Gramener

A Data Science Company

CASE STUDY

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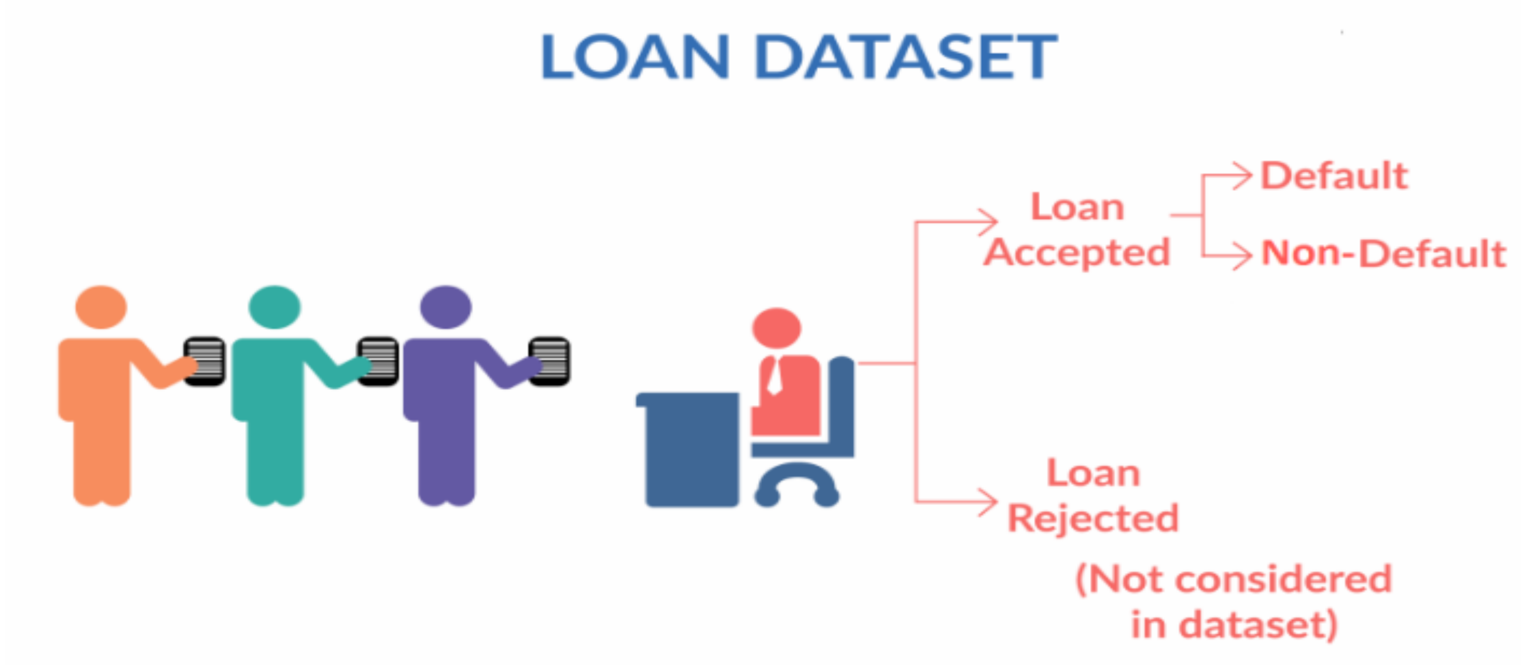
Problem Statement:

To identify the driving factors behind the loan default and also identify the patterns which indicate if a person is likely to default, which may be used for taking actions such as denying the loan, reducing the amount of loan, lending(to risky applicants) at a higher interest rate, etc.



Problem Analysis

Basic Understanding:

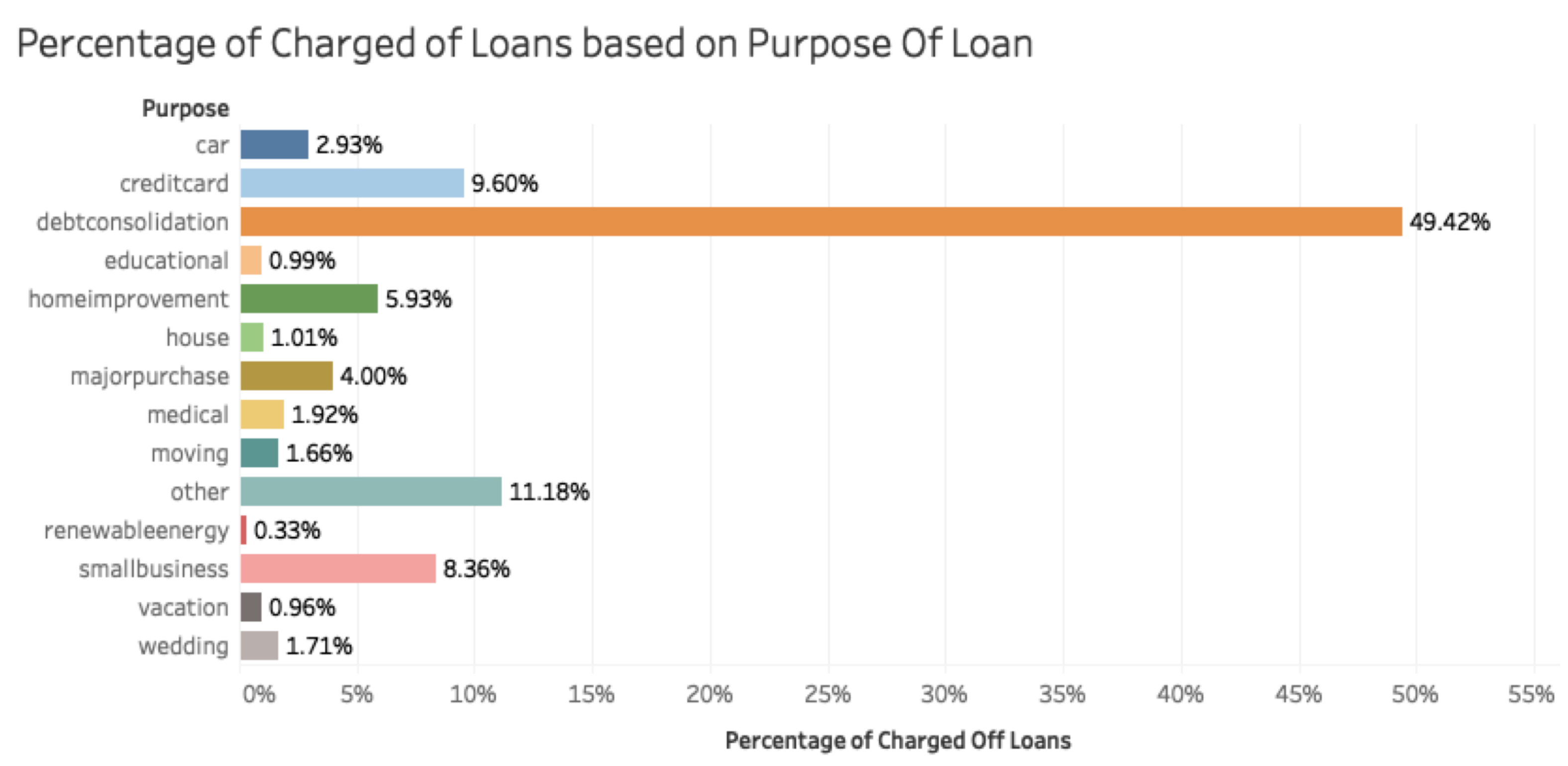
The given data set contains the complete loan data for all loans issued through the time period 2007 to 2011. The data has three categories of loan status via. Charged off, Fully Paid and Current. As we have to find the driving factors behind the default, we will focus on Charged off applicants.

Methodology:

- Data cleaning
- EDA
- Plotting the results

Tools Used

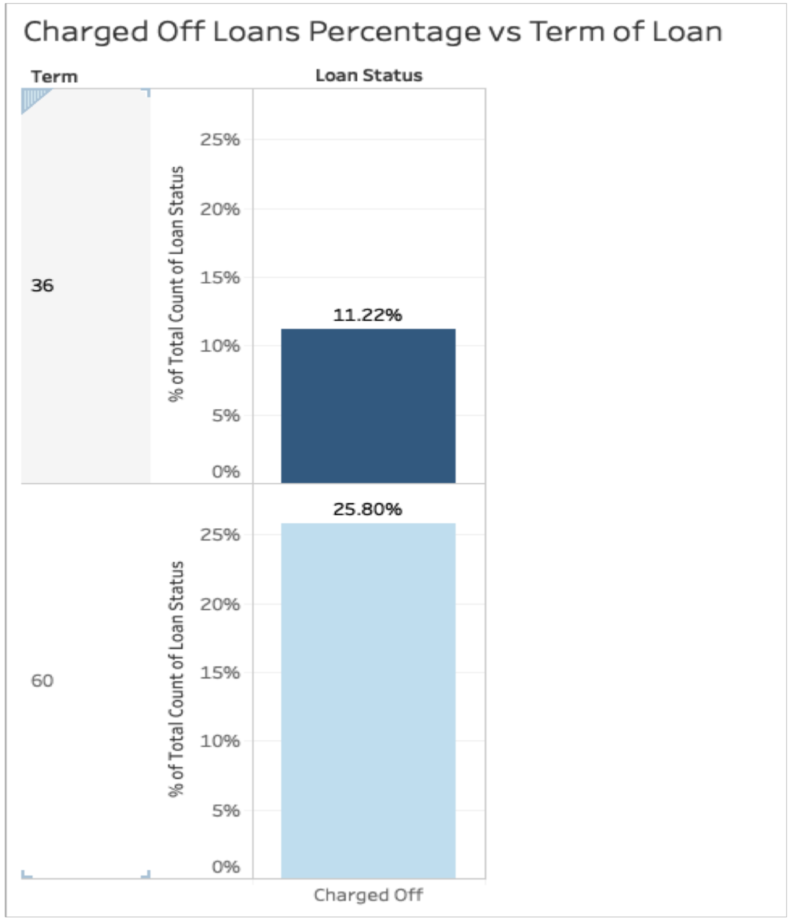
Plot 1: The plot below shows that purpose of loan with the percentage of Charged off loan. The applicants having debt consolidation purpose of loan are among the most defaulters, followed by thos taking loan for purpose:- other, credit card and small business



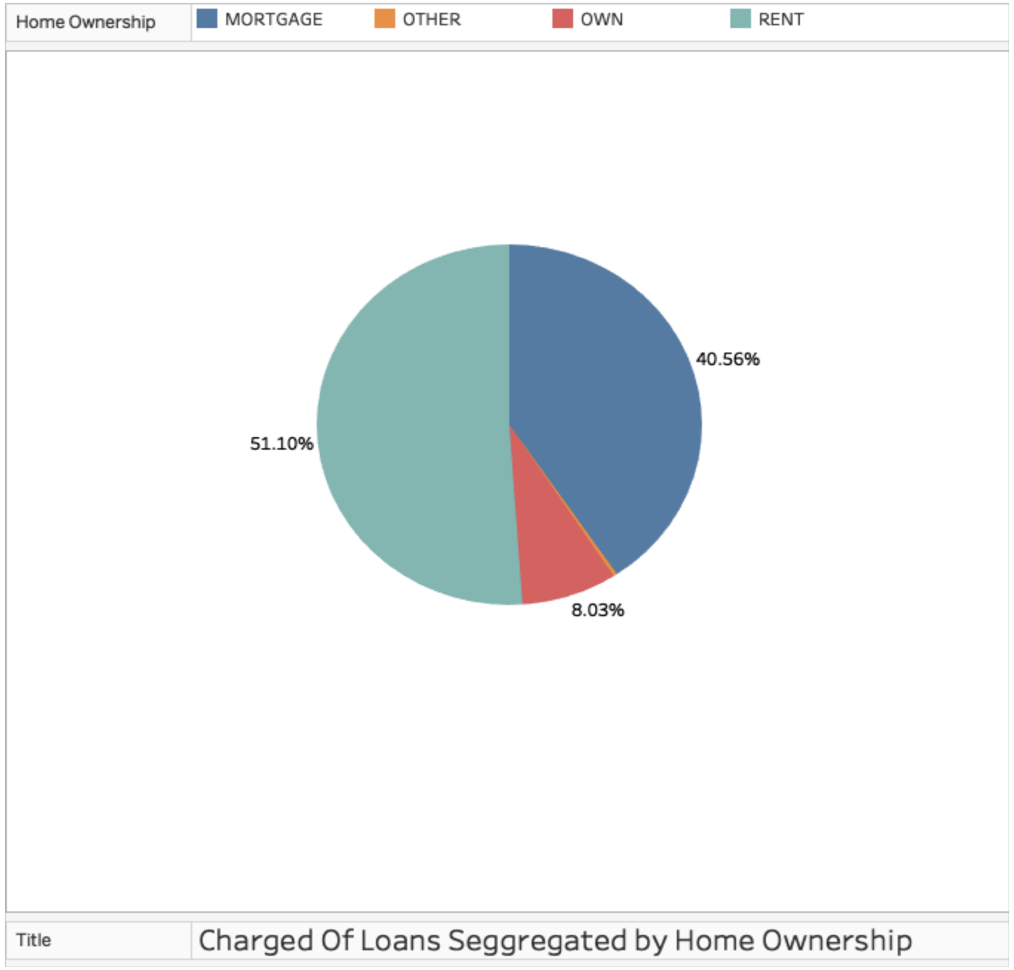
Plot1

Plot1: It shows the Charged off loans percentage with the duration of loan i.e. 36 and 60 months. It is observed that Charged Off Loans were higher for 60 months duration as compared to 36 months duration

Plot2: It shows the segregation of Charged off loans with the Home Ownership. People who have rented homes or have house mortgaged were higher among the defaulters

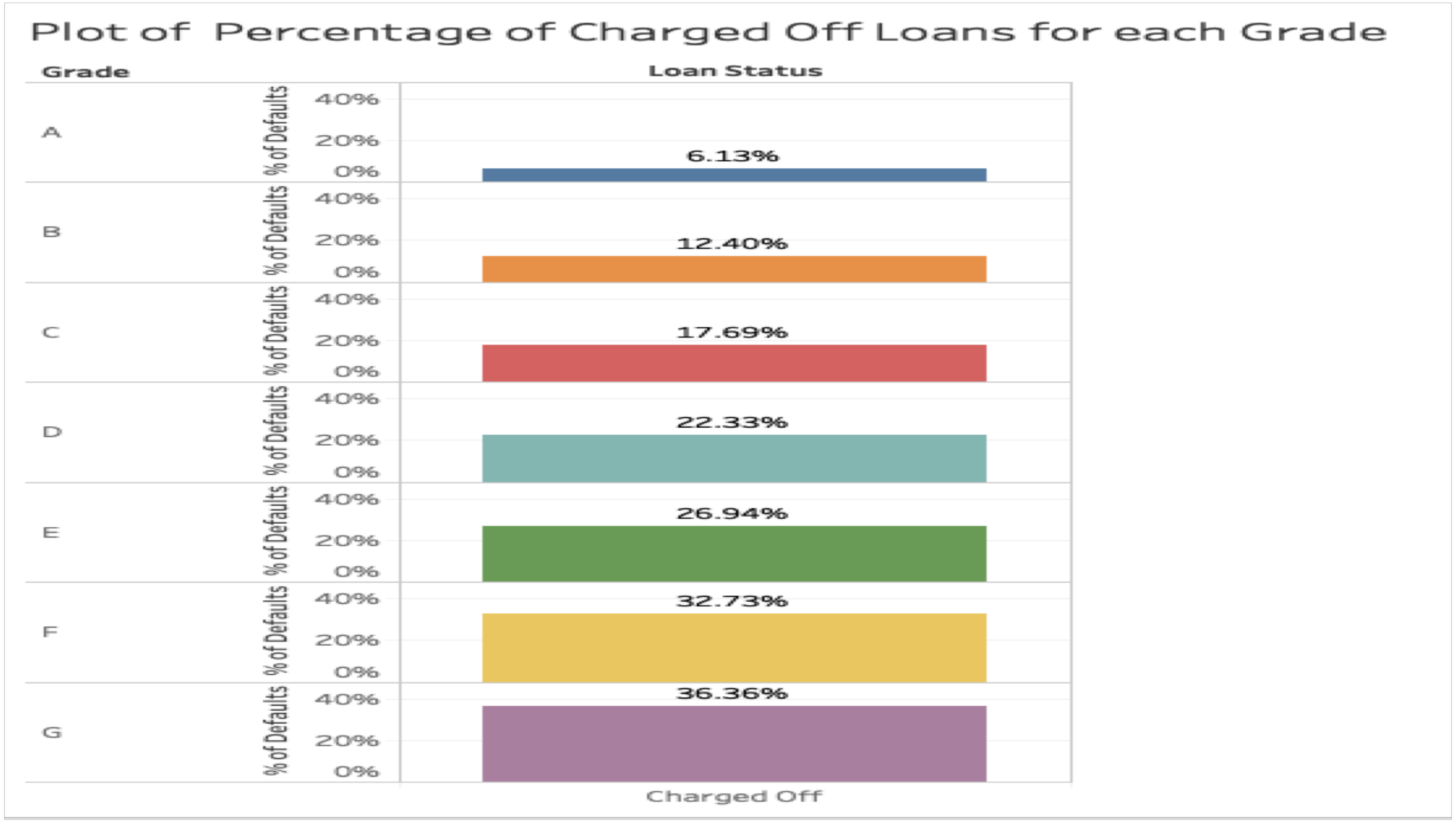


Plot1



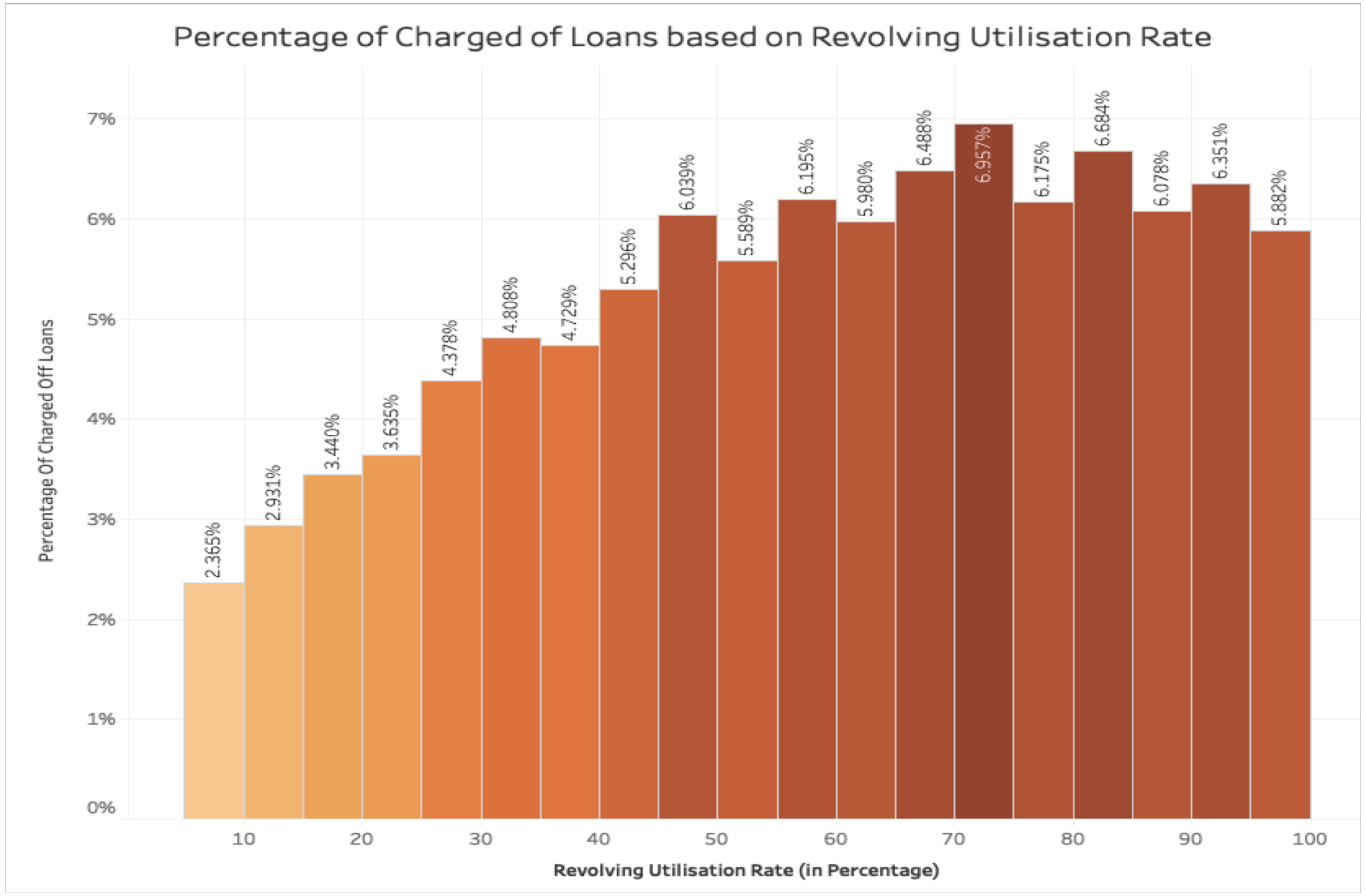
Plot2

Plot 1:- It shoes the Dharged of Loans per Grade Gateory assigned by Lending Club. From the below plot we can say that the grade G has the highest percentage of Charged off loans and Grade A has the lowest percentage.



Plot1

Plot1: It shows the Revolving Utilisation Rate vs Percentage Of charged Off Loans. It appears that as the Revolving Utilisation Rate increases the chance of defaulting loan increases.

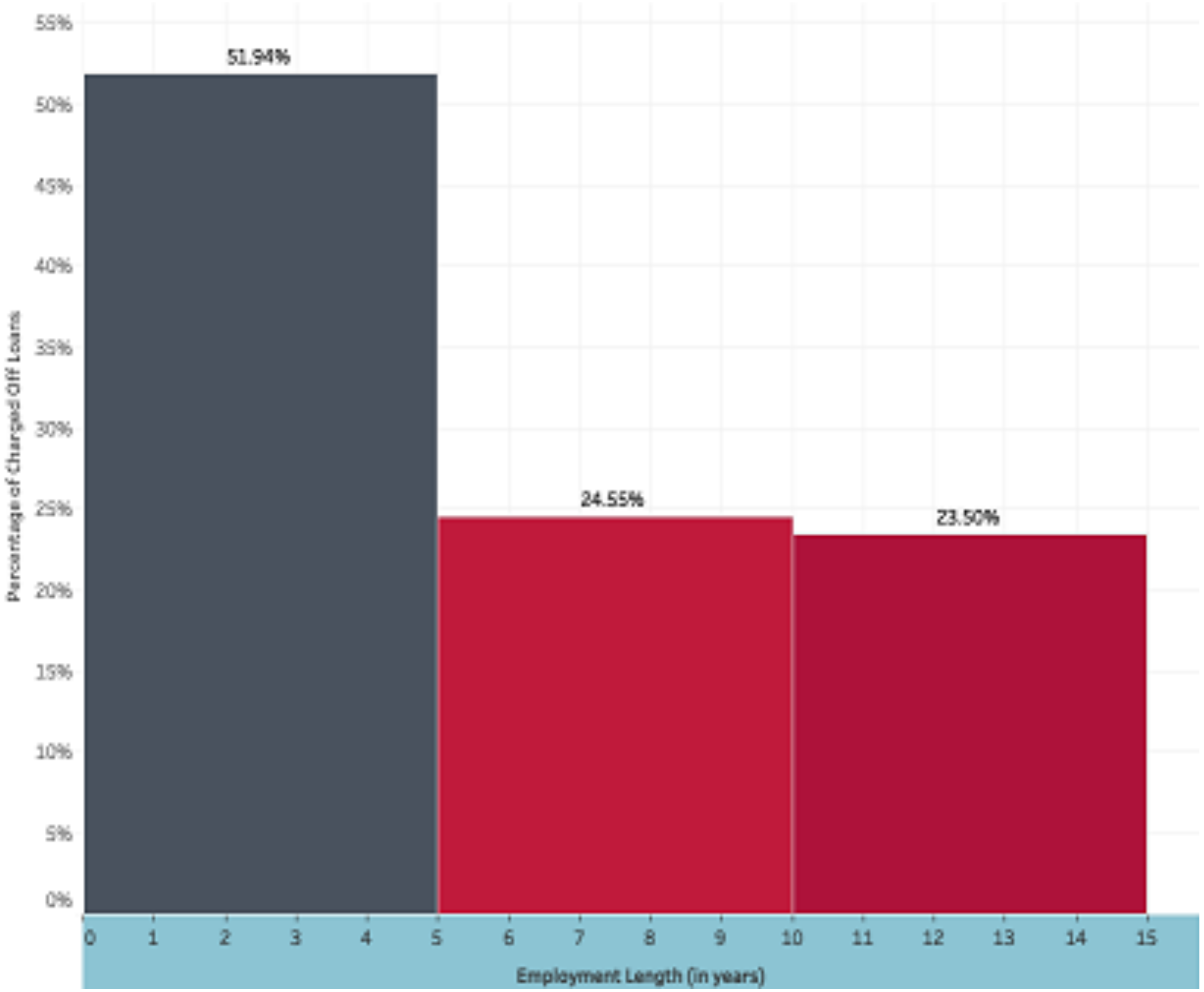


Plot1

Plot 1: We have split the Employment Length column in three stages

- 0 to less than 5
- 5 to less than 10
- 10 to 10+

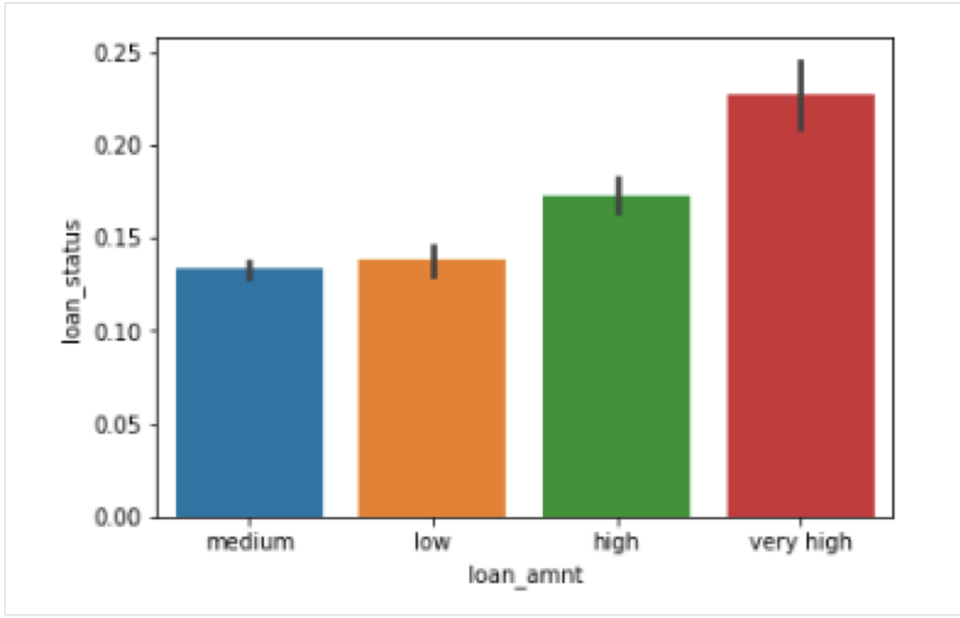
So from this we can say that the applicants having employment length in between 0 to 5 years has the maximum chances to get Charged off

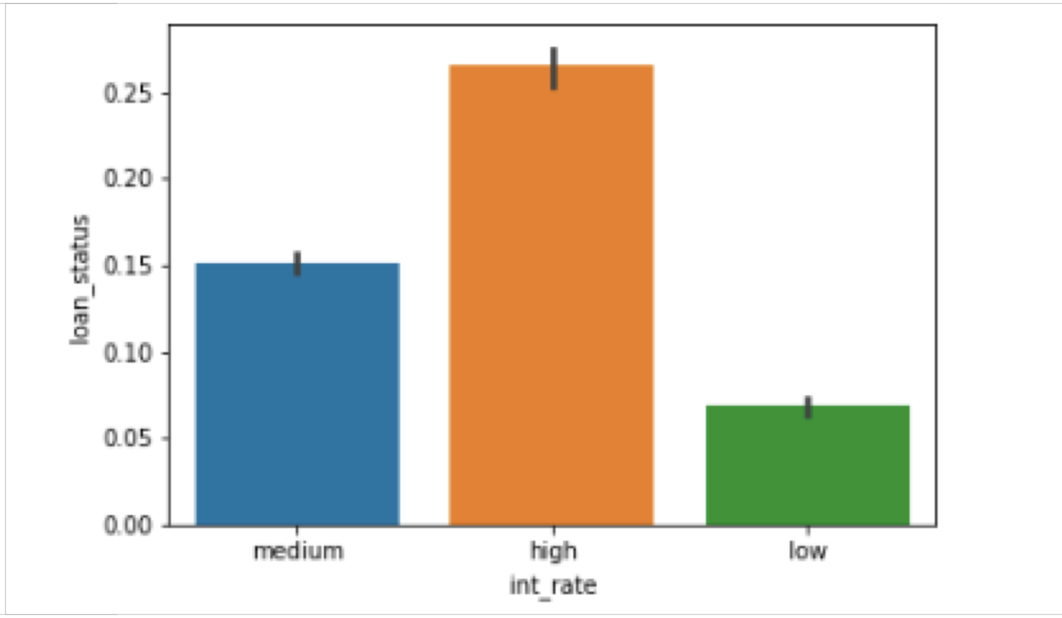


Plot1

Plot1 shows the analysis of Charged Of Loans for each Loan Amount . It can be seen that as the Loan Amount increases the change of loan getting charged off loans increases

Plot 2 shows the analysis of Charged Off Loan for different interest rates. As the Loan Interest rate increases. The probability of loan getting charged of increases.

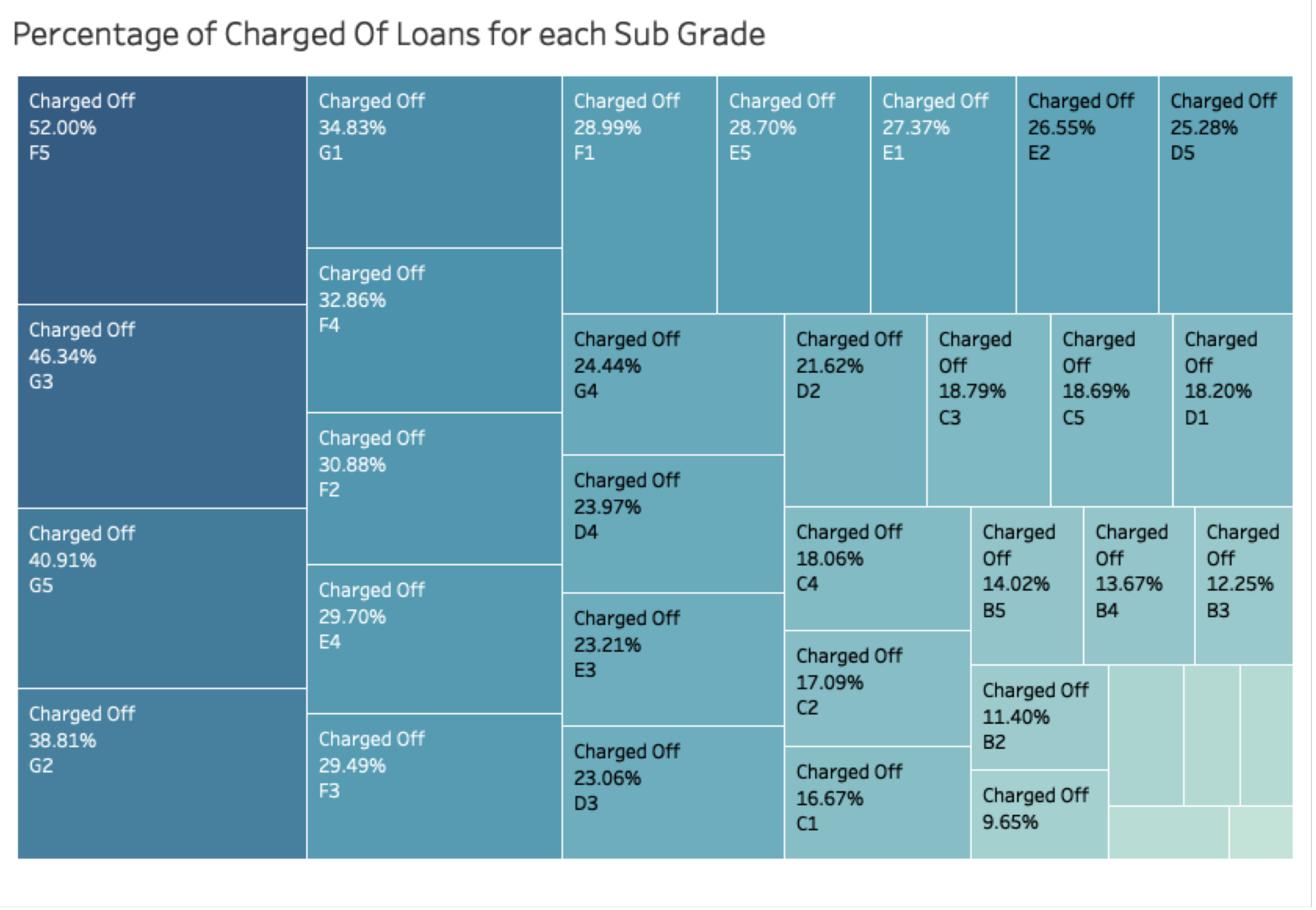




Plot1

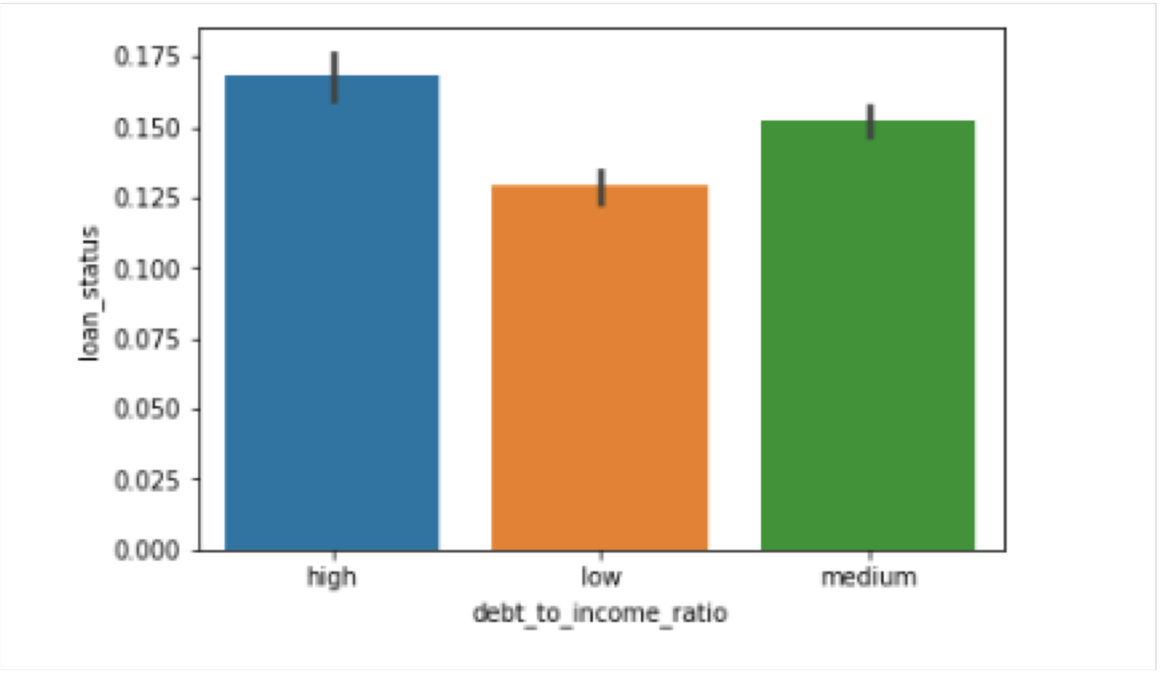
Plot2

Plot1 shows the analysis of Charged Of Loans for each Sub Grade Assigned by Lending Club. This graph shows that the amount of defaulters are more in sub grades F5 and G3



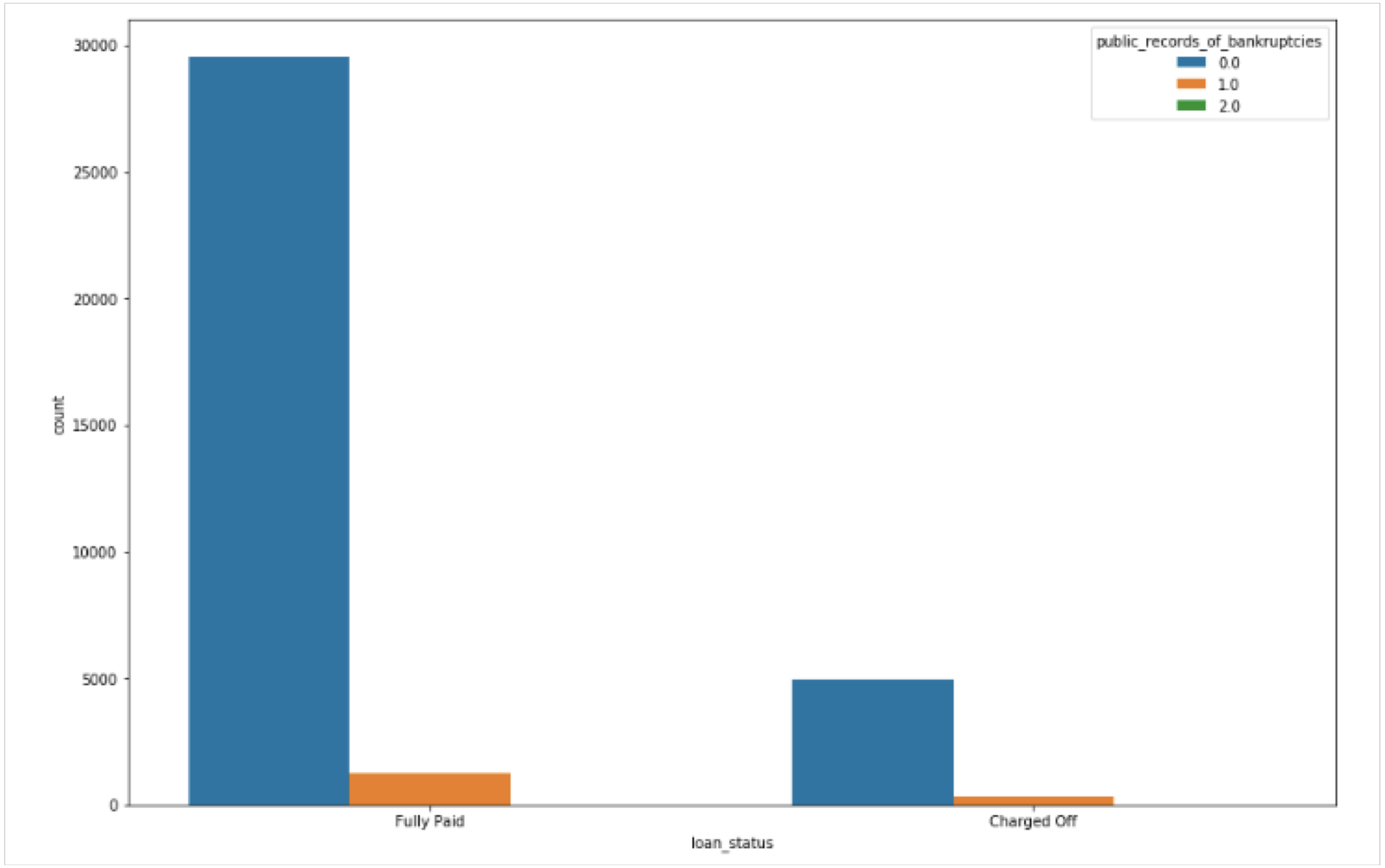
Plot1

Plot1 shows the analysis of Charged Of Loans vs Debt to Income Ratio. People with Higher Debt to Income Ratio Default more.



Plot1

Plot1 : It shows the analysis of Loans Status vs Public default records of bankruptcies. People who have had previous record of bankruptcies defaulted more



Plot1

Conclusion :

The key drivers of loan defaults as per the given data are:-

- **Purpose of Loan**
- **Loan Tenure**
- **Home Ownership**
- **Grade Segment**
- **Revolving Utilization Rate**
- **Year of Employment**
- **Loan Amount**
- **Loan Interest Rates**
- **Public record Of Bankruptcies**
- **Debt to Income Ratio**

Recommendations :

- **The Consumer Finance Company while dispersing loans should take into account the following :**
- **Loan amount is lower than 10000$**
- **Purpose of Loan not debt consolidation or credit card loan.**
- **Interest rate is in the range 10-12**
- **Customers should have an income higher than 50000.**
- **Loans should be of a lower term (more 36 months loans than 60 months loans)**
- **The Debt to Income Ratio of customers should be checked to give out more loans to customers with a favourable ratio.**
- **Loan Grades and Sub Grades are a good predictor of default, and should be used more often while giving out loans.**
- **Lower Debt to Income Ratio and Lower Revolving Rate Utilisation**