LENDING CLUB CASE STUDY

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Lending Club Case Study

Background:
Lending Club is the largest online loan marketplace, facilitating personal loans, business loans and financing of medical procedures. It's largest source of credit loss is lending loans to 'risky' applicants.

Problem Statement:
Lending Club wants to identify the risky loan applicants, so that such loans can be reduced thereby cutting down the amount of credit loss. Our aim is to find the driving factors behind loan getting default.

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 describes the meaning of each variable used in Loan Data Set.

Data Cleaning:

1. We dropped the columns having 100% null values.

2. We dropped the columns which is not relevant to out analysis(After loan approved fields like total_pymnt etc)

3. We have removed all data where loan status is "Current" as this is not relevant to our analysis.

## Categorical Variables vs Percentage of Charged Off:

The main motive of this use case is to find what parameters are impacting Loan Status the most i.e. if an applicant will successfully complete the loan term or default. So, we will be using a new term Percentage of Charged Off that will be equal to:

Percentage of Charged Off = (Number of Applicants Charged Off / Total No. of Applicants)*100

We will calculate this percentage w.r.t each column in bivariate analysis & will see how the Percentage of Charged Off changes with
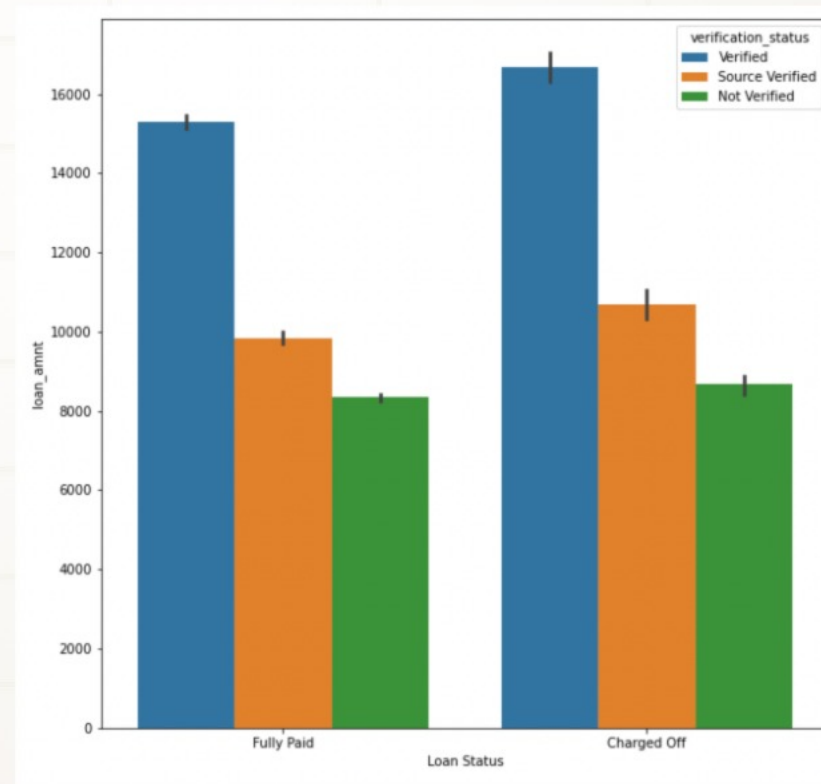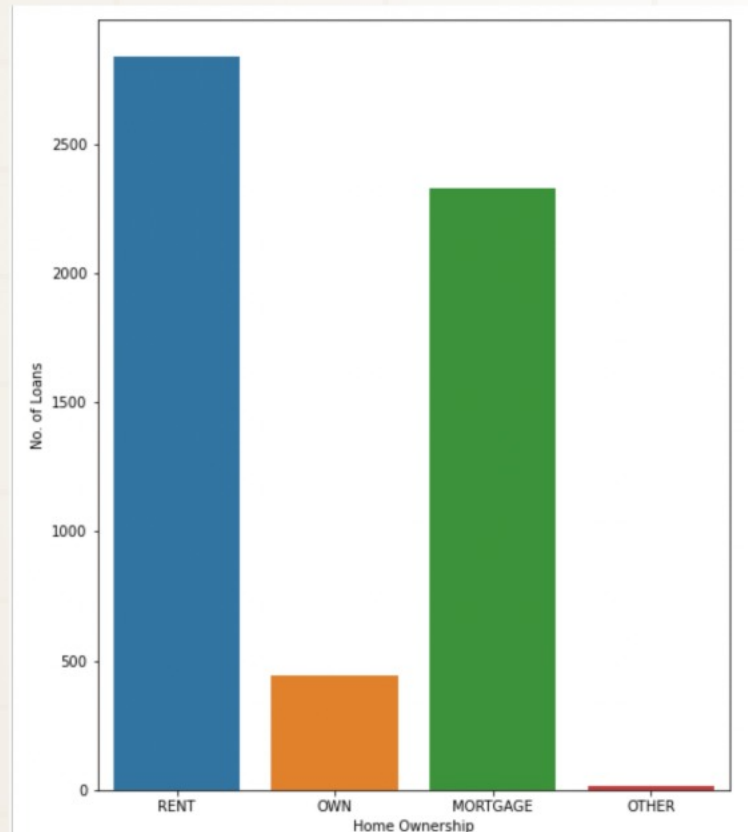these columns.

Loan Analysis
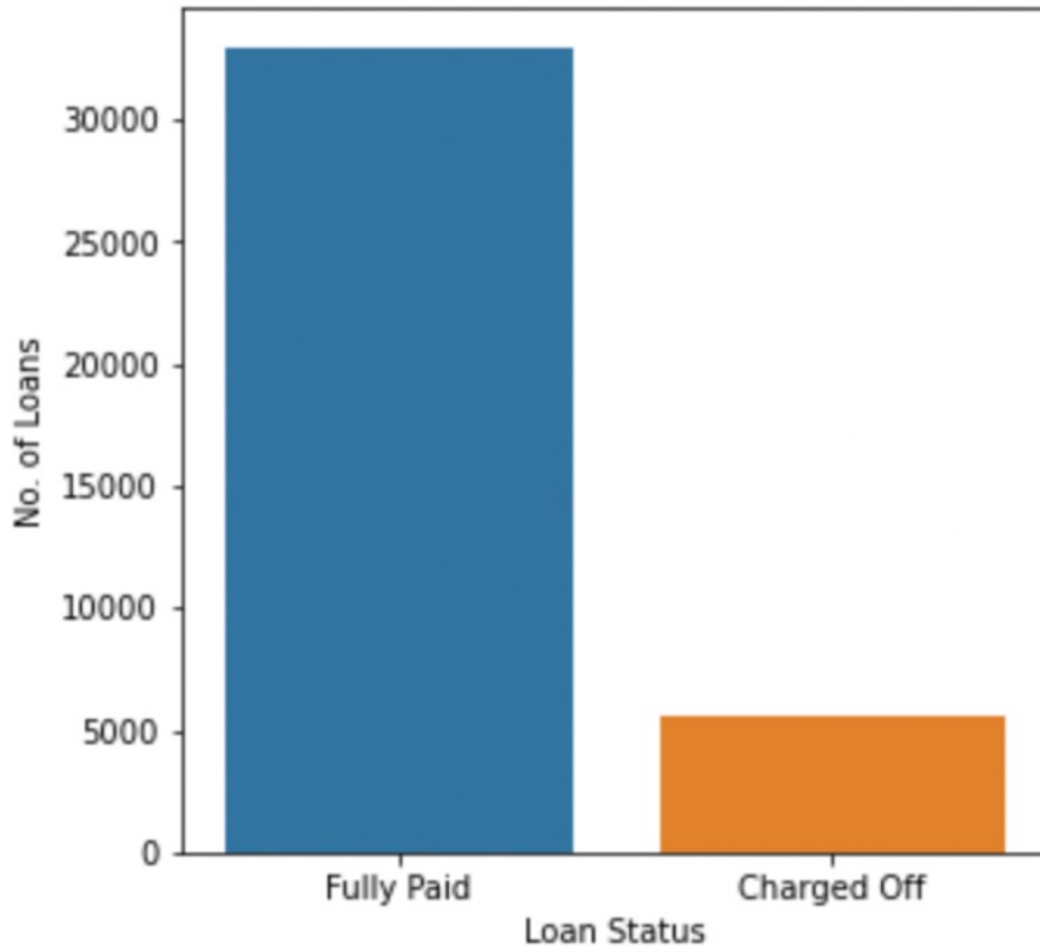

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Fully Paid      0.854136
Charged Off     0.145864
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1. More than 30000 loans are fully paid.
2. 14.5 % of the total loan is charged off

Verification Status & Home Ownership as per Loan Status

1. Max number of loans are charged off where verification status is Verified.

2. Max number of loans are charged off for people who are living on rent.

Year & Month Wise trends of Loans

1. No. of loans, fully paid and charged off are increasing year-by-year.

2. 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, applicants apply more loans towards the end of year
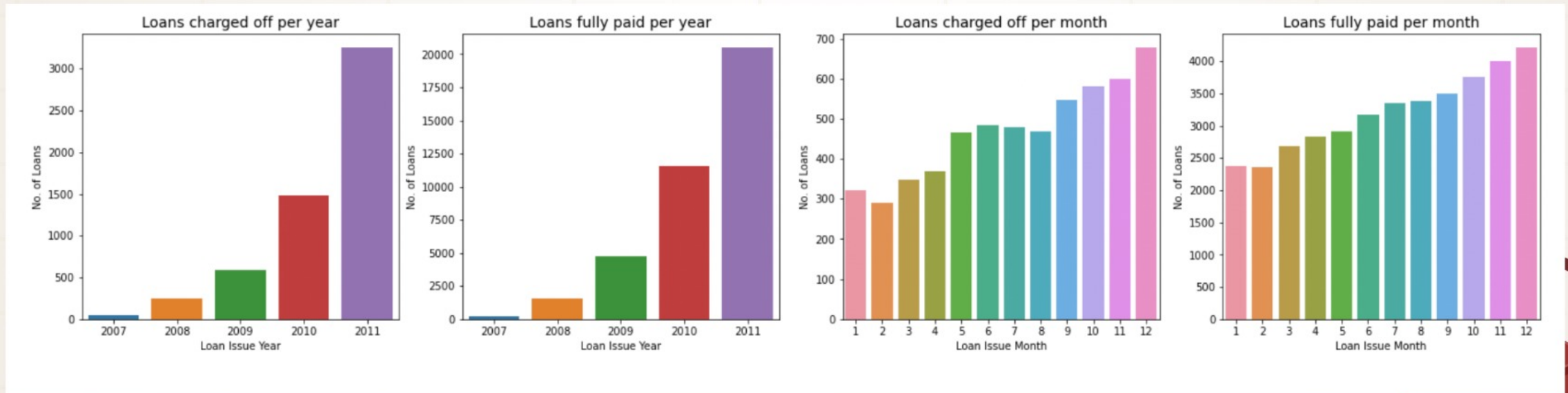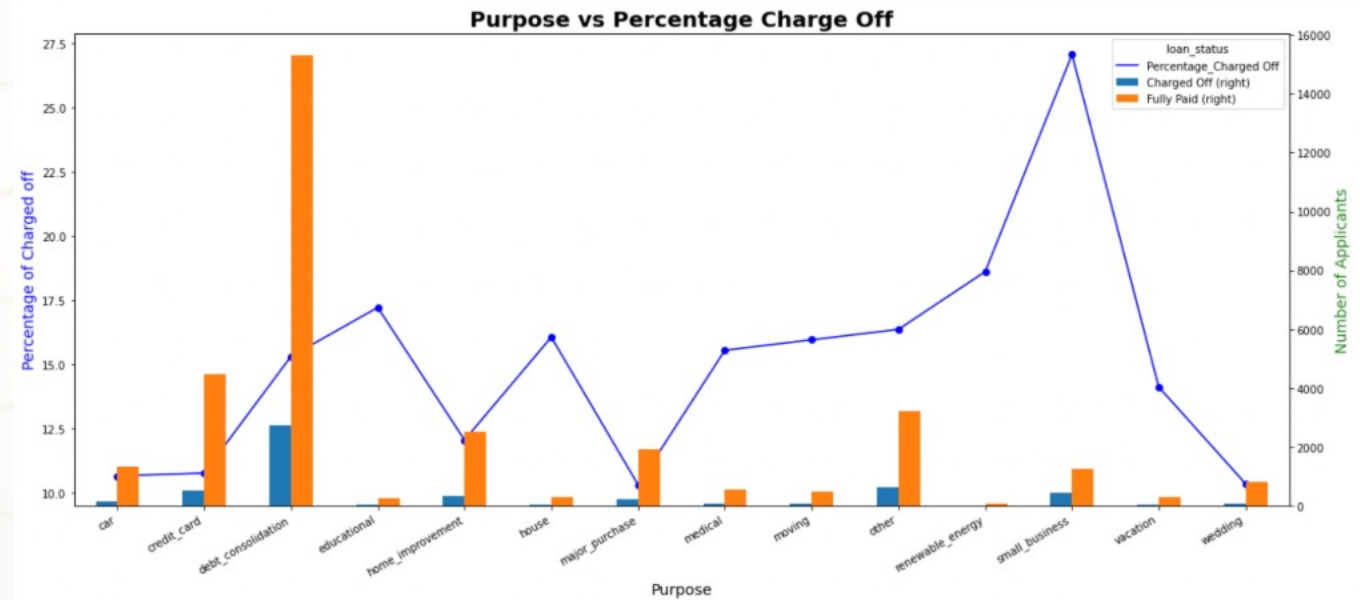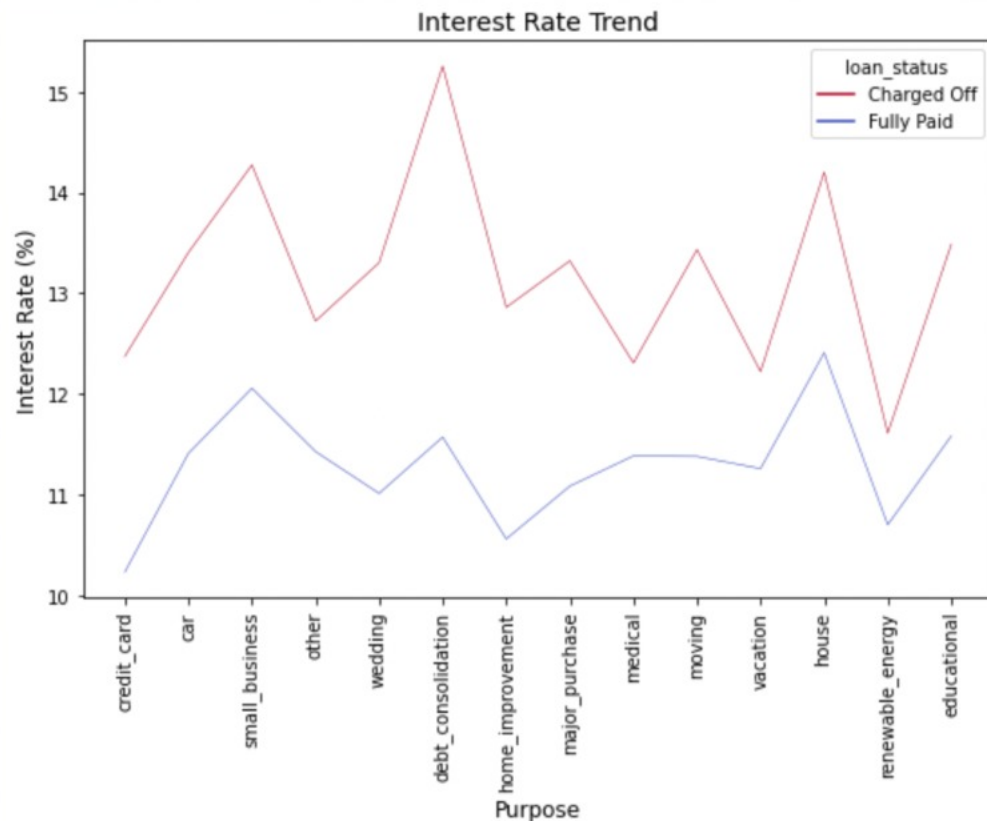
Loan Term Analysis

1. The interest rates are higher for 60 month term.

2. The average loan amount is similar for both the terms for both loan statuses.
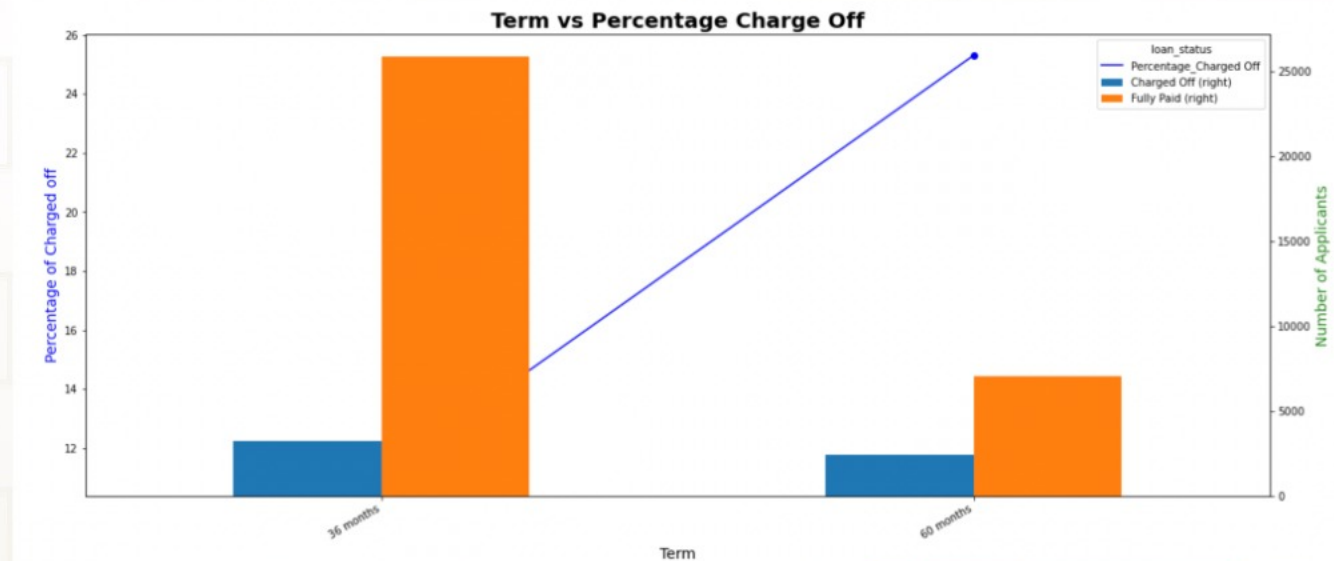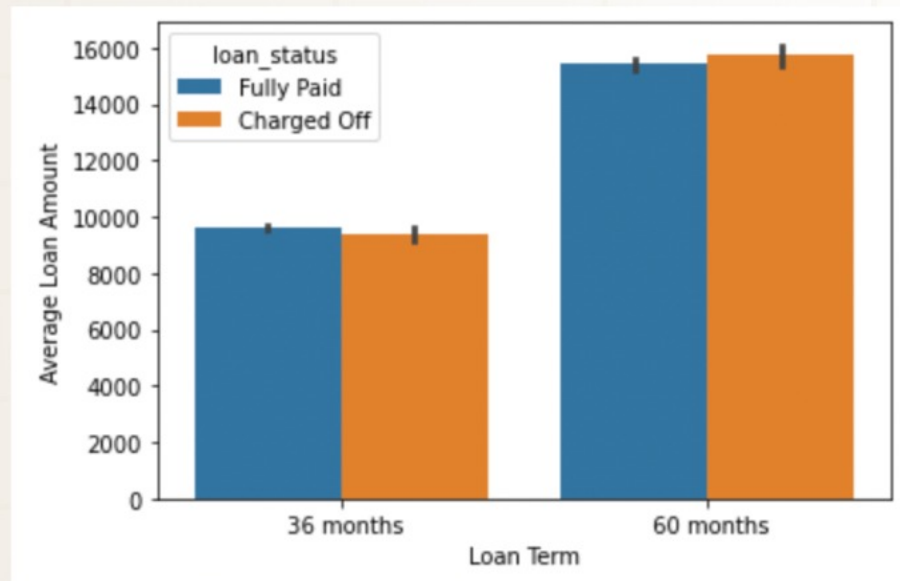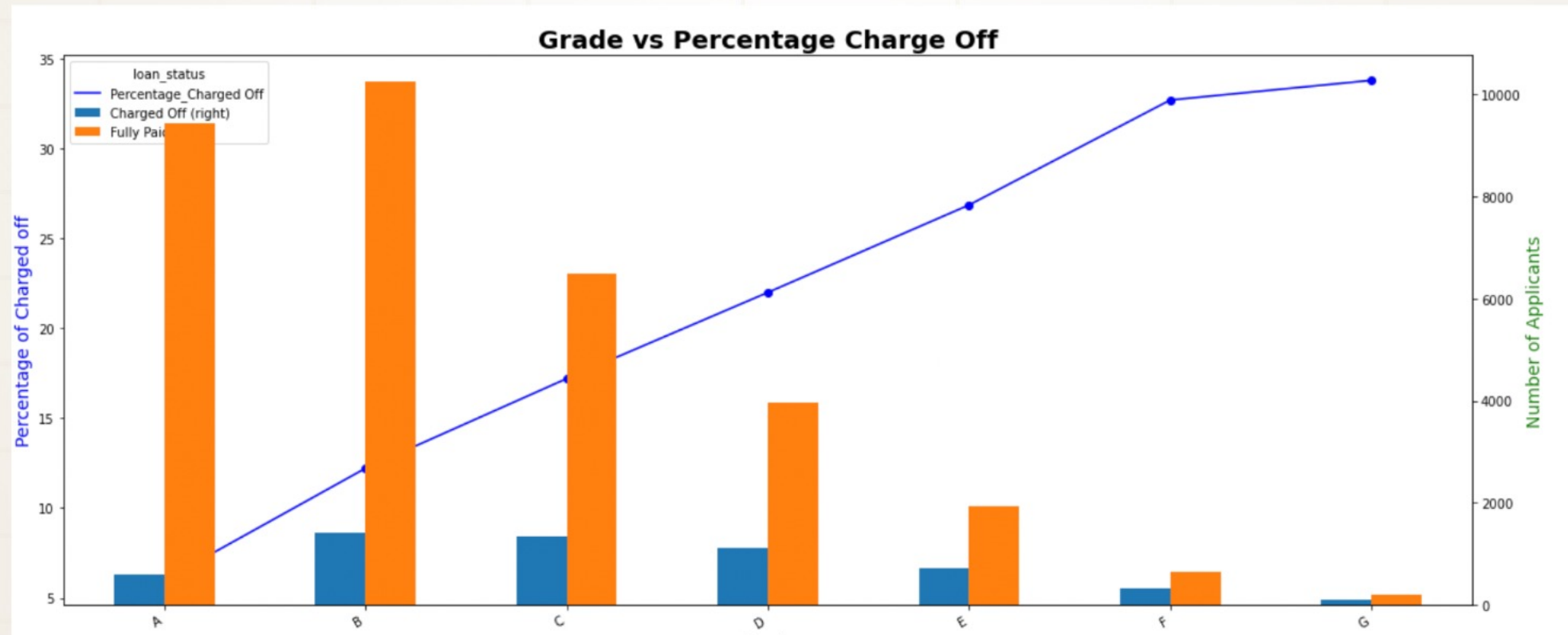
Charged off Percentage as per Loan Purpose

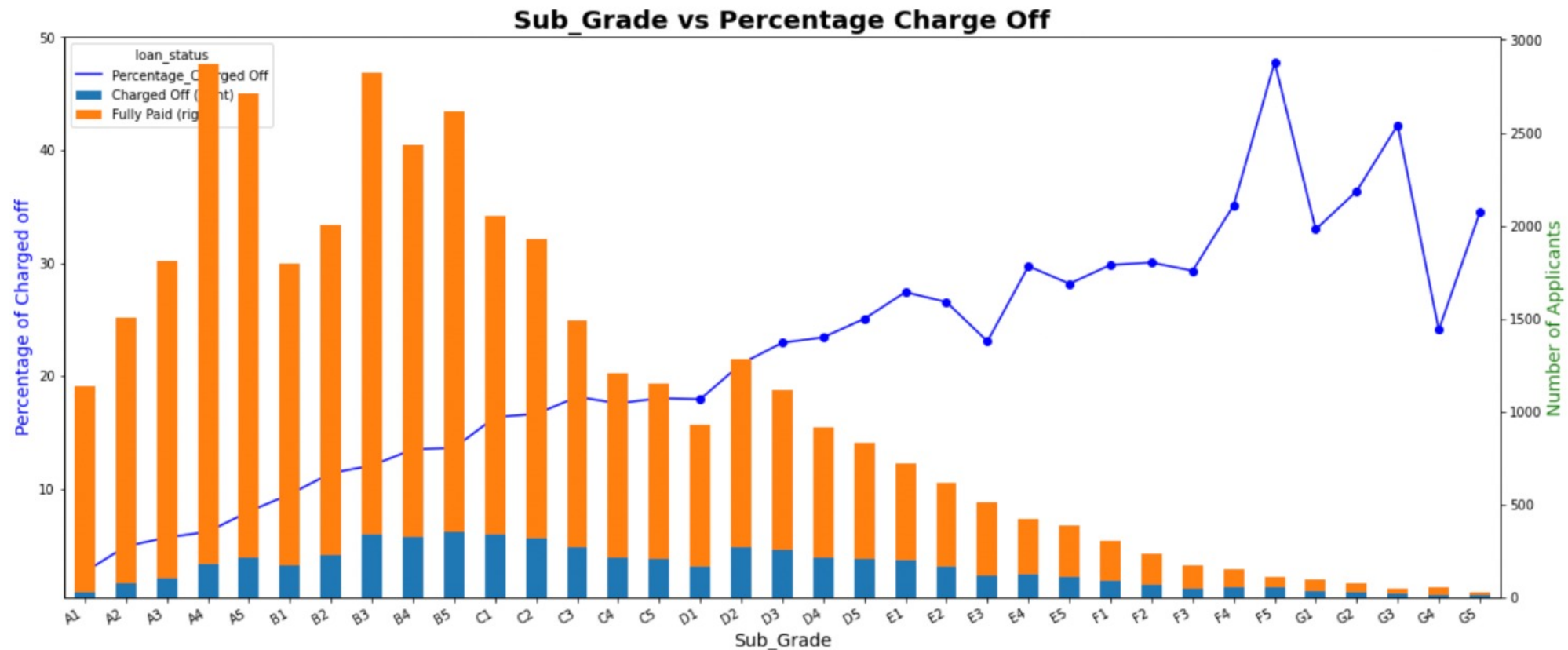Interest Rate is higher for charged off loans across all purposes.

Charged off Percentage as per Grade

1.Grade A and B loans are safe. Within these the sub-grades A4 and B3 have the highest number of loan applicants.

Charged off Percentage as per Sub-Grade

1. Grade E, F, G loans are less safe as compared to others.
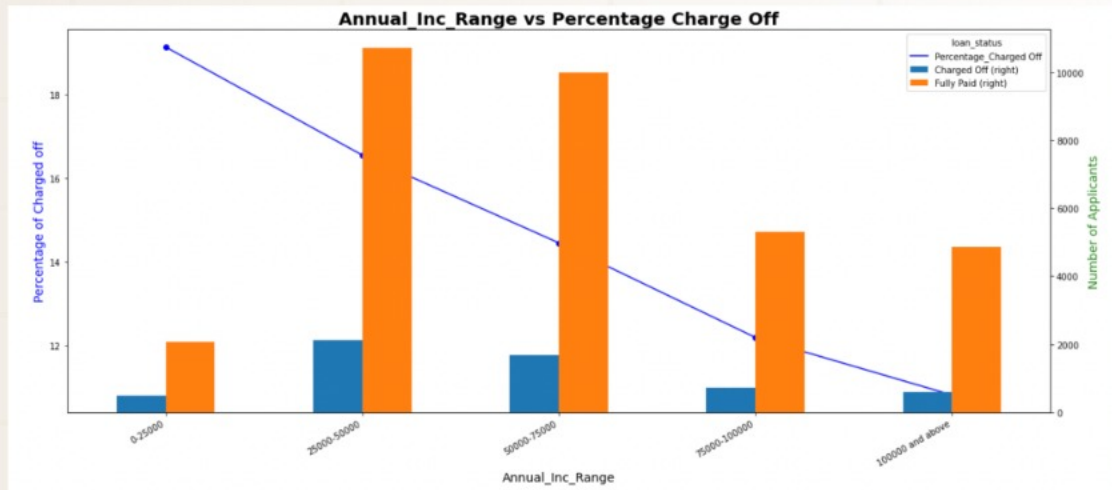
Charged off Percentage as per Loan Amount

As the loan amount increases, The probability of loan being charged off increases. It is maximum, 29.47% for the amount of 30,000+
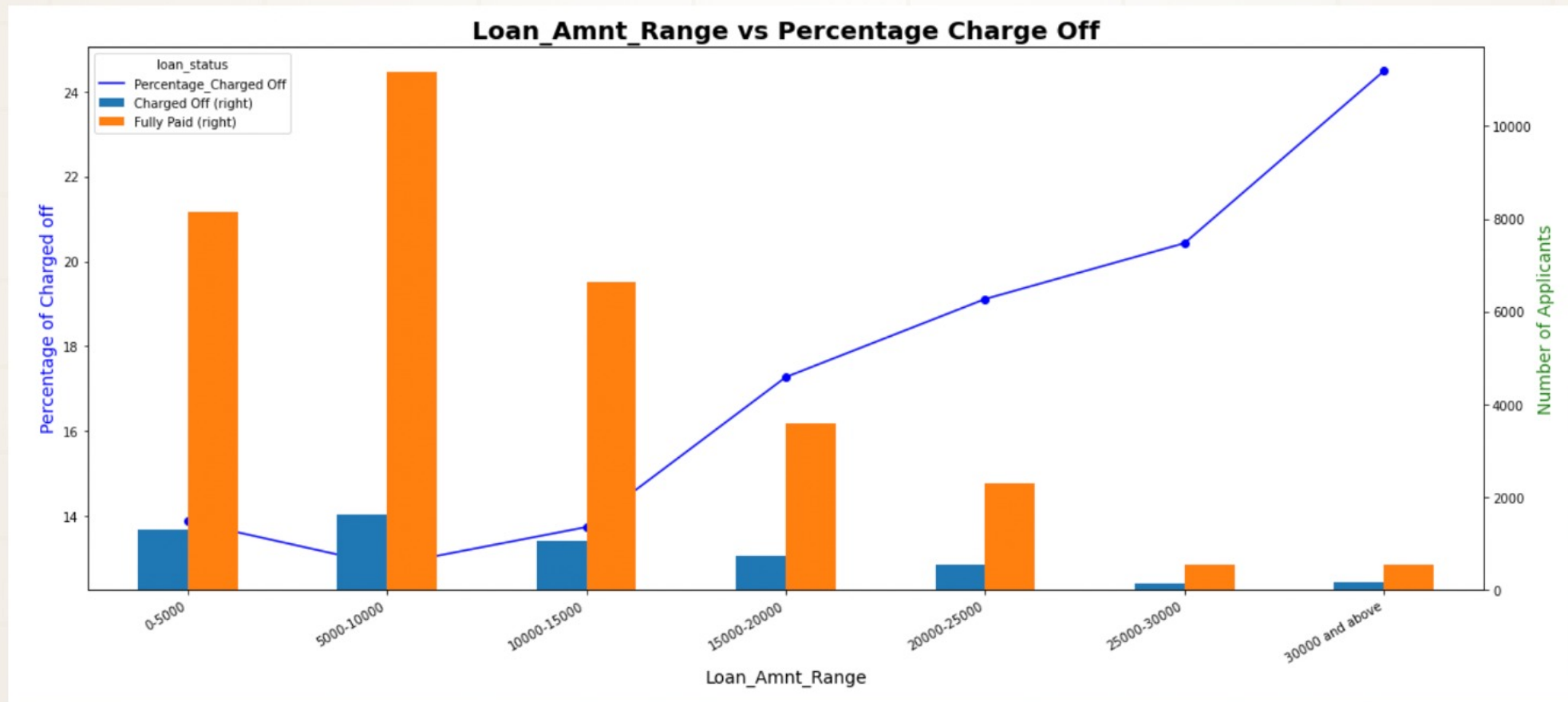
Charged off Percentage as per Annual Income Range

1. As the Annul income increased, percentage of loan default is decreasing.

2. Max no. of loans are charged off for people having 10+ years of experience.
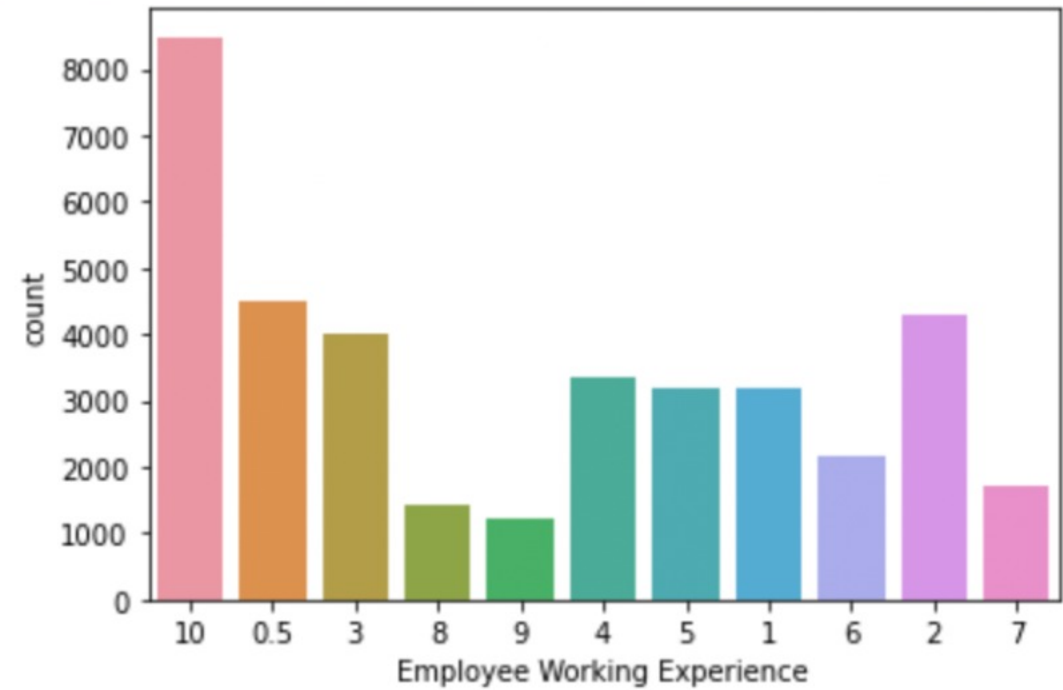
Charged off Percentage as per Loan Interest Rate

1.As the Interest Rate is increasing, The % of loan getting charged off is also increasing.It is minimum for interest rate below 7.5.

2.Maximum loans are applied by applicants where the interest rate is between 10 and 15%.
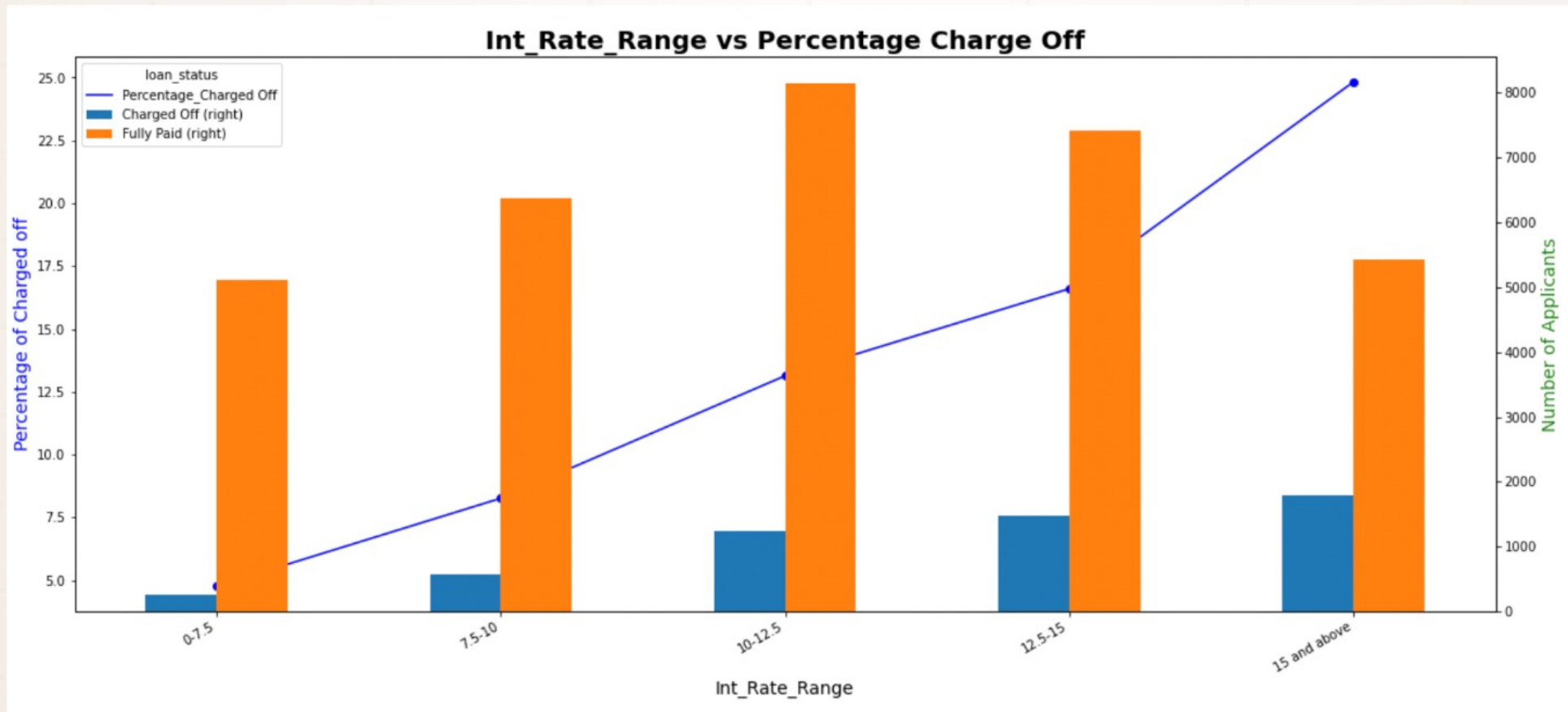
Correlation Heat-Map

1. Loan Amount, Funded Amount, Funded Amount invested and installment are highly correlated with each other.

2. Annual Income is negatively correlated with DTI.
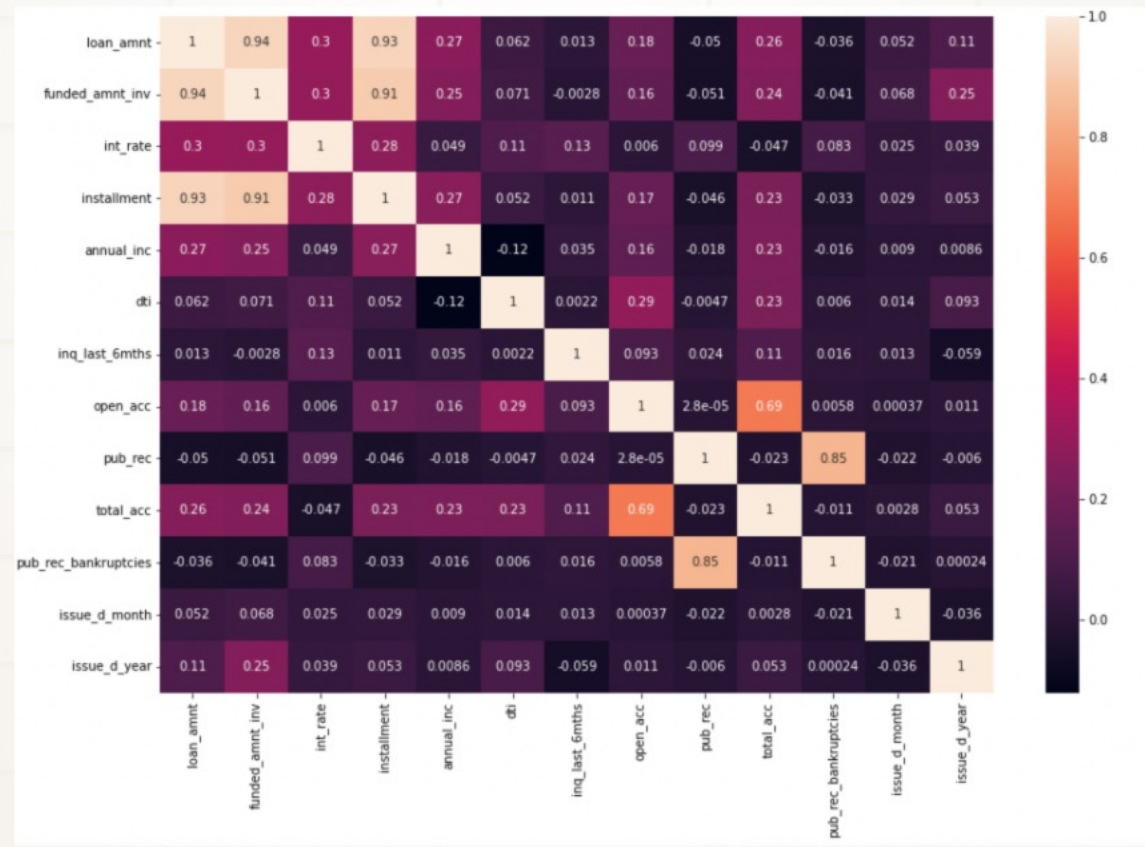
Recommendations to Lending Club

1. Lending Club should consider accepting more loans from applicants whose annual income is greater than 100000 as their probablity of charge off is minimum.

2. Higher the loan amount, the higher the chances of loan being charged off. Therefore Lending club should consider accepting loans of lower amount.

3. The maximum no. of loans, 12410 are applied where the loan amount ranges between 5000 and 10000. For this range the probablity of the the loan getting charged off is very less. Hence the risk factor is low for lending club.

4. Lending Club should be wary of giving loans for the purpose of Small Business as the percentage of a loan being charged off is maximum 27.1%. Accepting loans for the purpose of Weddings,major purchase, car and credit card is highly recommended.

5. Lending Club should consider accepting more loans where interest rate is less than 10% as their probablity of charge off is minimum.

6. Lending Club should consider accepting more loans of grade A and B.

7. Lending Club should consider accepting more loans from people who owns a house as the probality of defaulting is less.

8. Lending Club should accept more loans for the term of 36 months as the % of charged off loans is less and the no. of loan applicants are more. Also the avg fully paid loan amount is increasing over the years and avg charged off lon amount is decreasing over the years.