Lending Club Case Study

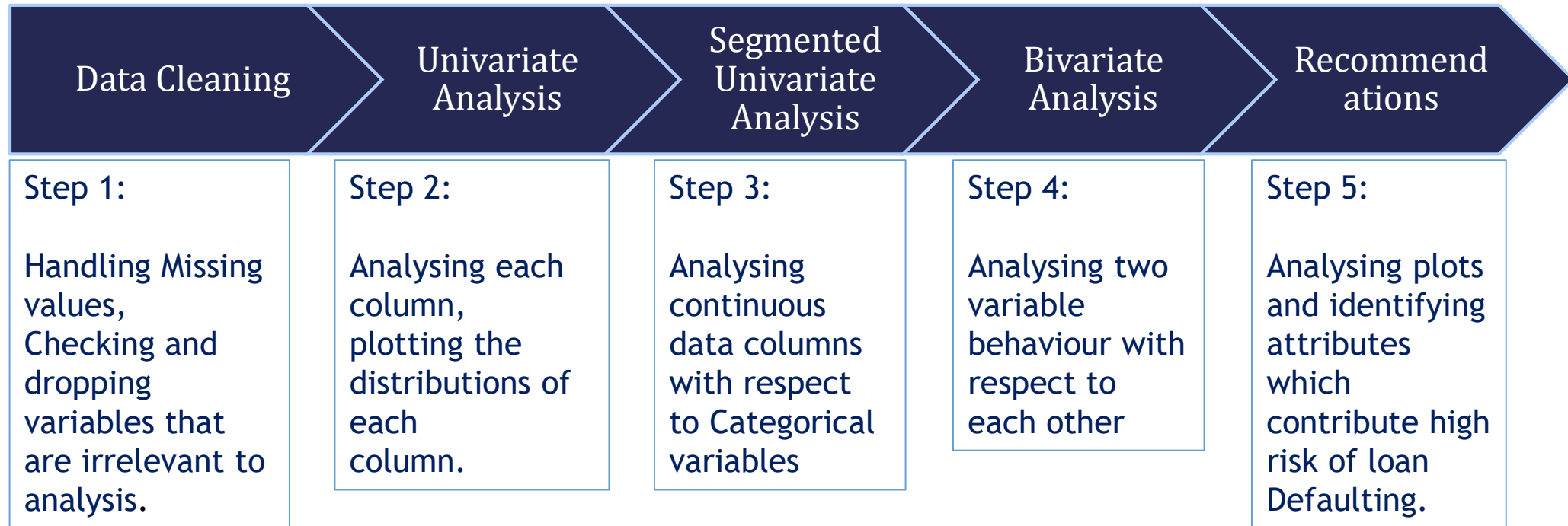By Abi Turab Untalawala

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.
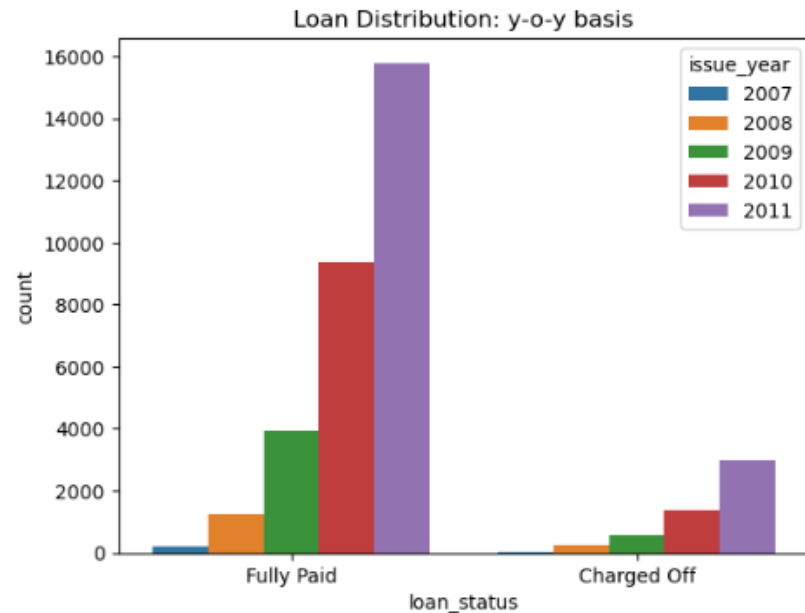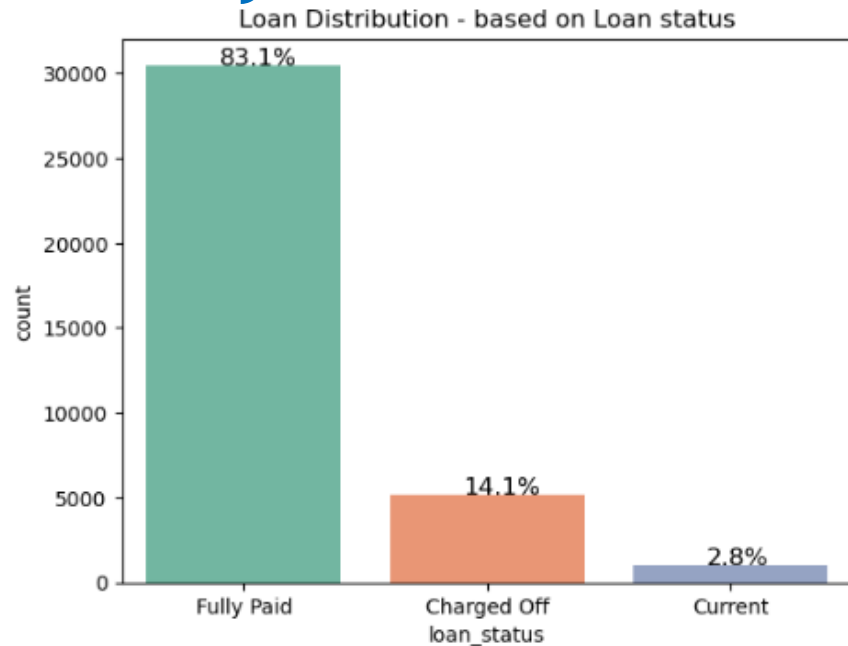
Based on the information from past loan application, company wants to understand the driving factors behind loan default, i.e. the variables which are strong indicators of default.

The company can utilise this knowledge for its portfolio and risk assessment.

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Problem Solving Approach

Data Cleaning	Univariate Analysis	Segmented Univariate Analysis	Bivariate Analysis	Recommendations
Step 1: Handling Missing values, Checking and dropping variables that are irrelevant to analysis.	**Step 2:** Analysing each column, plotting the distributions of each column.	**Step 3:** Analysing continuous data columns with respect to Categorical variables	**Step 4:** Analysing two variable behaviour with respect to each other	**Step 5:** Analysing plots and identifying attributes which contribute high risk of loan Defaulting.

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Analysis on Loan status

Loan Distribution - based on Loan status

Loan Distribution: y-o-y basis

Observation

- Fully paid loans : 83%

- Loans Charged off (Defaulted): 14%

- Bar chart shows increase in loans year on year basis.

- High numbers of loans granted in 2011, same is reflecting in high number of charged off loans
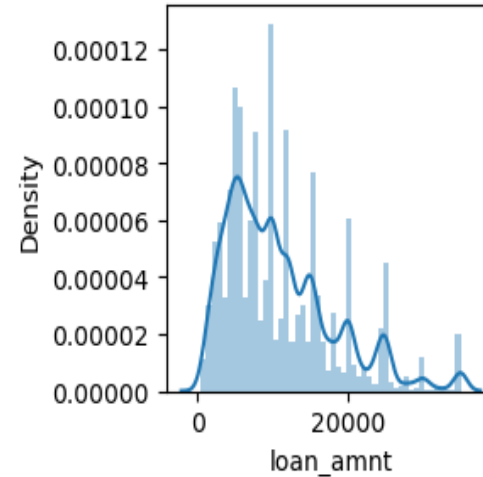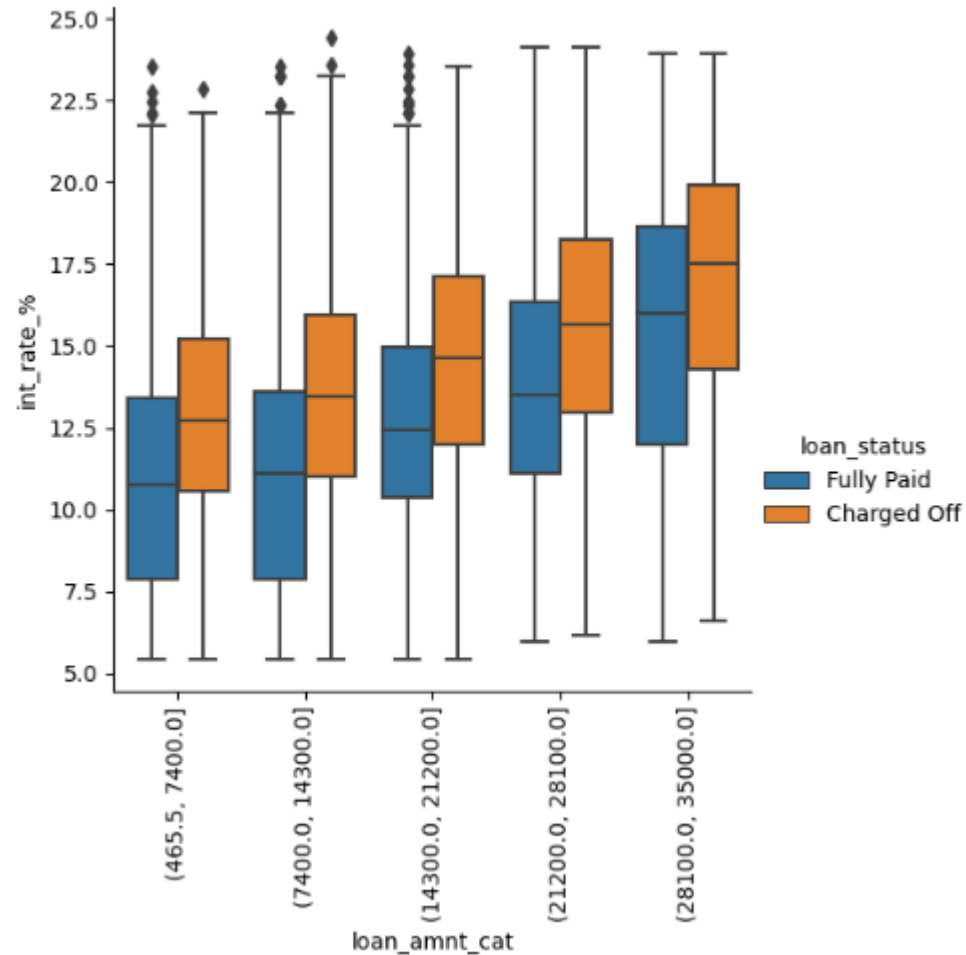
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Analysis on Annual Income
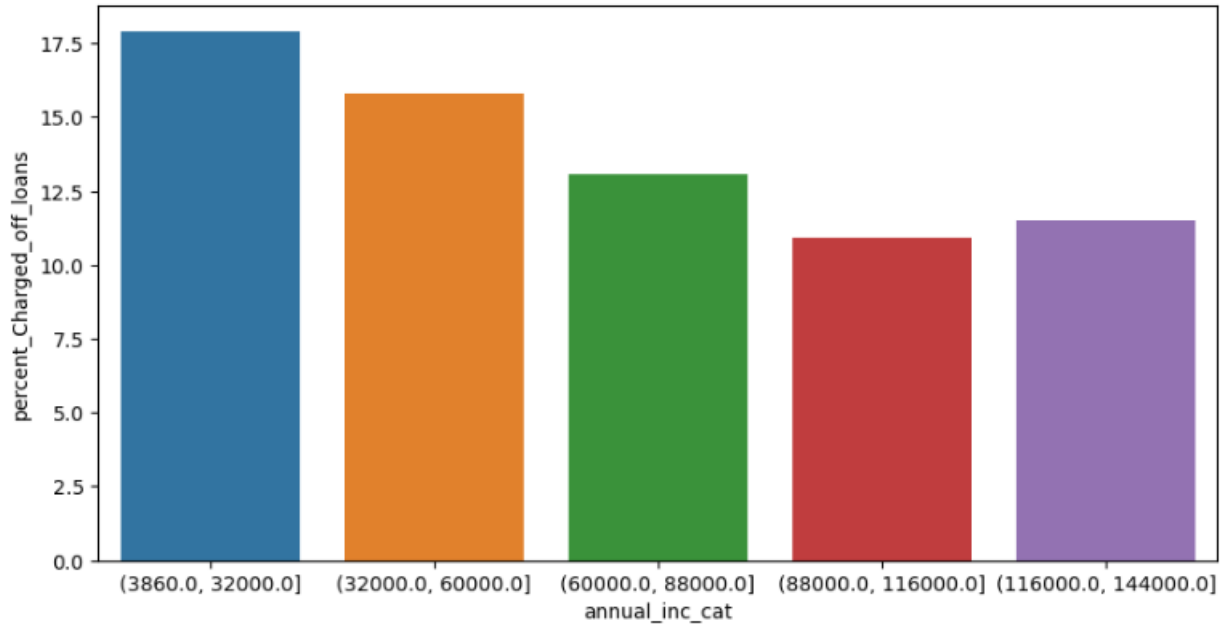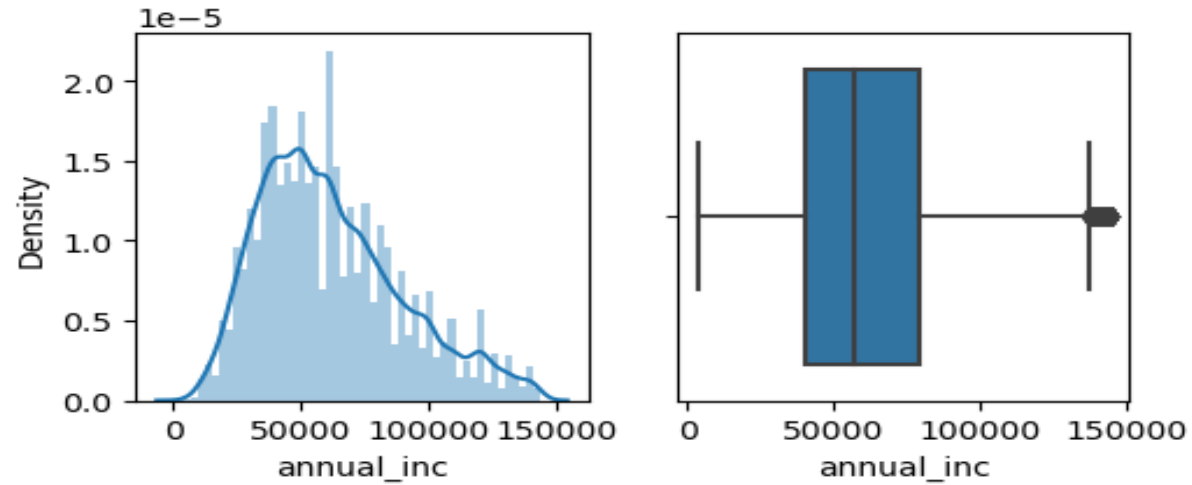
Observation

- Median loan amount is 9600 USD and IQR is 9650 USD

- Min loan amount is 500 USD and Max loan amount is 35000 USD

- Lower Income range 3860-32000 has high percentage of Charged off loans.

- Note Decrease in percentage of Charged off loan with increase in annual income.

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Analysis on Loan amount

Observation

- Median loan amount is 9600 and IQR is 9650

- Min loan amount is 500 and Max loan amount is 35000

- For the same loan amount group, interest rate is higher for Charged off loans

- It can be concluded that for the same loan amount, interest rate is higher for loans which were defaulted.
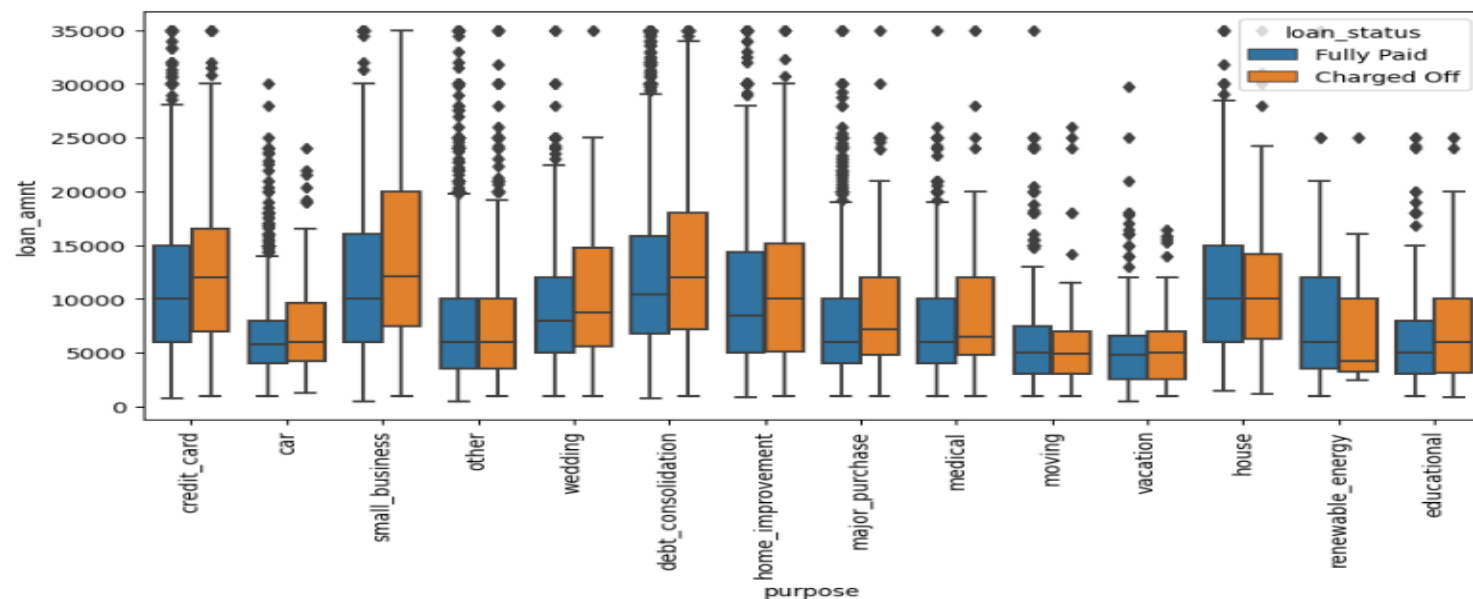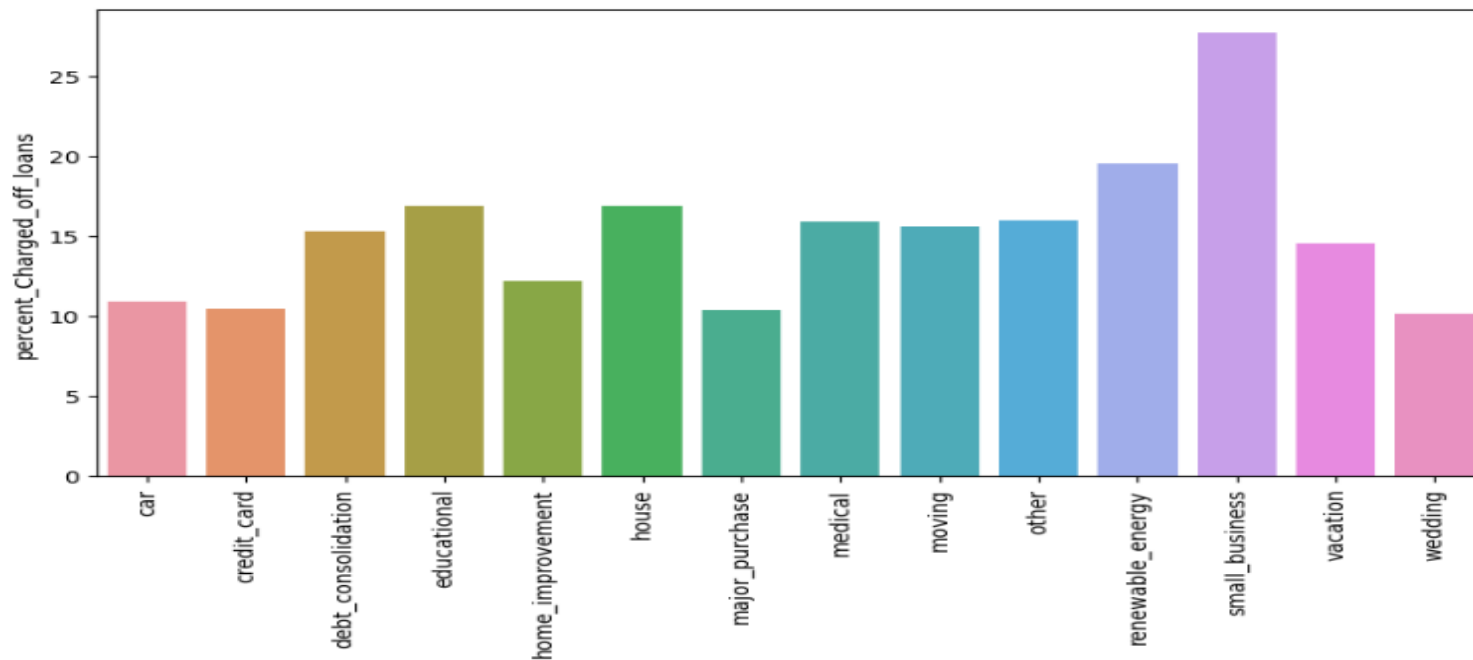
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Analysis on Interest rate
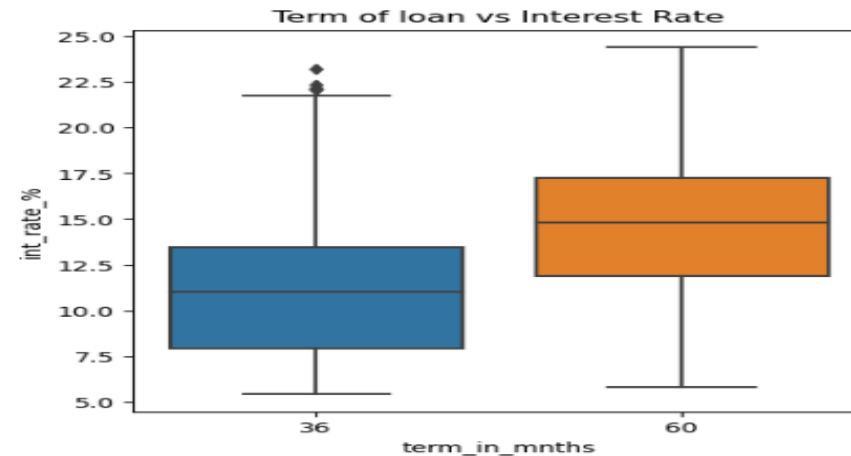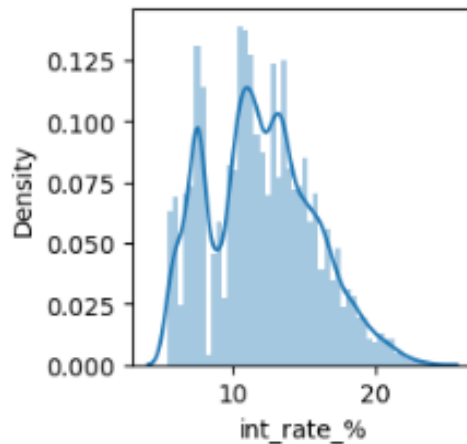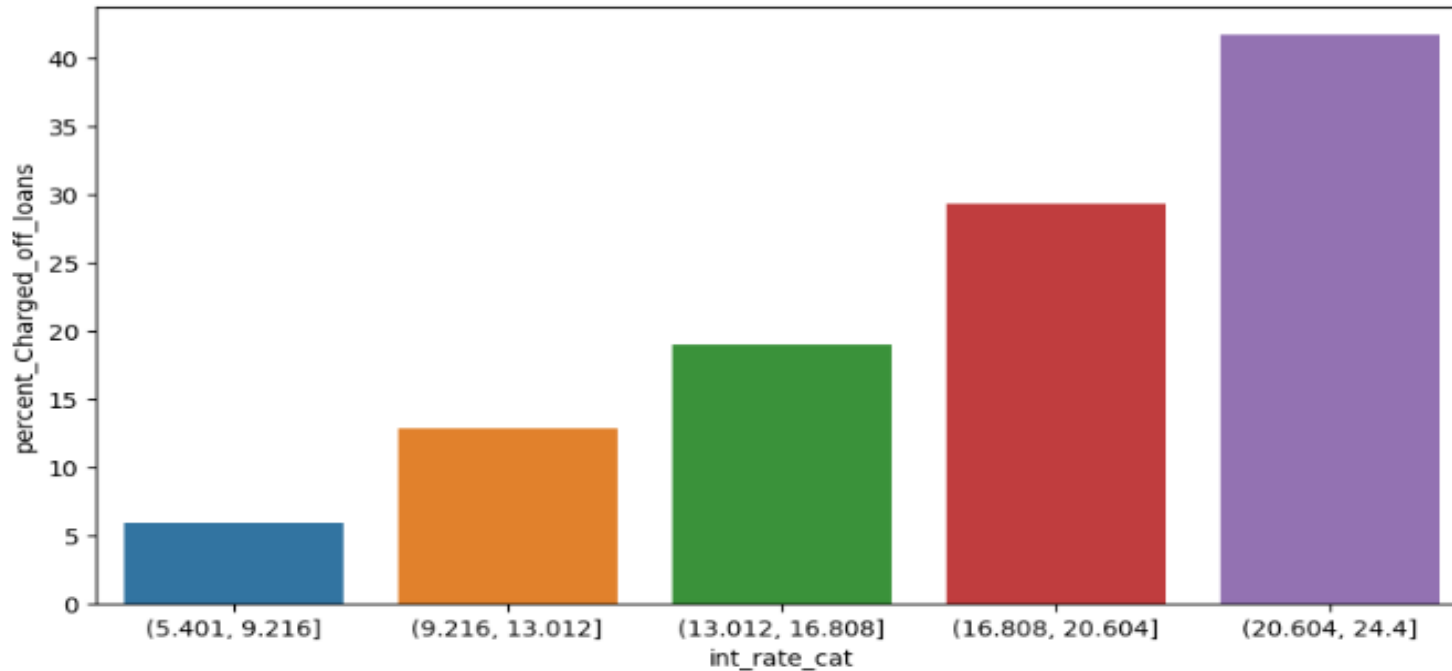
Observation

- Loans with higher int. rate 20 to 24.4 has high percentage of Charged off loans.
- Note Increase in percentage of Charged off loan with int. rate.

- Interest rate is higher for 60 months loan term.
- Most of the loans issued for longer term has higher interest rates

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Analysis on Loan Purpose

Observation

- Loans with purpose of small business has high percentage of Charged off loans (more than 25%).

- Median,25th percentile,75th percentile of loan amount is highest for loan taken for small business followed by Debt Consolidation and Credit card.

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Analysis on Home ownership
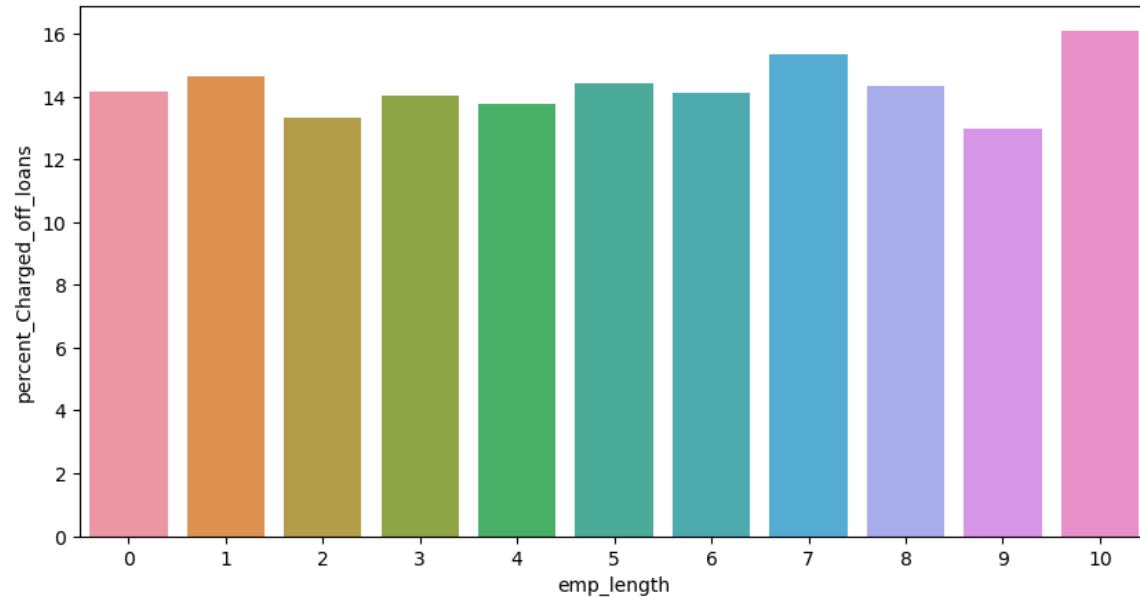

Loan Distribution - based on Home Ownership
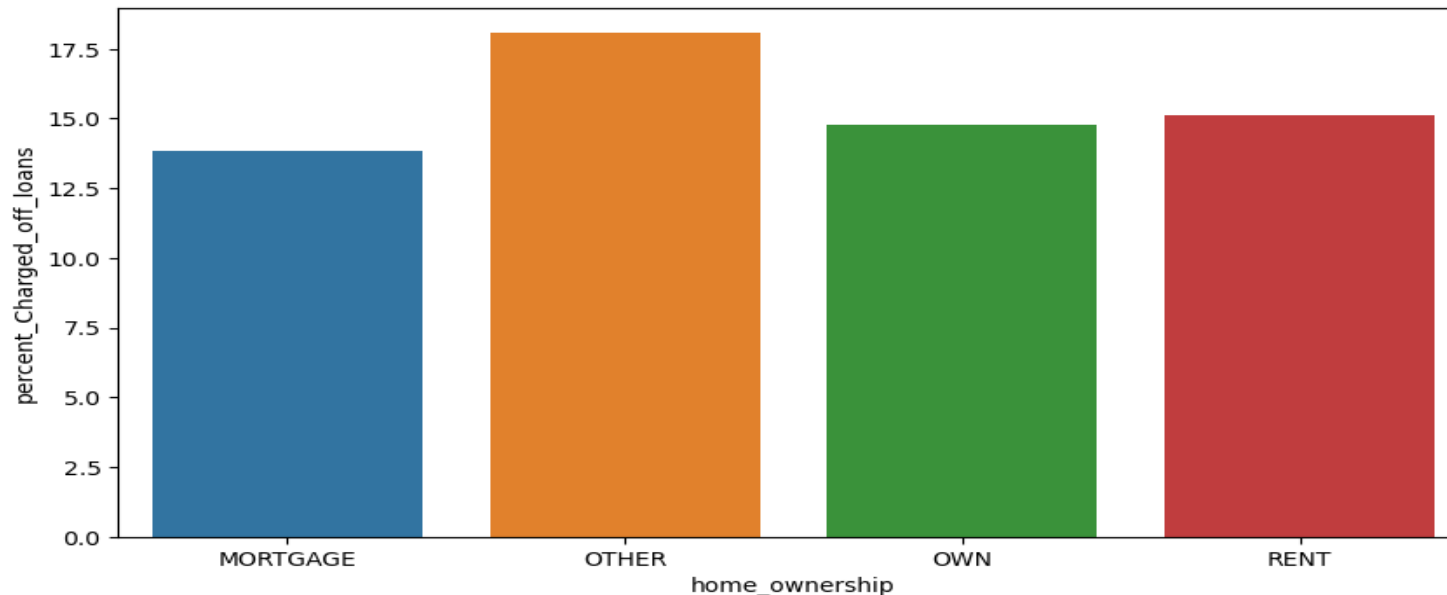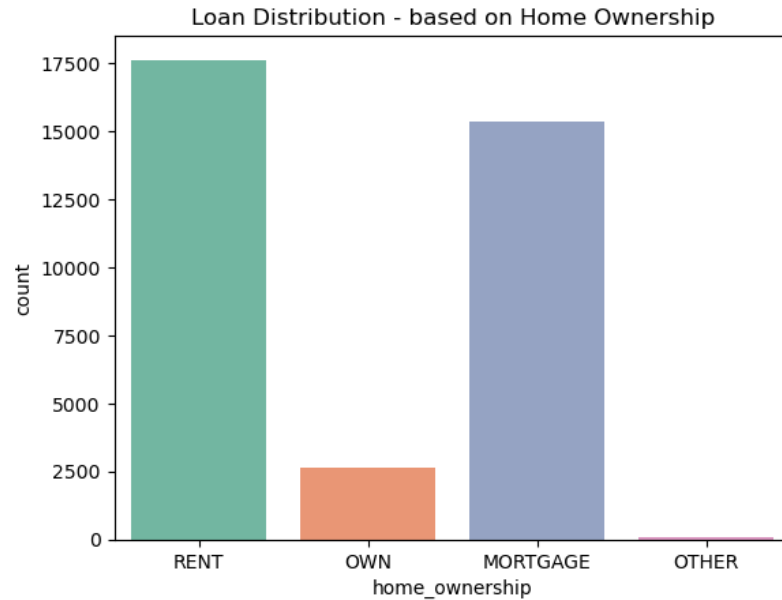
Observation

Most of the loans are taken by people who have Home ownership as either Rent or Mortgage

Trend shows almost equal distribution of percentage of Charged off loans against home ownership
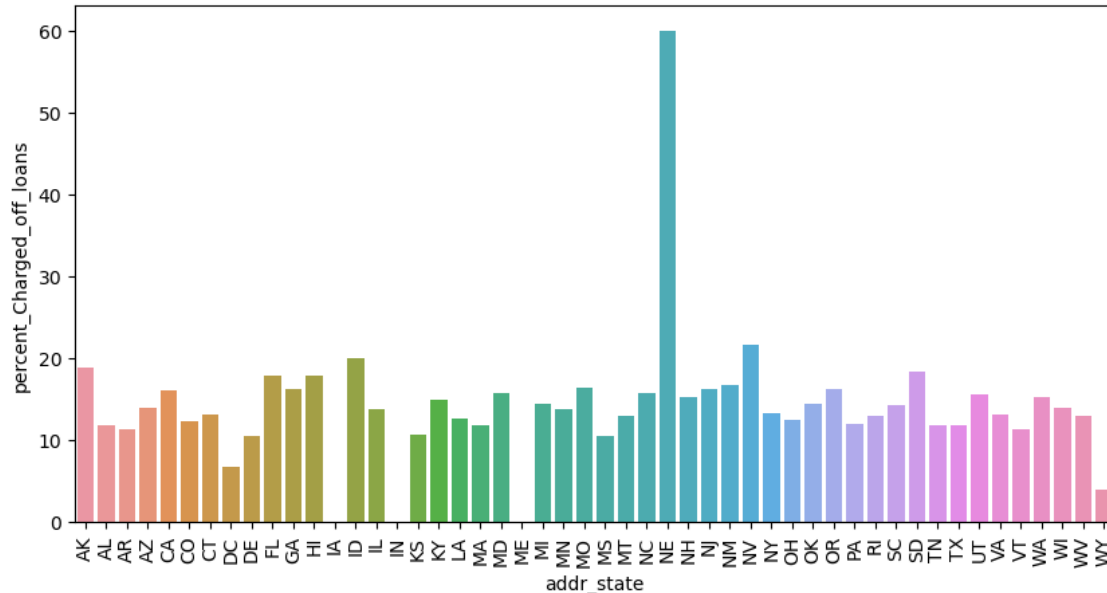
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Analysis on Employment Length

Observation
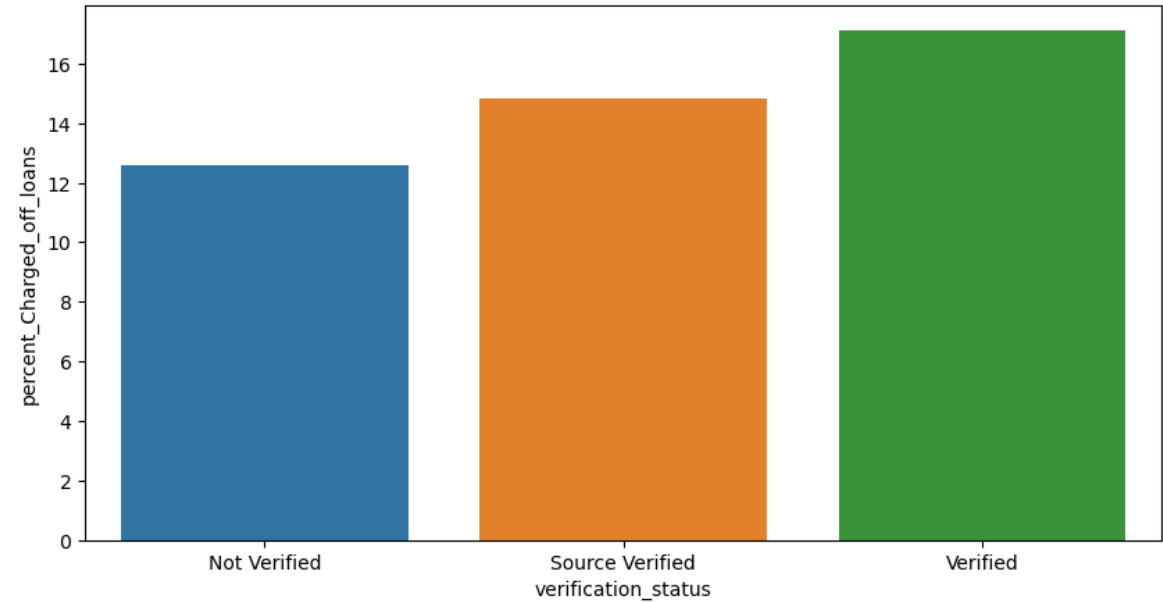
Above trend shows almost equal distribution of percentage of Charged off loans when compared with employment length of applicant

Analysis on Address State

States NE has very high chances of loans getting charged off but number of applications are too low for any conclusions
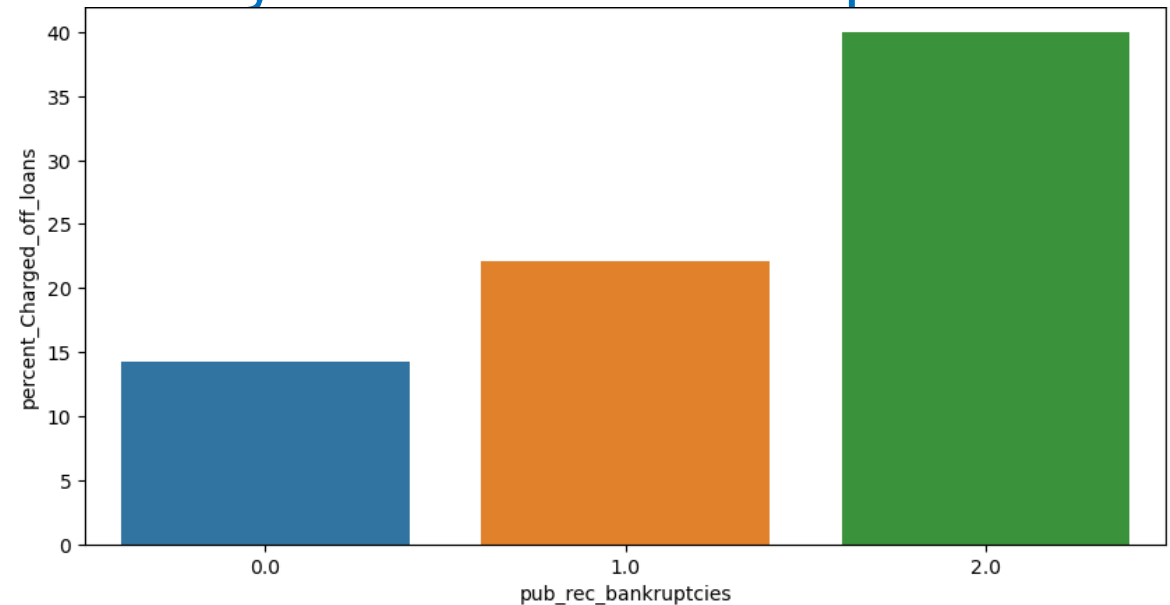
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Analysis on Verification status

Observation

Trend shows almost equal distribution of

percentage of Charged off loans when compared

with verification status

Analysis on Public bankruptcies record

Trend shows very high percent of Charged off loans in

case of '2' no of public record bankruptcies

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Conclusion

High Risk attributes

- Lower Annual Income range - less than 32000

- Higher loan interest rates - more than 20%

- Highest risk loans are associated with loans taken for the purpose of small business (25% default rate)

- Loan applications with two public record bankruptcies also has high default rate – almost 40%

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