

# Lending Club Case Study

Contributor : Tanvi Singh

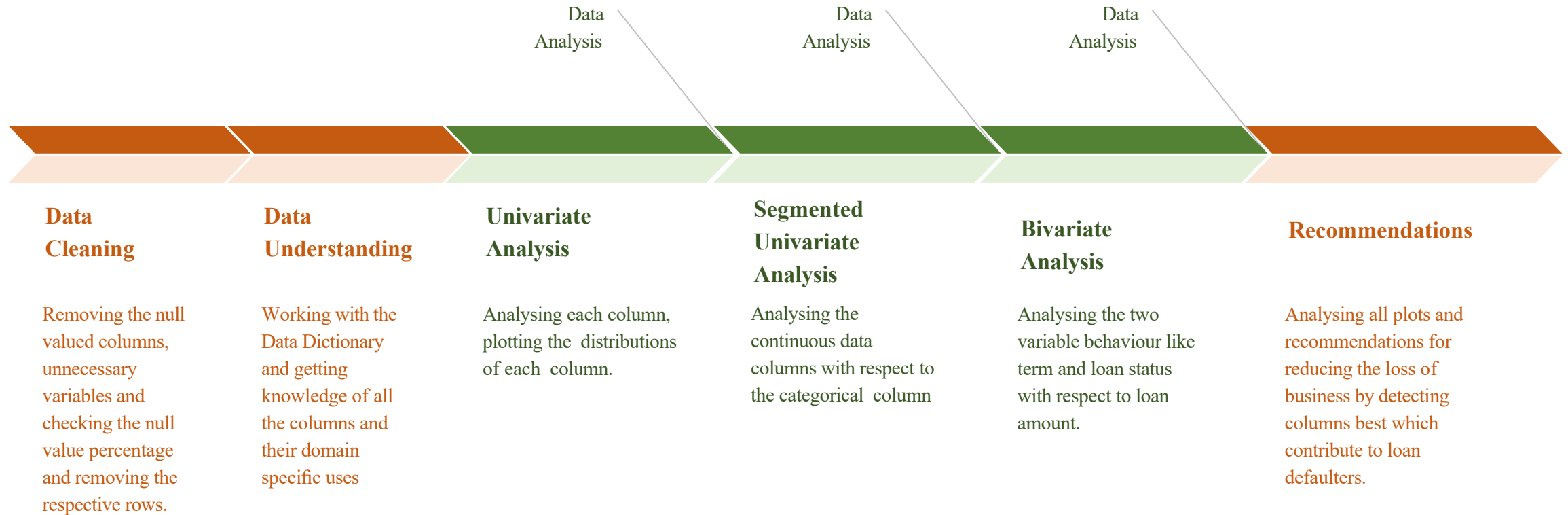
# Problem Statement

- 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.
- The objective of analysis is to use the information about past loan applicants and find whether they ‘defaulted’ or not.

# Objective

- In this case study, apart from applying the techniques you have learnt in EDA, you will also develop a basic understanding of risk analytics in banking and financial services and understand how data is used to minimise the risk of losing money while lending to customers.

# Problem solving methodology



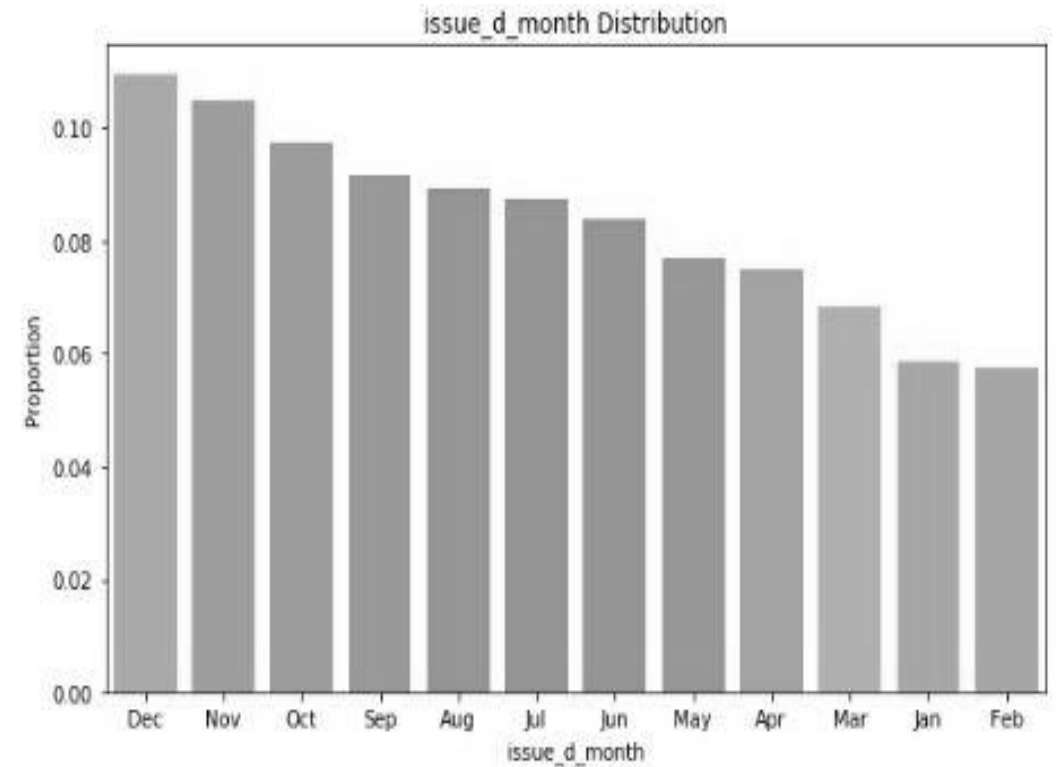
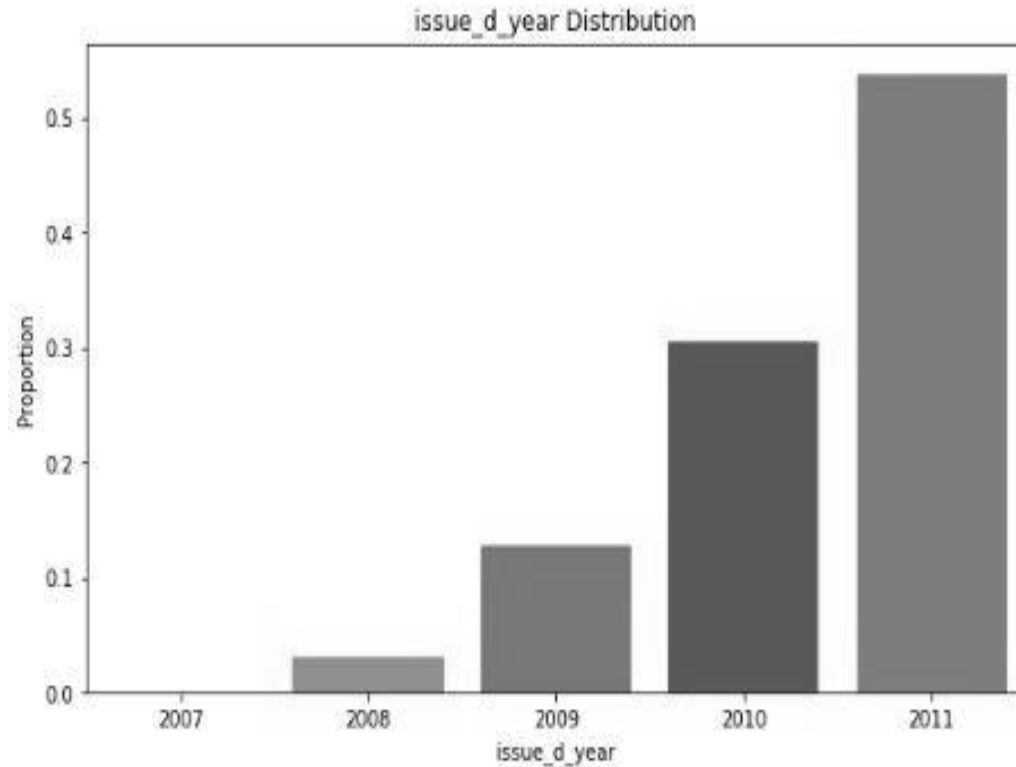
# Business Understanding

- The business objective is to take a decision whenever they receive a loan application whether to reject or approve based on certain variables.
- You work for a consumer finance company which specialises in lending various types of loans to urban customers. When the company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile. Two types of risks are associated with the bank's decision:
- If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company
- If the applicant is not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company

## **Dataset Details:**

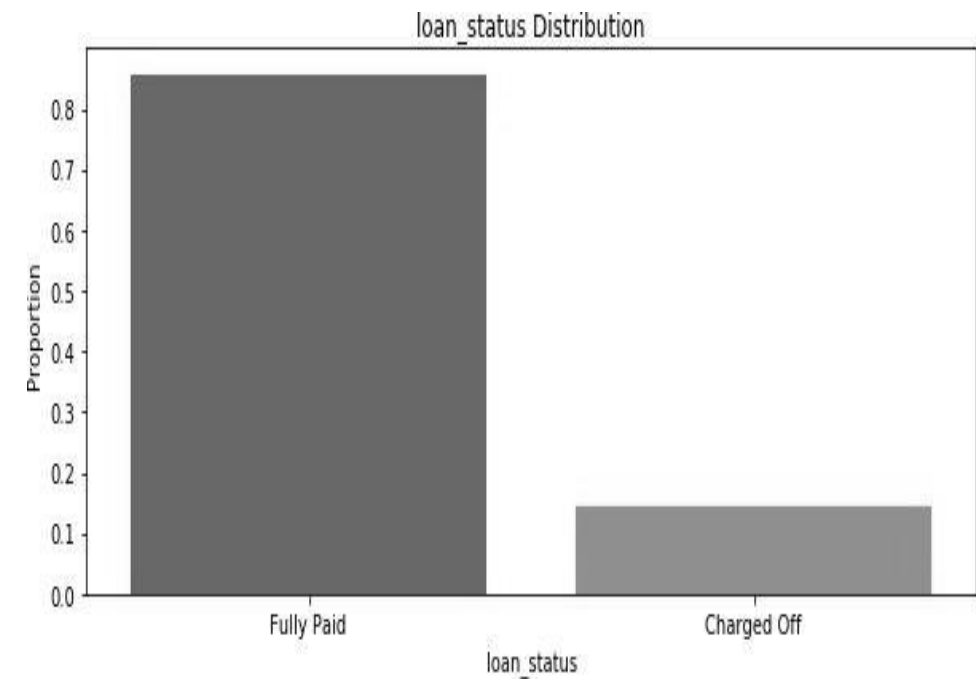
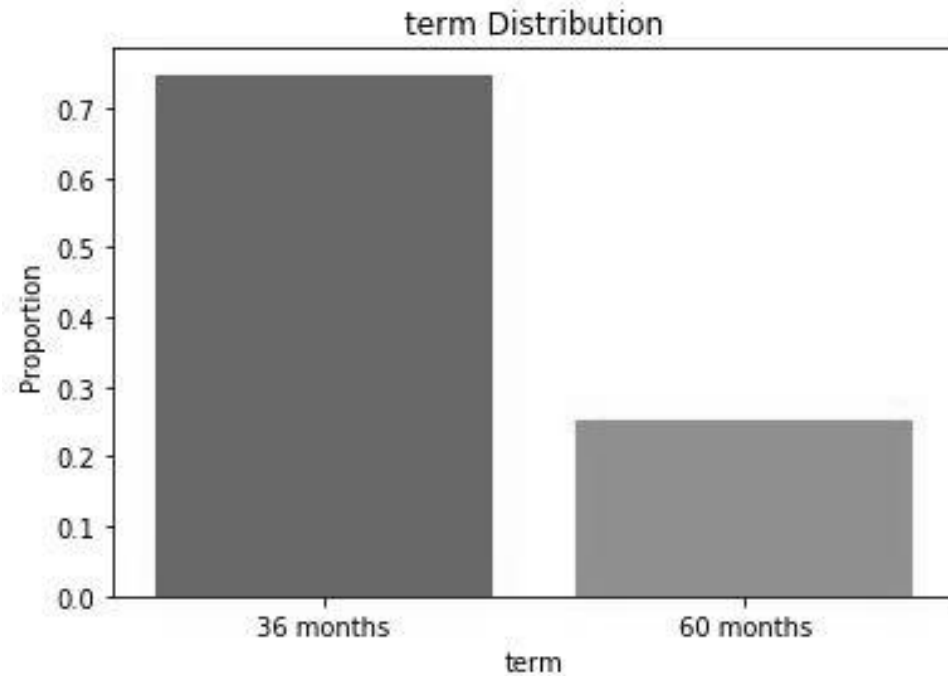
The data given below contains information about past loan applicants and whether they 'defaulted' or not. Data has details regarding approved loan not the rejected ones. It has 3 status of loan which is Fully Paid, Current and Charged-Off.

# Analysis

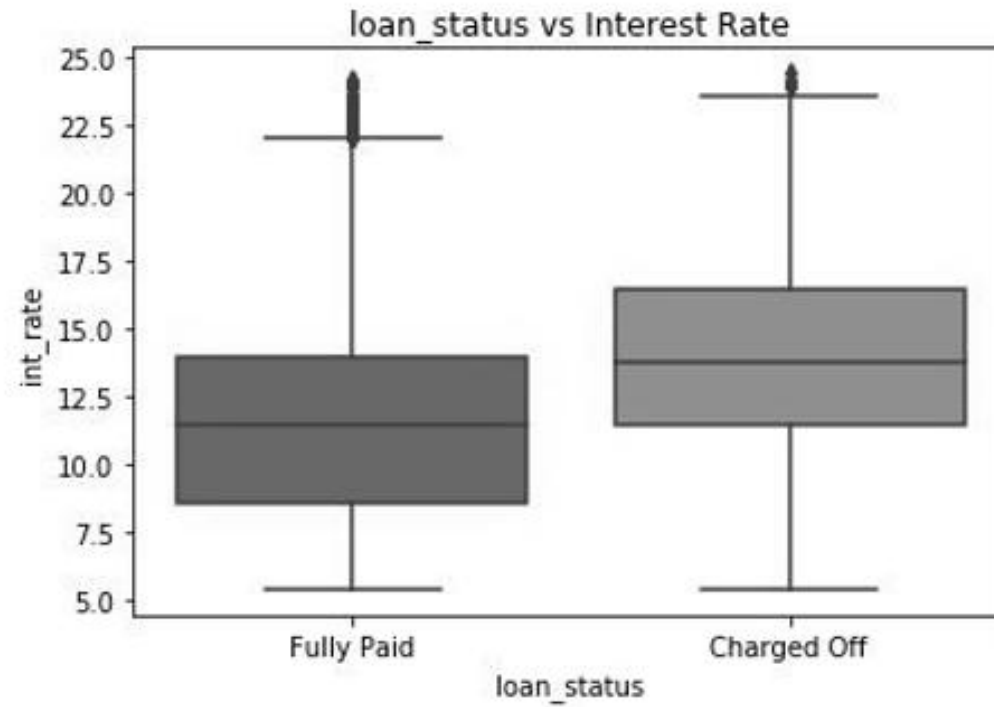


- Lending club has really expanded year by year, the number of loan issued are doubled every year.
- Also the issued month of loans is also increasing from January to December. In the final quarter of year there are more loans issued this could be because of vacation and christmas.

# Analysis

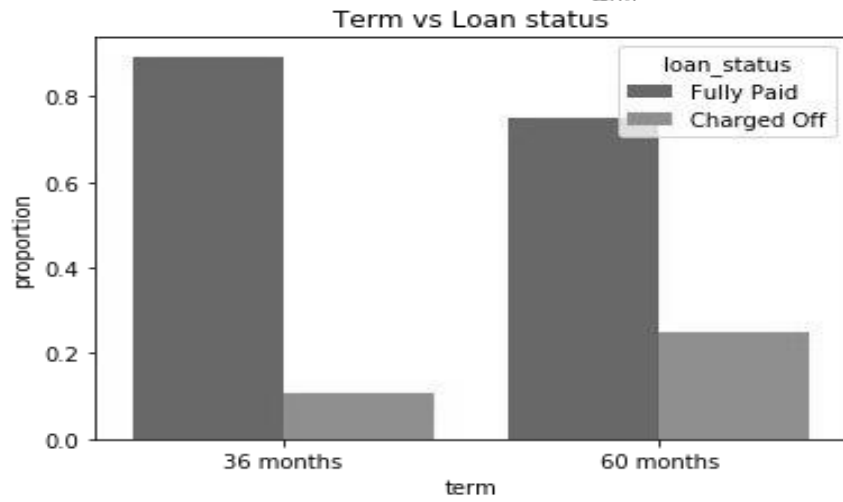
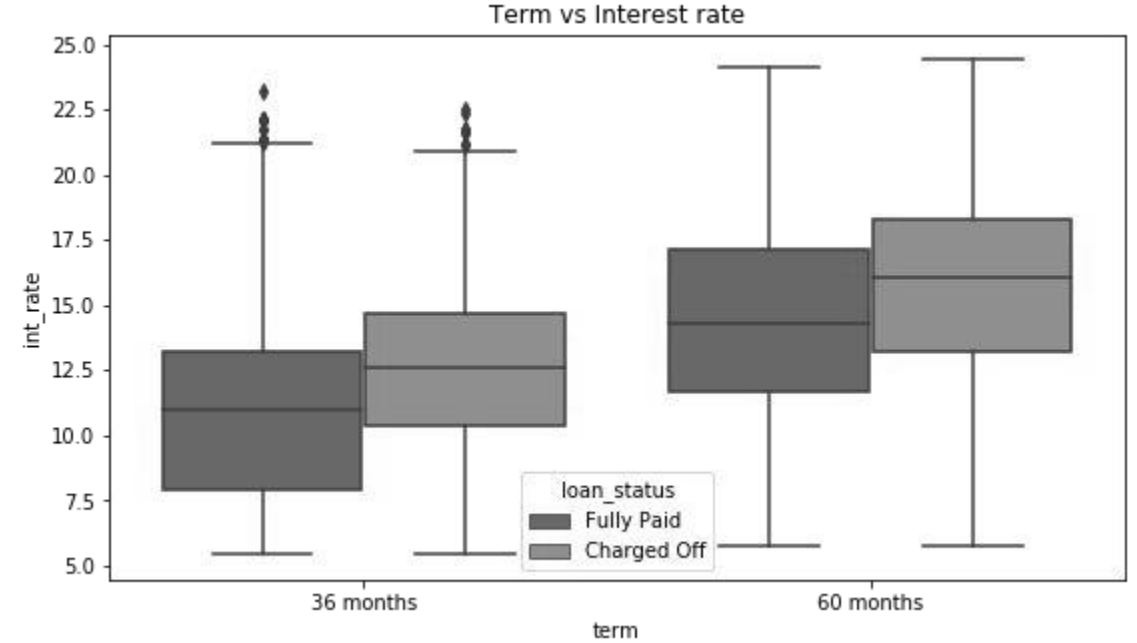
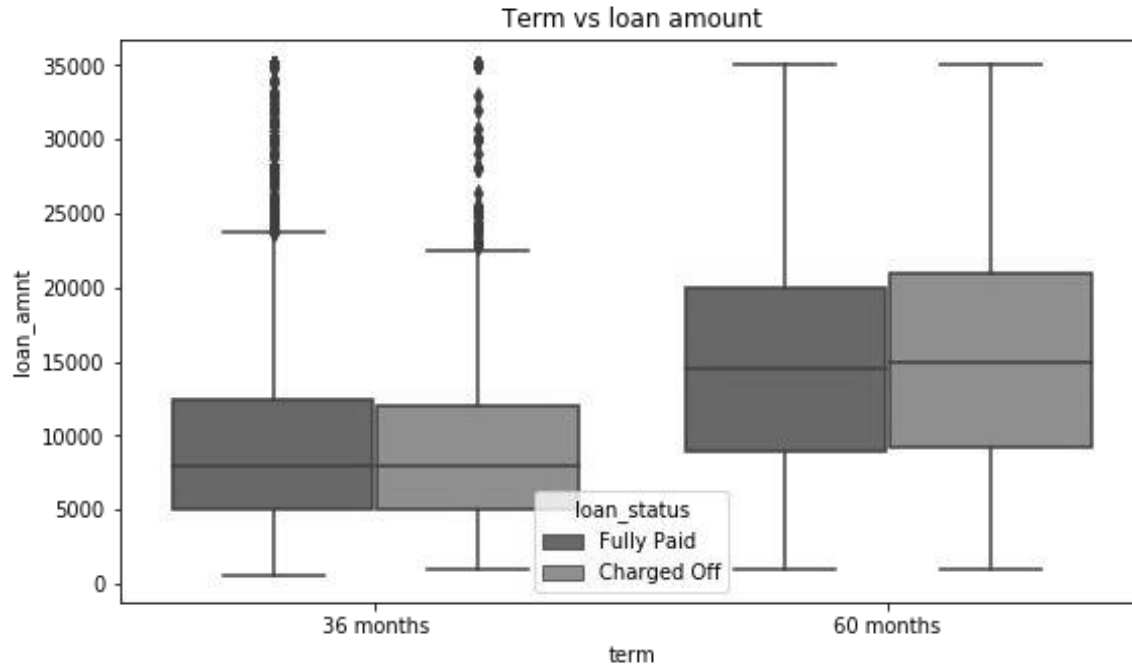


- There are only two loan terms 36 and 60 months. Around 75% borrowers took loans with 36 months term.
- The charged off borrowers are around 15% and fully paid is around 85% in the given data set.



When the loan interest rate is high there is high chance of loan getting defaulted.

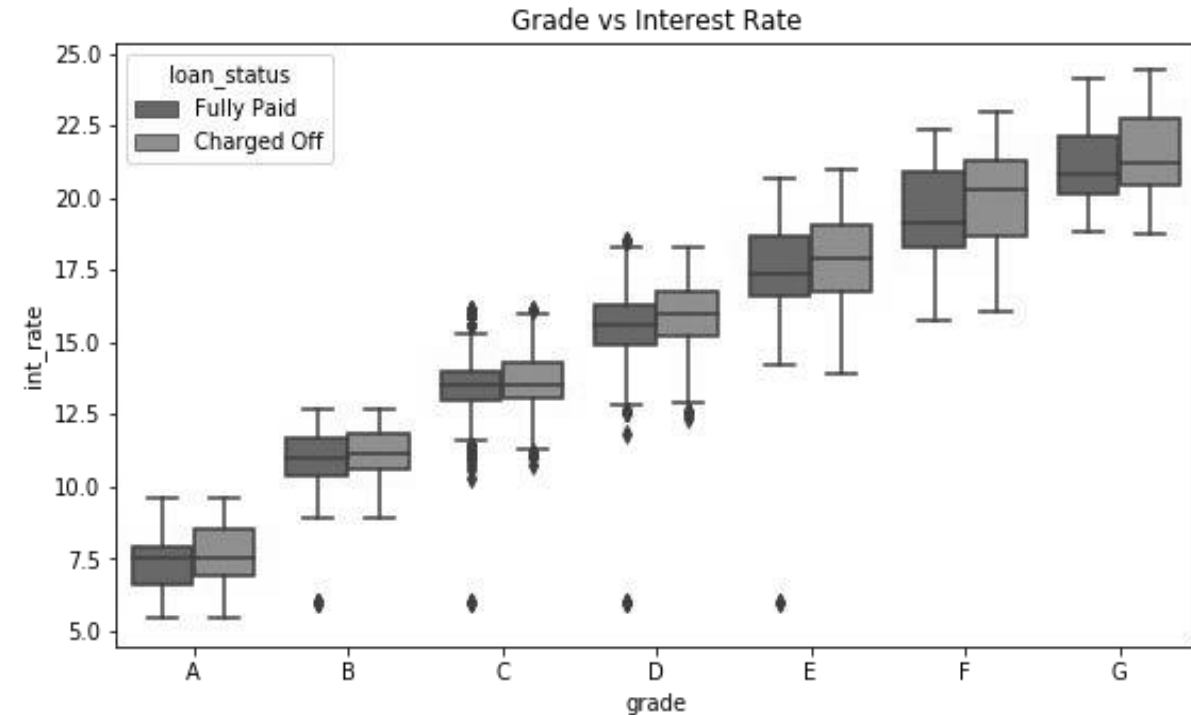
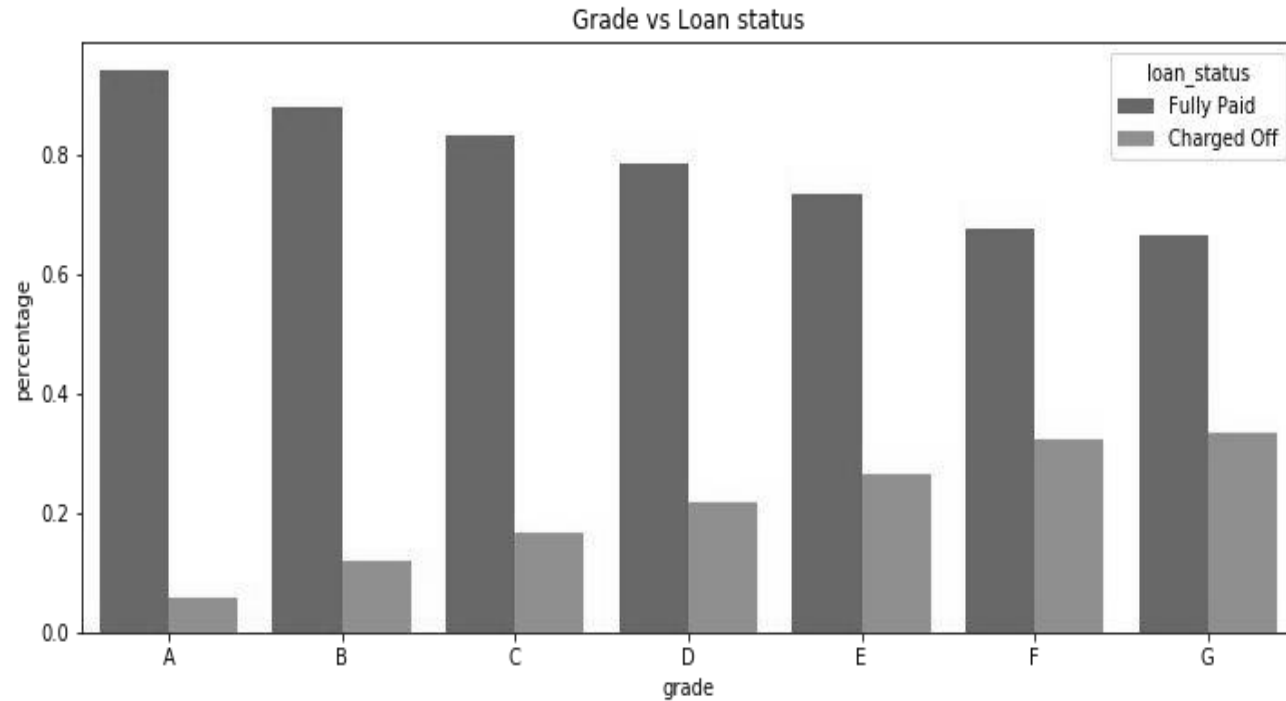
# Analysis



The default rate is high in 60 months tenure because most people took high loan amount with high interest rate in it and they faced difficulties in returning the sum to bank.

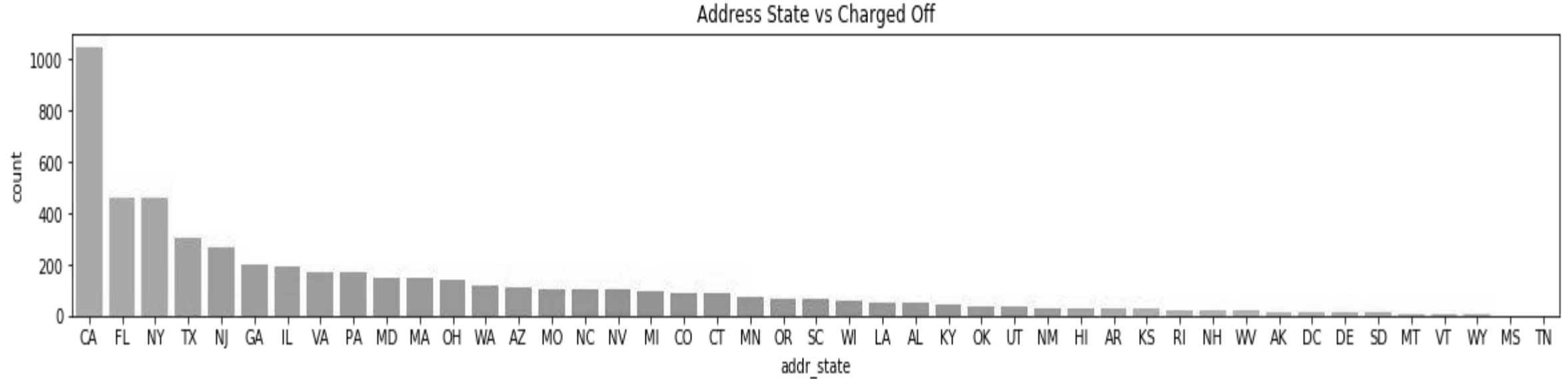


# Analysis



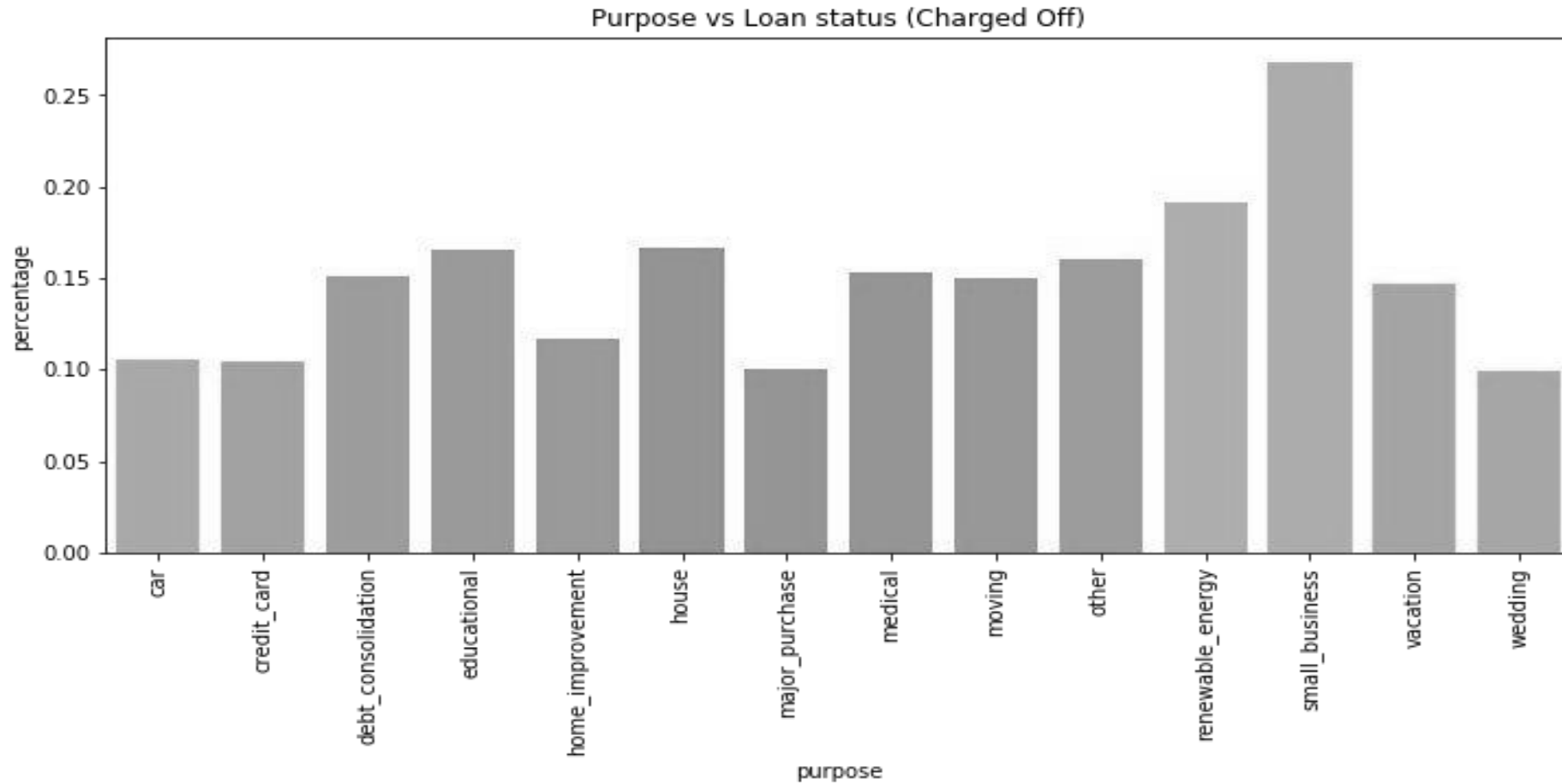
- Grades are very good category to tell the borrower probability of defaulting the loan.
- The Lower grades(E,F,G) have higher chances of defaulting the loan than Higher ones(A,B)
- Also the Lower grades are getting loans for higher interest rates which might be the cause for loan default.

# Analysis



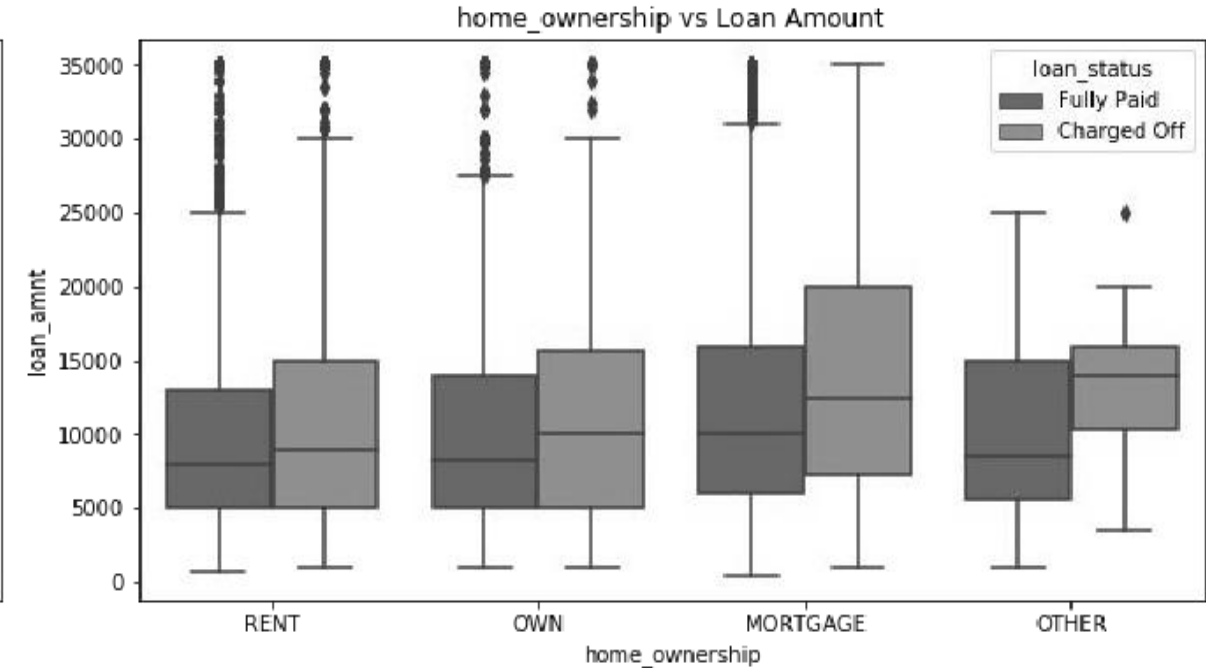
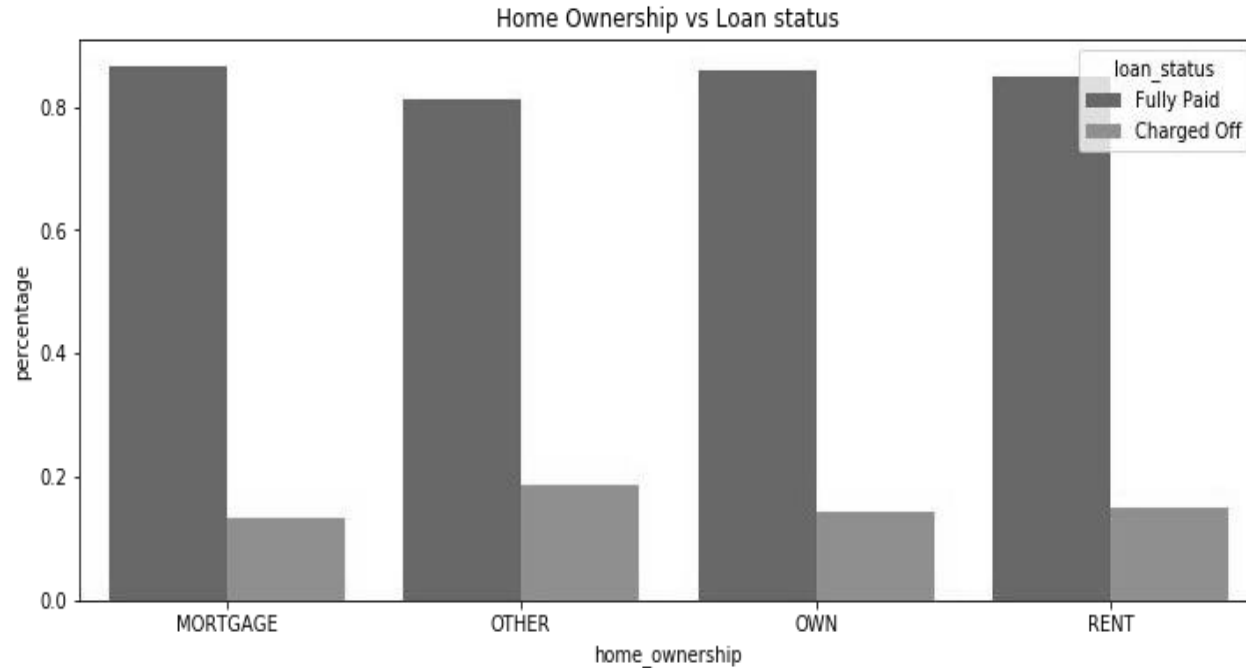
The loans which are given for CA, FL and TX state borrower's are defaulted more than other states.

# Analysis



Borrower's who took loans for small business purpose have defaulted more.

# Analysis



- There is around 20% chance of loan default in each home ownership category.
- From the 2nd plot we can see the people with higher loan amounts in **mortgage** home ownership has high default rate than others.

# Conclusions

- Lending club should reduce the high interest loans for 60 months tenure, they are prone to loan default.
- Grades are good metric for detecting defaulters. Lending club should examine more information from borrowers before issuing loans to Low grade (G to A).
- Lending Club should control their number of loan issues to borrowers who are from CA, FL and NY to make profits.
- Small business loans are defaulted more. Lending club should stop/reduce issuing the loans to them.
- Borrowers with mortgage home ownership are taking higher loans and defaulting the approved loans. Lending club should stop giving loans to this category when loan amount requested is more than 12000.
- People with more number of public derogatory records are having more chance of filing a bankruptcy. Lending club should make sure there are no public derogatory records for borrower.