LENDING CLUB CASE STUDY

CONSUMER FINANCE COMPANY

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BUSINESS UNDERSTANDING

- Two types of risks are associated with the bank's decision for loan approval :
    - If the applicant is likely to repay the loan, then loan must be approved.
    - If the applicant is not likely to repay the loan, then loan must be denied.

BUSINESS OBJECTIVE

- Identify risky loan applicants to curtail down the amount of credit loss.

PROBLEM SOLVING METHODOLOGY

1. DATA UNDERSTANDING

- Working with the Data Dictionary and getting knowledge of all columns

2. DATA CLEANING

- Remove Null value columns
- Remove unnecessary columns and rows
- Remove customer behavioral variables
- Remove missing data columns
- Remove rows with "current" Loan Status as these are not relevant for our analysis.

3. DATA ANALYSIS

- Univariate Analysis
- Segmented Univariate Analysis
- Bivariate Analysis

ANALYSIS - LOAN ISSUE YEARS

- Number of loans approved are doubled every year. Most of the loans are approved in December month.

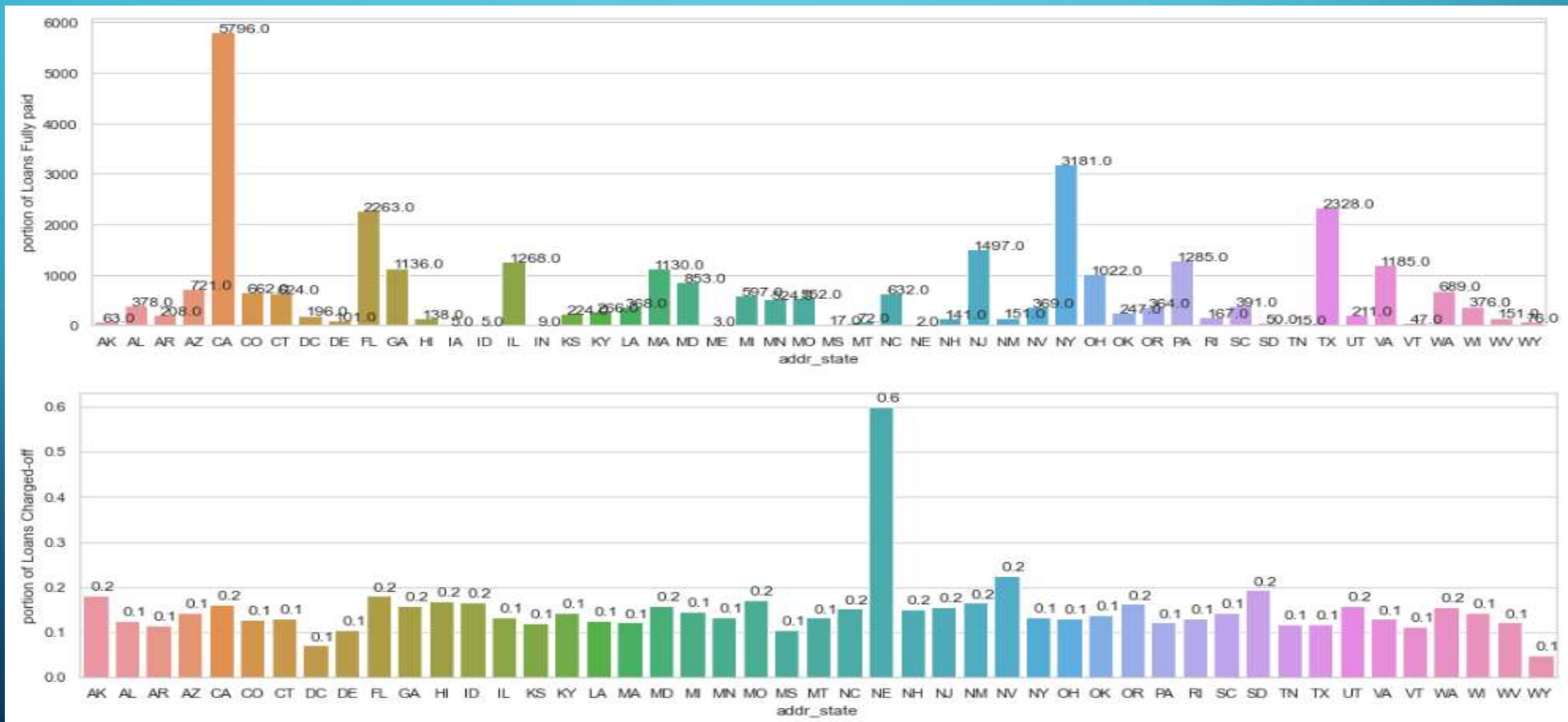Loans Fully Paid per year

Loans Fully Paid per month
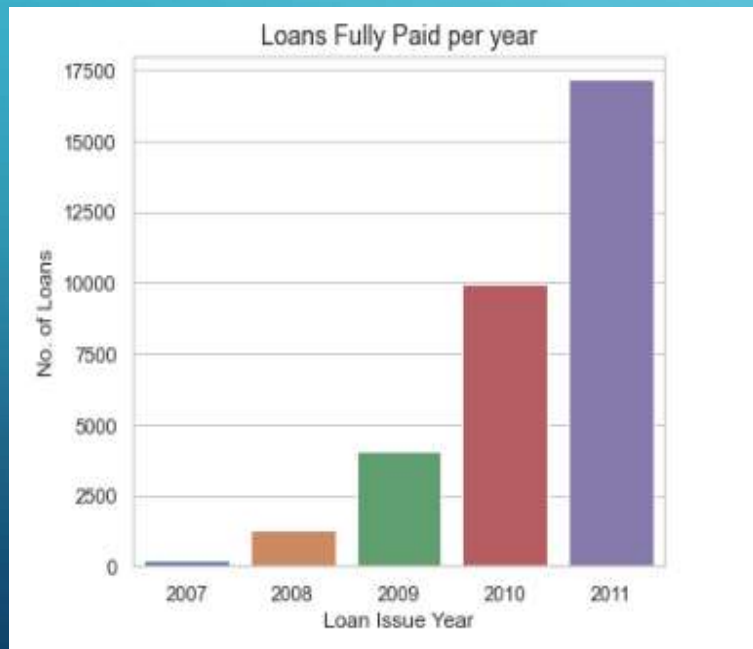
- Looking into charged off customers; they are also increasing in same ratio. Lets find out the factors that lead to increase in no. of cases of defaulters.

Loans charged off per year

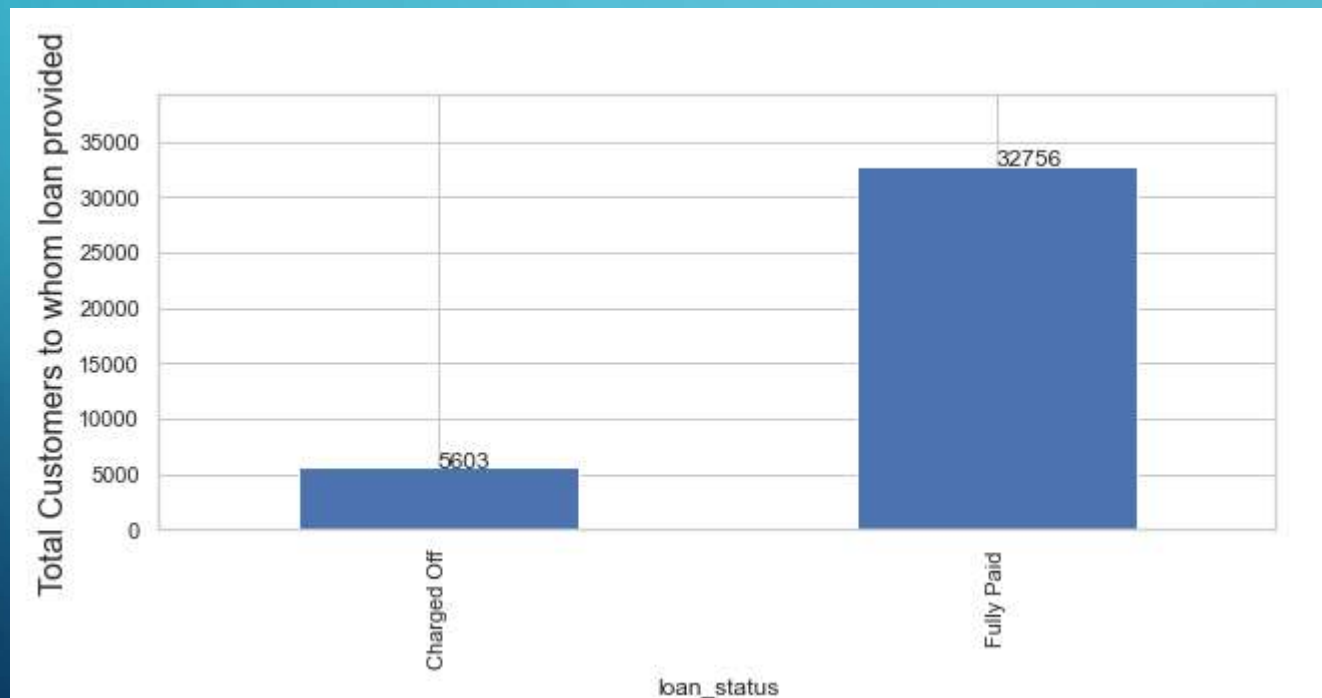Loans charged off per month
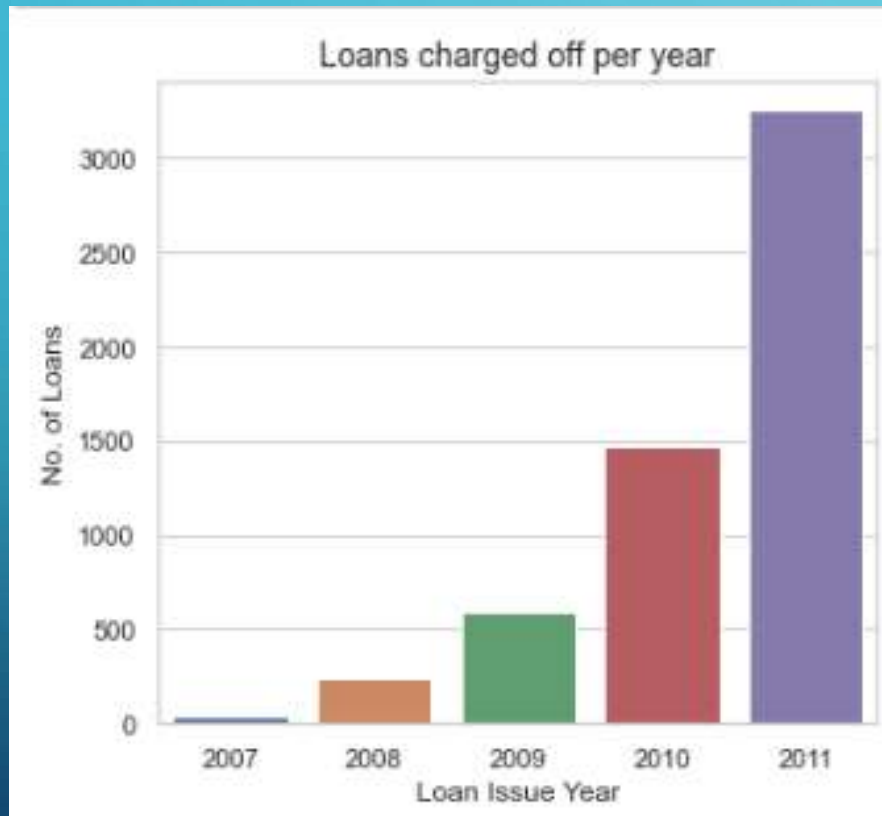
LOAN ANALYSIS

- Maximum loans taken are from people of CA, NY.

OVERALL LOAN ANALYSIS

- Total approved loans are 38359.

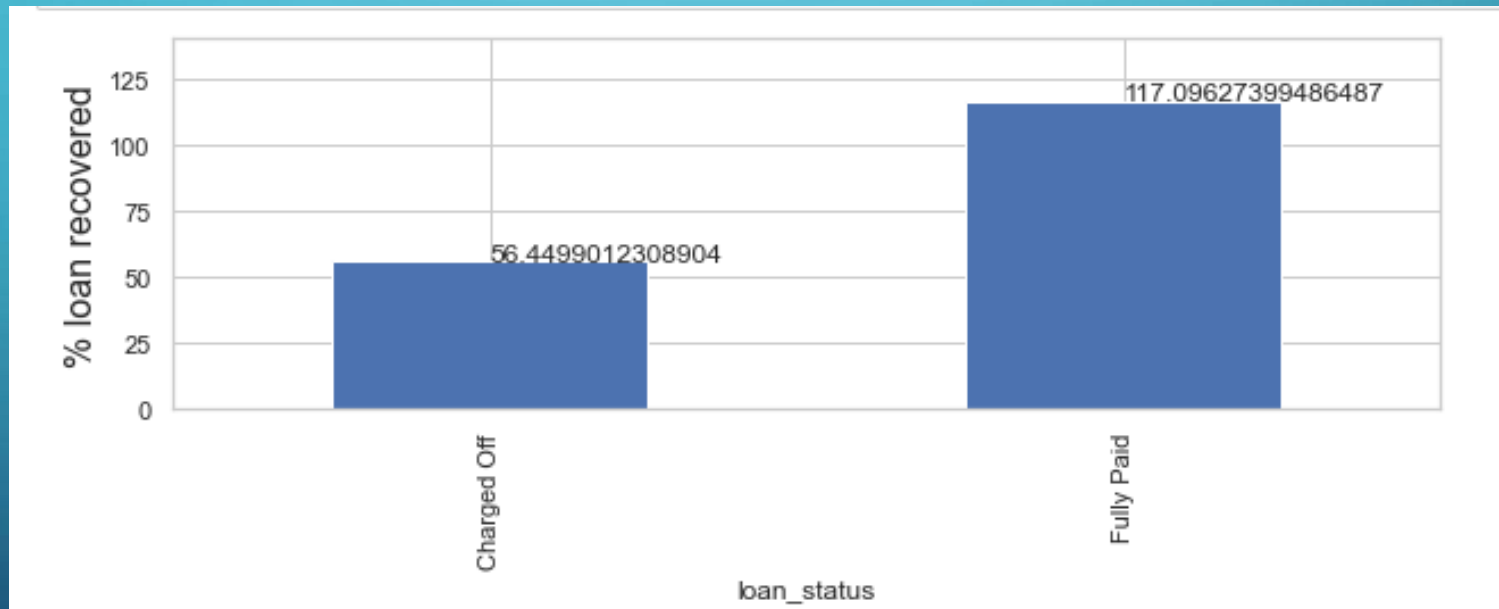- Charged off loans are 14% of total approved loans; which is bigger % of defaulters among approved loans.

loan_status	count	mean	std
Charged Off	5603.0	12078.364269	8067.373060
Fully Paid	32756.0	10820.028392	7151.392307

OVERALL LOAN ANALYSIS

- Lending Club are able to recover only 57% of defaulters amount.

- And Fully Paid loans profit rises to 17%.

LOAN TERM ANALYSIS

- As we can see total loans are given for duration of 3 years are larger than loans given for 5 years.

- For Charged Off, 60 months loan numbers rises to 43%; indicating that higher term loans have a higher chance of defaulters.
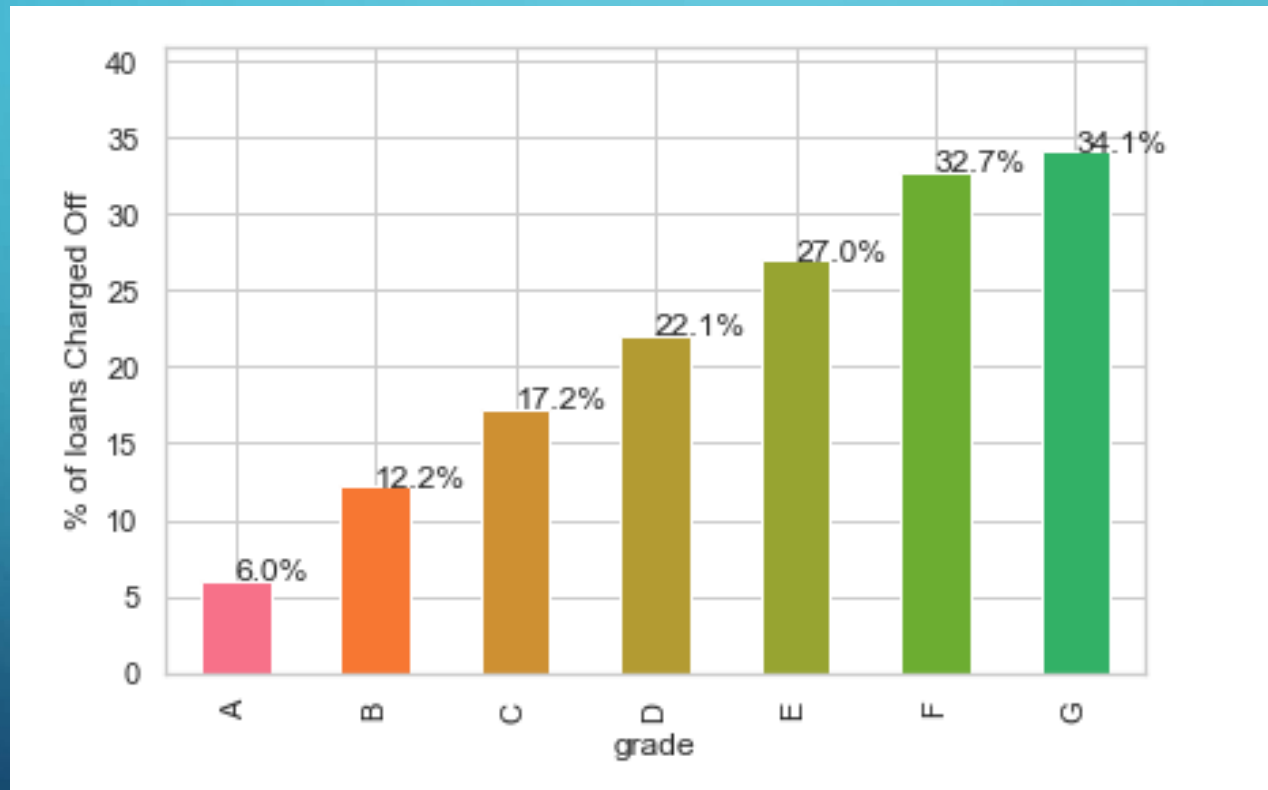
LOAN PURPOSE ANALYSIS

- Debt consolidation is the main category of loans for which the highest number of loans are executed.

- The category 'small_business' are mostly used for Charged Off loans.
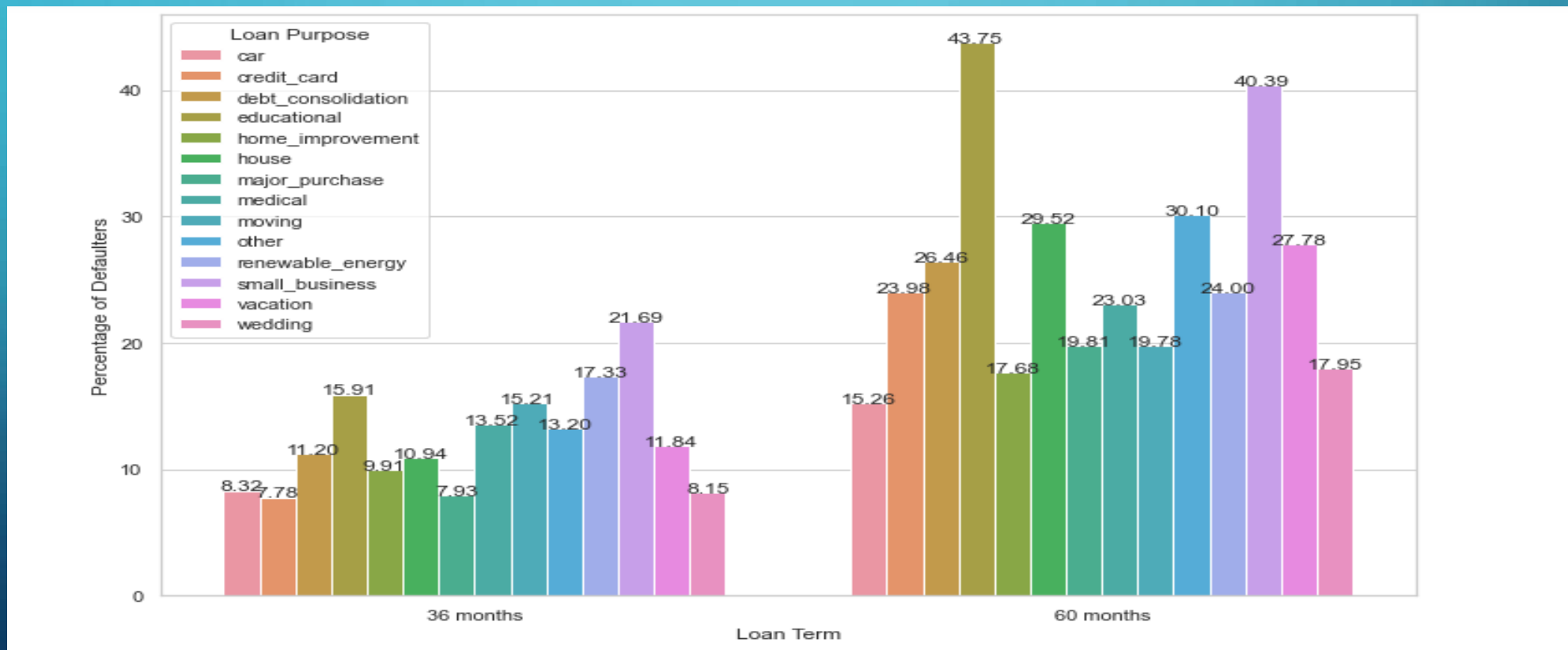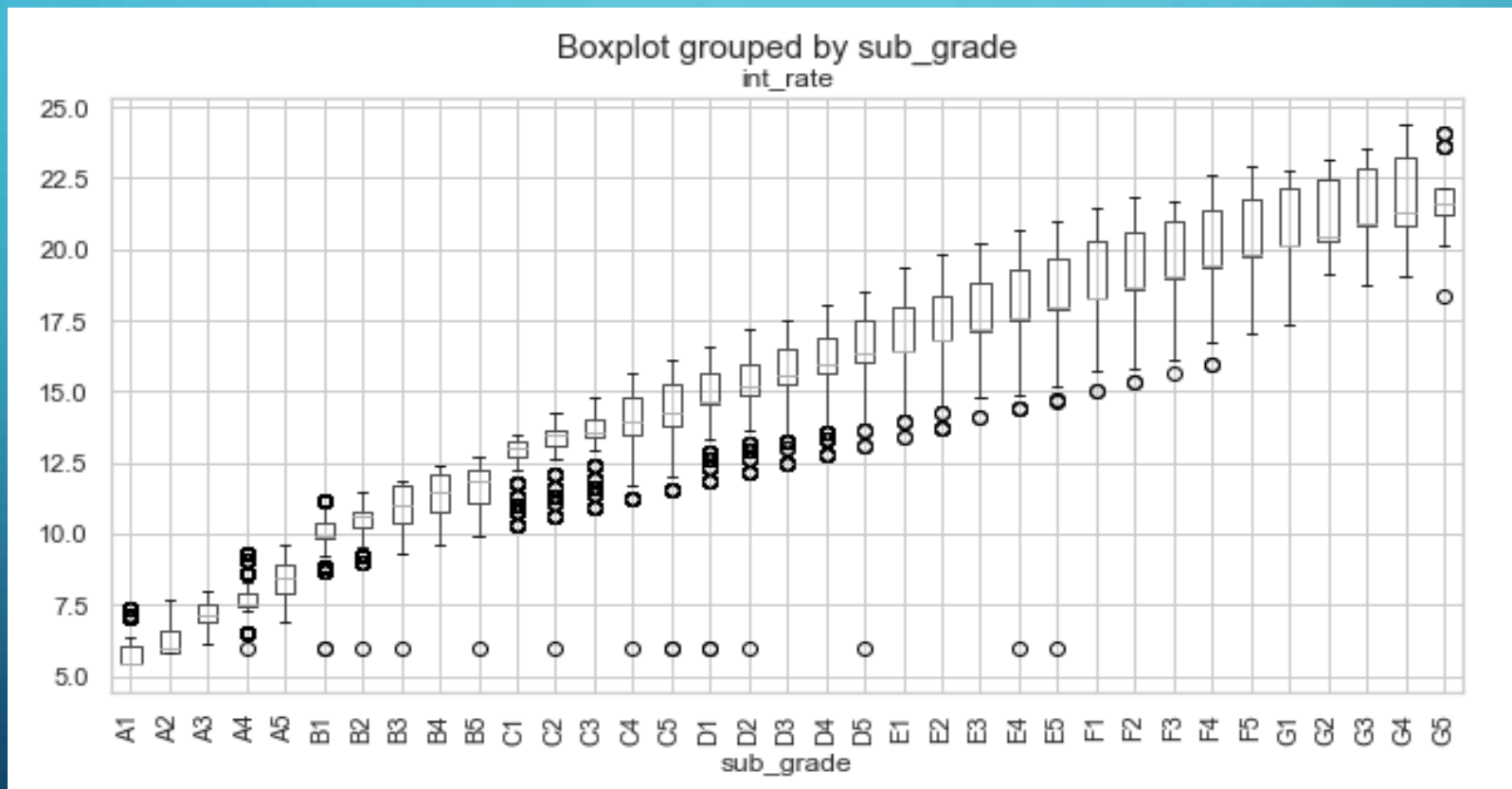
LOAN BY GRADE ANALYSIS

- Grade F and G are seems to default.

- Grade D,C,B,A are less in numbers and interest rates are higher for these grade loans.

LOAN BY GRADE ANALYSIS

- Interest rates are inversely proportion to the subgrade.

- Moving from A to F sub grade, rate of interest for the loan are also increasing.

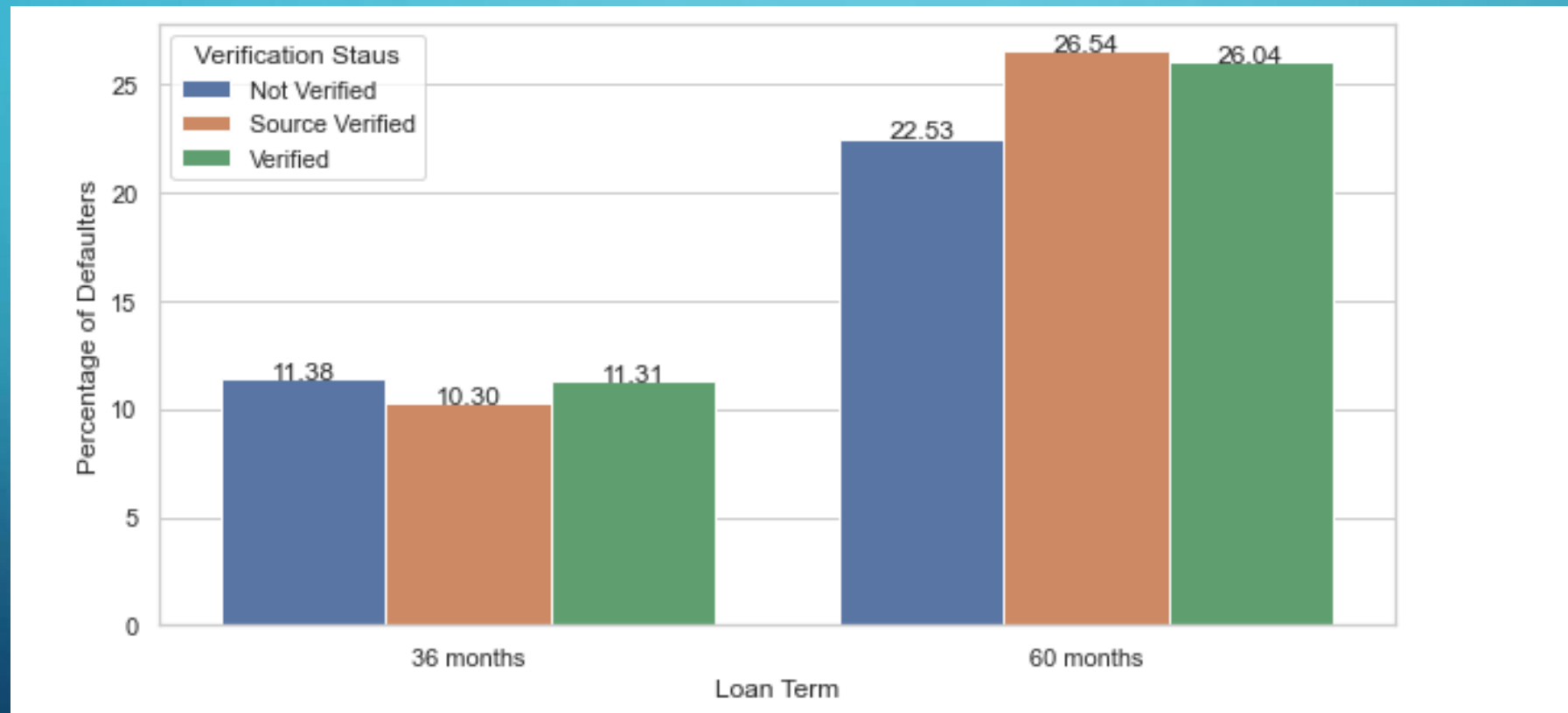Boxplot grouped by sub_grade
int_rate

LOAN BY HOME OWNERSHIP AND ANNUAL INCOME

- Less Income with rented house tend to default the loan more

- With High Income the borrowers living in Mortgaged houses tend to default the loan more.
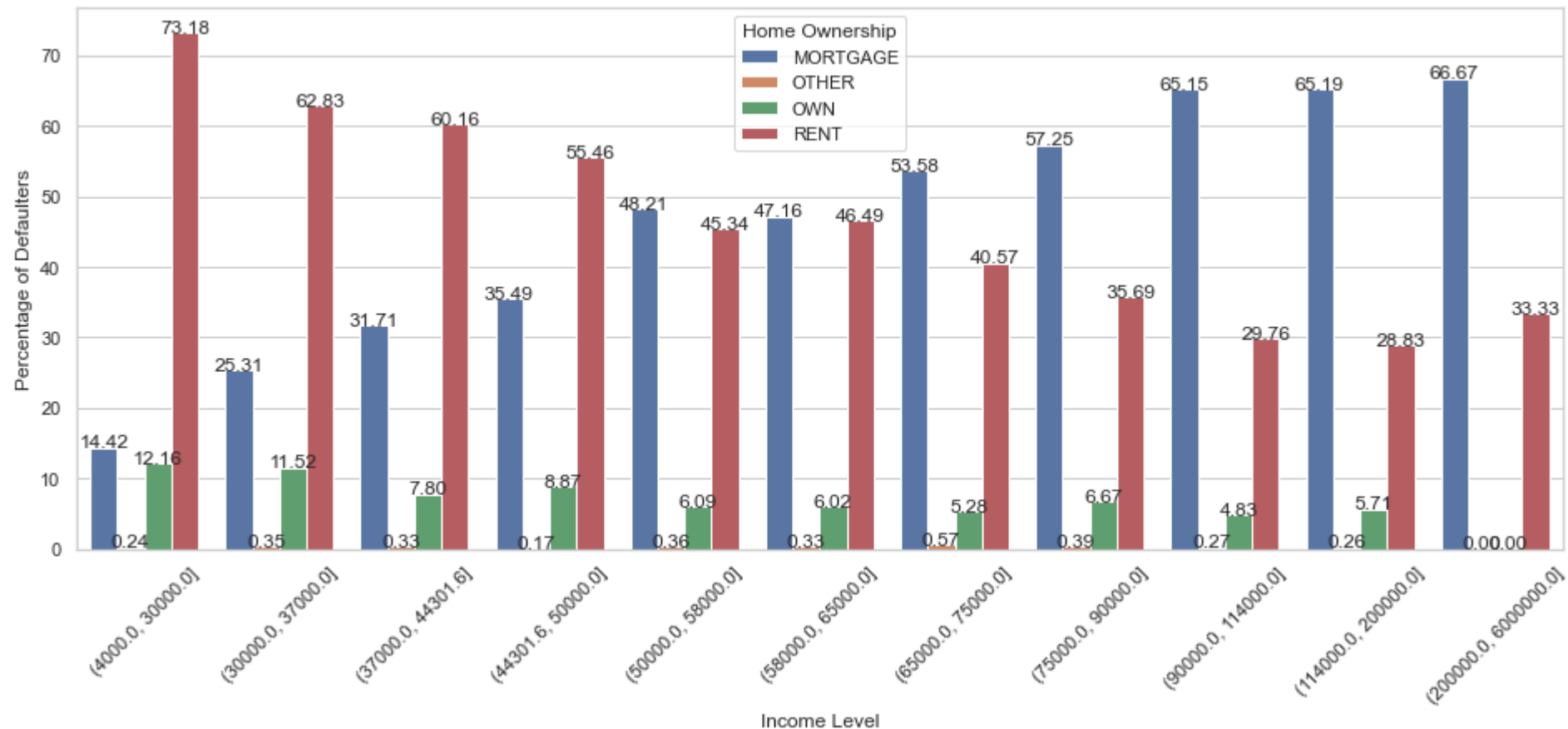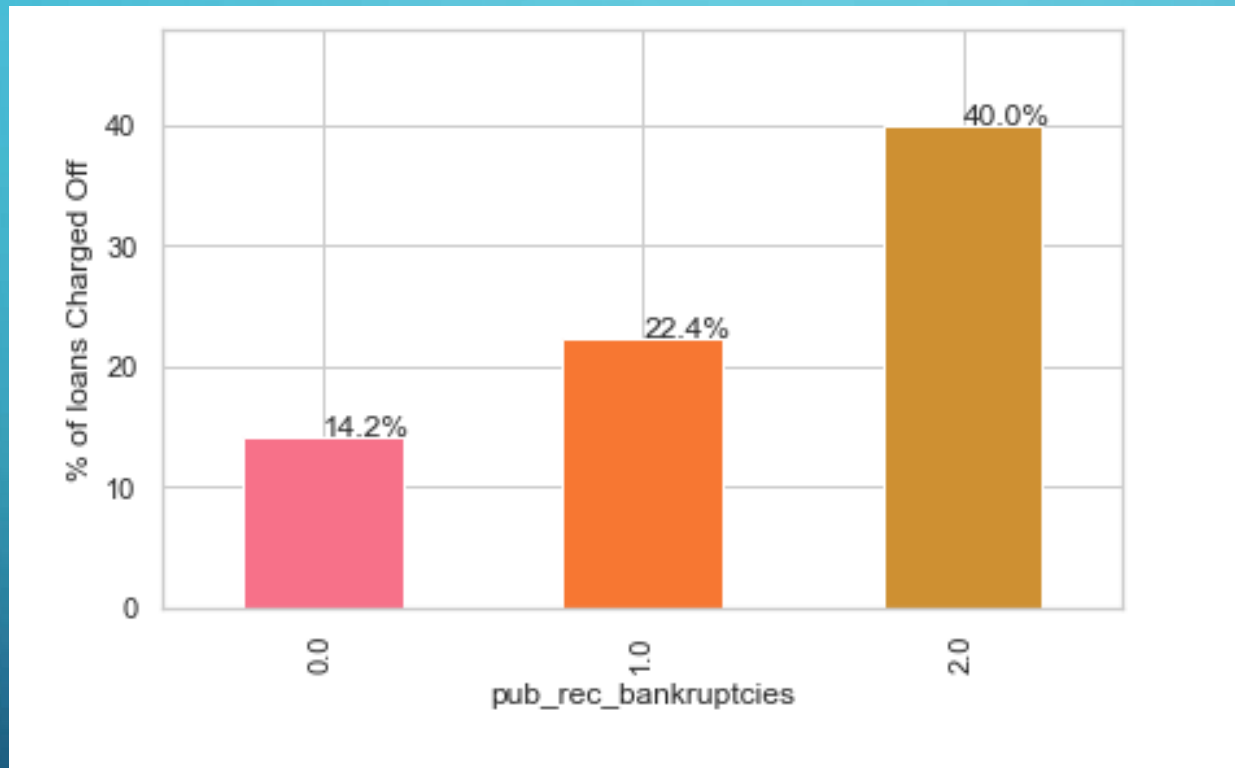
LOAN TERM AND VERIFICATION STATUS ANALYSIS

- Borrowers with higher Loan Term an income verified d income verified tend to Default more.
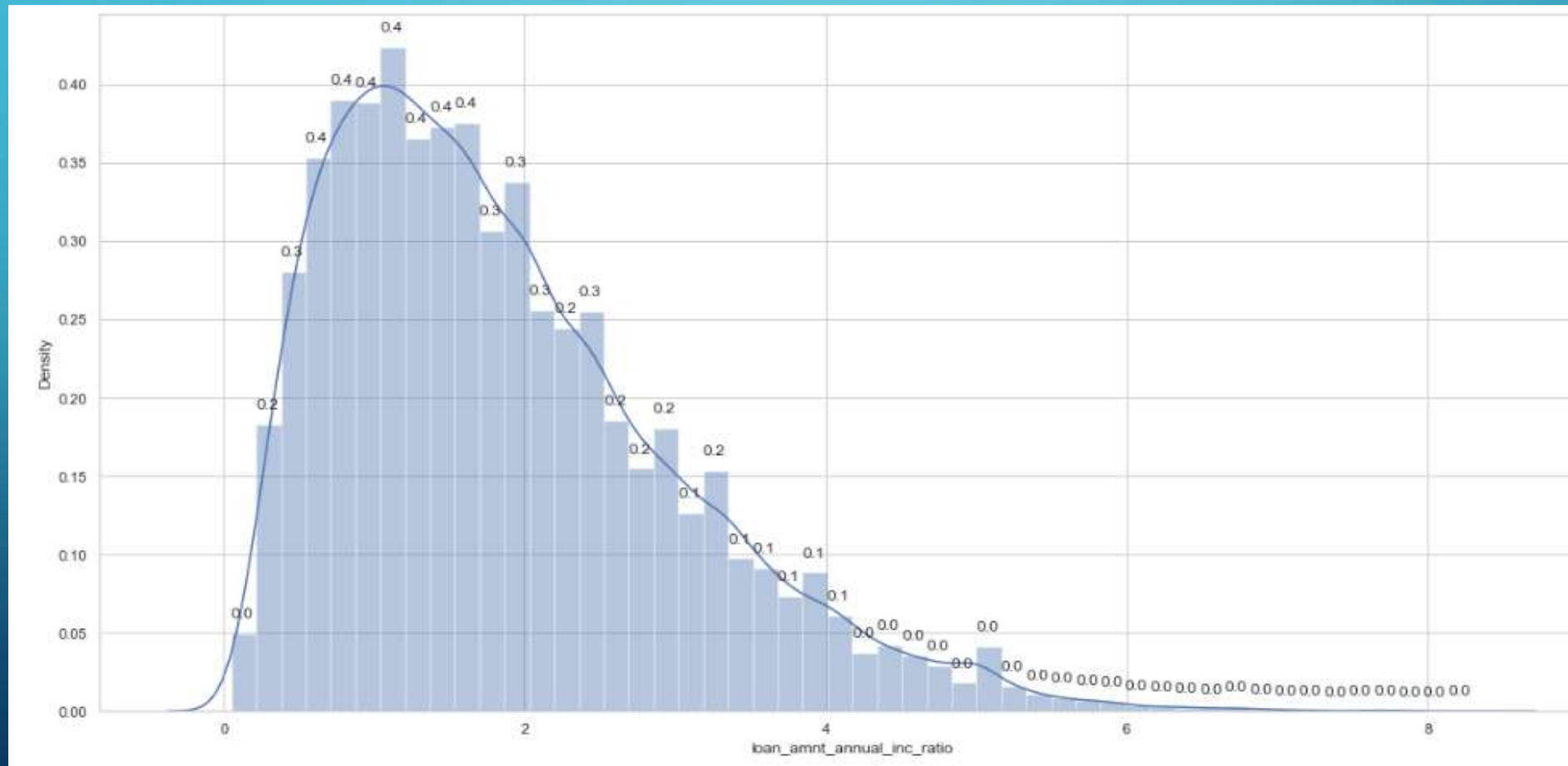
LOAN ANALYSIS BY PRIOR BAD RECORDS

- Customer with prior record of bankruptcy has higher chances to become a Defaulter.

LOAN AMOUNT AND ANNUAL INCOME RATIO ANALYSIS

- Loan amount which are less than 20% of annual income, seems to be less defaulters.

- Loan amounts of 30% of annual income or higher see a high rate of default.

CONCLUSIONS

- Borrowers who have taken loan amount greater than 15000.

- Borrowers having annual income less than 65000.

- Rented Houses or Other.

- Who have taken loan with grade beyond D. As interest rates are getting higher proportion to grade moving from A to G

- Small business, renewable energy purpose for taking loans .

- Loan terms for 5 years .