

Lending Club Case Study



Objective

The main objective is to be able to identify these risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss. Identification of such applicants using EDA is the aim of this case study.

Benefits:

- Study the data and get insights.
- Usage of EDA in real life business problems.
- Minimize the Financial loss using data while lending to clients.
- Develops a basic understanding of risk analytics.
- It provides understating of visualization and what charts to use for real life data.
- Analyzing the user details and the driving factors of loan defaulting before approving loan.



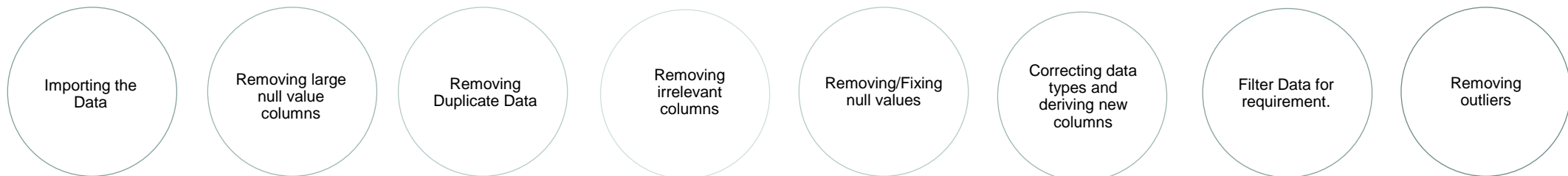
Business Understanding

- The goal of the analysis is to who is likely to default and this can only be said in case of either fully paid or charged off loans.

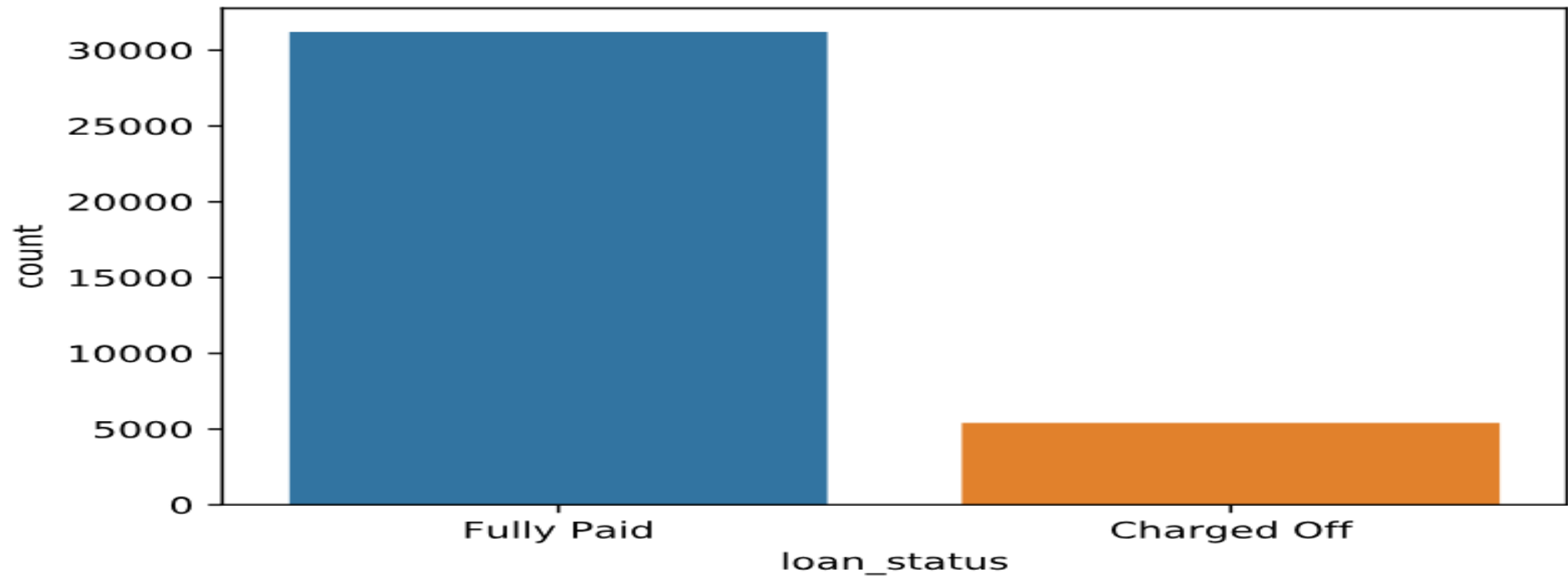
Dataset Details:

- Data given contains information about past loan applicants and whether they “defaulted” or not. Data has details regarding the approved loan only and not the rejected ones. It contains three loan status type which are Fully Paid, Current and Charged-Off.

Data Clean-up and preparation process:



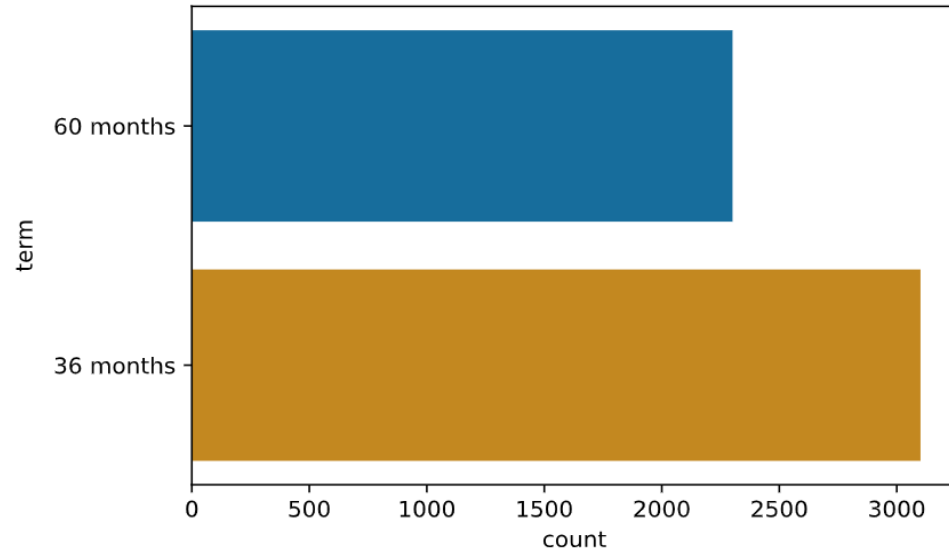
Loan Status



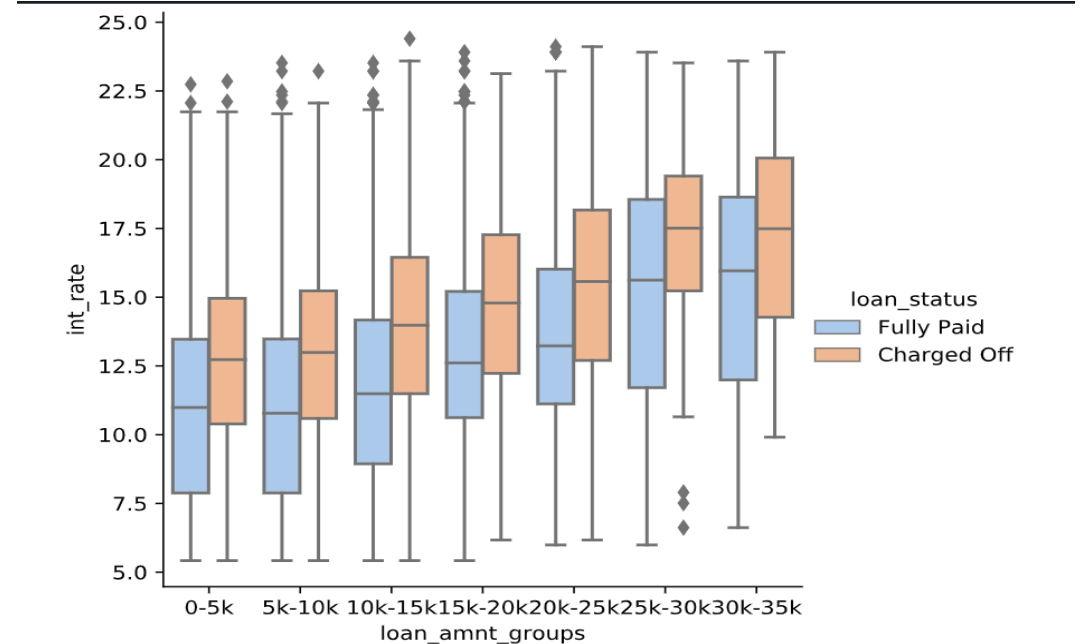
- **Loan Status:** The number of charged off loan is much smaller(14.5%) compared to total count.



Term and Interest Rate



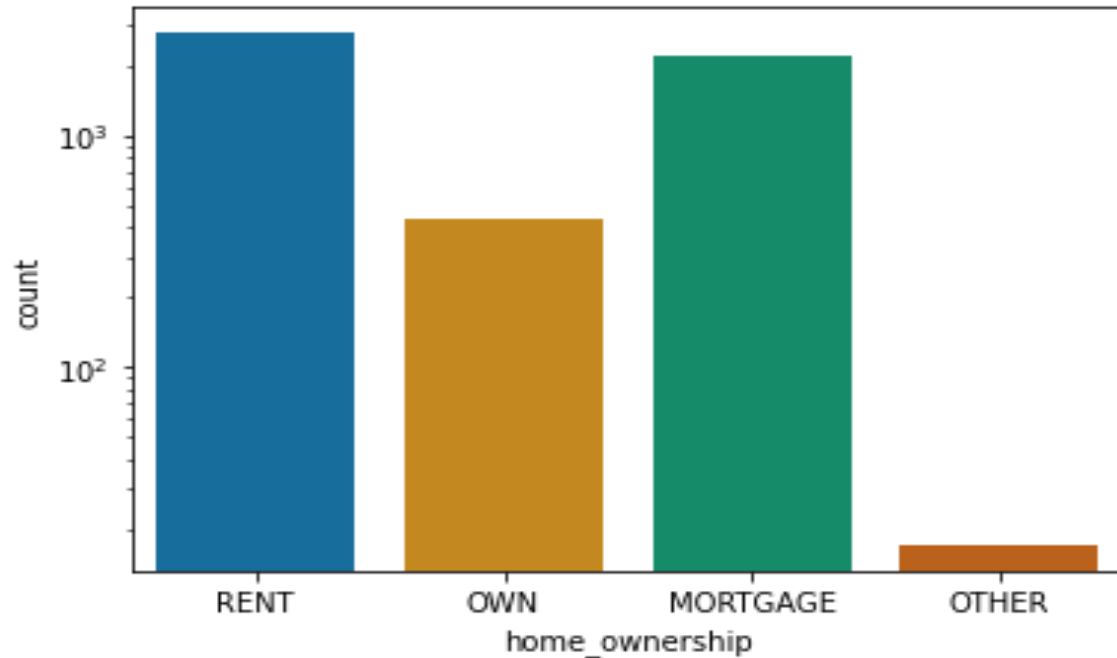
- **Loan Term:** The Loans taken for 36 month term are much more than 60 months and have lower chance of defaulting.



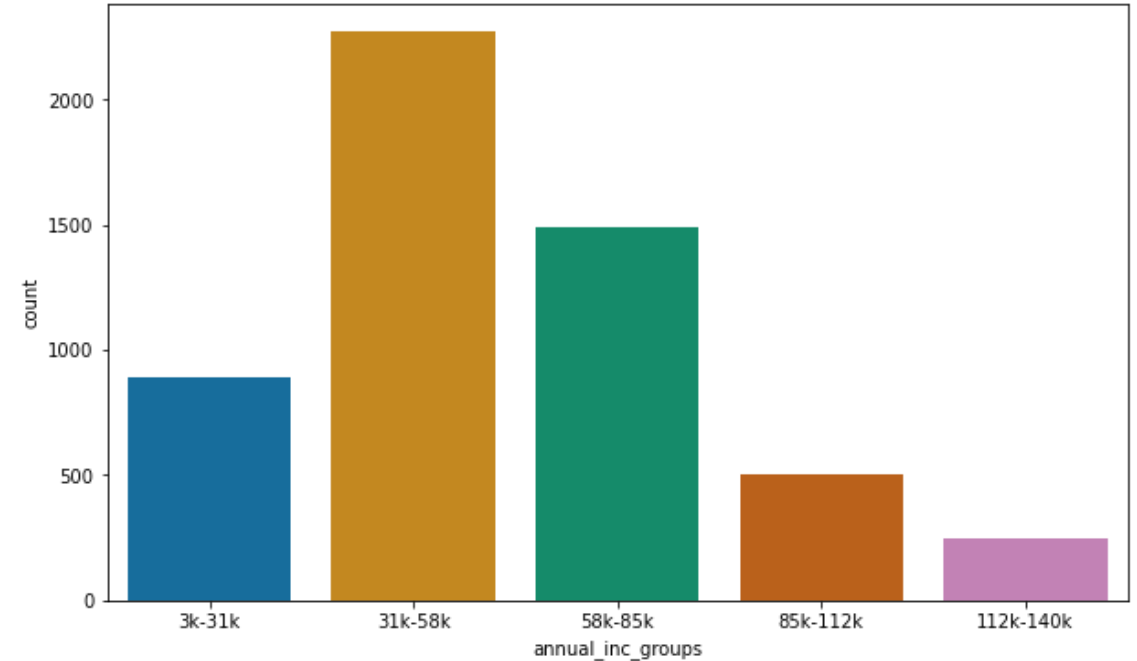
- **Interest Rate:** The interest rate for charged off loans is pretty high than that of fully paid loans in all the loan_amount groups.
- This can be a pretty strong driving factor for loan defaulting.



Home Ownership and Annual income



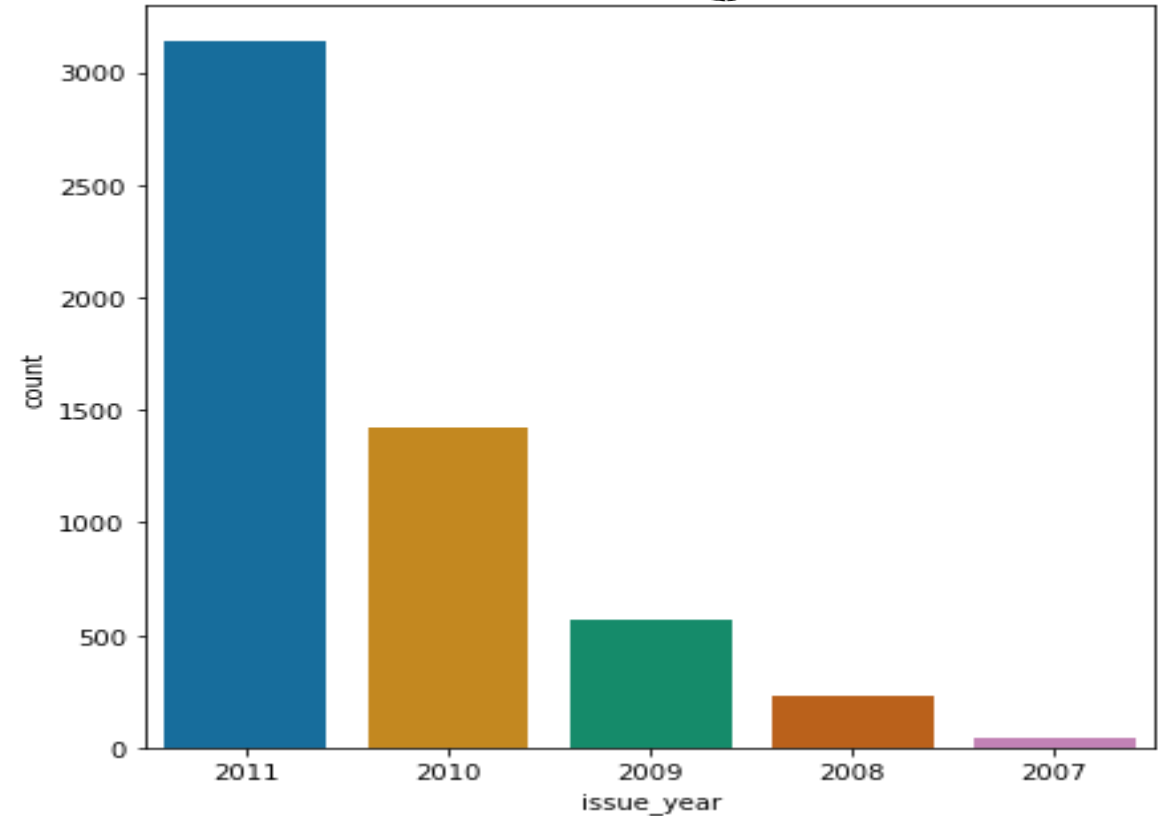
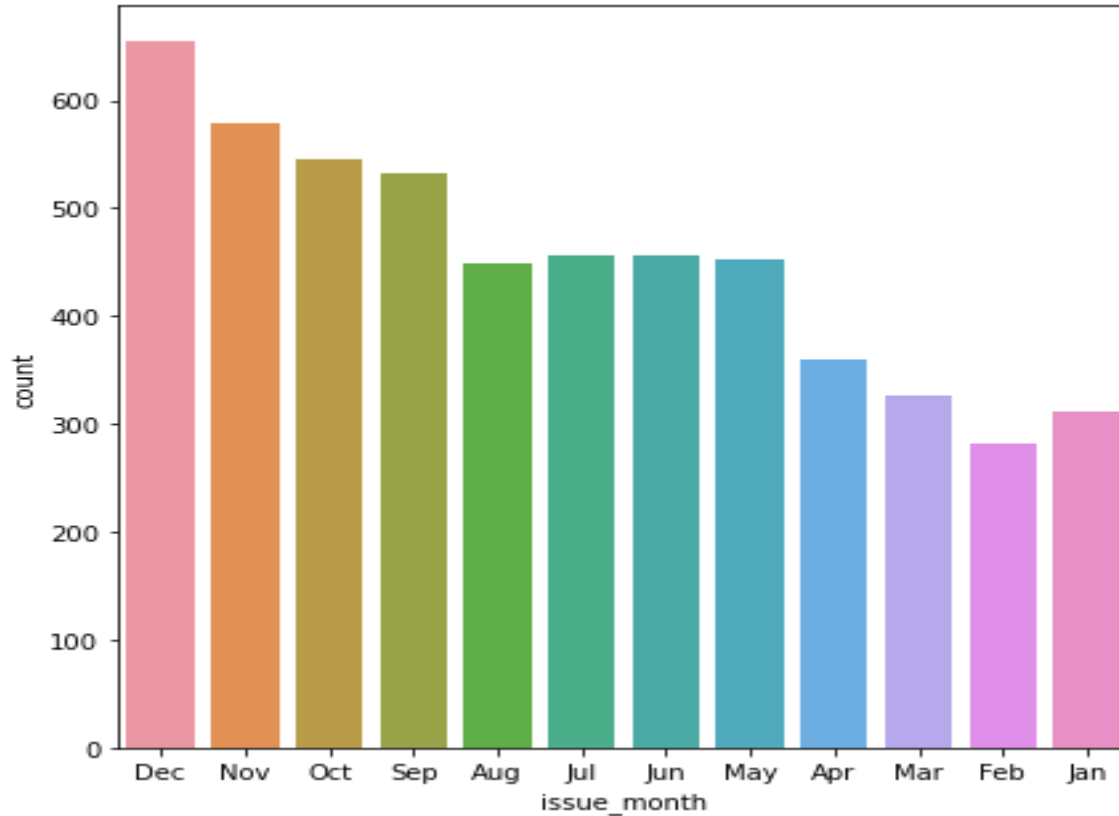
- **Home Ownership:** The Loans taken by those who are in rented house or if house is Mortgage are highest defaulted.



- **Annual income:** Those with annual income of 31k – 58 k are the highest defaulter and next is with income group of 58k – 85k.



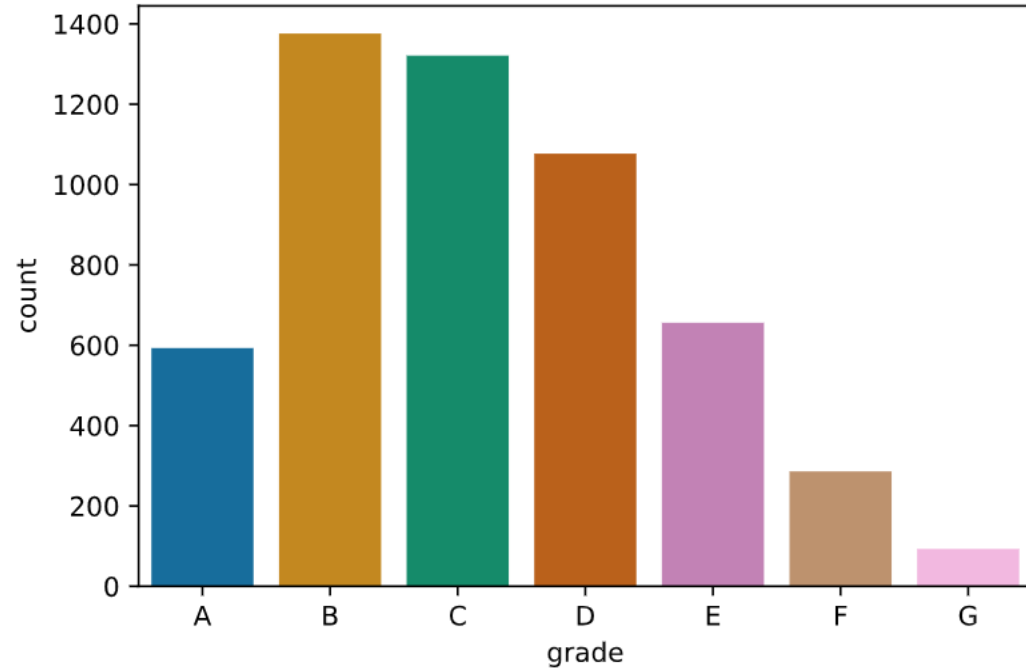
Loan Release month and year



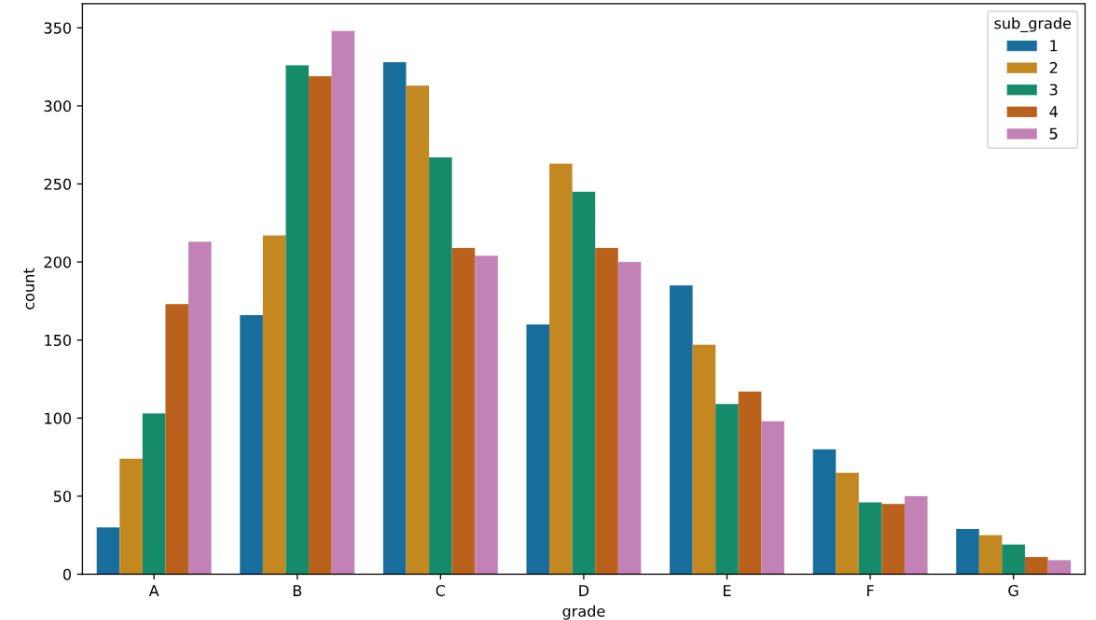
- From above analysis maximum number of defaulter are those who got loan sanctioned in December.
- From above analysis maximum number of defaulter are those who got loan sanctioned in 2011.



Grade and Sub-Grade



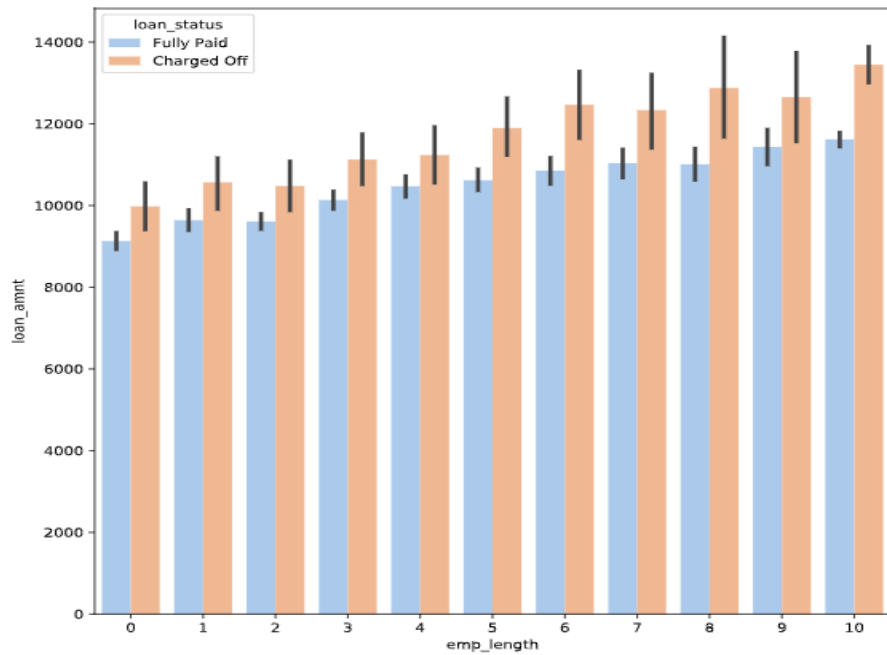
- **Grade:** The chances of defaulter are more in the grade range B and D. It decrease for the grades E to G.



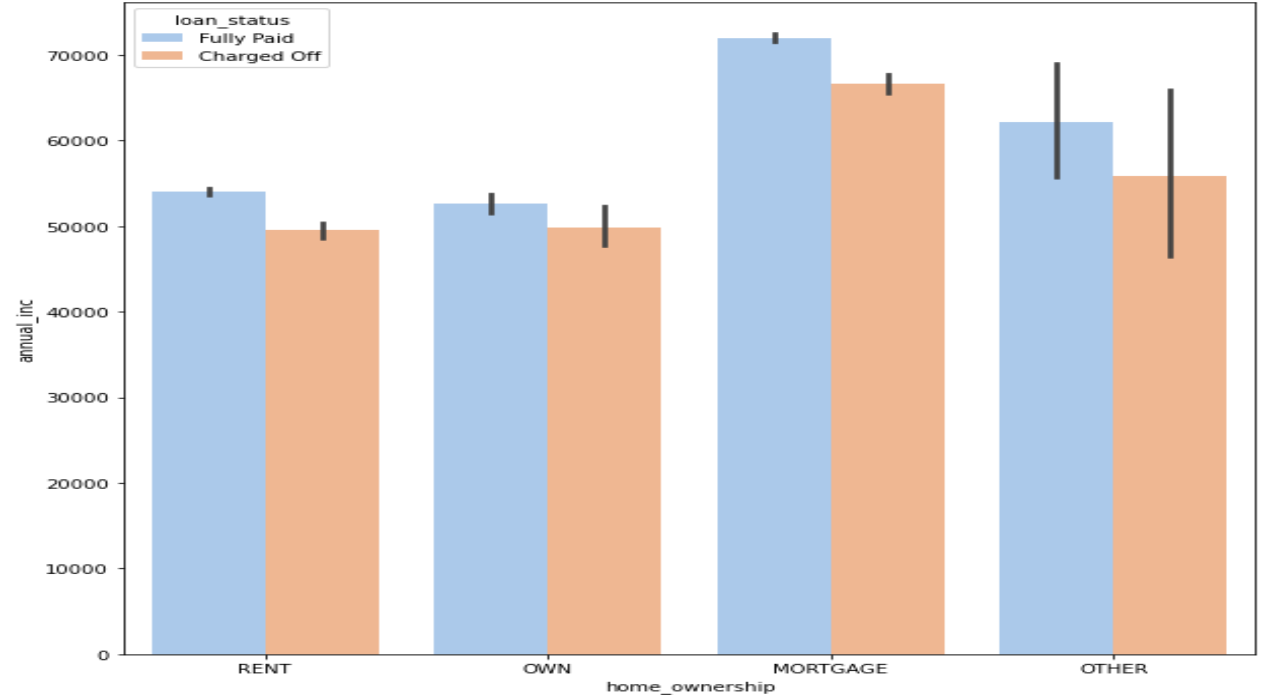
- **Sub Grade:** This provides more insight that the loans within sub grades.



Employment Length & Homeownership



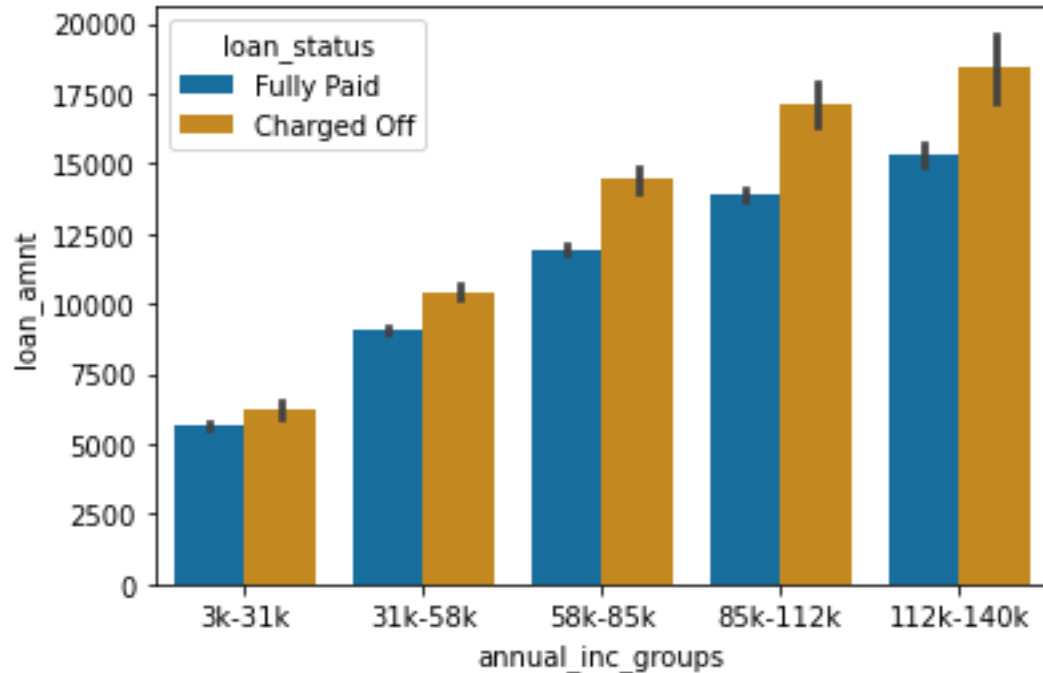
- **Employment Length:** The clients having experience of Ten plus years has highest number of defaulted loan.



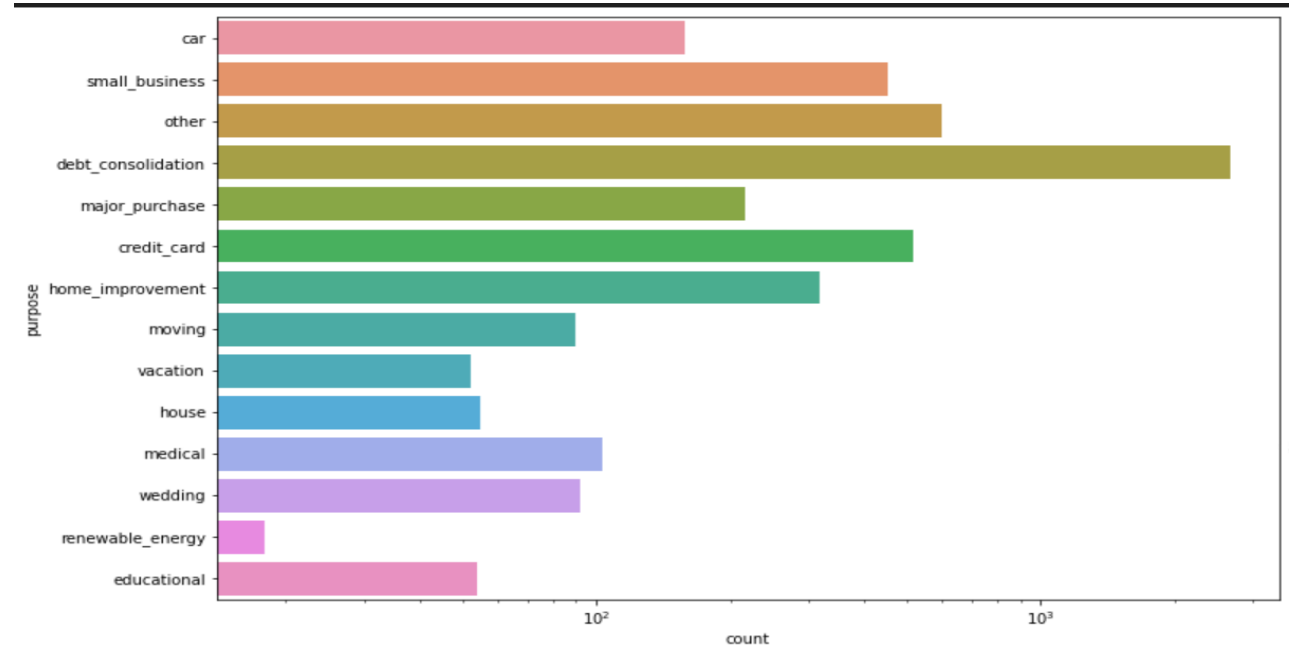
- **Home Ownership:** Those with Mortgage loans and others have larger number of defaulted loan then rent and own home.



Annual Income & Purpose



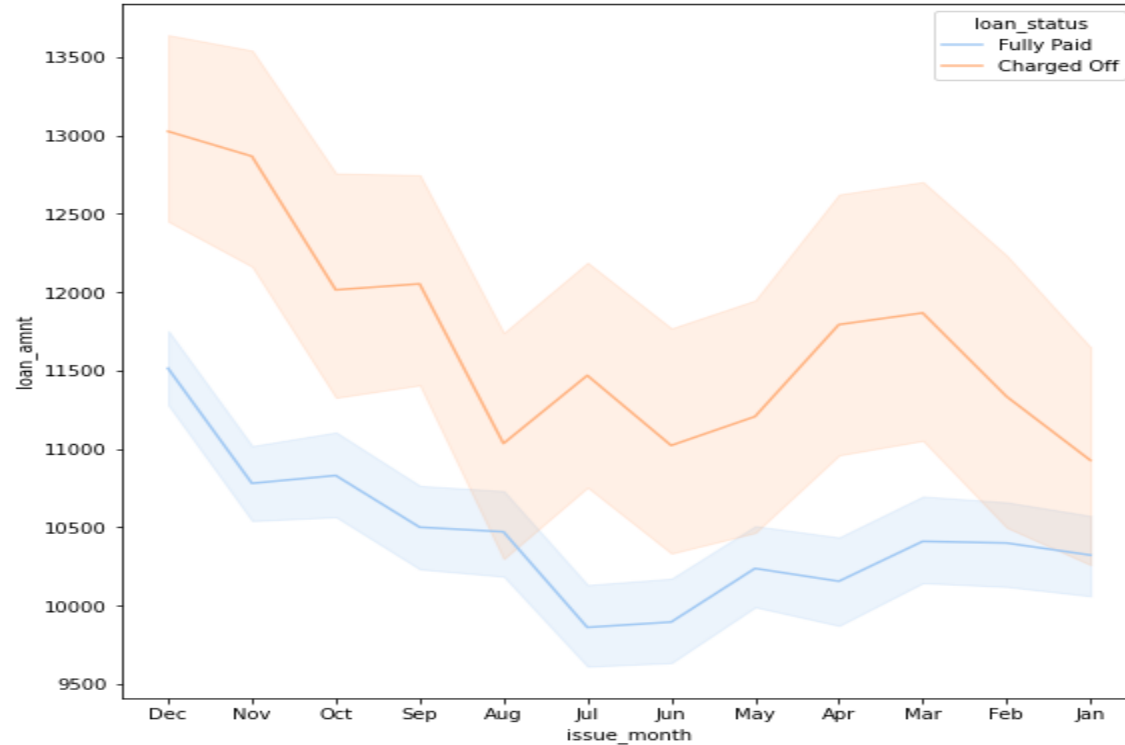
- **Annual Income:** As the annual income increases the defaulter also increases . So income is directly proportional to charged off or defaulter.



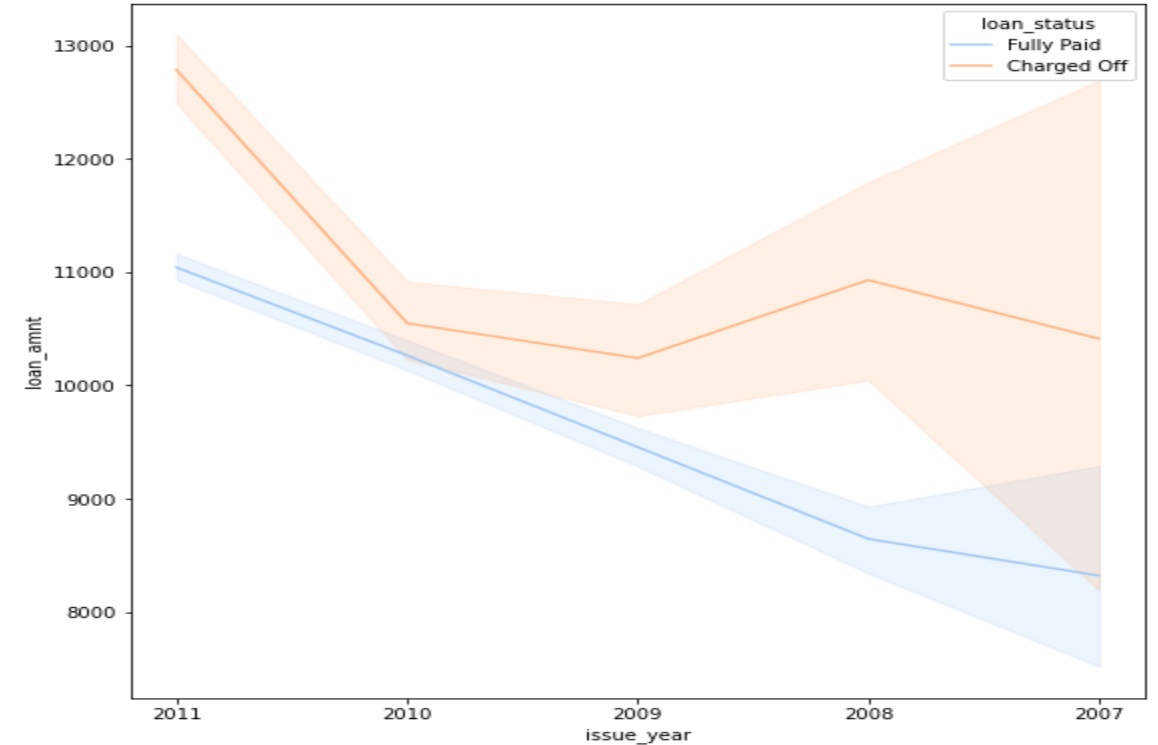
- **Purpose:** Defaulted loans are highest for 'debt_consolation' followed by credit_crads ,others and small business.



Loan Status Trend over years and month



Month: It is observed that maximum defaulter are from December. September to December saw maximum defaulter. August to December had maximum loan paid off.



Year: There is linear increase in fully loan paid, maximum at 2011. Year 2010 and 2011 saw maximum defaulter.



Observations

This are the analysis wrt charged off loans ,most probability of defaulting are in below cases:

- Those who have taken a loan for small business and the loan amount is greater than 14k
- Those whose home ownership is MORTGAGE and have loan of 14-16k
- Those taking loan for home improvement with income of 60k -70k
- Home ownership with MORTGAGE and income of 60-70k
- Those with annual income of 70k to 80k with interest rate of 21-24%
- Those with loan amount of range 30k - 35k and interest rate of 15-17.5 %
- Employment length with 10 plus years and loan amount is 12k-14k
- Those with loan verified and loan amount is above 16k
- For those with grade G and interest rate above 20%
- Those with of grade F with loan amount of 15k-20k

