

# Lending Club Case Study

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# Business Statement :

## **Problem Statement :**

A consume finance company is facing challenges with Non-performing assets where their NPA % is to tune of 15% of Total Assets with 14% default customer , which is impacting the operational performance of companies.

## **Objective of Study :**

To identify the parameter impacting the credit leakages in the system and provide the recommendations based on study and analysis any sort factors to be considered while sanctioning the loans and quality governance systems to be set to ensure optimizing the tolerances existing in the system that helps in improving the operational efficiency of the companies and reduces the bad loans and NPA's.

# Data retrieval and Identify Key Variables

## Data retrieval and Study :

- ~ 110+ variables are provided by finance company .
- As a part of study, it was observed that 55 + variables does not have values available to consider them and access the impact.
- As data study is done to understand the type of loan status , ID and member\_ID are insignificant value for analysis
- Additionally certain variables with constant values / like application\_type , policy code , payment plan, URL, Zip code , address state creates insignificant value in analysis.
- Based on final study and analysis we considered only 35 variables which are key for study and analysis and rest of variables are ignored from analysis.

## Key Variables : 35 Variables

Variable Type	Variable
Nominal	loan_status ; home_ownership ; verification_status
Categorical	issue_d;purpose;pub_rec_bankruptcies;
Interval	emp_length; term
Ordinal	Grade ;sub_grade
Numerical/Number	loan_amnt;funded_amnt;funded_amnt_inv;int_rate;installment;annual_inc;dti;delinq_2yrs;earl iest_cr_line;inq_last_6mths;open_acc;pub_rec;revol_bal;revol_util;total_acc;out_prncp;total_p ymnt;total_rec_prncp;total_rec_int;total_rec_late_fee;recoveries;last_pymnt_d;last_pymnt_a mnt;last_credit_pull_d;

# Data cleaning and Manipulation

- As a part of data cleaning , we created ranges wherever needed to bring the common summary analysis around different variables such as Interest rates to provide more drill down in Interest rates impact.
- All outliers in Annual Income excluded with average of annual income excluding the borrowers falling outside the range Q1 and Q3
- Employee length of designation and Purpose of loan factors are cleaned for considering the further drill of details.

# Data Study and Analysis - Univariate & Bi-Variate Analysis

## Variables Analysis :

### Univariate Analysis :

- As apart of problem statement mentioned 15% of Loans are Charge off with 14% of default customer. Hence problem statement “loan status” is key variable for univariate\*\* analysis univariate variables

\*\* Other Variable not summarized for univariate analysis

### • Verification Status and Loan tenure

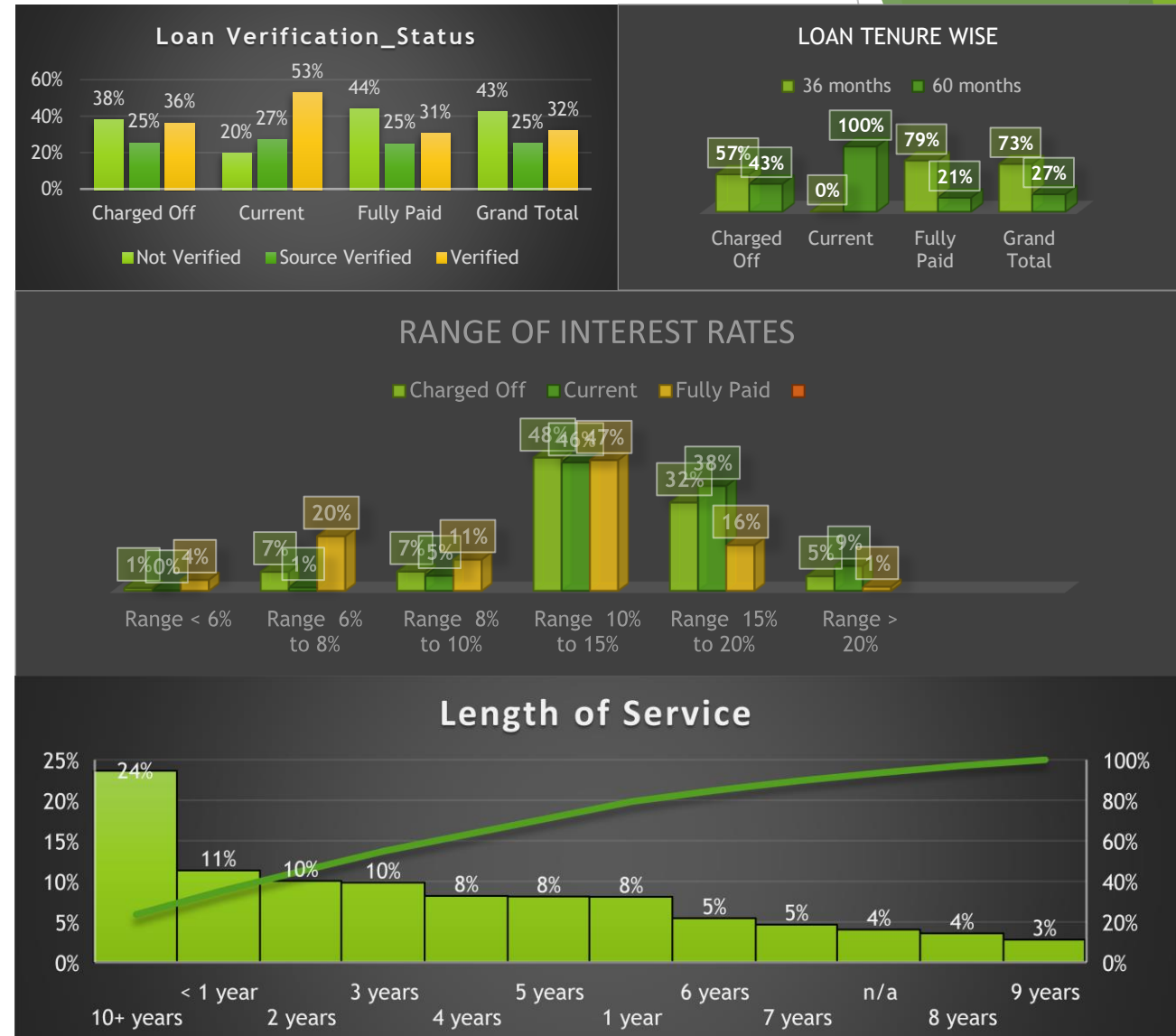
- Charge off cases are 38% of loans are not verified and 57% for loans with less tenure < 36 Months
- Though this category of variable is strong indicator of more default cases due to improper verification procedures and low loan tenure, we observe same trend exists in the performing loans also.

### • Interest Rates

- Charge off cases and defaulters are increasing when rate of interest is increasing, it was impacting the repayment capacity of borrowers.

### • Length of Service

- Borrowers with Higher length of service are defaulting the payment.



# Data Study and Analysis - Cont....

- House \_OwnerShip Type :

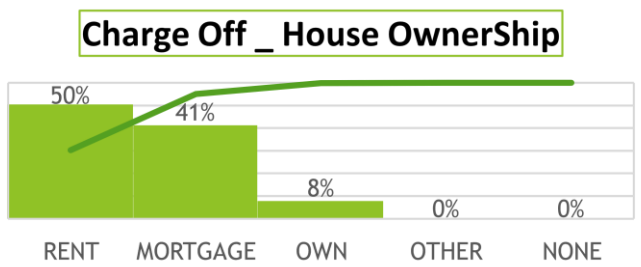
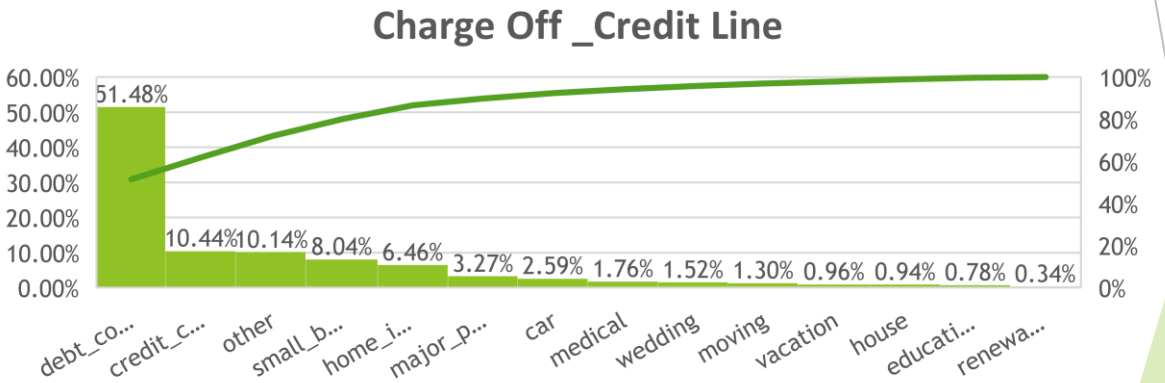
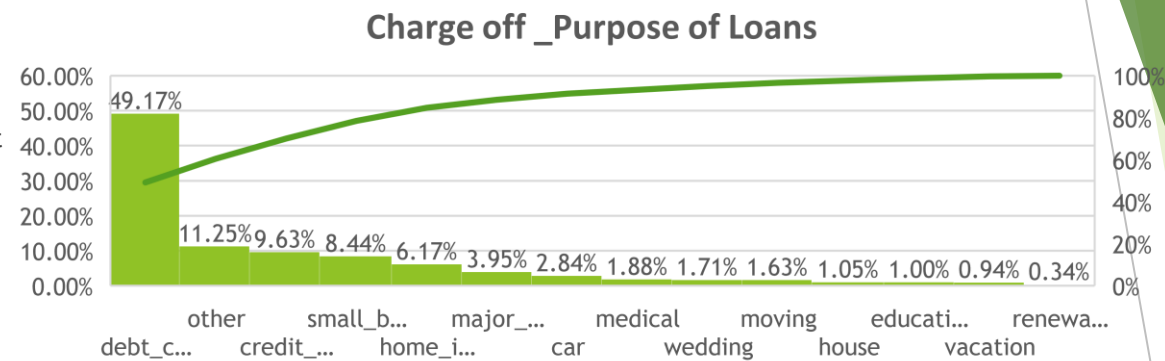
Charge off cases are higher with Borrowers staying on rent followed by Mortgage.

- Purpose of Loan :

Around 49% of Charge off Loans are borrowed for consolidation and borrowers are taking multiple loans and trying to consolidate the loans . As a results these borrowers are defaulting the loans

- Credit Lines (Borrowers Account) :

Around 51.48 % of Charge off Loans , borrowers taken loan for debt consolidation are having Highest credit line accounts , which means these borrowers maintaining multiple credit loans and tracking of loans performance not done consistently.



# Data Study and Analysis - Cont....

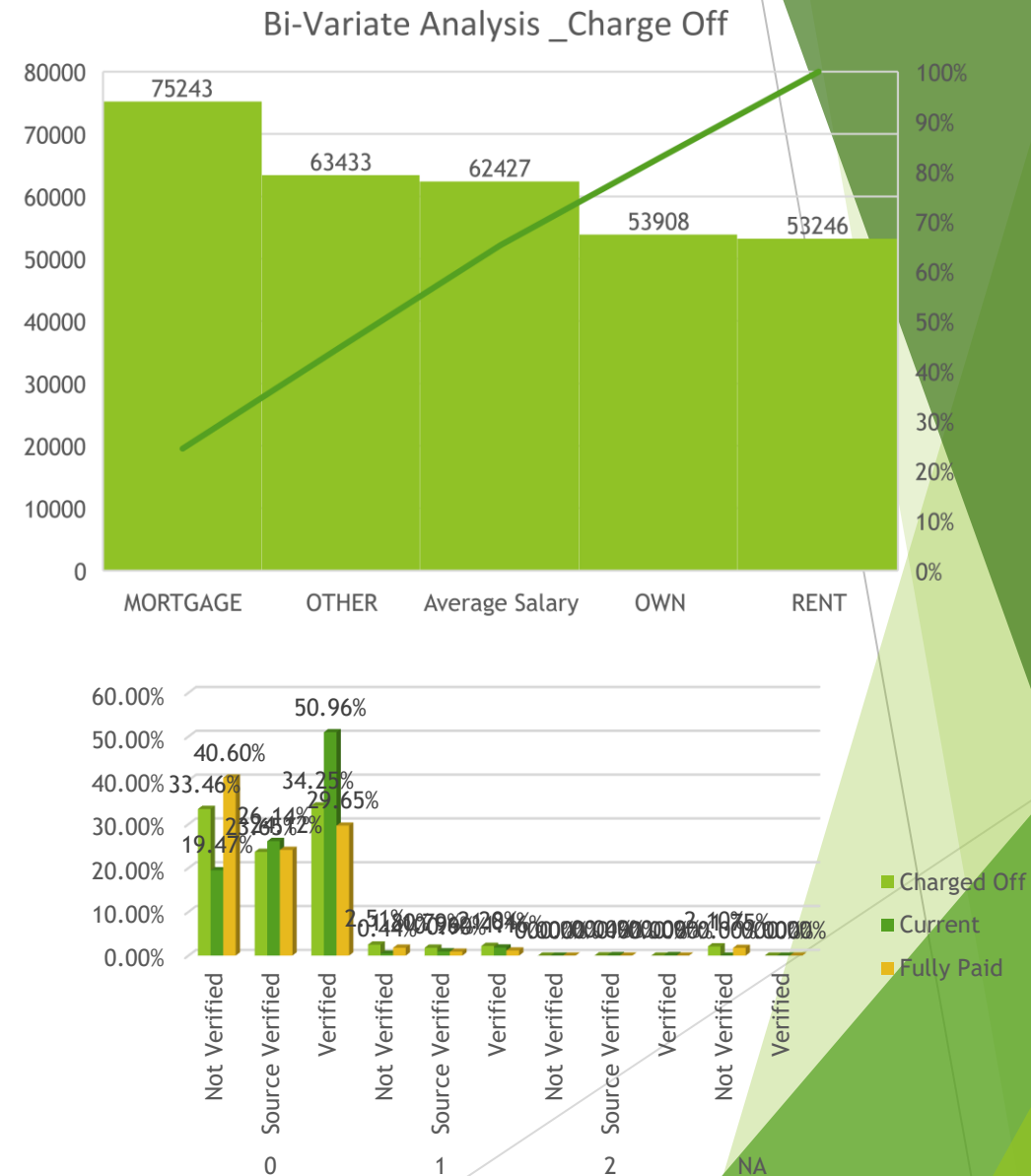
## Data Correlation Study & Bi - Variate Analysis:

### Annual Income /Home Type :

- Average income are low for charge off borrowers as compared to the Current and Fully Paid.
- Borrowers' re-payment capacity was not accessed taken into Annual income .
- Average Income of default borrowers staying on rent is lower than other type of Home type defaulters.

### Bankruptcy Cases / Source Verification :

- Bankruptcy cases are high under charge off with 6.5% vs 3.25% for Current and Fully paid.
- Charge off Borrowers who are with high bankruptcy , the percentage of borrowers where background verification not done properly is High .
- This gives sense of direction while doing background verification public bankruptcy is not considered whether to go for sanctioning or not.

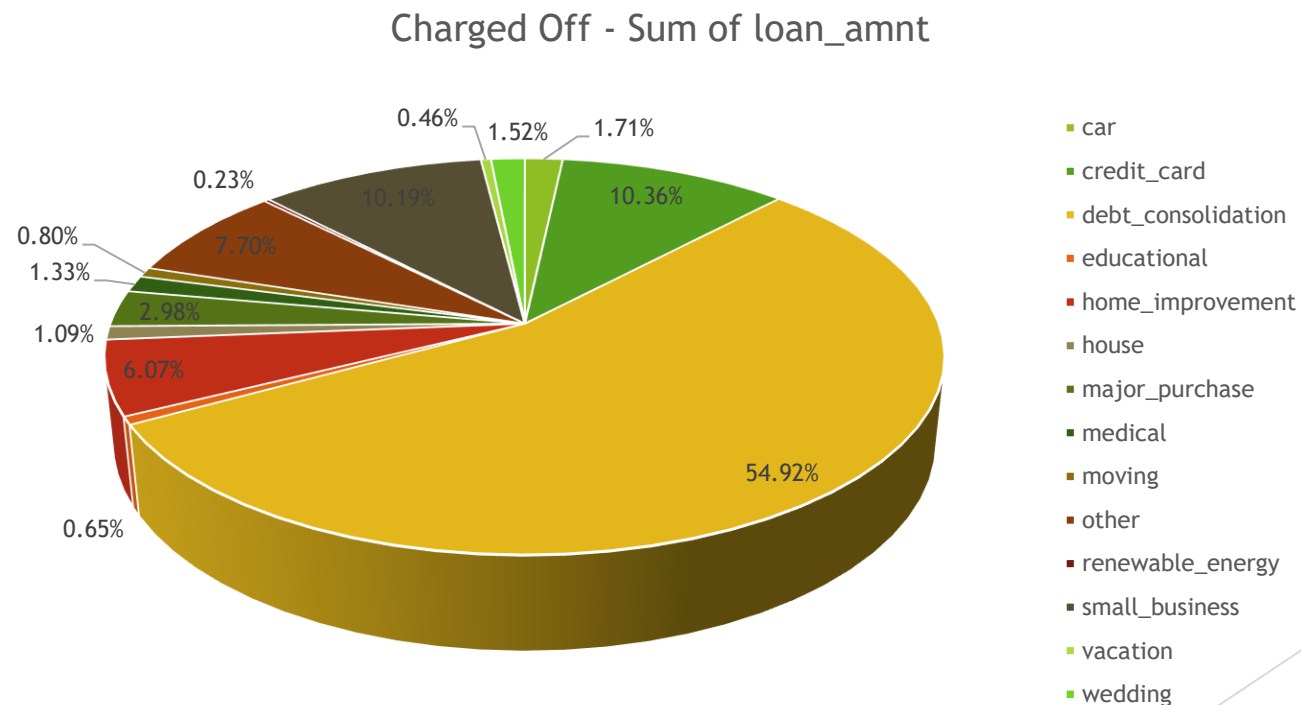




# Segment Analysis

## Segment Analysis :

- Charge off 54.92% are for purpose of debt consolidation and this was funded by 55.75% of investors funding
- Borrowers with Debt consolidation as Highest public records for bankruptcy
- Around 50% cases this borrowers do always pay late payment fees.
- Under Debt consolidation , borrowers with 10+ years experience do highest debt consolidation.
- Most of borrowers with default stay on rent and doing background verification Not verified cases are High for these defaulters.



# Recommendations and Risk Assessment

## Overall Summary :

Based on study and findings it was observed that “ High “ charge off cases are existing under Debt consolidation where defaulters under this category are “ Not verified “ , and they are defaulting the payments and considerable delay resulting in payment of late fees. Additionally, these category of borrowers are having high bankruptcy filings and more than 100% funded from investors money.

## Recommendation & Factors to be considered :

- Bankruptcy records of the borrowers to reviewed and included for loan rejection/sanctioning.
- Tenure of employee with Home ownership and Average Annual Income combination of the three parameters should be viewed to see the credibility how much funding bank can make.
- Delay in Interest payment and late payment fees.

## Risk Assessments :

1. Certain factors & variables like “avg\_cur\_bal “ are not existing to see how many of borrowers are facing liquidity or cash crunch.
2. Certain factors like dti are not clear to access the repayment capacities and Additionally parameters like how funding was derived is not clear as adjustments of existing loans etc factors information is not clear to access the risk.