

# Lending Club: Case Study

## Group Members:

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## Background:

Lending Club 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.

Largest source of credit loss of this Company is lending loans to 'risky' applicants who are not willing to pay back the loan amount or charged-off borrowers.

## Problem Statement:

To analyse the pattern in given data set and identify defaulter/charged off borrowers.

# Problem Solving Methodology:

## **Data Understanding:**

1. Loan Data Set contains the complete loan data for all loans issued through the time period 2007 to 2011.
2. Data Dictionary given describes the meaning of each variable used in Loan Data Set.

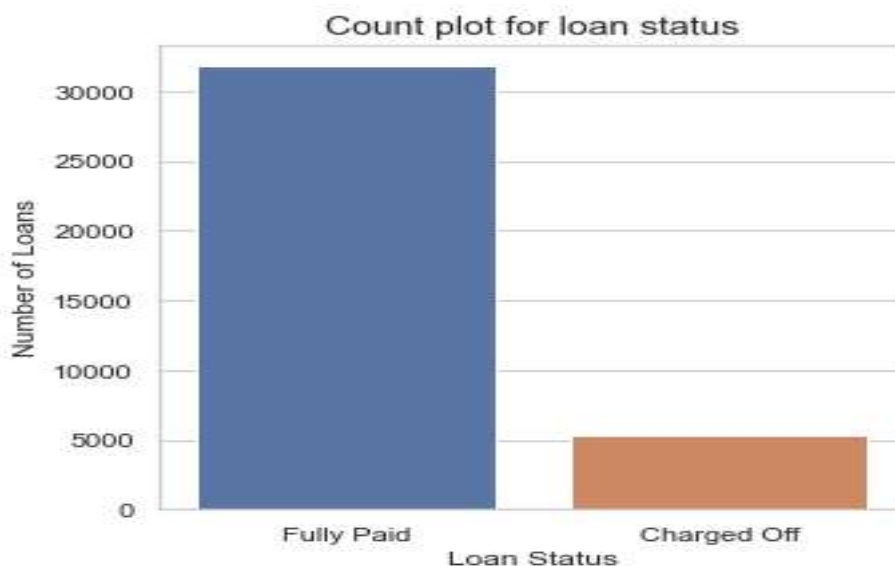
## **Data Cleaning:**

1. Removed all data where loan status is "Current" as this is not relevant to our analysis.
2. Deleted the columns representing customer behavior (e.g. Delinquency, revolving balance/utility etc.) are not relevant with respect to our analysis.
3. Dropped the columns having more than 60% missing values, where number of unique Value is only one and columns which are not influencing our target variable i.e loan status.

# Loan Data Analysis:

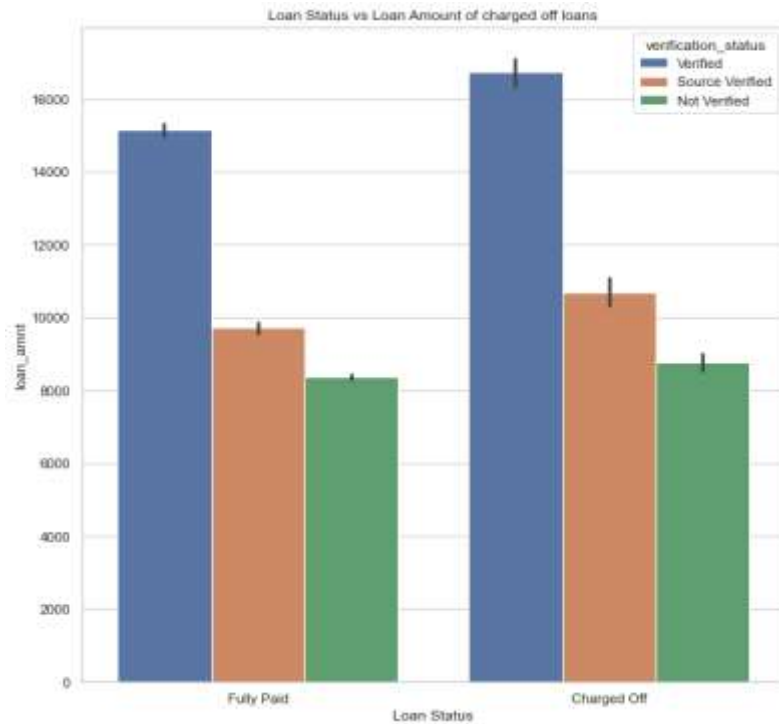


- Maximum number of loans are applied by people from CA.
- Maximum number of loans are charged off for people of NV.

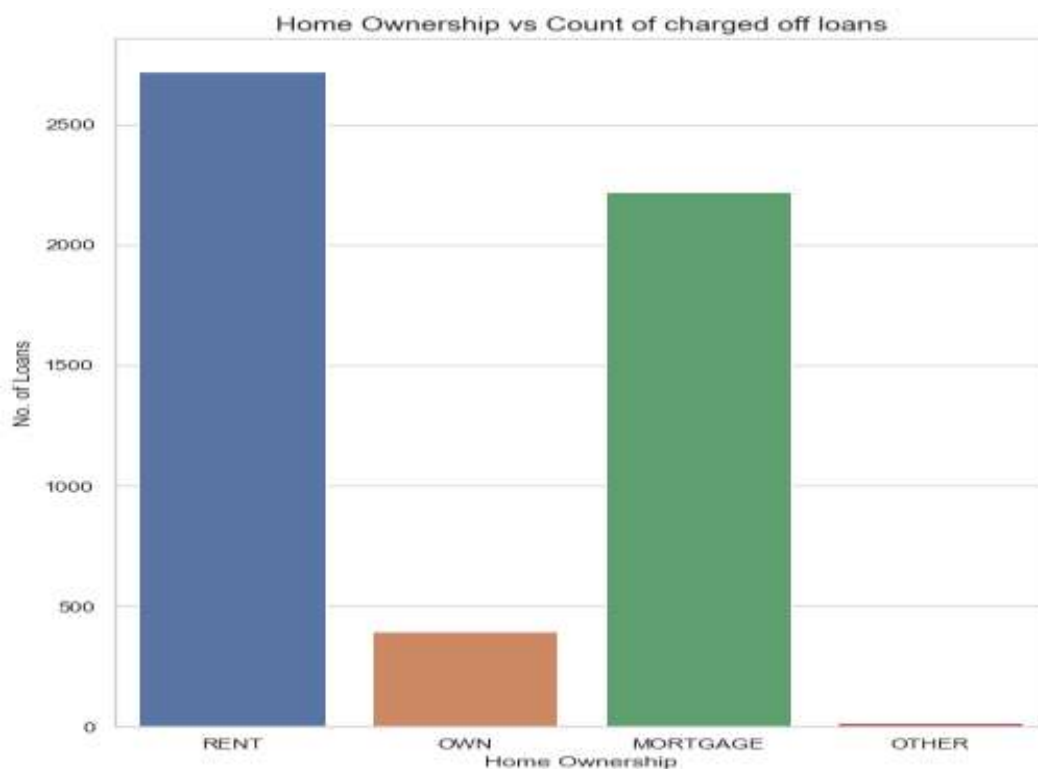


- More than 30000 loans are fully paid.
- Around 5000 loans are charged off.

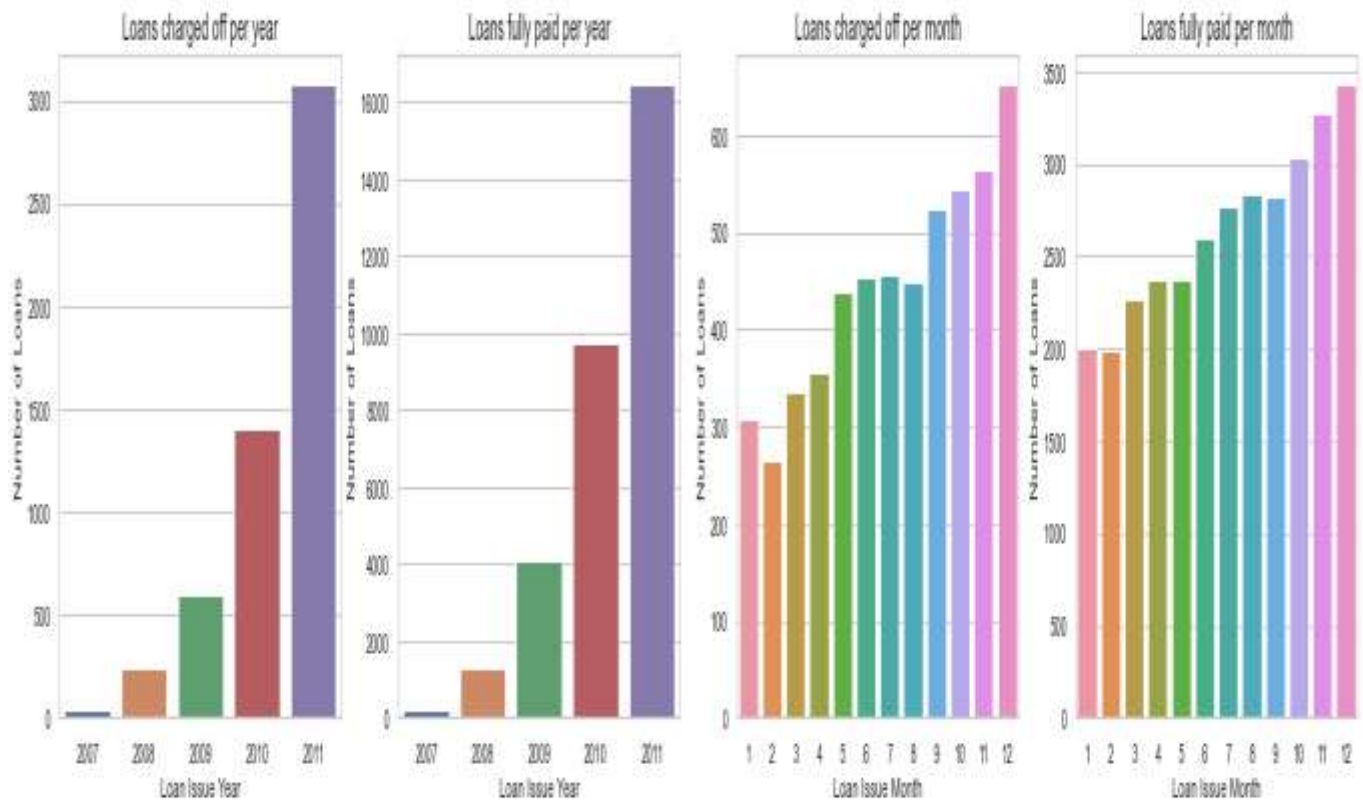
## Verification Status & Home Ownership as per Loan Status:



- Max number of loans are charged off where verification status is Verified.
- Max number of loans are charged off for people living on rent.

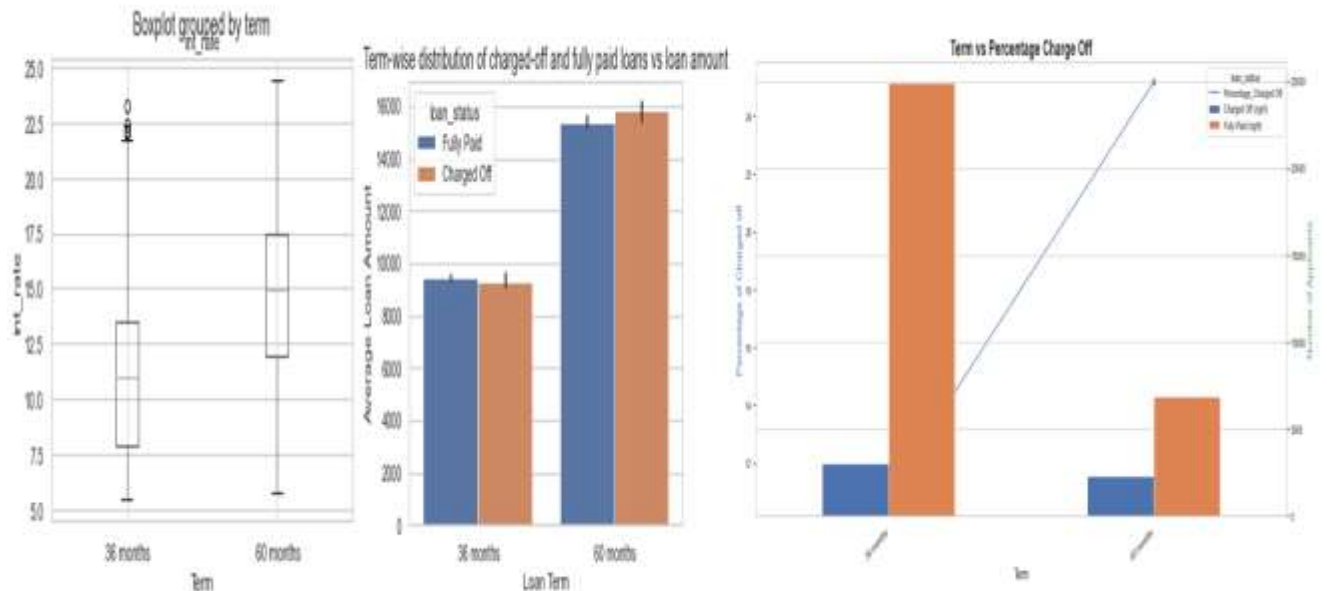


## Year & Month Wise trends of Loans:

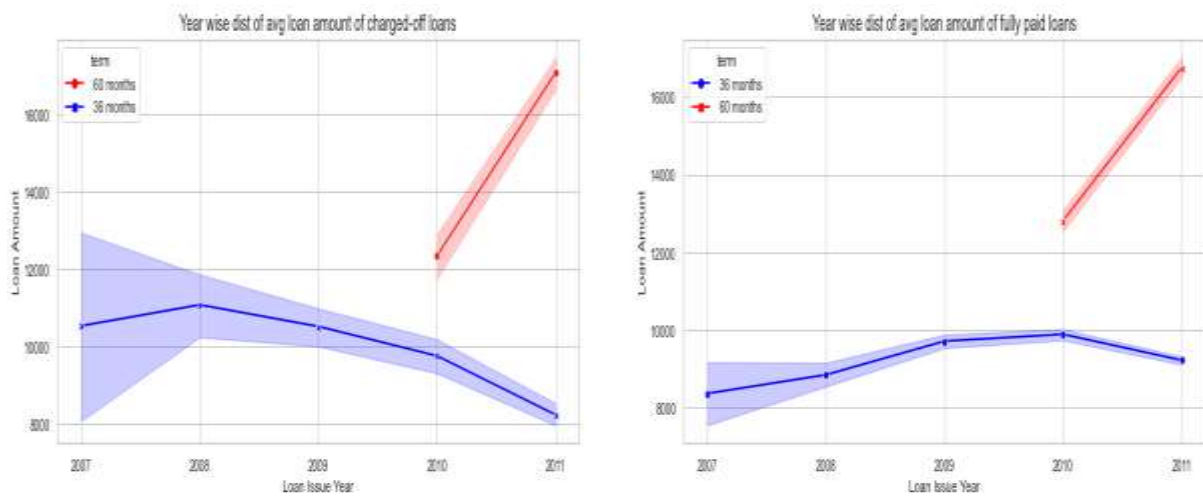


- Number of loans, fully paid and charged off are increasing year-by-year. This is a very positive trend for Lending Club as the requirement of loans are increasing every year.
- The month-wise trend shows that most of the loans are fully paid as well as charged off as the year comes to an end

## Loan Term Analysis:

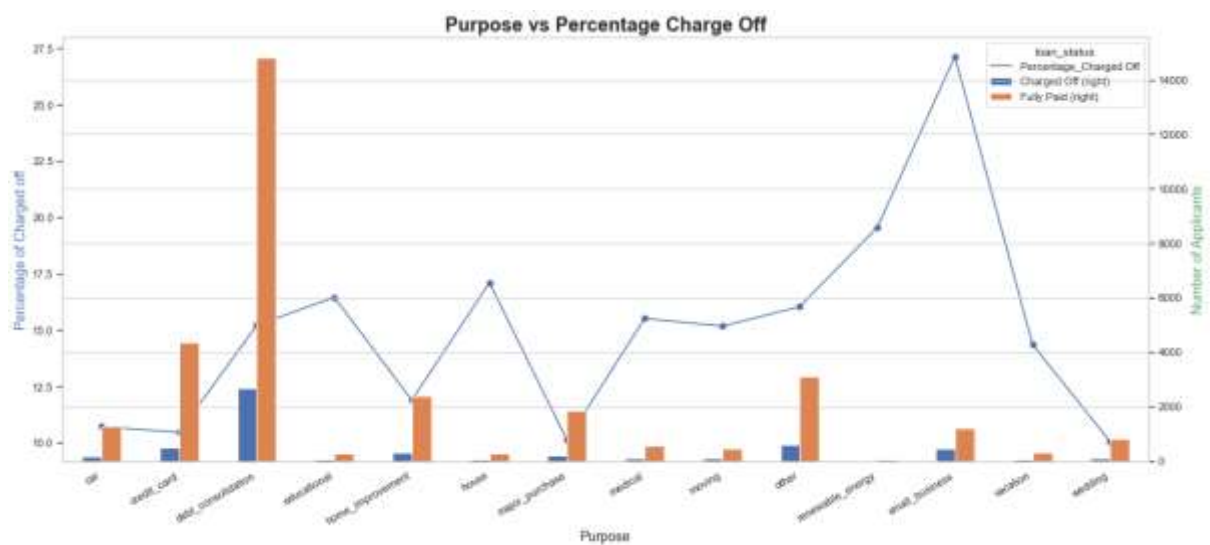


- Interest rates are higher for 60 months term.
- Average loan amount is similar for both the terms for both loan statuses.
- Average loan amount is higher for the 60 months term.



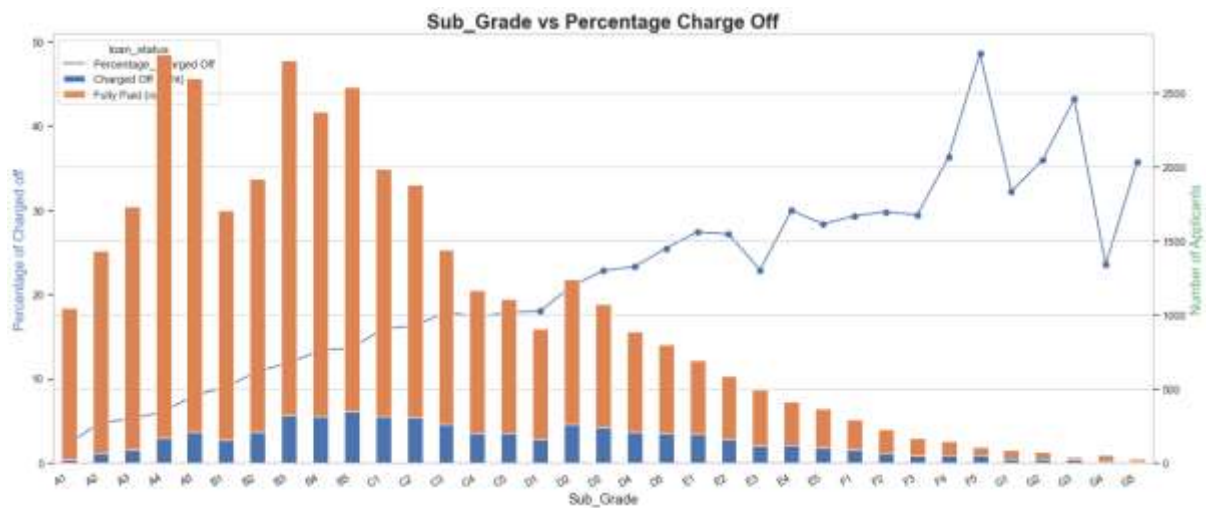
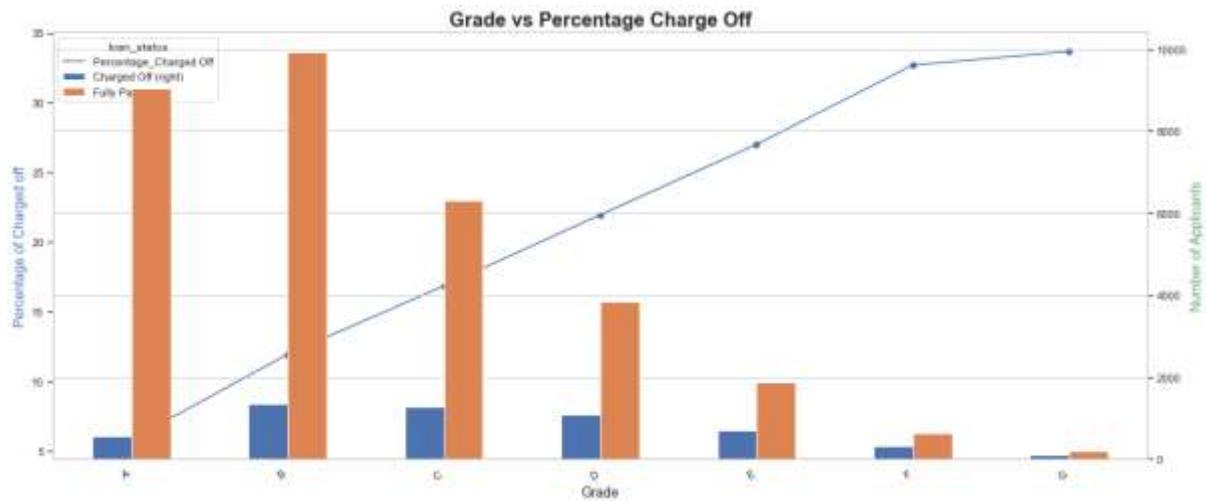
- Average Interest Rate is increasing for charged off and fully paid loans year-wise in 36 months term.
- Average interest rate is higher for 60 months term.

## Charged off Percentage as per Loan Purpose:



- Maximum Number of loans are accepted for the purpose of Debt Consolidation.
- Maximum percentage of a loan being charged off is for the purpose of small business.

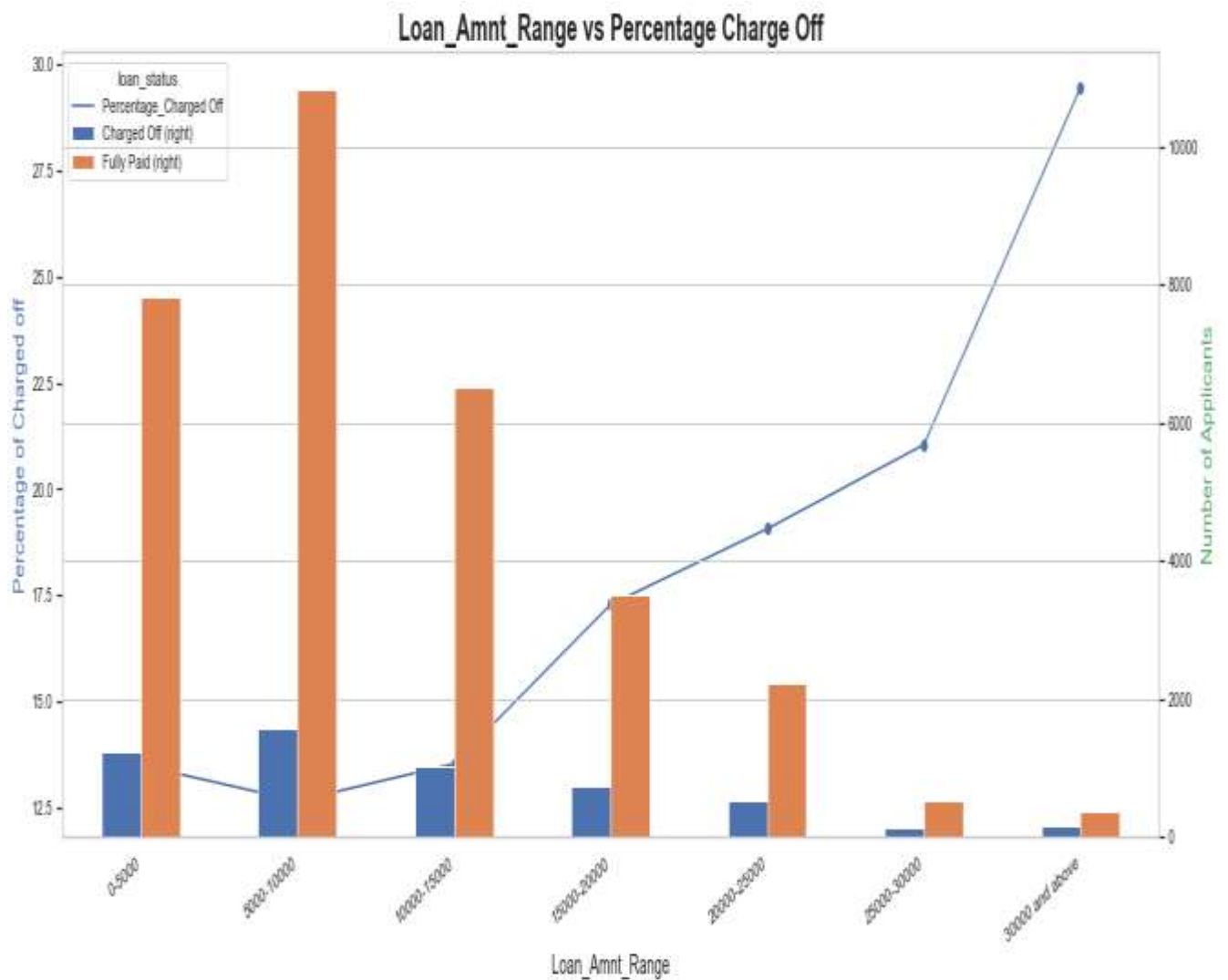
## Charged off Percentage as per Grade:



- Borrowers with Grade A and B loans are safe. Within these the sub-grades A4 and B3 have the highest number of loan applicants.
- Borrowers with Grade E, F, G loans are less safe as compared to others and more likely to be Charged- off.

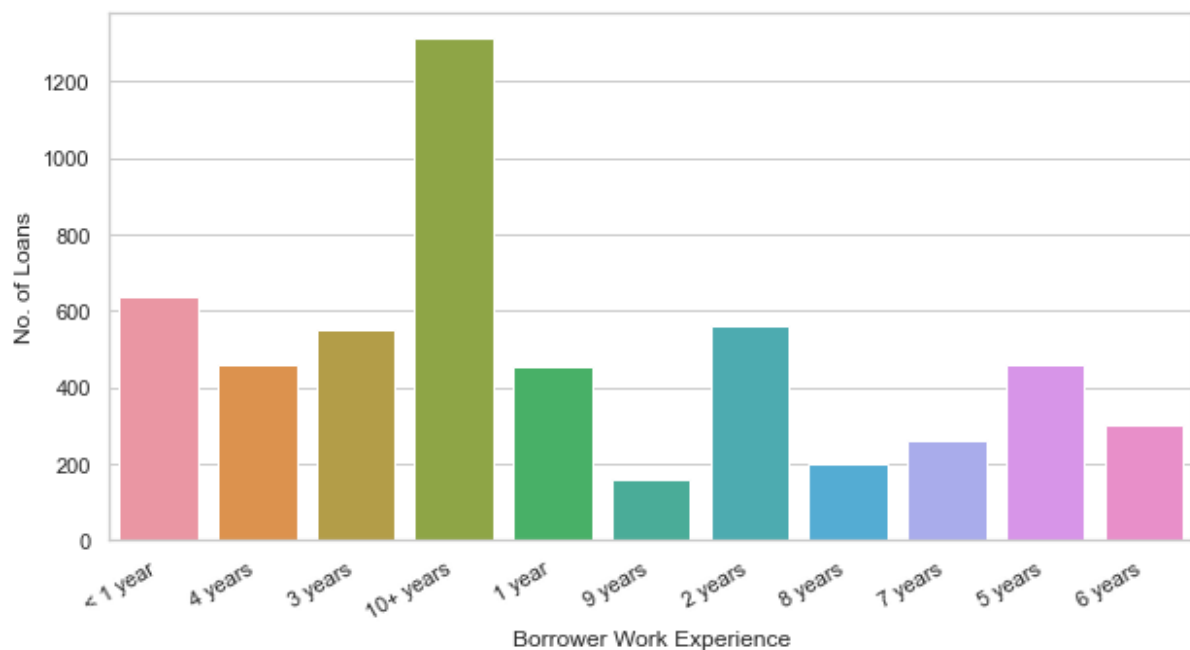
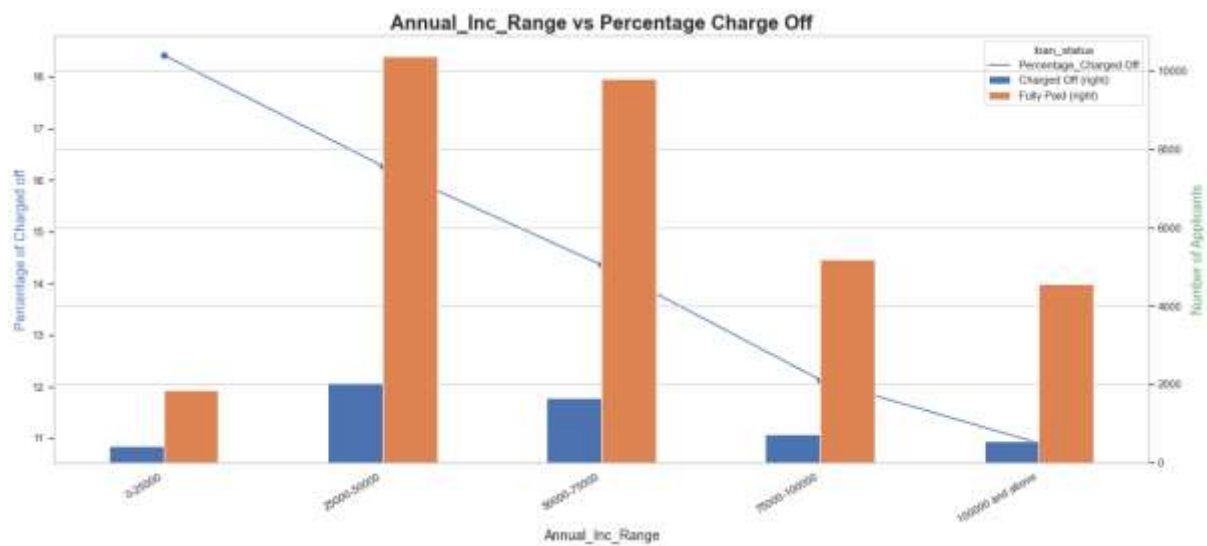


## Charged off Percentage as per Loan Amount:



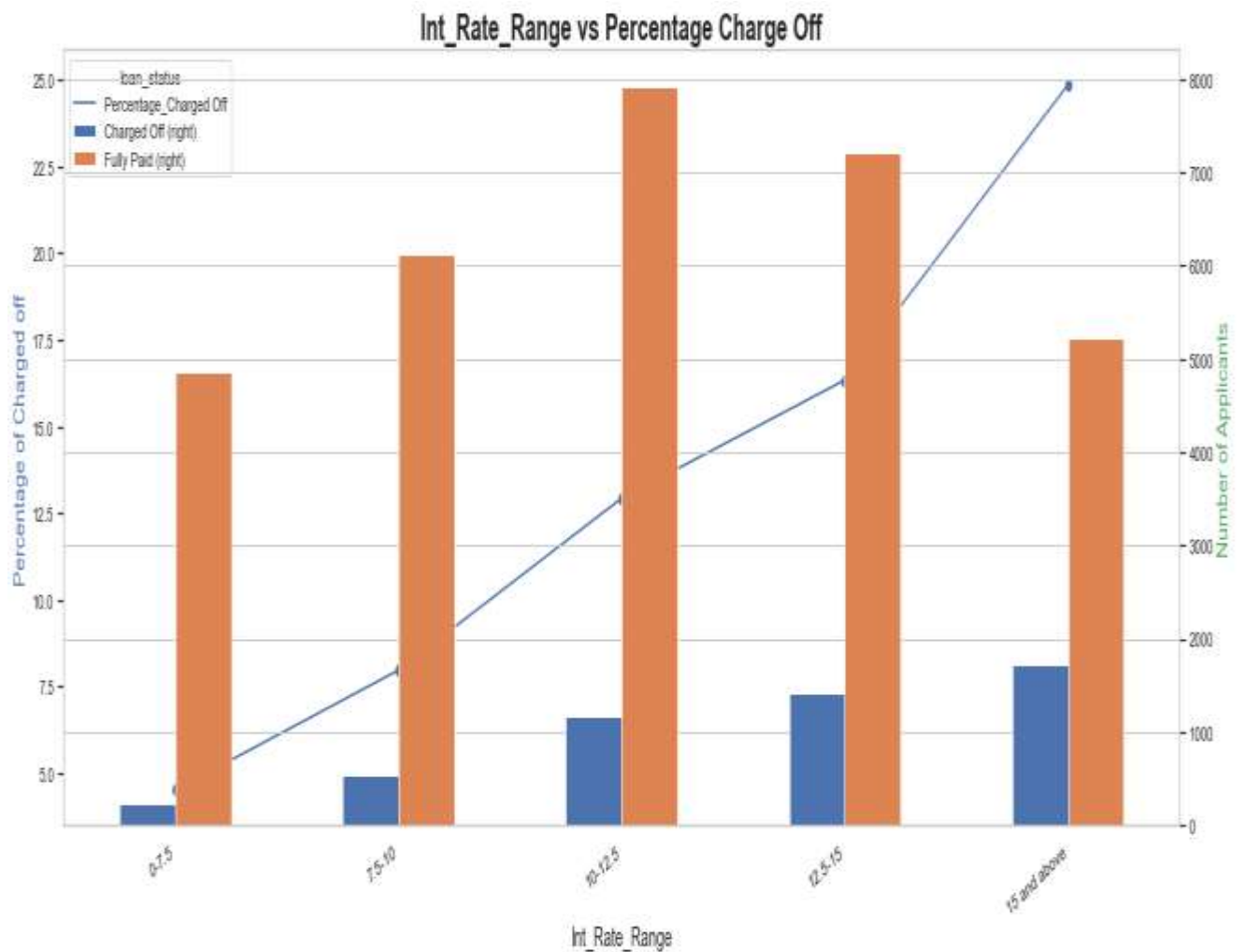
- As the loan amount increases, the probability of loan being charged off increases. The maximum numbers of loans are applied where the loan amount ranges between 5000 and 10000.

## Charged off Percentage as per Annual Income Range:



- Loan Charged off decreases with increase in annual income.
- It is minimum for income more than 100000 and maximum where annual income less than 25000.
- Maximum loans are applied by applicants whose annual income is between 25000 and 75000.
- Maximum number of loans are charged off for people having 10+ years of experience

## Charged off Percentage as per Loan Interest Rate:



- Percentage Charged off is high for high rate of interest rate. for interest rate 15 and above have highest charged off percentage.
- Maximum loans are applied by applicants for the interest rate between 12.5 % and 15%

# Recommendations to Lending Club

- **Percentage Charged off is high for high rate of interest rate. for interest rate 15 and above have highest charged off percentage**
- **Lesser is the Annual income, higher is the probability of charged-off loans**
- **Loans with Grades like E,F,G are more likely to be charged-off.**
- **Loan borrower living on rent and with mortgage are more prone to be defaulter.**
- **purpose of small business has highest percentage of loan charged -off.**
- **Maximum number of loans are charged- off for borrower with 10+ years of experience.**
- **Maximum number of loans are charged-off where verification status is verified.**
- **Interest rate are higher for the loan term 60 months which is contributing major chunk of defaulters.**
- **Major loan defaulters are from state of NV in terms of percentage charged off and CA in terms of total number of charged off loans.**