# GRAMNER CASE STUDY

# SUBMISSION

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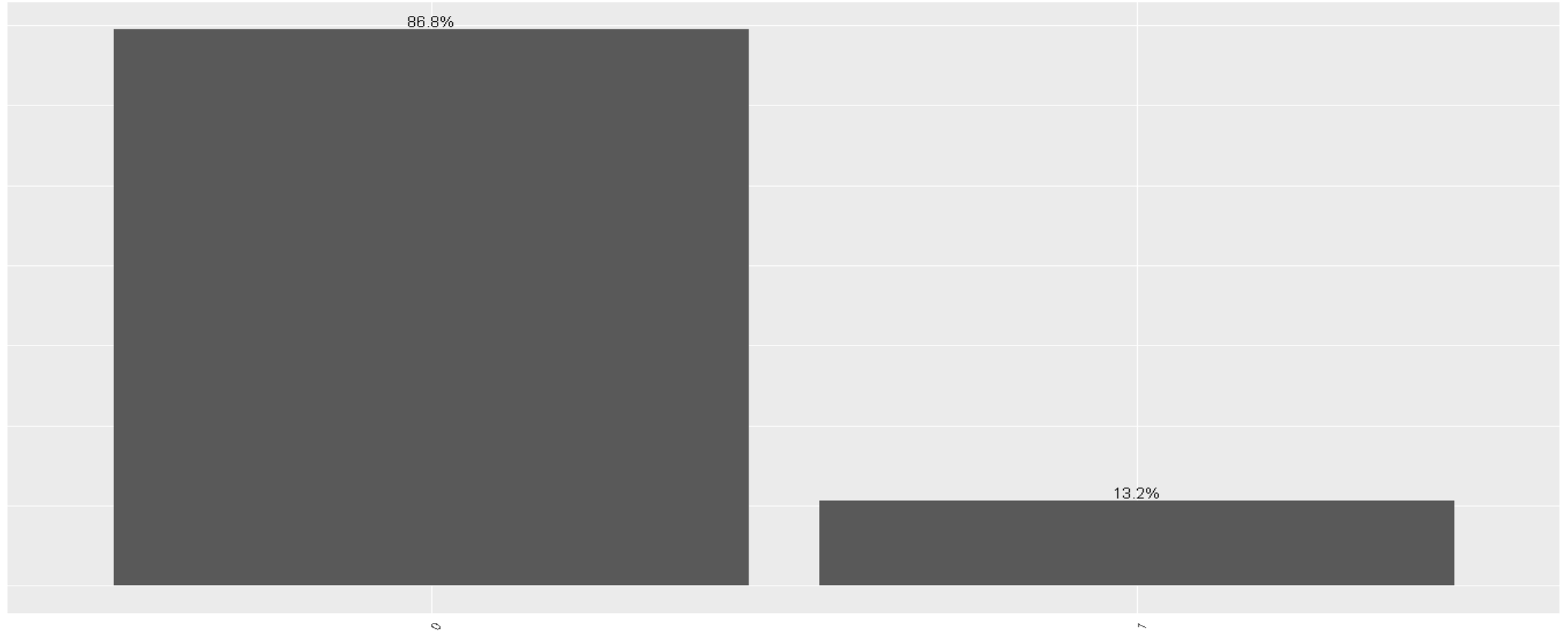2.   Madhusudhan C
3.   Amit Sharma

# Background

- Lending company is a consumer finance company which specializes in lending various types of loans to urban customers.

- The company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile.

- Two types of risks are associated with the bank's decision:

    - If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company

    - If the applicant is not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company

# Business Objective

- The company wants to understand the driving factors (or driver variables) behind loan default, i.e. the variables which are strong indicators of default. The company can utilize this knowledge for its portfolio and risk assessment.

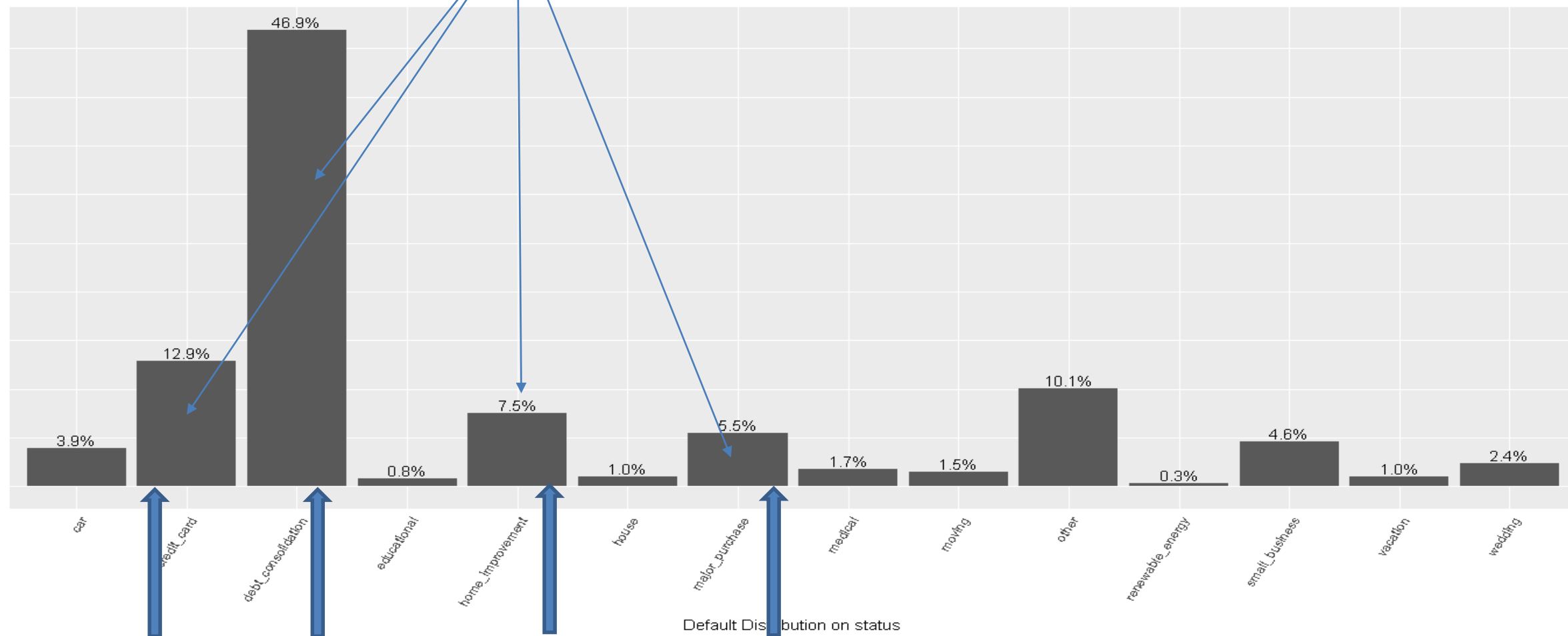# Data Understanding:13% are Defaulters



Deault Distribution of charged off and non chaged off

# Selecting the top 4 purposes for loan applications



Default Distribution on status

# *Top contributor for defaulter*

- From the above graph we see that debt consolidation is the <u>major purpose for the loan</u> and <u>most of the defaulters</u> also in the debt consolidation bracket.

- Although most of the debt consolidator loaner's have fully paid the loan there should be more concern as there are many defaulters also.
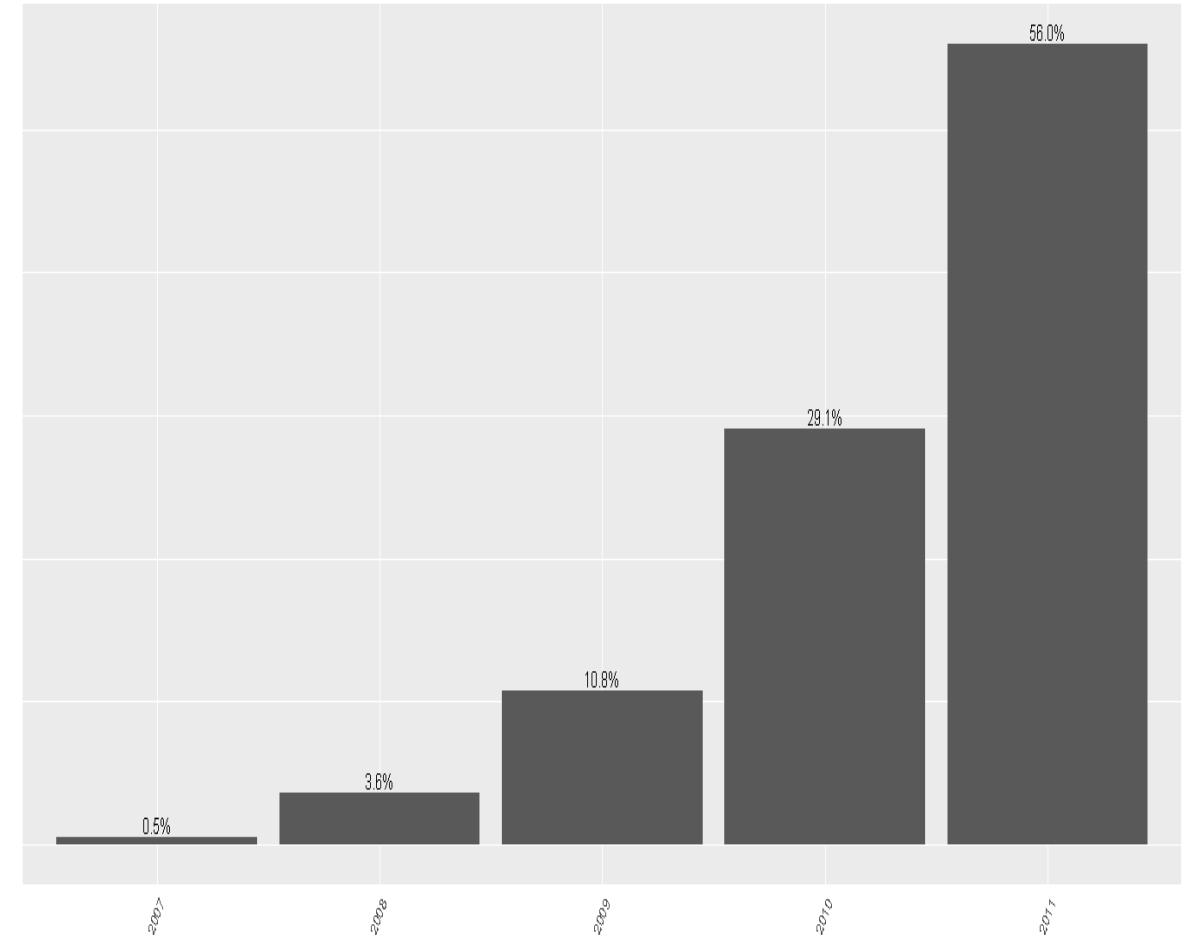


fill based on purpose and loan status after filter
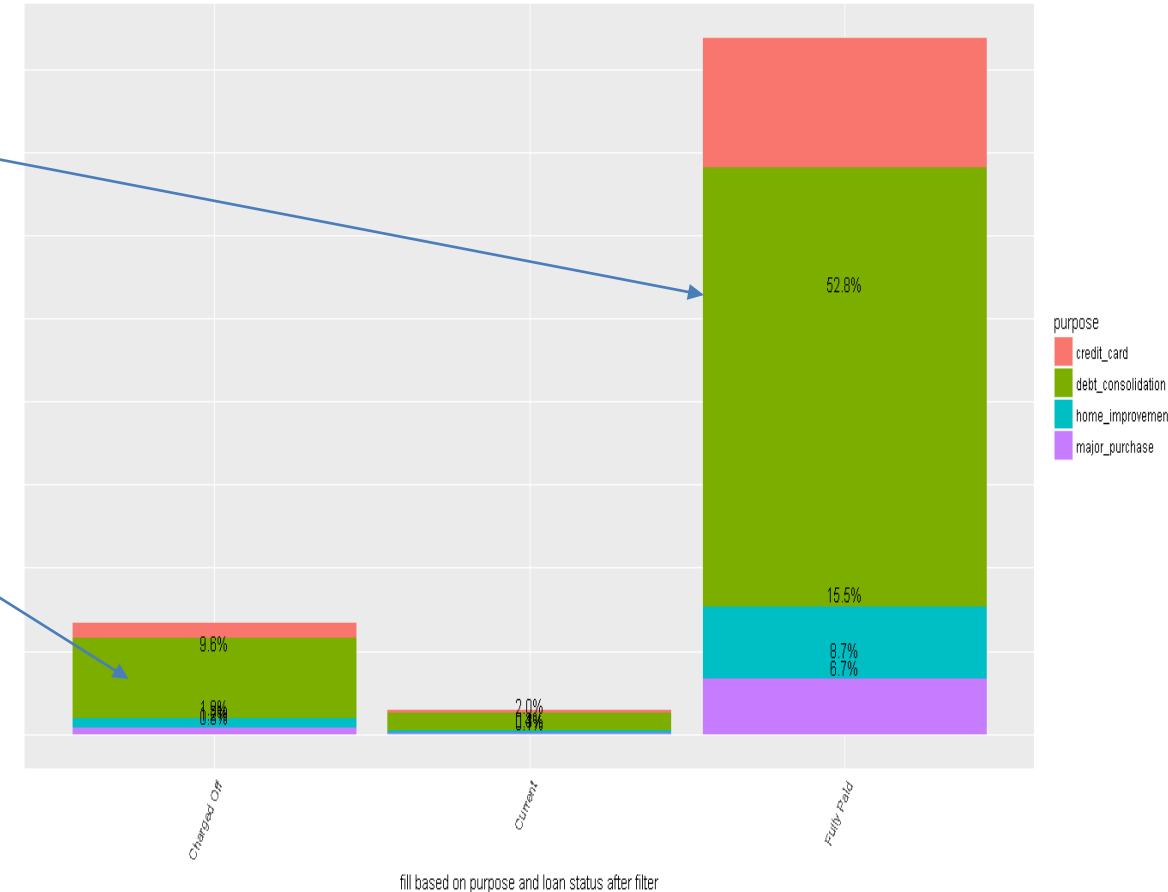
# *Top contributor for defaulter*

- There is a significant jump in the number of loans issued every year.

- This is a good indication to the company as they are attracting lots of customers

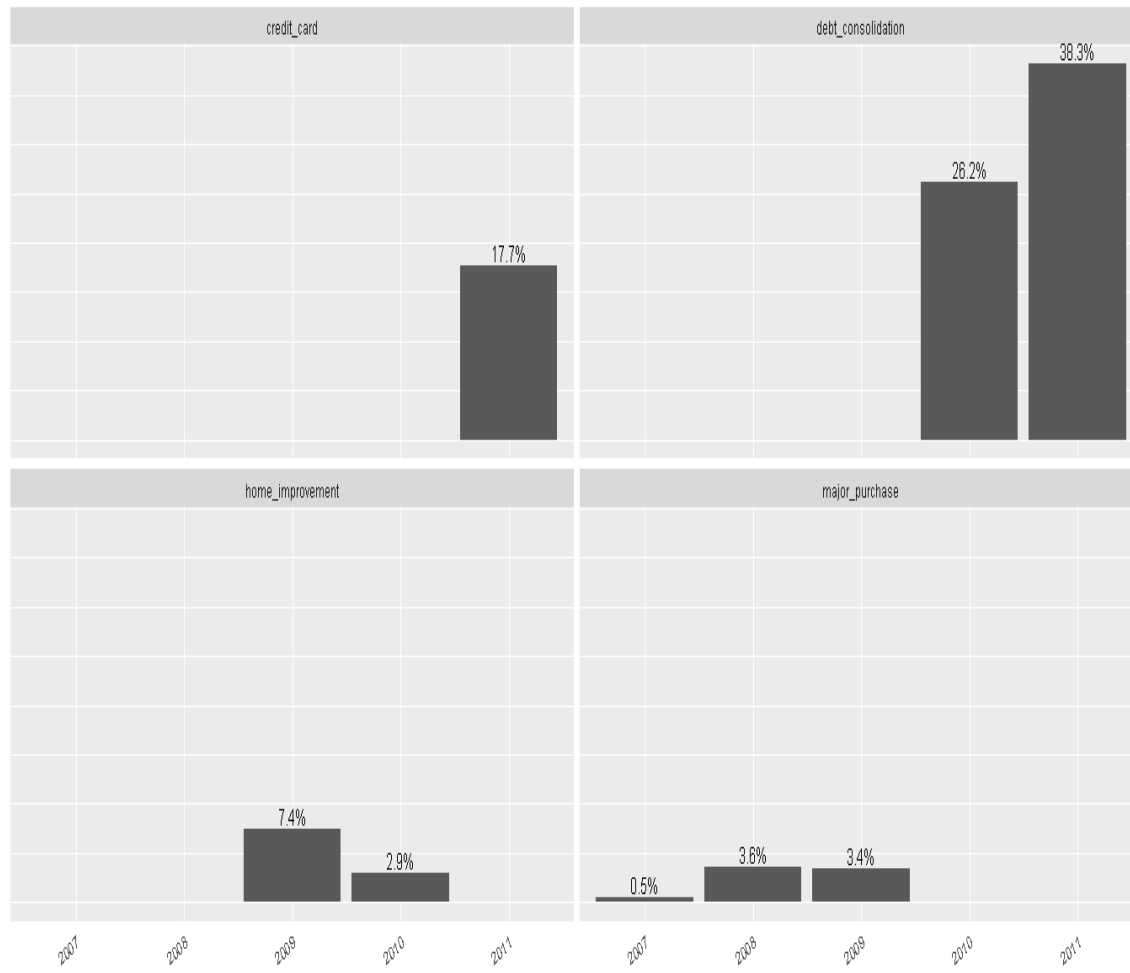- There is almost more than 50%  growth YOY
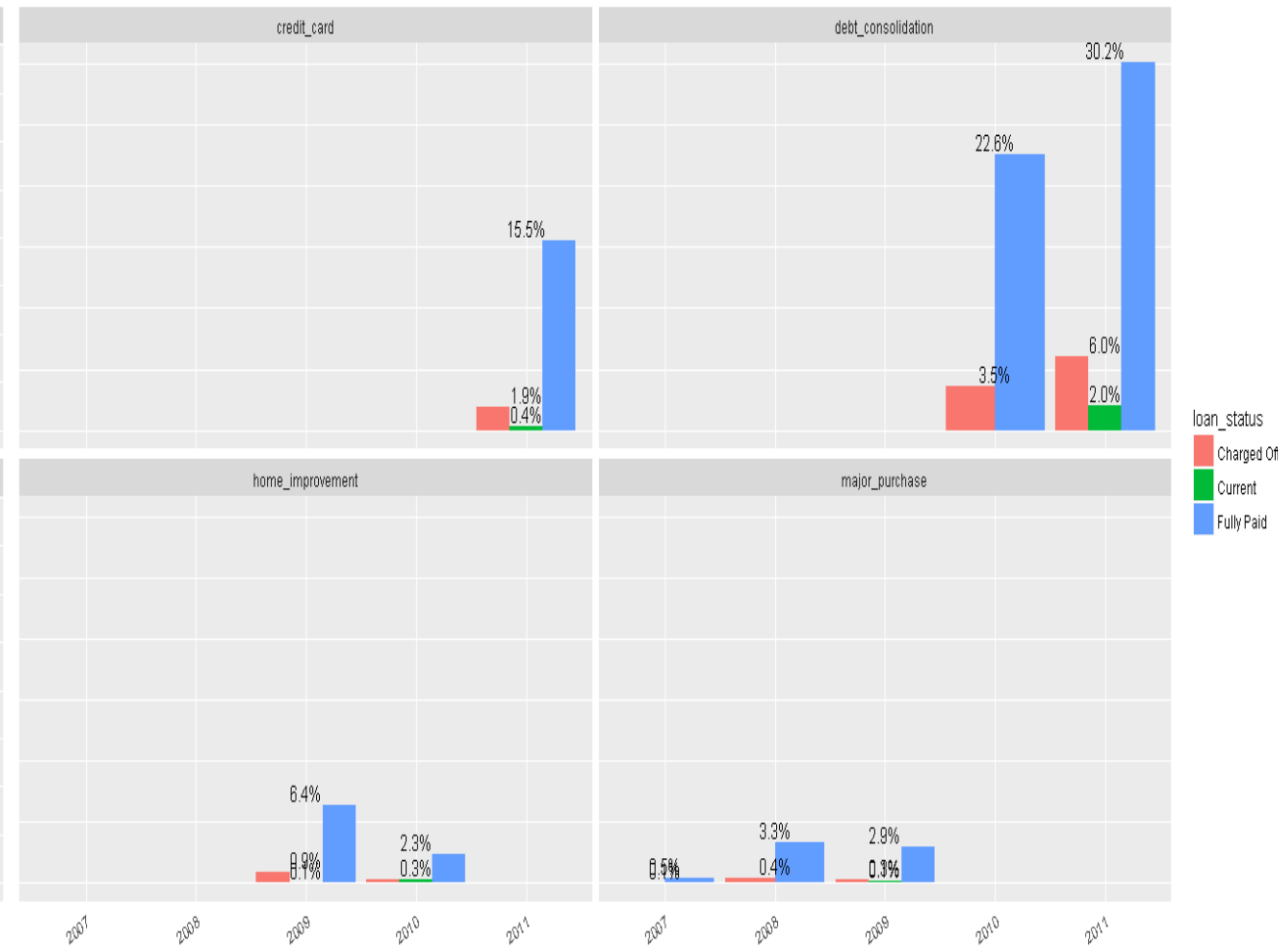


Distribution based on the yearly basis

56.0%

29.1%

10.8%

3.6%

0.5%

2007    2008    2009    2010    2011

Distribution based on the yearly basis

# Distribution of loan YOY in top 4 purpose



purpose Distribution 2007-2011

# Infernce from the graph

- We see that in the 2007-2008 the major area of purpose was "major_purchase"

- Where as from 2009-2010 the focus was shifted to "home_improvement" although there was good amount of focus on "major_purchase"

- But in the year 2010 "major_purchase" was dropped from the plan and it was focused solely on "debts_consolidation" and with minor focus on "home_improvement".

- The year 2011 was focused both on "credit_card" and "debt_consolidation" and closing its "home_improvement" plan in 2011

- We also get to see that both "major_purchase"(0.7%) and "home_improvement"(0.9%) have contribution less than 1% defaulters individually where as "credit_card" contributes 1.4% and "debt_consolidation" contributes almost 9.5%.so these are major area of concern, while releasing funds or accepting the loan application

- There should be more thorough back ground verfication before granting the loan for the debt_consolidationx

# Grade vs Percent with loan status as fill
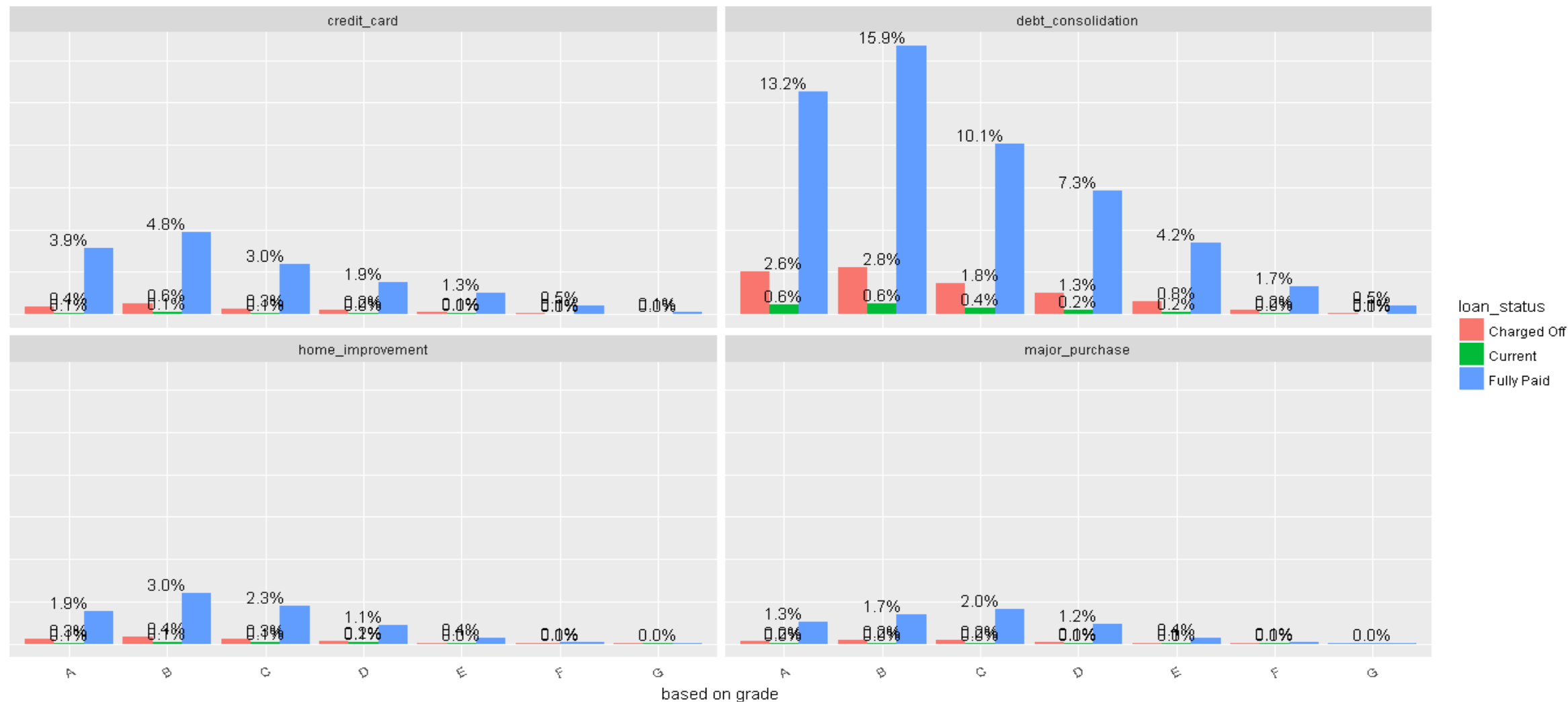
# *Infernce from previous graph*

- From the above graphs we also see that we can grant loan to grade e,f,g loaners without much worry as they have very less chance of getting charged-off from all the major groups(major_purchase,credit_card,debt_consolidation,home_upgrade)

- But the interesting observation here is ,all the grade from a-g in the group major_purchase ,home_improvement , credit_Card have almost paid there loan or they are still paying but the major concerned area is in debt_consolidation where grade a,b,c,b are cause of concern and these grade being the major contributors of becoming charged-off or defaulters

- Debt consolidation has a very high rate of interest and it also has relatively high rate of defaulter , there should be a strategy drawn to solve this problem. Either increase the interest

# Interset rate distribution amonf top4 purposes
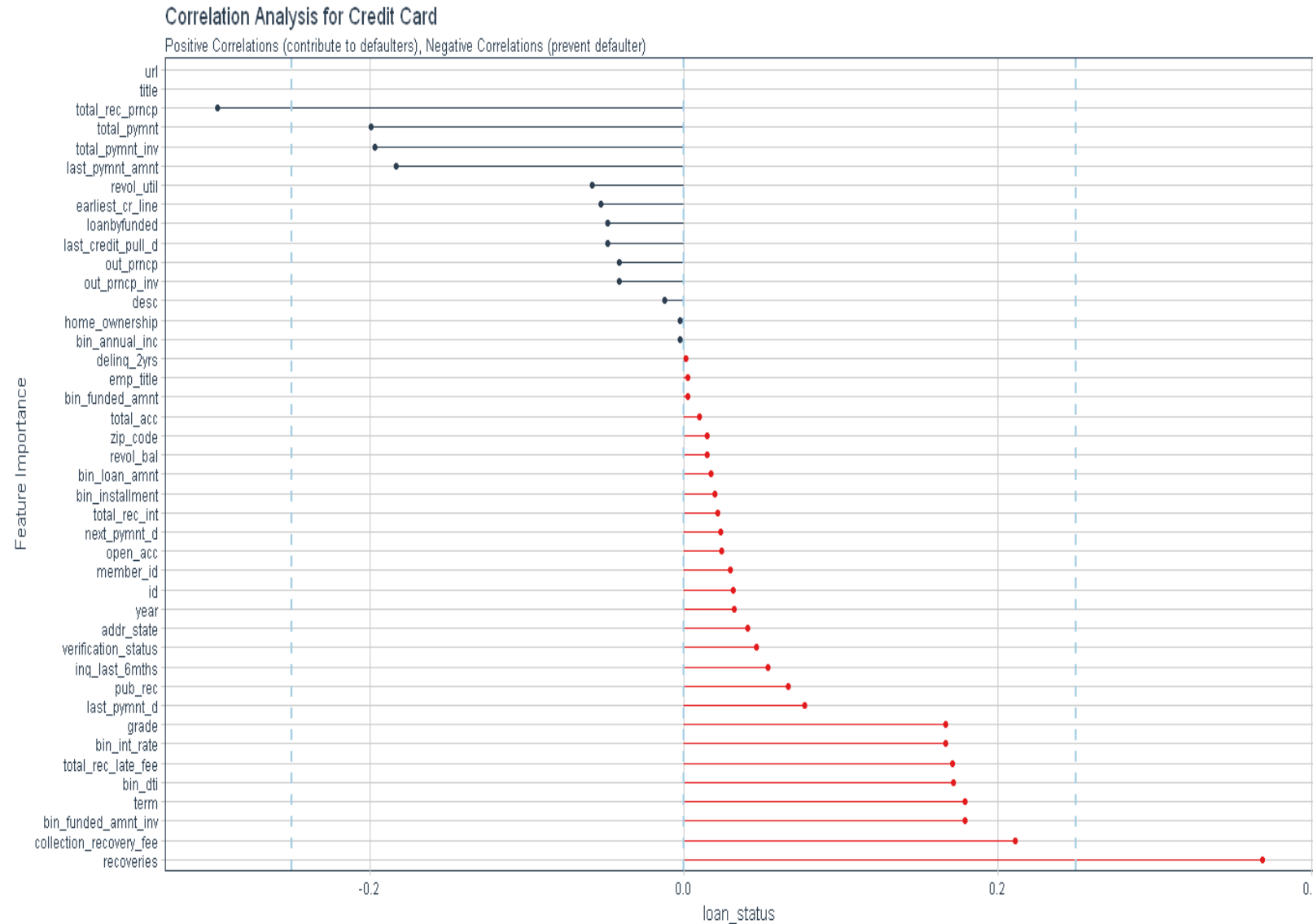

interest Distribution
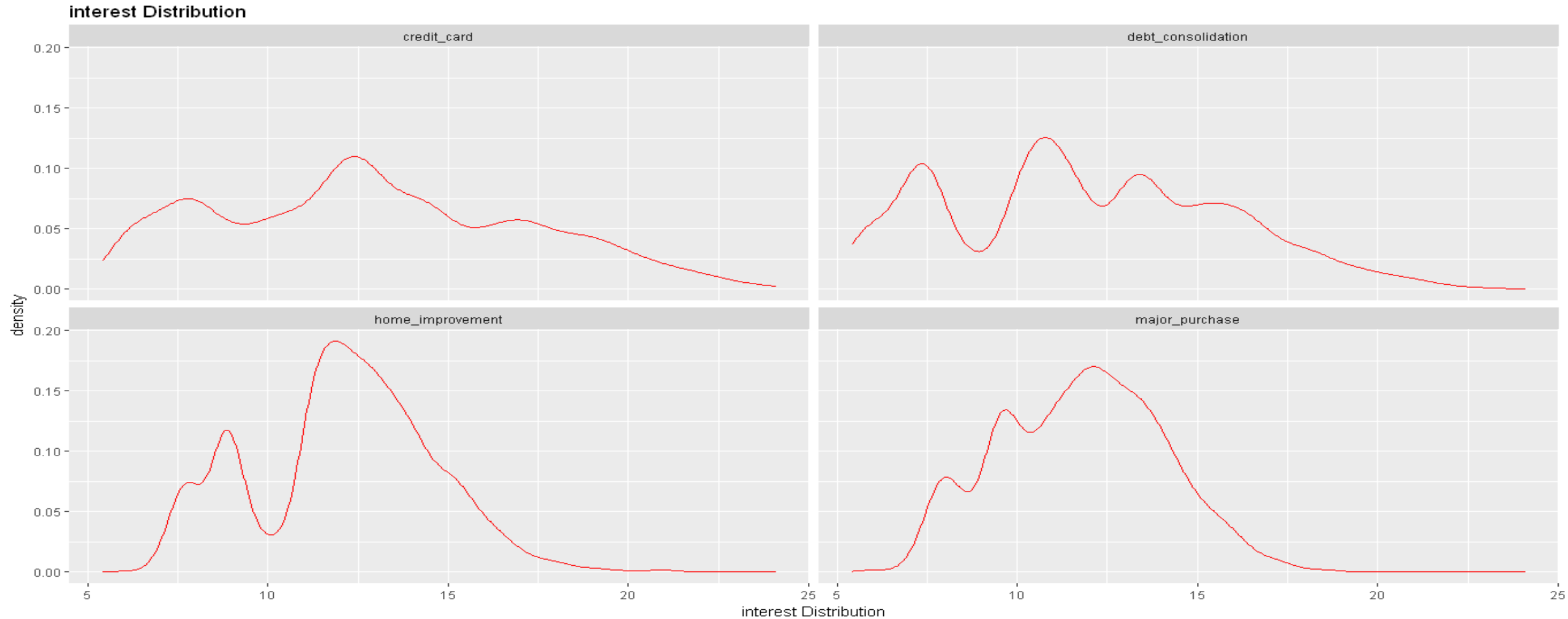
# Correlation Analysis for Debt Consolidation

- Payment plan is one of the most important correlation in all the observation.

- Other top features are
  - recoverries
  - Term
  - bin_dtu
  - bin_int_rate
  - Grade
  - bin_funed_amt_invested
  - collection_recovery_fee
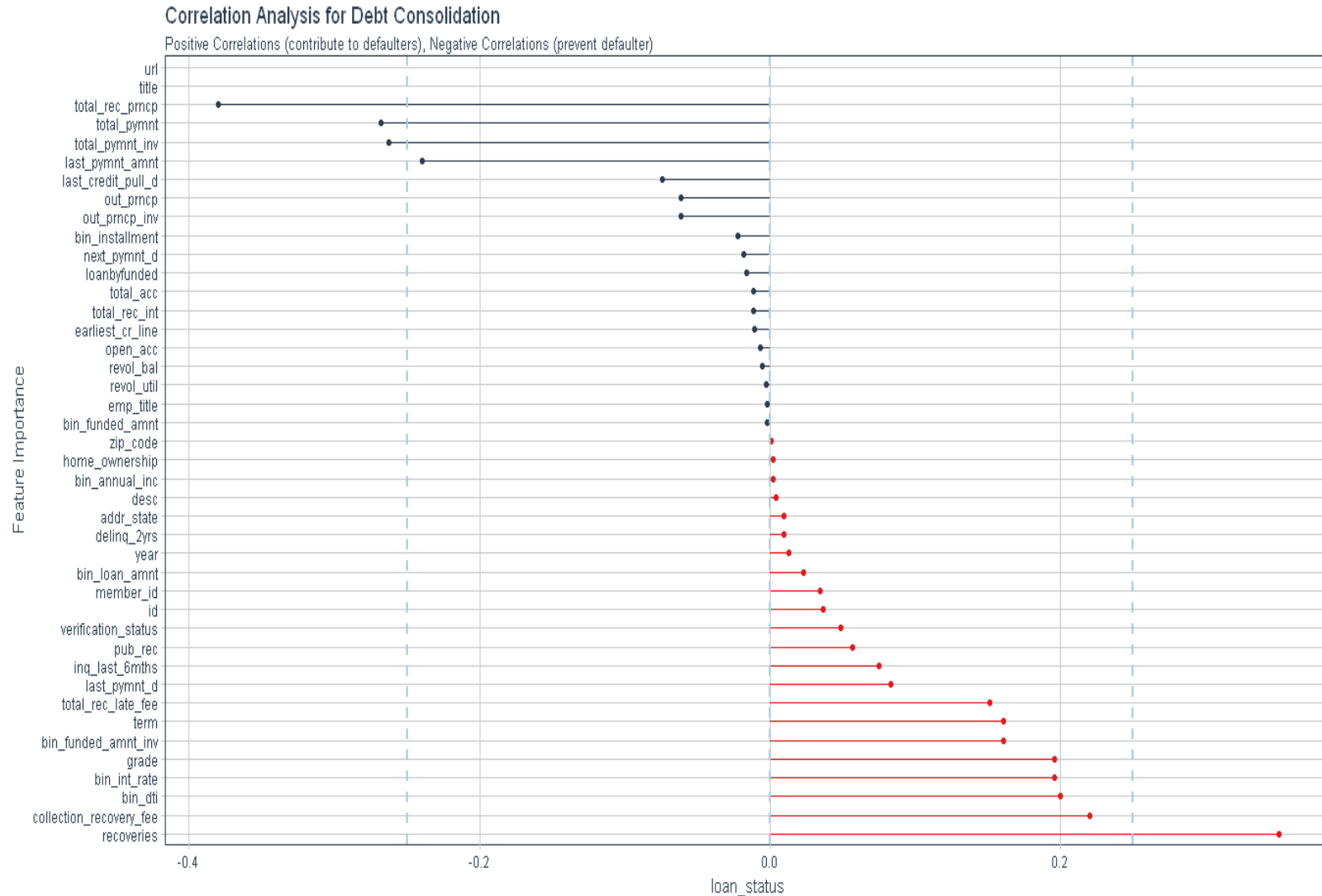
# *Correlation Analysis for Credit Card*

- Payment plan is one of the most important correlation in all the observation.

- Other top features are

  - recoverries

  - bin_funed_amt_invested

  - term

  - collection_recovery_fee

  - bin_dti

  - bin_int_rate

  - grade



Correlation Analysis for Credit Card
Positive Correlations (contribute to defaulters), Negative Correlations (prevent defaulter)
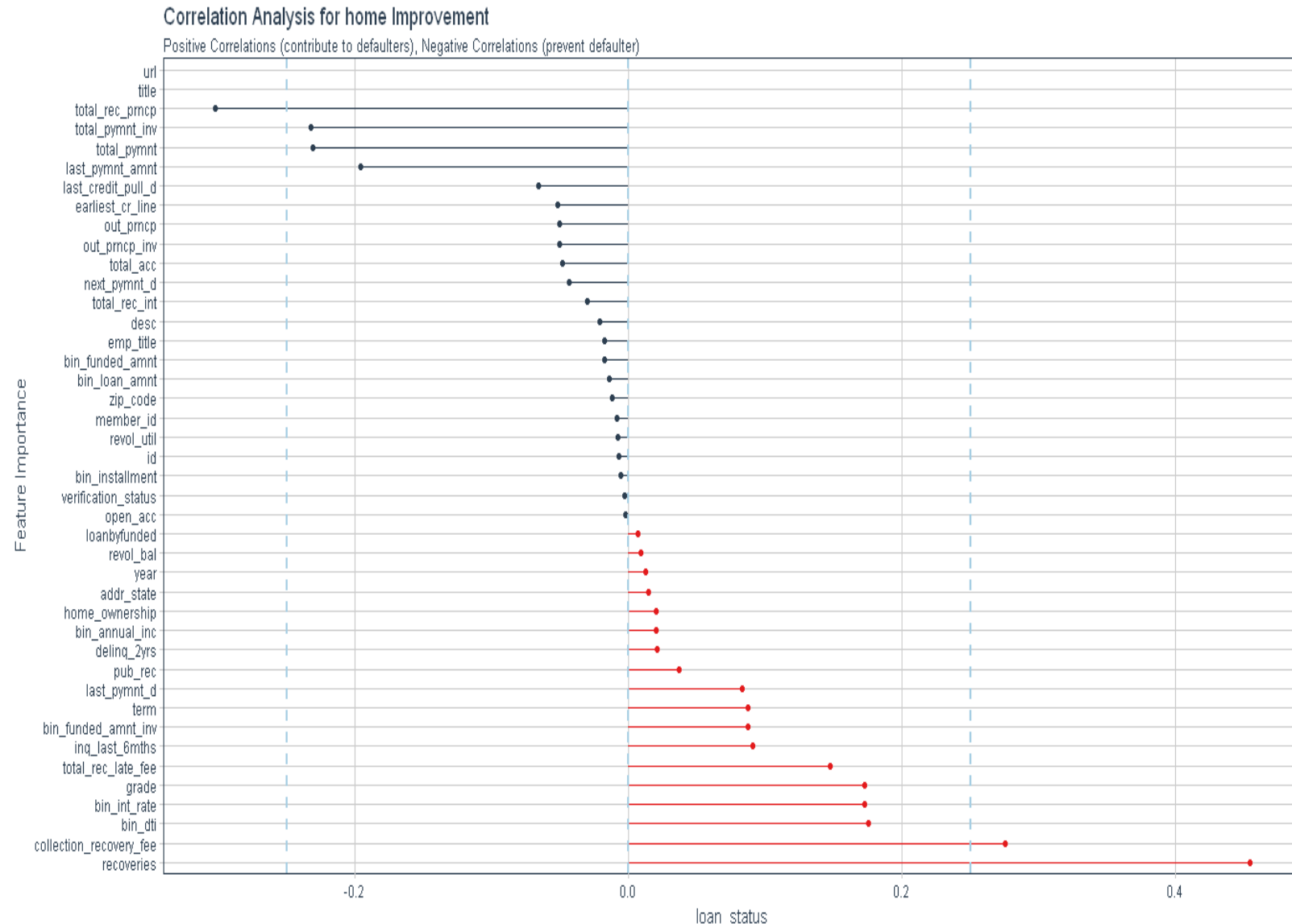
# *Correlation Analysis for Home Improvement*

- Payment plan is one of the most important correlation in all the observation.

- Other top features are
    - recoverries
    - collection_recovery_fee
    - bin_int_rate
    - bin_funed_amt_invested
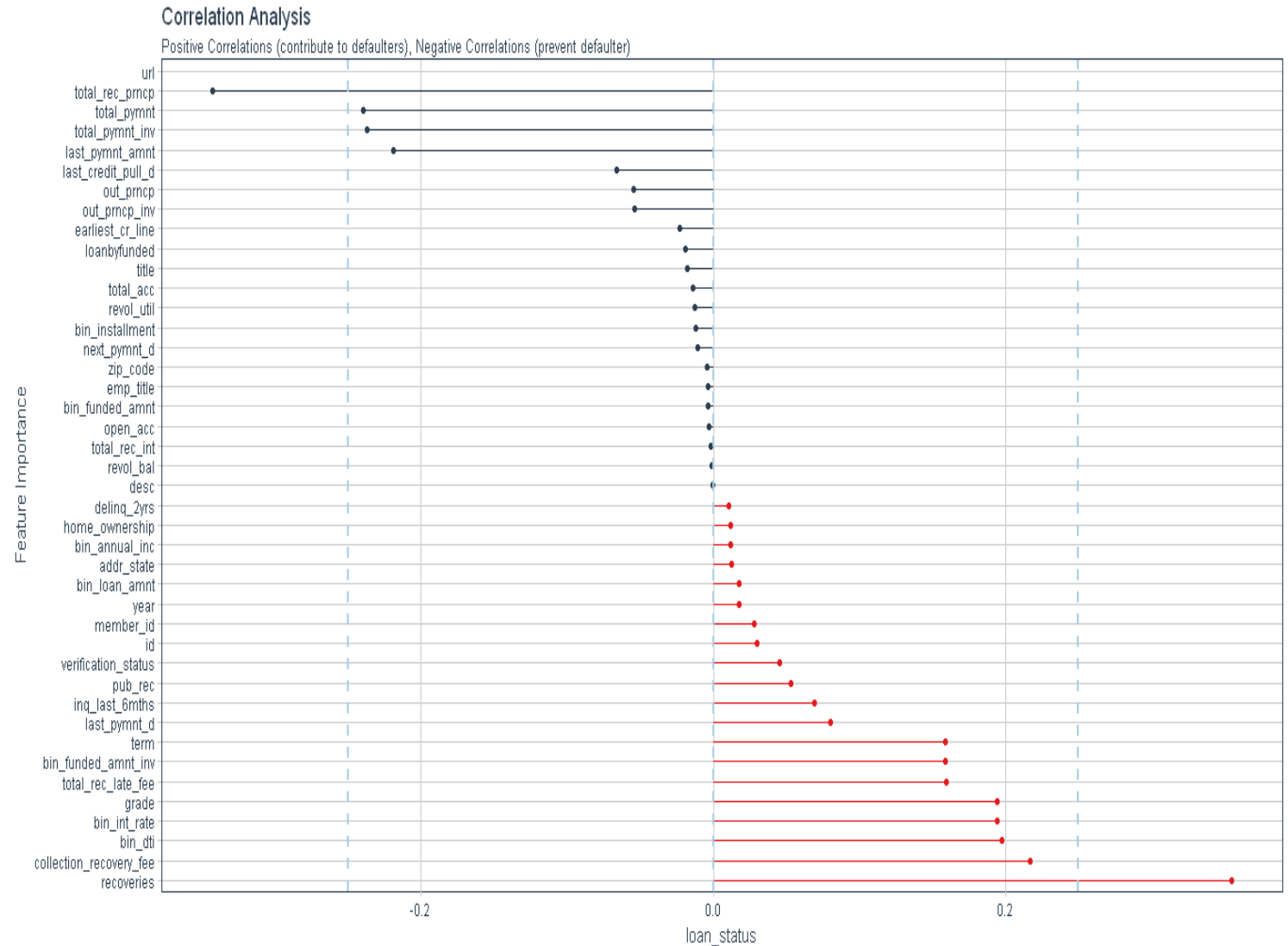    - term
    - bin_dti
    - grade



Correlation Analysis for home Improvement

Positive Correlations (contribute to defaulters), Negative Correlations (prevent defaulter)

# *Correlation Analysis for Major Purchase*

- Payment plan is one of the most important correlation in all the observation.

- Other top features are

  - recoverries

  - collection_recovery_fee

  - bin_int_rate

  - grade

  - bin_dti

  - year

  - home_ownership



Correlation Analysis for home Improvement

Positive Correlations (contribute to defaulters), Negative Correlations (prevent defaulter)

# _Correlation Analysis for Whole_

- Payment plan is one of the most important correlation in all the observation.

- Other top features are

    - recoverries

    - collection_recovery_fee

    - bin_int_rate

    - grade

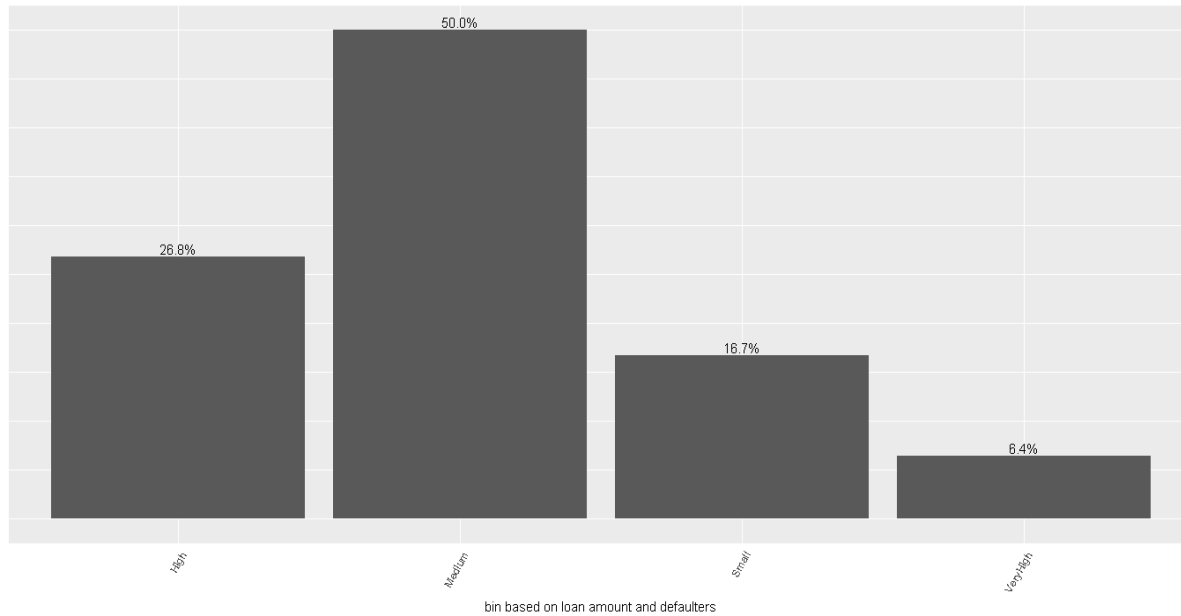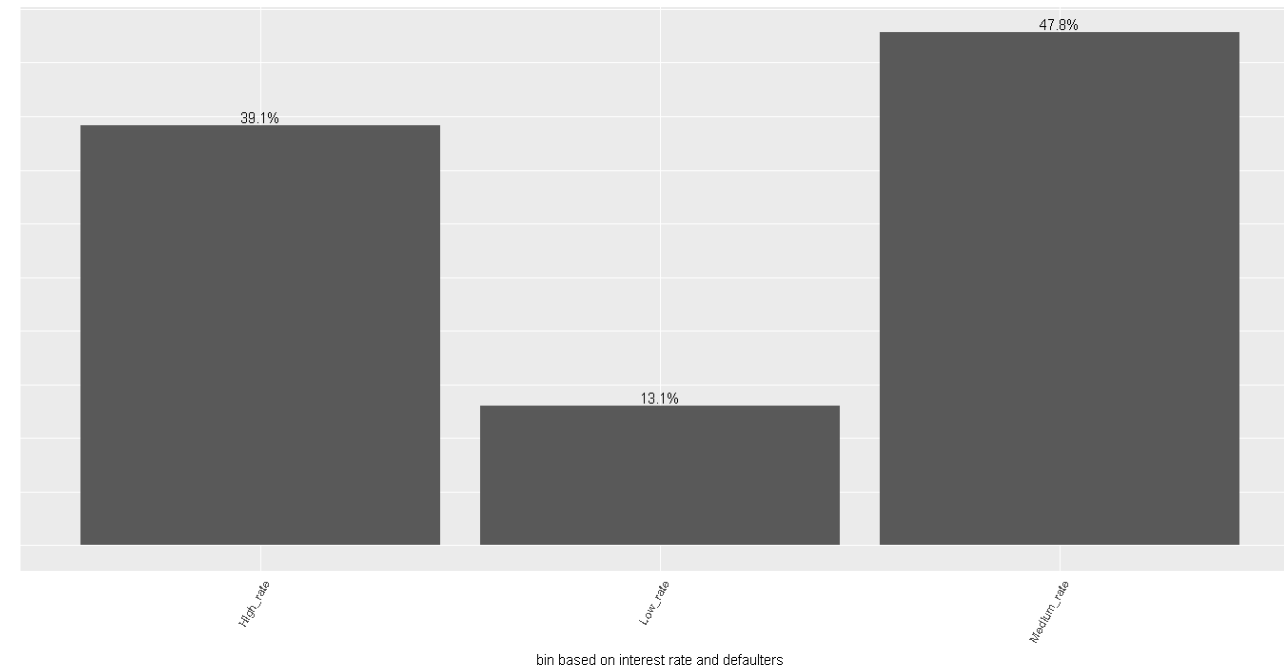    - bin_dti

    - year

    - home_ownership



Correlation Analysis
Positive Correlations (contribute to defaulters), Negative Correlations (prevent defaulter)

# _Conclusion_



bin based on loan amount and defaulters



bin based on interest rate and defaulters

- Loaner whose loan amount is between 5k to 15 have very chances of defaulting they contribute almost 50 %

- Loaner whose interest rate is between 10% to 15% have very chances of defaulting they contribute almost 50 %

# *Coclusion*

- There has been thorough Exploratory Data analysis following are the conclusion
    - We have done correlation analysis for all the major purposes.

    - We can find the major variable for each purpose in given correlation graph

    - The bank now knows which are the major variable to look for while accepting or granting the loan for each purpose.

    - The major variable in all the purpose are payment time and recoveries.

    - Other major aspects are the annual income ,interest rate