LENDING CLUB CASE STUDY

SUBMISSION

Name: Regil Tom C J

Shanmukha Sai Prakash Uriti

Abstract and Objective

Lending Club, the largest online loan marketplace facilitating personal loans, business loans, and financing of medical procedures. wants to understand the driving factors (or driver variables) behind loan default, i.e. the variables which are strong indicators of default.

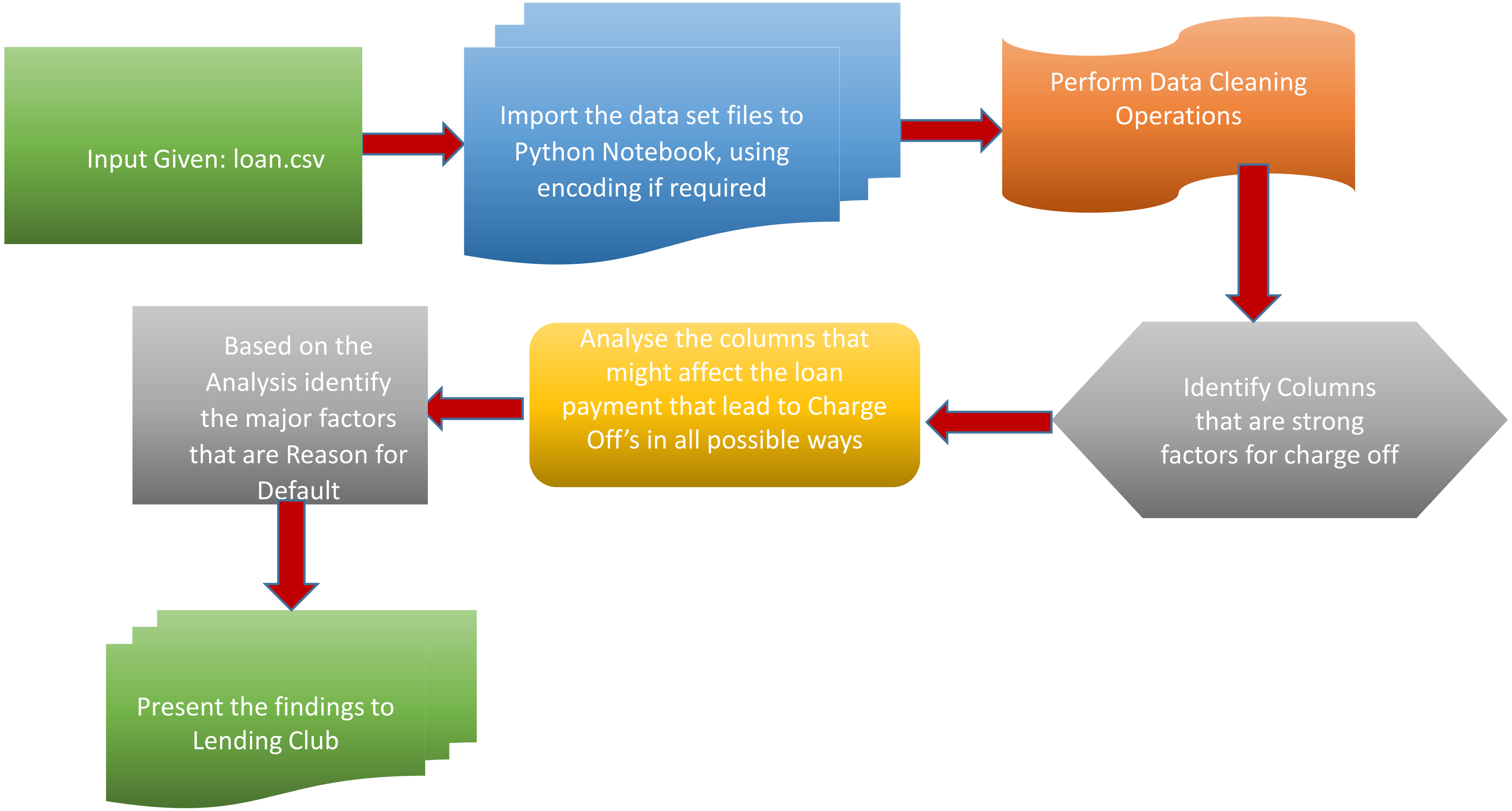
Below are the driving factors for analysis

- 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 not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company

So, the objective is to identify the factors that are indicators of loan default. The overall strategy is to take appropriate decisions while lending money to members which based on the indicators mentioned and also make any modifications to the lending system if required.

So , Lending Club wants to understand the driving factors for loan default.

Flowchart for Analysis



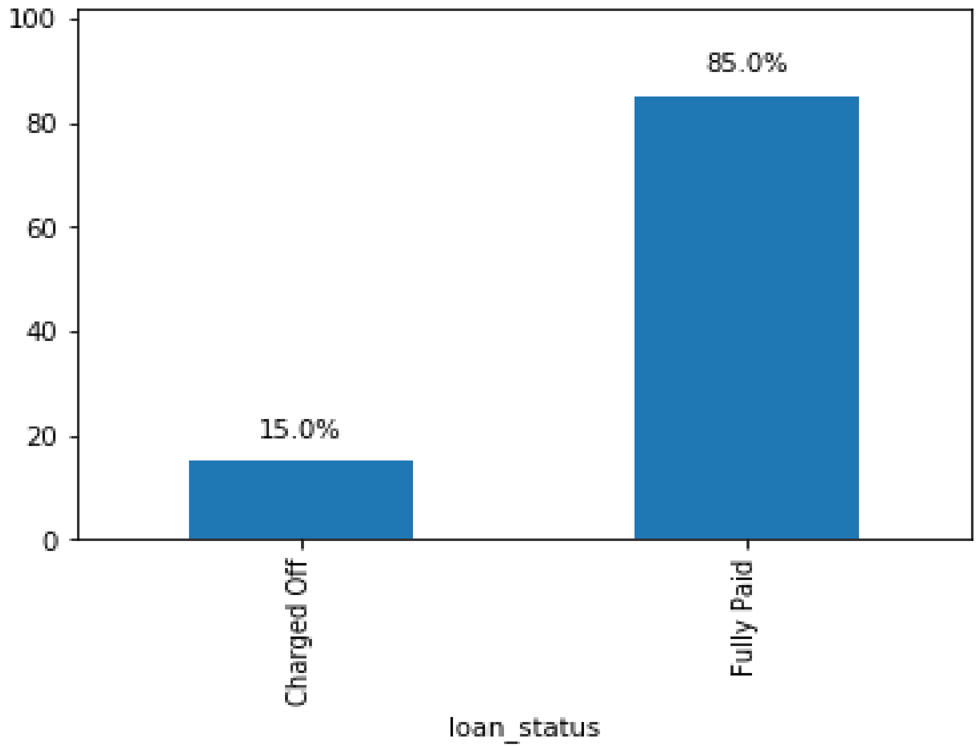
Basis for Analysis

The are several factors that might lead to Charge Off. Broadly , these factors have been classified into three types.

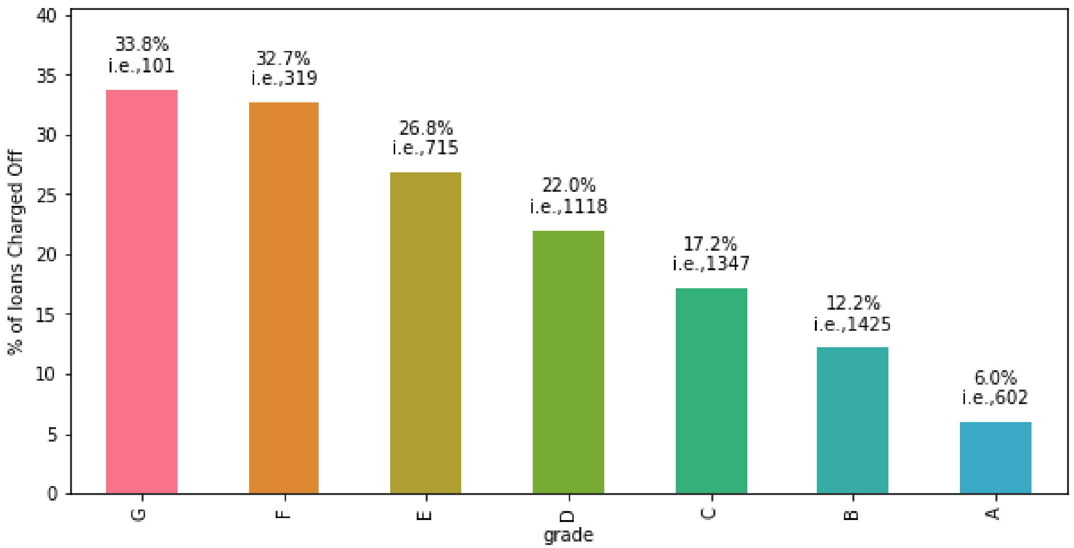
1. Those which are related to the applicant (demographic variables such as age, occupation, employment details etc.),
2. Loan characteristics (amount of loan, interest rate, purpose of loan etc.) and
3. Customer behavior variables (those which are generated after the loan is approved such as delinquent 2 years, revolving balance, next payment date etc.).

The third category even though analyzed might not help Lending Club as we will not be having this data for new applicants.

We have 15% of defaults in the whole data set. So any attribute which might cause a default percentage of above 15% is of interest.

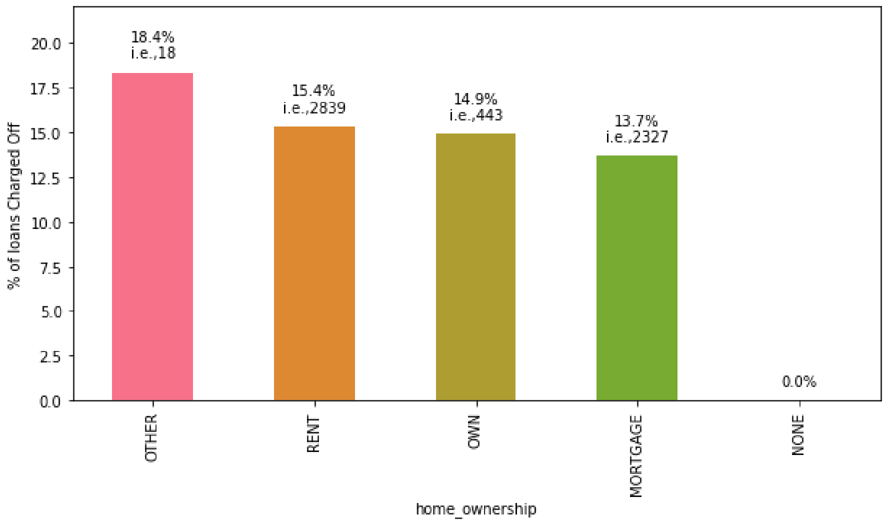


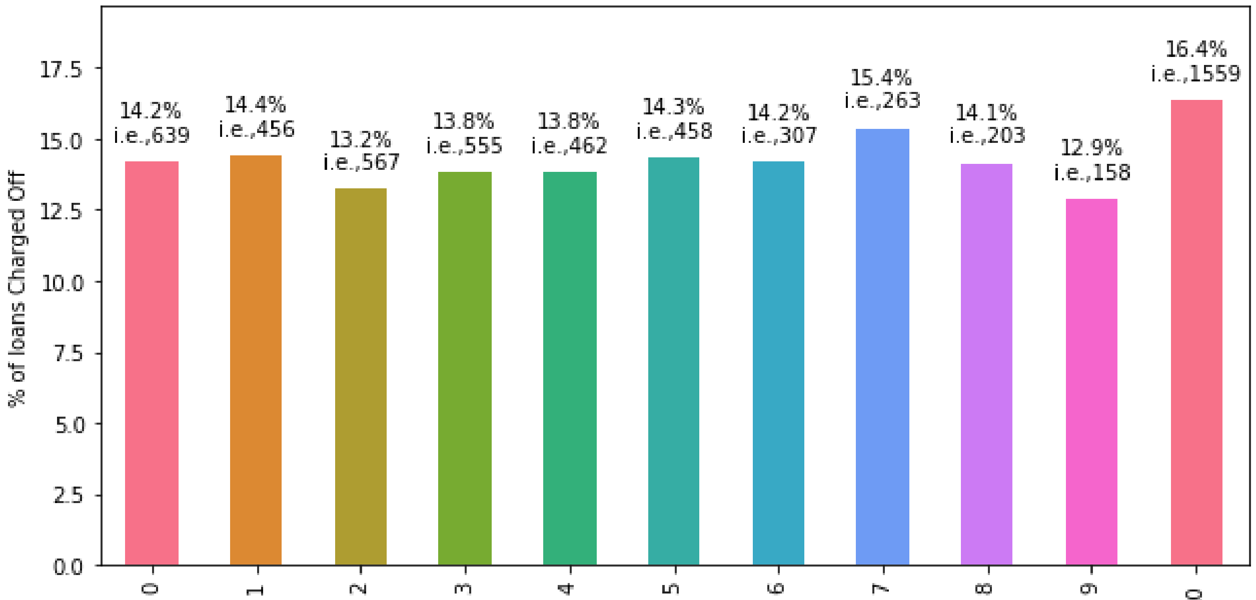
Applicant Characteristics Analysis



Analysis on the first category fetched few insights as follows:

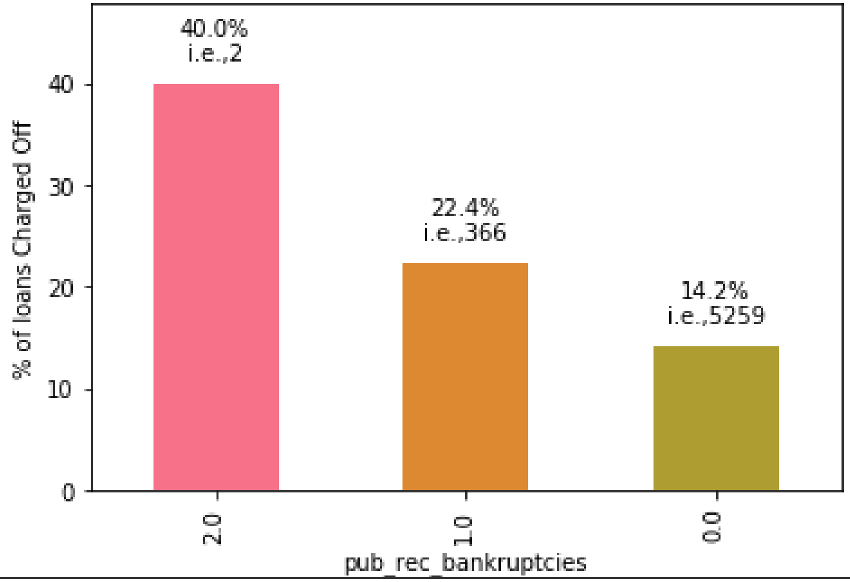
- **Home Ownership:** Most of the applicants are either Rented or has Mortgaged home ownership. 'Other' has the highest chance of defaulting. Of the most two common ownership (Rent and Mortgage), Those who are rented has higher default rate.
- **Employment length:** Highest default rate is observed in the employment length 10+ years followed by 7 years. Default rate increases from 2 to 7 years and then decreases from 7 to 9 years.
- **Grade**: Higher the credit strength less likely is an applicant to default. LC is doing the correct strategy .



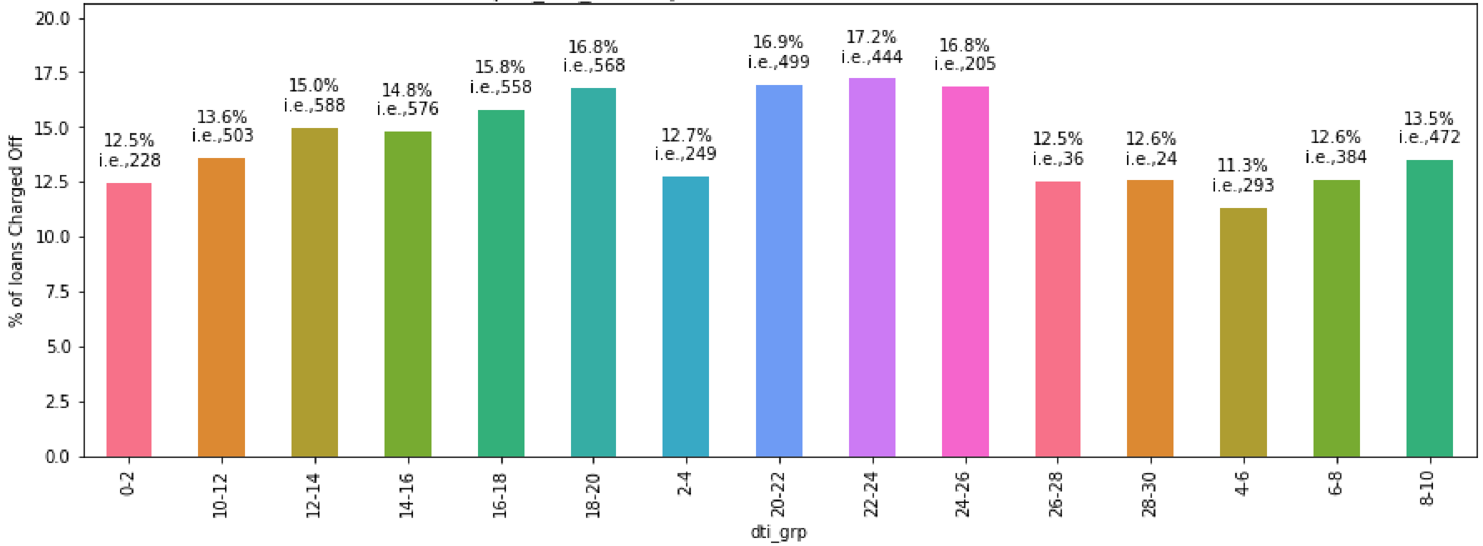


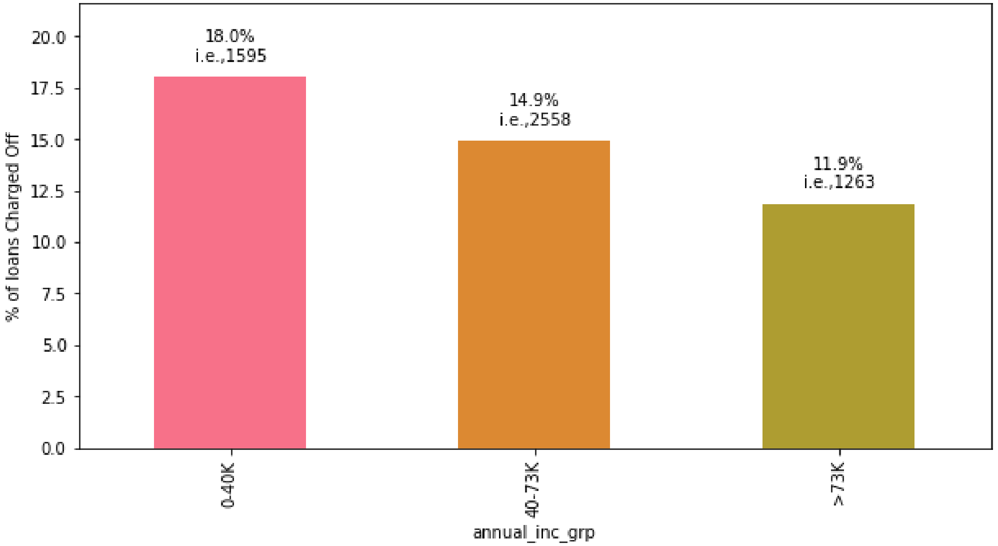
Applicant Characteristics Analysis – Contd..

UpGrad

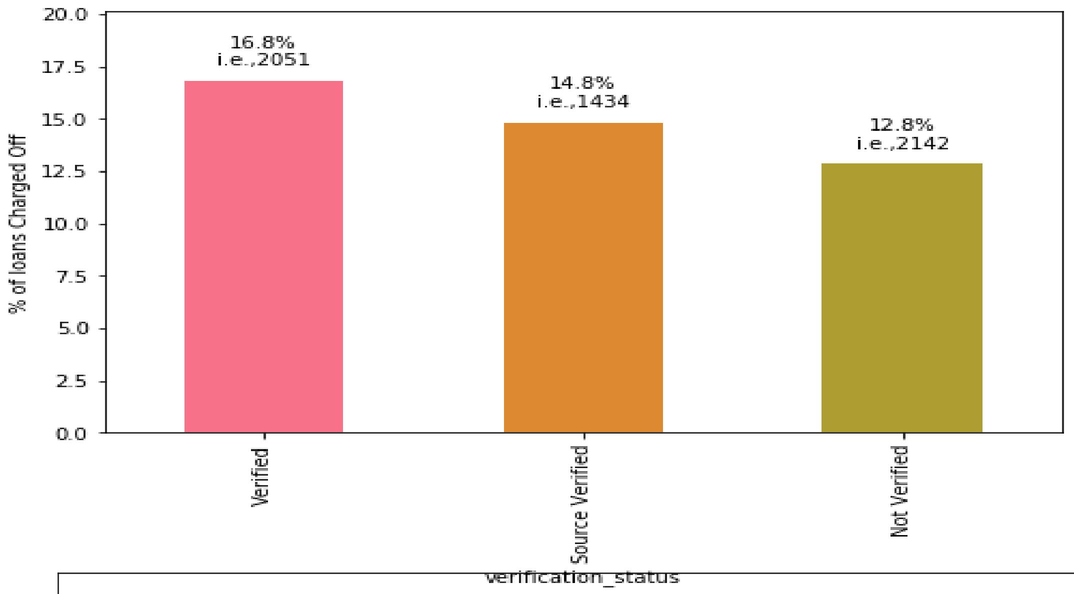


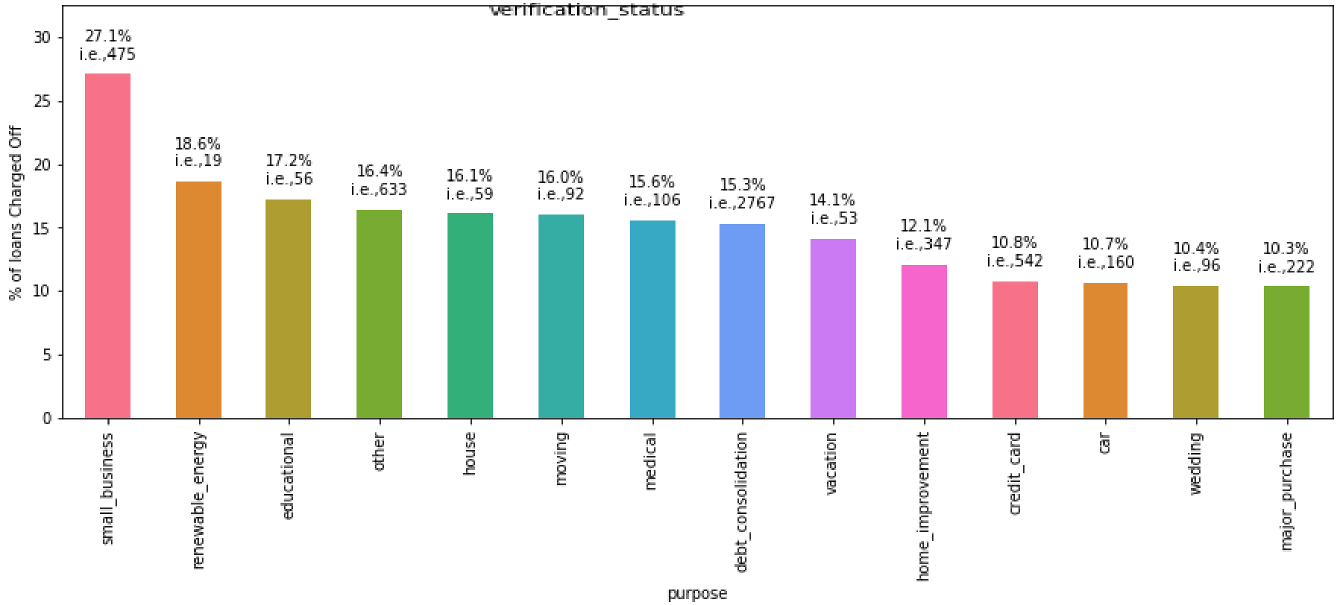
- **Annual income**: Lower the salary more likely it is to default. Also there is a clear trend that shows that the default percentage decreases with increase in salary
- **DTI:** The percentage of default increases with increasing dti.
- **Public Record Bankruptcies :** The default percentage increases with increasing public record bankruptcies.





Loan Characteristics Analysis

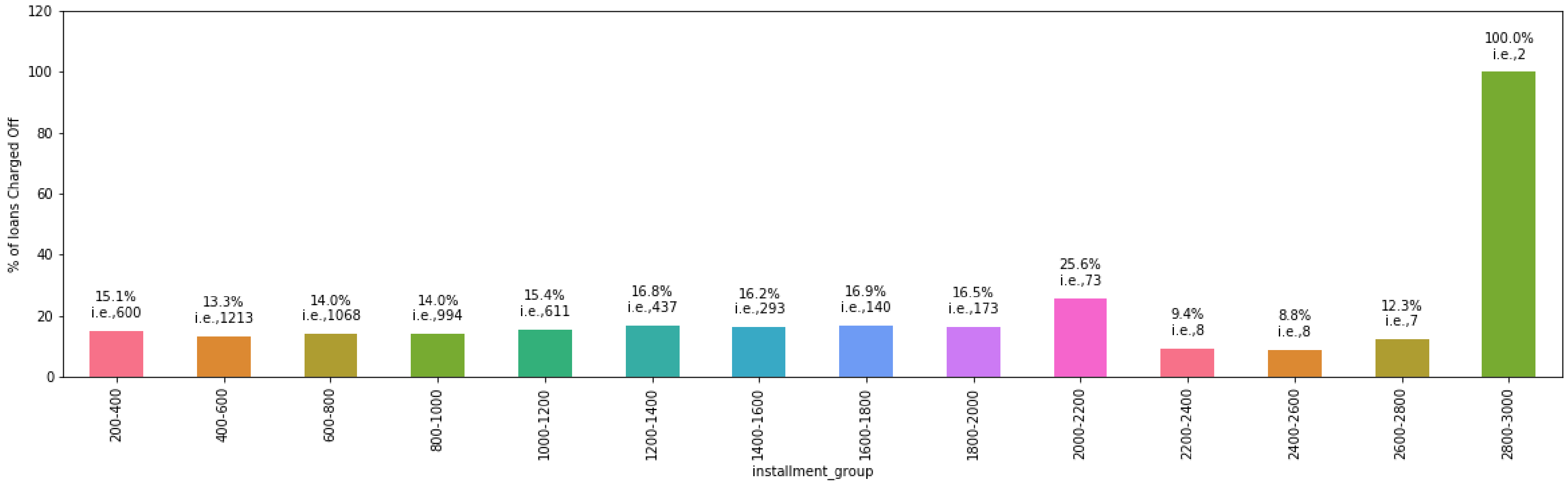




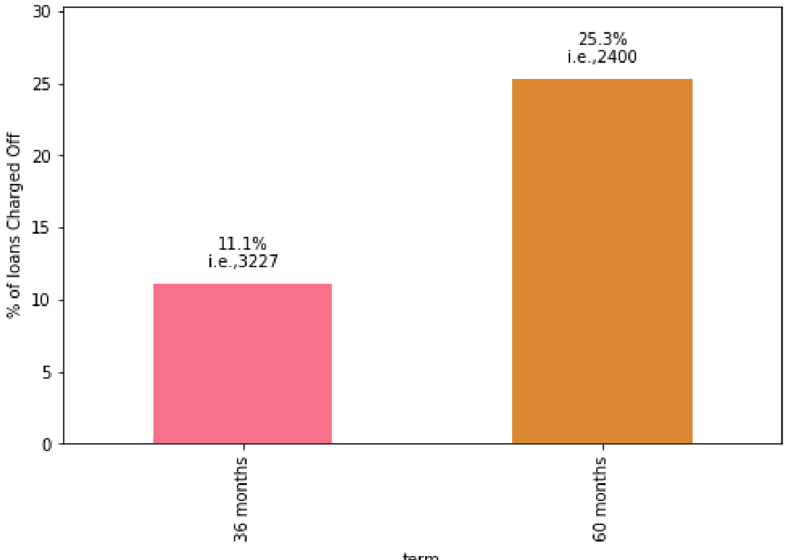
Analysing loan Characteristics:

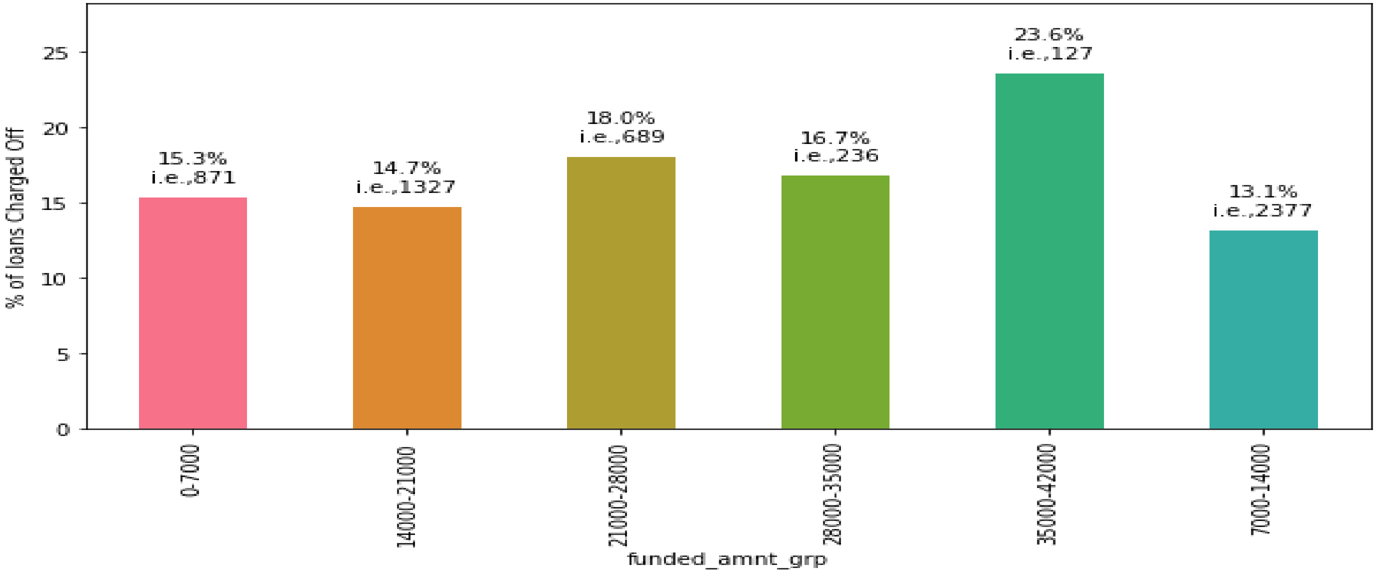
- **Purpose** : Small business has high percentage of default followed by renewable energy. Around 26% of the loans for small business had been defaulted while for renewable energy it is at 18%
  Also majority of the loans have been taken for debt consolidation (~ 50%) and there is considerable number of (~ 15%) of defaulters in that category .
- **Verification Status** : Contradictory to general assumptions , the Verified applications are more likely to default followed by Source Verified and Not Verified.

Loan Characteristics Analysis- Contd..

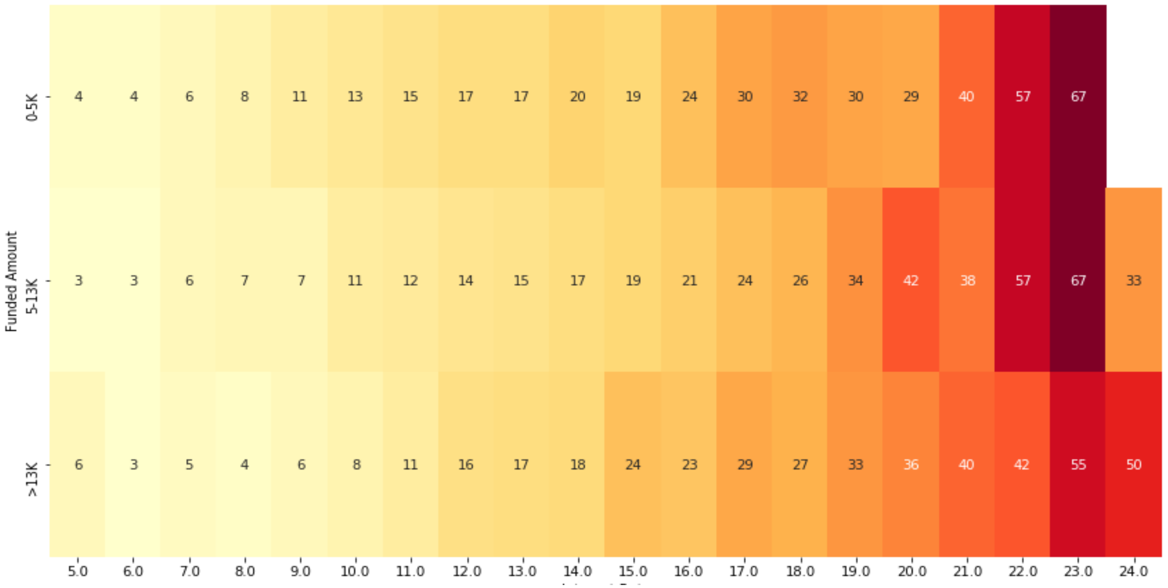


- **Term**: The Charged Off percentage is higher if term is 60 months
- **Funded Amount**: The default percentage is high in funded Amount is in the range (21,000-42,000)
- **Instalment** : The percentage of defaulters tend to increase with increasing installment amount until 2200 and then there is a sudden decrease in defaulters probably because the number of loans applied are low.



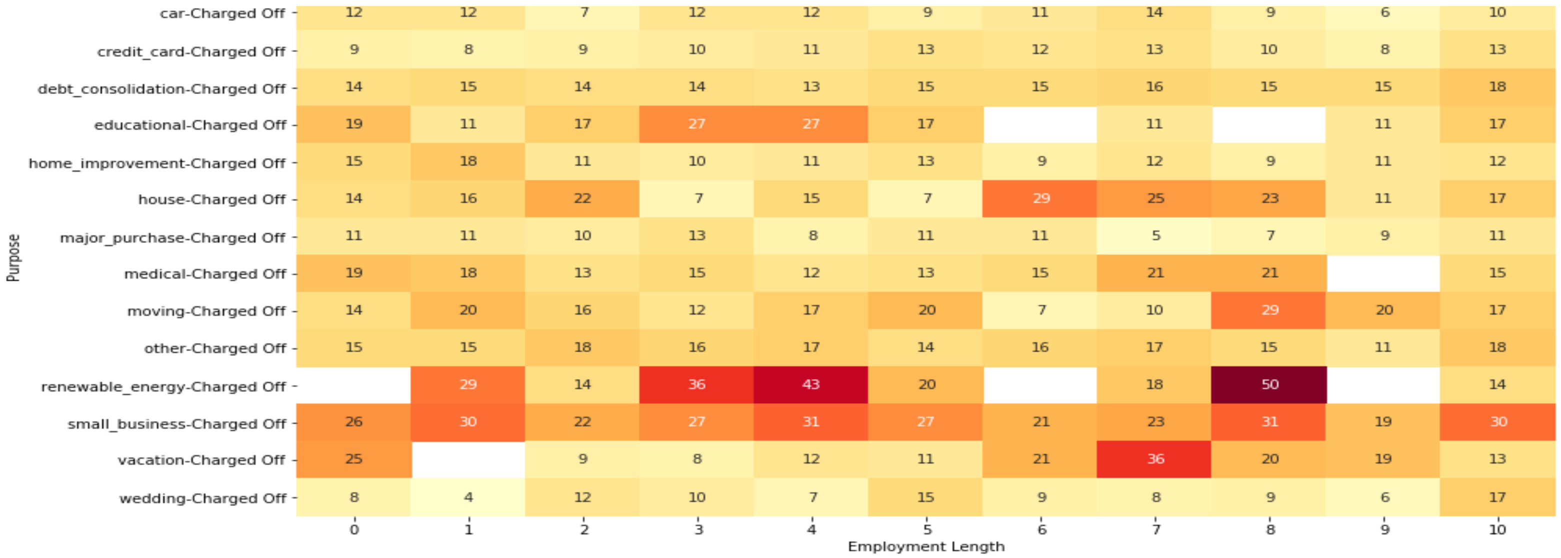


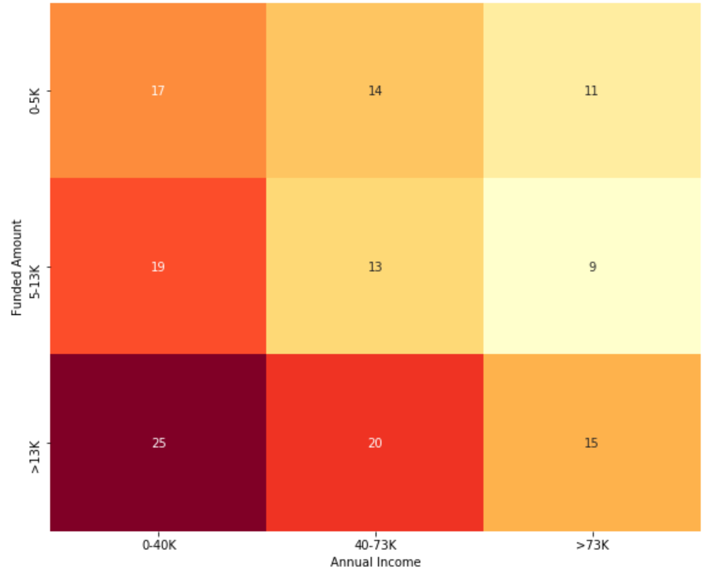
Analysis with multiple factors



Analysis using more than one variable:

- **Funded Amount & Annual Income** : An applicant is likely to default if the annual income is low (<40K) and the funded amount is high (>13K).
- **Funded Amount & Interest Rate** : An applicant with a lower funded amount charged with a higher interest rate is more likely to default.. There is a chance that high interest rate is provided to G grade loans so that most of the funded amount is returned even if defaulted
- **Employment Length & Purpose** :Considering the employee length 0-9 years we could infer the following Default percentage is high for Educational loans taken with employment length 2 and 3 years .Default percentage is high for House loans taken with employment length 6 to 8 years . Same is the case with Medical loan.





Conclusions:

Based on the analysis, below mentioned factors are major causes for default:

- The impact of verification process is as expected as the percentage of people who default after they are verified are high as compared to others.
- Members with low annual income(<40K) are more likely to default and members with annual income range (40K-73K) are likely to default if funded amount is greater than 13K
- Default percentage is high for Educational loans taken with employment length 2 and 3 years .Default percentage is high for House and Medical loans taken with employment length 6 to 8 years
- The members with dti in range (16-26) are more likely to default.
- Lending Club should lend more to OWN rather Rented. The default percent for rented is very high.
- The default percentage is twice as high when the term is 5 years as compared to 3 years.