

# Lending Club Case Study

Group Members:

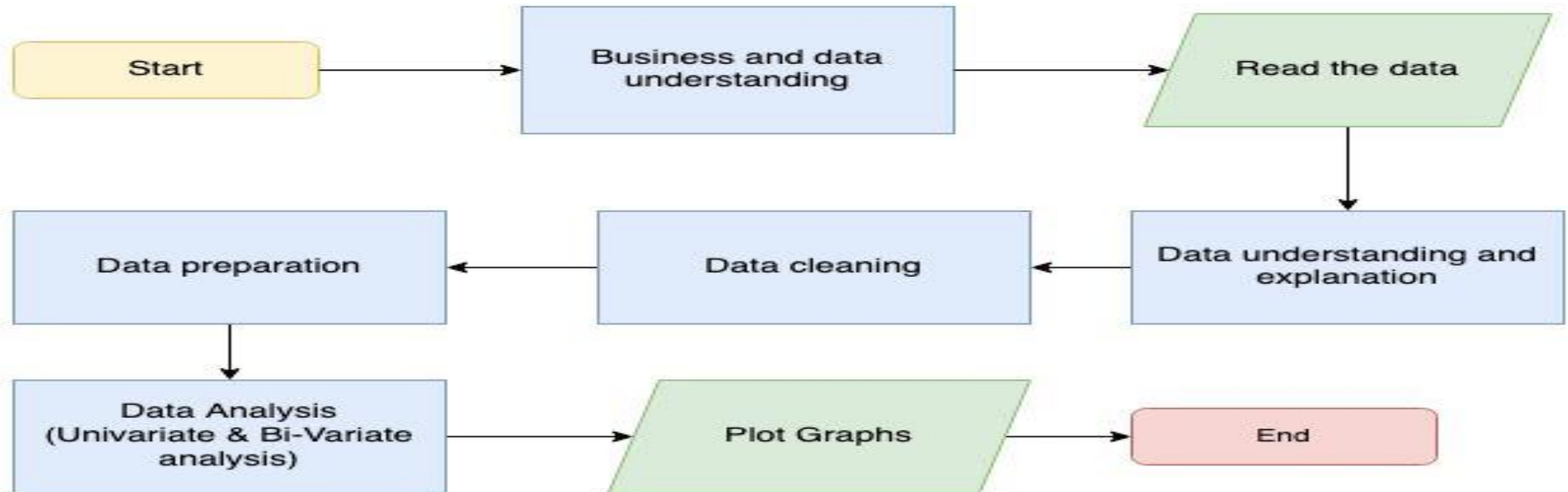
Mitesh Patel

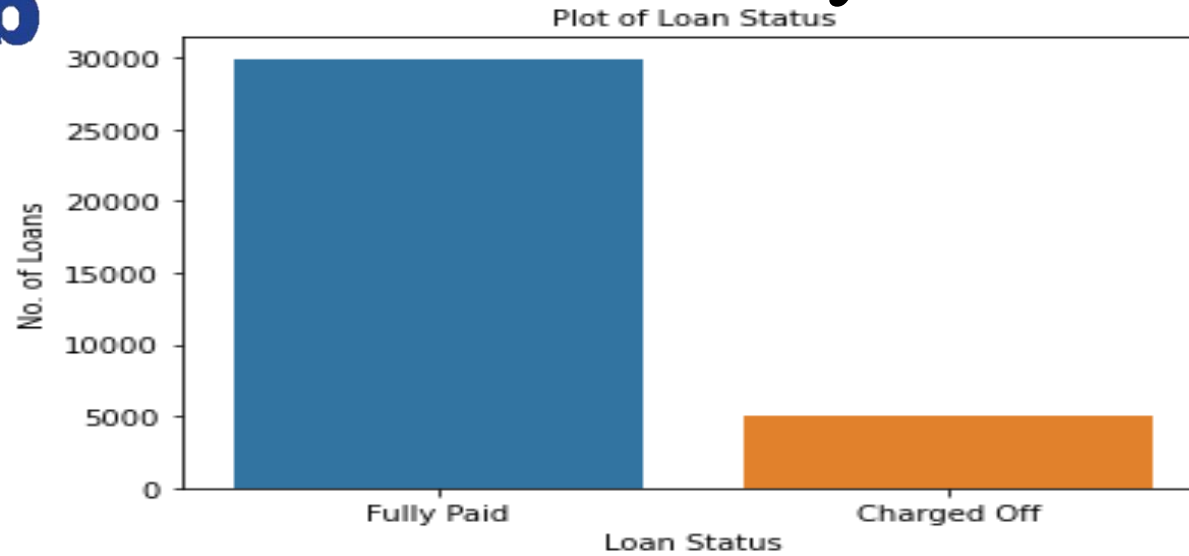
Sravani Kallu

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

# Problem solving methodology





Observation:

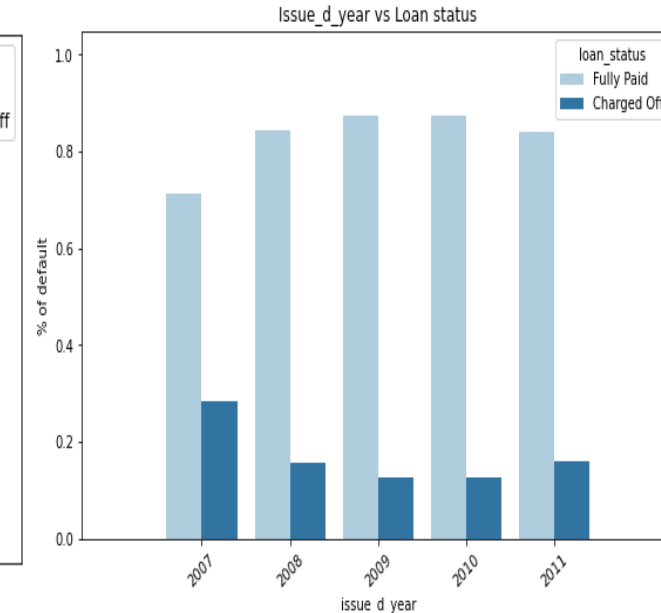
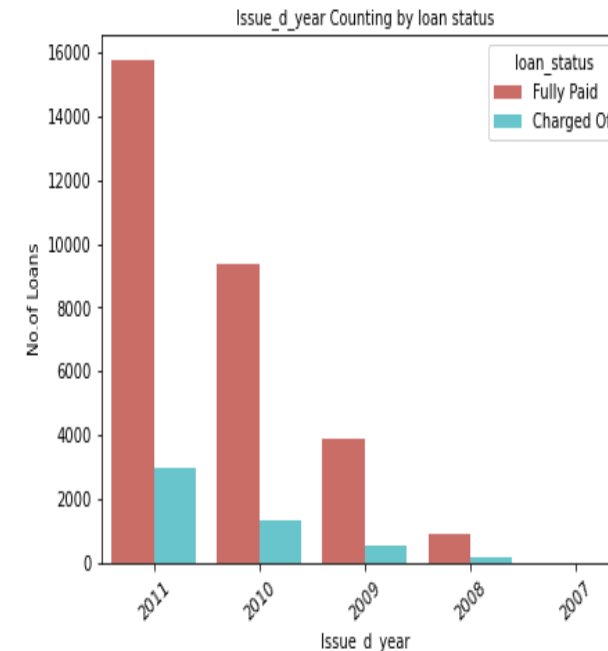
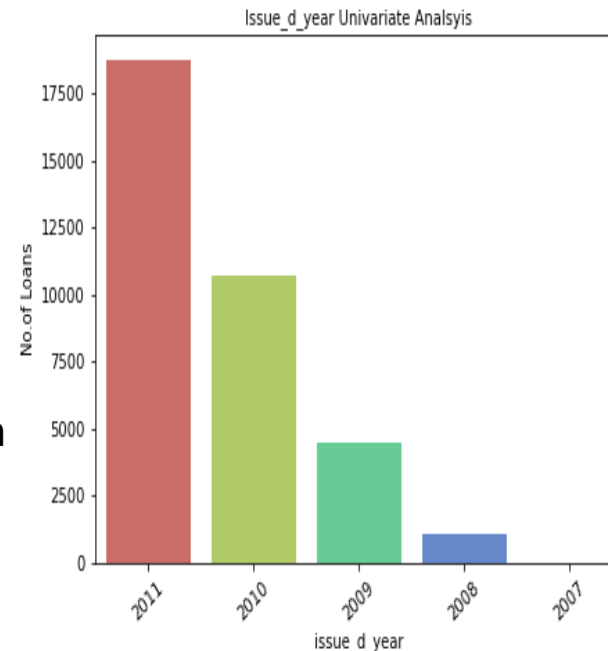
1. More than 25,000 loans are fully paid.
2. Around 5,000 loans are charged off.

## Loan count across issued year

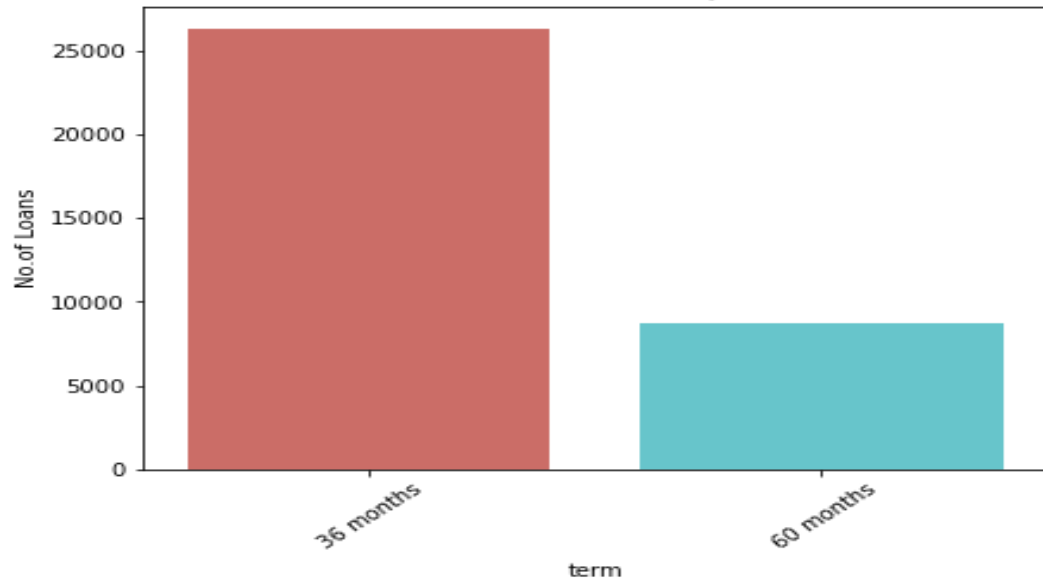
Observation:

1) No. of loans taken by borrowers are gradually increased from 2007 to 2011.

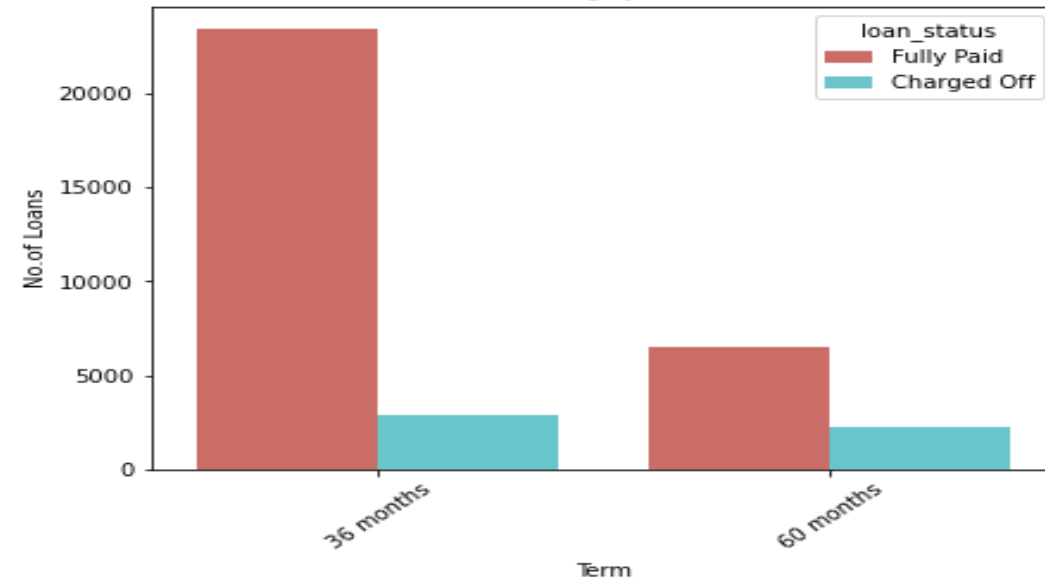
2) The default rate was high in 2007 then decreased and suddenly increased in 2011 from 2010.



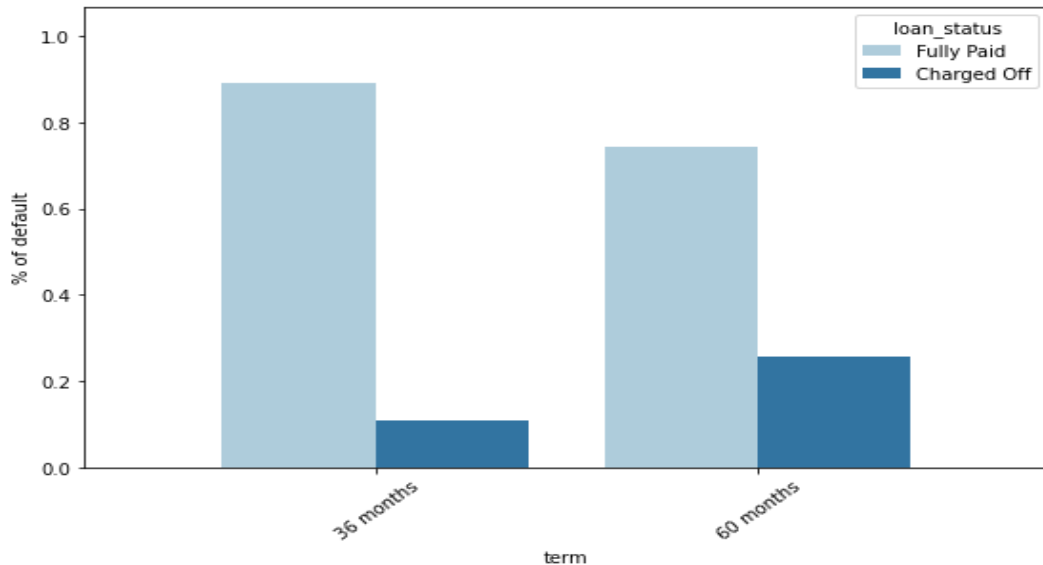
Term Univariate Analysis



Term Counting by loan status

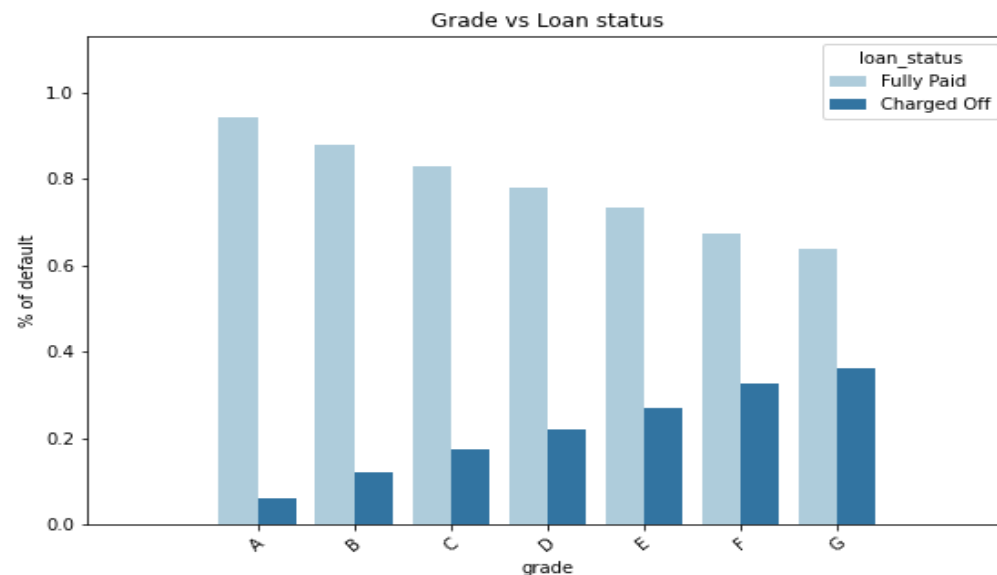
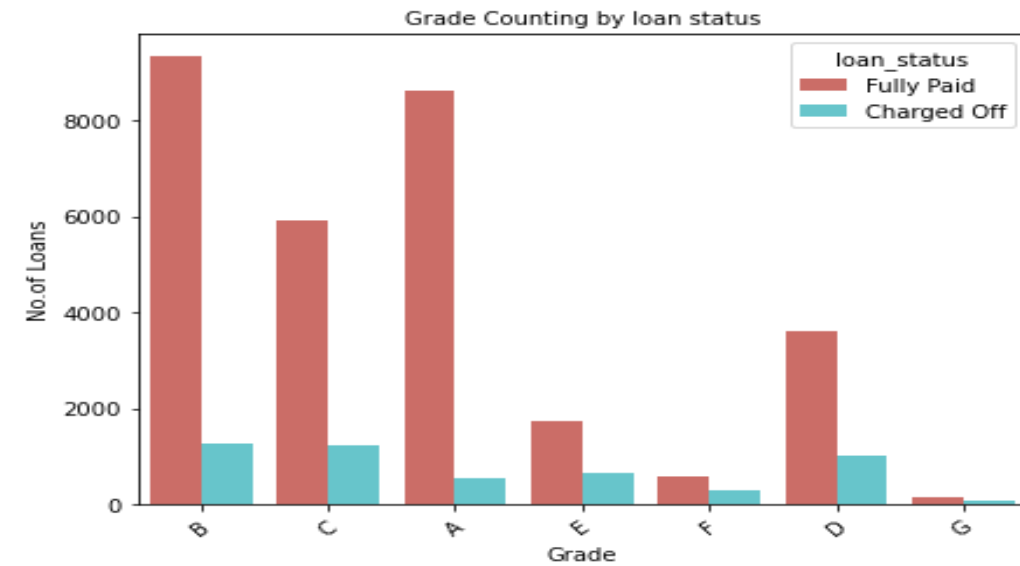
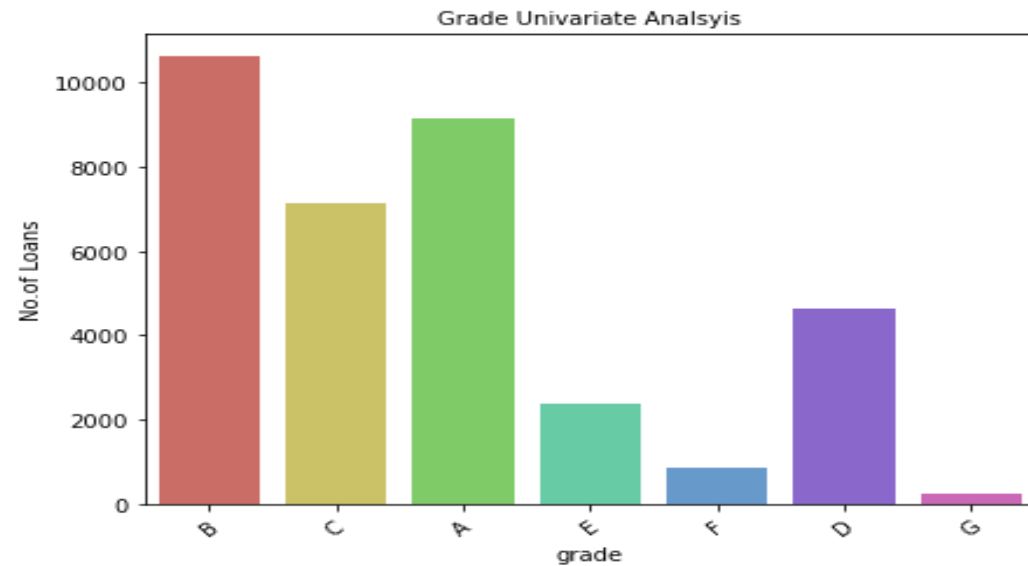


Term vs Loan status

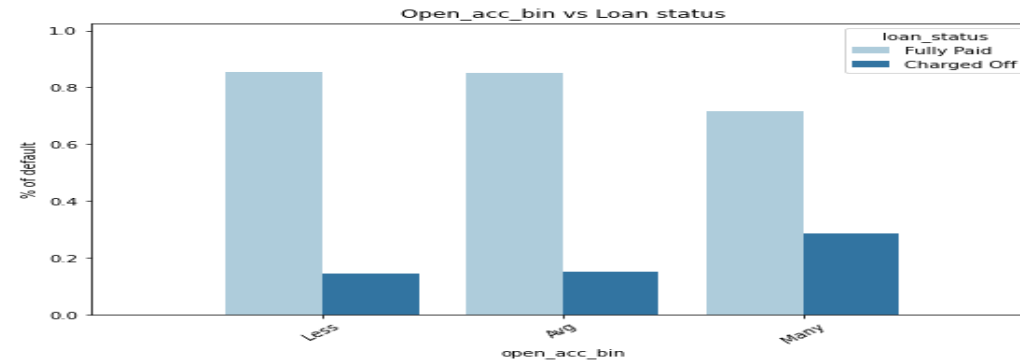
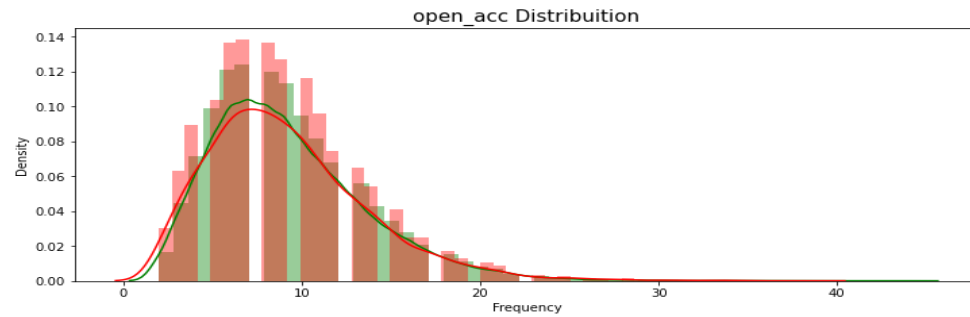


Observation:

- 1) There are more no. of 36 months loans.
- 2) 60 months loans default rate is more than 36 months loans

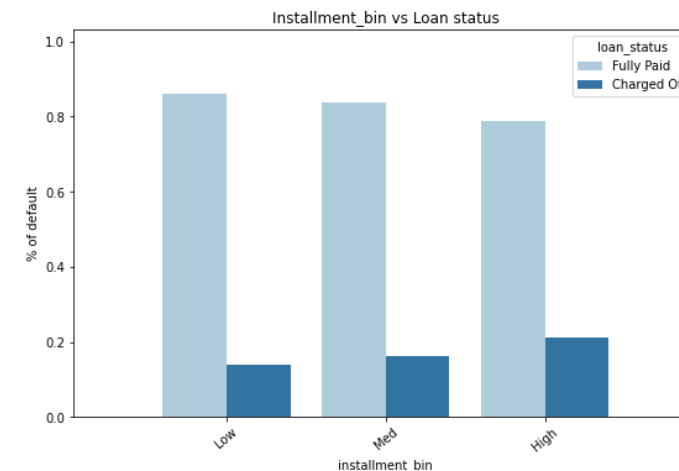
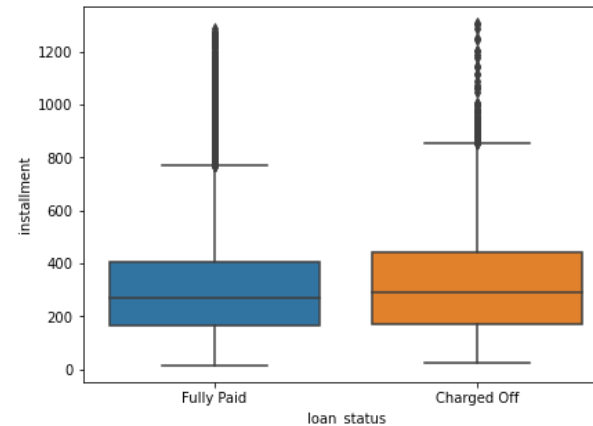
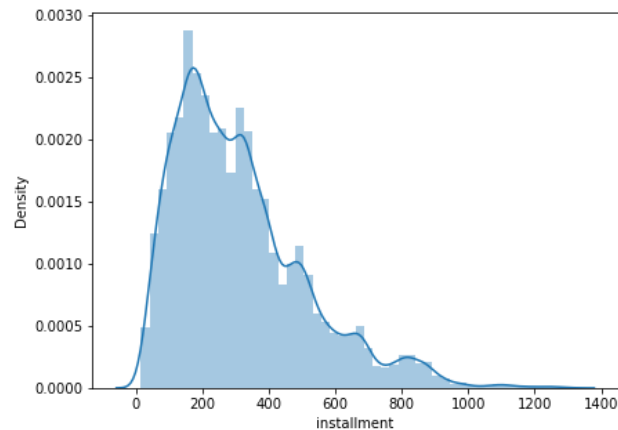
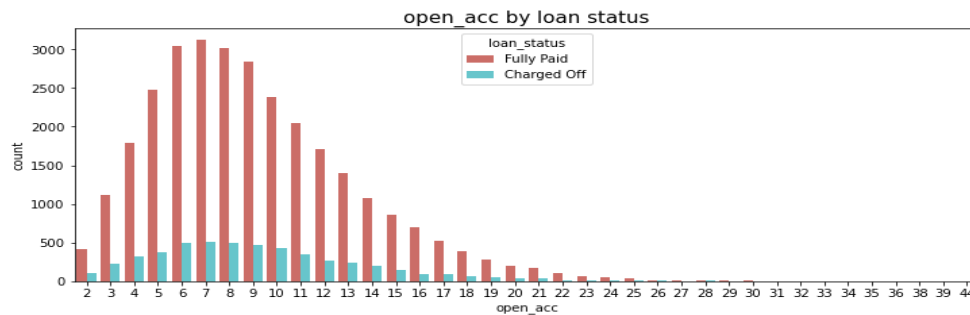


Observation: As the grade of loan goes from A to G, the default rate increases. This is expected because the grade is decided by Lending Club based on the riskiness of the loan.

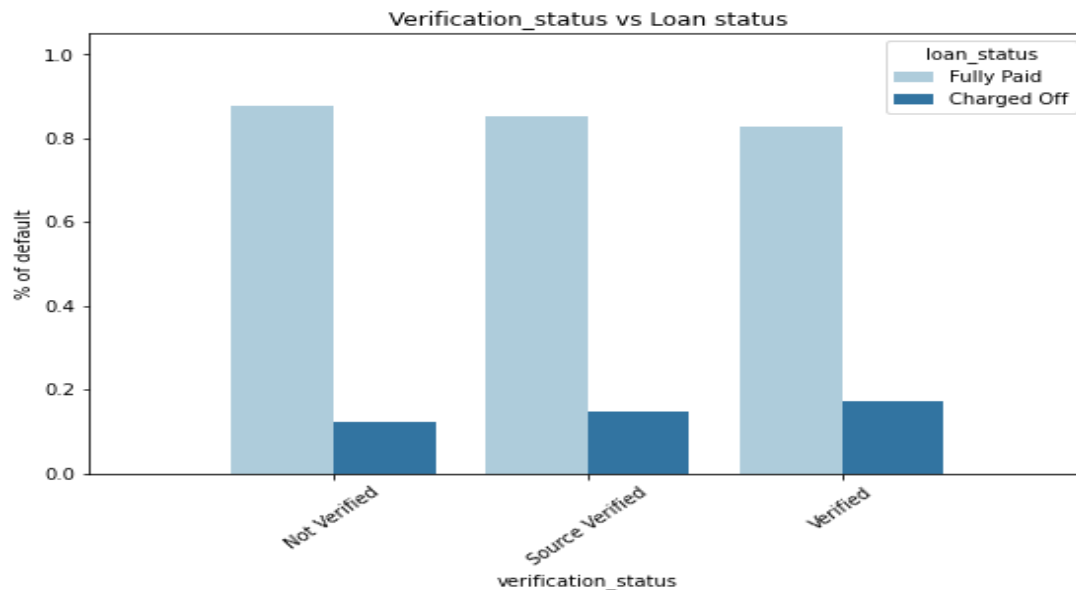
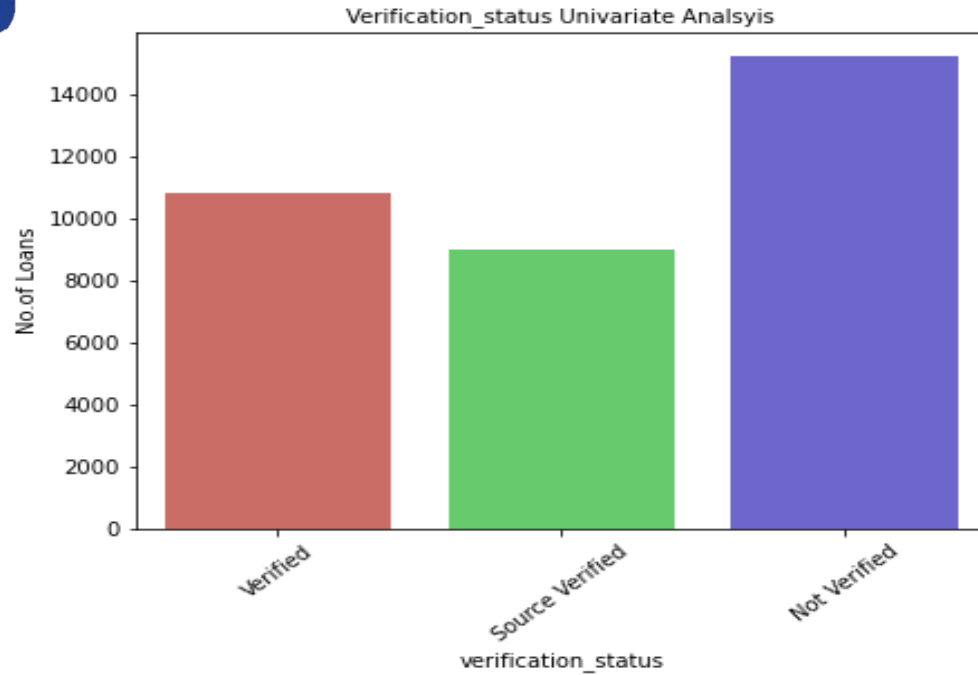


Observation:

- 1) Most of the borrowers are having less open accounts.
- 2) The borrowers with many open accounts, higher the default rate



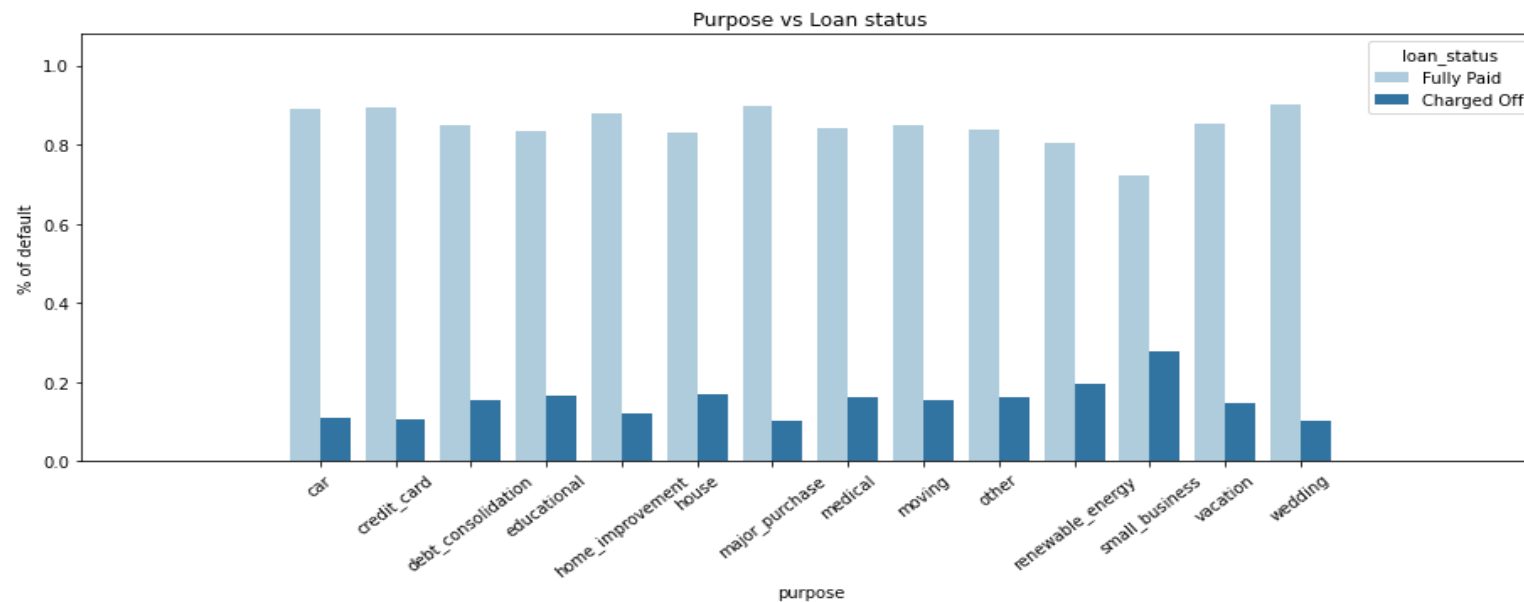
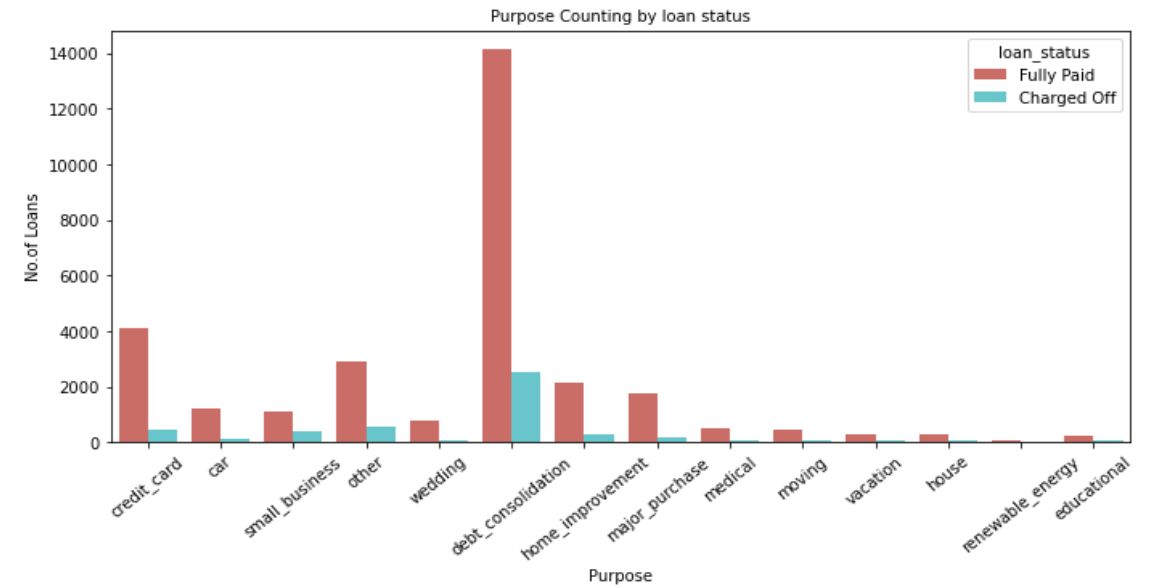
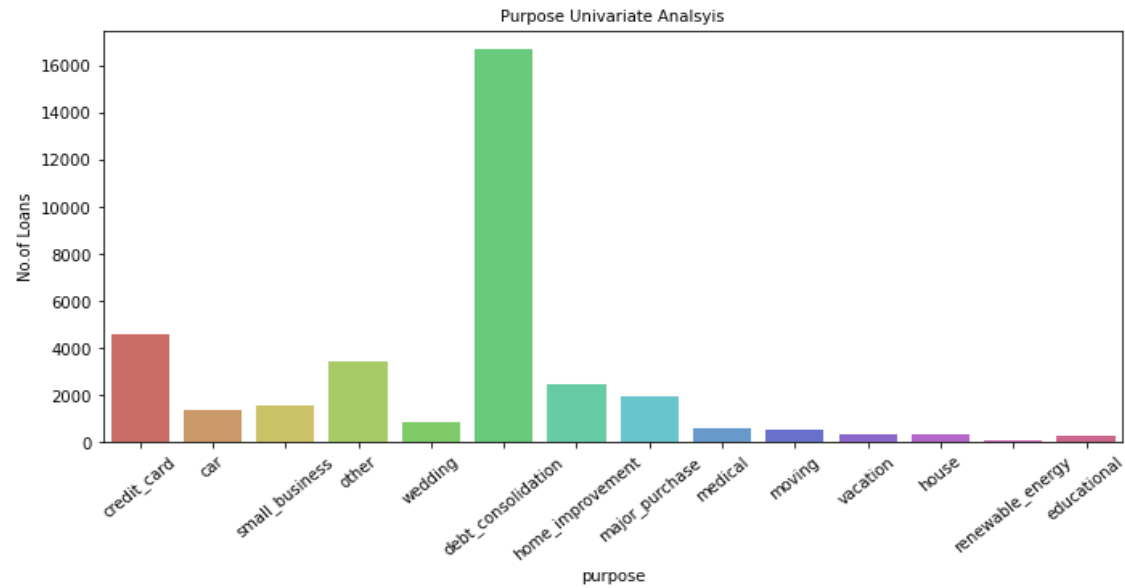
Observation: Higher the installment amount, the higher the default rate



Observation:

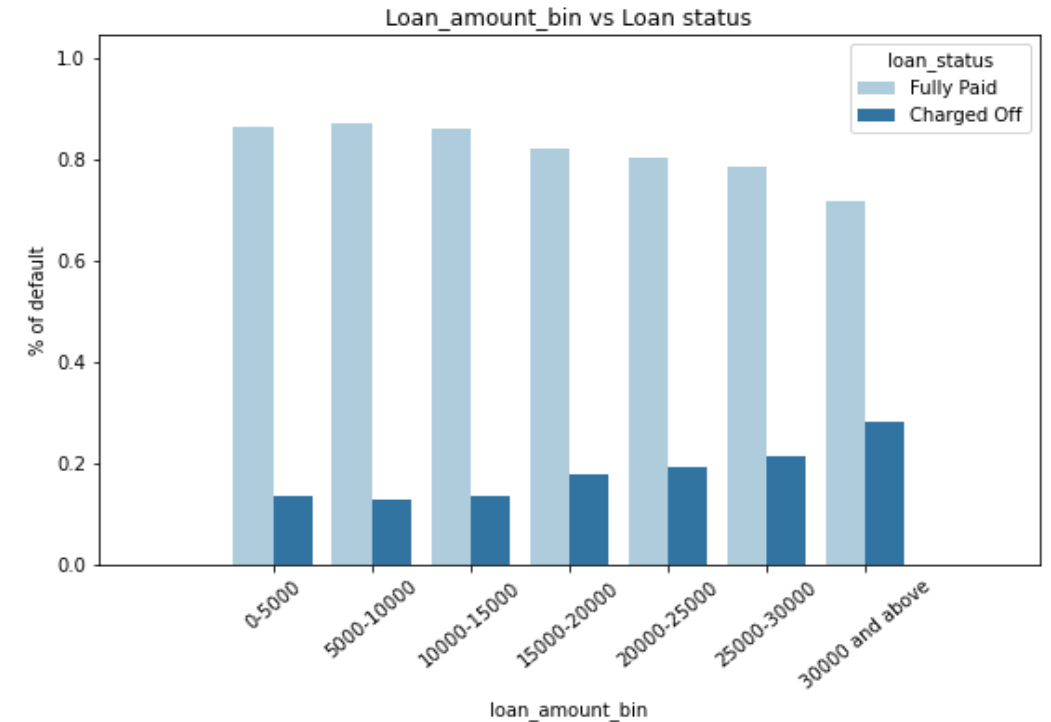
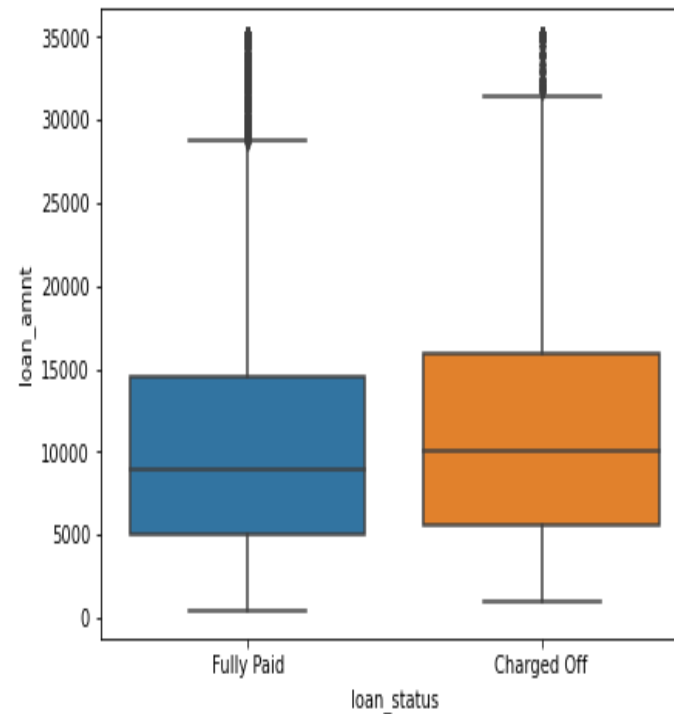
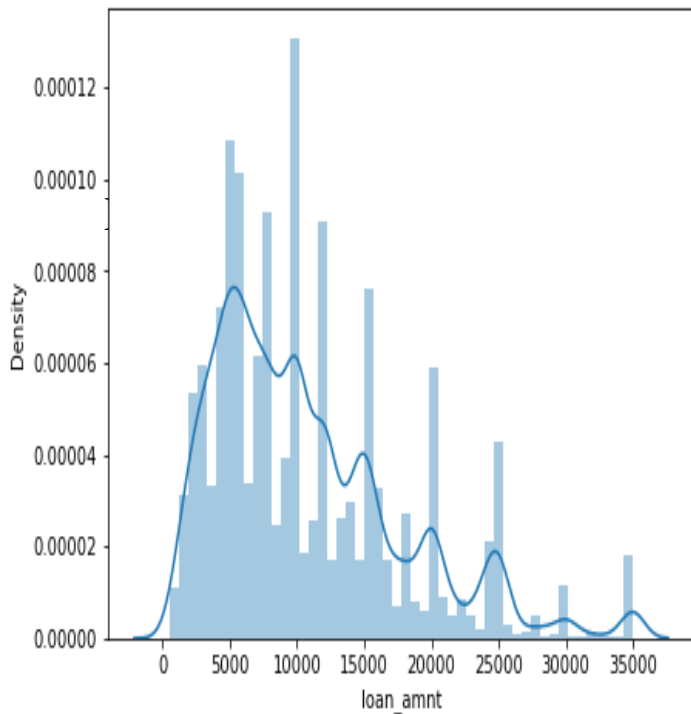
- 1) High amount of loans are non-verified.
- 2) Verified loans default more than not verified which is unusual.





## Observation:

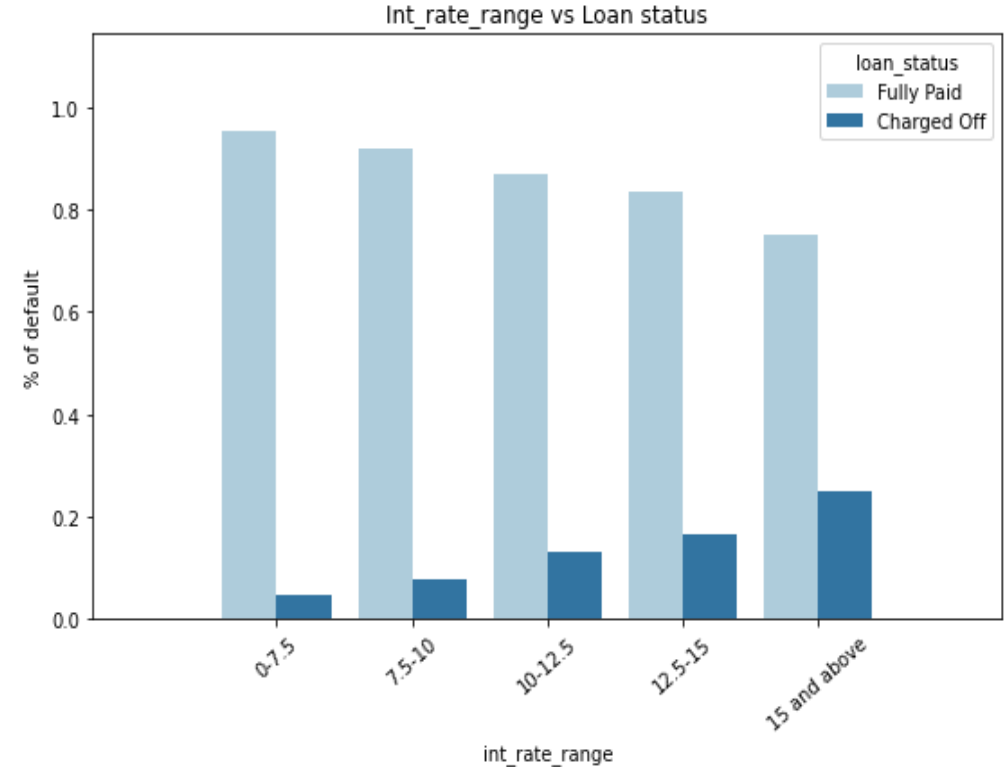
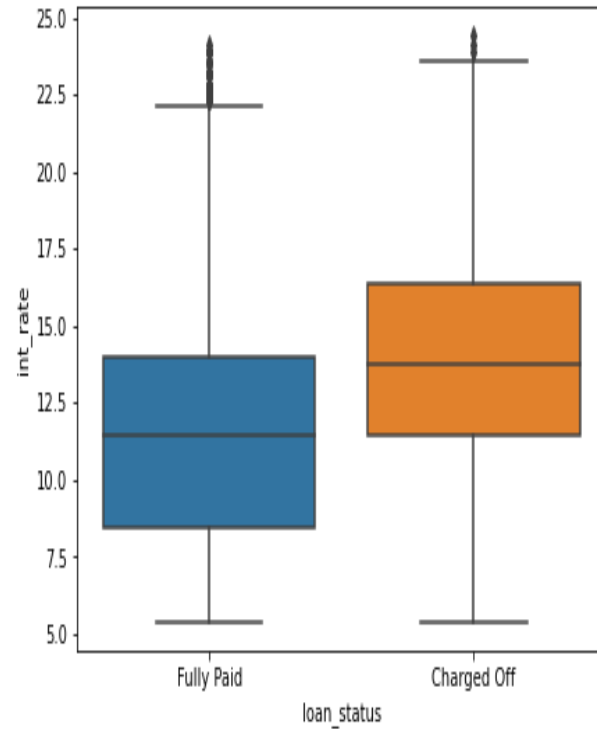
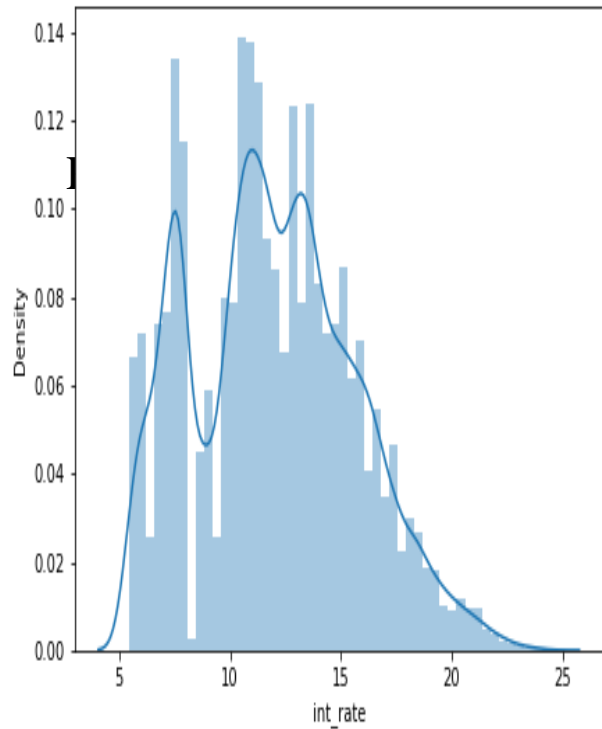
- 1) High amount of loans are taken for debt\_consolidation.
- 2) small business loans default the most, then renewable energy and education



## Observation:

- 1) Most of the loans granted are below 15,000 i.e. 75 percentile value
- 2) Around each 5,000 boundary we can observe a spike in loan amounts.
- 3) The median loan amount is around 10,000

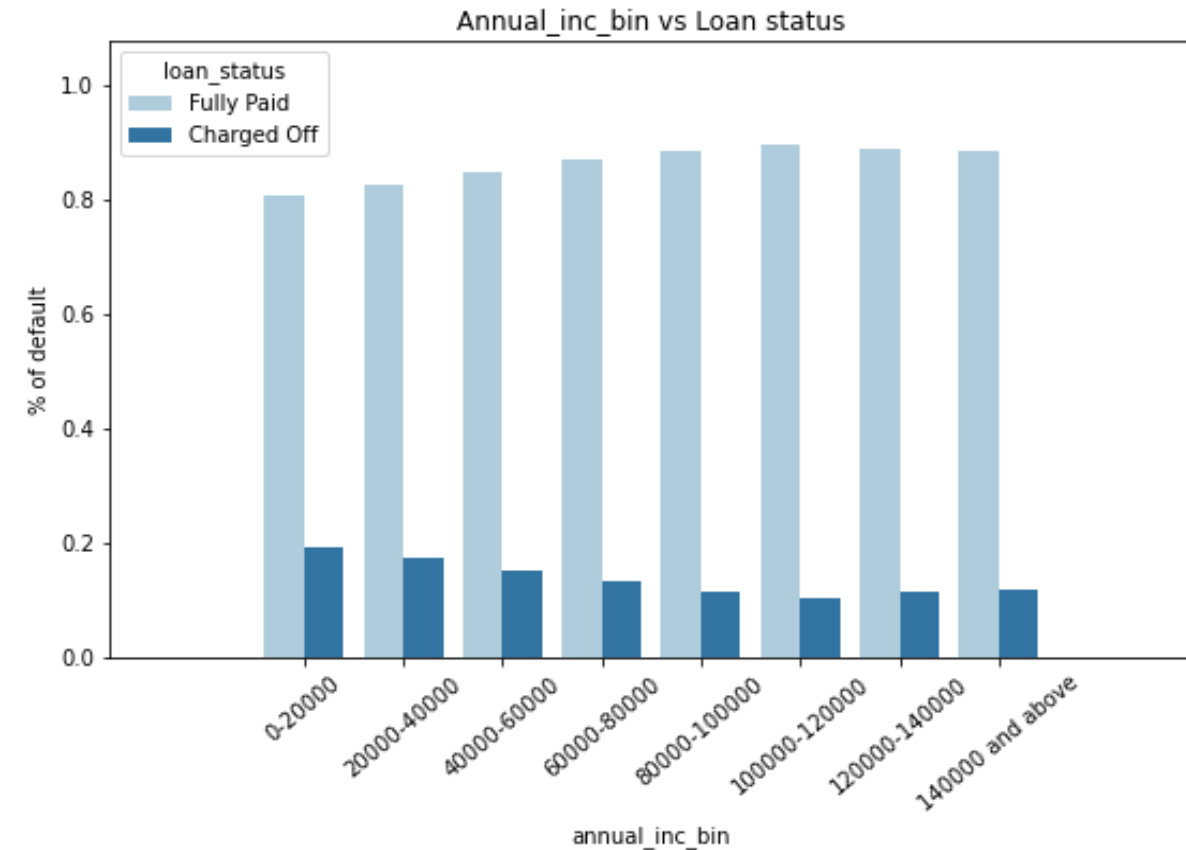
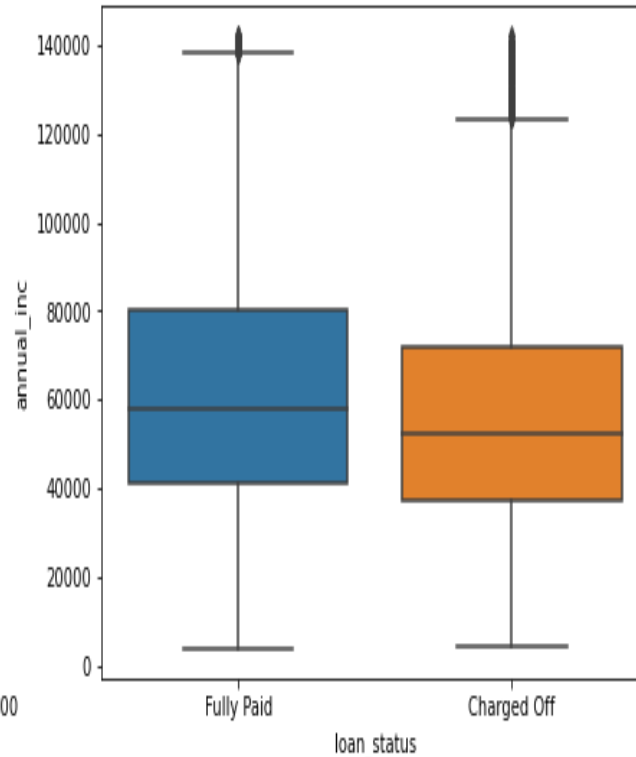
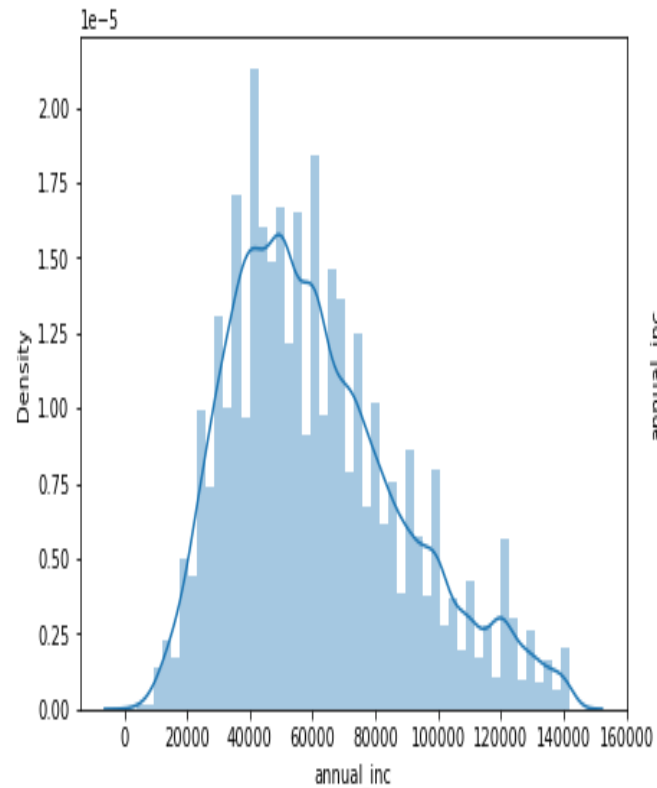
Observation: Percentage of Charged off loans increases as the loan amount bucket increases.  
Higher the loan amount, Higher the default rate.



Observation: Charged off borrowers count is high with high int\_rate

Observation:

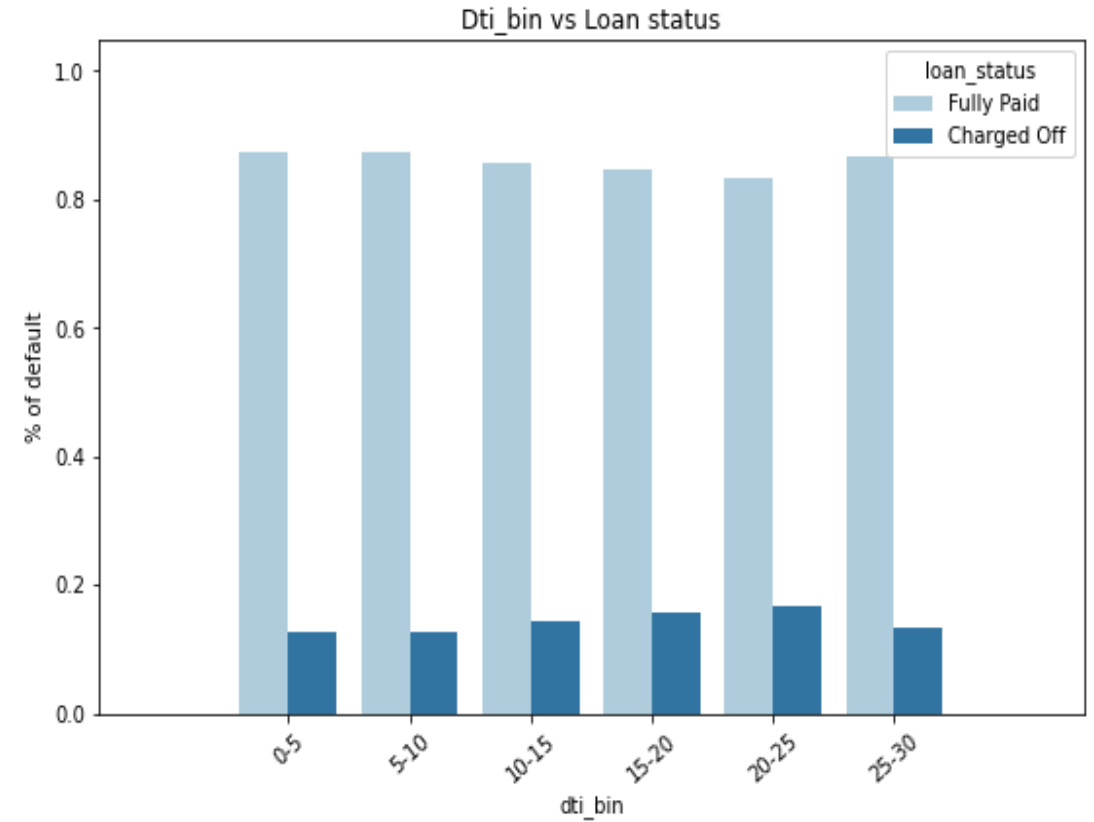
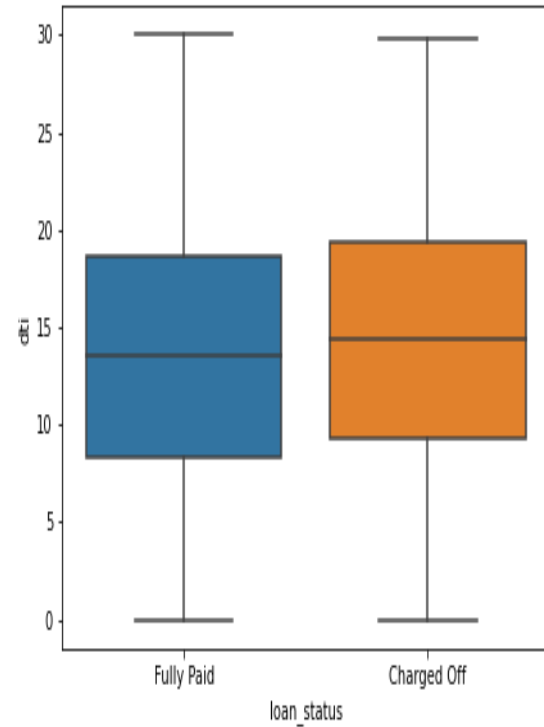
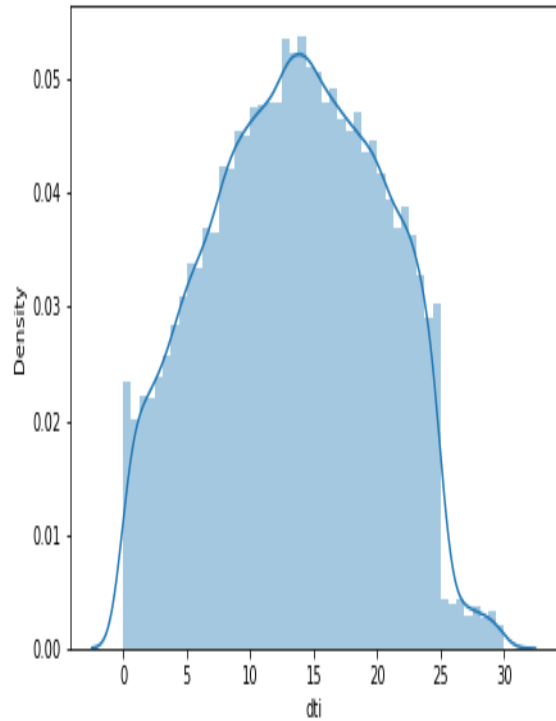
- 1) Large no. of loans are taken with int\_rate of 10-12.5 by fully paid borrowers and 15 and above by charged off borrowers.
- 2) High interest rates default more.



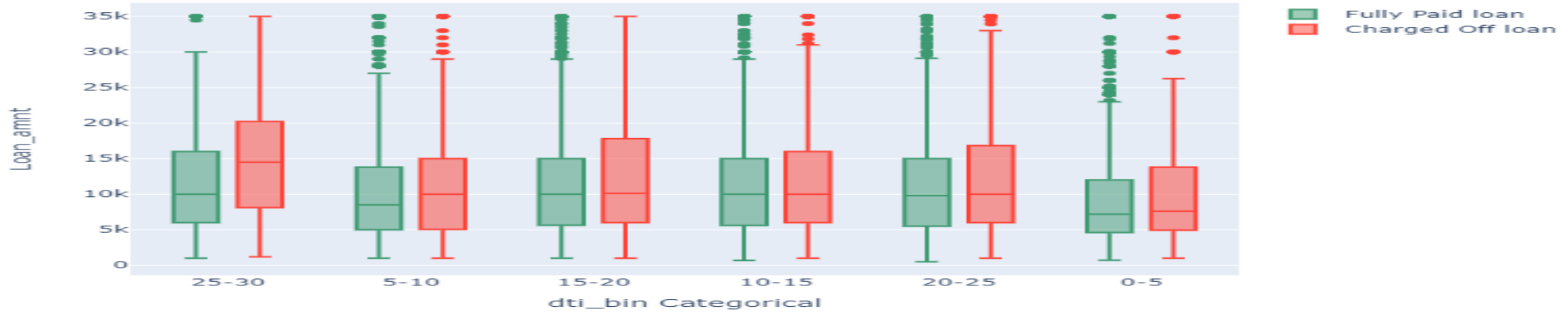
## Observation:

- 1) Most of the borrowers annual income is in between 40000 - 60000.
- 2) Median annual income is around 60,000.
- 3) Most people have an annual income less than 115000

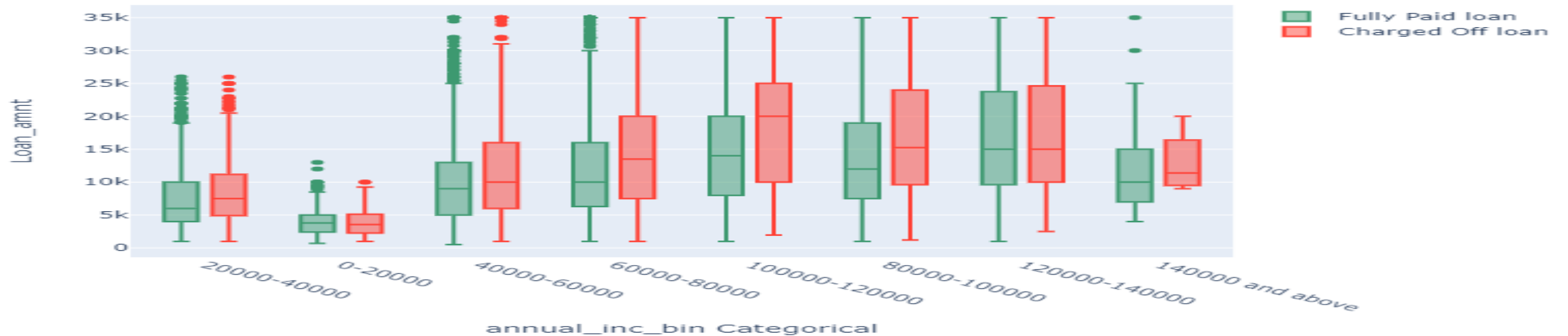
Observation: Lower the annual income, higher the default rate



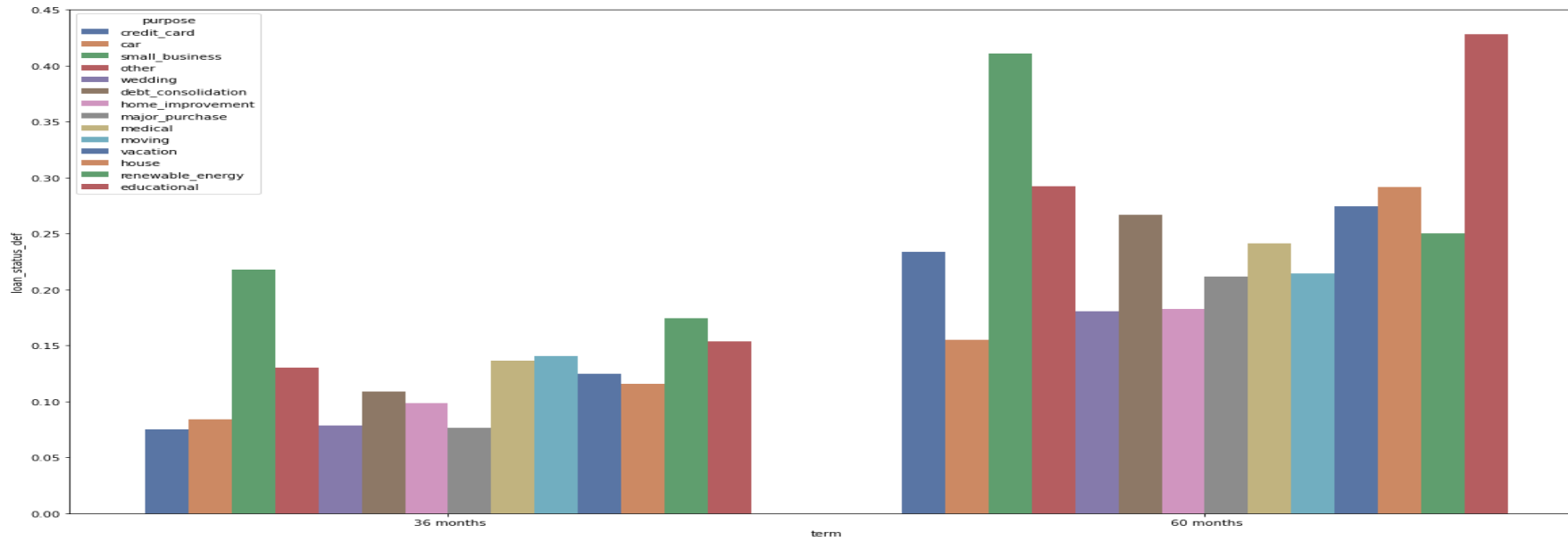
Observation: When the dti or debt payment to income ratio is higher than 20, higher percentage of loans are Charged Off  
Higher the dti higher the chances of loan being Charged Off.



Observation: Borrowers with dti in range of 25-30 have high default rate.

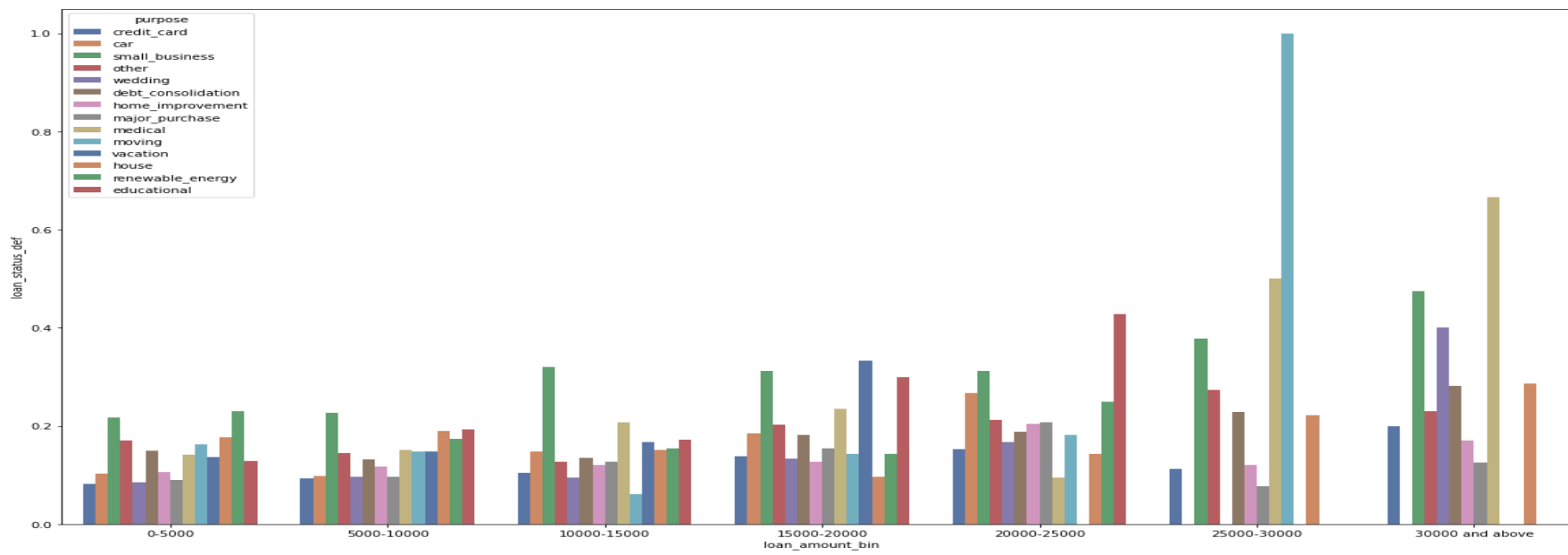


Observation: Borrowers with income in between 60000 to 120000 have high default rate.



Observation:

- 1.The borrowers with purpose of small business have higher chances to default irrespective of Term.
- 2.The borrowers with purpose of credit card have around 43% chances to default in 60 months term.
- 3.The borrowers with purpose of small business have around 22% chances to default in 36 months term.



Observation:

- 1.For the loan amount less than 15000 and loan purpose as small business has highest chances to default.
- 2.For the loan amount less than 20000 and loan purpose as small business or vacation has 30% chances to default.
- 3.For the loan amount less than 25000 and loan purpose as moving has 90% chances to default.
- 4.For the loan amount above 30000 and loan purpose as medical has 65% chances to default.

# Conclusions

- Lending club should reduce the high interest loans for 60 months tenure, they are prone to loan default as 60 months loans default rate is more than 36 months loans
- Grades are good metric for detecting defaulters. Lending club should examine more information from borrowers before issuing loans to Low grade (G to A).
- The borrowers with many open accounts, higher the default rate. LC should open accounts of borrowers before issuing loans borrowers with many open accounts.
- Small business loans are defaulted more. Lending club should stop/reduce issuing the loans to them.
- Higher the dti higher the chances of loan being Charged Off. LC should examine borrowers with high DTI before issuing loans.
- Higher the loan amount/Int\_rate, Higher the default rate.