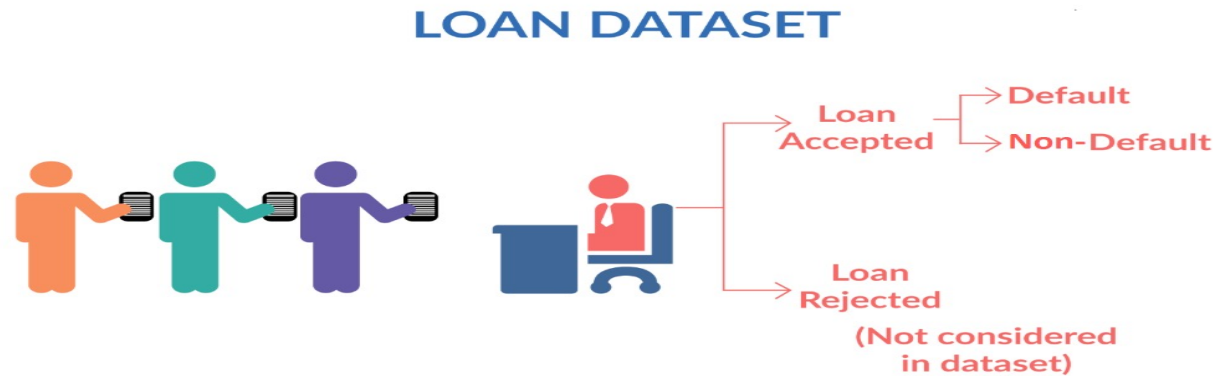# Lending Club Case Study

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VaradaVenkataKrishna

Objective of Case Study

- To implement EDA technique on a Lending Club problem
- Present insights on key indicators/driving factors for loan defaulters.

LOAN DATASET

Loan
Accepted → Default
→ Non-Default

Loan
Rejected
(Not considered
in dataset)

Process ...

There are four major parts that are needed to be done for this case study:

1. Data understanding

2. Data cleaning –
    ◦ Importing the Data , Removing columns with all null values, Removing Columns with all same values, Removing Duplicate Data, Removing irrelevant columns
    ◦ Imputing null values columns, correcting data types and deriving new columns, Detecting and Removing outliers ,

3. Data Analysis

-        univariate analysis, bivariate analysis
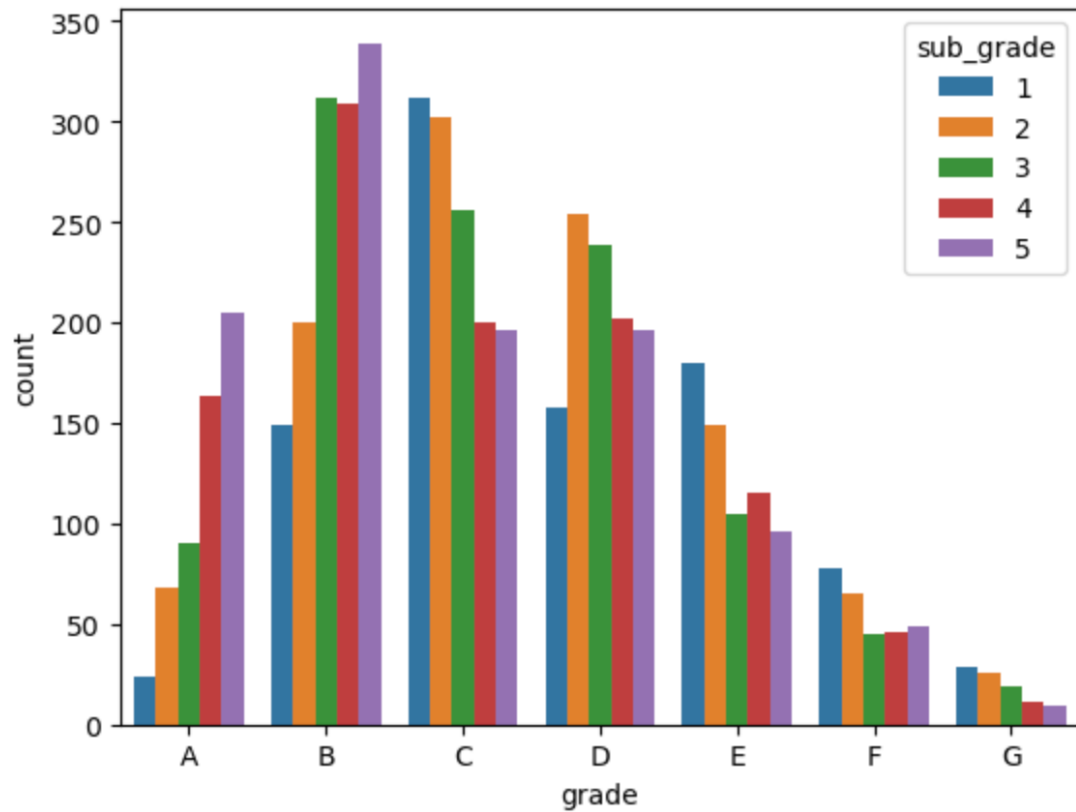
4. Recommendations

Term , purpose
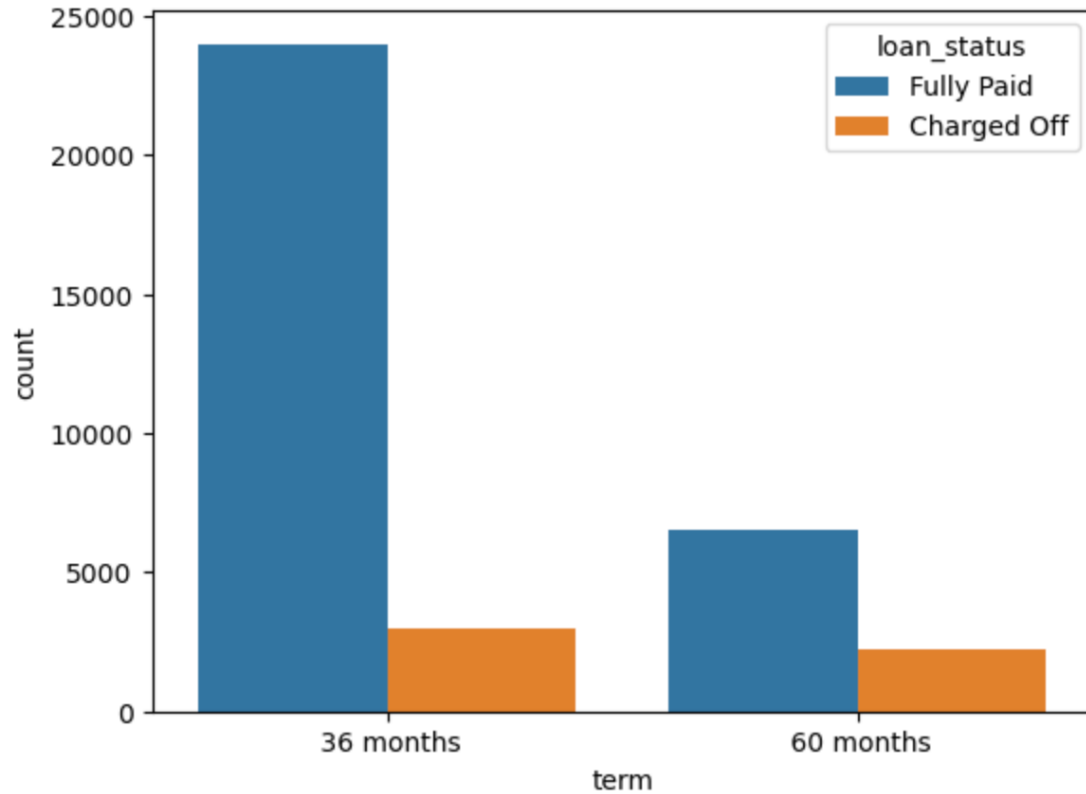
The loan term for 36 months are
much more than 60 months and has lower
chance of being default.
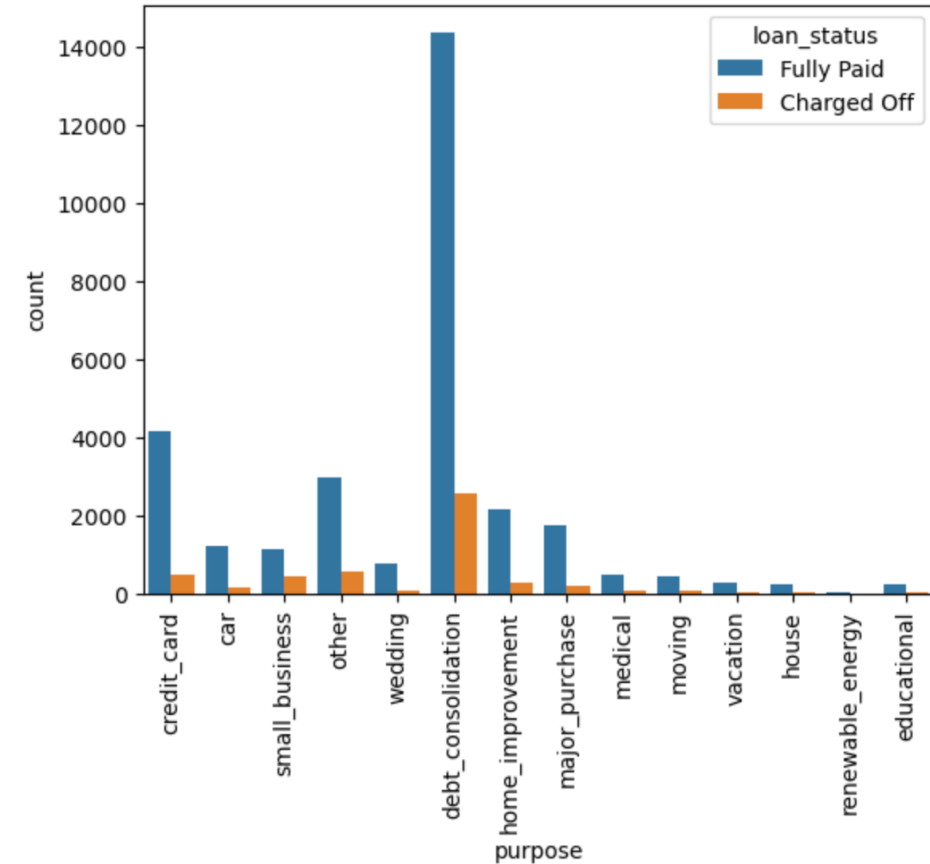
1. Most of the applicants applied loan for
debt_consolidation as purpose.
2. debt_consolidation has highest fully paid loan
and also has highest defaulted loans as well.

Grade

1. If LC assigned grade is A - applicant is less likely to be defaulter.
2. Within A if subgrade is increasing (A1 , A2 ,A3 ,A4 ,A5) - applicant is more likely to be defaulter.
3. Most chances of being defaulter is with Grade B and sub-grade - B5
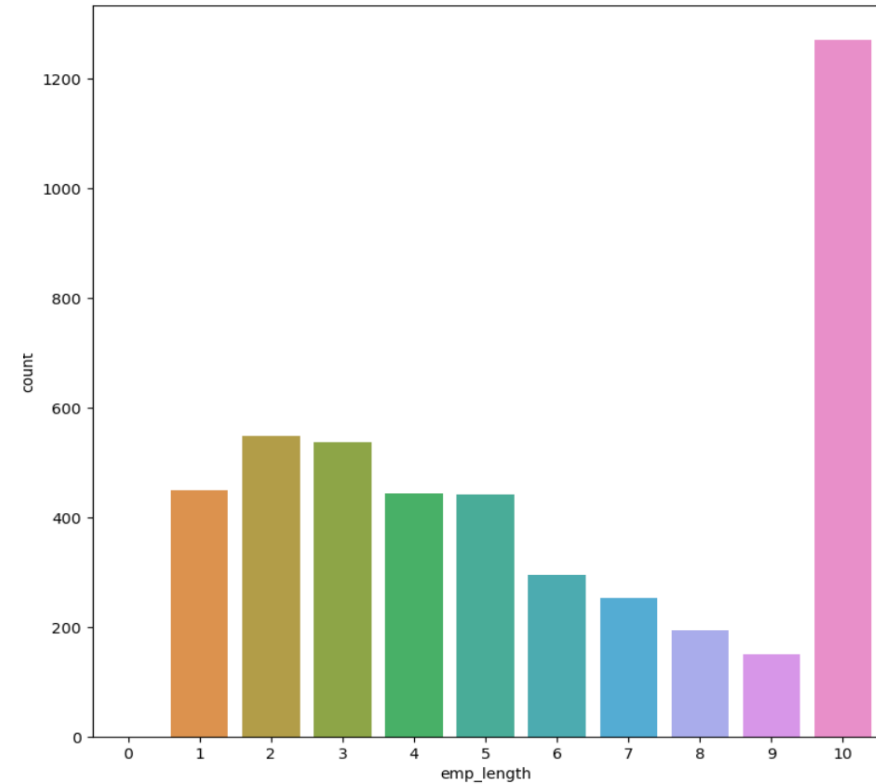
Home Ownership
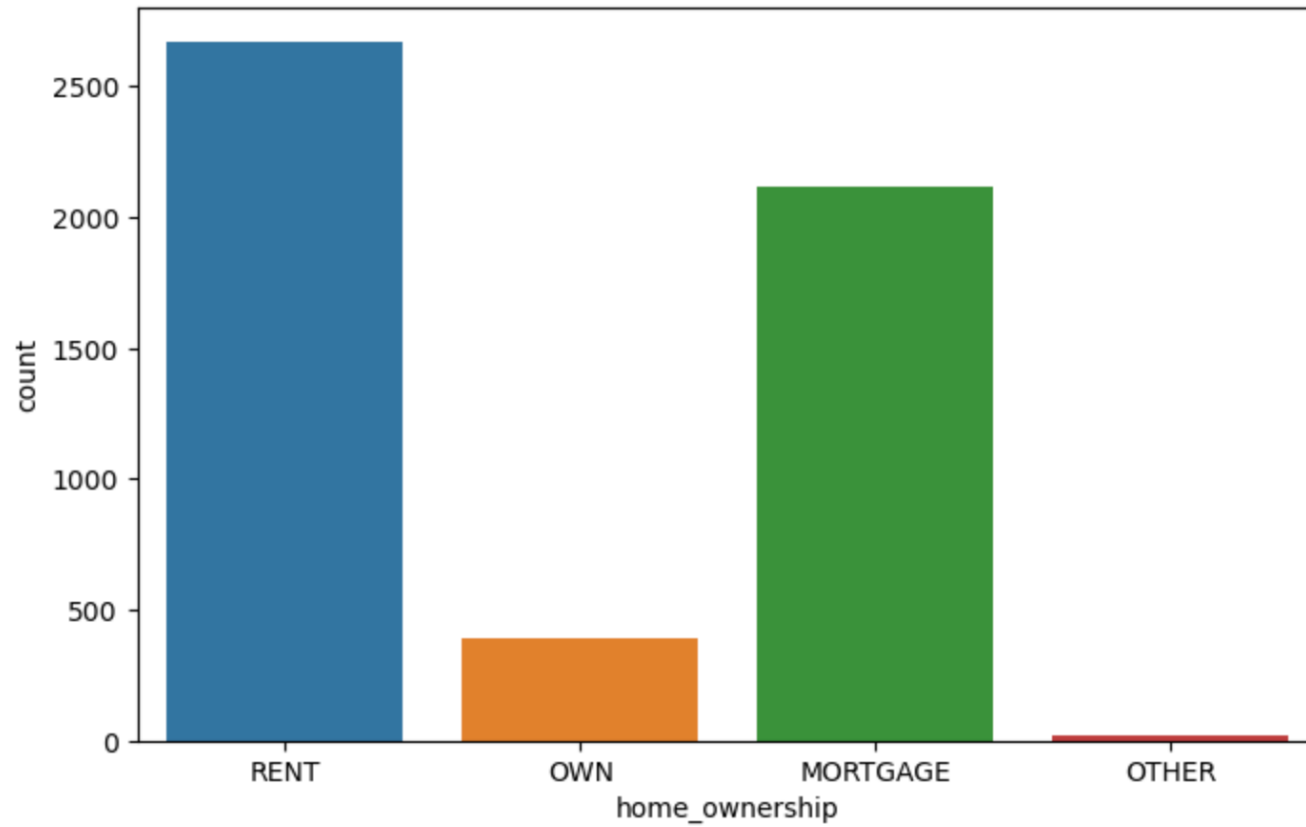
1. If applicant is on RENT and MORTGAGE he is more likely to be defaulter.
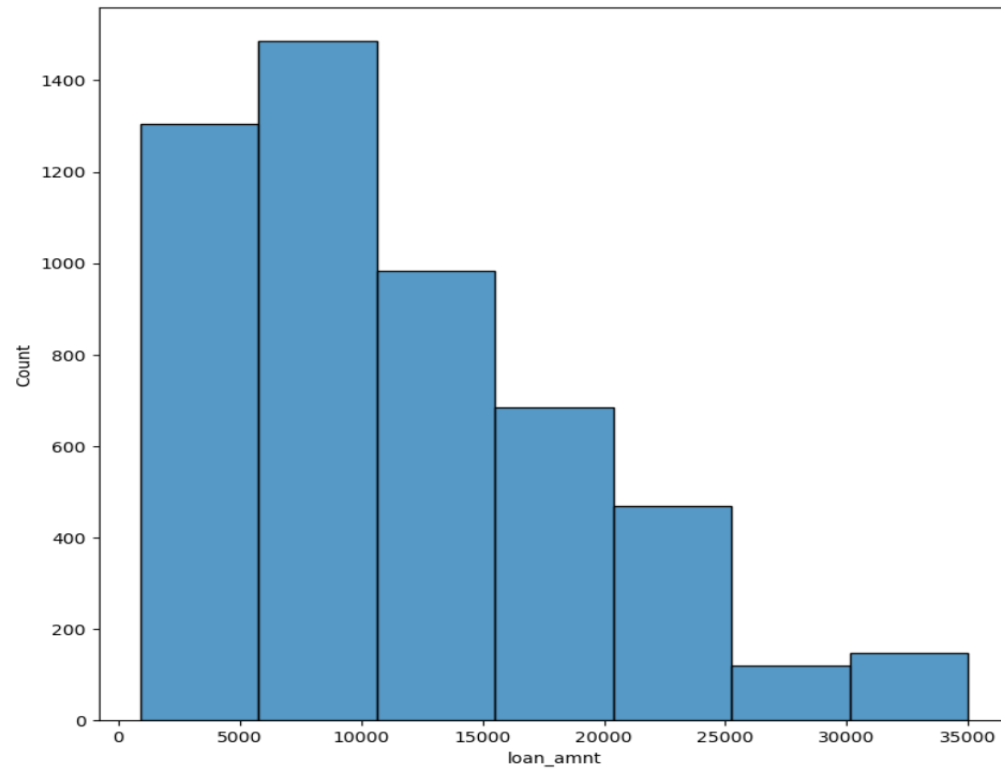
verification_status ,emp_length
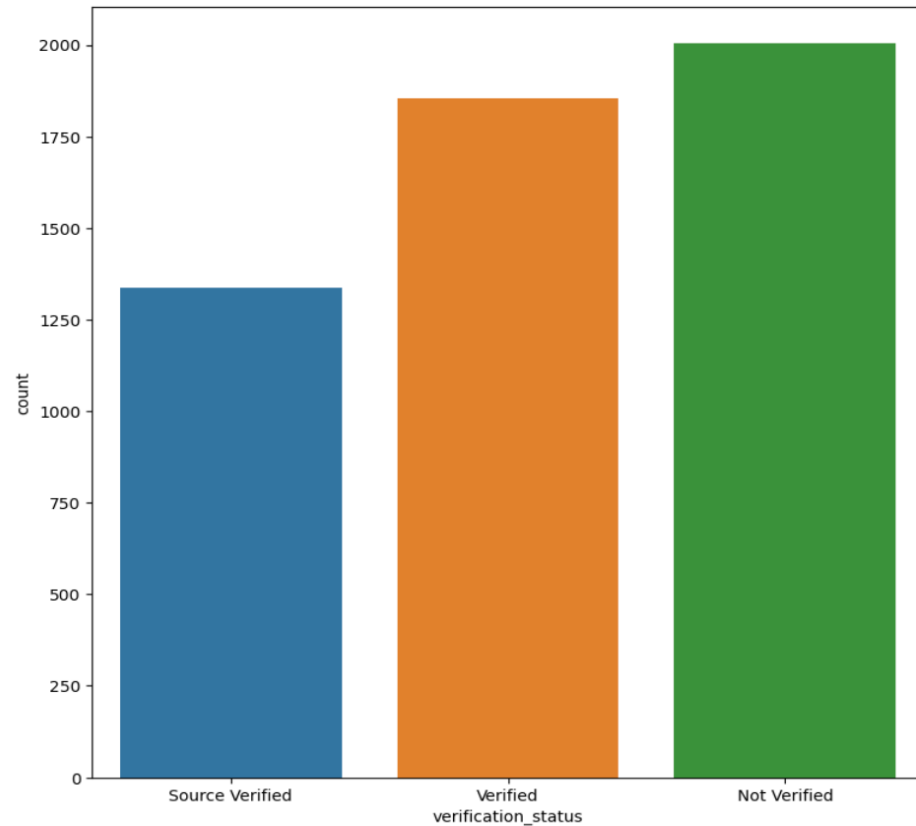
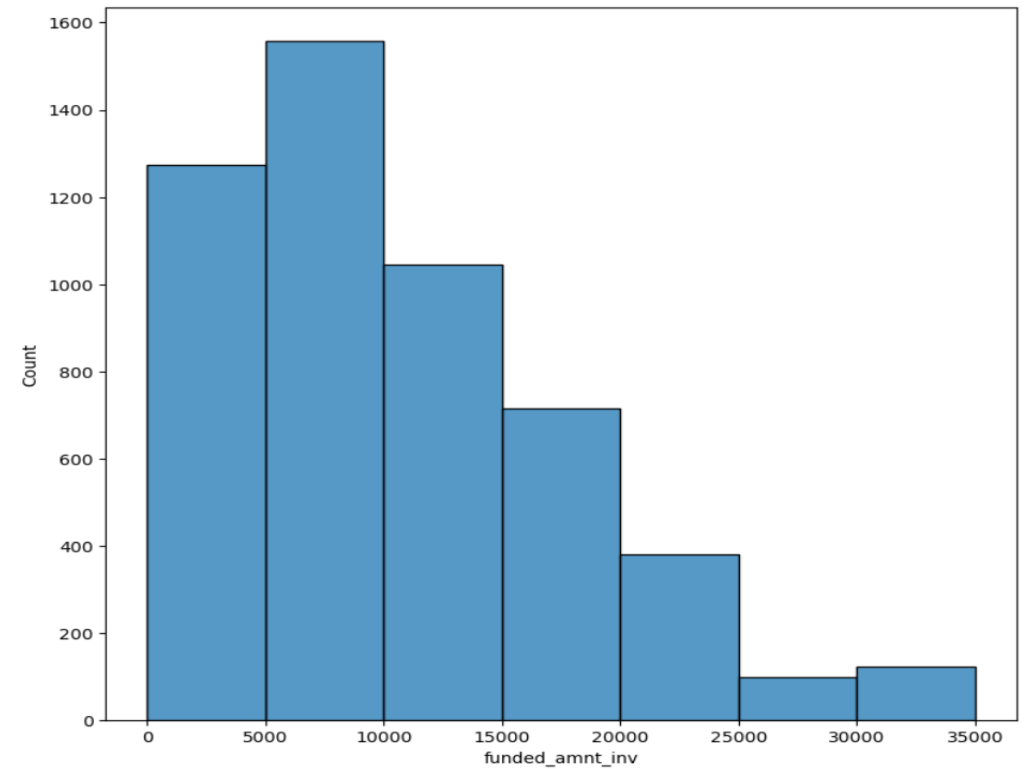If loan is not verified - he is more likely to be defaulter.

If employment length of applicant is >=10 years , he is more likely to be defaulter
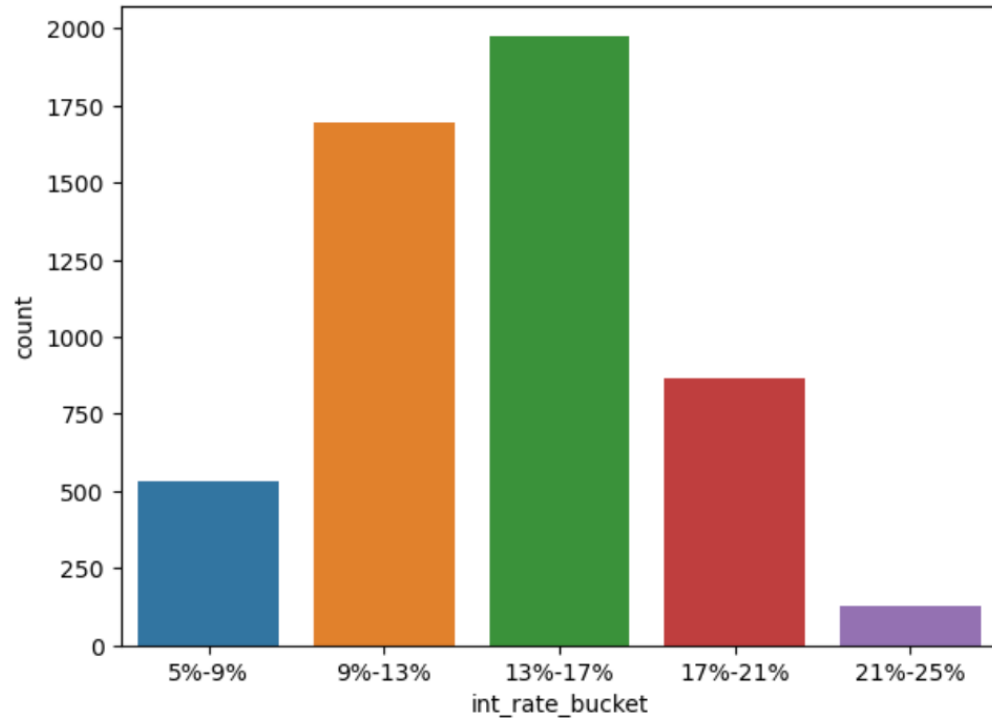
Loan amount , funded amount by inv

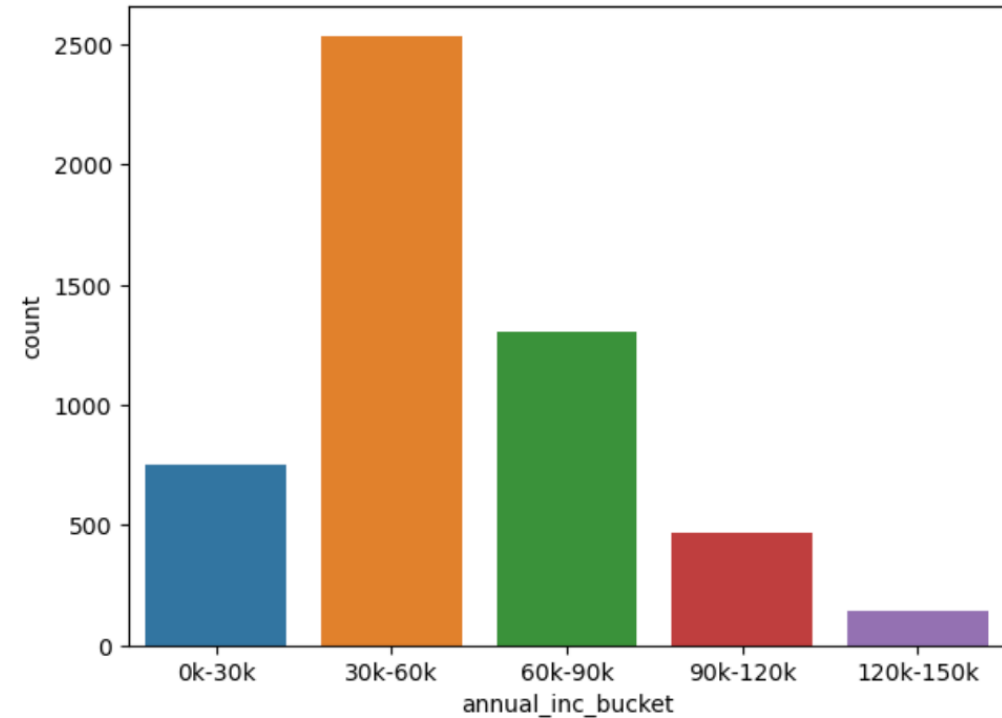If loan amount is 6k-11k - applicant is more likely to be defaulter.

If funded amount by investors : 5k-10k - applicant is more likely to be defaulter.
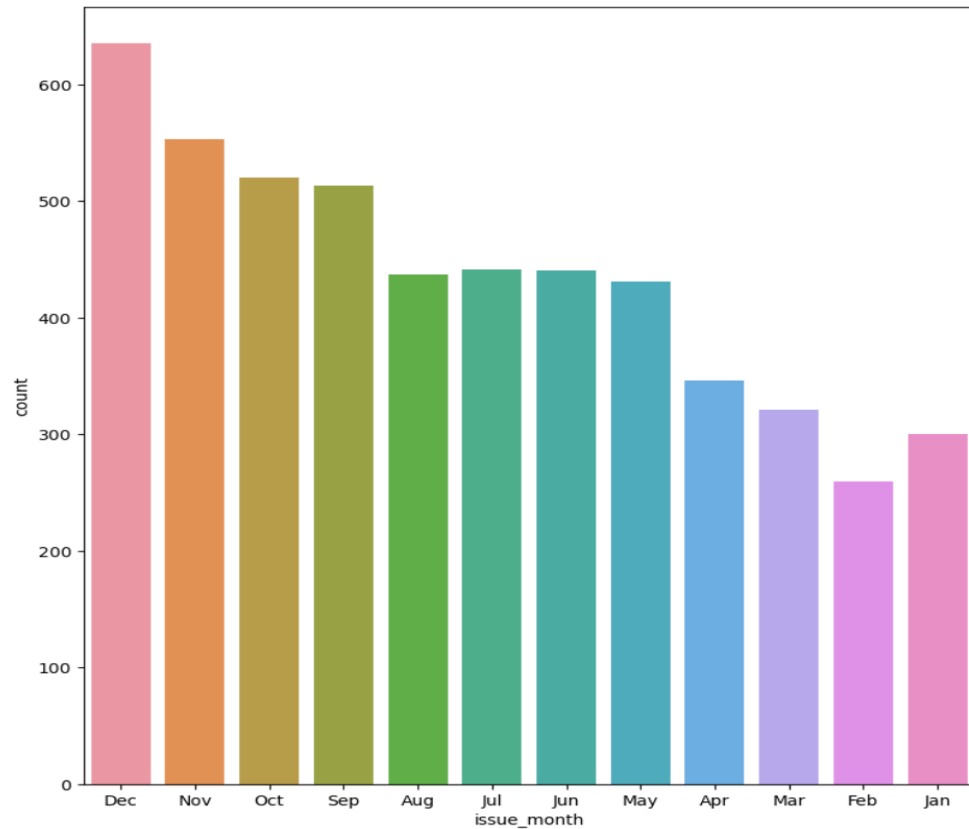
Interest rate , annual income

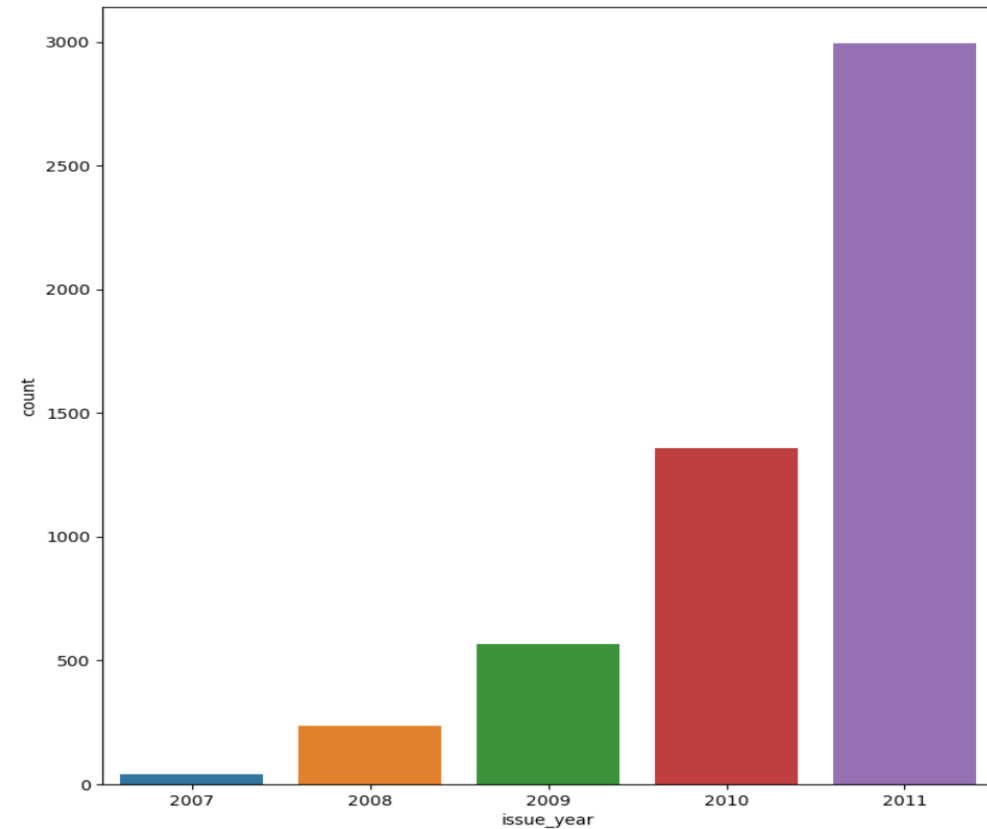If interest rate is 13%-17% - applicant is more likely to be defaulter.

If annual income is in range of 30k-60k , he is more likely to be defaulter
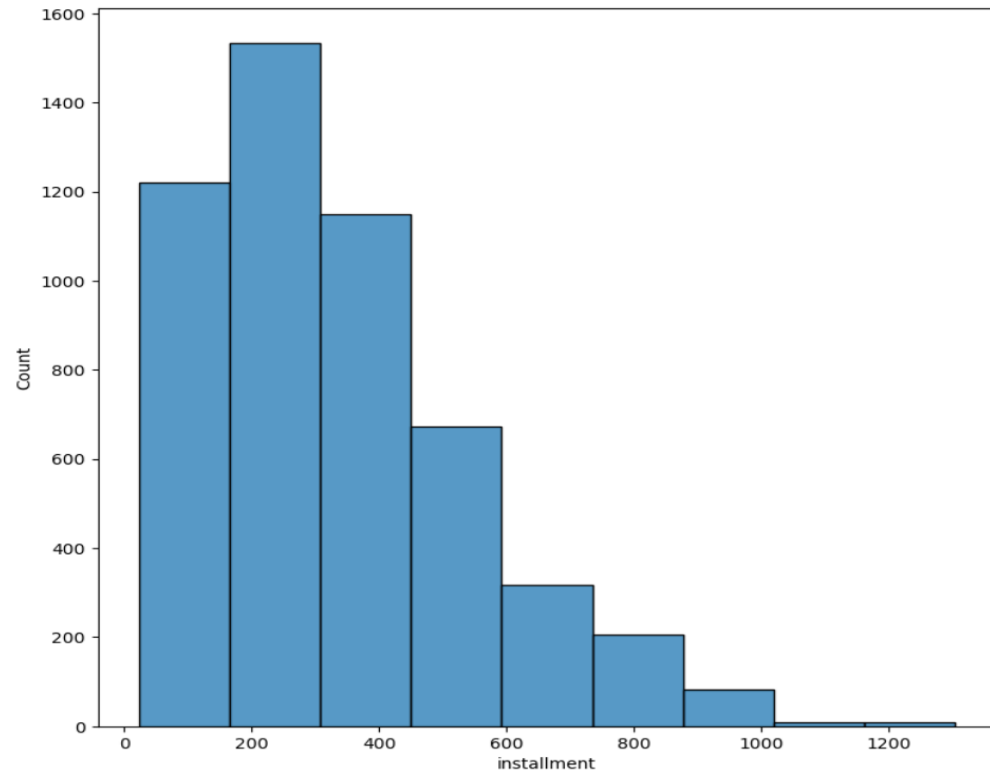
Issue month and year

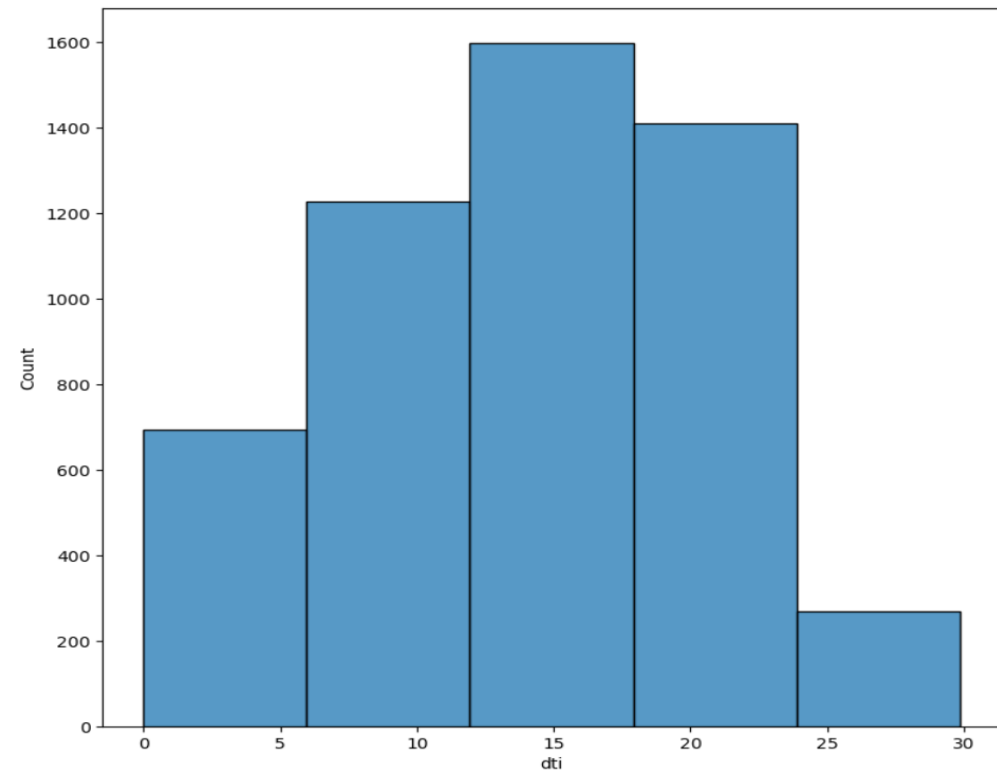Loan issued in Year end months like Nov,Dec have high chances to be defaulter.

2011 year has produced the highest defaulters so far.

Installment , dti
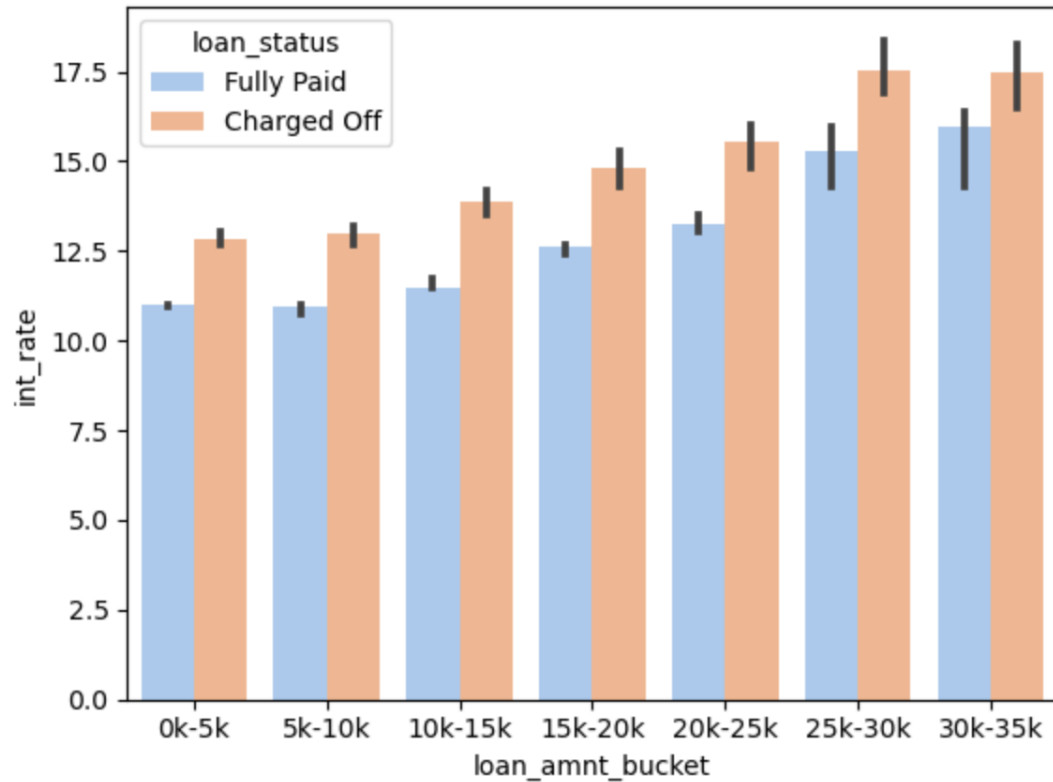

If the probable monthly installment is ~150-300 , he is more likely to be defaulter.
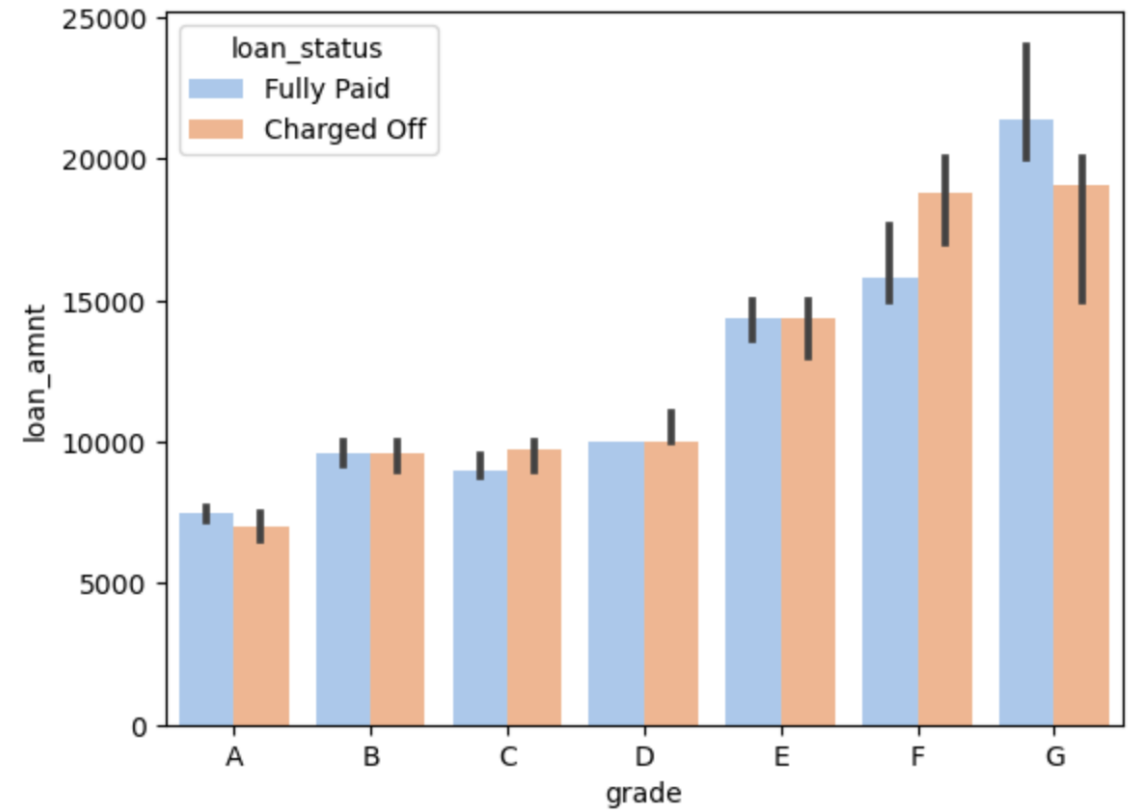
If the dti is in range of 12-18, he is more likely to be defaulter.

Loan amount and int rate + loan amount and grade

Applicants who have taken loan in the range of 25k with charged interest rate of 15%-17.5% are more likely to be default.

Loan amount > 15k and Grade is F – more likely to be default.

Loan amount and purpose
+ loan amount and home_ownership
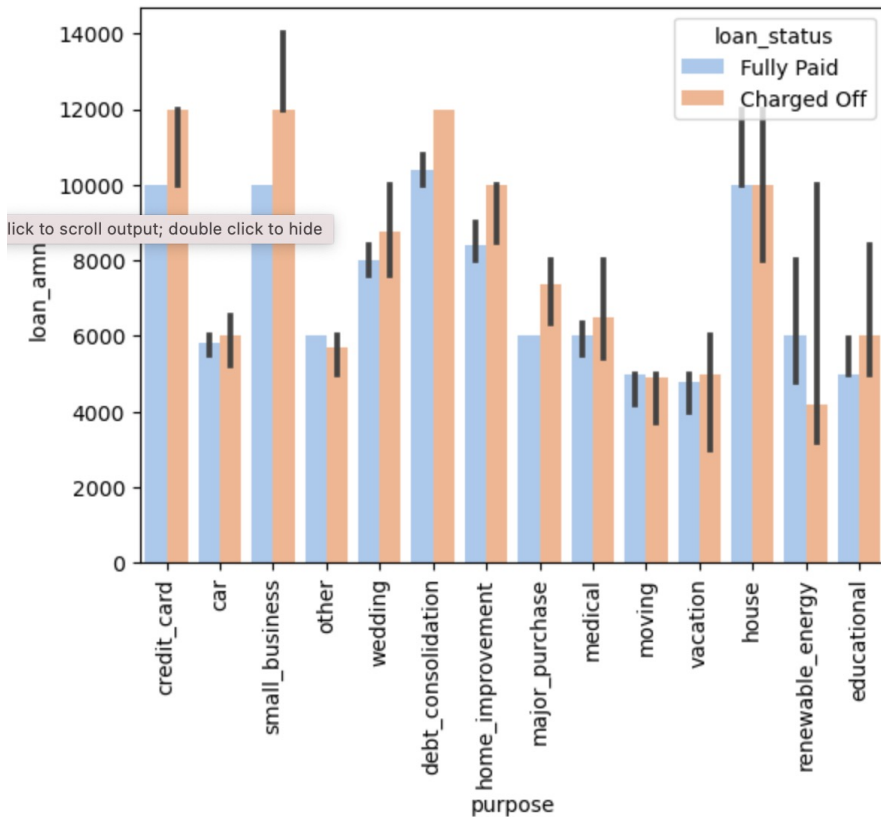
Applicants who have taken a loan
for purpose as small business,
credit_card, debt_consilidation and the
loan amount > 10k are more likely to be default.

Applicants who have taken loan above 10k and have
home_ownership as MORTGAGE and OTHER –
Have more chances to be default.

annual income and Int rate
+ annual income and loan amount

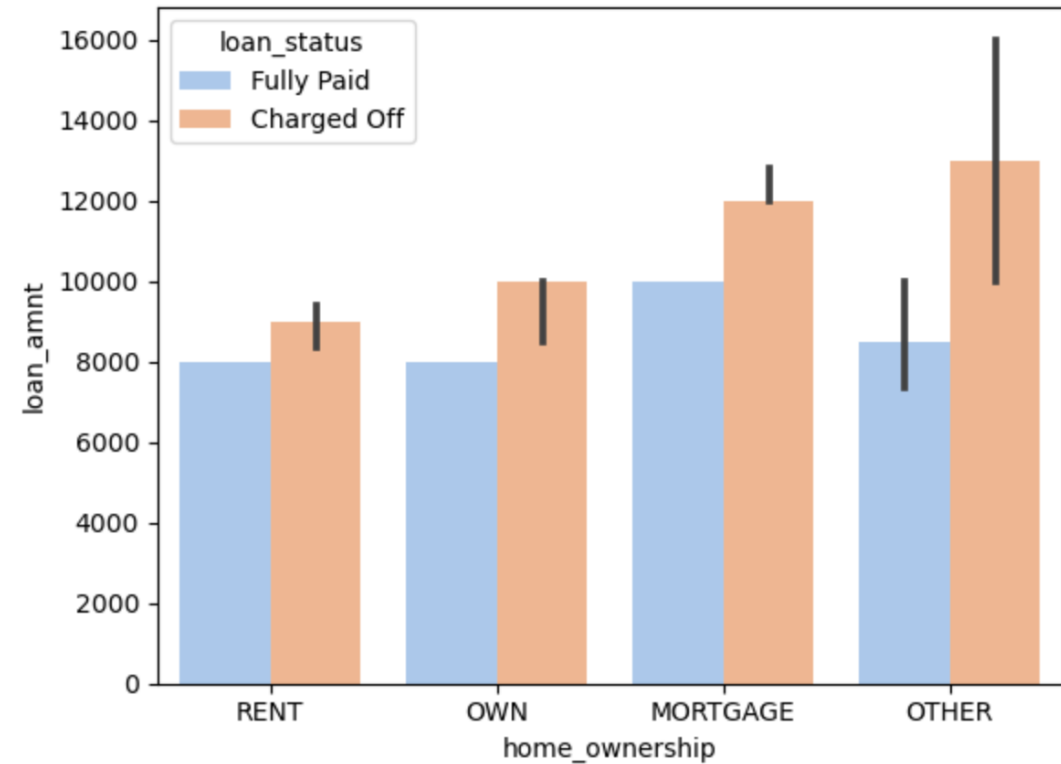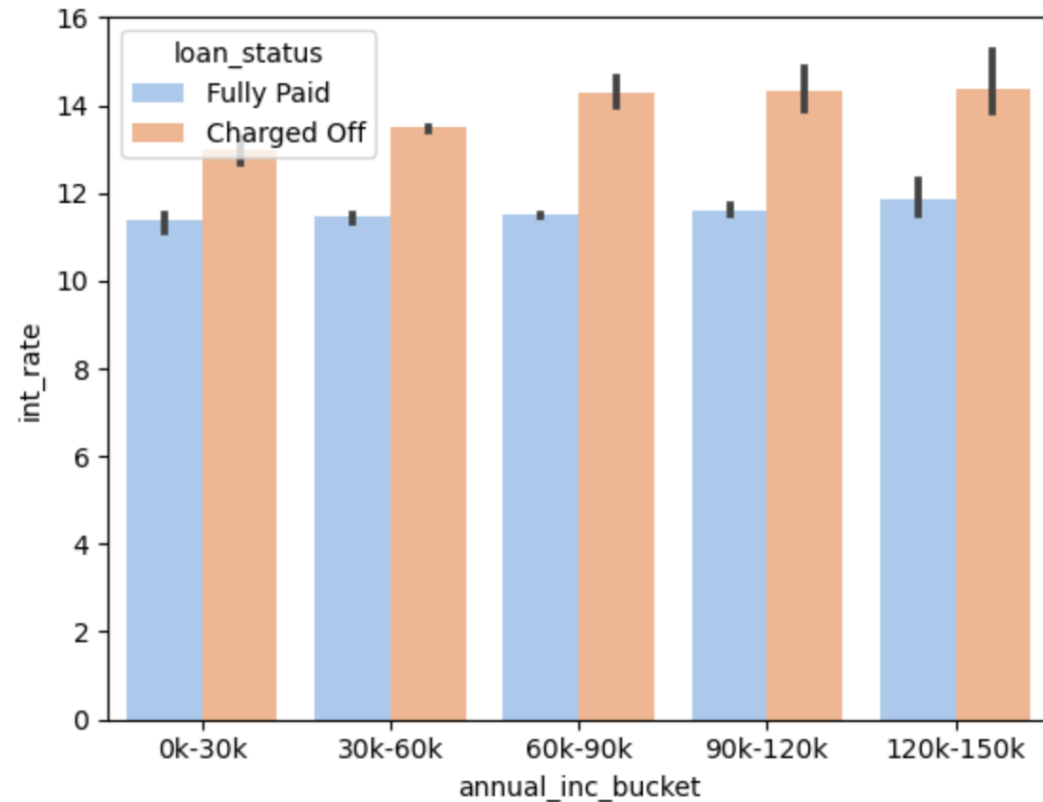Applicants who has interest rate > 11.5 across all income group have more chances to be default.
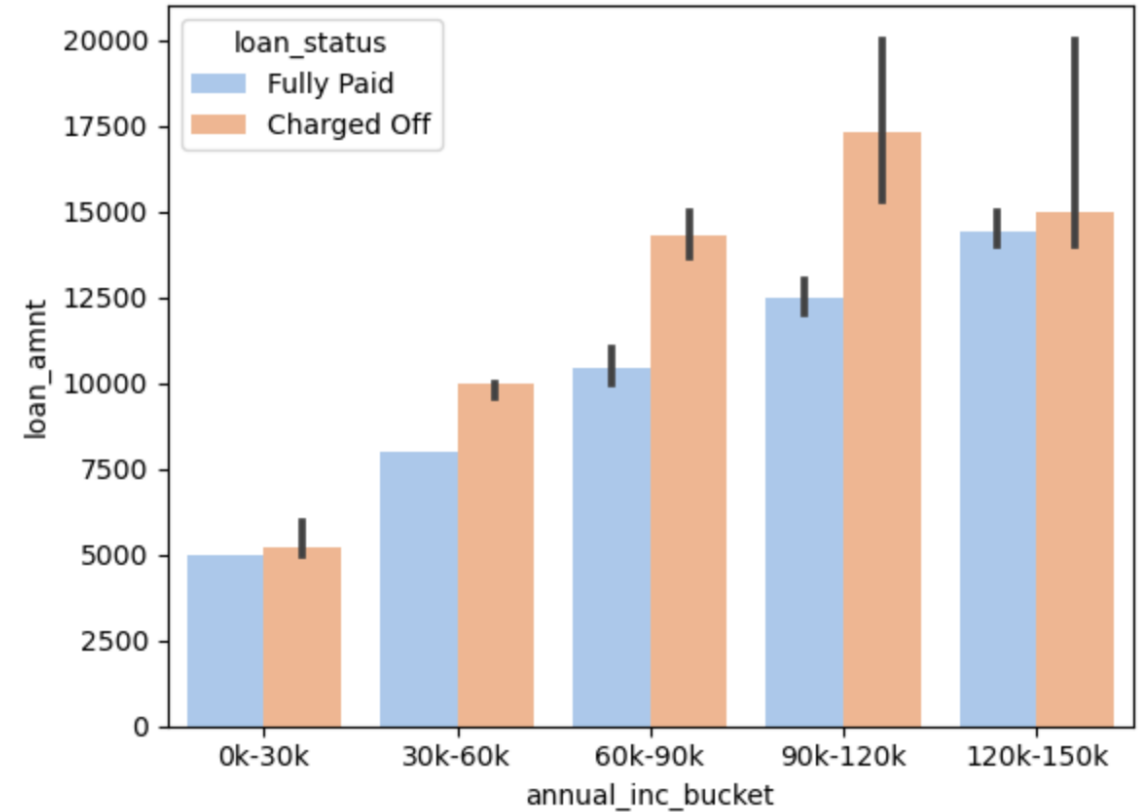
Applicants who has annual income in range of 90k-120k and applied loan of amount > 12.5k have more chances to be default.

annual income and home_ownership
+ annual income and purpose
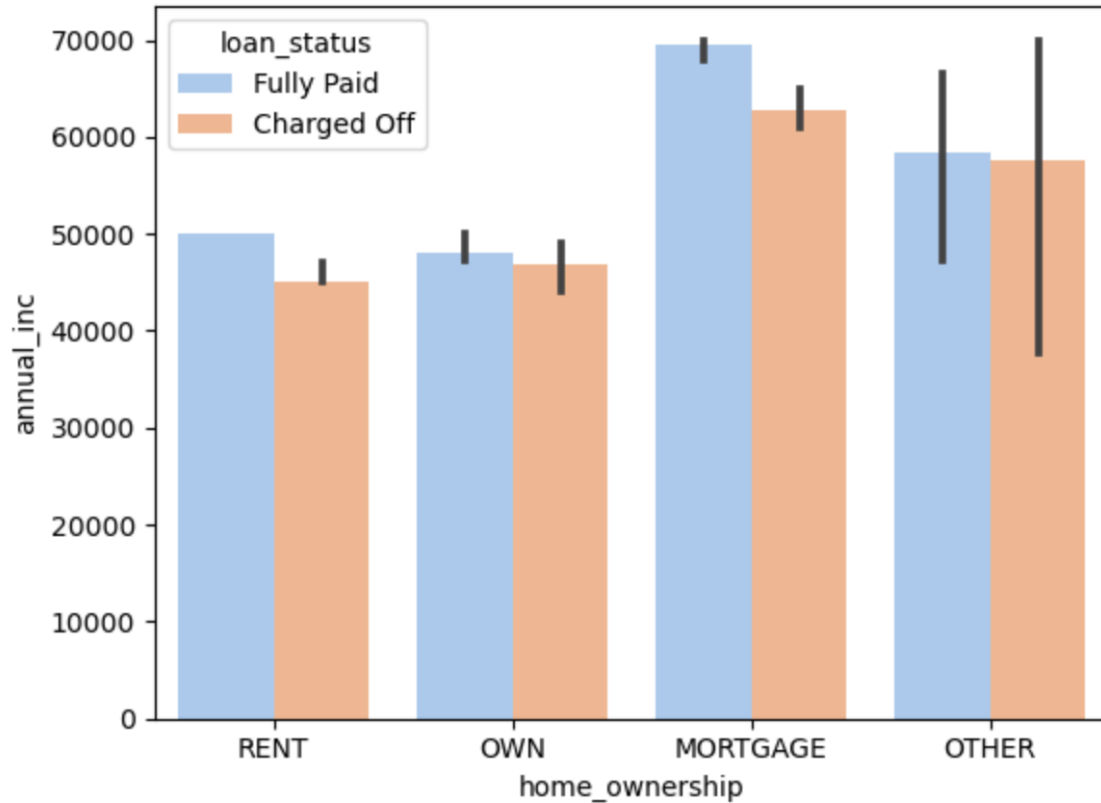
Applicants who has annual income >50k and home_ownership as Mortgage and Other have more chances to be default as compared to RENT and OWN.
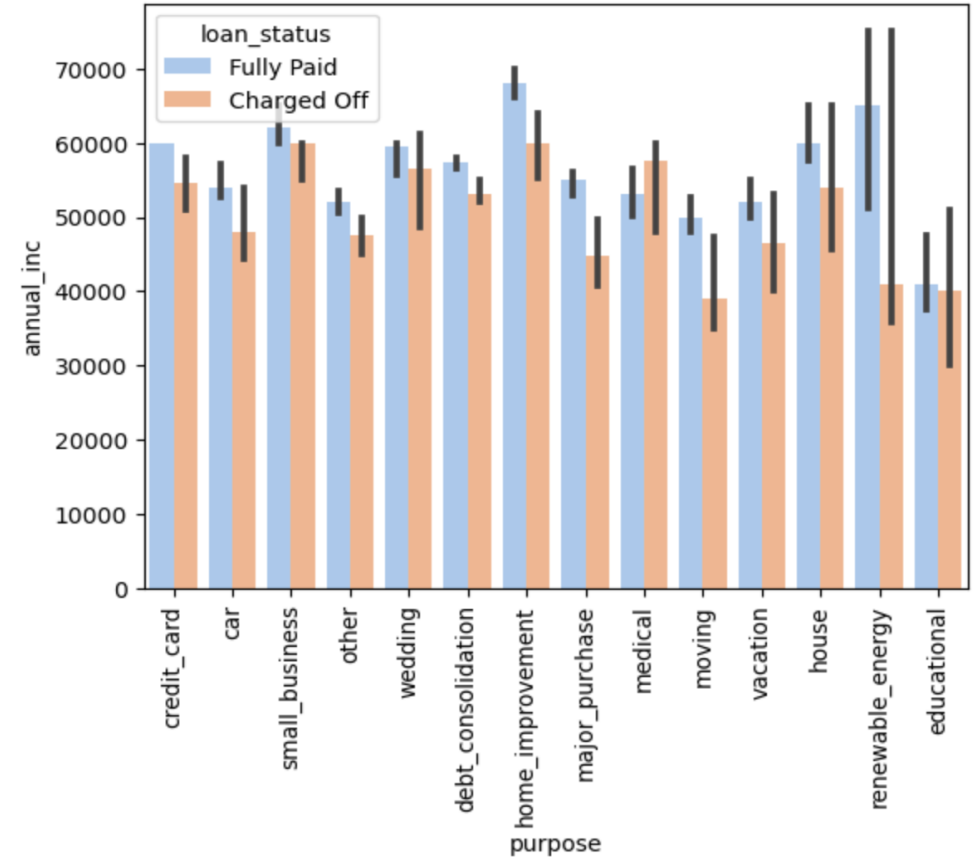
Applicants who has annual income >55k and applied purpose is small_business and home_improvement are more likely to be default.

Recommendations -1

More chance of being defaulter when:
- term : 60 months
- grade : B
- sub_grade : B5
- emp_length : Employment Length is 10+ years
- home_ownership : RENT
- verification_status : Not Verified
- issue_d : Year end months have high chances like Dec , Nov
- purpose : when purpose is 'debt_consolidation'
- int_rate_bucket : When applicant has 13%-17% interest on this loan
- annual_inc_bucket : When applicant has annual income of 30k -60k
- loan_amnt : ~ 6k-11k
- funded_amnt_inv : 5k-10k
- int_rate : 13%-17%
- installment : When monthly installment is ~150-300
- annual_inc : ~31k - 59k - dti : 12-18

Recommendations -2

1. Applicants who have taken loan in the range of 25k with charged interest rate of 15%-17.5% are more likely to be default.

2. Loan amount > 15k and Grade is F - more likely to be default.

3. Applicants who have taken loan above 10k and have home_ownership as MORTGAGE and OTHER - Have more chances to be default.

4. Applicants who have taken a loan for purpose as small business,credit_card, debt_consilidation and the loan amount > 10k are more likely to be default.

5.Applicants who have taken a loan > 10k and applied in month of Nov and Dec are more likely to be default.

6. Applicants who have taken a loan > 10k and emp length >= 10 years are more likely to be default.

7. Applicants who has interest rate > 11.5 across all income group have more chances to be default.

8. Applicants who has annual income in range of 90k-120k and applied loan of amount > 12.5k have more chances to be default.

9. Applicants who has annual income >50k and home_ownership as Mortgage and Other have more chances to be default as compared to RENT and OWN.

10.Applicants who has annual income >55k and applied purpose is small_business and home_improvement are more likely to be default.