GRAMENER CASE STUDY

SUBMISSION

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Abstract

Consumer Finance Company is an online loan marketplace specialized in lending various types of loans such as personal loans, business loans, financing of medical procedures and our analysis is intended to help them in taking decision on approving the loan application. Company need to make the decision to approve a loan application by factoring various risks involved and this insight could be gained by analyzing the data of past loan applications. This exploratory data analysis on past loan data will identify the consumer attributes and loan attributes which influence the tendency of a loan applicant likely to default. The company can utilize this knowledge for its portfolio and risk assessment.

Problem solving methodology

For Consumer Finance Company to do the risk assessment of loan application, important driving factors will be identified by performing exploratory data analysis (EDA) on past loan applications. This process will be done in following steps:

- Univariate and segmented univariate analysis is done to identify 5 important driver variables which could influence the tendency to default.

- Business driven, type-driven and data-driven metrics are created for the important variables and utilized for analysis.

- Bivariate analysis is performed to identify the important combinations of driver variables. The combinations of variables are chosen such that they make business or analytical sense.
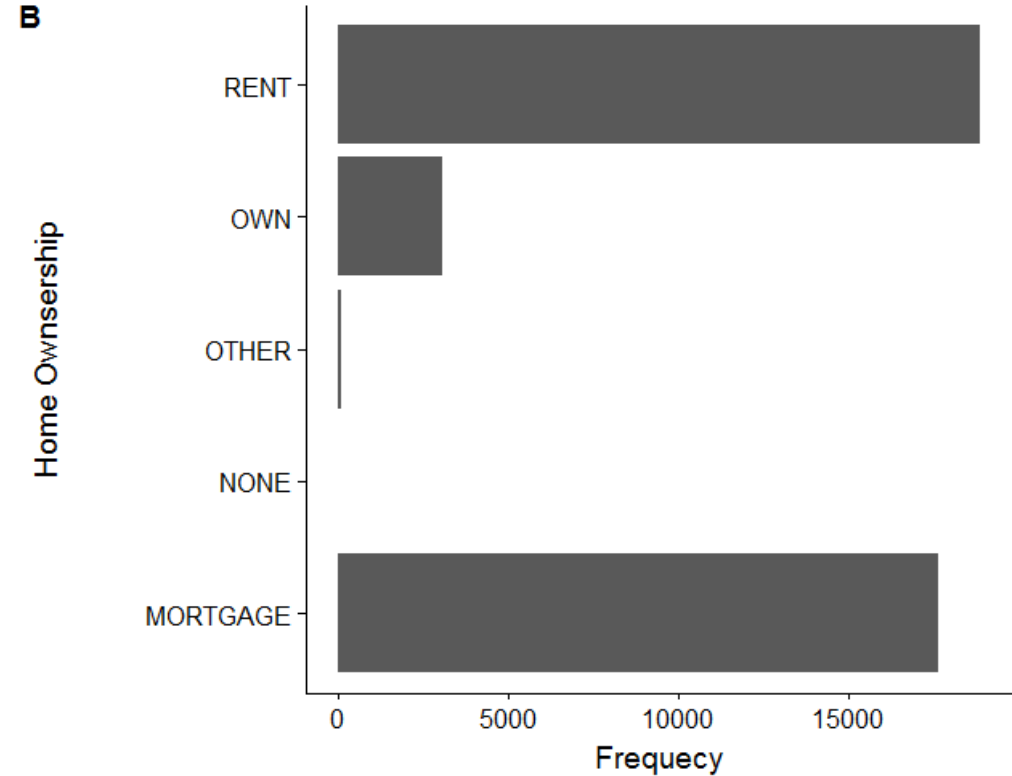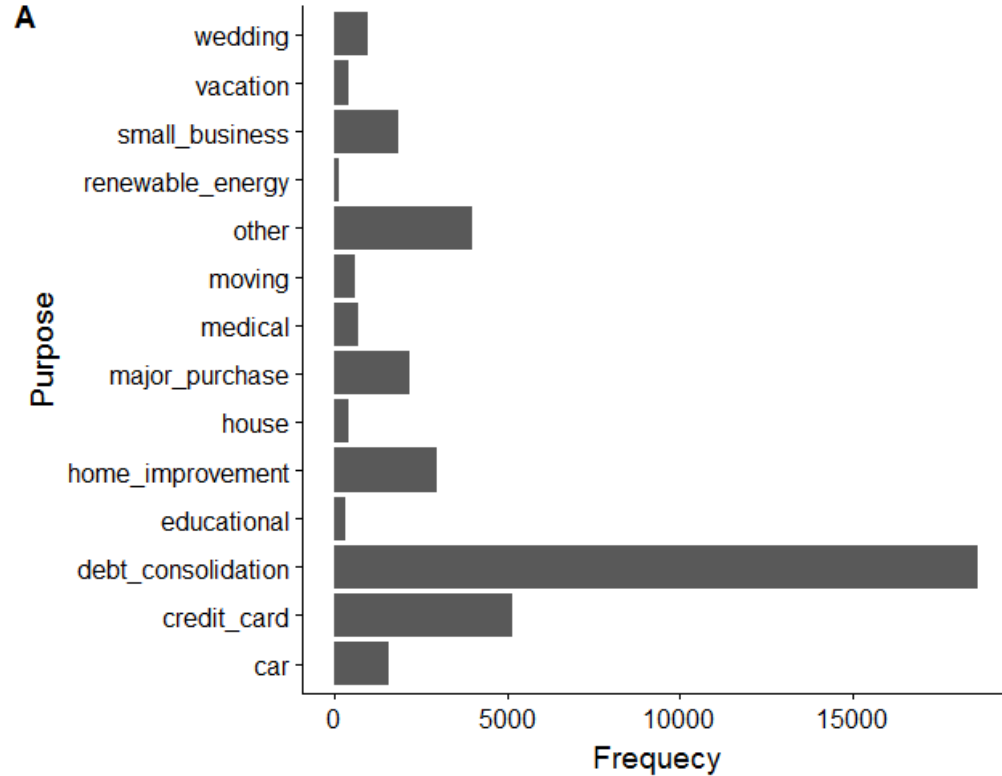
Univariate Analysis
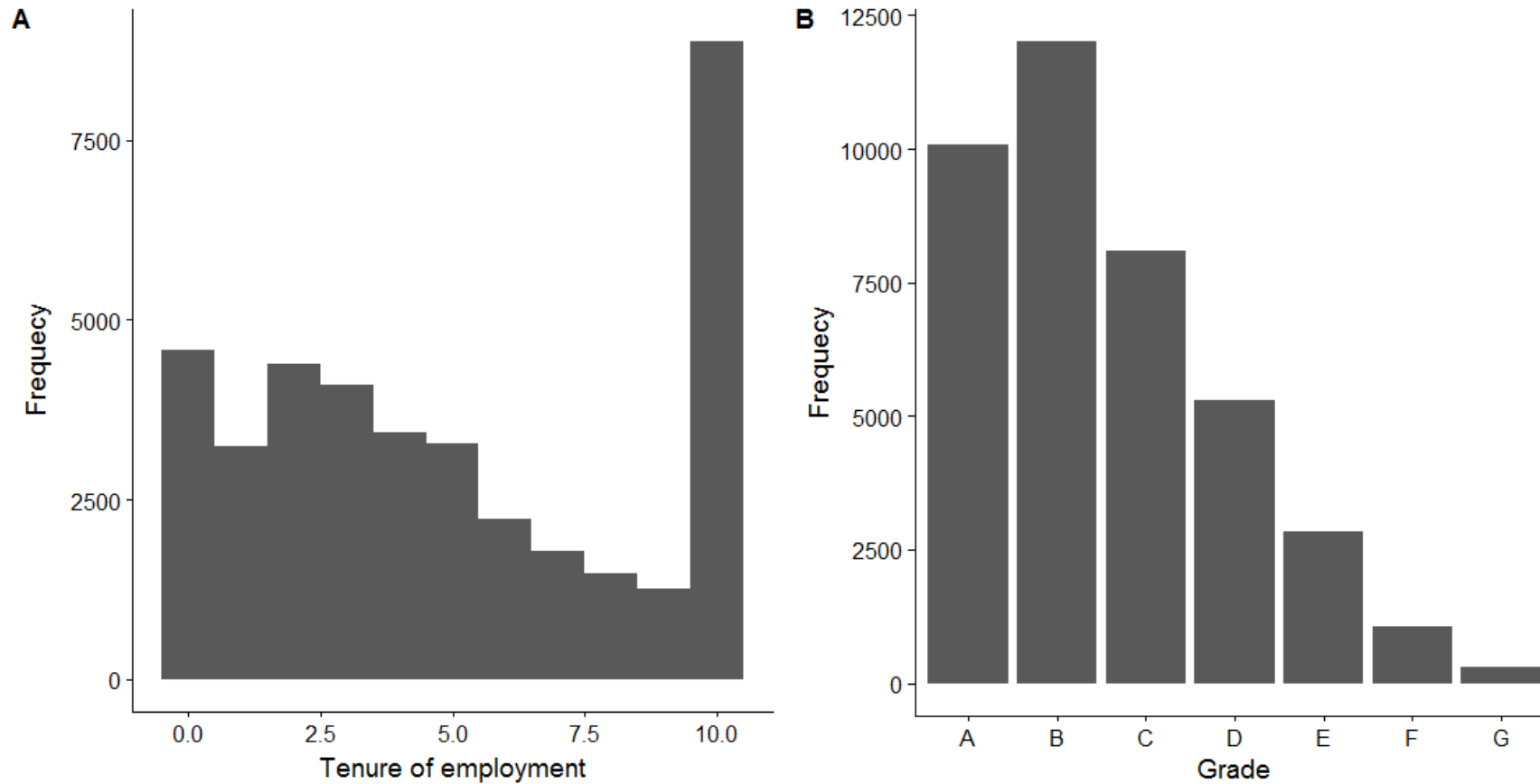
Observations

- More loans taken by people with employment tenure 10 or more number of years

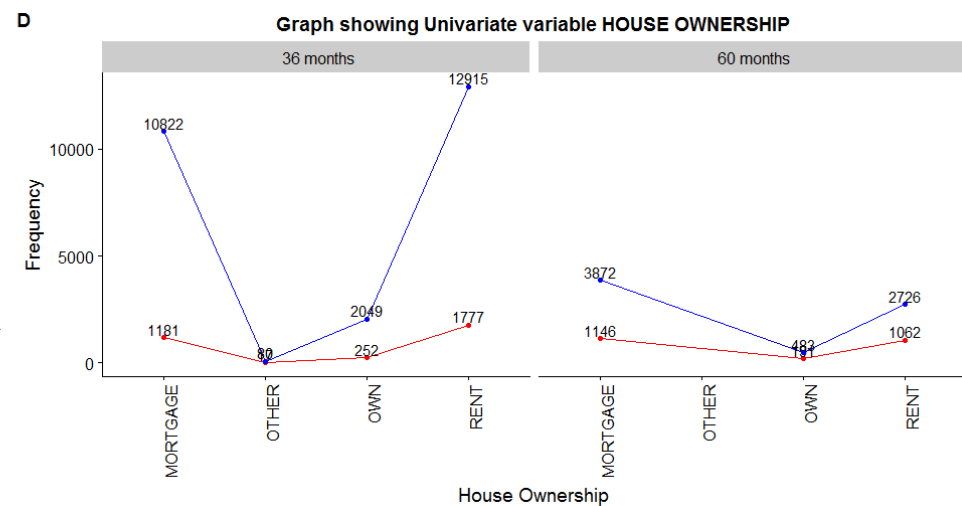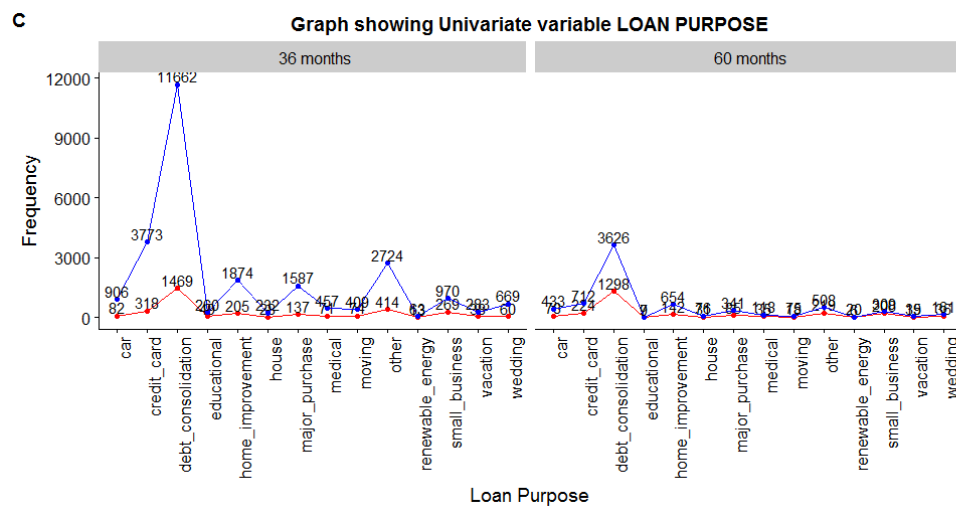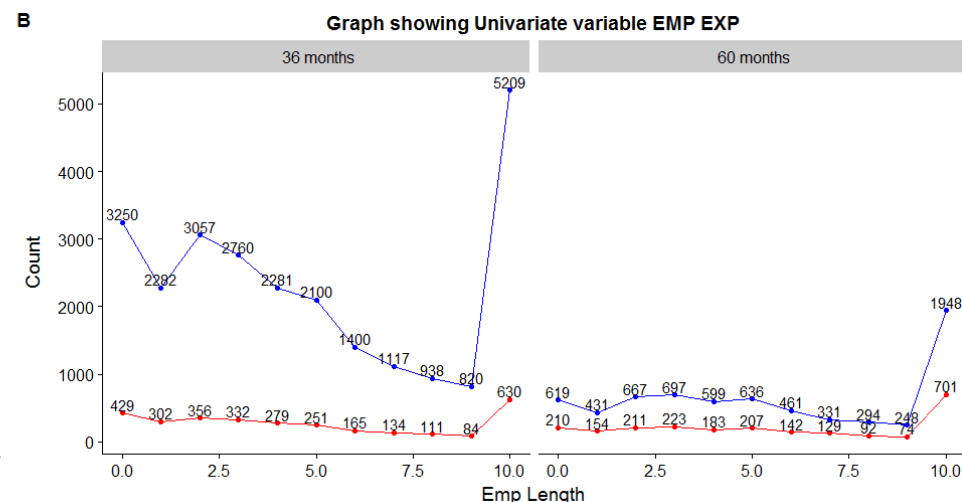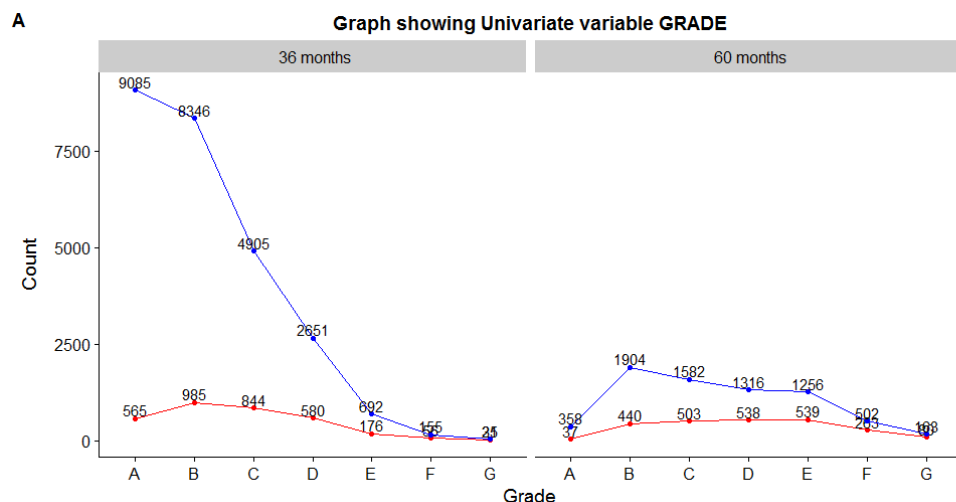- Significantly high number of loan applicants are fully paid
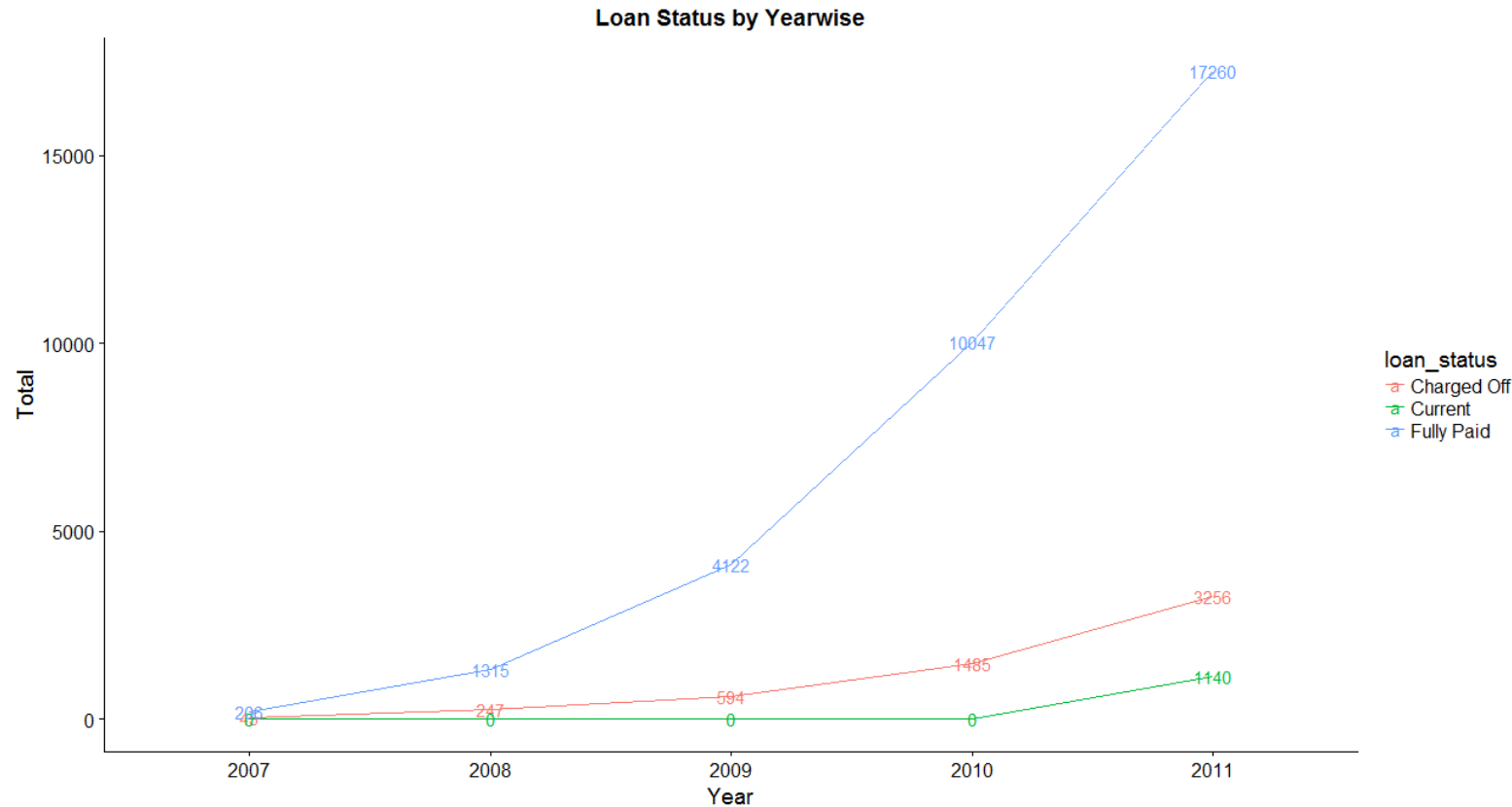
Univariate Analysis

Observations

- Significantly high number of people applied loan for debt consolidation
- Significantly high number of people who are on Rented or Mortgaged applied for loan compared to Own

Univariate Analysis

A — Graph showing Univariate variable GRADE

B — Graph showing Univariate variable EMP EXP

C — Graph showing Univariate variable LOAN PURPOSE

D — Graph showing Univariate variable HOUSE OWNERSHIP

Insight into data

Loan Status by Yearwise

- We observed total 119151 loan applications.

- We have current active users only for the people who applied for loan in 2011.

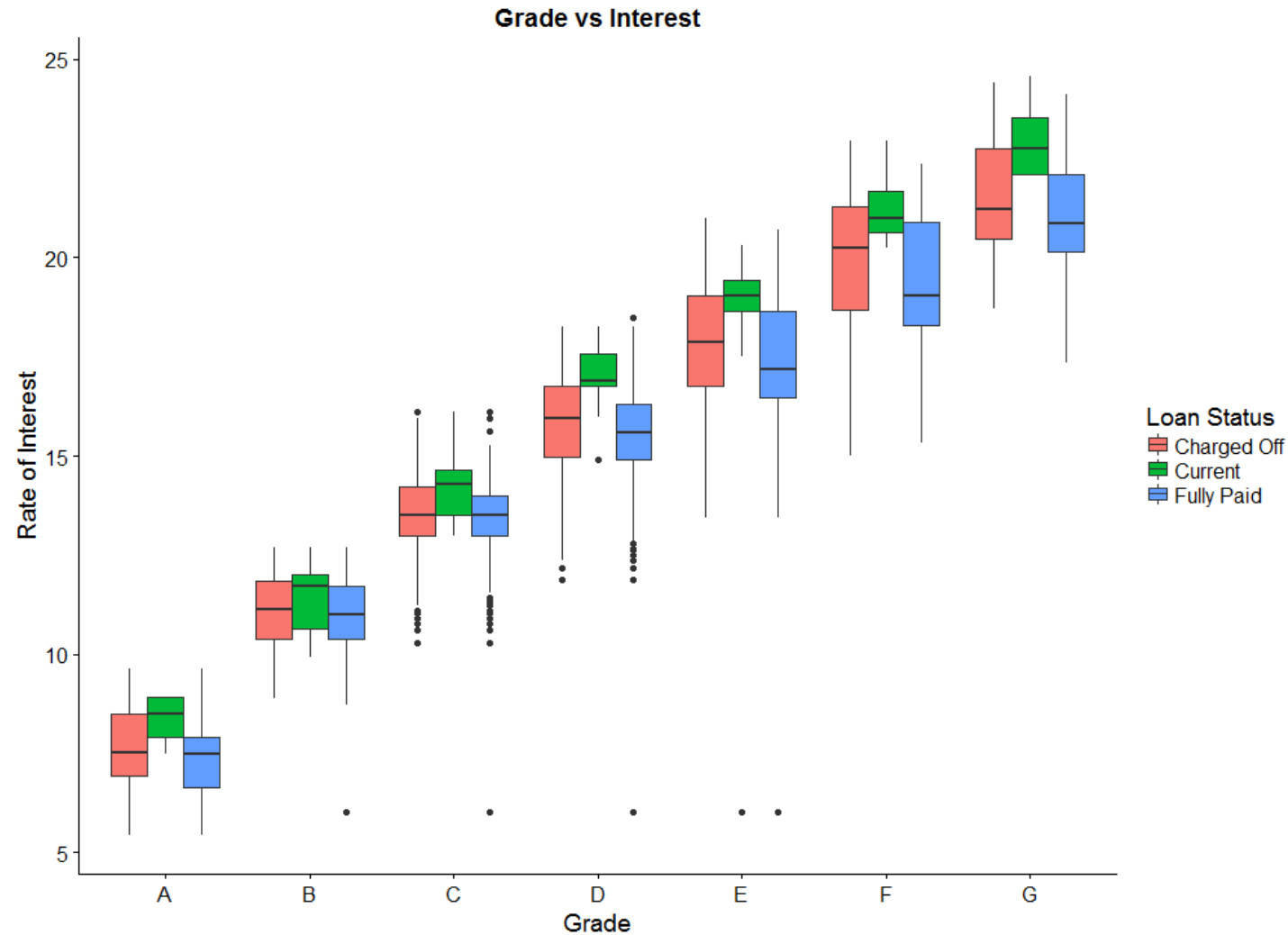- Loans given has increased exponentially from 2008 to 2011.

Insight into data
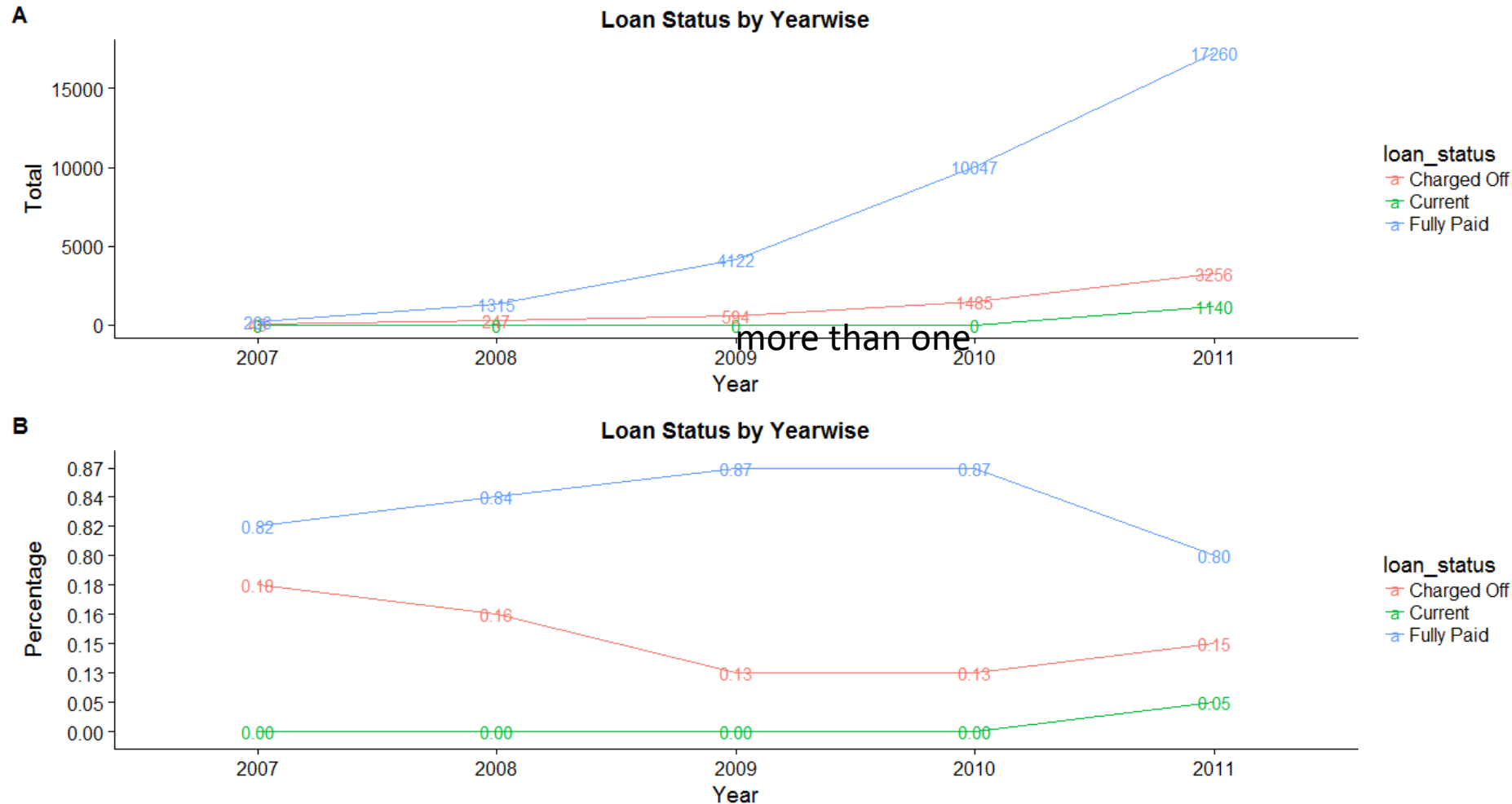
We notice that defaulter rate was high(18%) in year 2007, it was reduced to 13% till 2010 then again increased to 15% by 2011
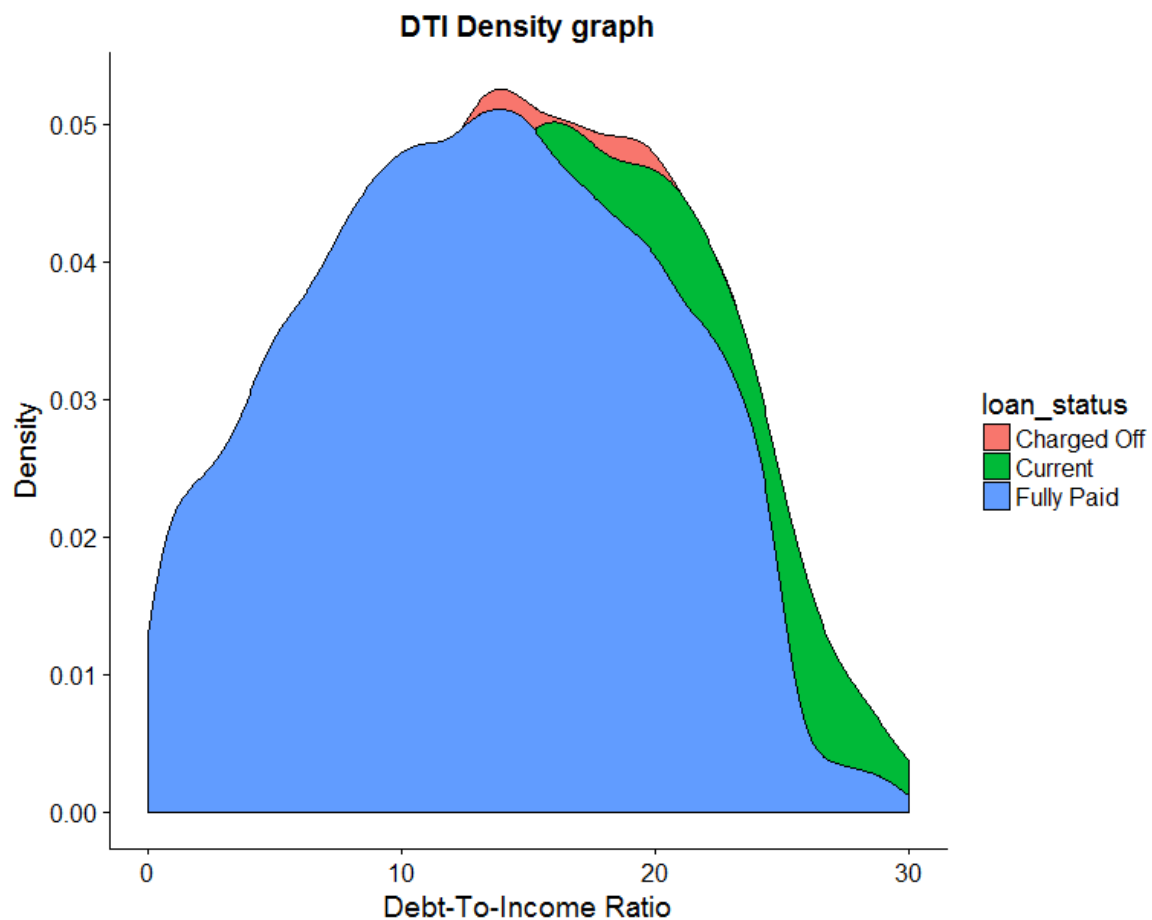
Insight into data

Grade vs Interest

We notice that as loan grade increment rate of interest goes up as well as tendency to default.
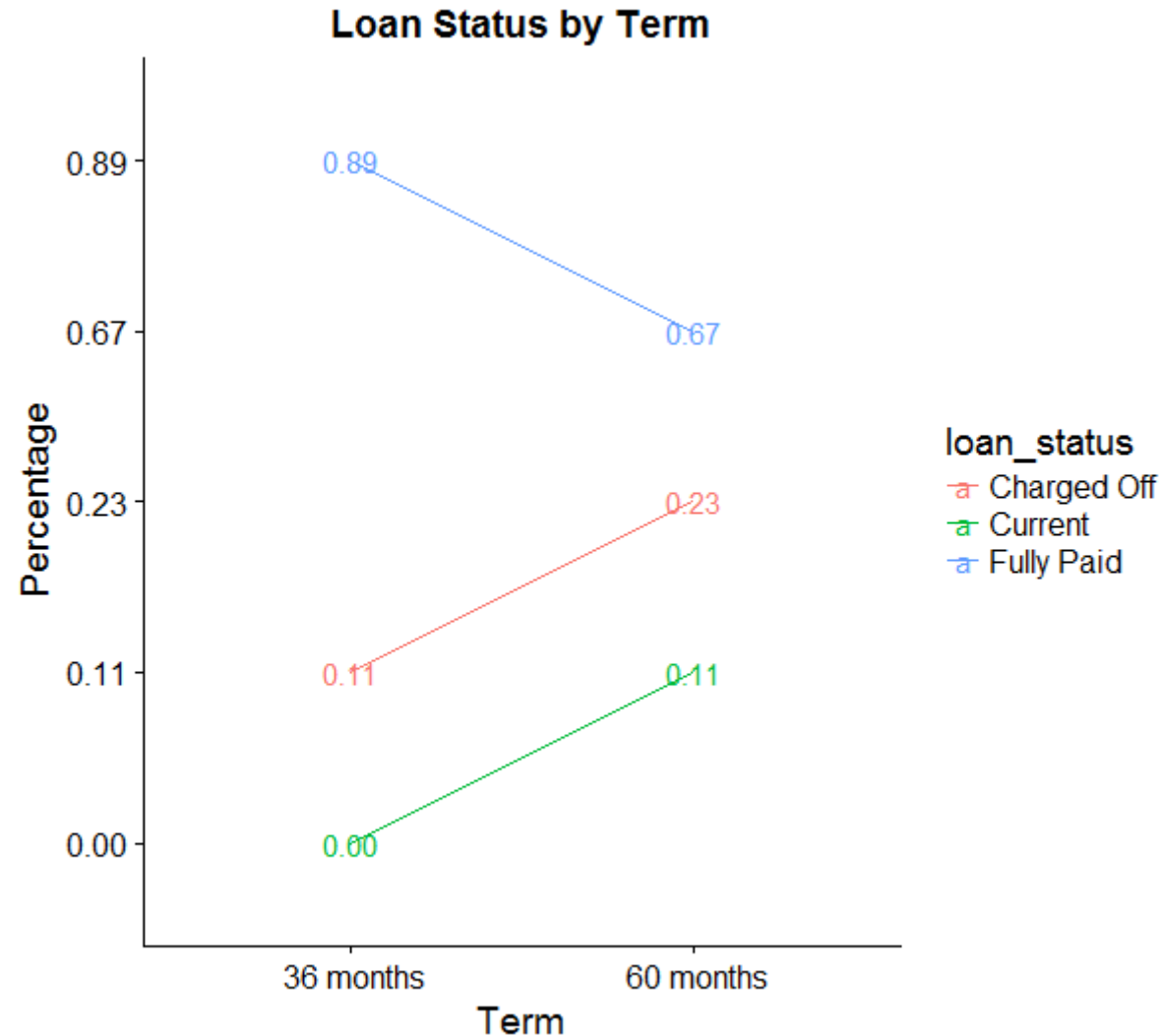
Insight into data

DTI Density graph

We notice that applicants having DTI ratio around 12 to 22 having tendency to default.

Bivariate Analysis

Loan Status by Term

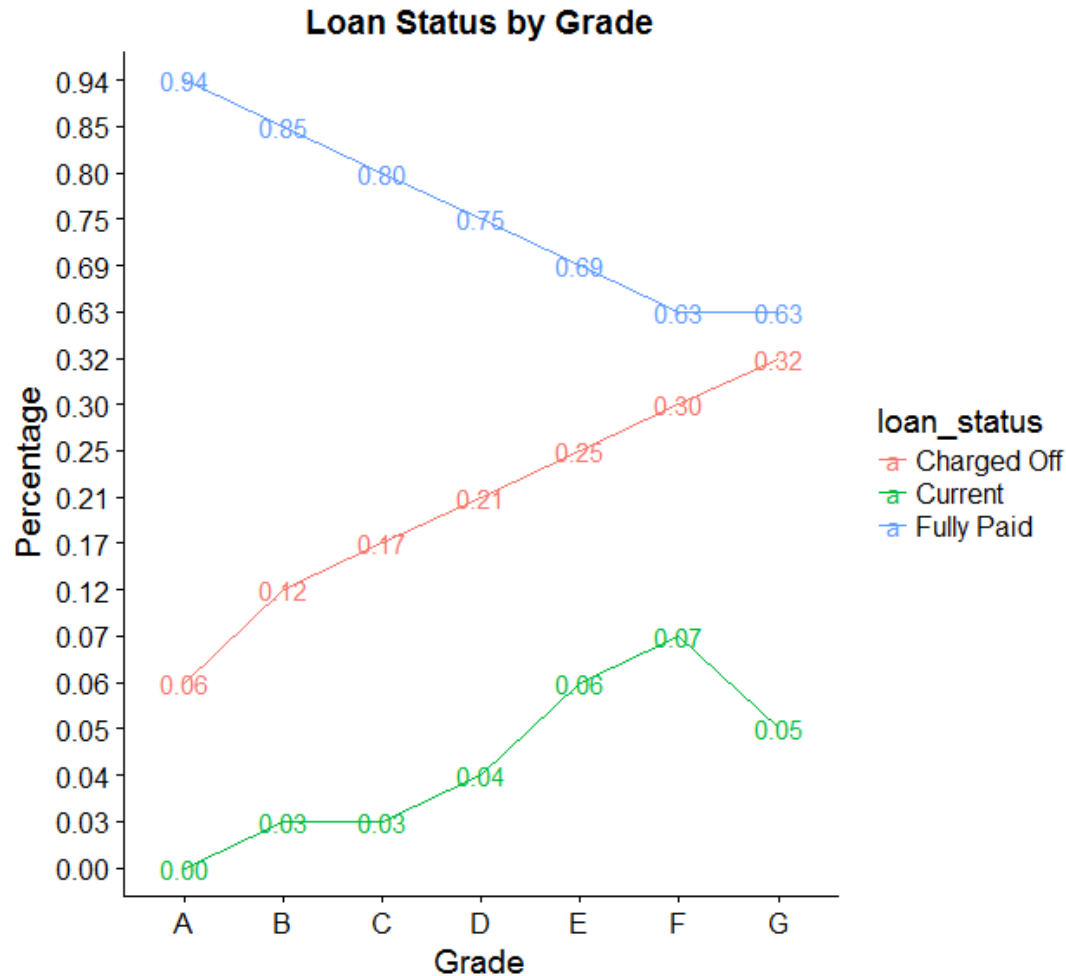**LOAN STATUS BY TERM**

- We notice that with 60 months term defaulters are more
- 36 months: defaulters=11%
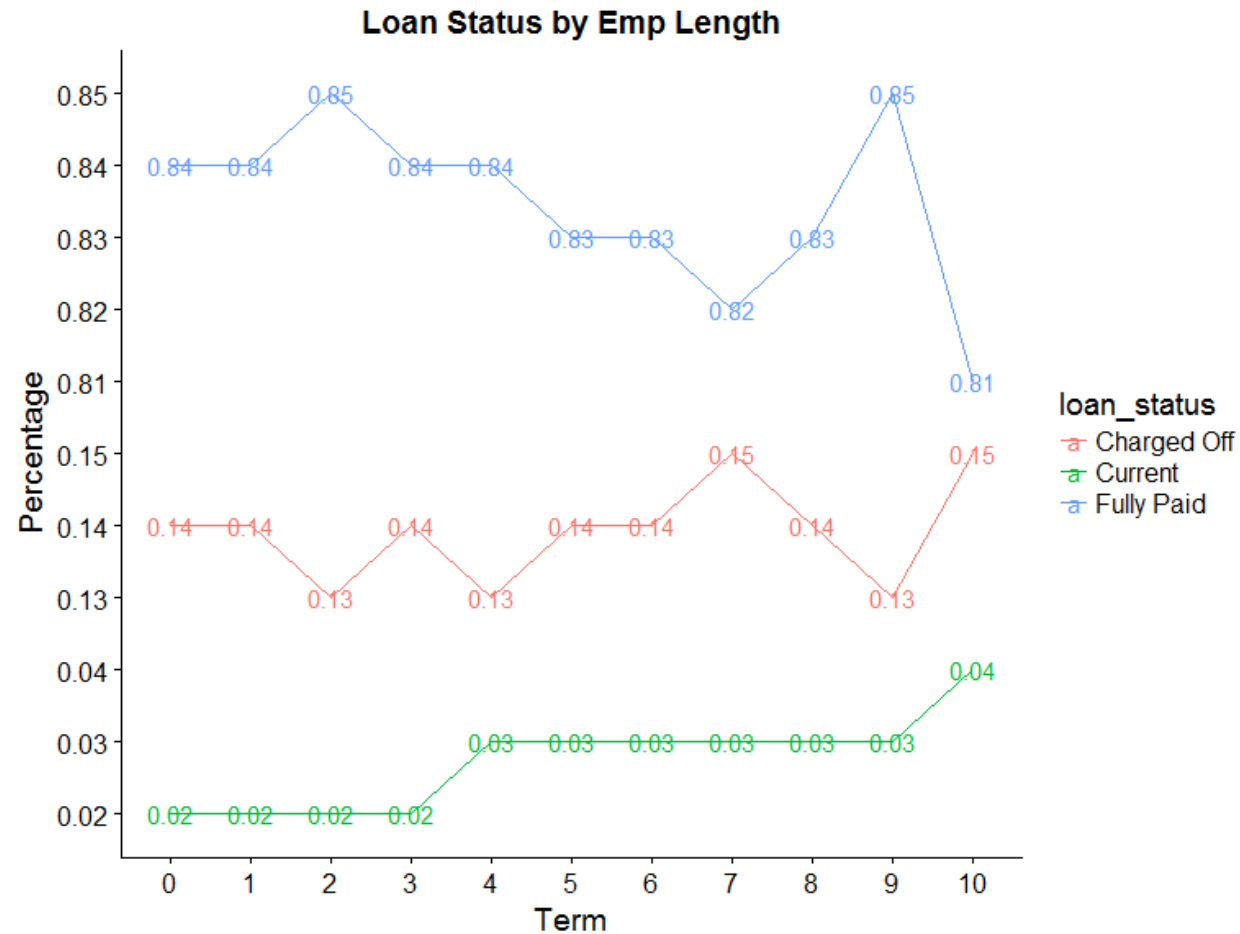- 60 months: defaulters=23%

Bivariate Analysis

LOAN STATUS BY GRADE

- We notice that as the grade increase from A to G defaulter % increases and Fully paid % decreases.
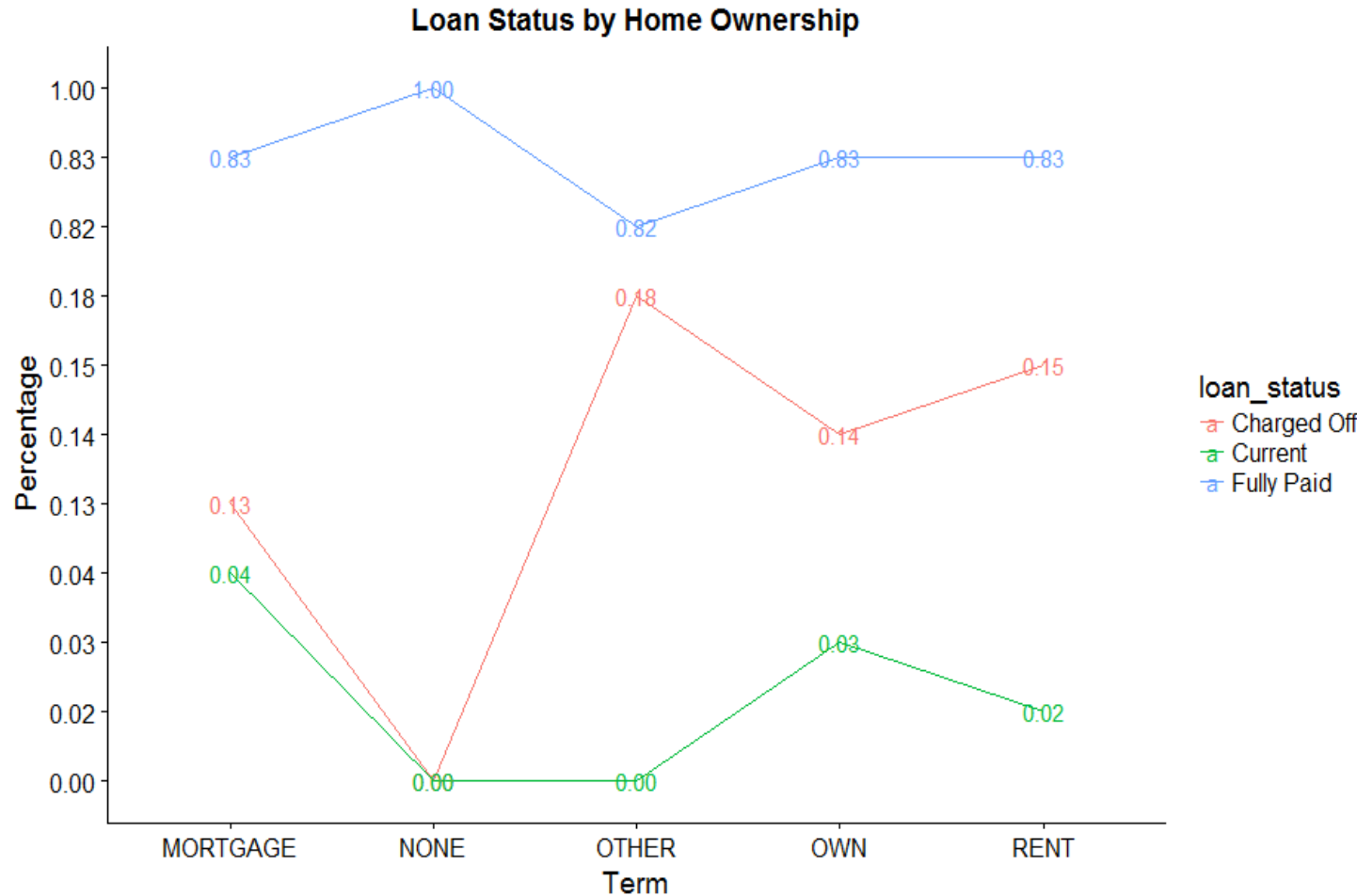
Bivariate Analysis

Loan Status by Emp Length

LOAN STATUS BY EXPERIENCE

- We notice that as defaulter rate lies between 13 to 15%

Bivariate Analysis

Loan Status by Home Ownership
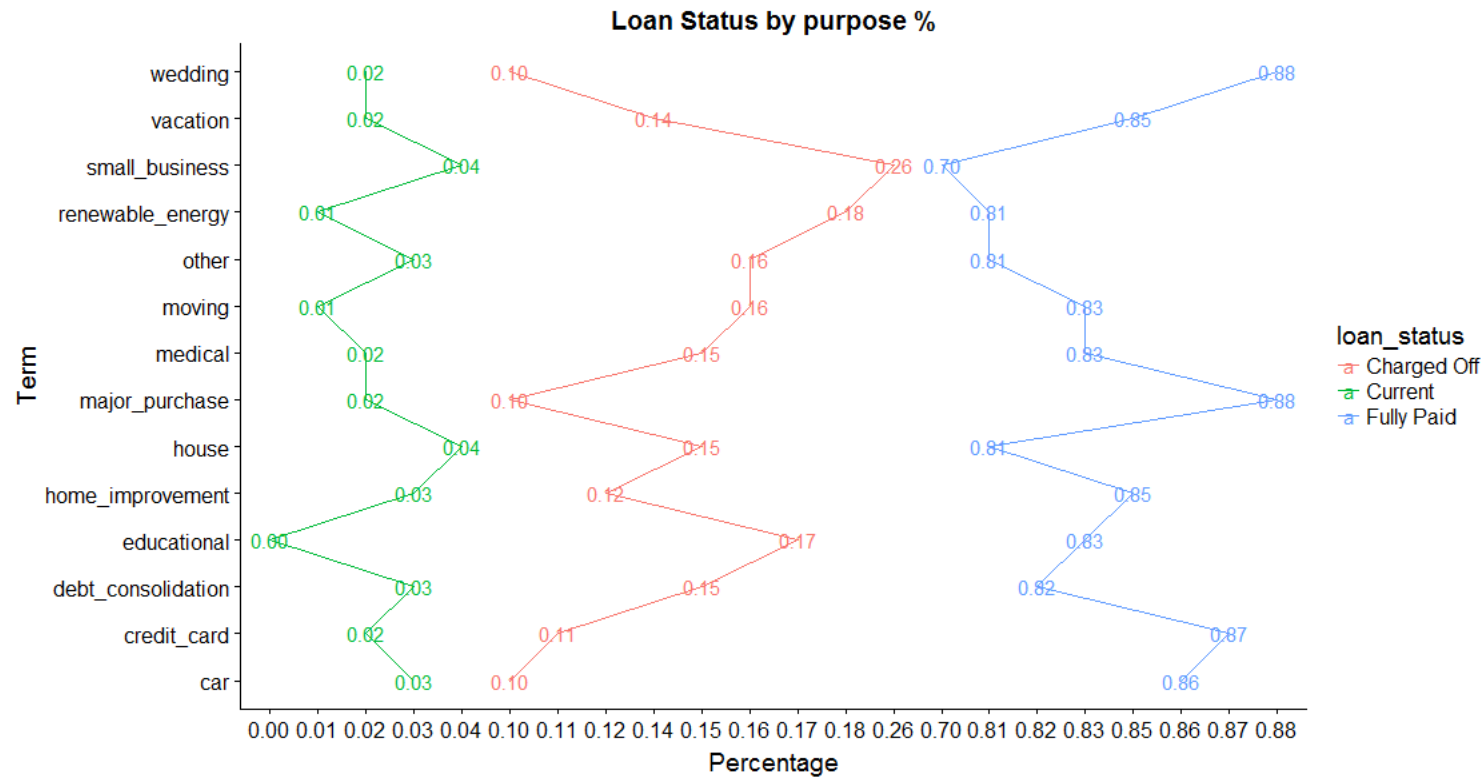
LOAN STATUS BY HOME OWNERSHIP

- We notice that as defaulter rate high for OTHER Category

Bivariate Analysis

Loan Status by purpose %
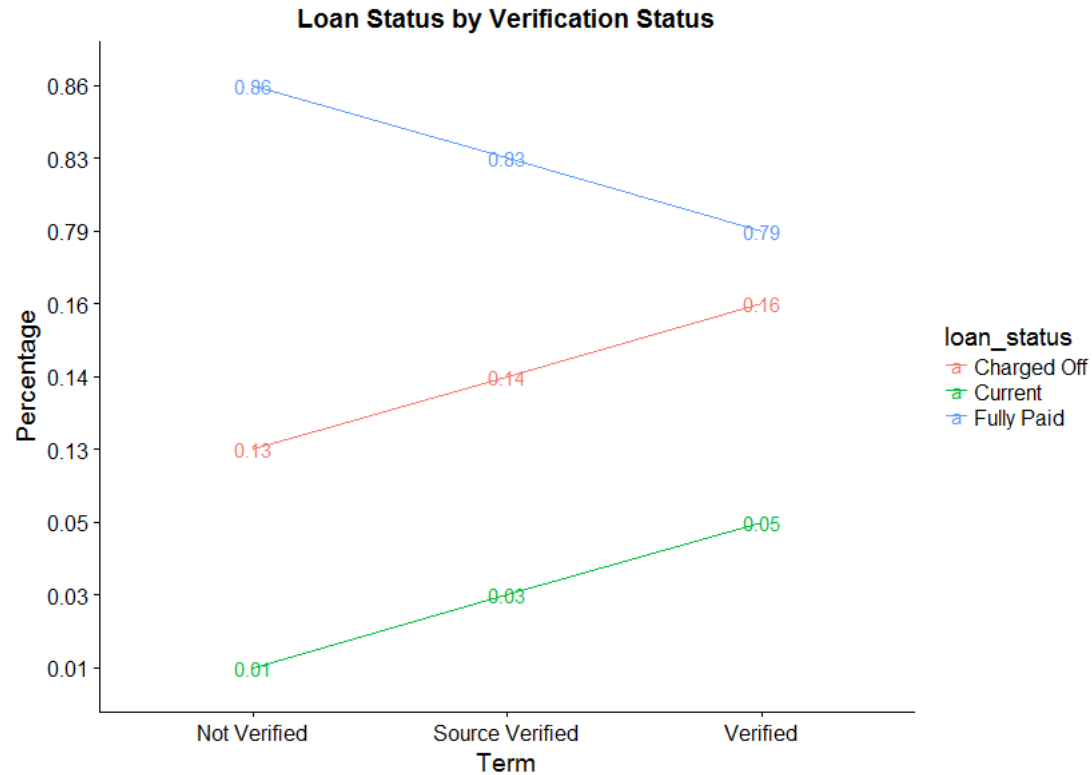
LOAN STATUS BY PURPOSE

- We notice that as defaulter rate high for small Business, renewable Energy and educational
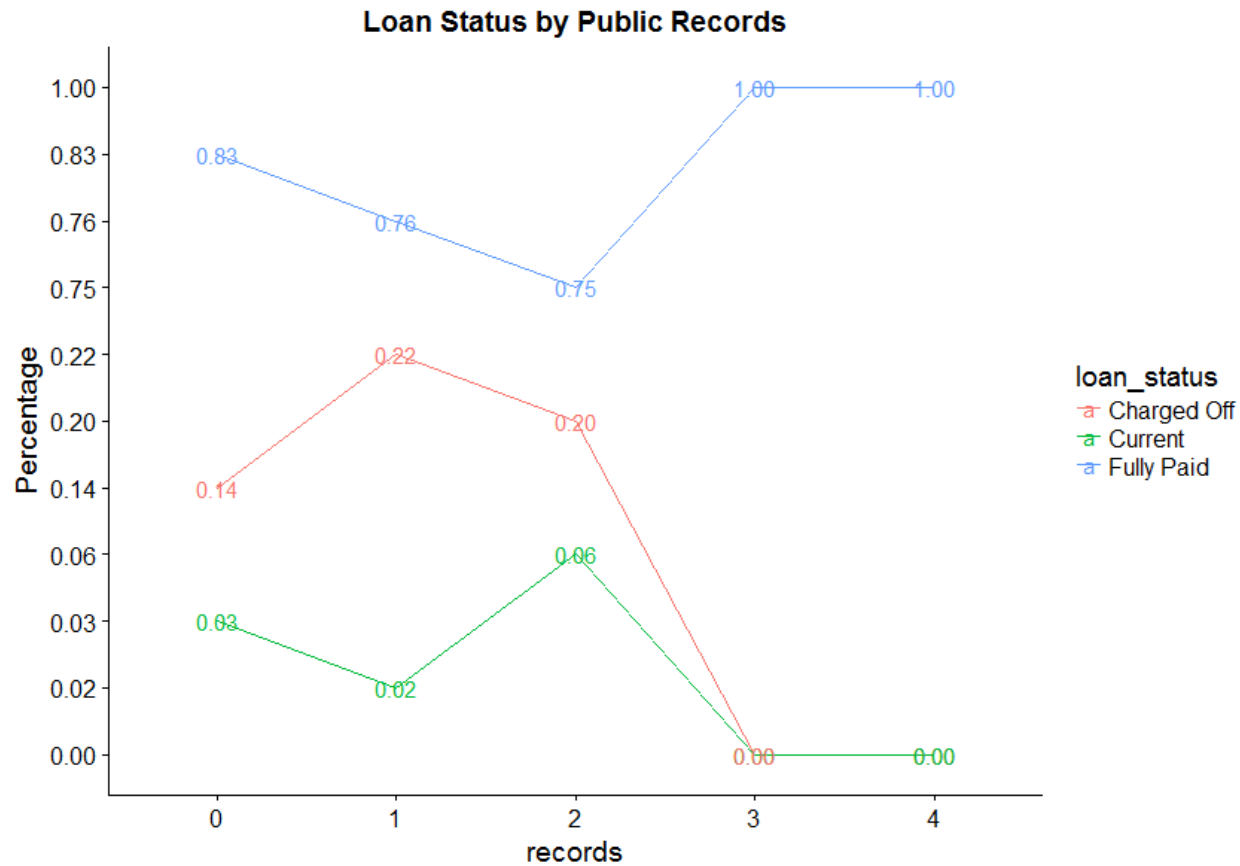
Bivariate Analysis

LOAN STATUS BY VERIFICATION STATUS

- We notice that as defaulter rate high for Verified status

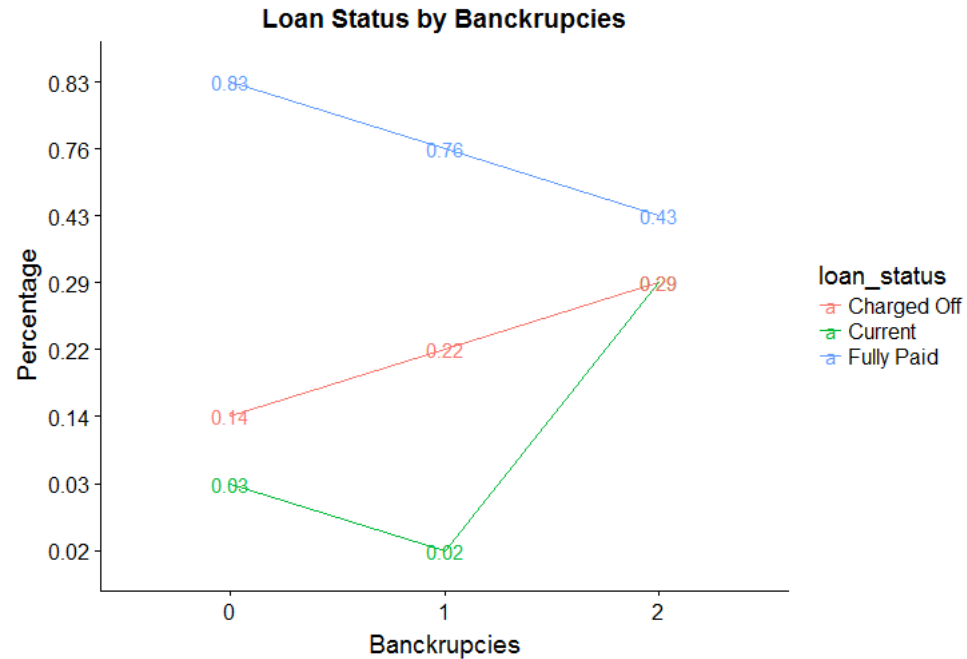- Verified customers are not a indicator of likely to repay the loan.

Bivariate Analysis

LOAN STATUS BY Public Records

- We notice that as defaulter rate high for applicants having derogatory public records.

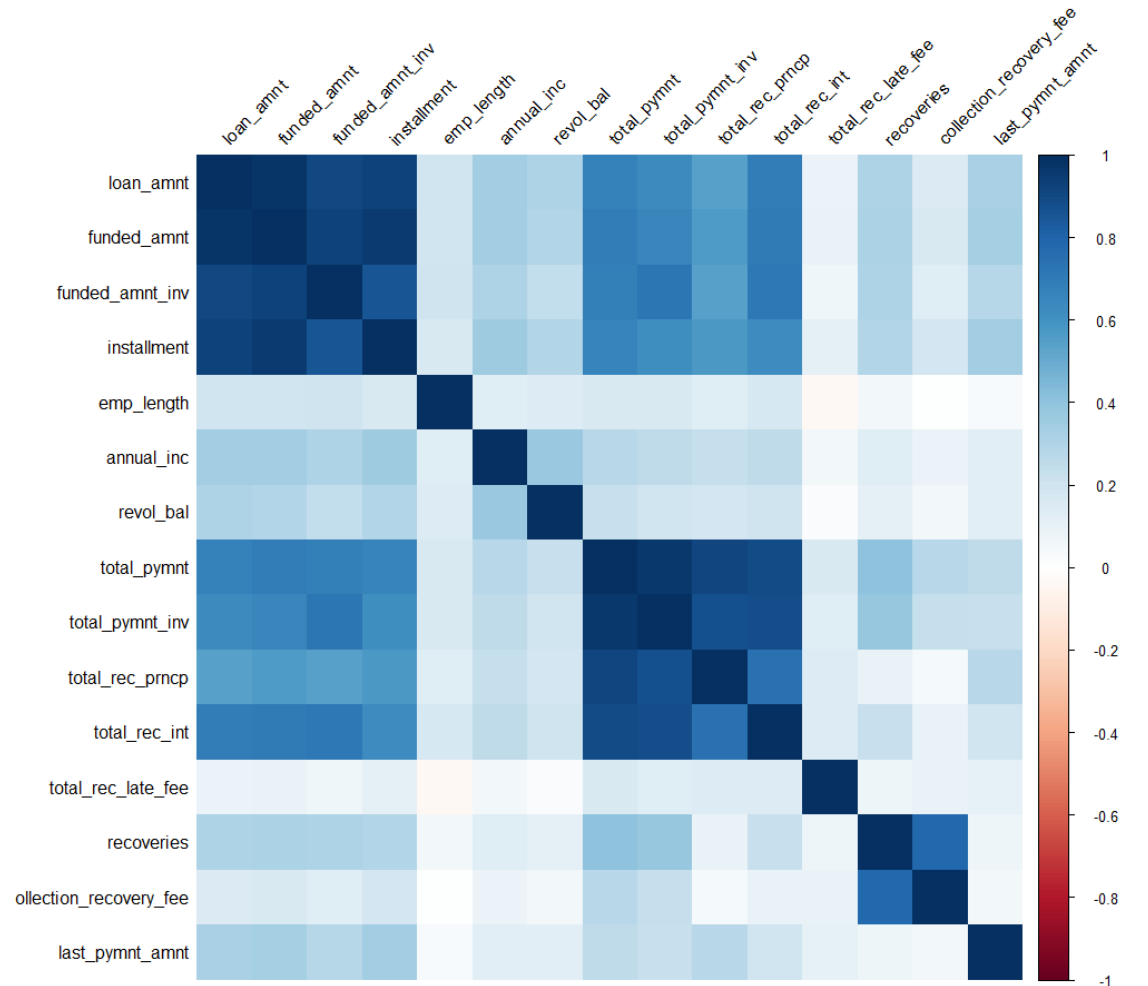- Strong indicator to default the loan

Bivariate Analysis

Loan Status by Banckrupcies

LOAN STATUS BY BANKRUPTCIES

- We notice that as defaulter rate high for record=2

- Strong indicator to default the loan

Bivariate Analysis

Correlation Plot

- Annual income and Total Payment are less co-related.

- No other significant observation from correlation plot.

Conclusions

From the analysis of past loan records, we observed below listed strong indicators influence the tendency to default the loan.

- Purpose - Small Business, Renewable Energy and Education.

- Home ownership – Other category.

- Applicant with more than one derogatory public records.

- Applicant having more than one bankruptcy record.

- Loan term - 60 months.

- Loan grade – higher the loan grade, higher the tendency to default.

- Applicants having DTI ratio around between 12 to 22

Consumer Finance Company should consider these parameters for building the risk profile, making the decision on approving the loan application and to avoid financial loss to the company.