Lending Club Case Study
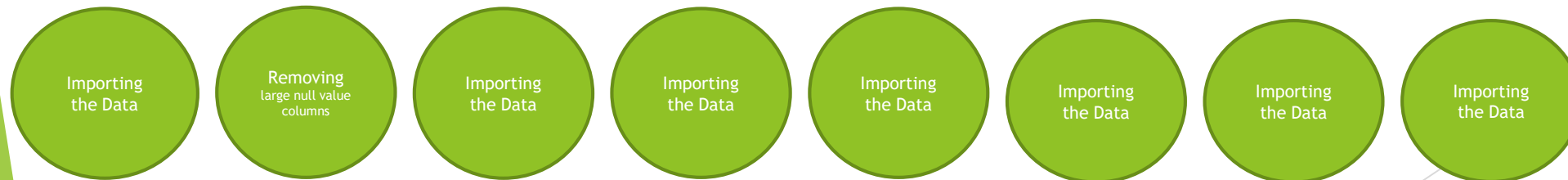
Abhishek Kumar Pandey

<u>Objective</u>

▶ The Objective of this case study is to implement EDA technique on a real world problem and understand the insights and present in a business first manner via presentation.
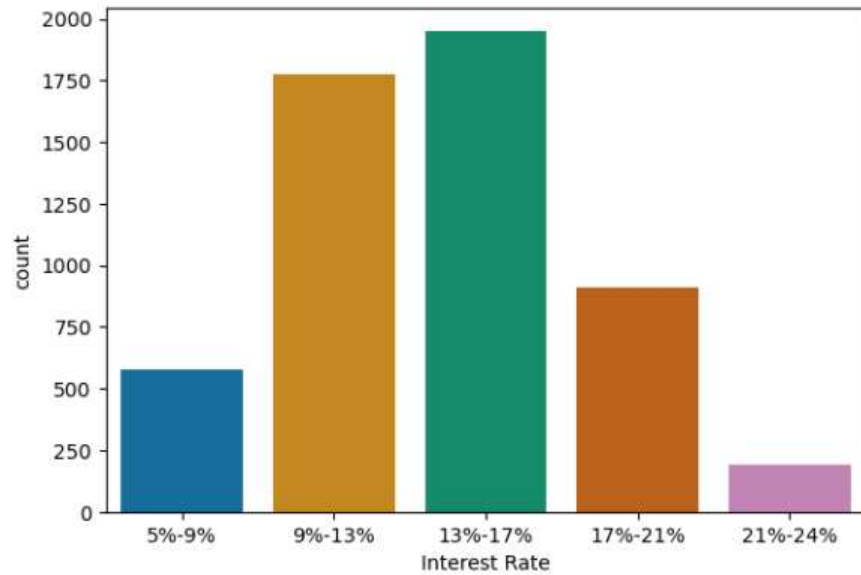
Benefits of the case study:

▶ Gives a idea about how EDA is used in real life business problems.

▶ It also develops a basic understanding of risk analytics in banking and financial services.

▶ How the data is used to minimize loss of money while lending it to clients.

▶ It improves our understating of visualization and what charts to use for real life data.

Business Understanding

▶ The business objective is to take a decision whenever they receive a loan application whether to reject or approve based on certain variables.

▶ **Dataset Details:**

▶ The data given below contains information about past loan applicants and whether they 'defaulted' or not. Data has details regarding approved loan not the rejected ones. It has 3 status of loan which is Fully Paid, Current and Charged-Off.

▶ **Data Clean-up and preparation process:**

Importing the Data

Removing large null value columns

Importing the Data

Importing the Data

Importing the Data

Importing the Data

Importing the Data

Importing the Data

# Interest rate with respect to the interest rate bins created

The count of loan taken is showing spike with Interest rate range in 13% - 17%
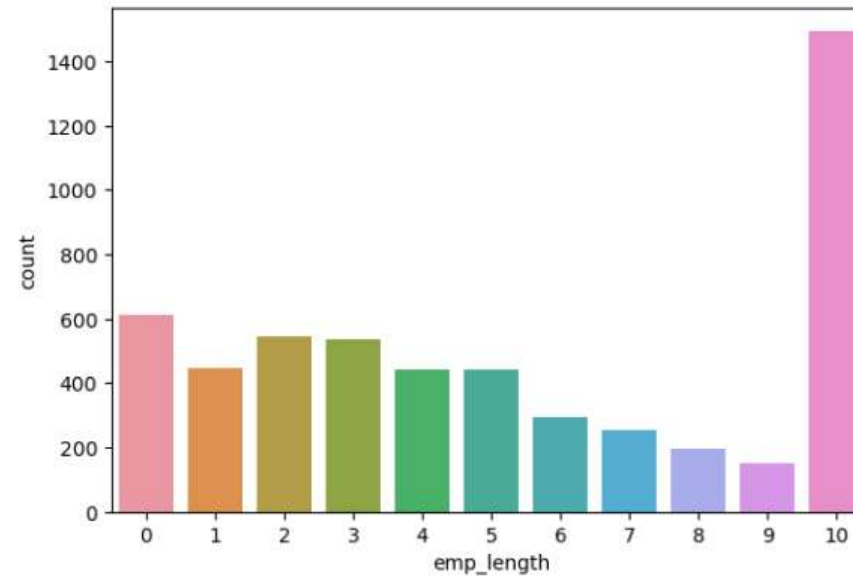
Loan taken is showing huge spike with employee having maximum employment history and the most likely spike is in within those who are with zero employment history (may be looking for job)
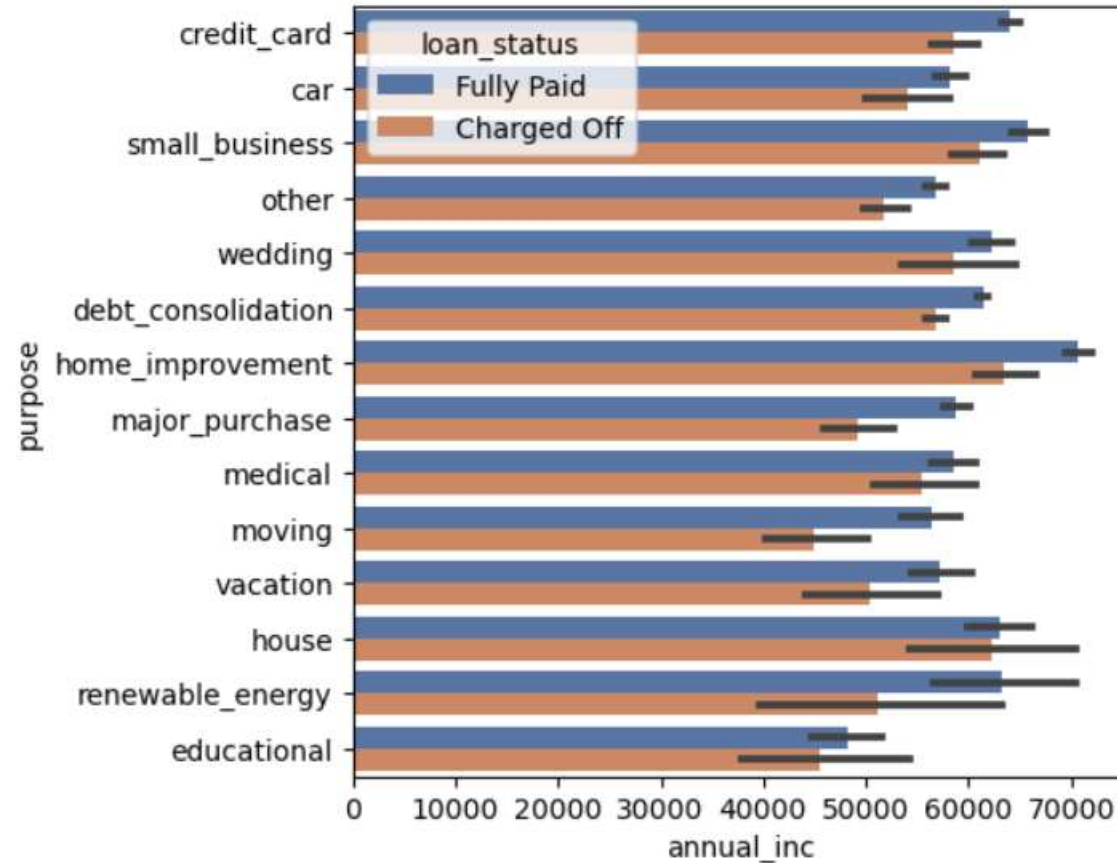
Analyzing by the loans issued month and year
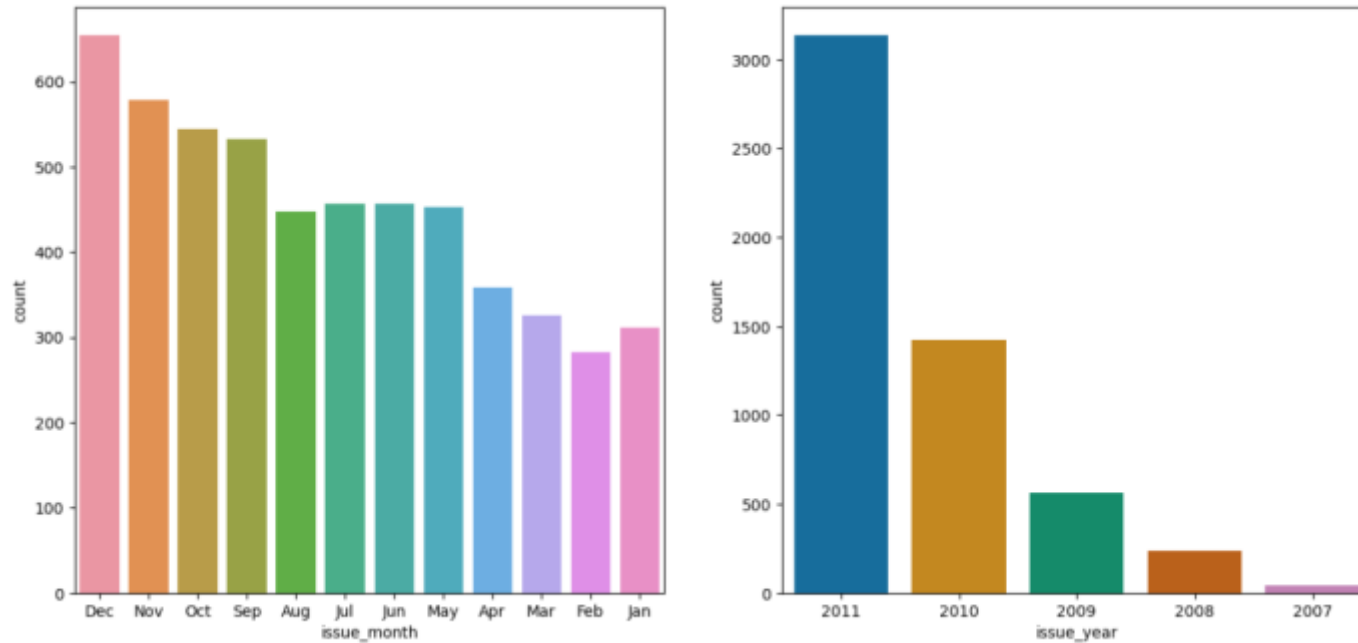

Maximum number of defaults occurred :-

- When the loan was sanctioned/issued in Dec.

- When the loan issued in the year 2011 were also as compared to other years
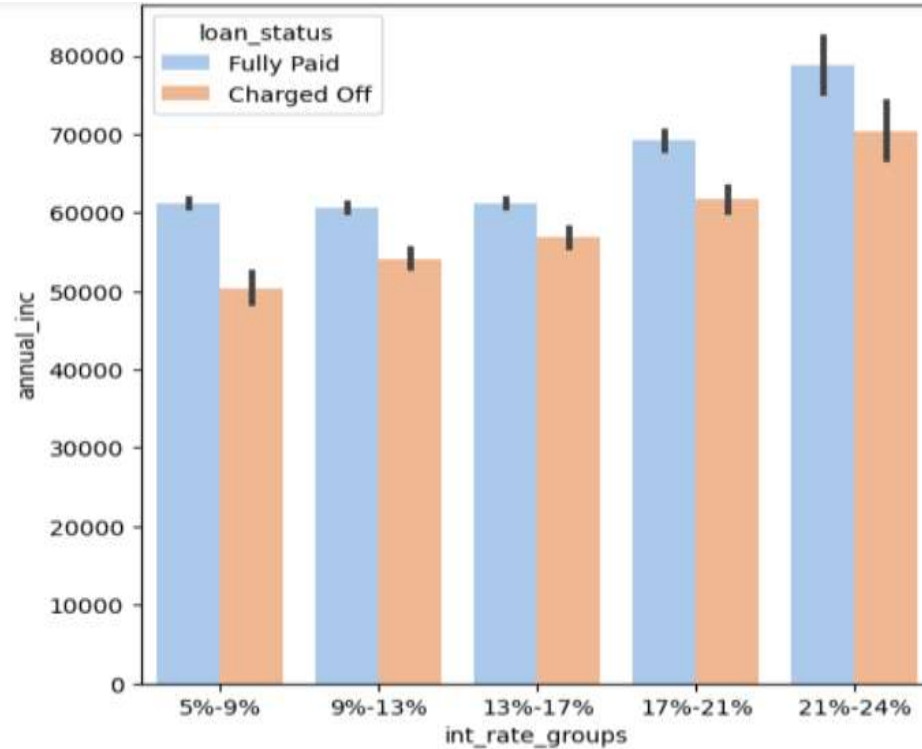
Annual income vs loan purpose

As per the data we see most loans are taken for the home improvement purpose and also we see the next most likely loan data for the small business purpose.
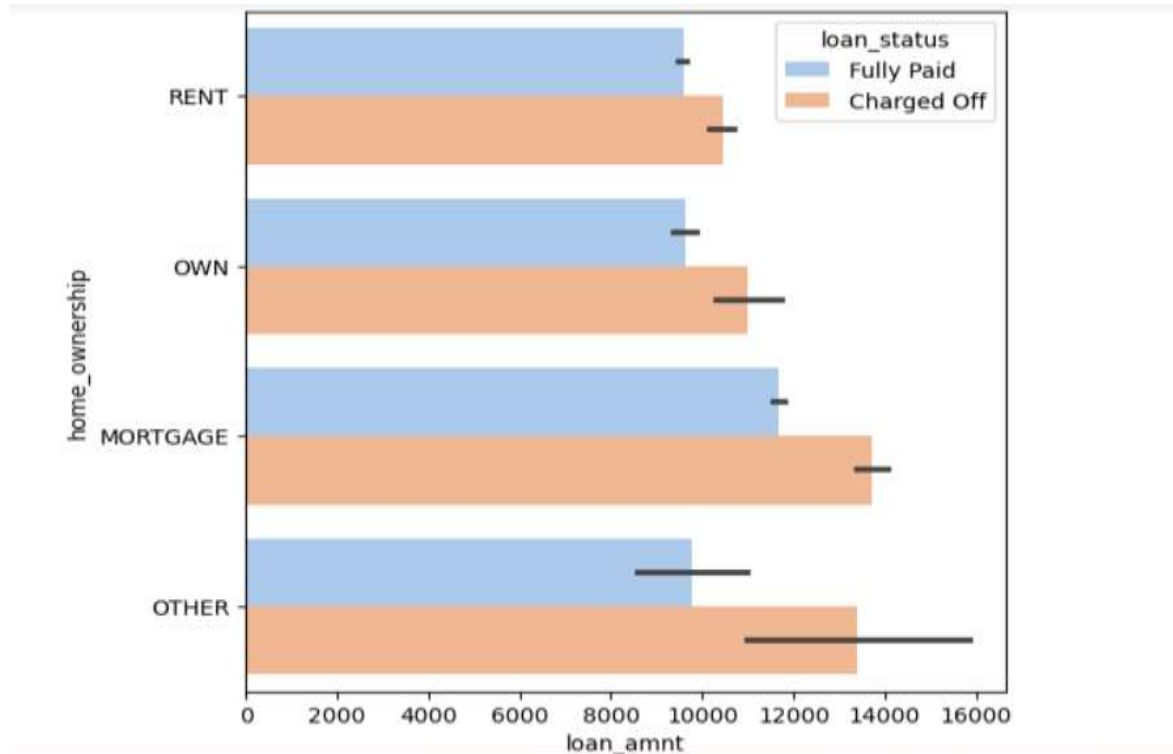
Annual income vs home ownership
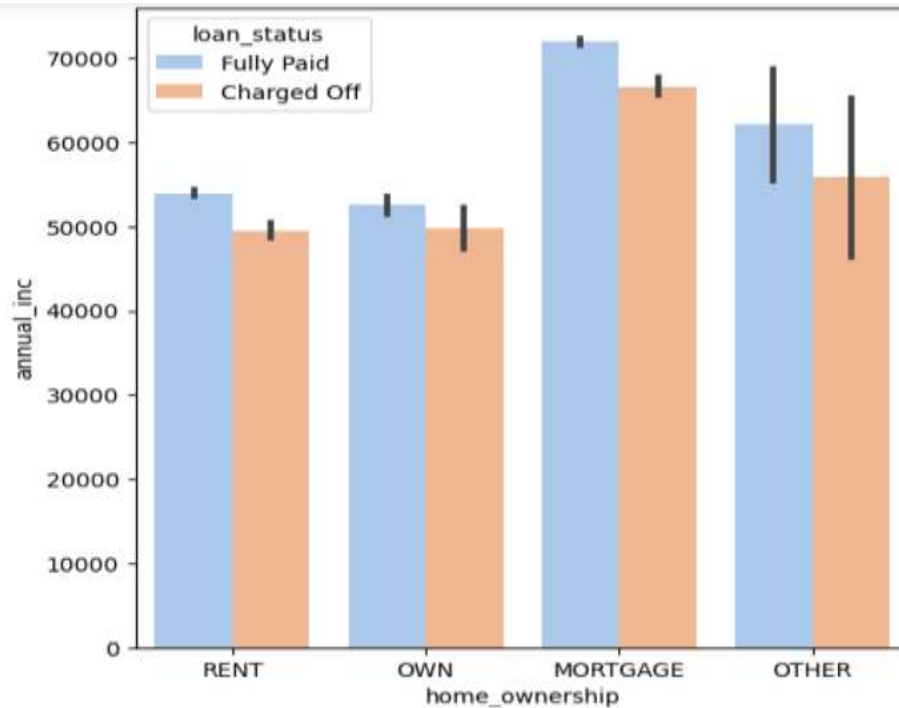
▶ We see the data Mortgage rate is higher for fully paid and charged off
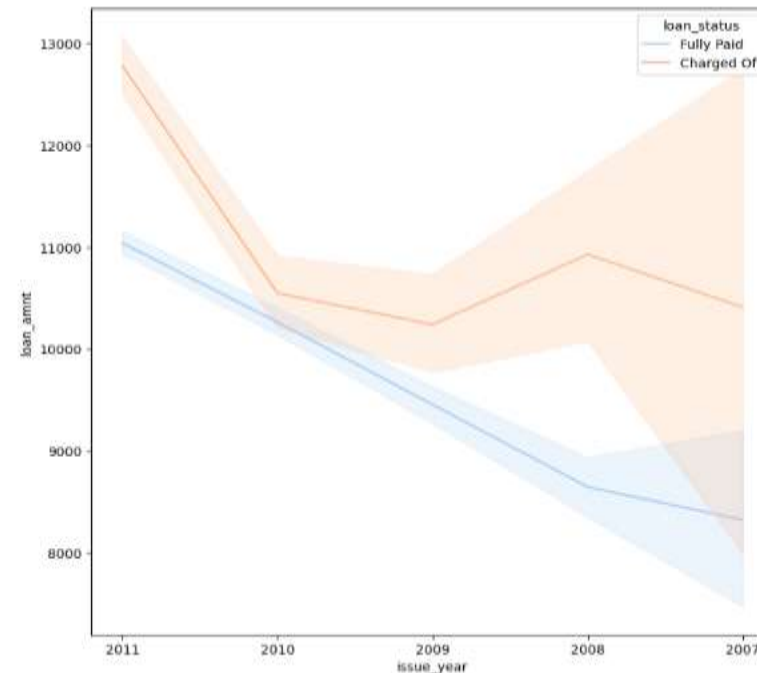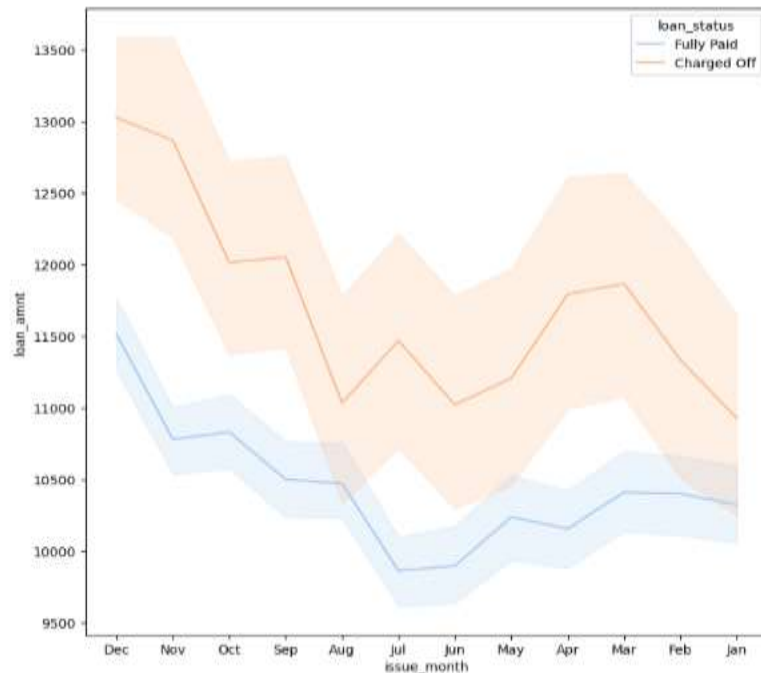
Annual income vs int_rate

▶ The above data shows the people with more income bar can afford more interest rate hence allow the loan to be get paid in less time and also has higher probability of getting fully paid .
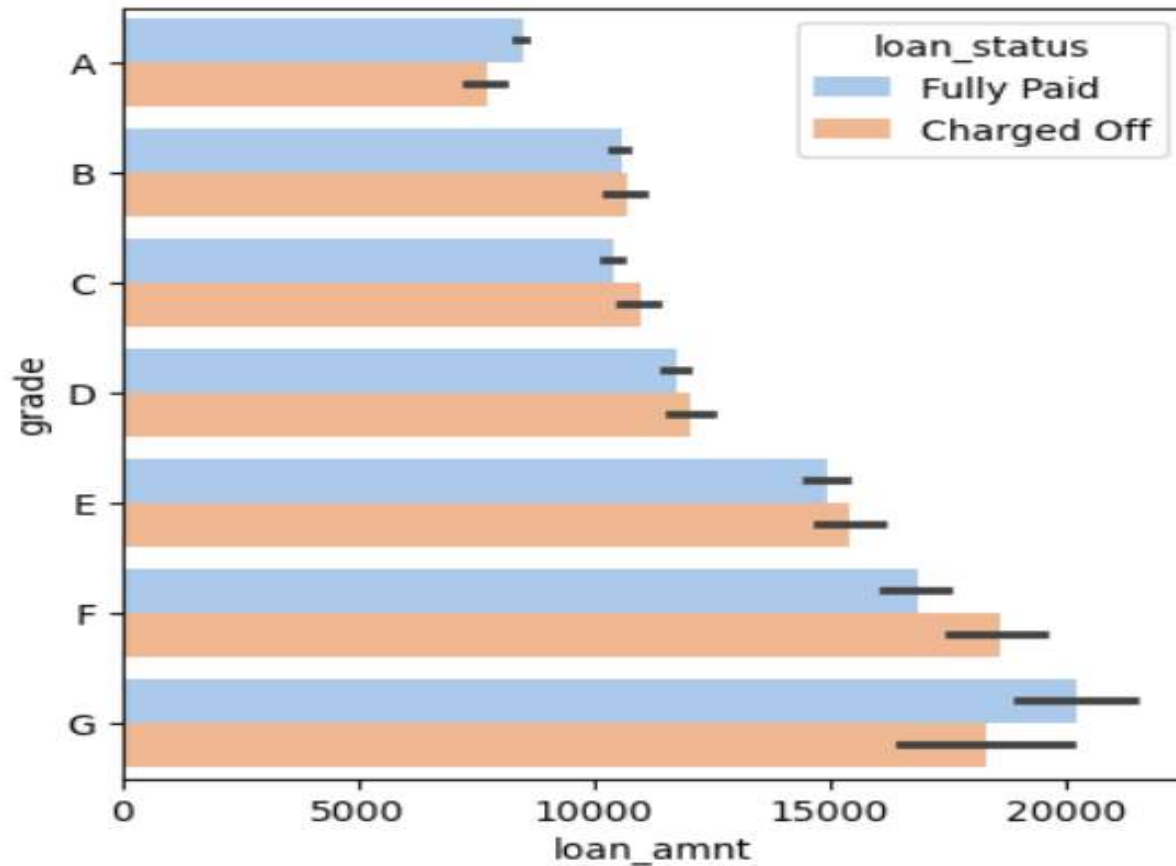
Loan vs House Ownership

▶ Applicants whose home ownership is 'MORTGAGE and have loan of 14-16k
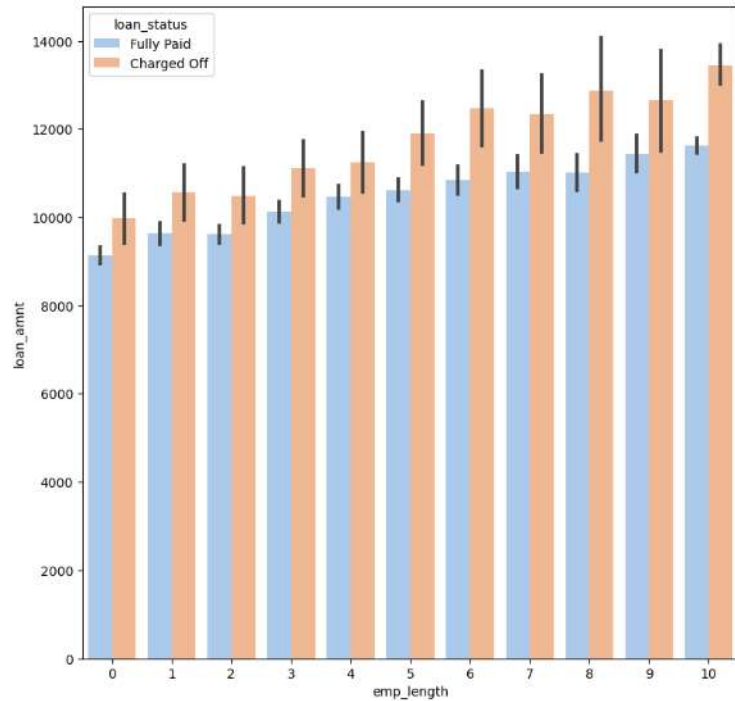
Loan amount vs month issued and year issued

- As per the above data it looks the loan approved in month of dec has higher rate of getting defaulted.

- Also in the year of 2011 we see the loan defaulters are more
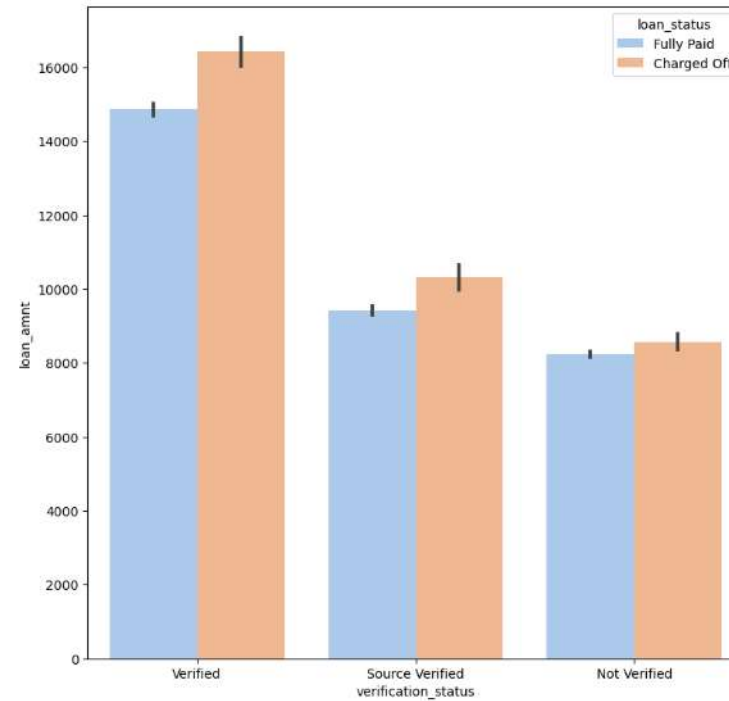
Loan amount vs Grade

▶ As per the above data the higher the loan amount has more grade category (such as G)

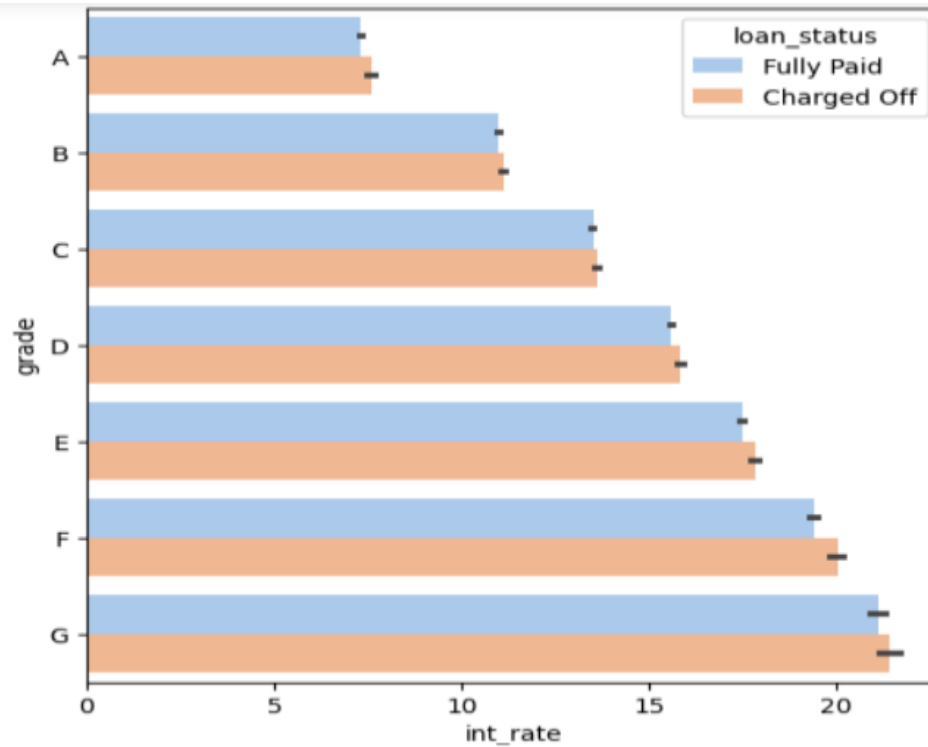# Employment Length vs Verification Status

▶ Higher the employee's employment length more loan amount requested(12k – 14k)

▶ Loan amount with higher value(14k – 16k) are verified.

Grade vs Interest rate

▶ For grade G and interest rate above 20%

<u>Observations</u>

There is some probability of customer getting defaulted as per the above analysis with respect to the charged off loans:-

- Applicants taking loan for 'home improvement' and have income of 60k -70k

- Applicants whose home ownership is 'MORTGAGE and have income of 60-70k

- Applicants who receive interest at the rate of 21-24% and have an income of 70k-80k

- Applicants who have taken a loan in the range 30k - 35k and are charged interest rate of 15-17.5 %

- Applicants who have taken a loan for small business and the loan amount is greater than 14k

- Applicants whose home ownership is 'MORTGAGE and have loan of 14-16k

- When grade is F and loan amount is between 15k-20k

- When employment length is 10yrs and loan amount is 12k-14k

- When the loan is verified and loan amount is above 16k

- For grade G and interest rate above 20%