Lending Club Case Study

Analysis on Loan Status Charged Off Status

Basic Details of Loan Dataset

- Shape of Dataset - (39717,111)
- Info of Dataset - {dtypes - int64(13), float64(74), object(24)}
- Null Values on (Axis = 1) = 0
- Null Values on (Axis = 0) = 54
- Duplicated on id = 0
- After Dropping Blank Columns shape - (39717,45)
- Columns Need to be taken care -
  - Pub_rec_bankruptcies
  - Emp_length
- Columns for Analysis
  - Loan Amount
  - Funded Amount
  - Interest Rate
  - Loan Status
  - Purpose
  - Total Payment
  - Annual Income

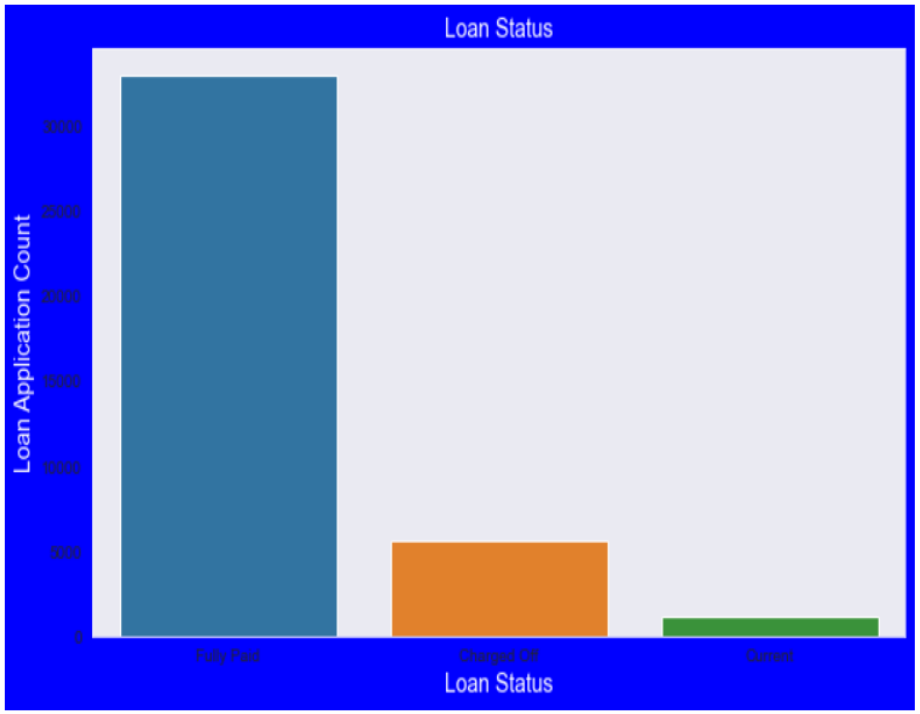
Data Cleaning

- **Data Cleaning on Columns -**
  - Employment Length - Only Numeric should be available
  - pub_rec_bankruptcies - Fill with Not Known at Blank Places
  - Revol Util - Remove % Symbol
  - Interest Rate - Remove % Symbol
  - Columns to Numeric data types -
    - loan_amnt
    - funded_amnt
    - int_rate
    - funded_amnt_inv
    - Installment
    - annual_inc
    - Dti
    - emp_length
    - total_pymnt

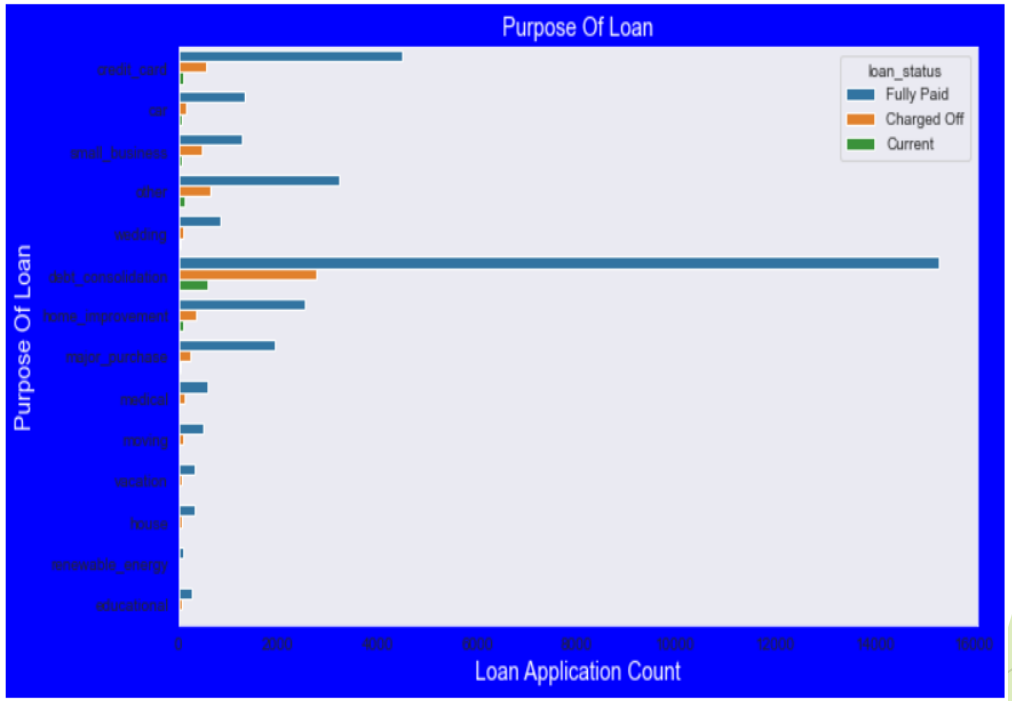
- **Data Cleaning on Columns -**
  - Create Two Separate columns - Year and Month on Loan issued date
  - Remove Few more Columns -
    - Application Type
    - Policy Code
    - Instalment
    - Payment Plan
    - Initial Status
  - Create more columns for Derive analysis
    - Loan Amount Category
    - Annual Income Category
    - Interest Rate Category

Data Analysis

Loan Status - Fully Paid, Current and Charged Off

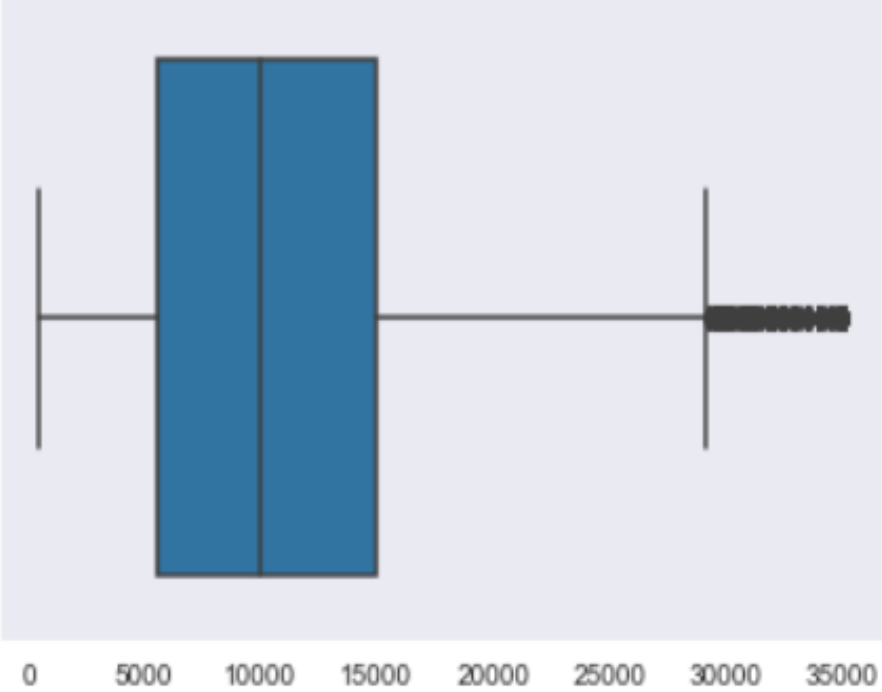


Plot for Purpose column - debt consolidation is the purpose in which charged off and current status loans count are low

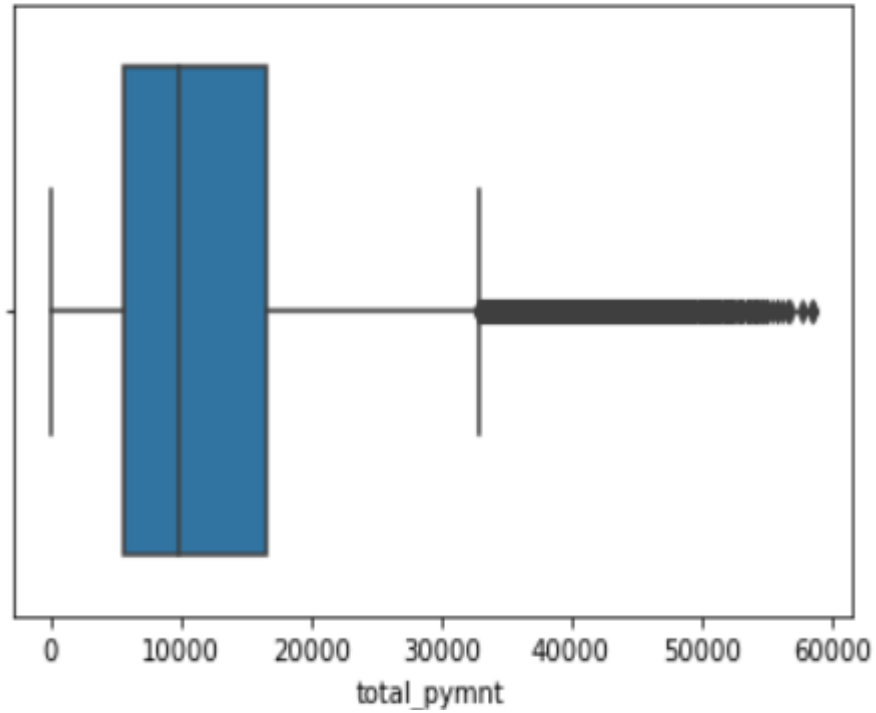


Univariate Analysis

Box Plot for Loan Amount - Ranges between 5000-15000

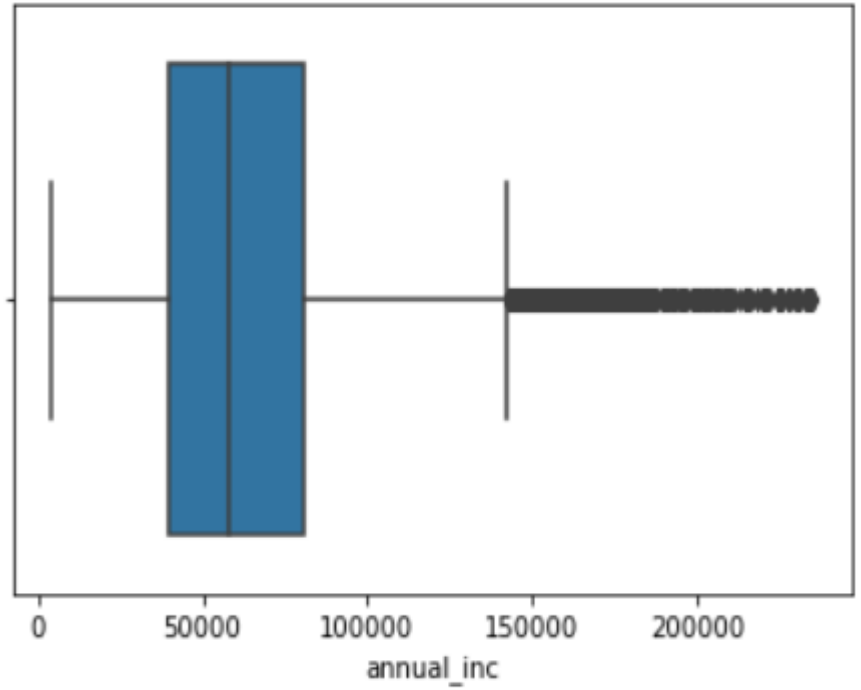


Box Plot for Total Payment - ranges between 5000-15000

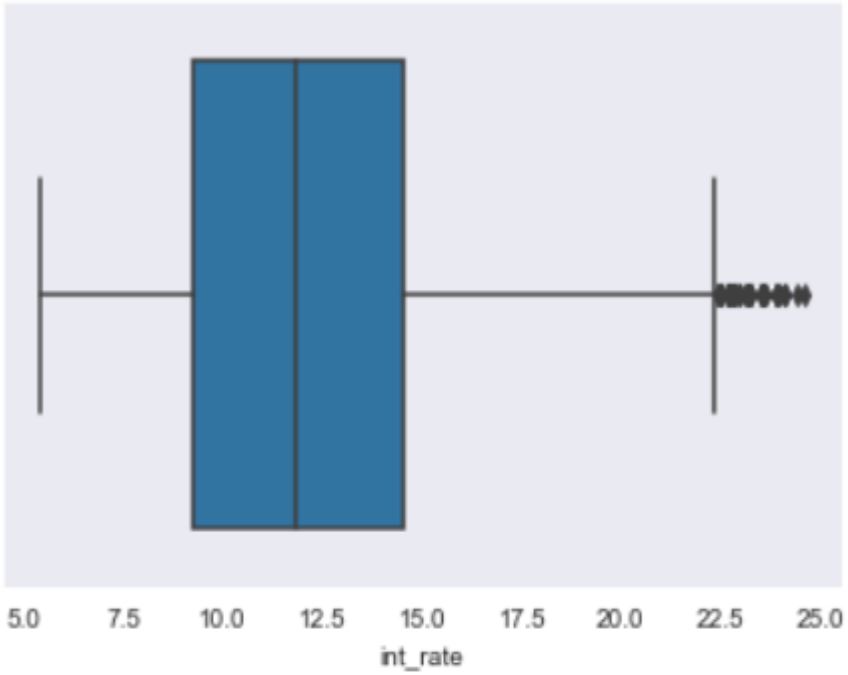


Univariate Analysis

Box Plot for Annual Income – Ranges between 5000-15000

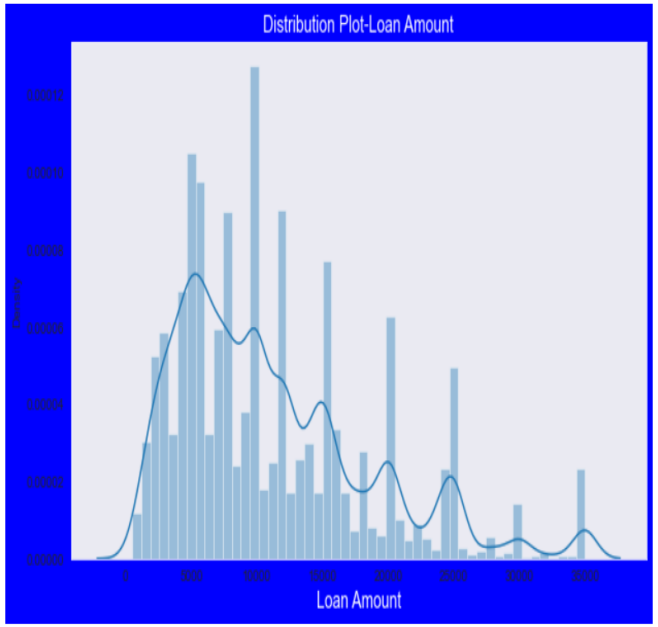


Box Plot for interest rate – ranges between 8%-14%

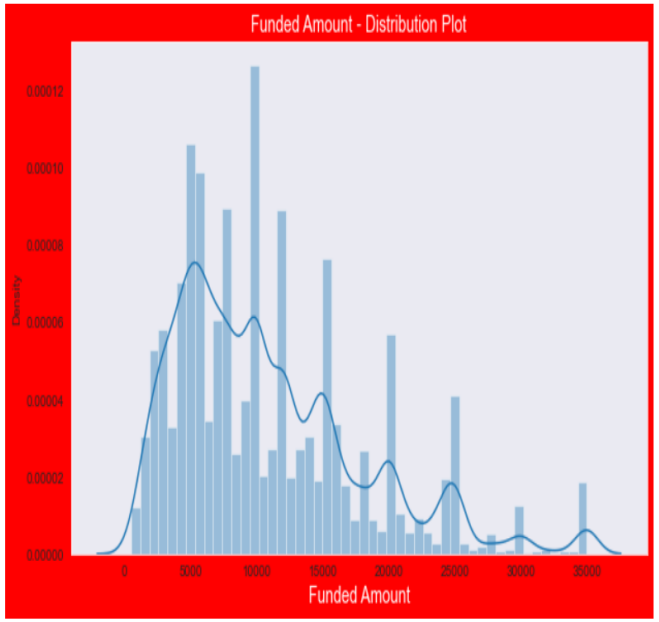


Univariate Analysis

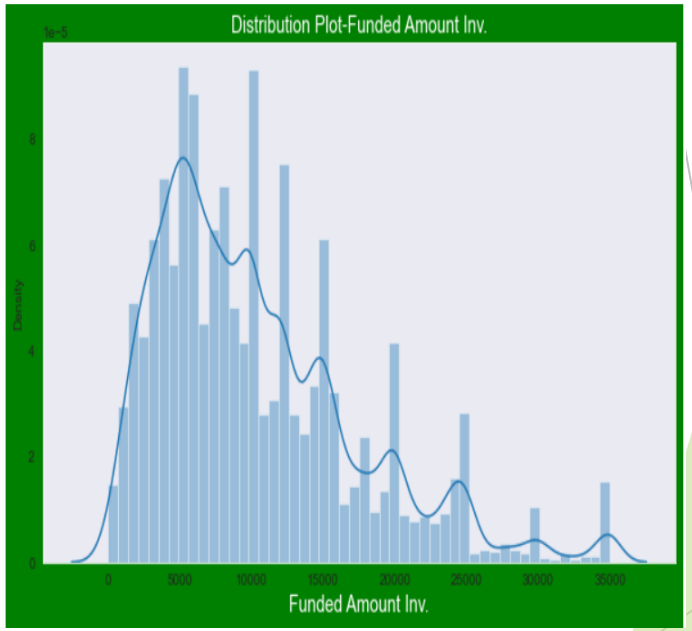
Distribution Plot for Loan Amount



Distribution Plot for Funded Amount



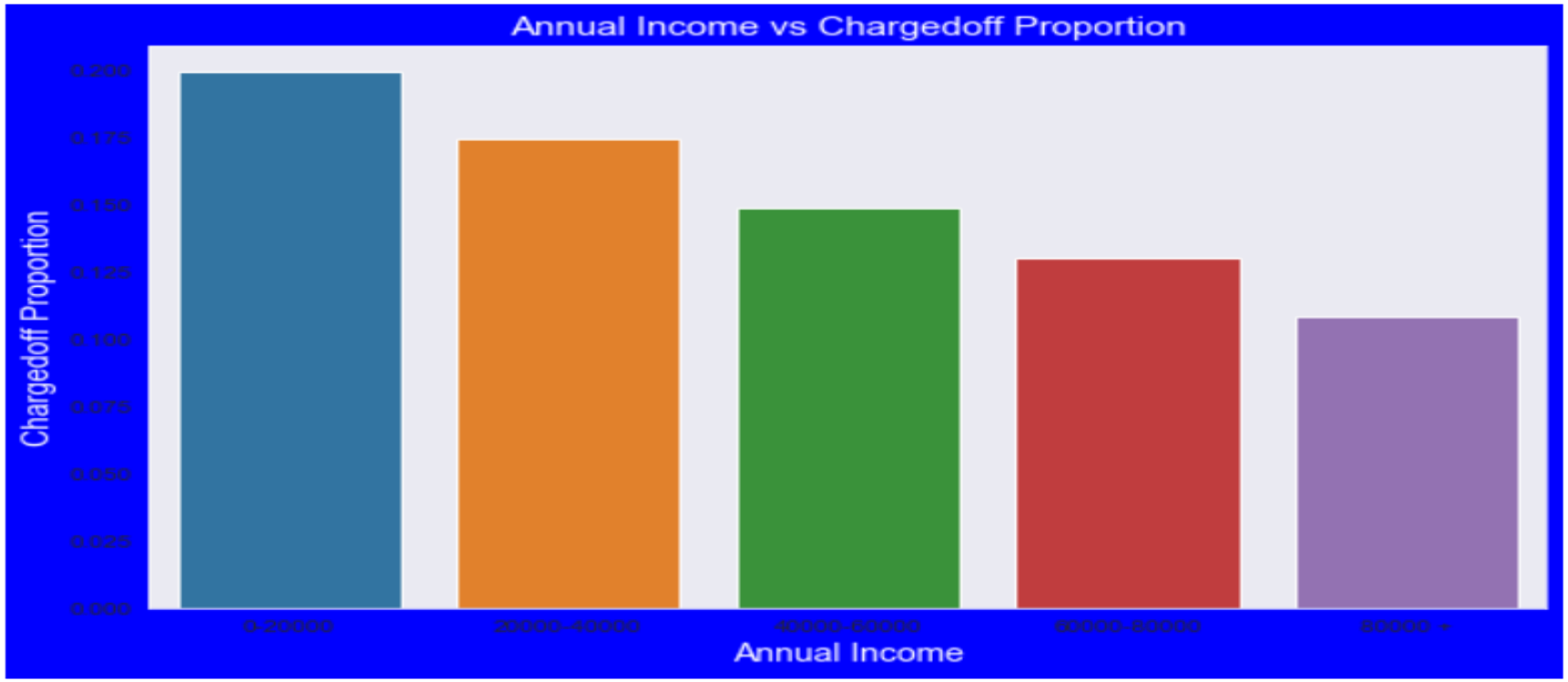
Distribution Plot for Funded Amount invert



Loan Amount Funded Amount and Funded Aount_invert are more or less same pattern so considering Loan Amount for Analysis

Bivariate Analysis

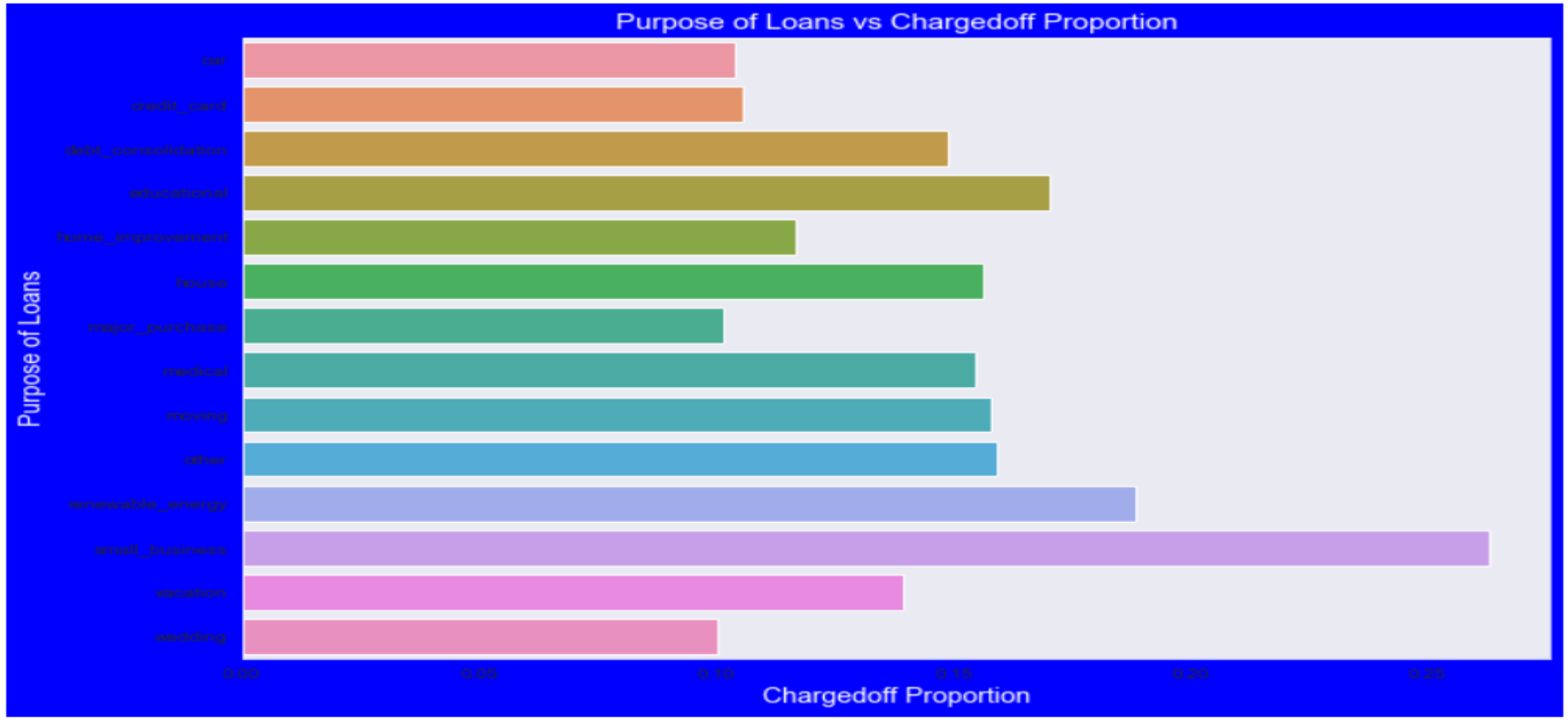
Bar Plot for the Charged OFF data with respect to Annual Income Category



- Highlights –
  - Income Ranges 80000+ has less chances of charged off
  - Income Ranges 0-2000 has high chances of charged off
  - With increase of Annual Income Charged off possibility got decreased

Bivariate Analysis

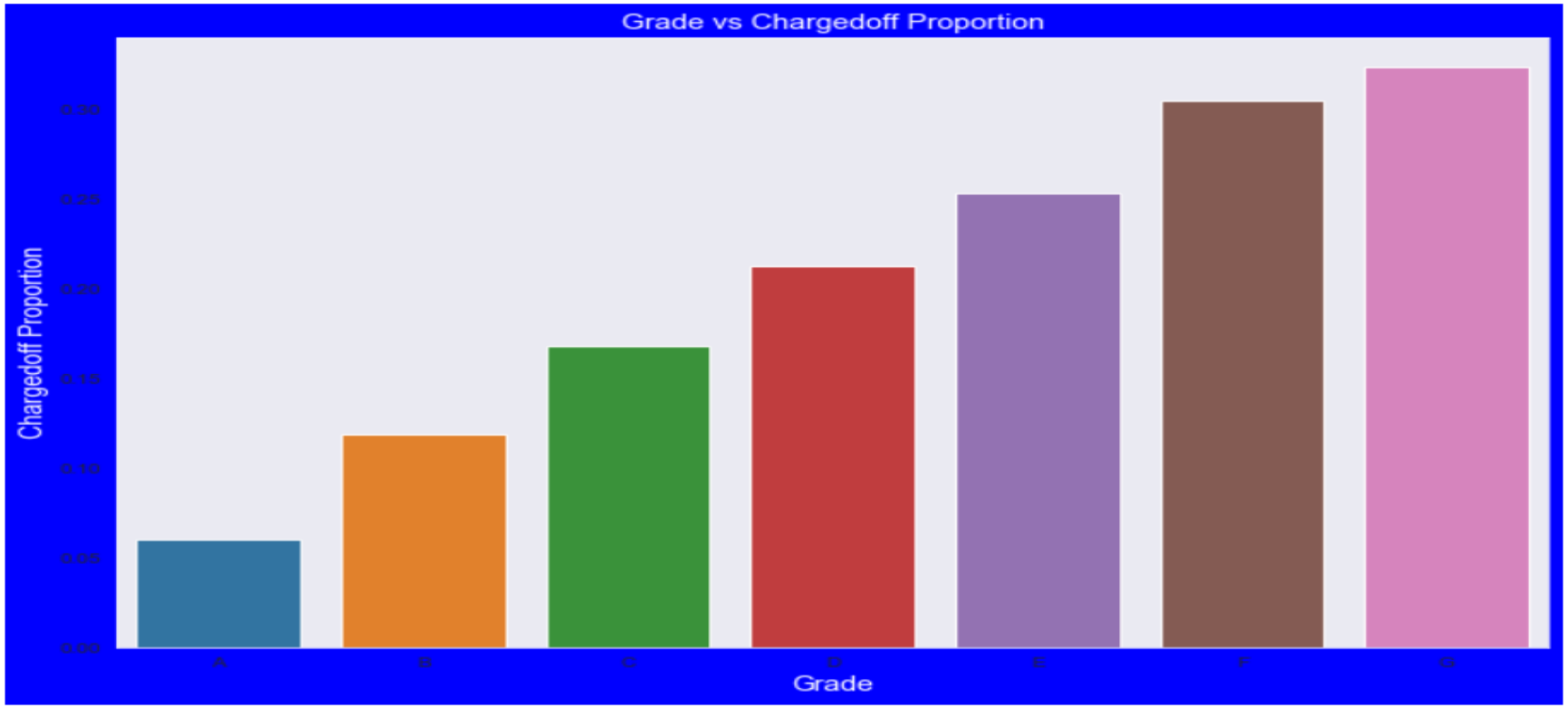
Bar Plot for the Charged OFF data with respect to Purpose of Loan



- Highlights –
  - Renewal Energy charged off possibility is better than other category
  - Small Business has high chances of charged off

Bivariate Analysis

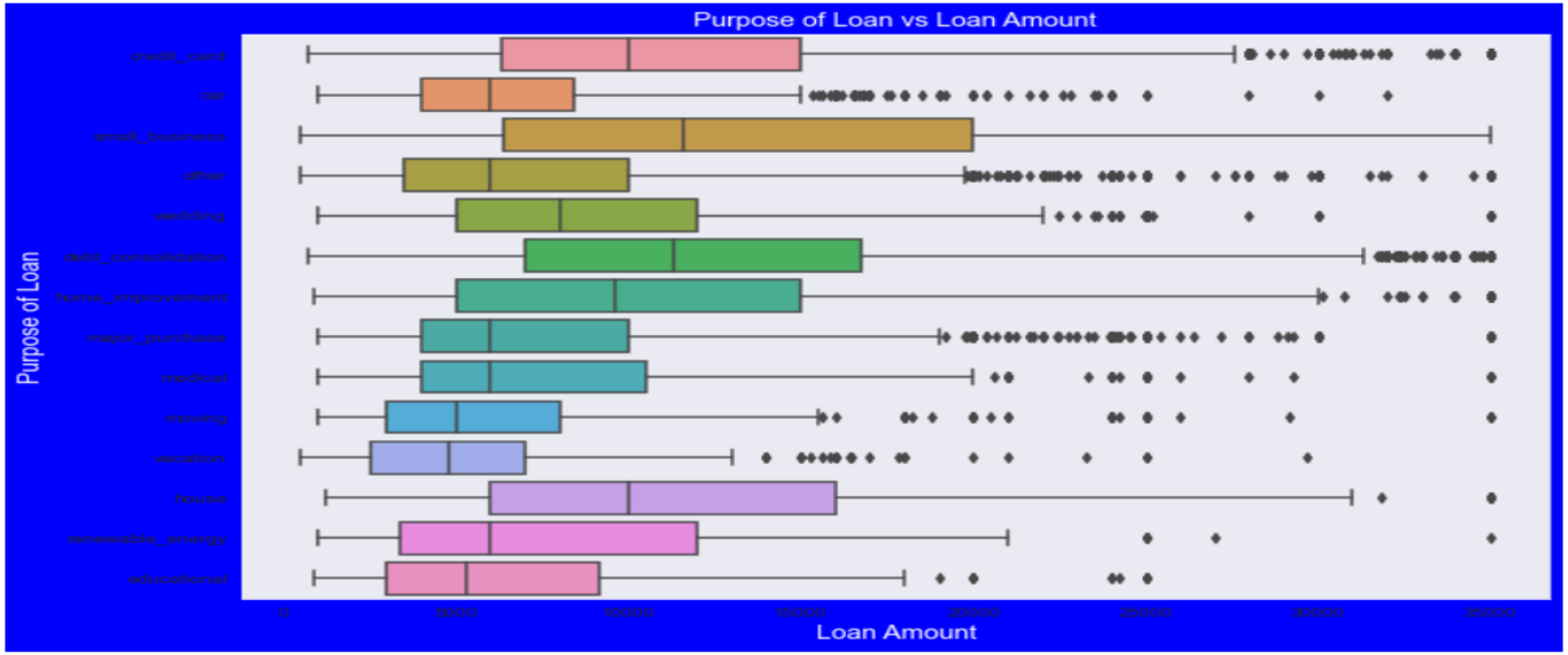
Bar Plot for the Charged OFF data with respect to Grade System



- Highlights –
  - Grade A has high chances of charged off
  - Grade F and G has high chances of charged off
  - Pattern Shows that chances of charged off increases moving towards from A to G

Bivariate Analysis

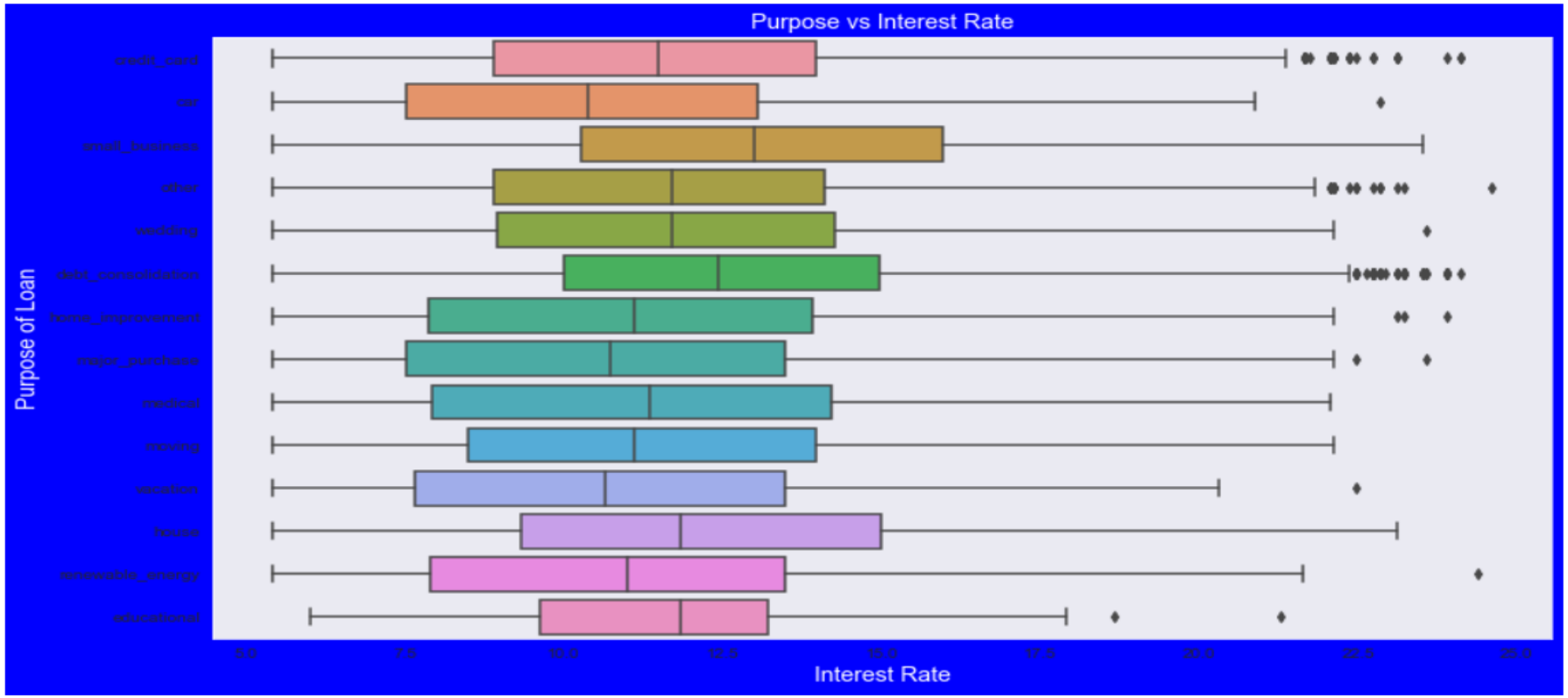
Box Plot for the Loan Amount vs Purpose of Loan



- Highlights –
  - Debt Consolidation is second and Credit Card is the 3rd reason to get Purpose of Loan
  - Small Business is the 1st reason to get the Loan

Bivariate Analysis

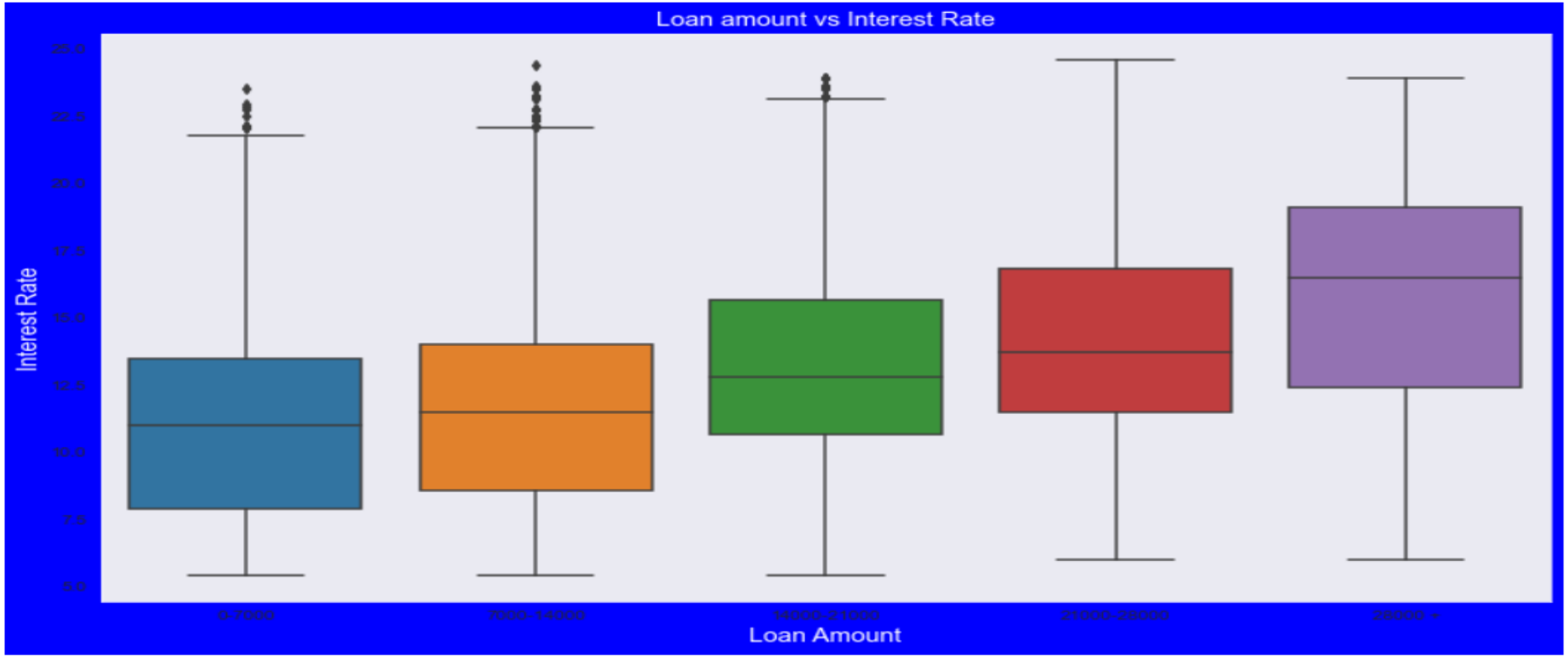
Box Plot for the interest rate vs Purpose of Loan



- Highlights –
  - Average Interest Rate is higher for Small Business
  - Loans taken for small business had to repay with more interest rate

Bivariate Analysis

Box Plot for the interest rate vs Loan Amount



- Highlights –
  - Interest Rate is increases with Loan Amount