LENDING CLUB – CASE STUDY

AUTHORED BY – PRITAM NARKAR & SANKET PAWAR

Table of Contents

Business Problem

This company is the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures. Borrowers can easily access lower interest rate loans through a fast online interface.

 Like most other lending companies, lending loans to 'risky' applicants is the largest source of financial loss (called credit loss). Credit loss is the amount of money lost by the lender when the borrower refuses to pay or runs away with the money owed. In other words, borrowers who default cause the largest amount of loss to the lenders. In this case, the customers labelled as 'charged-off' are the 'defaulters'.

If one is 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.

 In other words, the company wants to understand the driving factors (or driver variables) behind loan default, i.e. the variables which are strong indicators of default. The company can utilize this knowledge for its portfolio and risk assessment

Analysis Approach

Data pre-processing

- Removing unwanted rows and columns, Fixing missing values & Standardizing the values

Univariate Analysis

- Checking distributions,frequencies of variables, removing outliers

Segmented Univariate Analysis

- Analyzing variables against other segmented variables, Creating derived columns

Multi-variate Analysis

- Perform correlation analysis , check how variables affect other variables, and joint distributions.
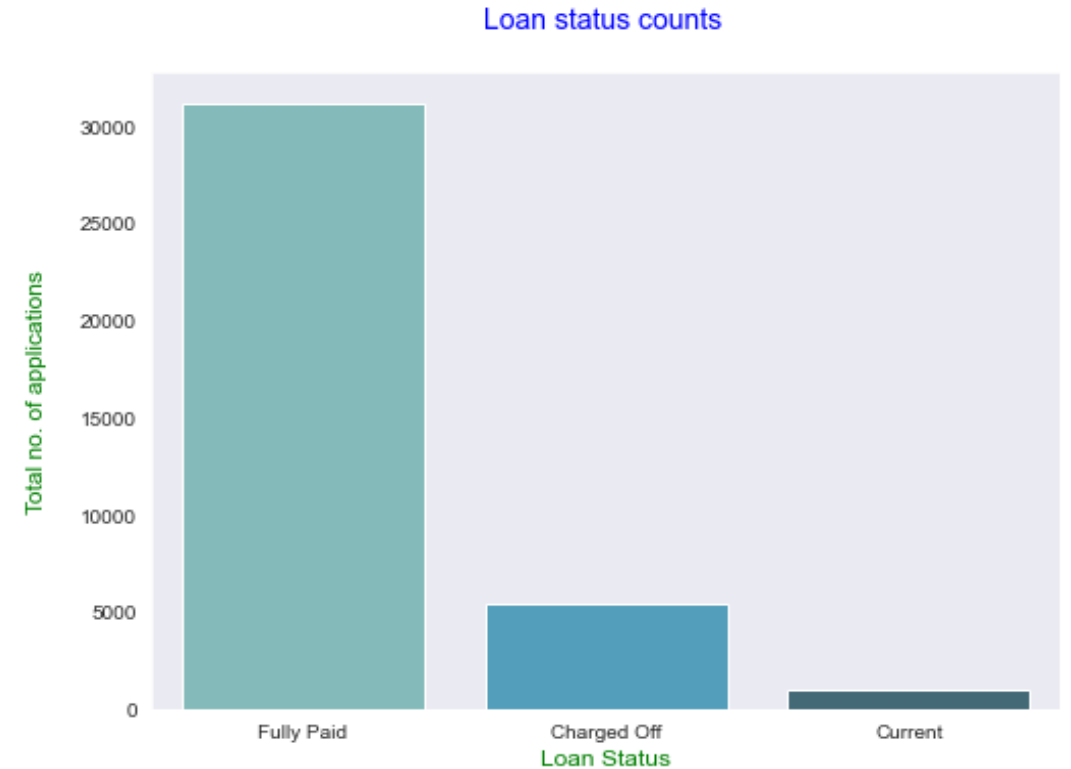
Result Summary & Recommendation

- Summarizing results with help of visualization,deriving conclusions and providing recommendation
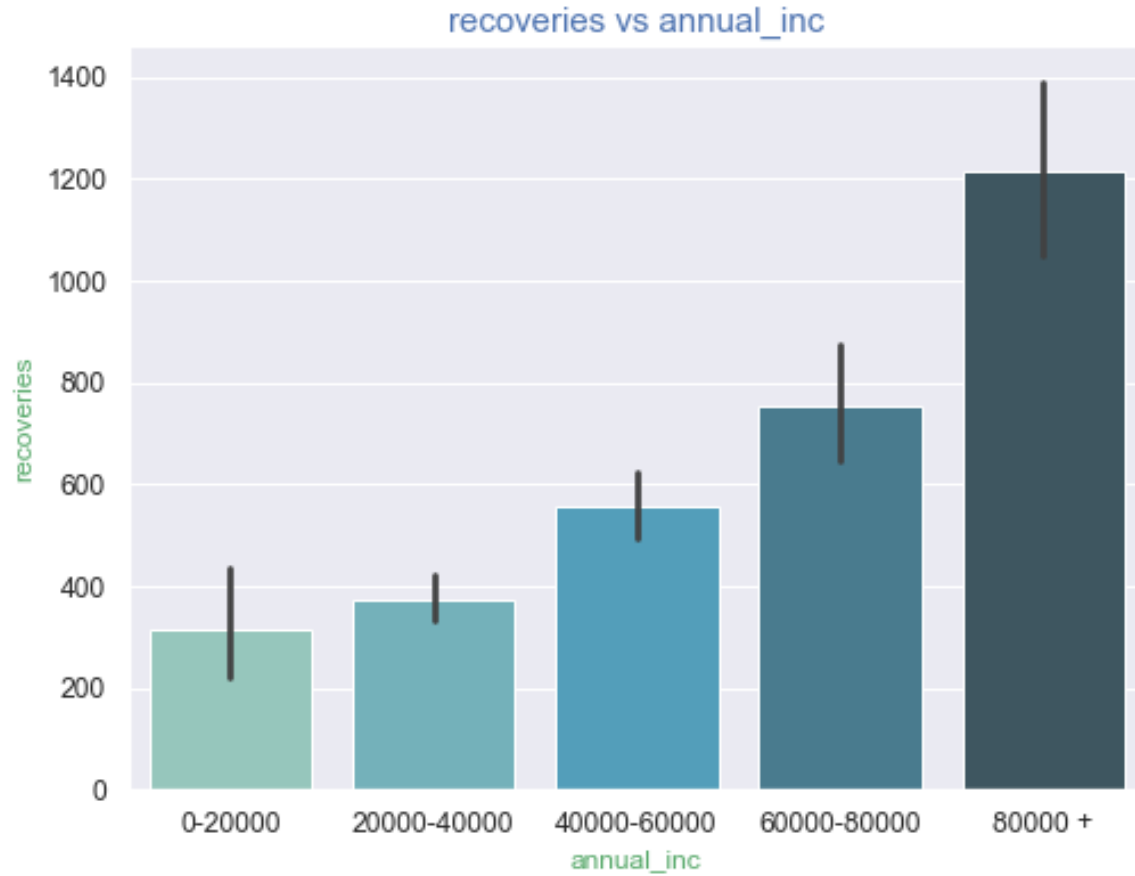
Current stats about lending business

Purpose Of Loan

Loan status counts
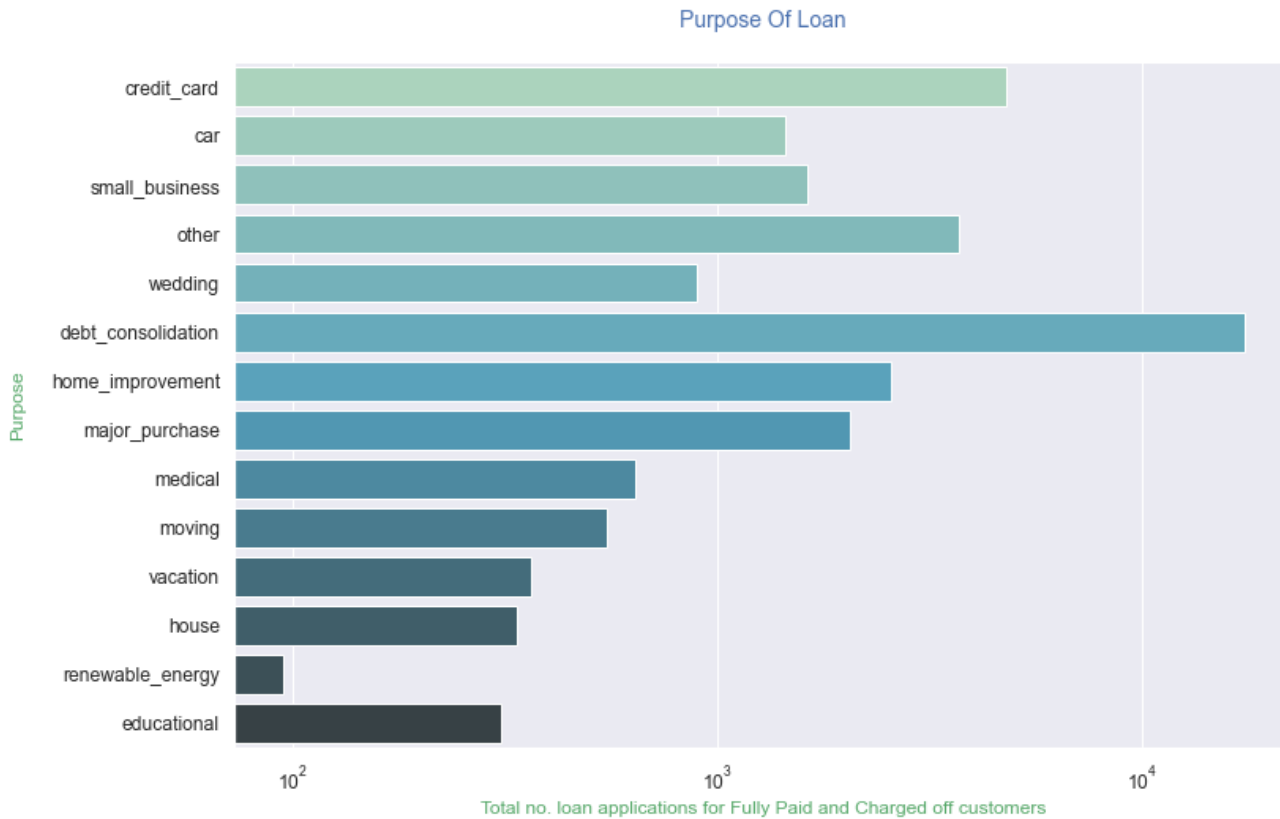
Debit consolidation, credit card, major purchases are top contributor for lending business.

Almost 14% of borrowers are defaulting on their loans.

Current stats about lending business
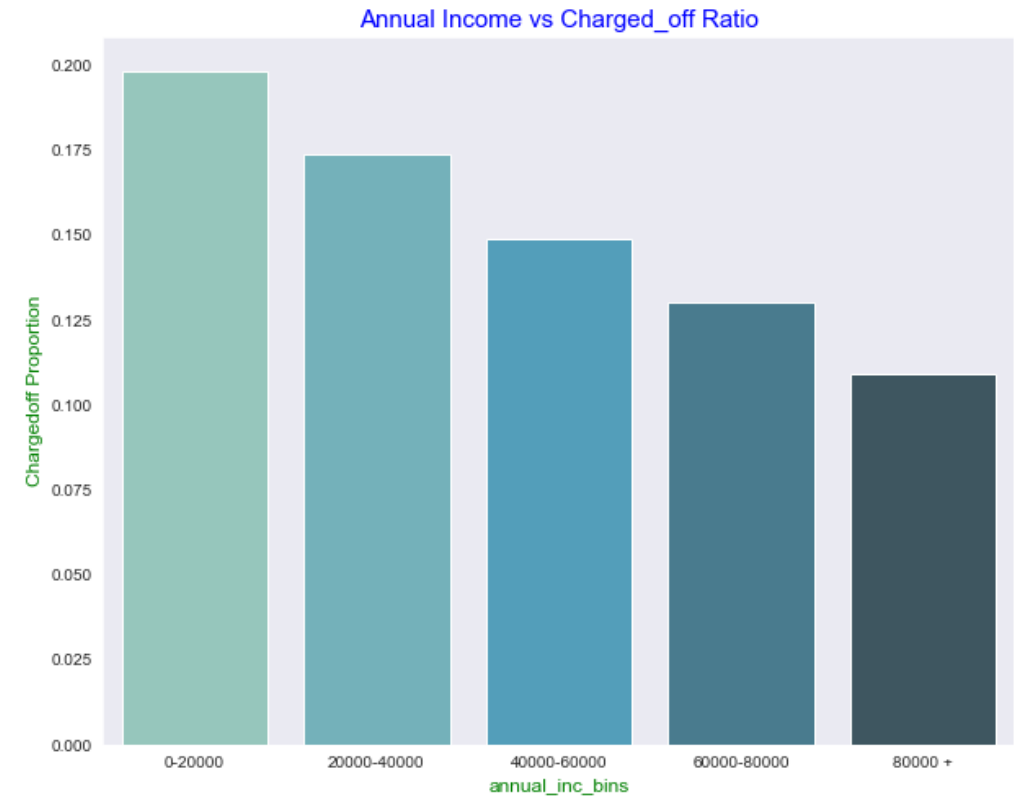

recoveries vs annual_inc

Loans given to higher income person have higher recovery rates, where as we are losing more money when loan given to lower income customers.

Analysis of 'Charged off' loans

Purpose vs Charged_off Ratio

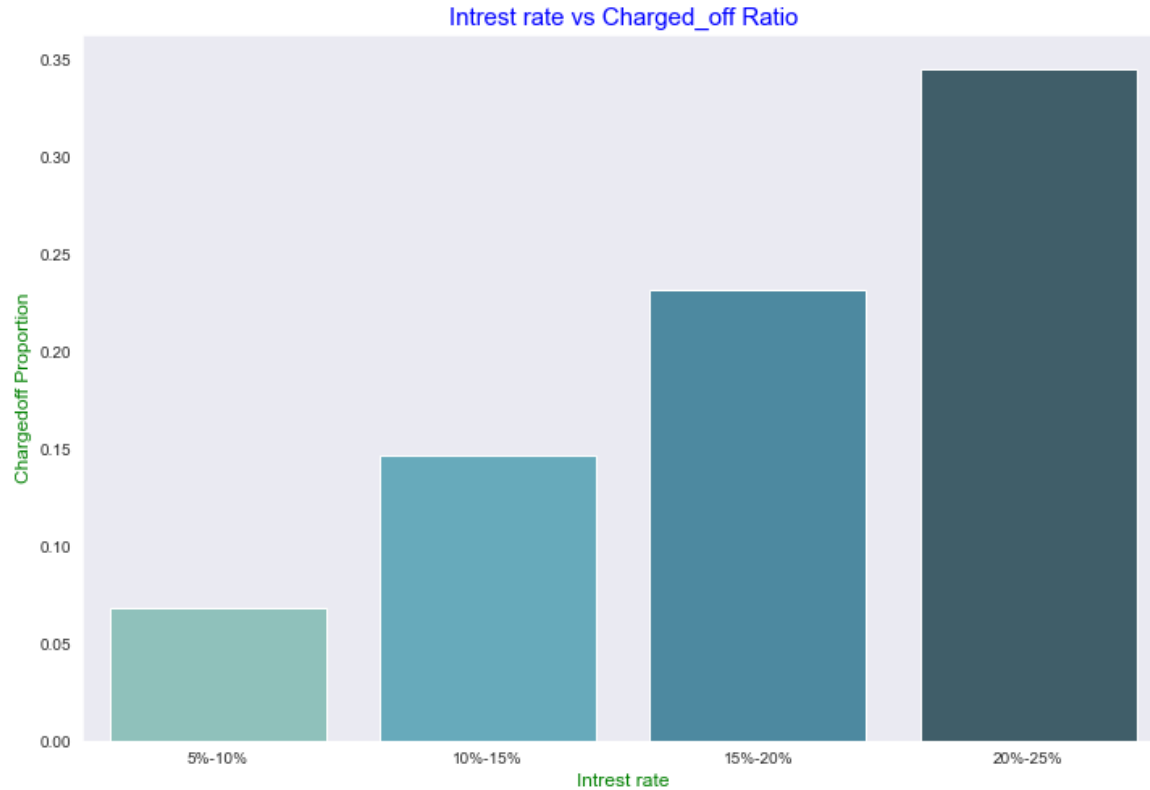**Annual Income vs Charged_off Ratio**
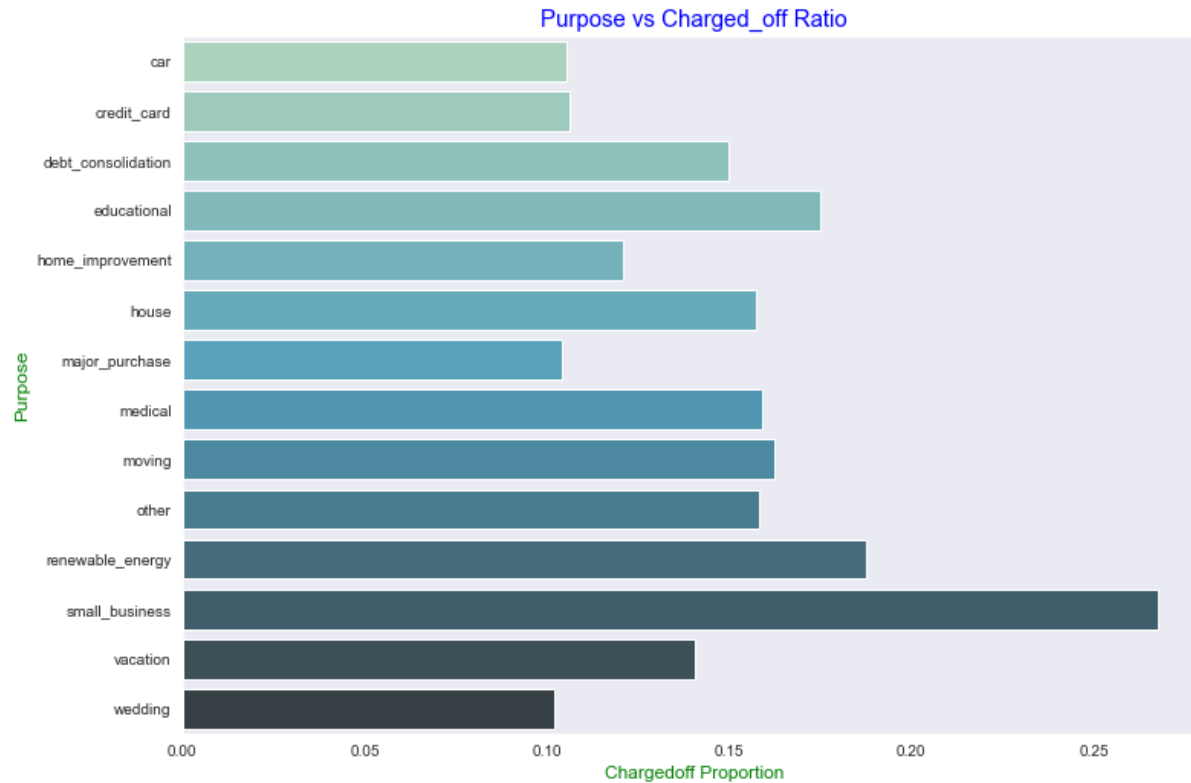
Loans taken under the category of 'Small Business' are highest contributor for default loans.
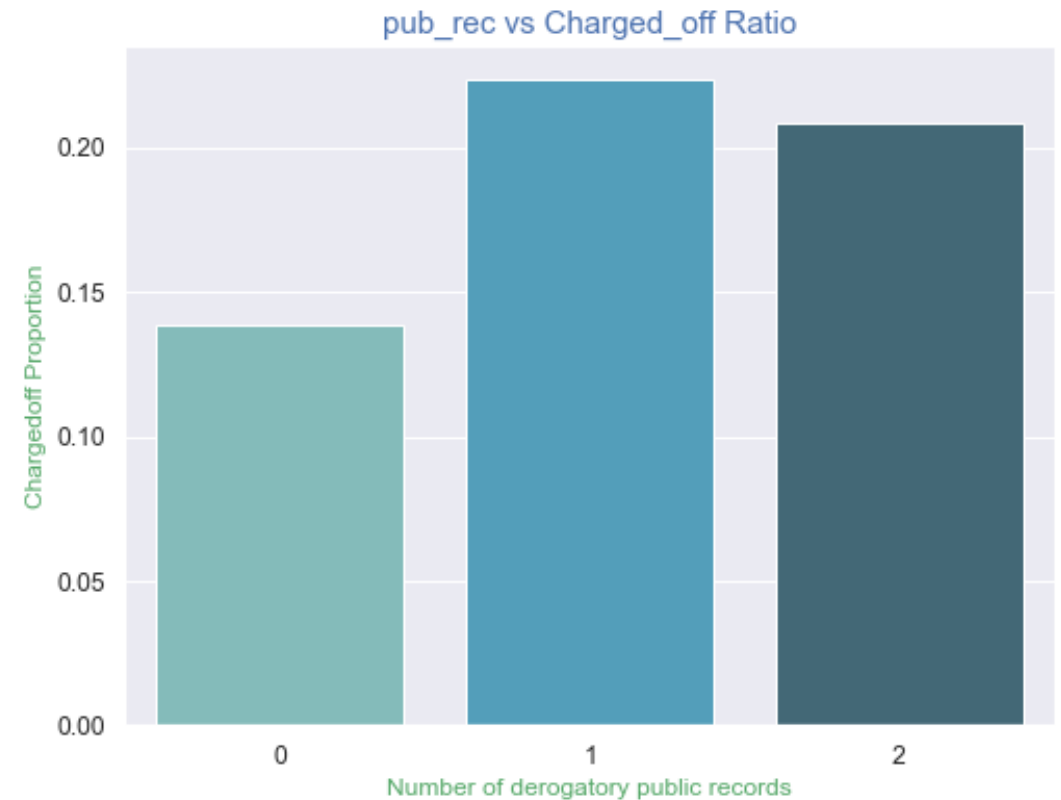
Lower the income, higher the chances of borrower getting default. Highest number of borrowers are in income bucket of 0-20000.

Analysis of 'Charged off' loans

The chances of loan getting default increases with higher interest rates. Looks like customers are NOT able to bare higher charges of EMIs.

Higher number of derogatory public records are another factor behind the defaulted loan. These borrowers need to be avoided.
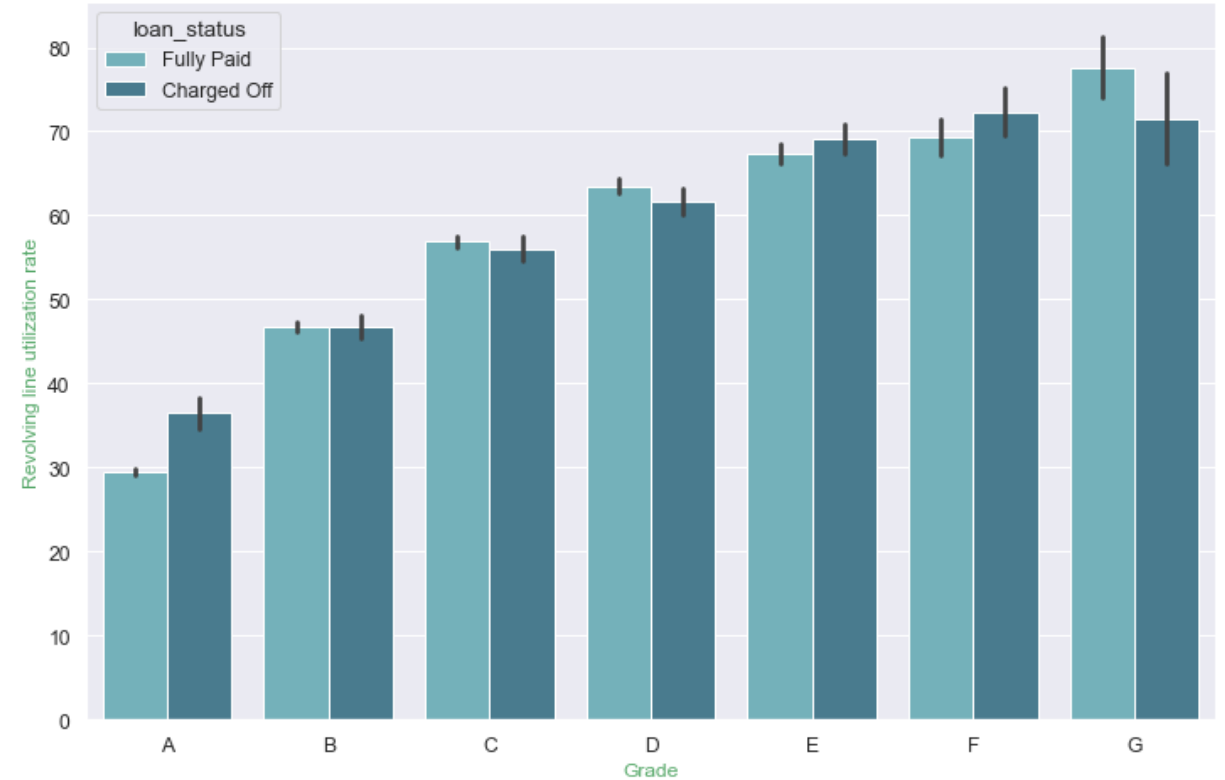
Analysis of 'Charged off' loans

Loan Amount vs The number of payments on the loan (in Months)

Revolving line utilization rate vs Grade for Fully Paid and Charged Off customers
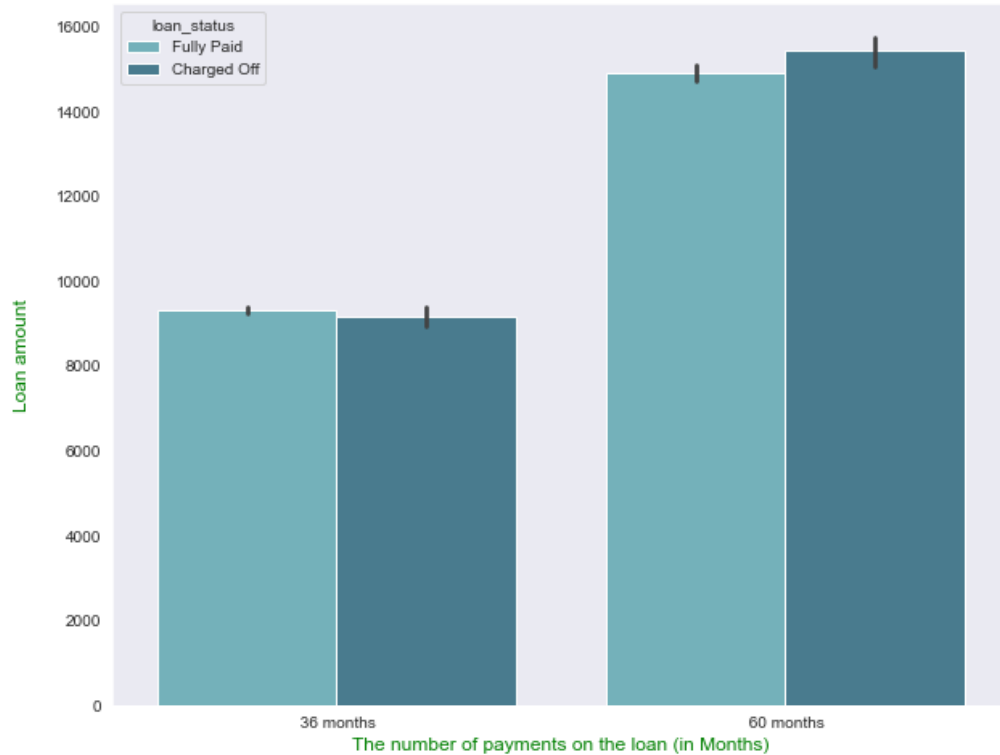
Defaulted loans are more than fully paid loans when loan term is 60 months (Higher). It appears that customers don't bare pressure of EMI for long.
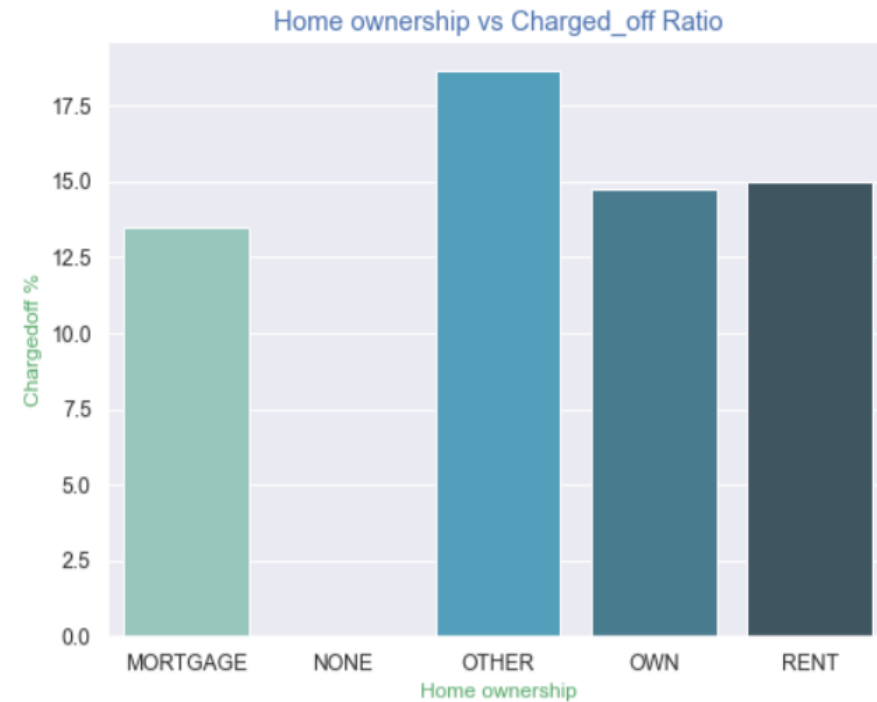
Lower grade customer (E, F) have higher revolving credit utilization. The 'charged off' loans are more for these grades than 'Fully paid' loans.
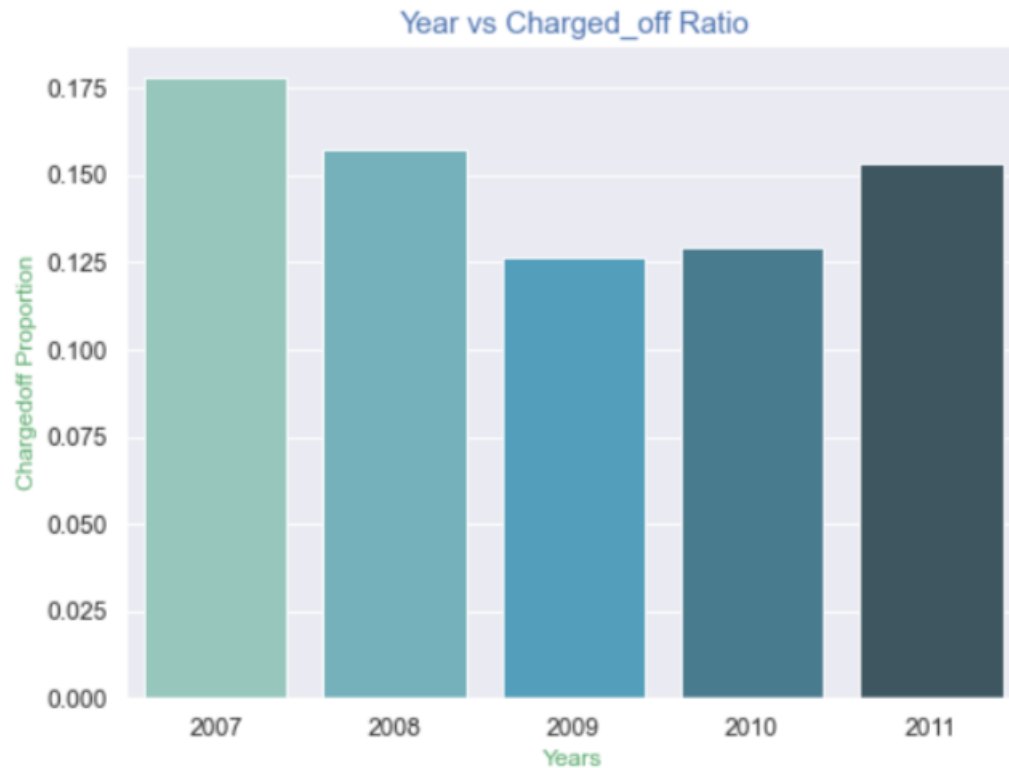
Analysis of 'Charged off' loans
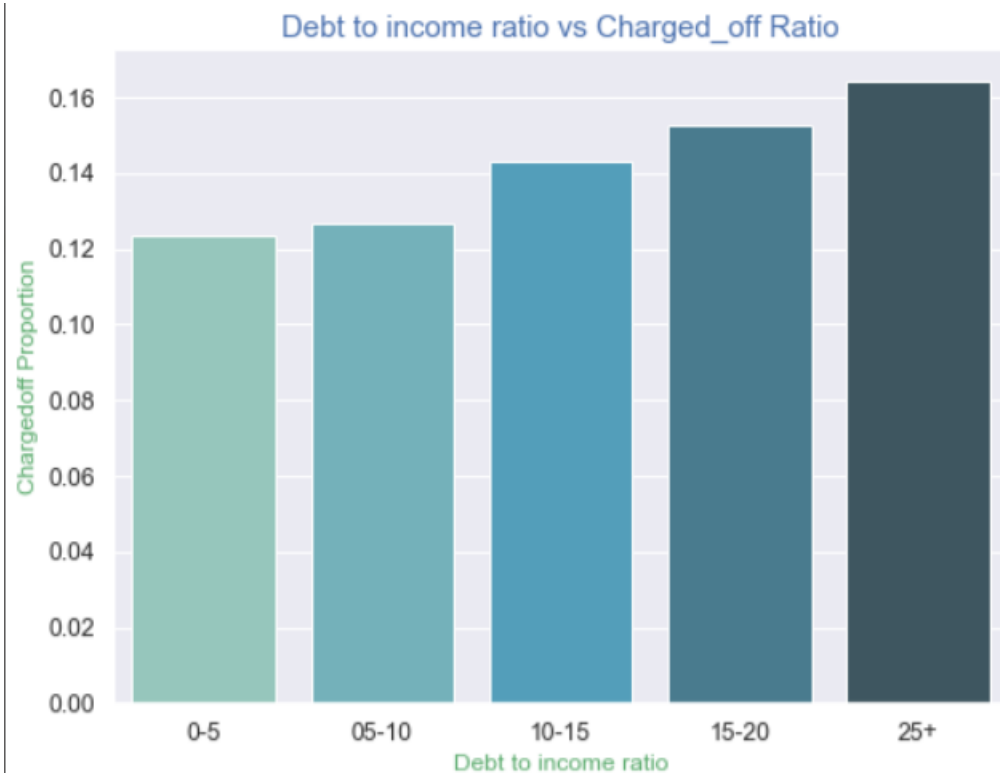
Higher the DTI (debt to income) ratio, higher are the chances of Charged-off loans. It appears , customers with higher debt are eventually unable to reply full loans.
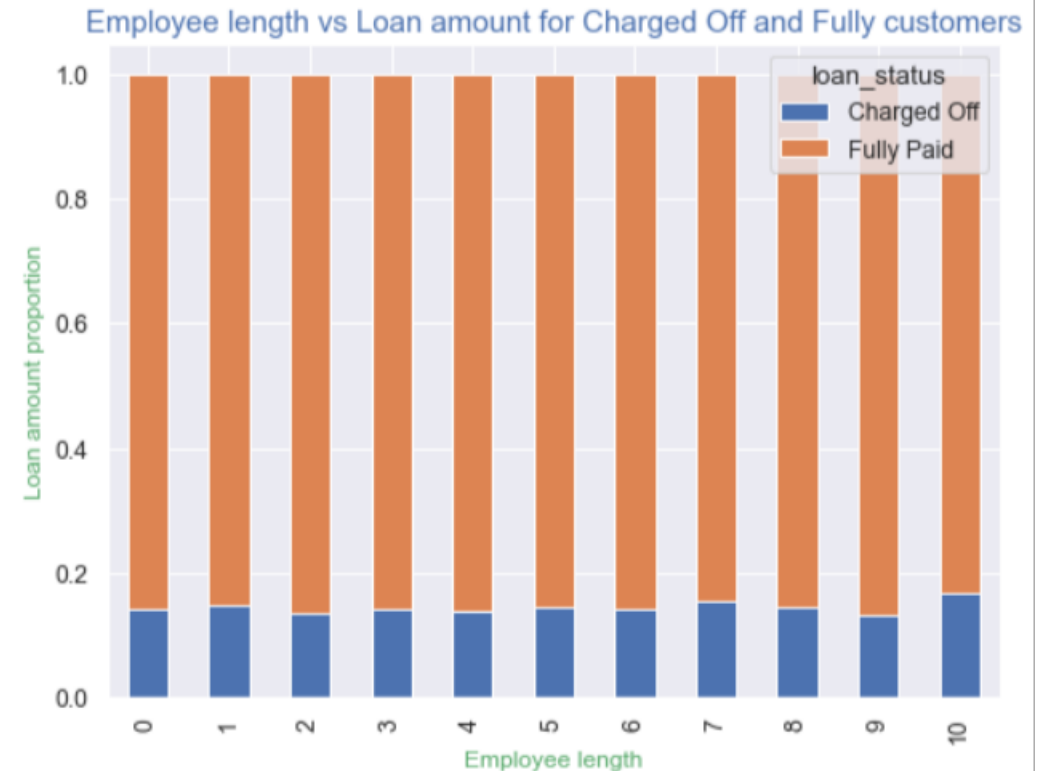
The number of borrowers who have home ownership mentioned as 'Others' are high in charged off loans.
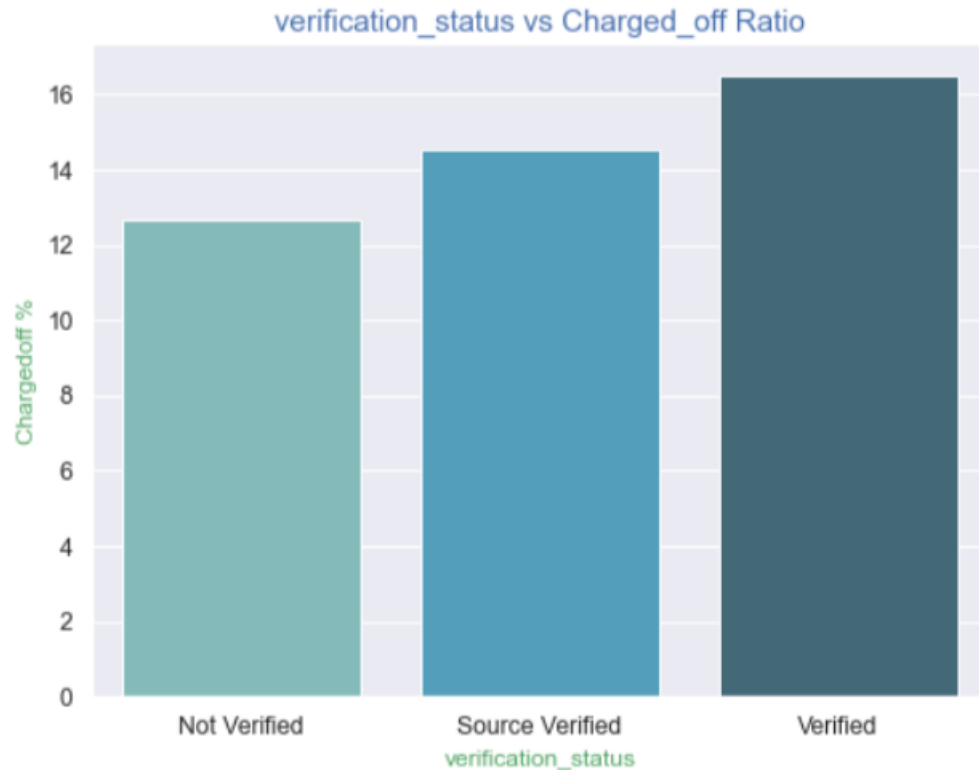
Appendix : Interesting facts

Year 2007 had more loans under Charged off category. Looks like it was a beginning of 2008 sub-prime mortgage crisis ?

Employment length has no impact on loans getting defaulted. This is contrary to belief that loans to people who have lesser experience are 'Risky'.

Appendix : Interesting facts

verification_status vs Charged_off Ratio

Loans which were verified have highest Charged off percentage. The process of Verification need to be scrutinized further to find the cause.

Appendix : Interesting facts

State vs Charged_off %
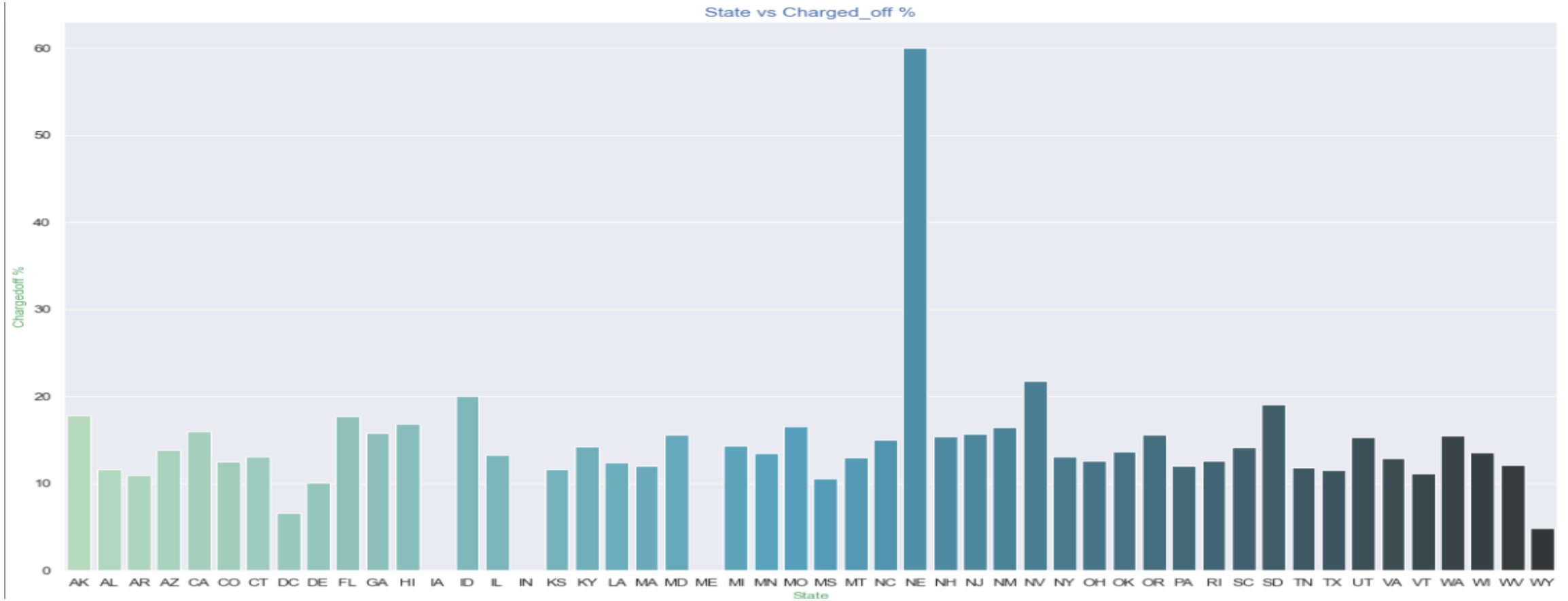
State of 'NE' has more customers defaulting on their loans. This need to be scrutinized further.

Recommendations

Recommendations to offer more loans to increase business.

1. Offer High income borrowers with competitive interest rate for loan category of **Debt consolidation, car, wedding**. as they have higher chances of repayment.

2. Customer with **high income** (60000+) have good records of replaying full loans.

   We recommend to **attract more customers with high income (60000+) with competitive interest rate** to increase business.

3. Target Customer with **lesser revolving credit utilization** as they **have high chances of loan repayment**.

Recommendations to avoid defaulting loans to restrict loss.

1. **Avoid** loan for purpose of **Small Business** as they have high chances of default.

2. **Avoid loan or charge higher interest rate** to borrower having more public derogatory records as they have higher chances of defaults.

3. **Reduce loan amount** to borrowers having less income.(income < 40000) or higher DTI.

4. **Reduce loan amount** to borrowers having **high utilization of revolving credit**.

Thank you