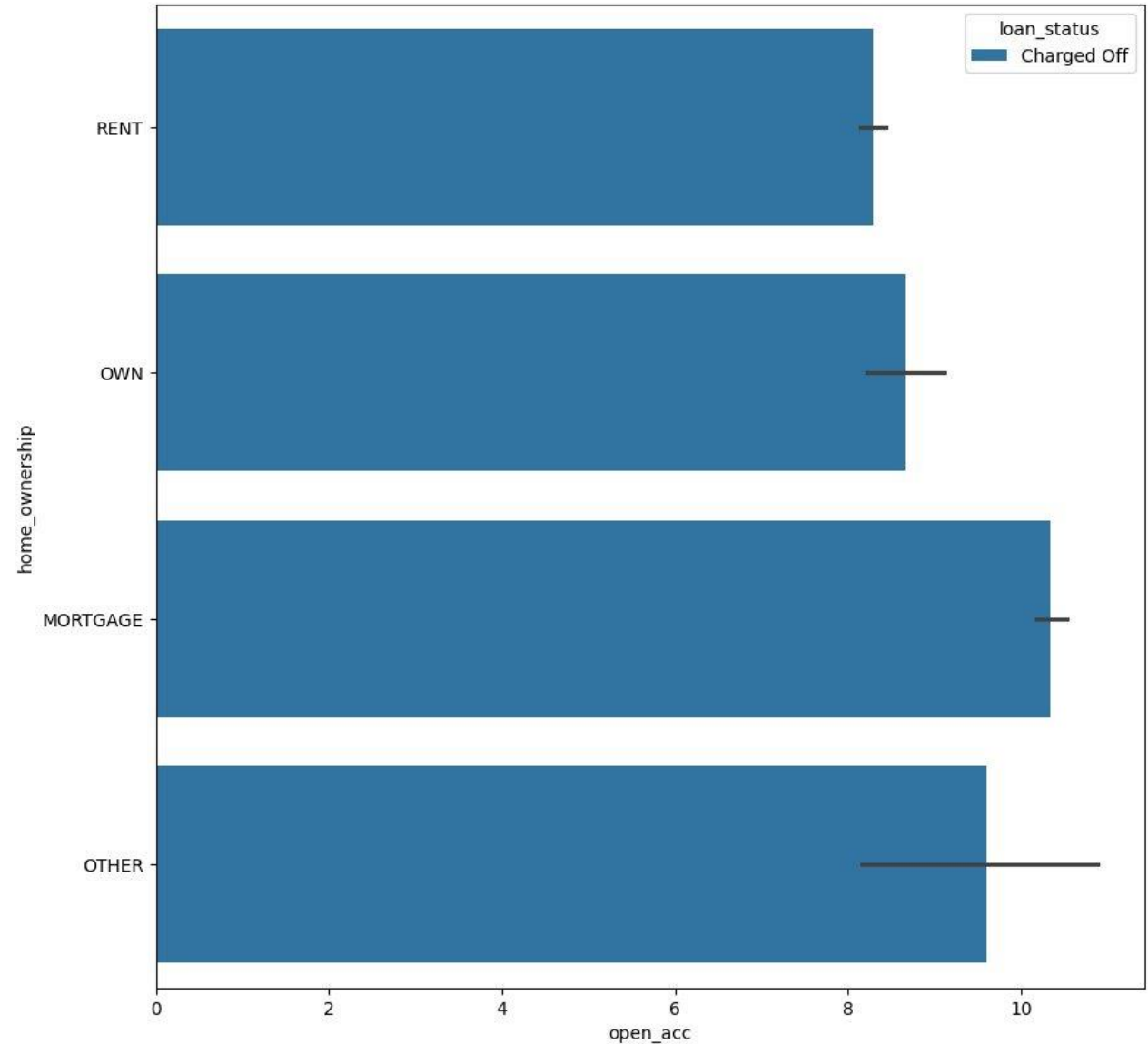
Bivariate Analysis

- Lower the grade (E,F,G) higher is the risk of charge off
- The grade (E,F,G) takes loan of higher amount which could be a reason of more defaults



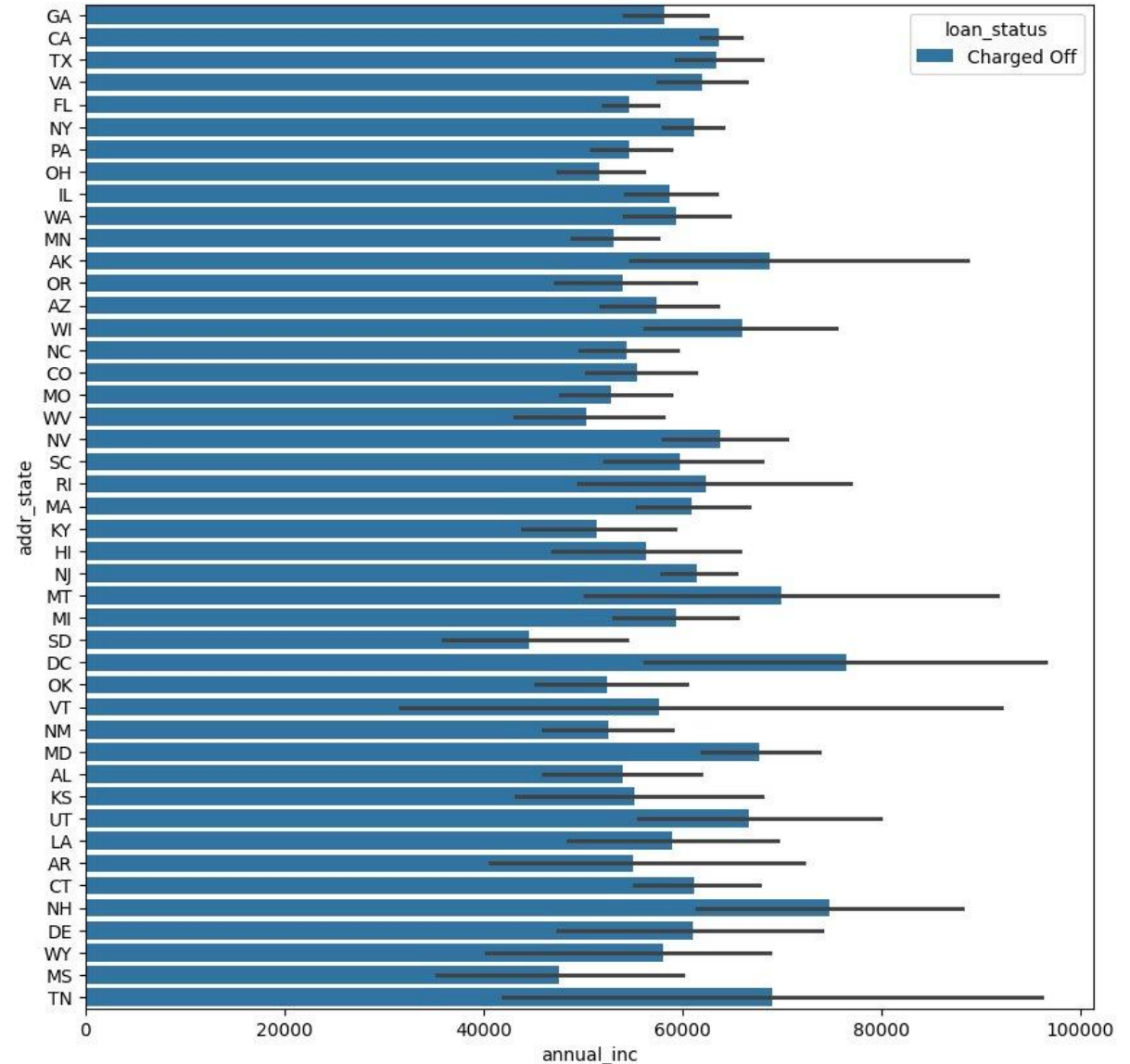
Bivariate Analysis

- Using Bivariate analysis we can conclude that borrowers on 'mortgage' have the high risk of charging off
- This is due to higher open credit line due to which they have more loans



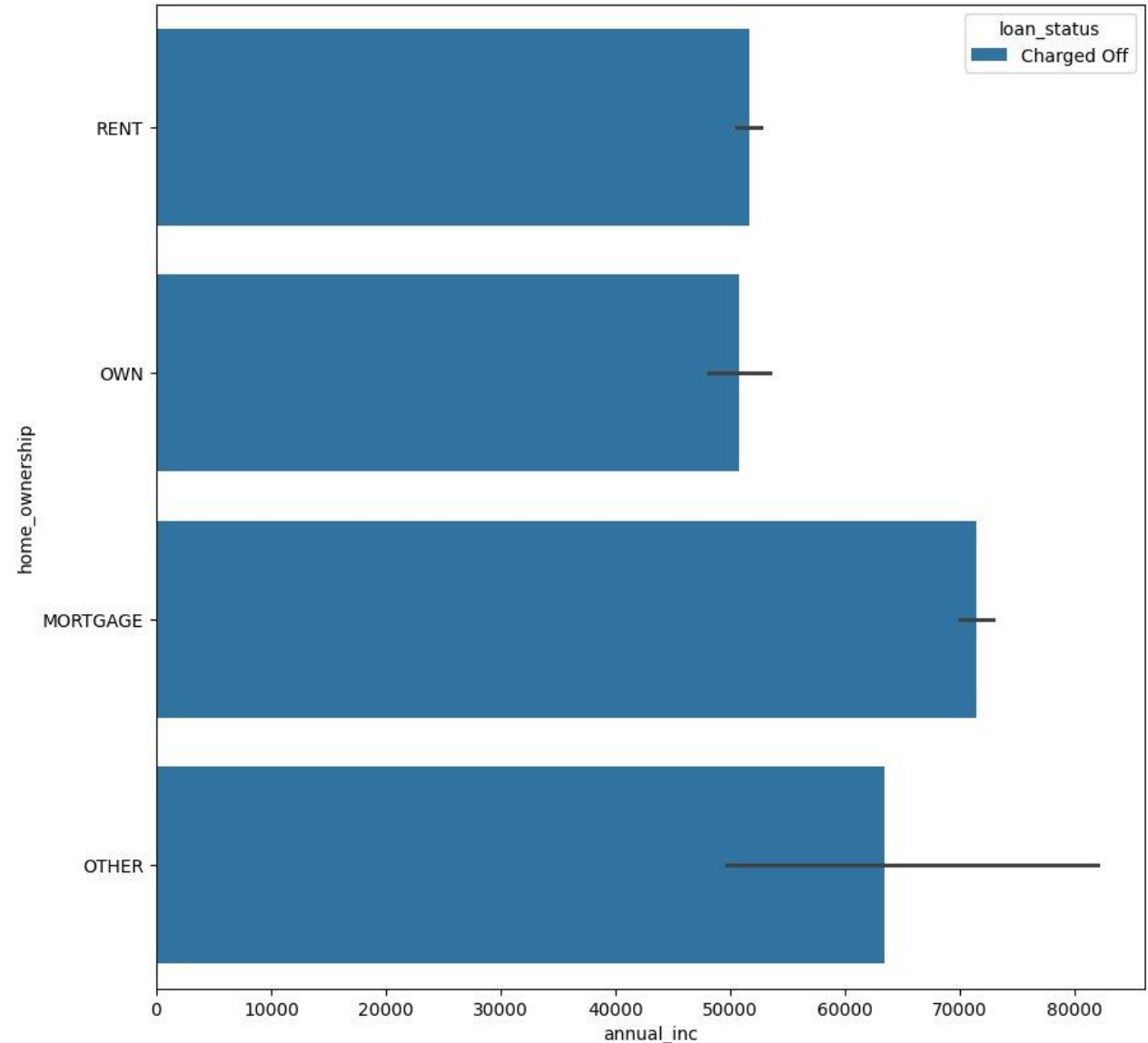
Bivariate Analysis

- When the `addr_state` is 'DC' and `annual_inc` is between 70k-80k have the high default count



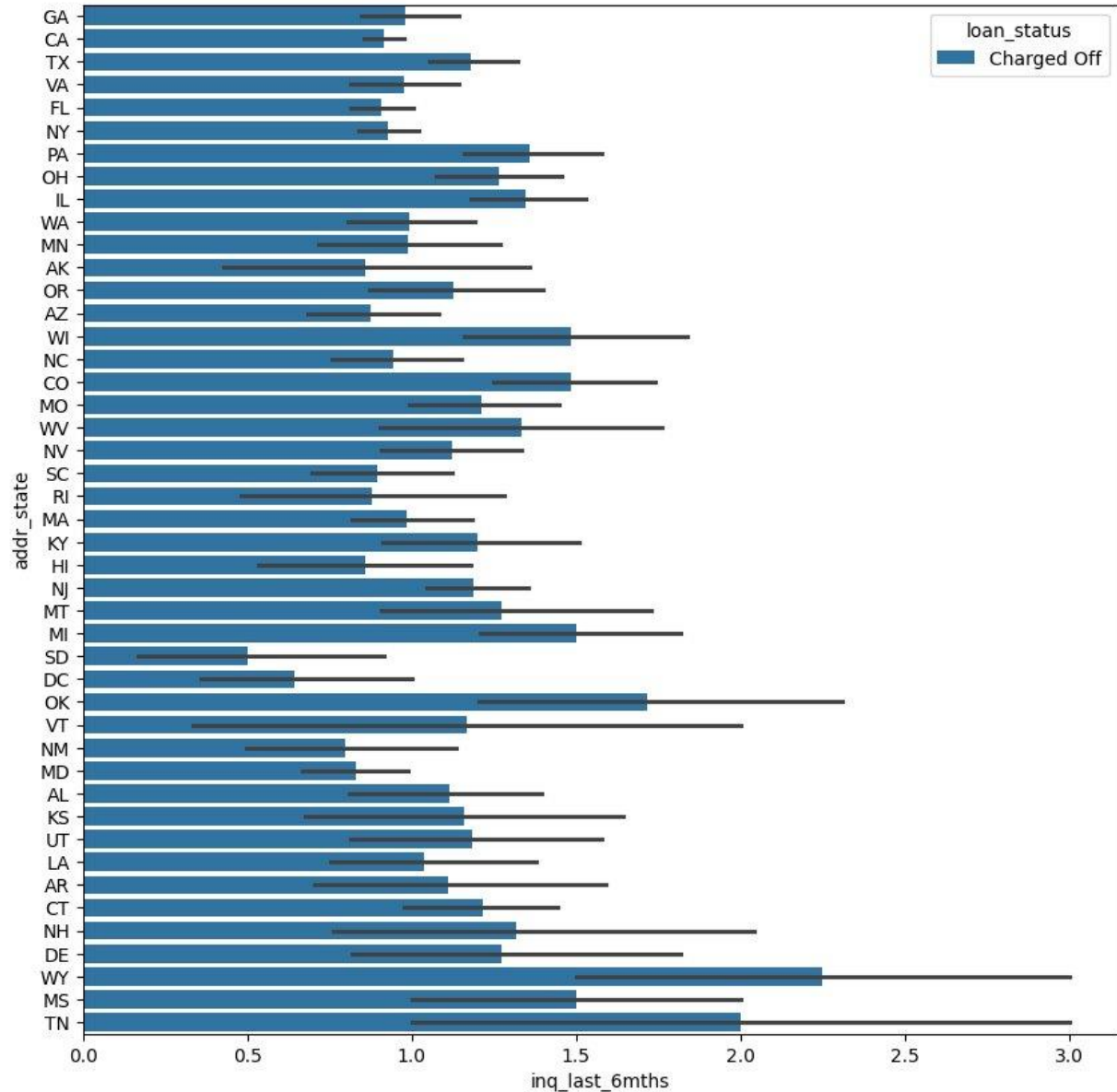
Bivariate Analysis

- Borrowers having higher annual income and home ownership as mortgage has high chance of charge-off



Bivariate Analysis

- When the addr_state is 'WY' and inq_last_6mths is above 2 have the most charge off



Conclusion (Uni-Variate Analysis)

From the univariate analysis, we can make the following observations that there is more possibility of defaulting when:

- ❖ When the 'grades' is 'B'
- ❖ When the 'sub_grade' is 'B5'
- ❖ When the purpose is 'debt_consolidation'
- ❖ When the 'home_ownership' is 'RENT'
- ❖ When the 'term' is '36 months'
- ❖ When the 'revol_util' is between '60-80'
- ❖ When the 'loan_amnt' is between '4k-8k'
- ❖ When the 'int_rate' is between '11%-14%'
- ❖ When the 'installment' is between '150-300'
- ❖ When the 'emp_length' is between '10+ years'
- ❖ When the 'annual_inc' is between '26k-52k'
- ❖ When the 'dti' is between '10-20'
- ❖ When the 'open_acc' is between '3-6'
- ❖ When the 'addr_state' is 'CA'

Conclusion (Bi-Variate Analysis)

From the bi-variate analysis, we can make the following observations that there is more possibility of defaulting when:

- ❖ When the 'annual_inc' is between '60k-70k' purpose is 'home_improvement' or 'house'
- ❖ When the 'annual_inc' is between '60k-70k' and 'grade' is 'F' or 'G'
- ❖ When the 'annual_inc' is between '60k-70k' and 'home_ownership' is 'MORTGAGE'
- ❖ When the 'annual_inc' is above '60k' and 'revol_util' is between '80-100'
- ❖ When the 'purpose' is 'small_business' and 'loan_amnt' is '14k-16k'
- ❖ When the 'purpose' is 'credit_card' and 'dti' is between '14-16'
- ❖ When the 'purpose' is 'vacation' and 'emp_length' is between '6-7 years'
- ❖ When the 'purpose' is 'house' and 'inq_last_6mths' is between '1-2'
- ❖ When the 'home_ownership' is 'MORTGAGE' and 'open_acc' is close to '10'
- ❖ When the 'loan_amnt' is between '15k-20k' and 'grade' is 'F'
- ❖ When the 'addr_state' is 'WY' and 'loan_amnt' is above '15k'
- ❖ When the 'addr_state' is 'DC' and 'annual_inc' is between '70-80k'
- ❖ When the 'addr_state' is 'WY' and 'inq_last_6mths' is above '2'