LENDING CLUB CASE STUDY SUBMISSION

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ABSTRACT

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. Lending Club wants to understand the driving factors behind loan default. The company can utilize this knowledge for its portfolio and risk assessment.

The objective is to identify the **driving factors (or driver variables)** behind loan default, i.e. the variables which are strong indicators of default. If one is able to identify these risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss.

The approach is to clean the given datasets and analyze it thoroughly by doing an exploratory data analysis and narrow down our analysis on each step to get the desired results. This analysis will give a detailed and visualized view of all the findings after which lending club can make rightful decisions to make profit and decrease the defaulters.

PROBLEM SOLVING METHODOLOGY

Data Cleaning

- Remove the columns where all null, random and only 1 unique values
- Impute missing values and outlier treatment
- Standardize the columns

Univariate Analysis

- Make some data and type driven variables
- Check distribution count, and summary of variables

Segmented Univariate Analysis

- Analyze variables against another variables
- Create intervals of continuous variable

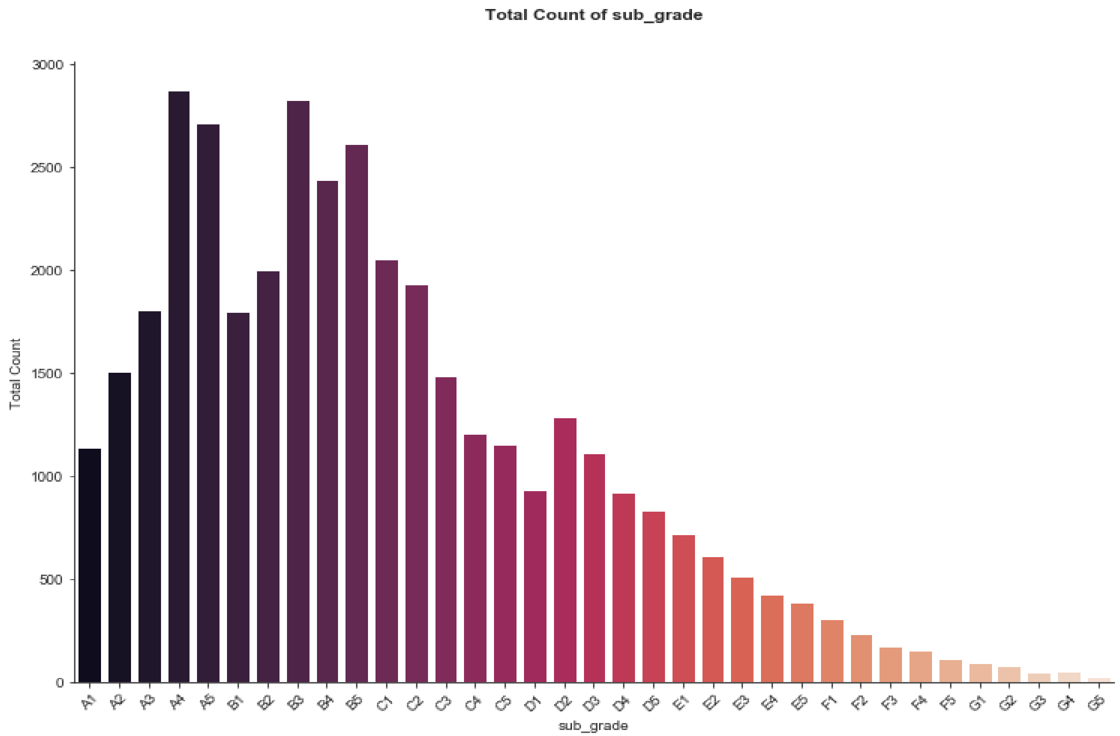
Bivariate analysis

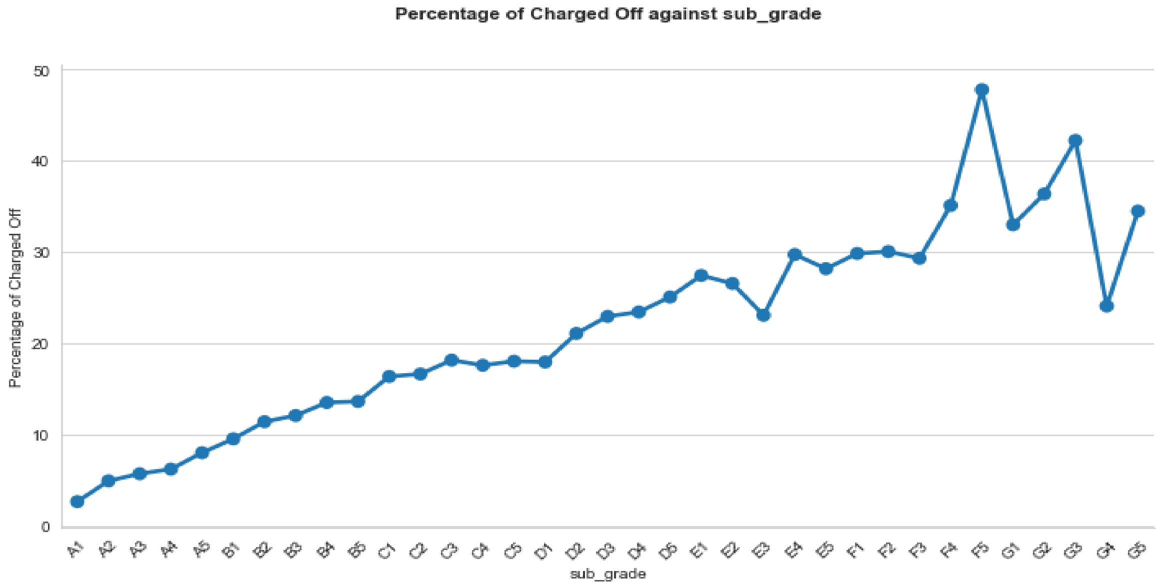
- Do correlation analysis Check how two variables affect each other or a third variable

Results

- Publish all the insights and analysis
- Conclusions are made for important variables which affect defaulters

ANALYSIS

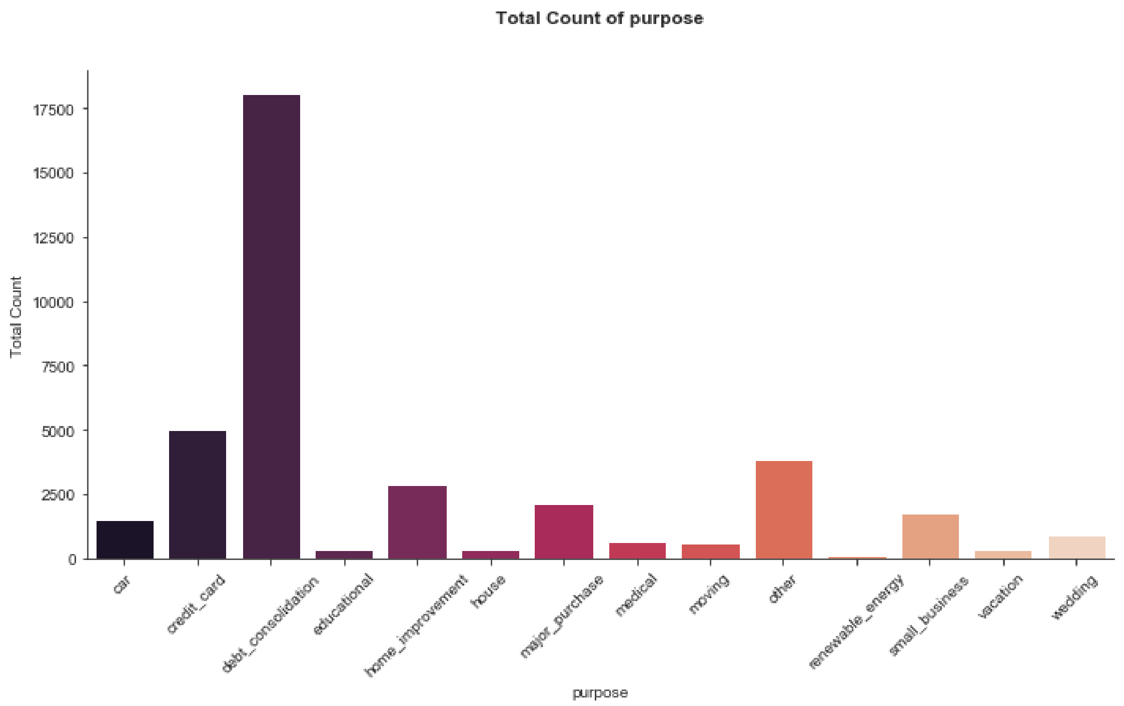


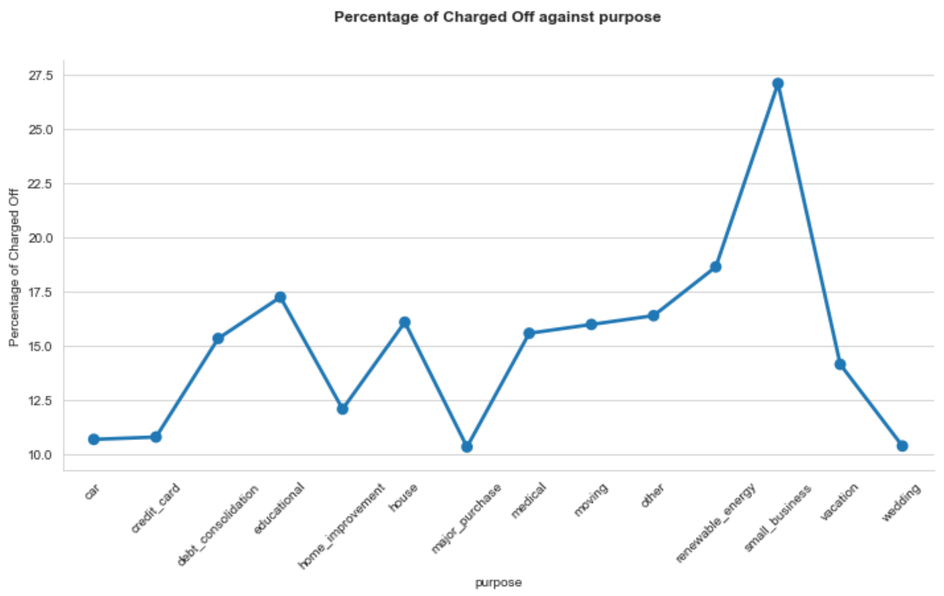


LC is giving more high quality loans having grades (A, B, C)

Default rate is high for lower quality loans

ANALYSIS

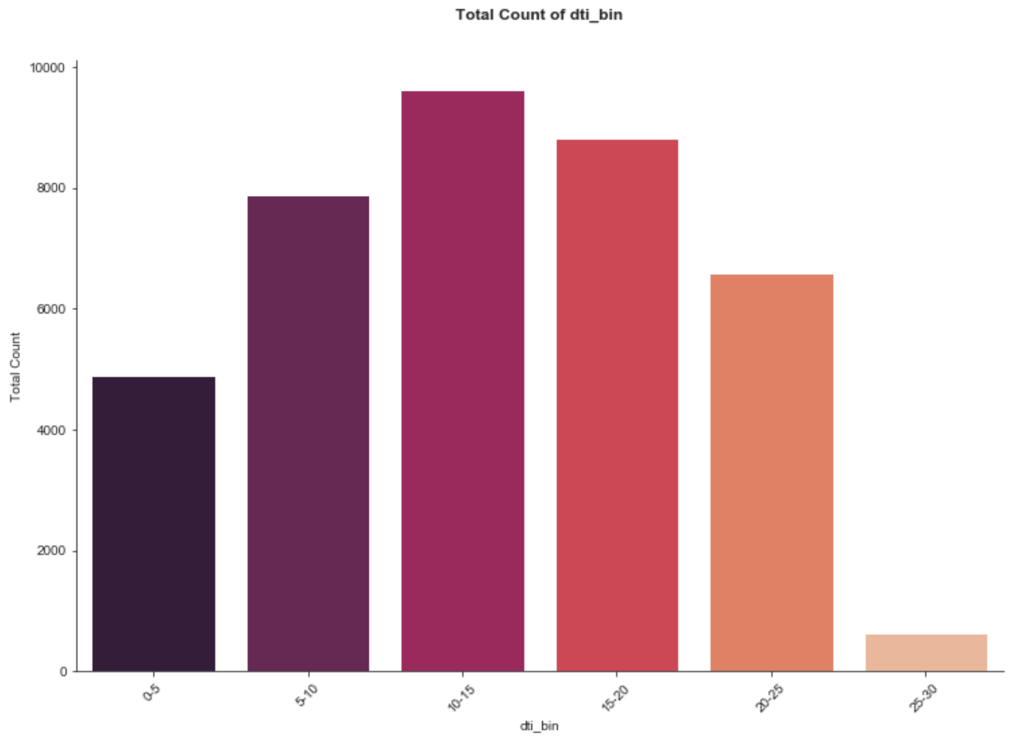


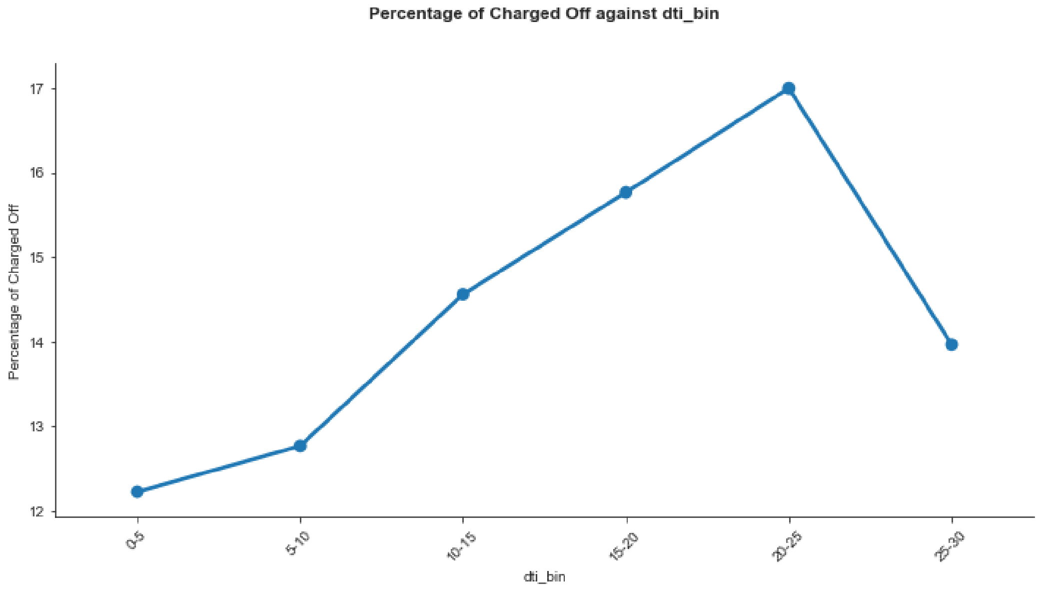


Most no. of loans are for purpose – debt consolidation

Customer who took loan for small business purpose have very high default rate

ANALYSIS

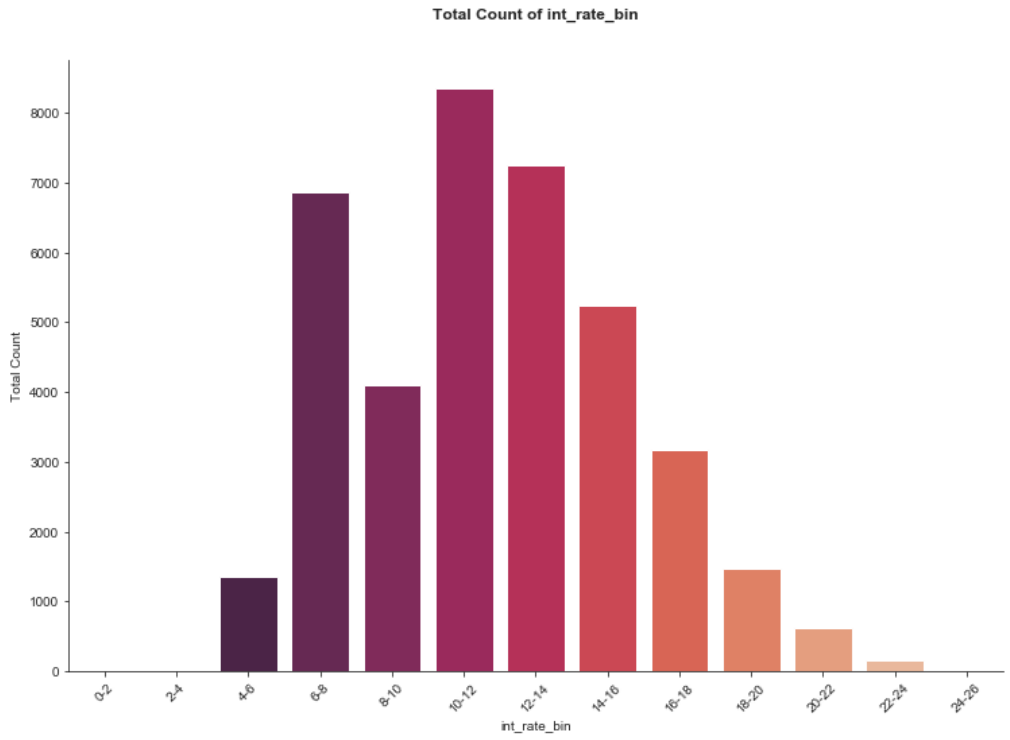


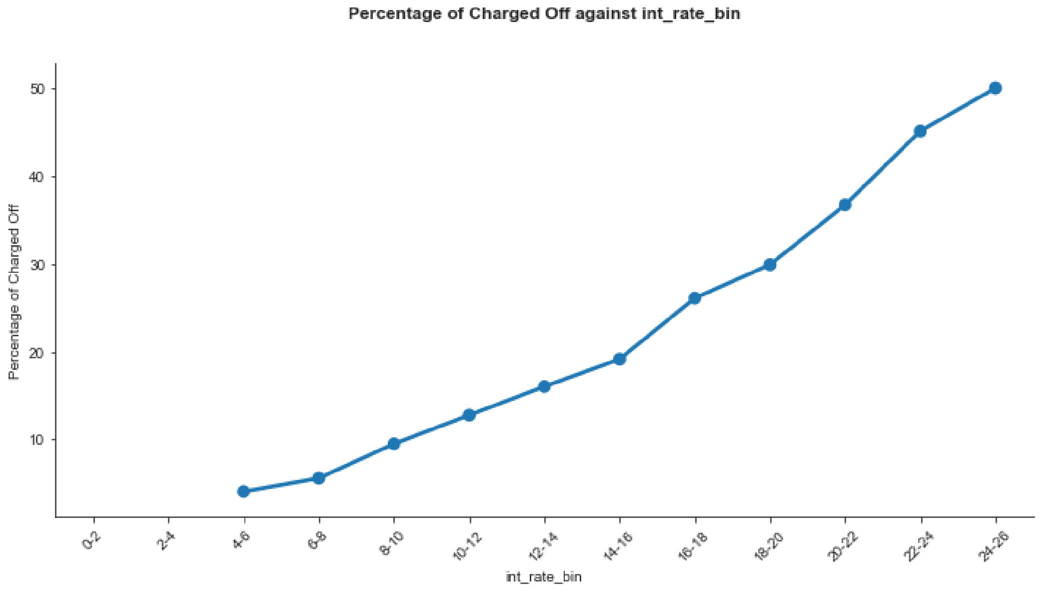


LC is giving more loans to customer having dti range 5-20.

Default rate is high for customers having high dti.

ANALYSIS

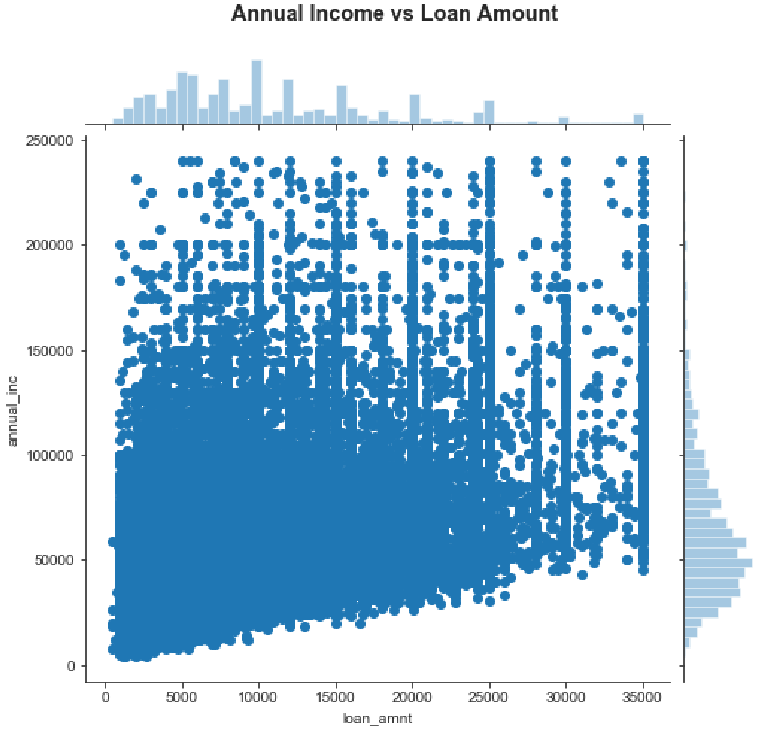


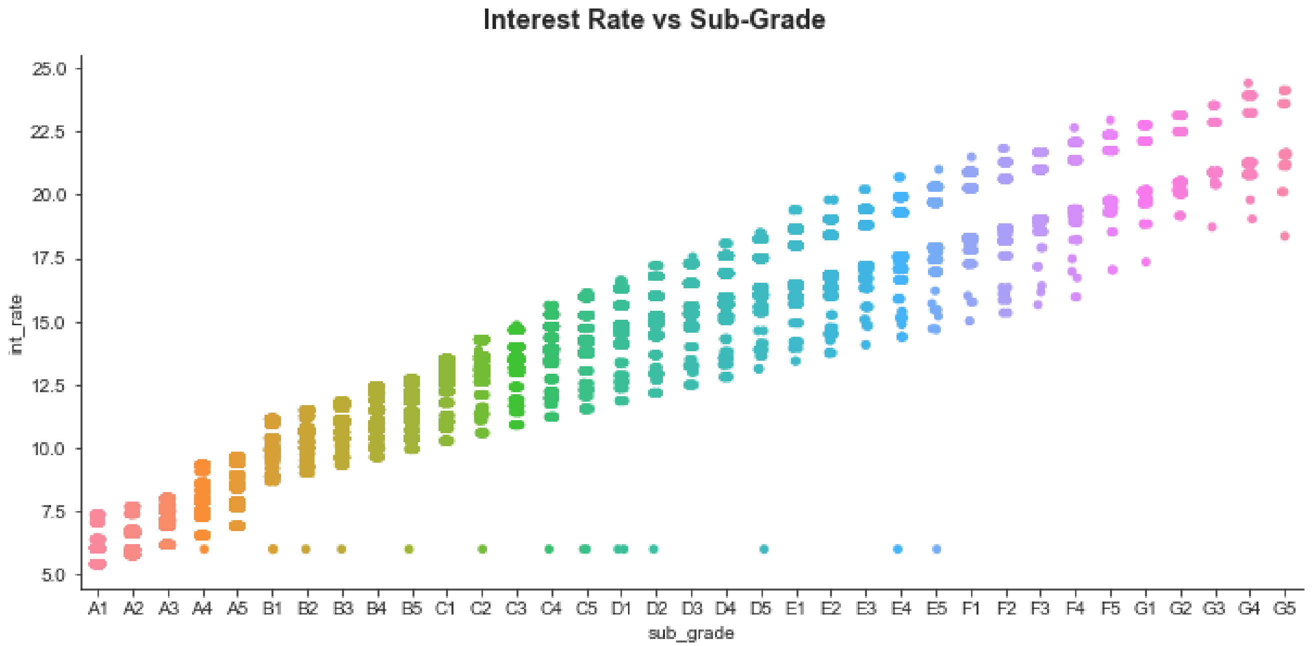


LC is giving more loans with interest rate in range 11 to 17.

6-11 is a good range for interest rates, above that default rate increase monotonically.

ANALYSIS

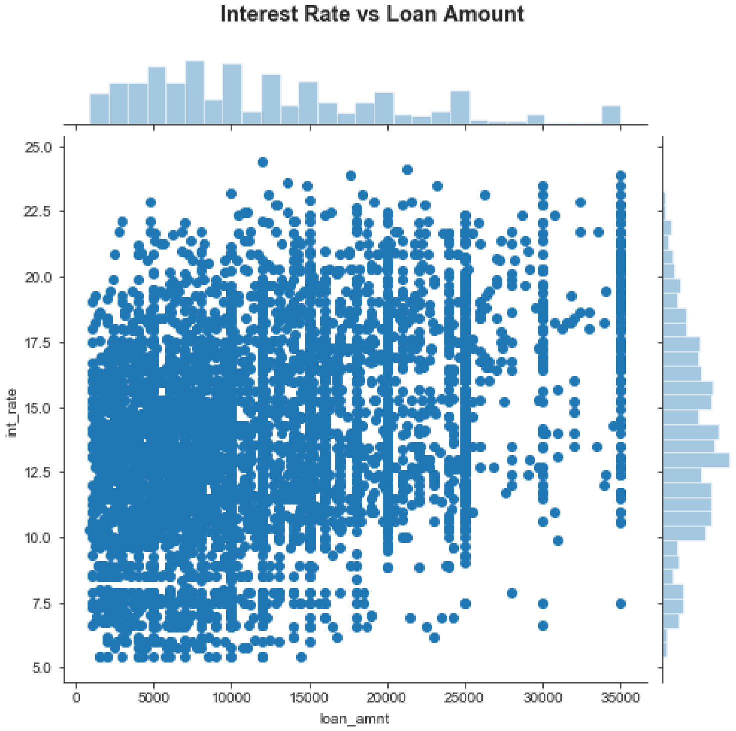


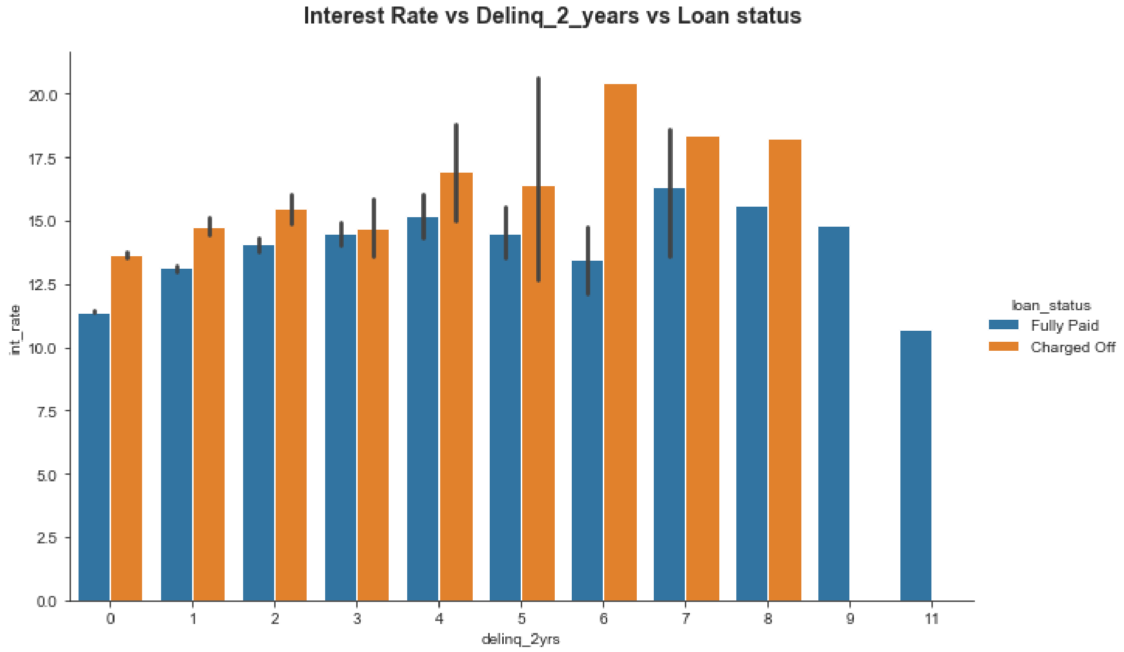


LC is giving loans where loan amount is greater than customer's annual income

As checked earlier, lower quality grades have more no. of defaulter. This is because LC charges more interest on it.

ANALYSIS





The density of defaulters is more in the range where interest rate is high and loan amount is small

It is observed that the interest rate increases with increase in delinquency

ANALYSIS

More Observations:

1. There are around 15% customers who are defaulters
2. LC is giving higher interests to the lower grades. As their charge off ratio is high, this happens to be a good measure to reduce number of defaulters.
3. We have observed that as revolving utilization line increases, LC increases the interest rate too.
4. It has been observed that those who are earning less are given loan worth of high amount, giving the company more business risk.
5. More loans are given in Last quarter of the year. They have a consistent high charge off ratio.
6. LC has given higher number of loans to more recent earliest credit line.
7. We have observed that the loans having amount greater than 20k has more business risk as compared to the lower range of loans.
8. The loan applicants having annual income range 0-60k are more prone to become defaulters.
9. Those applicants who have home_ownership as OTHER and RENT have higher charge off rate than others.

RECOMMENDATIONS

1. Reduce giving loans where loan amount to annual income ratio is greater than 0.3.
2. Reduce number of loan approvals where purpose is small business.
3. LC should take steps to verify the income properly to reduce the Charge Off percentage as it is observed that more high amount loans, given to the peoples having verified income are defaulters.
4. Reduce approving loans to people having more number of public record bankruptcies public records.
5. Stop approving loans where revolving line utilization rate greater than 70%.
6. Charge higher interest rates for loans having dti greater than 20.
7. Reduce the loan amount to the people having lower income but asking for high loan amount.