

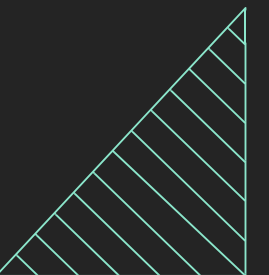
# LENDING CLUB - CASE STUDY

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This Case Study is used to identify risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss in online loan marketplace.

01

## PROBLEM STATEMENT

Identify a problem and form a thesis statement.

02

## UNDERSTANDING THE DATA

Review literature related to your topic.

03

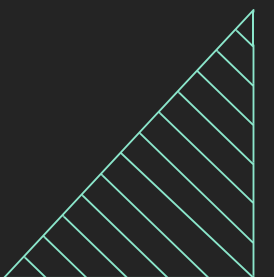
## HYPOTHESIS

Come up with an educated guess based on your research.

04

## ANALYSIS & OBSERVATIONS

Interpret the results and write your conclusion.



# Problem Statement

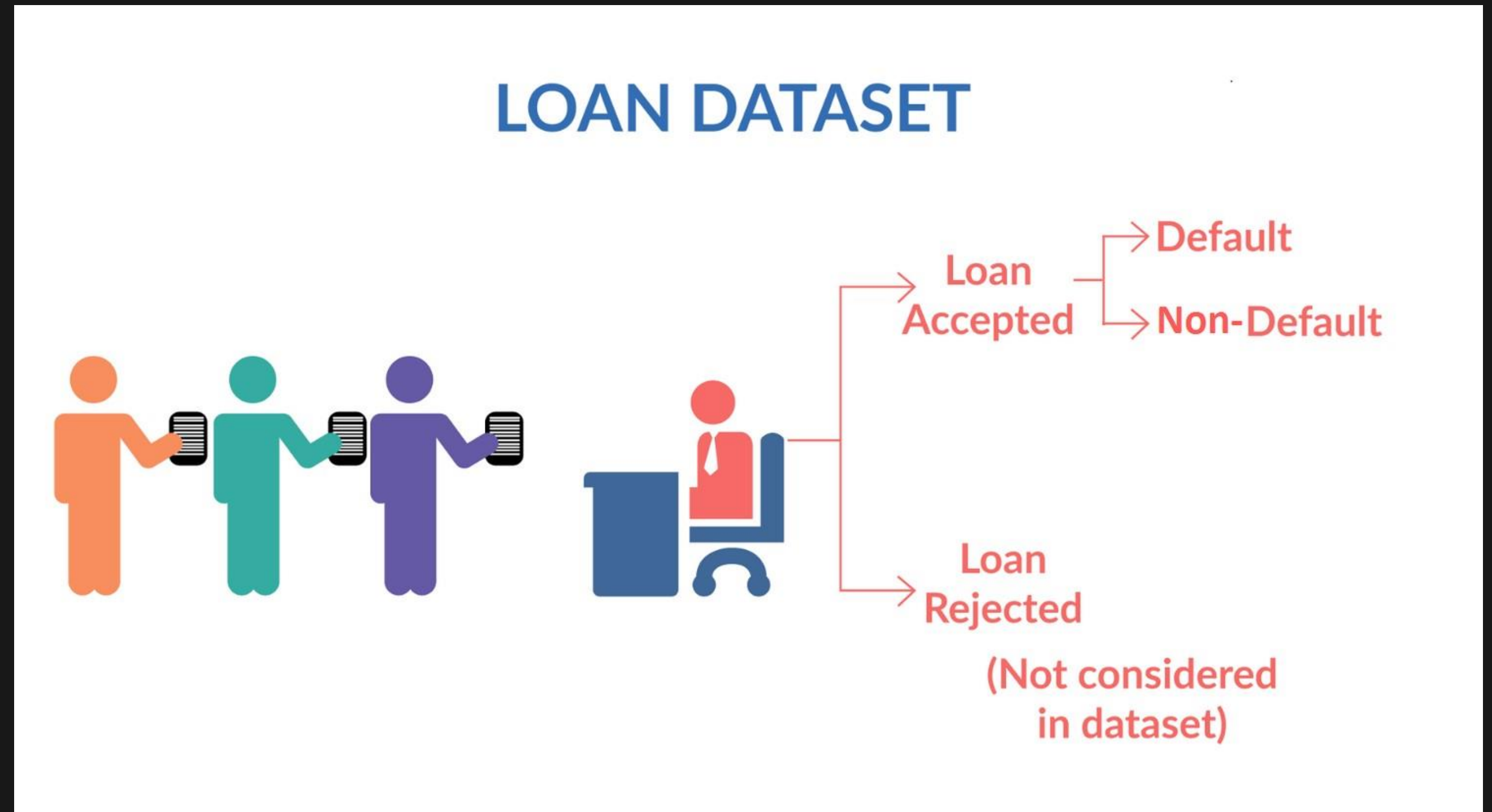
A company, which is largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures. Borrowers can easily access lower interest rate loans through a fast online interface.

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.

If one is able to identify these risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss.

# LOAN DECISIONS SCENARIOS

- IF THE APPLICANT IS LIKELY TO REPAY THE LOAN, THEN NOT APPROVING THE LOAN RESULTS IN A LOSS OF BUSINESS TO THE COMPANY
- If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company



# LENDING CLUB CASE STUDY

## GOAL

- Understanding the Driving factors behind Loan default. Reduce Credit loss.

## OBJECTIVE

- Analysis of ChargedOff Borrowers.
- Getting Insights on the affecting factors in 'Default'.



## METHODS

- Using Exploratory Data Analysis on the data for borrowers.
- Getting some insights using the EDA Visualization techniques.

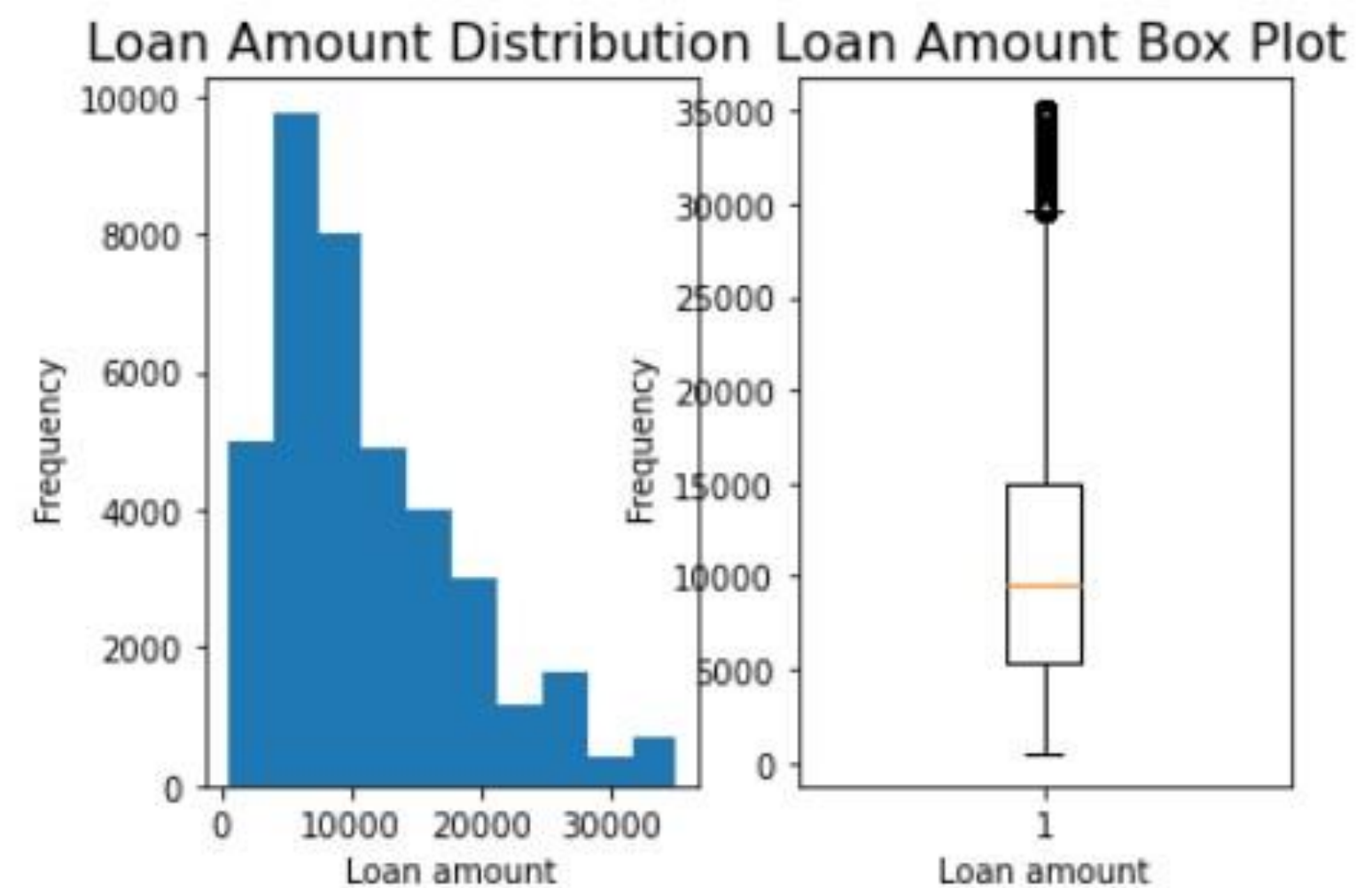
## CONCLUSION

- Deriving the factor responsible for credit loss.

# HYPOTHESIS - 1

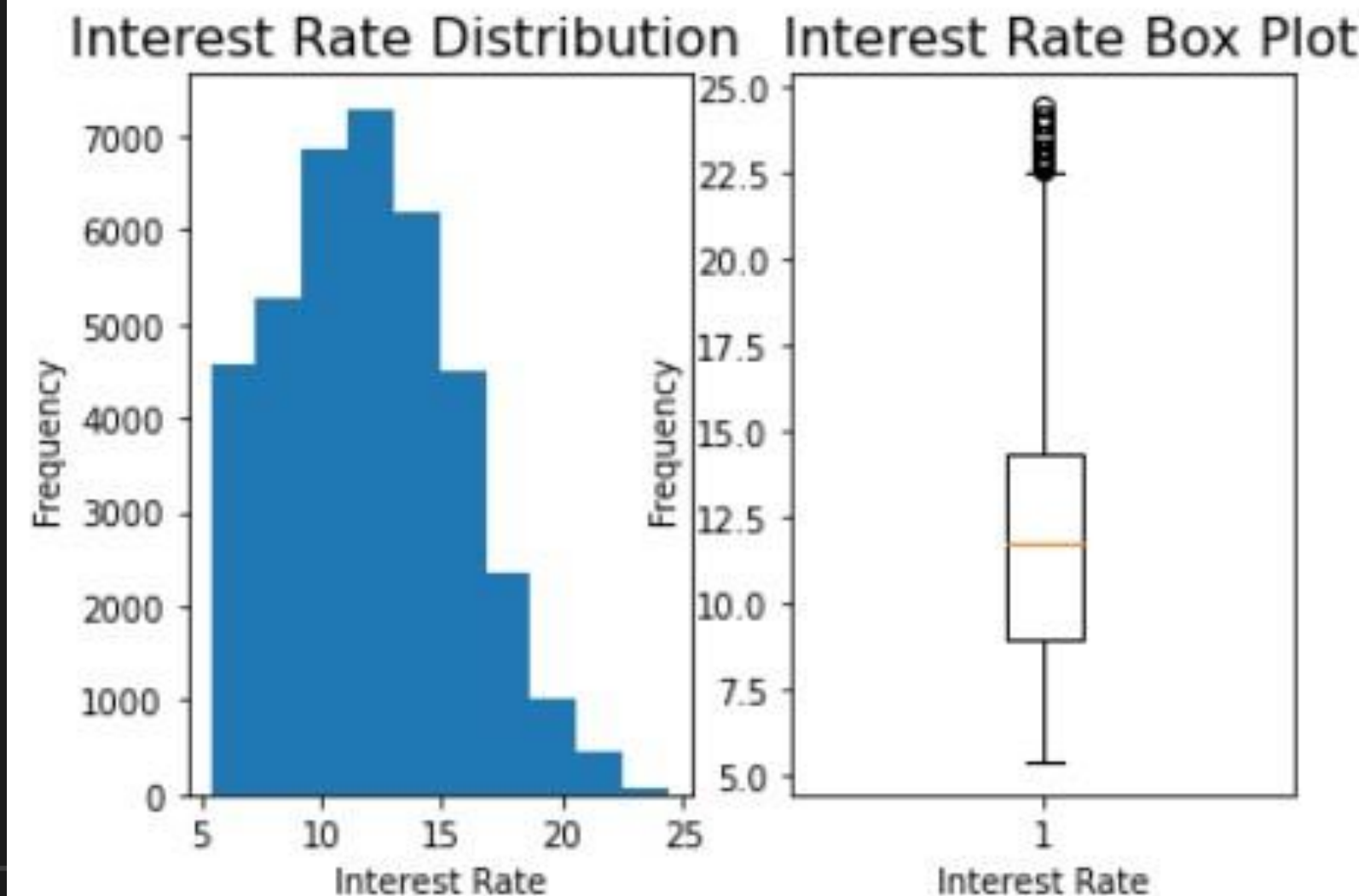
## Loan Amount Distribution

**Observation :** Most of the people have taken loan amount of 5000 to 15000, there are very few who has taken loan of amount 30,000 and above. We can consider those as outliers for our analysis.



## Interest Rate Distribution

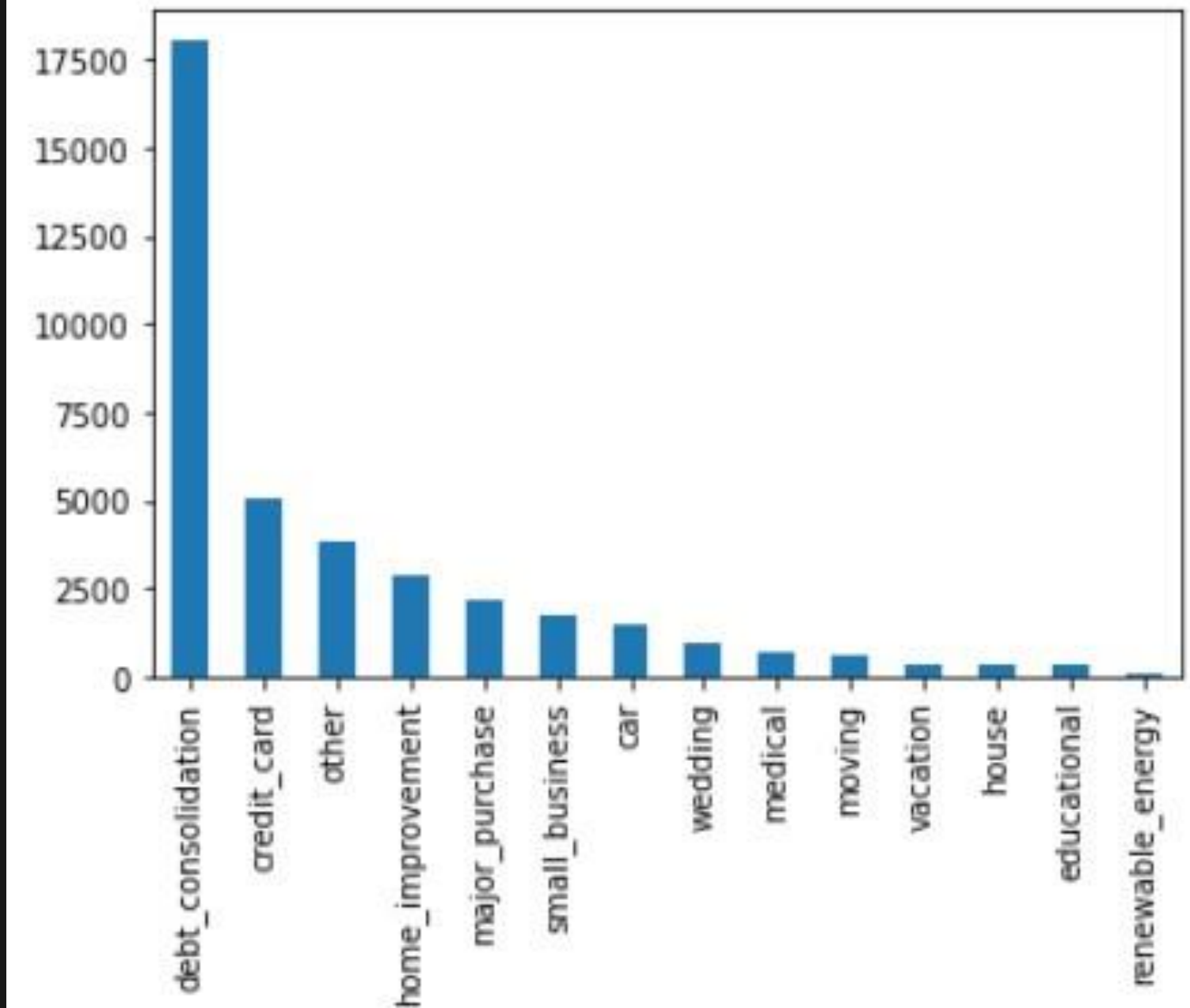
**Observation:** Most of the people have taken loan in interest rate 8 to 15%, only few candidate have taken loan in very high interest rate more than 20%



# HYPOTHESIS - 2

## Purpose Distribution

**Observation** Indicates that most of the people have taken loan for debt consolidation but we can not say from here that they are more likely to be charged off. Let's evaluate that in bivariate analysis.



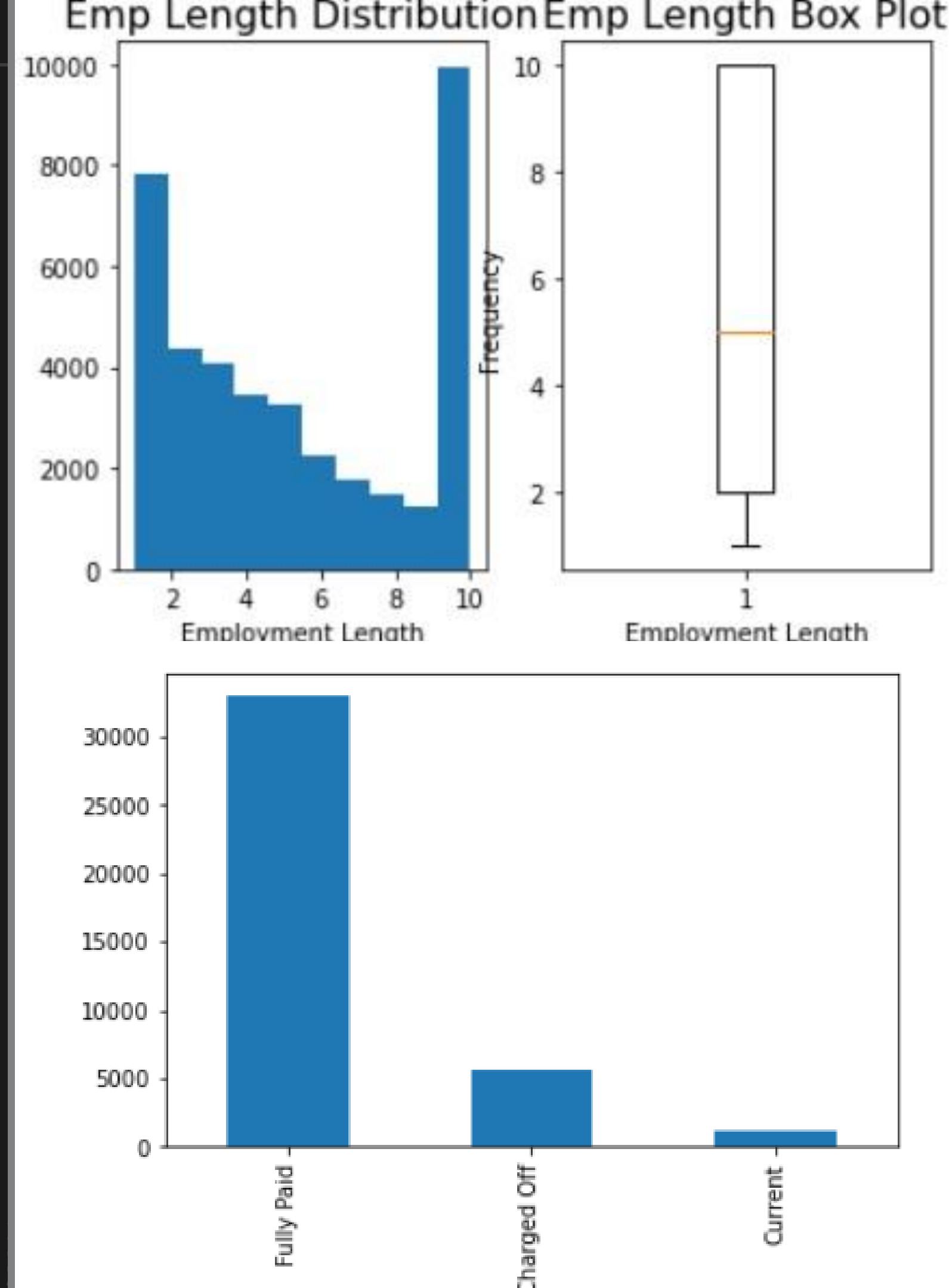
# HYPOTHESIS - 3

## Employee Length Distribution

**Observation:** Though highest frequency of applicant have 10 or more years of employment but boxplot shows the maximum distribution is between 2 to 8

## Loan Status Distribution

**Observation:** Count plot shows that around 5000 applicants were charged off and very few are in current status. Since current does not add any information for applicant whether the applicant will be chargedOff or not, We can remove rows with loan status - 'Current'

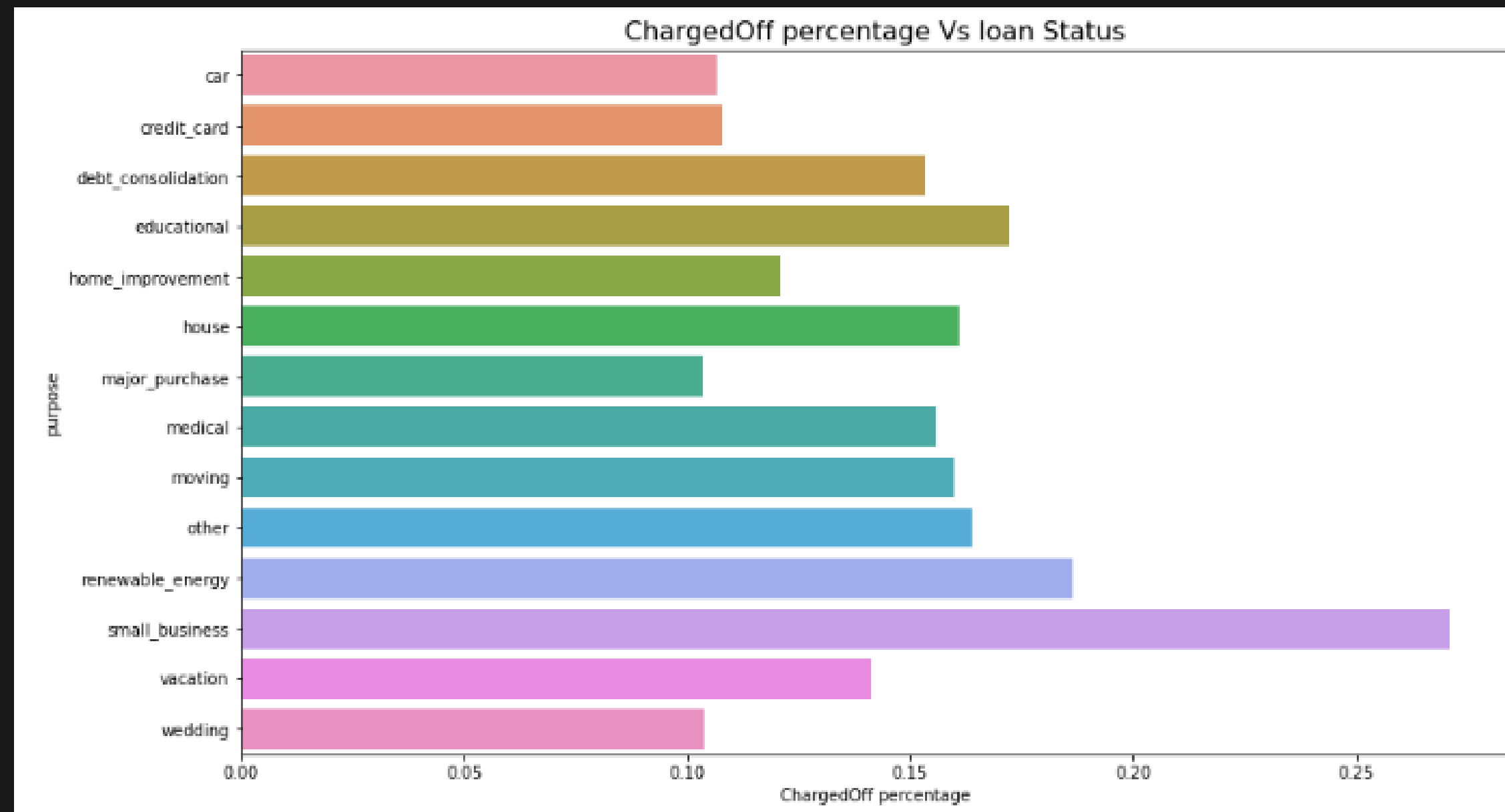




# HYPOTHESIS - 4

## ChargedOff Percentage Vs Loan Status

**Observation:** It is very evident from here that applicants who take loan for small business are more likely to be charged off.



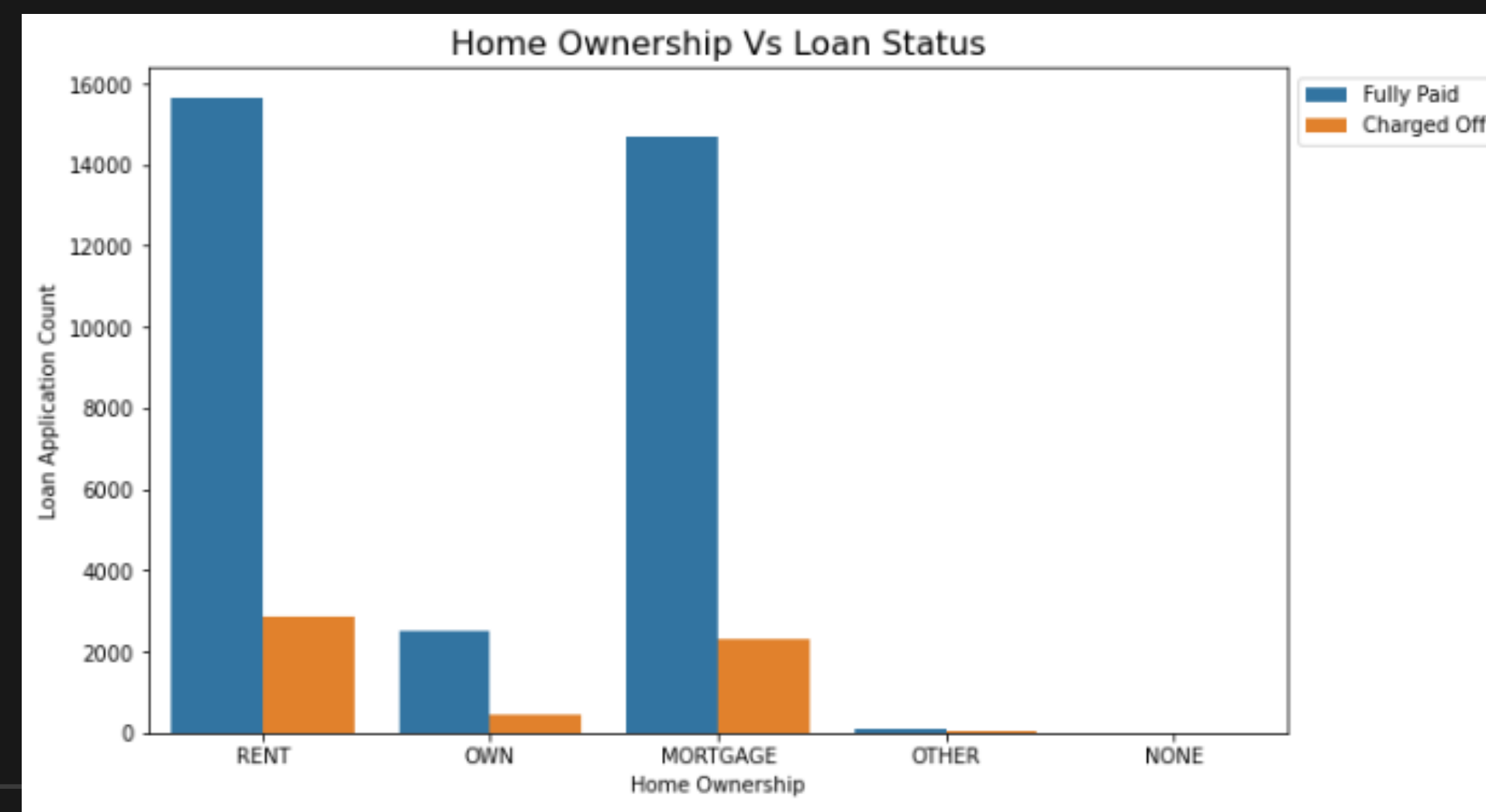
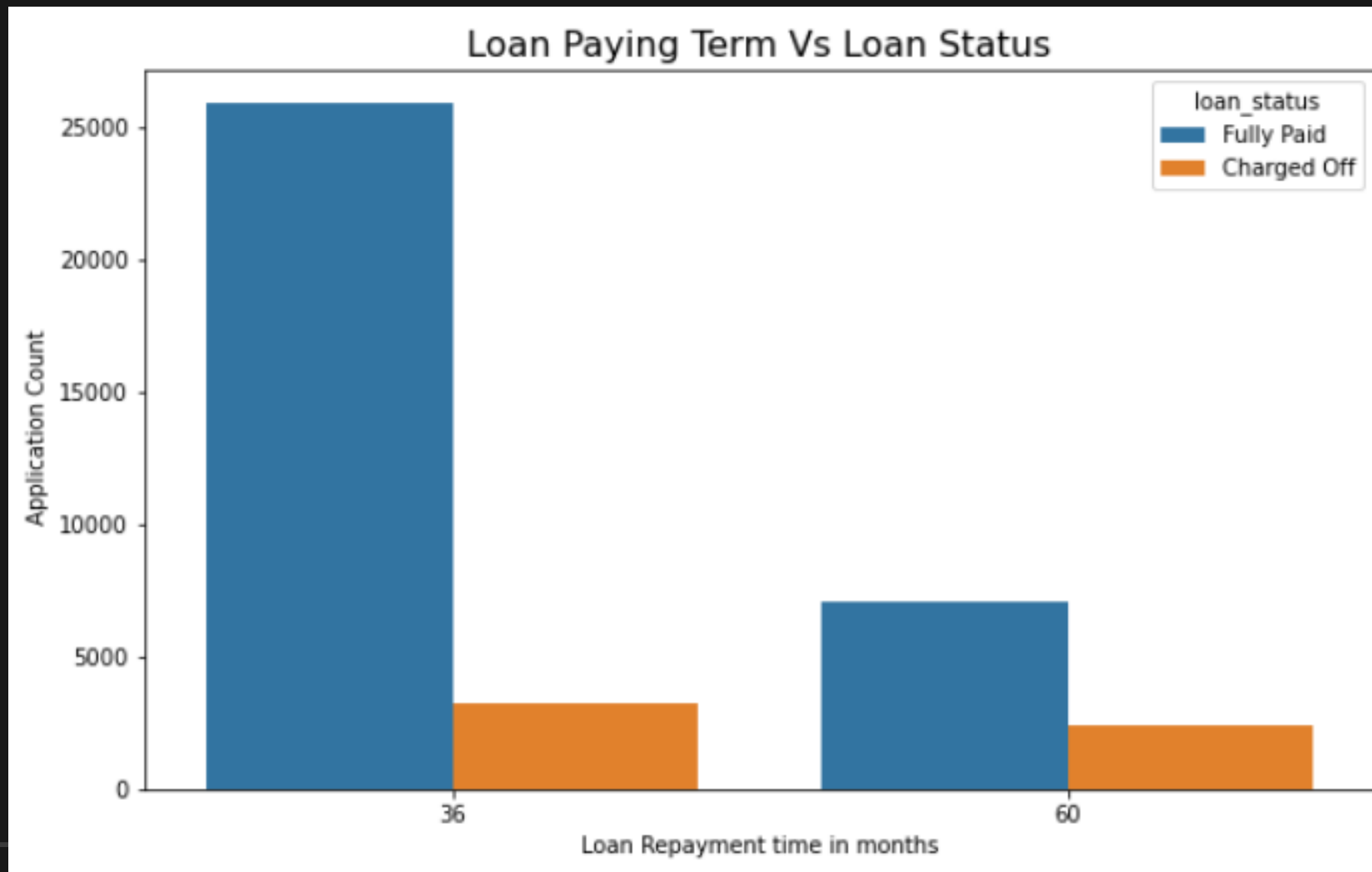
# HYPOTHESIS - 5

## Loan Paying Term Vs Status

**Observation:** Though number of charged off applicants are more who has take loan for 36 months but proportion/ ratio of chargedoff applicants is more on 60 months time duration. Hence who take loan for more time period are more likely to be charged off.

## Home Ownership Vs Loan Status

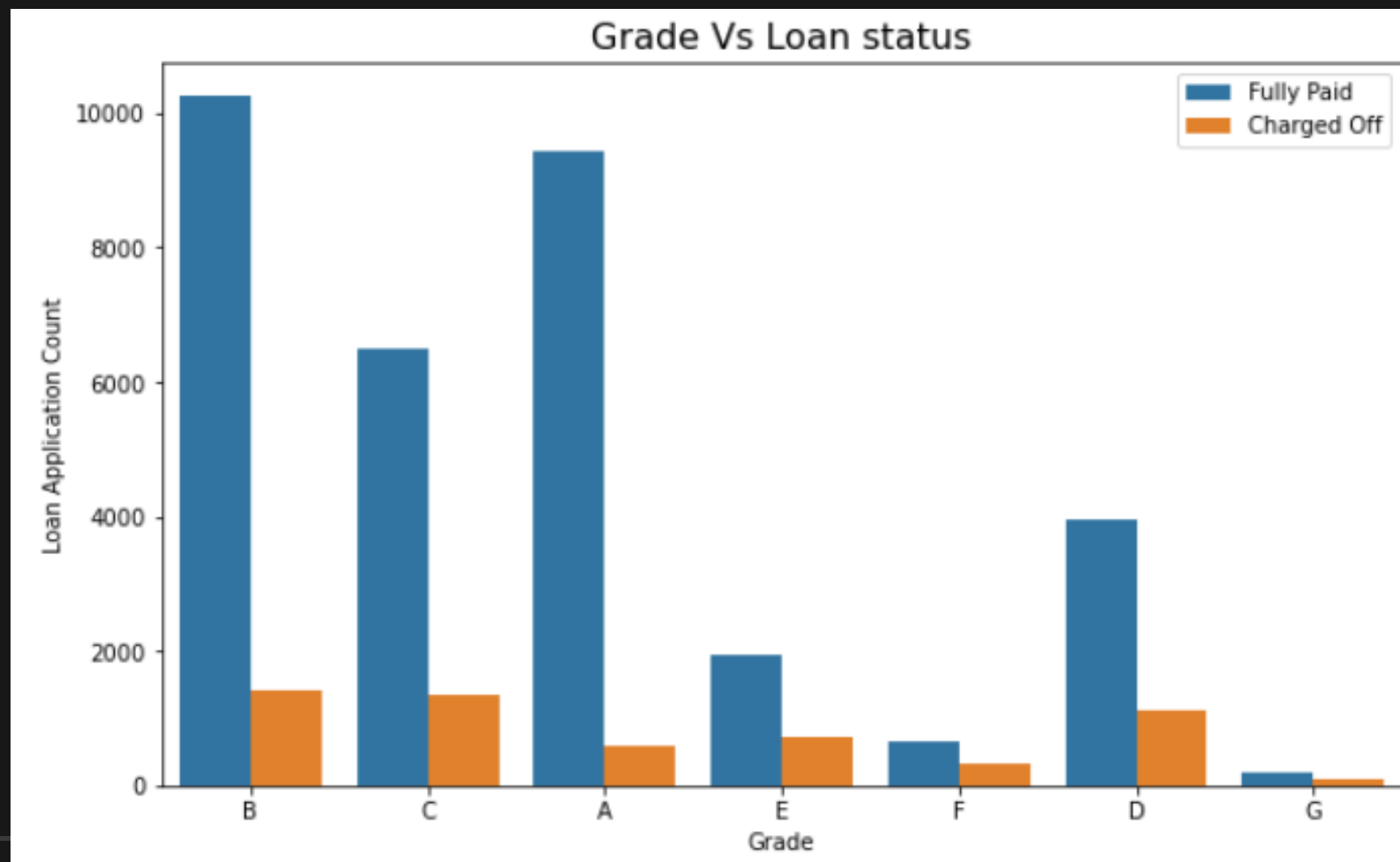
**Observation :** Those applicants who are living in rent or mortgage property, they are more likely to be chargedoff.



# HYPOTHESIS - 6

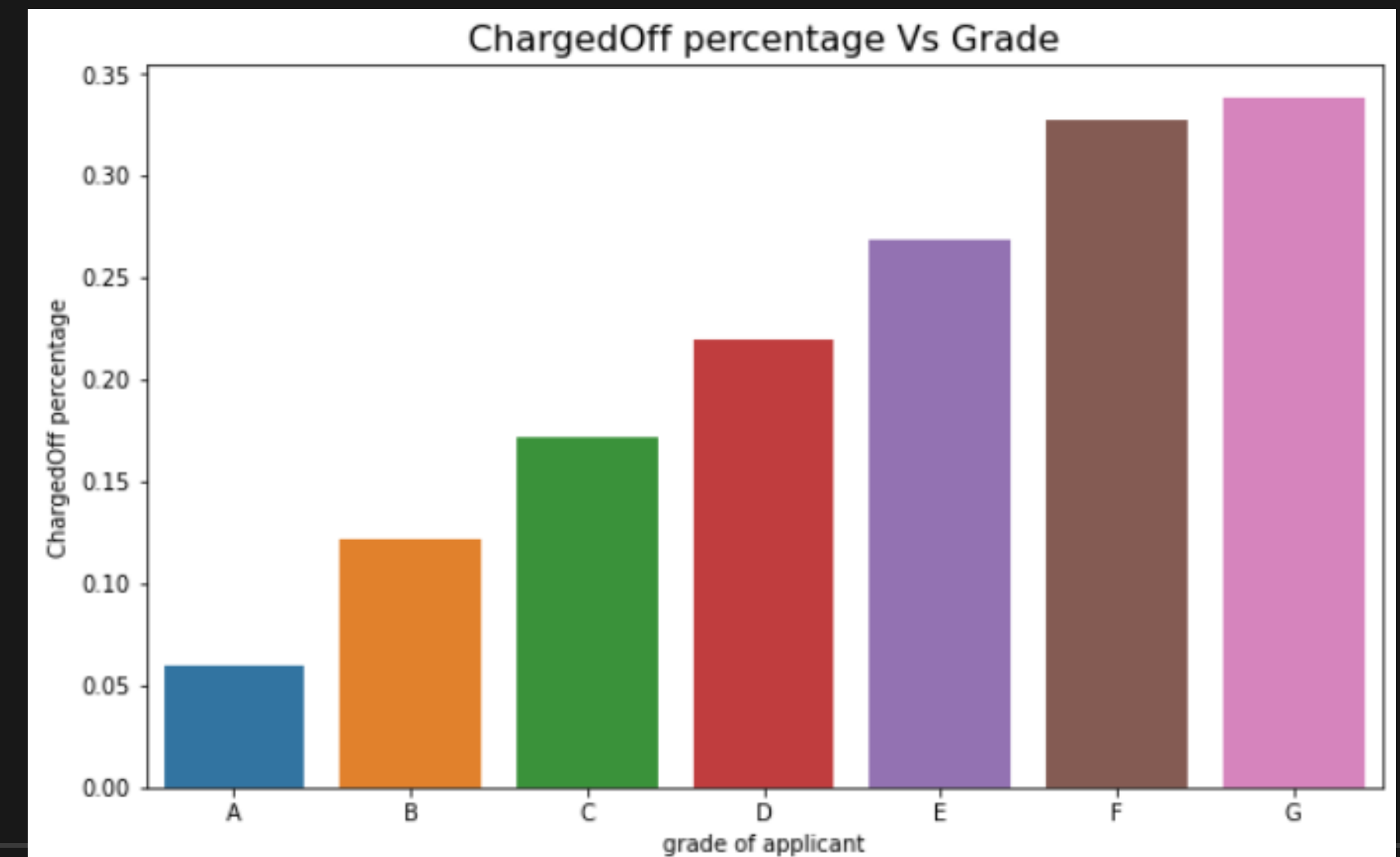
## Grade Vs Loan Status

**Observation :** Not very clear from this plot who are more likely to be charged off, the ratio of F,G looks more.



## ChargedOff percentage Vs Grade

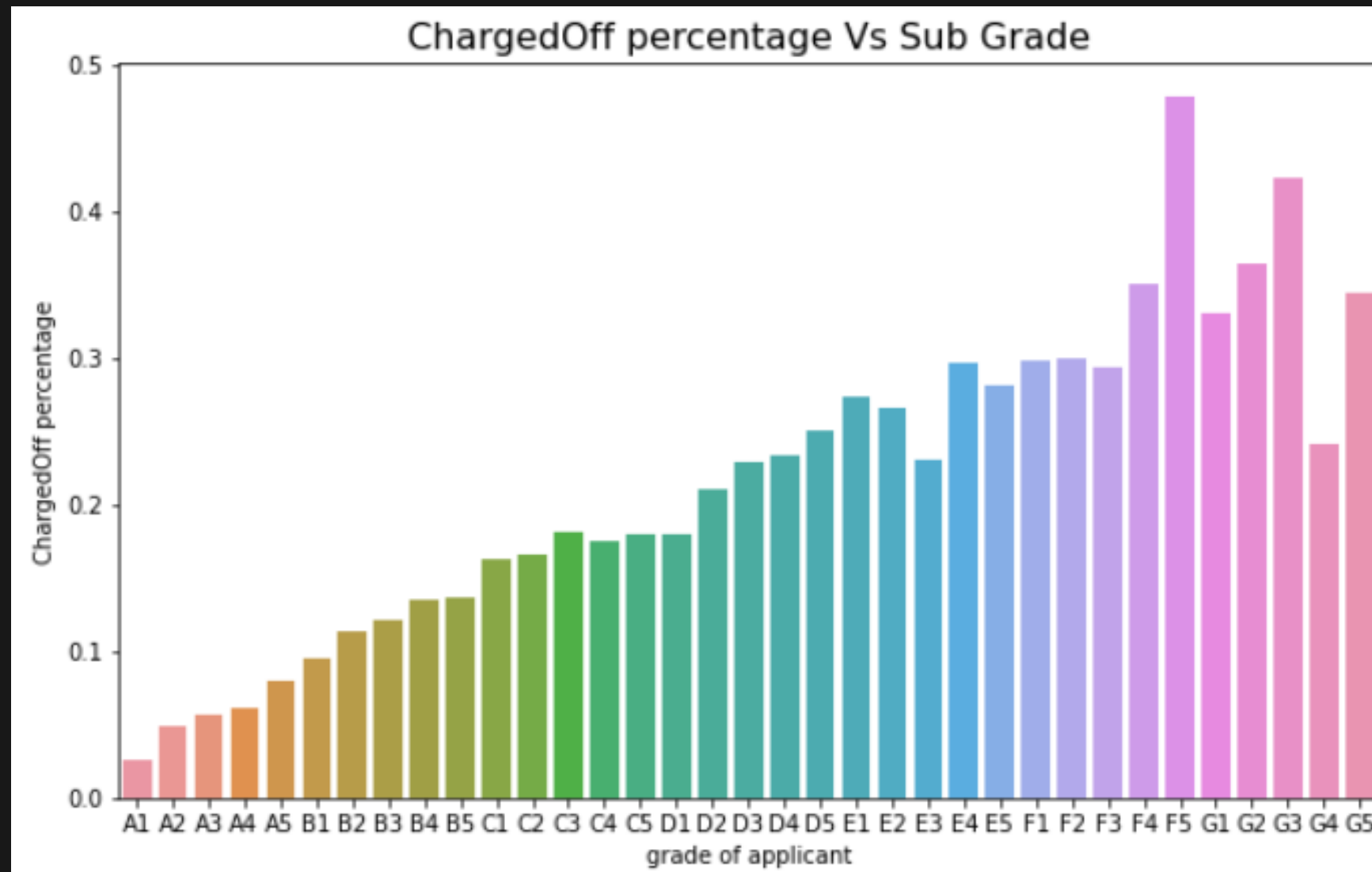
**Observation :** Not very clear from this plot who are more likely to be charged off, the ratio of F,G looks more.



# HYPOTHESIS - 7

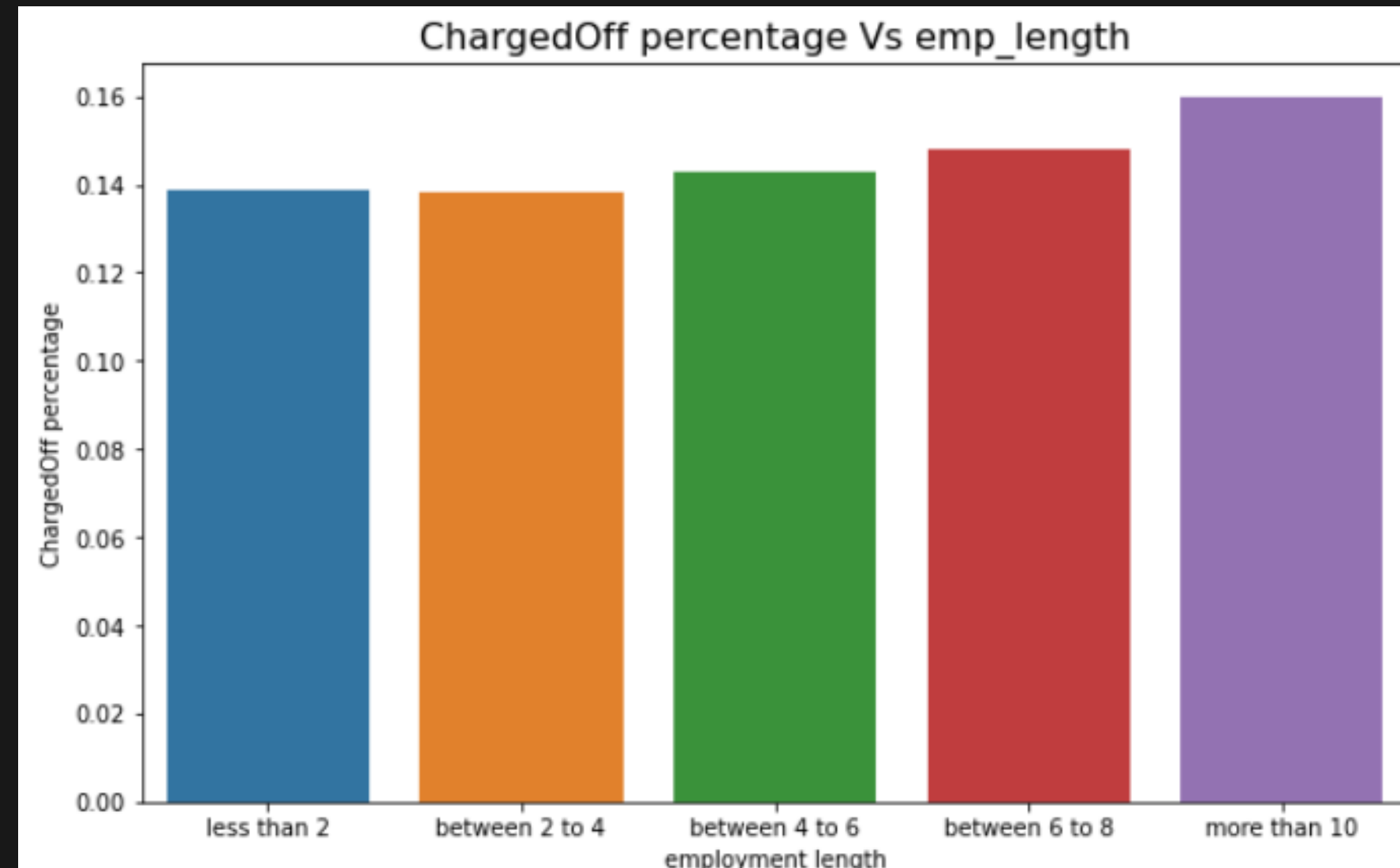
## ChargedOff Vs Sub Grade

**Observation** From here we can recommend that among F and G, F5,G2,G3 are more likely to be charged off.



## ChargedOff percentage Vs Employee 30 Length

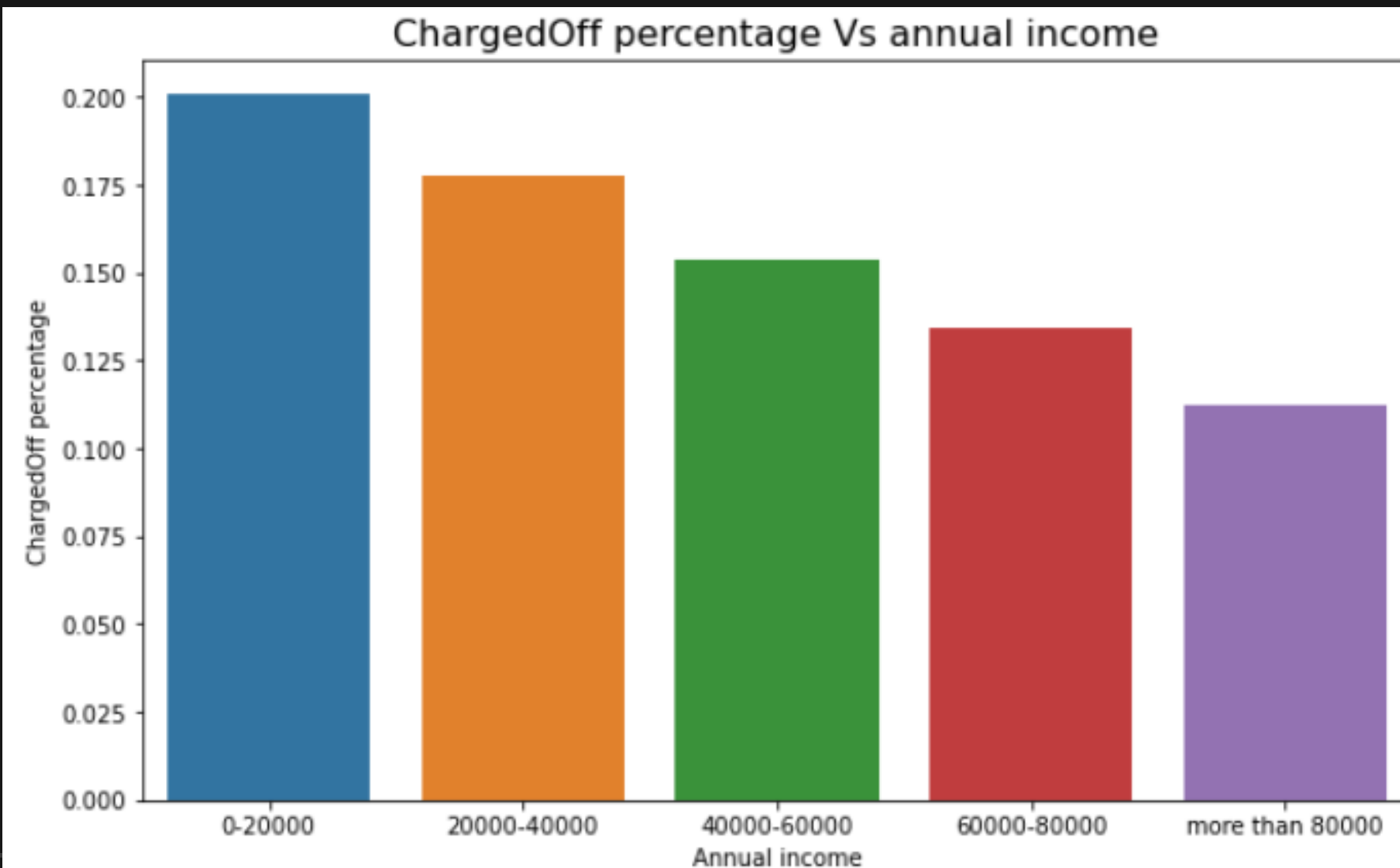
**Observation:** ChargedOff proportion is more if employment length is more than 10 years but it may be w.r.t to annual income and home ownership etc. we cannot say always 10 years + experience will be charged off.



# HYPOTHESIS - 8

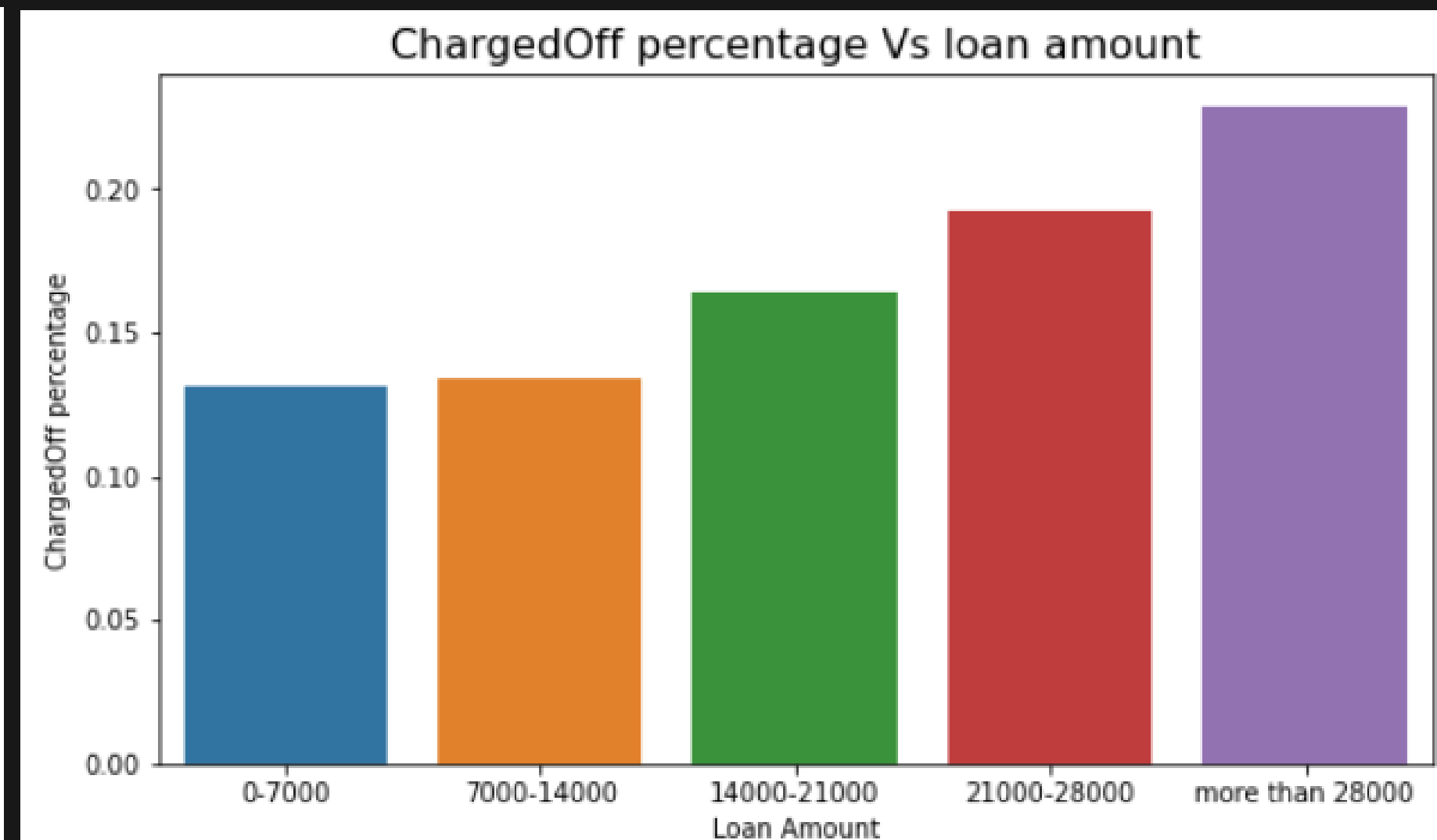
## ChargedOff Percentage Vs Annual Income

**Observation :** Applicants whose annual income is less than 20,000 are more likely to be charged off.



## ChargedOff percentage Vs Loan Amount

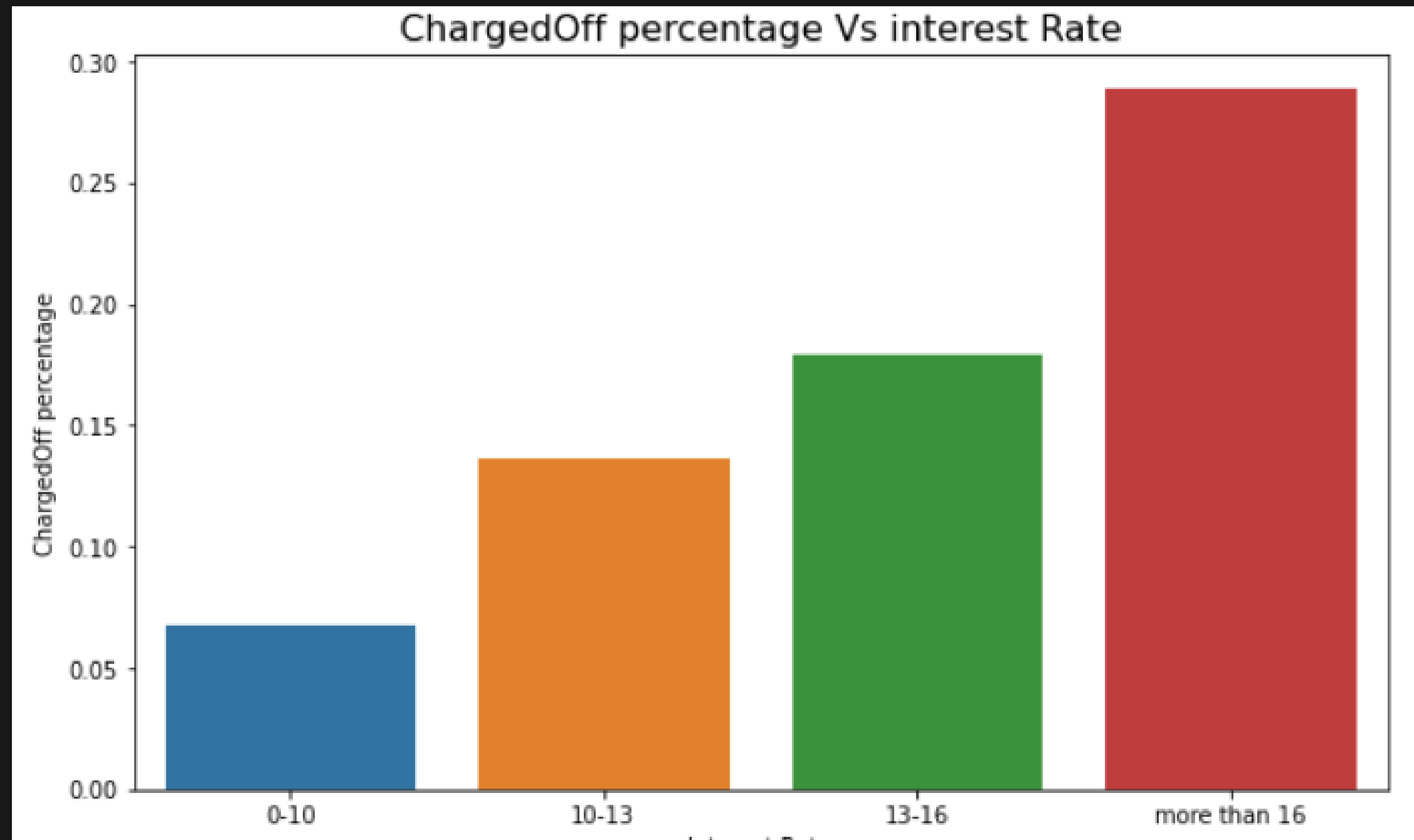
**Observation:** Chances of being charged off increases as the loan amount increases.



# HYPOTHESIS - 9

## ChargedOff Percentage Vs Interest Rate

**Observation :** Higher the interest rate, more is the risk of being charged off.



# Analysis & Observations

**Important Variables that impact directly the loan status to be chargedOff or not.**

1. Annual Income of Applicant
2. Grade
3. Subgrade
4. employment length.
5. Home Ownership
6. Loan Amount
7. Repayment term of loan
8. Interest Rate
9. Purpose of loan

# Analysis & Observations

- If Applicant's annual income is less than 20,000 with grade F5,G2,G3 and employment length is more than 10 years then he is most likely to be charged off.
  - If Applicant's Home is rented or mortgaged, his purpose of loan is small business and term of repayment is more or equal to 60 months, he/she is most likely to be charged off.
  - If loan amount is more than 28000 and interest rate kept is 16 then he is most likely be charged off.
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