



LENDING CLUB CASE STUDY

Group member:
VAISHNAVI NAYAK S



PROBLEM STATEMENT

- ❑ Lending club is largest online loan marketplace, facilitating personal loans, business loans.
- ❑ Lending club wants to identify “risky” loan applicants who are unlikely to pay loan back. These applicants are called as “**Defaulters**”.
- ❑ Identify variables which are strong indicators of loan default so that club can prevent giving loan to them avoiding credit loss.

PROBLEM SOLVING METHODOLOGY

Data understanding

Data cleaning

Datatype conversion

Derived metrics

Univariate analysis

Segmented univariate analysis

Bivariate analysis

DATA CLEANING & DERIVED METRICS

☐ FIXING ROWS:

- Remove summary rows, header and footer rows
- Delete duplicate rows

☐ FIXING CLOUMNS

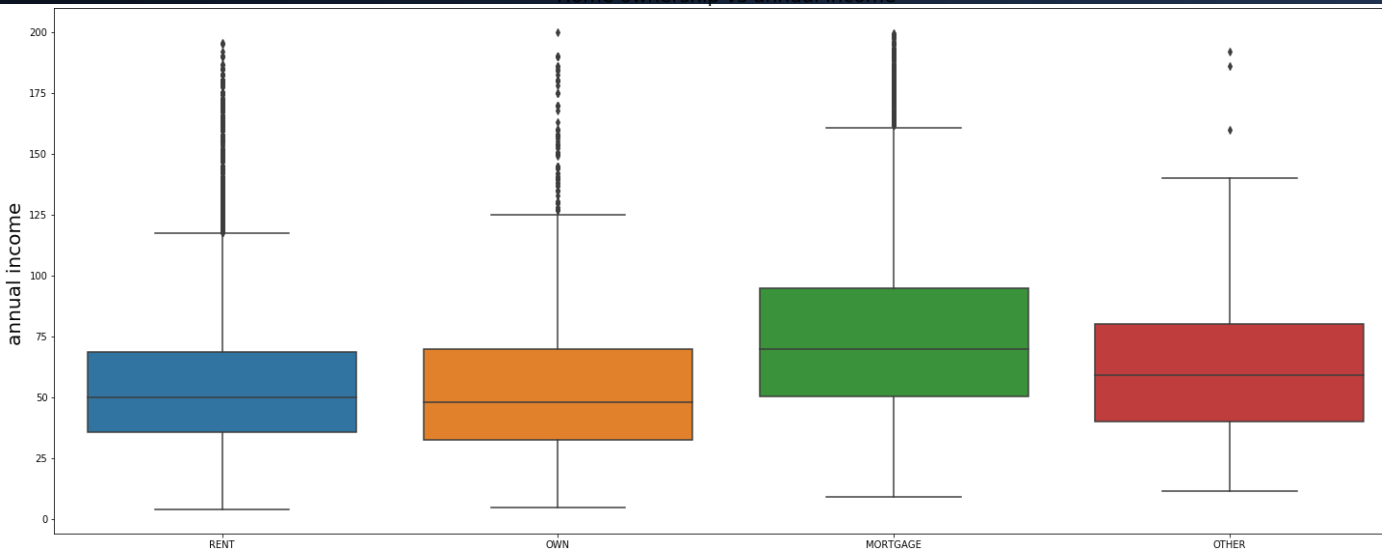
- Add column names if missing.
- Delete unnecessary columns.
- Align misaligned columns.
- Remove columns that have all missing values.
- Remove columns that have high percentage of missing values.
- Drop unnecessary columns with string names.
- Drop columns having only 1 unique values.
- Drop customer behavior variables as these are not available at time of loan application.

☐ DERIVED METRICS

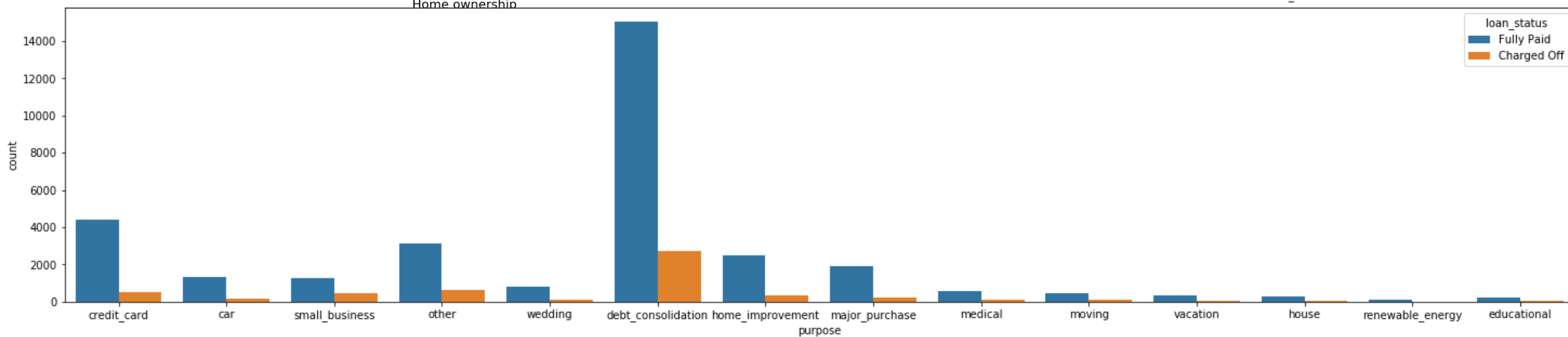
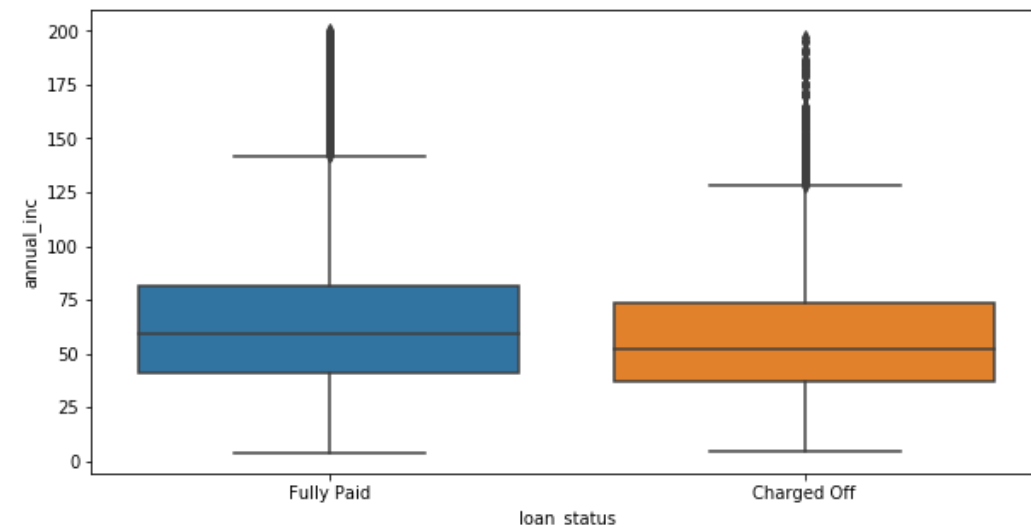
- Derive the new column of loan issue month and year
- Create buckets of loan amount and annual income as these are continuous variables.

ANNUAL INCOME ANALYSIS

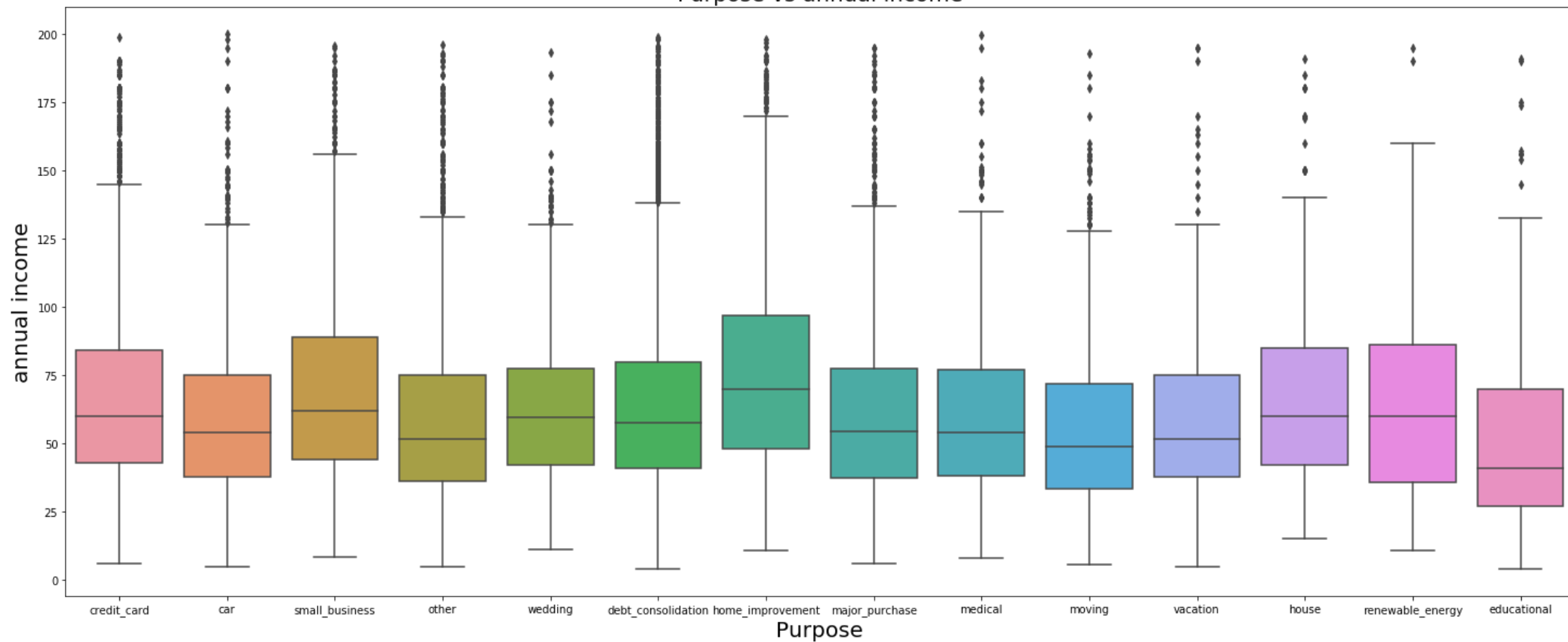
Home ownership vs annual income



Loan status vs annual income



Purpose vs annual income

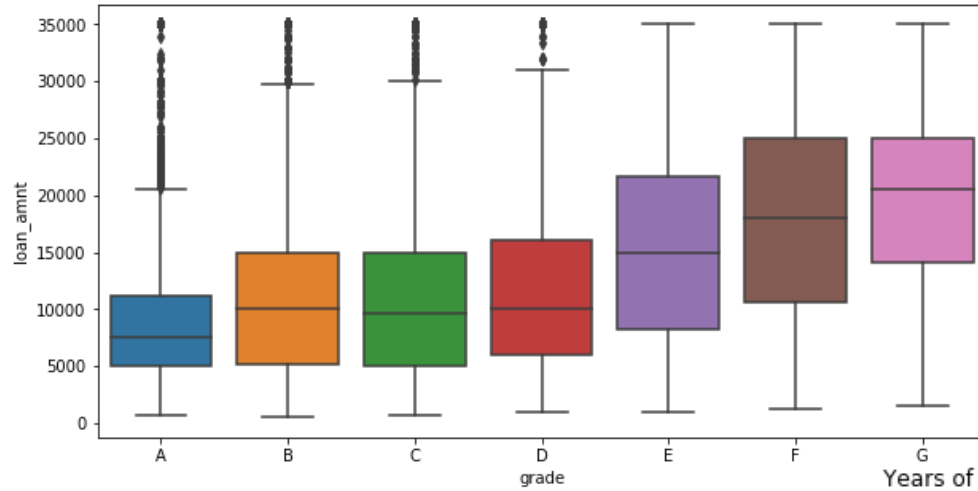


❑ Observations:

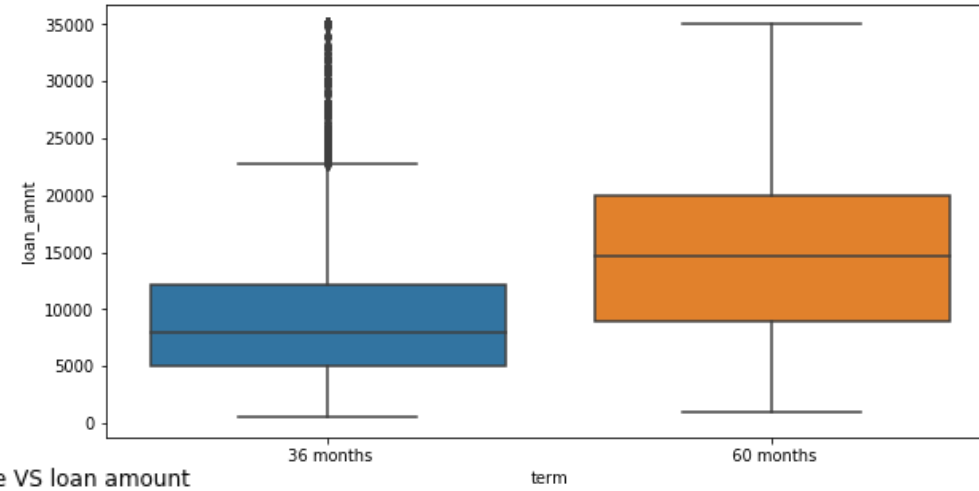
- Lesser the annual income , more chances of getting defaulted
- Those kept home on mortgage have higher annual income, so less chance of getting defaulted.
- Debt reconsolidation purpose loan borrowers have less annual and chances of getting charged off is also more .
- Ones who have taken loan for home improvement loan amount is lesser and annual income is higher so less chance of getting defaulted

LOAN AMOUNT ANALYSIS

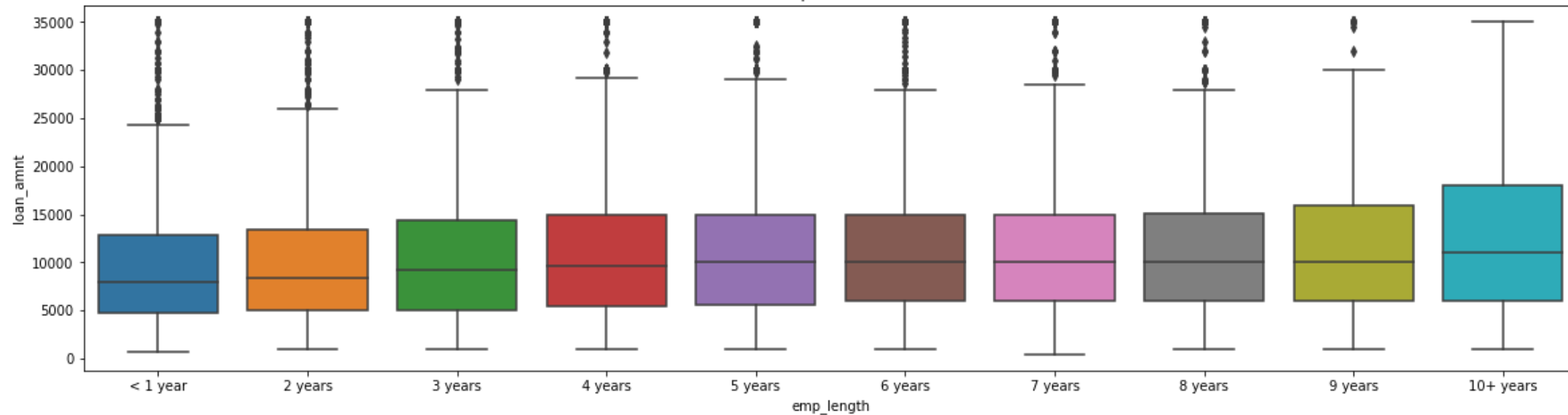
Grade of borrowers VS loan amount

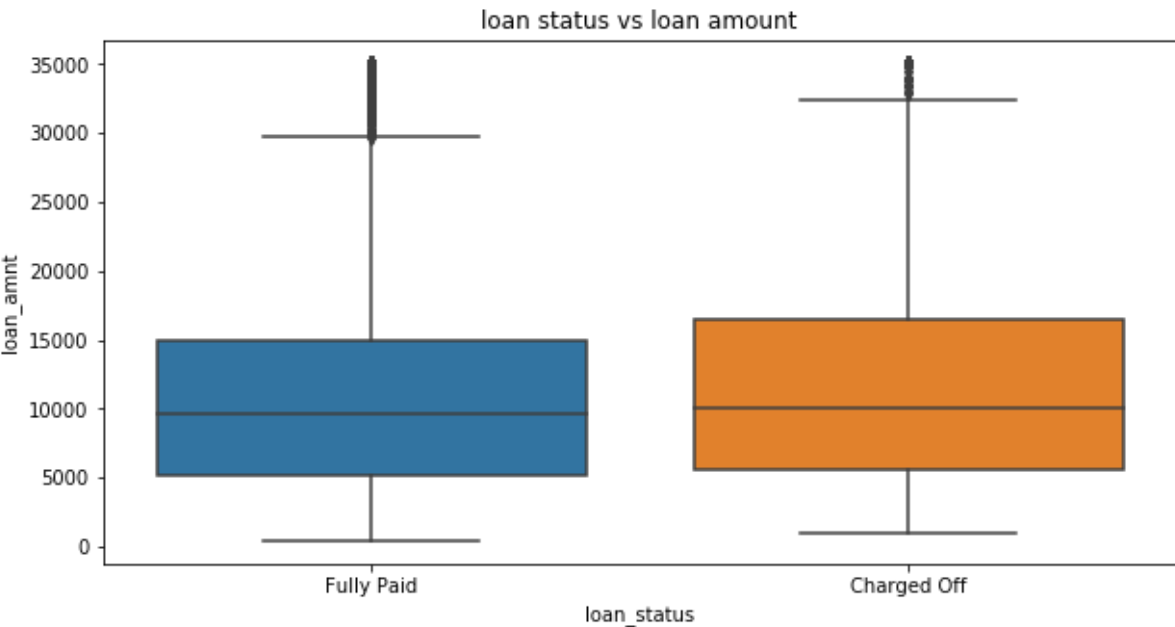
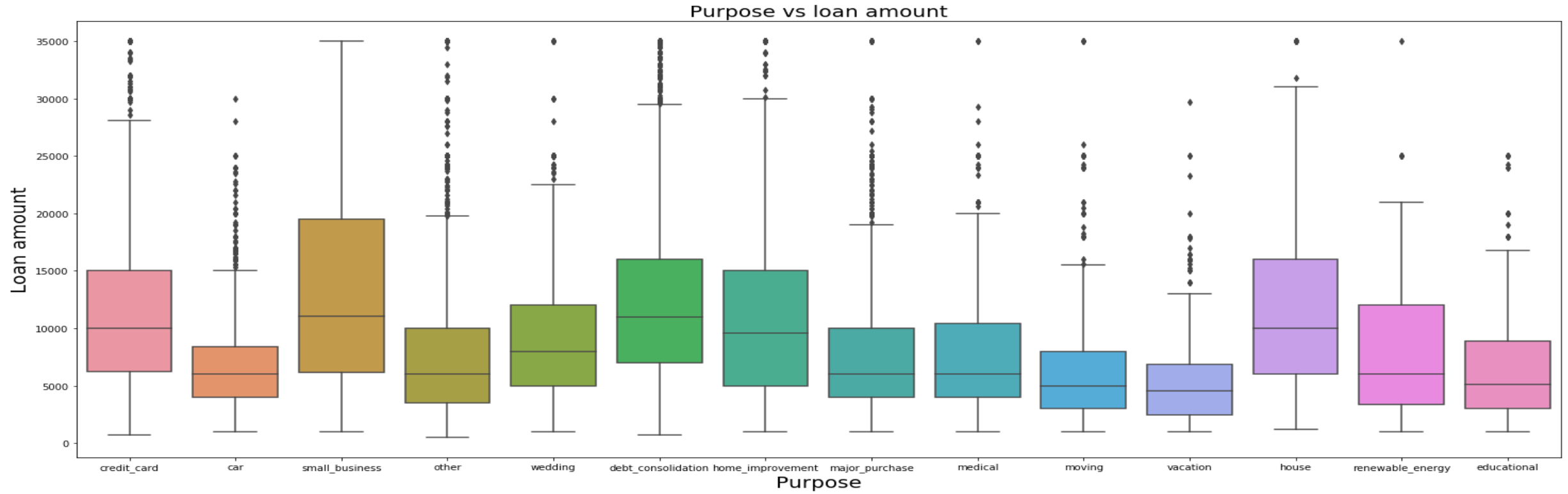


Term vs loan amount



Years of work experience VS loan amount

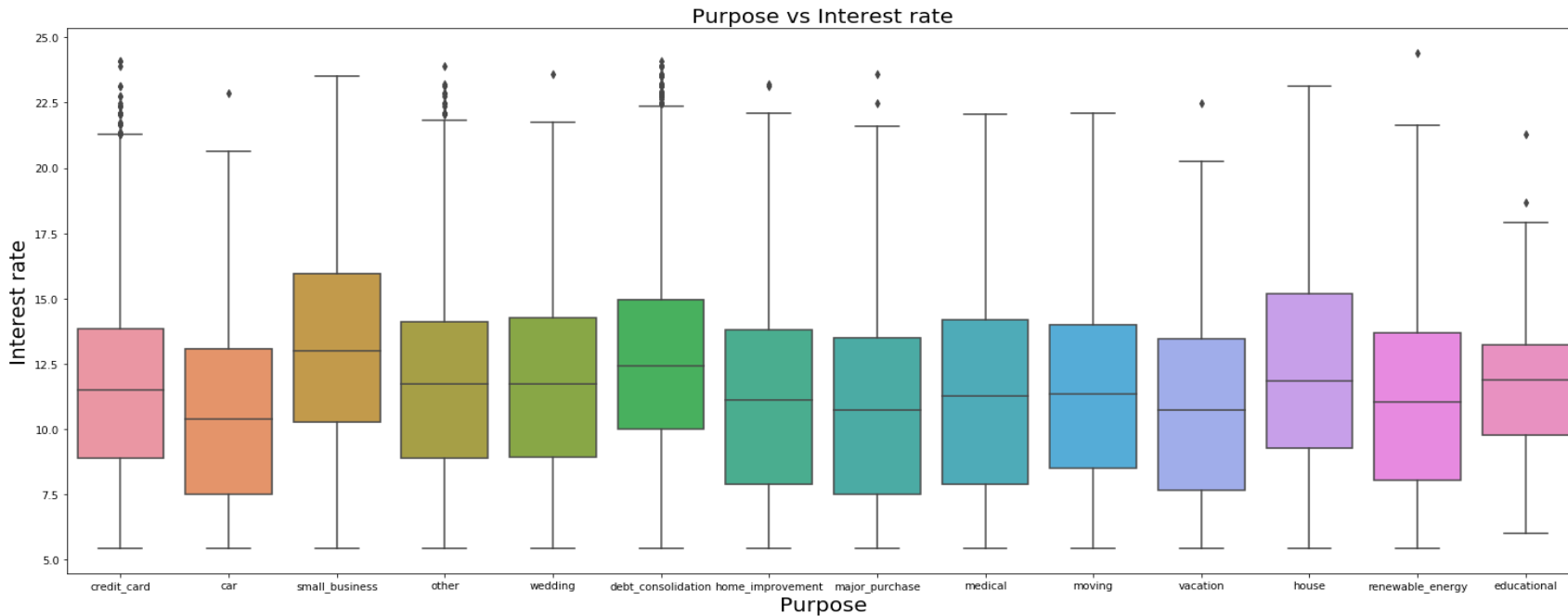




☐ Observations:

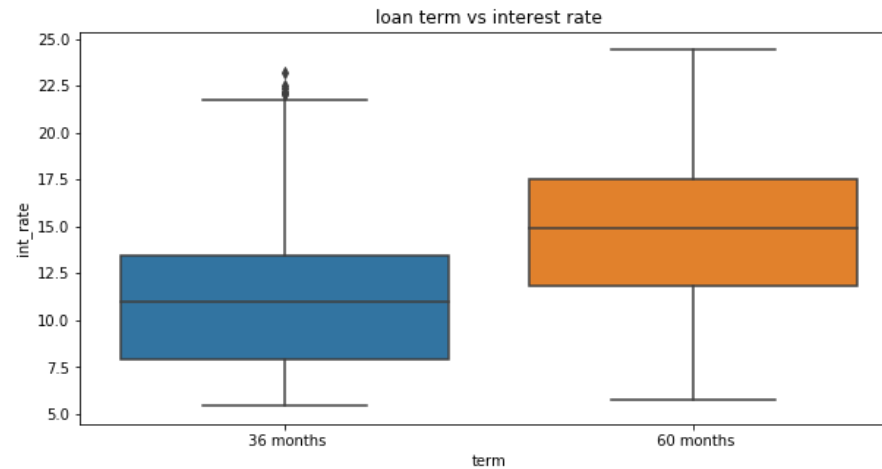
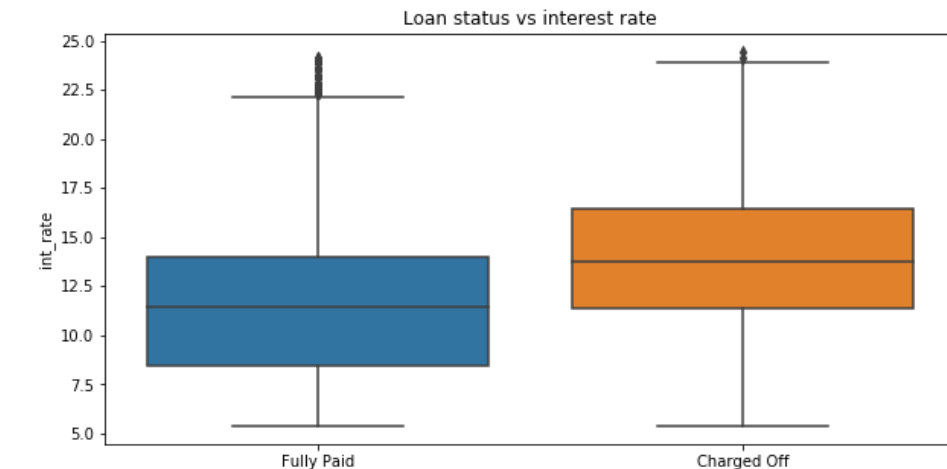
- Loan amount is more for higher term(60 months)
- Lesser the grades ,higher the loan amount, grade A has lower loan amount median, Grade G has higher loan amount
- As years of experience increases, loan amount increases
- Charged Off loans have higher loan amounts compared to fully Paid ones.
- Loan amount for small business is high, followed by house and debt consolidation

INTEREST RATE ANALYSIS

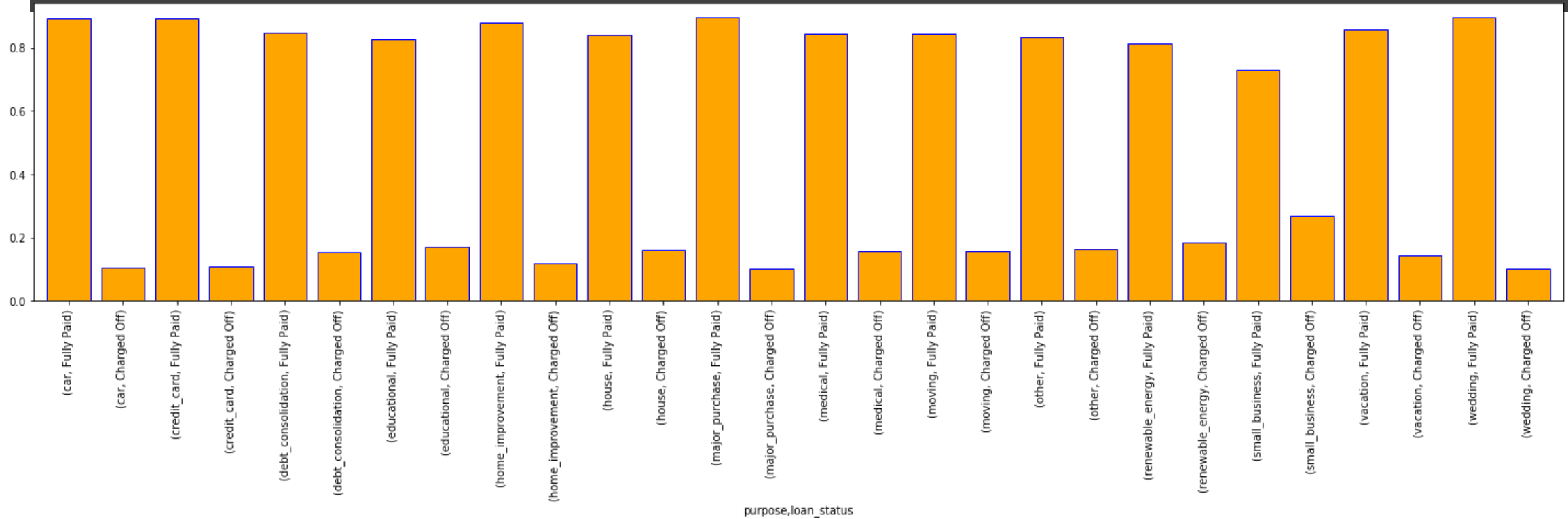


☐ Observations:

- Higher the interest rate , more the term
- Higher the interest rate more the chances of getting defaulted as term and loan amount is more
- Interest rate for small business followed by house and debt consolidation is more



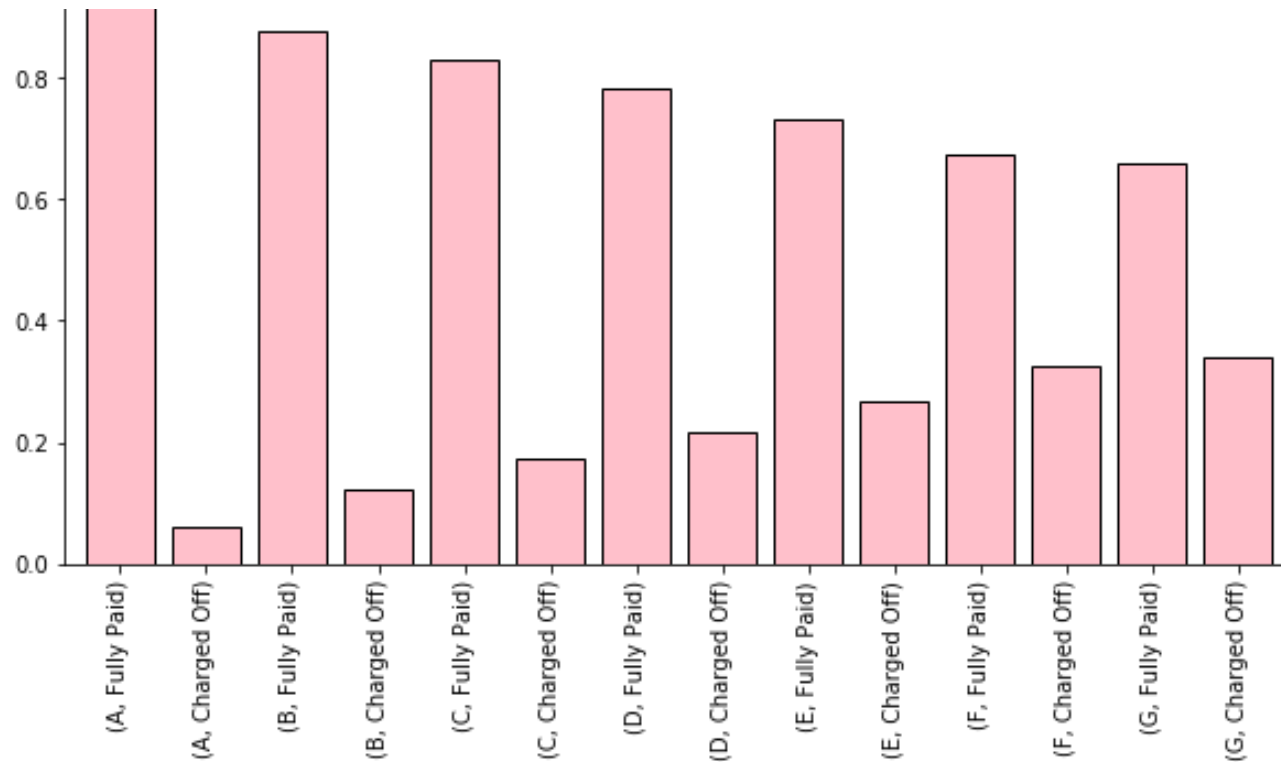
Loan status Vs Purpose



❑ Observation:

- Small business and renewable energy, debt reconsolidation have high charge off % , hence risky

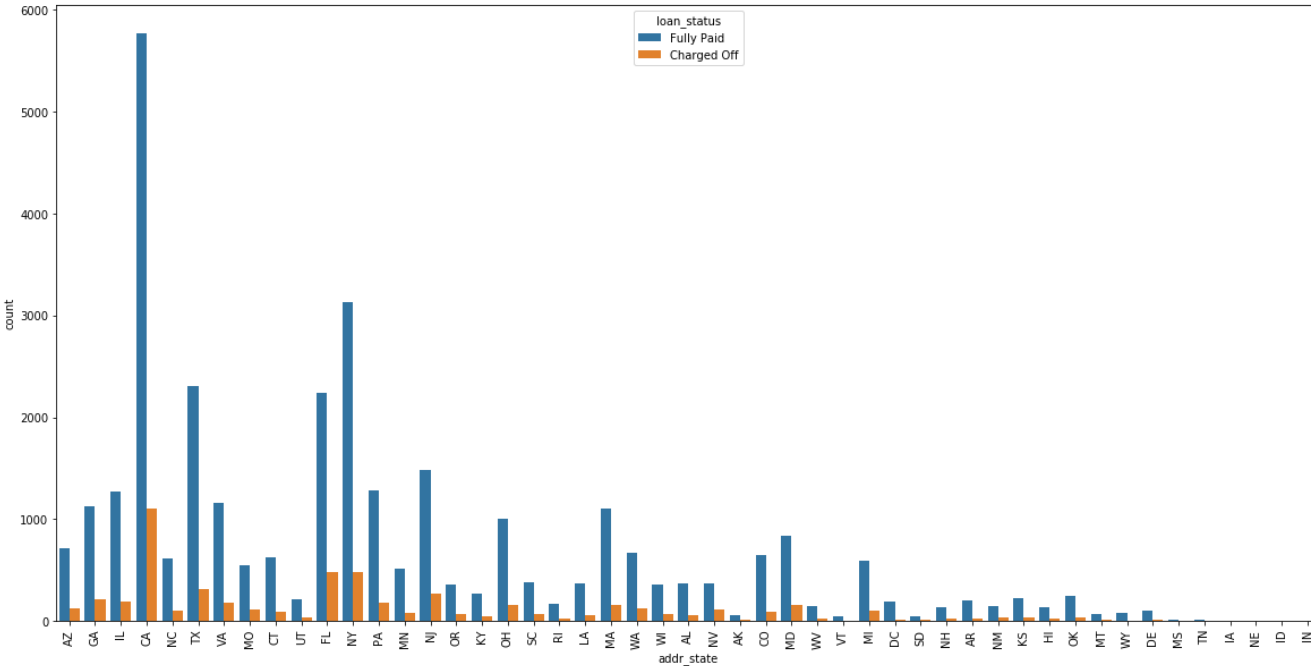
Loan status vs Grade



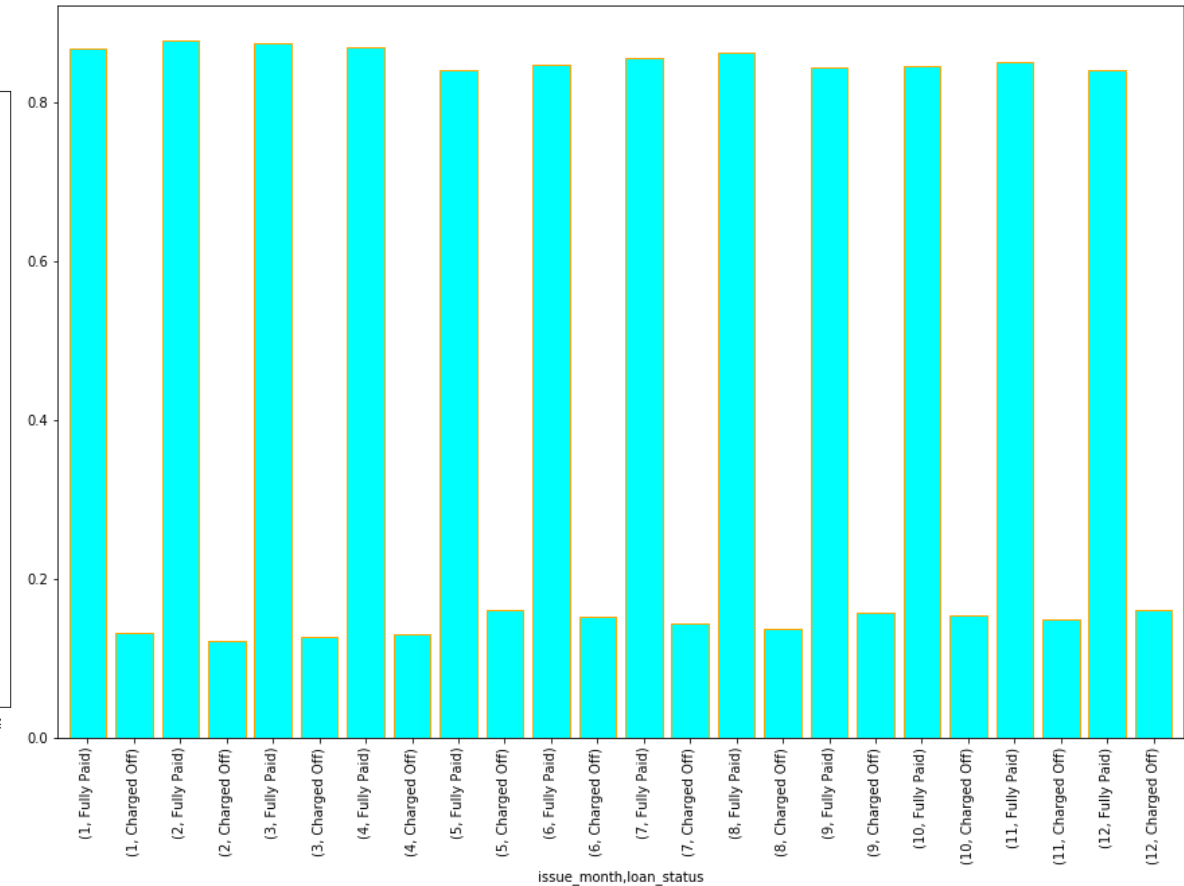
❑ Observation:

- Lesser the grades , more chances of getting defaulted

Loan status vs state



Loan status vs Issue month



❑ Observation:

- State CA ,NY, FL have high chances of getting defaulted
- Loan taken in month of May and December have high chances of defaulted



CONCLUSION

- ✓ DTI of applicant must be checked as chances of getting defaulted is more if DTI is more
- ✓ Loan amount greater than 16000 \$ and annual income less than 30000 \$ have high risk of getting defaulted.
- ✓ Debt reconsolidation, renewable energy , house loan and small business purpose loans are risky.
- ✓ Lower the grades more the risk i.e. grades E,F,G.
- ✓ Loans having high interest rate above 15% is risky, this is taken for small business and house loan.
- ✓ If the term is 60 months then risk is more.
- ✓ State CA ,NY, FL have high chances of getting defaulted.
- ✓ Loan taken in month of May and December have high chances of defaulted, due to mid and year end vacation.
- ✓ House and major purchase loan, with high annual income , less DTI hence safe investment