

GRAMENER CASE STUDY

Risk Analysis for Loan Applicants

Group Members:

1. Bhanu Pratap
2. Shadab Hussain
3. Nidhi Tripathi
4. Vikash Bajaj

Abstract

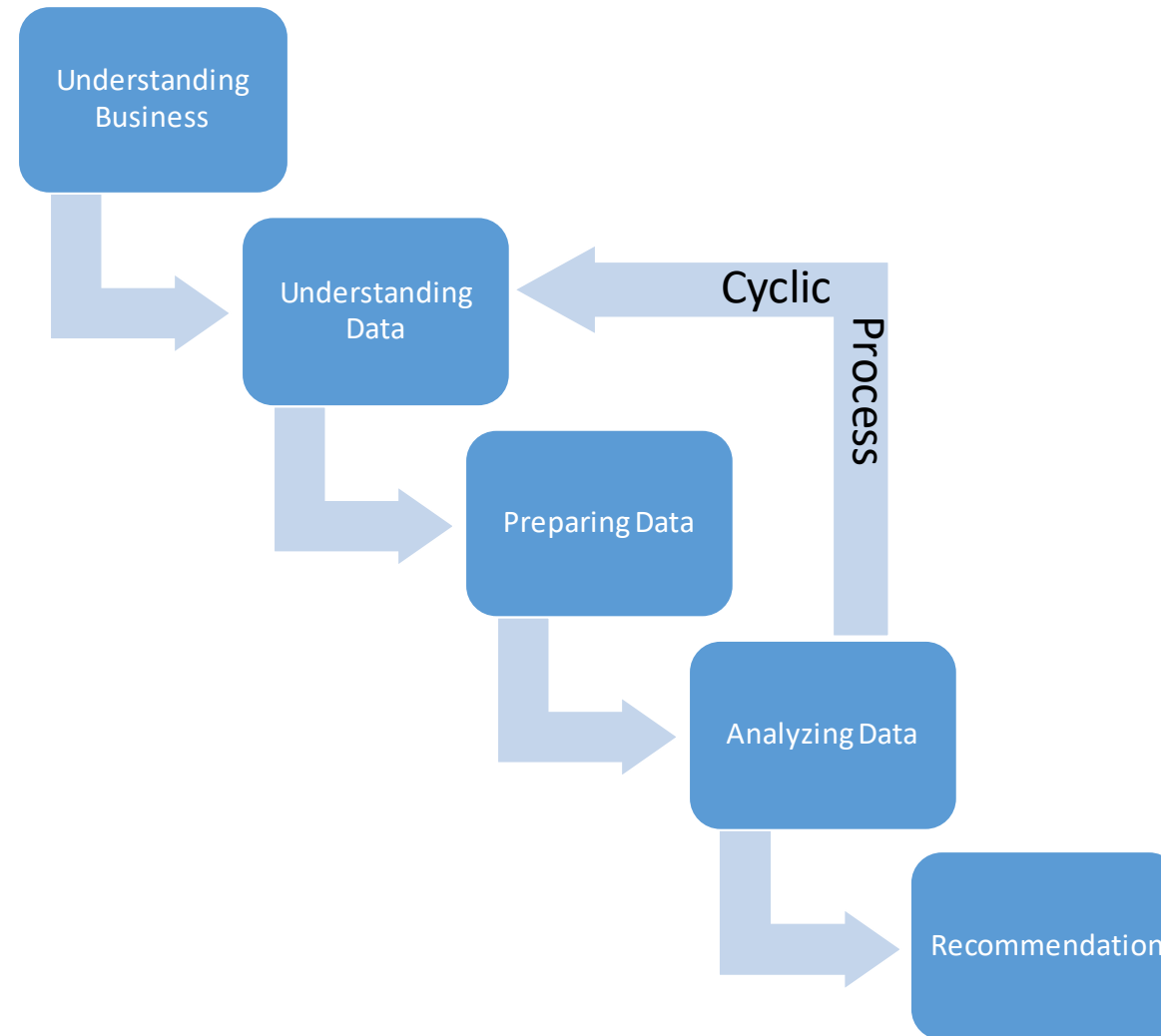
The consumer finance company specializes in different types of loans to the urban customer. The major problem they face is when the customer fails to repay the loan. Two types of risks are associated with the bank's decision:

- 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 aim of this analysis is to try to find the customers who are likely to pay the loan and who are likely to default.
- We aim to find the parameters that significantly influences a customer's probability of being a defaulter thereby taking necessary actions.

Problem Solving Methodology



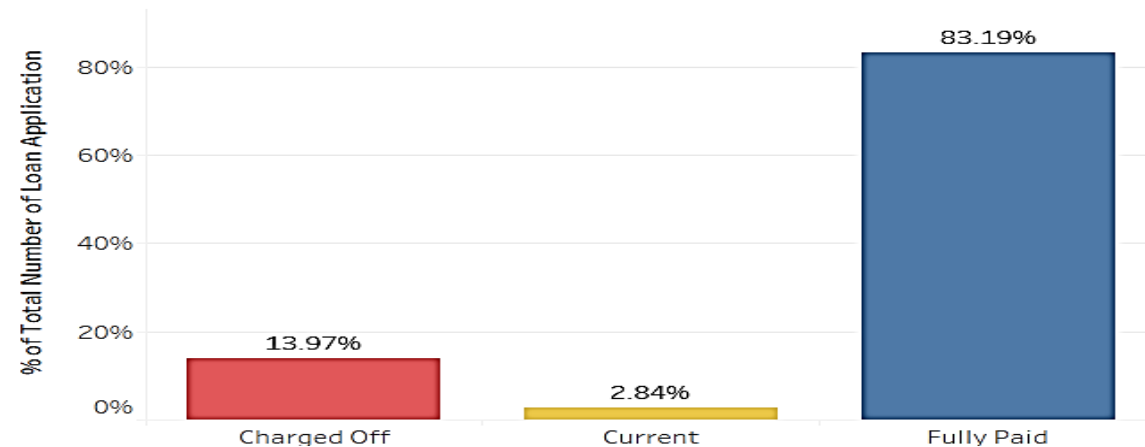
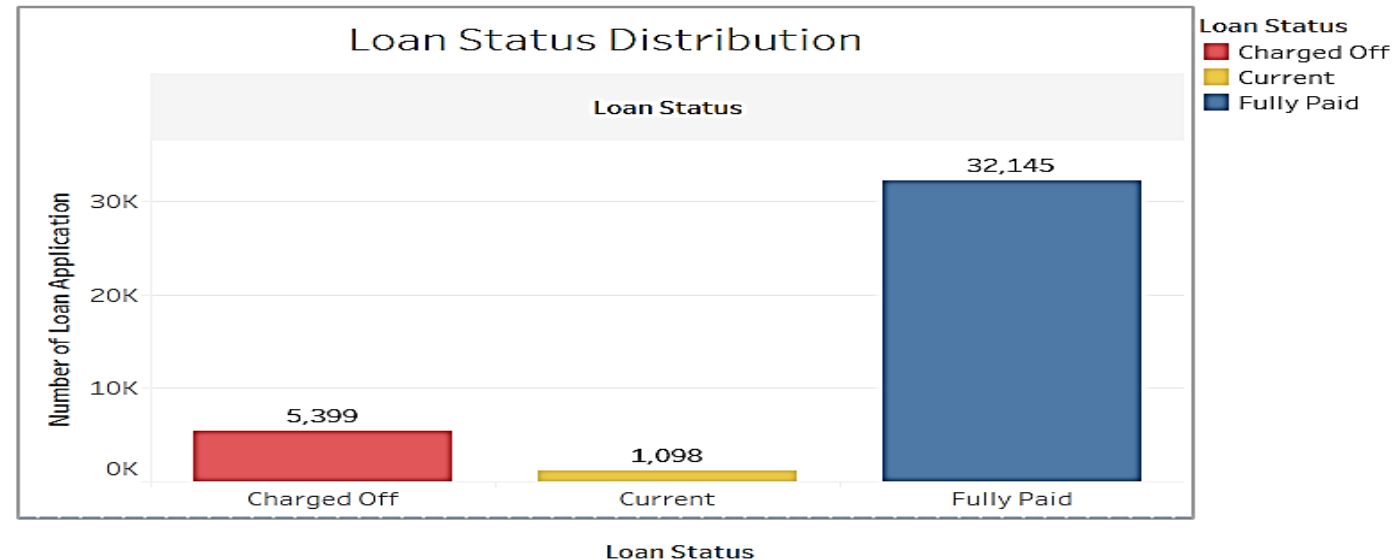
Data Understanding

- We have analysed three states of loan, namely, fully paid, current and defaults.
- Fully paid are those for which customers have cleared the loan, current being the ones that are going on, and default being the ones that the customers failed to pay off.
- After cleaning the data we plot the loan status with different parameters and try to find the influences of those parameters on the status of loan.

An overview of the data

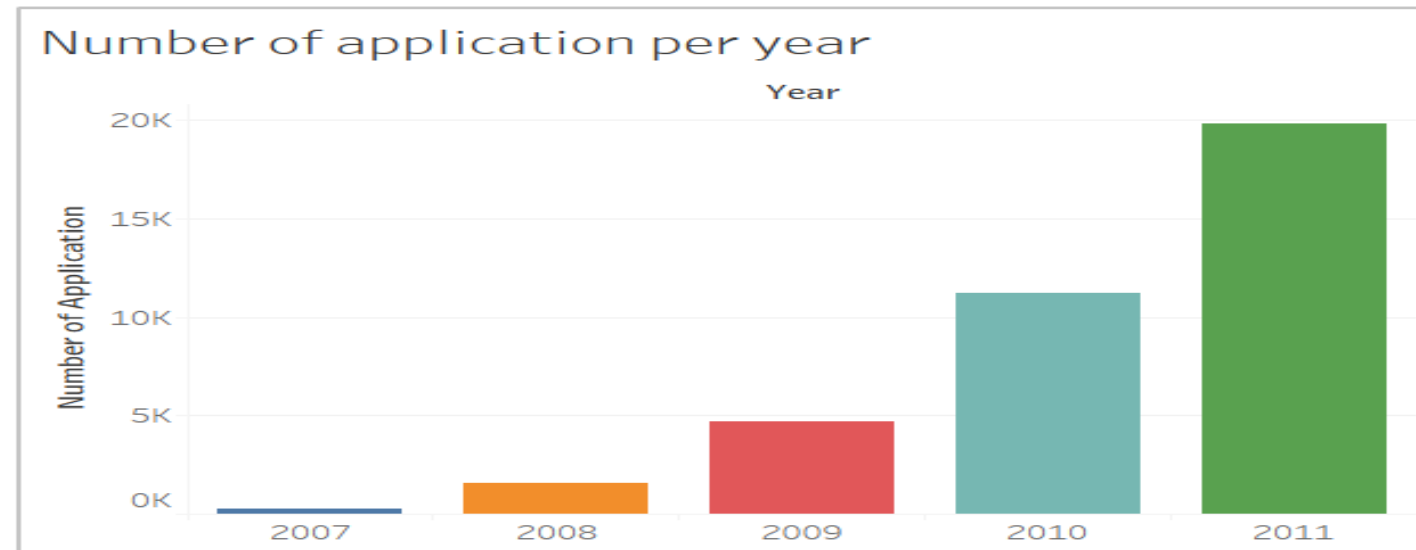
There is a overall 14.0% of loan defaulters in whole dataset.

Lets further try to find the different parameters which influences the defaulters.

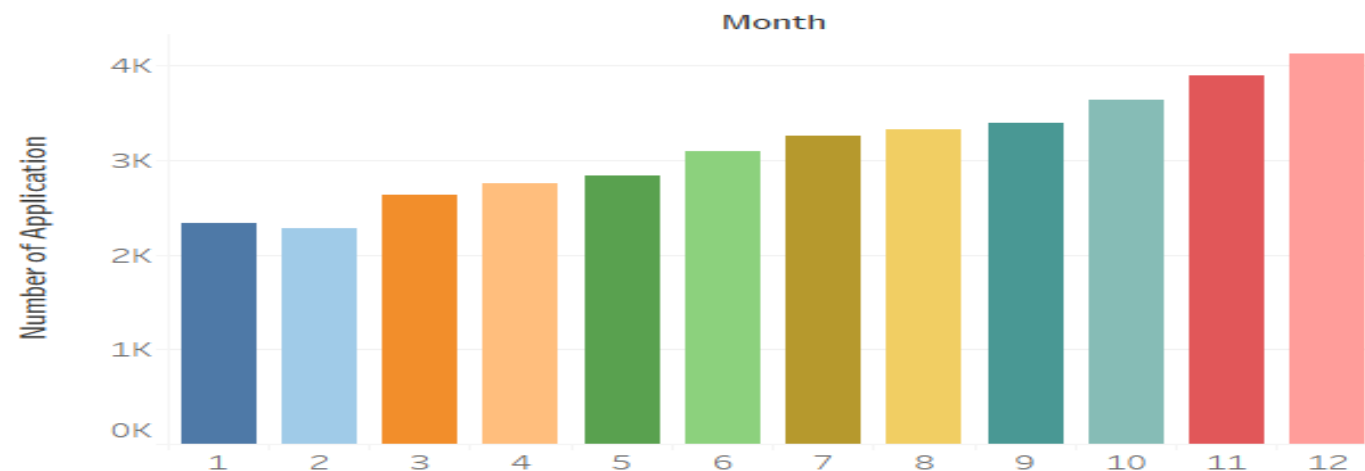


Loan Application with Time Frame

- There is almost exponential increase in the loan application over the year.
- There is more number of application in the last 6 month of year than first six month.



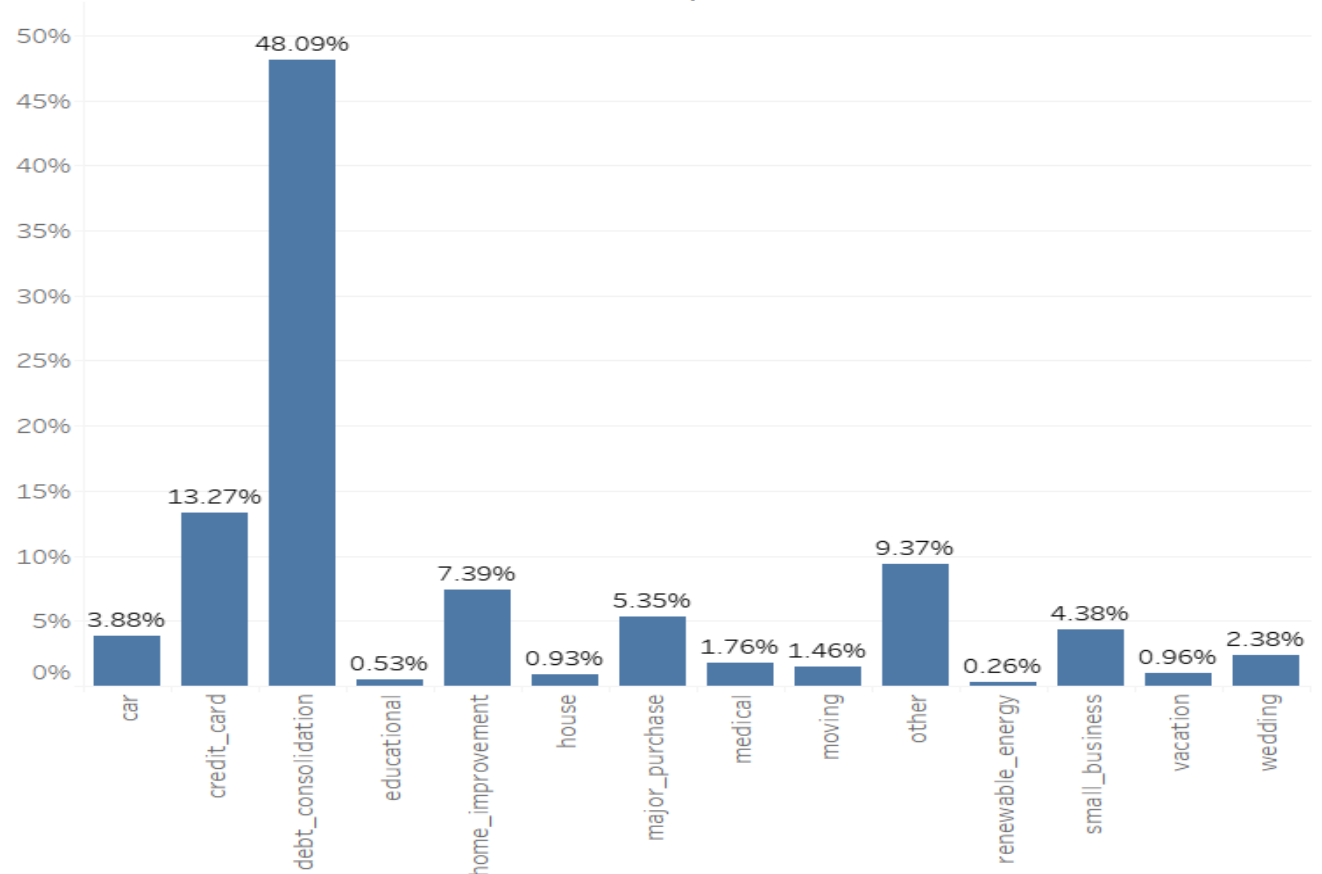
Number of application in each month



Loan Purpose Distribution

- Debt Consolidation Loan is the most popular
- Followings are the top 5 purpose with most number of loan application over the years:
 - 48.09 % Debt Consolidation Loan
 - 13.27 % Credit Card Loan
 - 9.37 % Other Loan
 - 7.39 % Home Improvement Loan
 - 5.35 % Major Purchase Loan

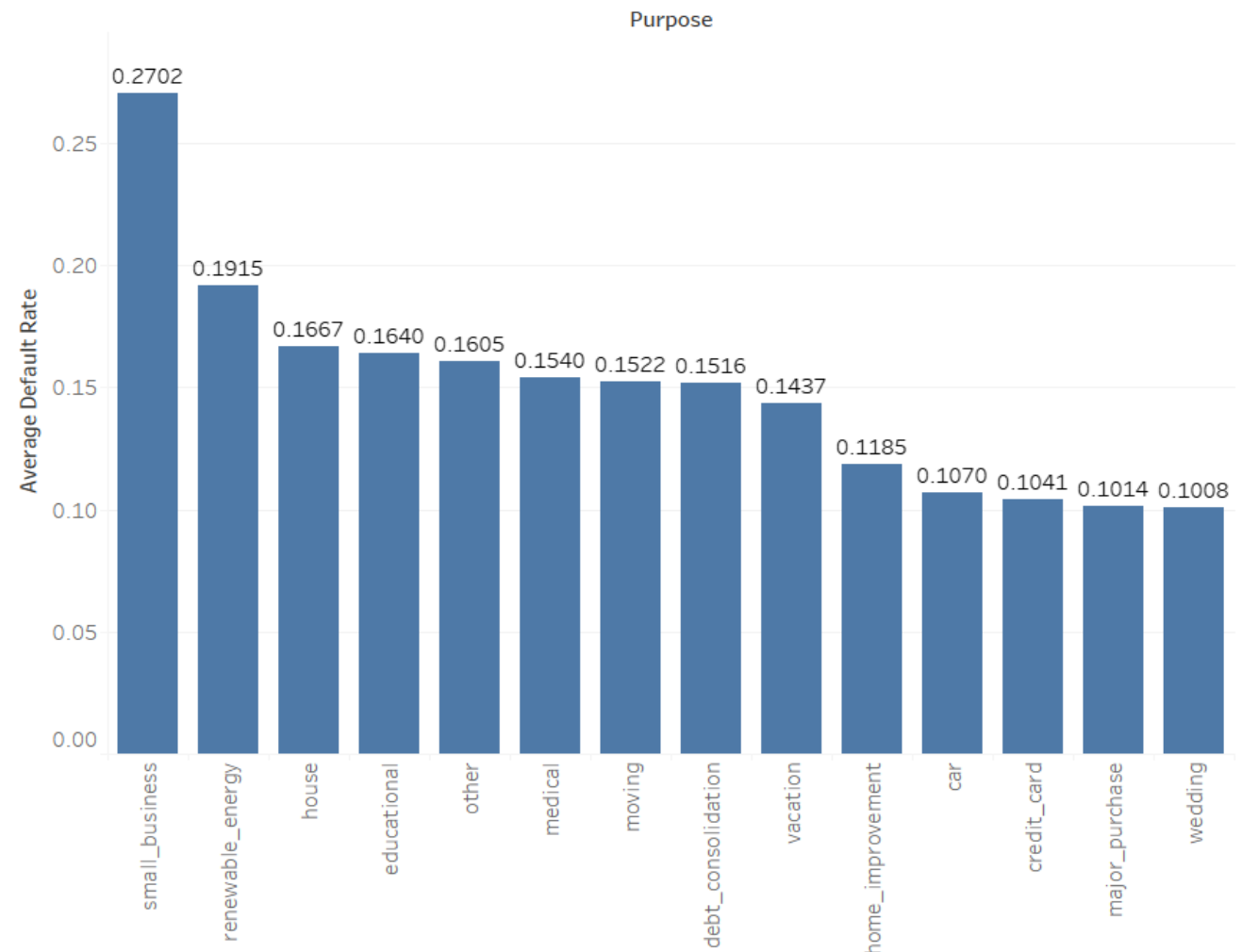
Loan Application Distribution across Various loan Purpose



Default Rate by Loan Purpose

- The purpose of loans have a major influence on the number of defaulters.
- Following Purpose has most default rates :
 - Small Business - 27%
 - Renewable Energy - 19%
 - Education -16%
 - Debt Consolidation -15%
 - Home Improvement - 11%
 - Credit Card -10%

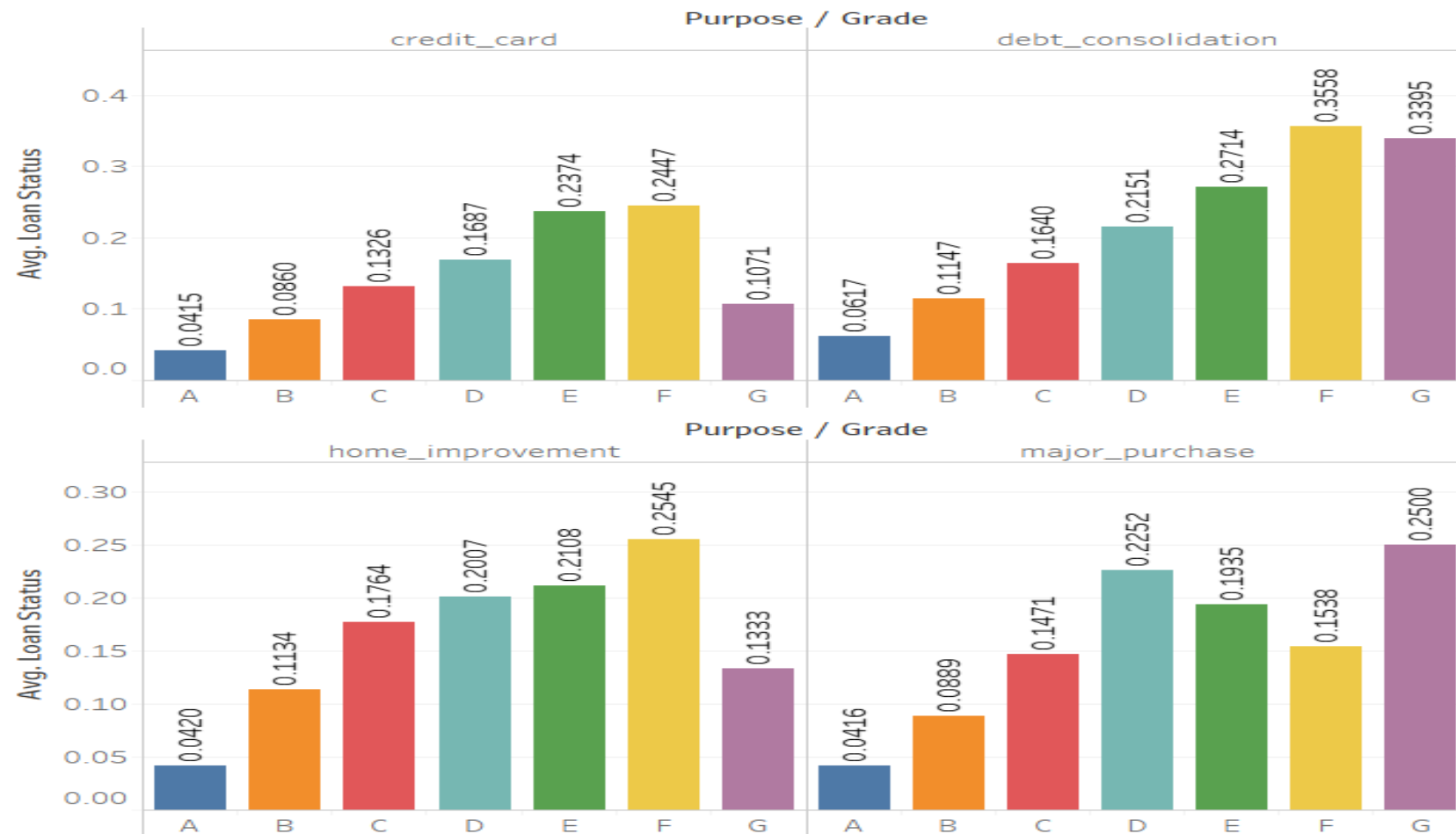
Default Rates by Loan Purpose



Default rate and grade of loans distribution

- There is increase in the default rate as we move from Grade A to Grade G for all the purpose.
- There is almost 27% increase in the default rate from Grade A to Grade G.

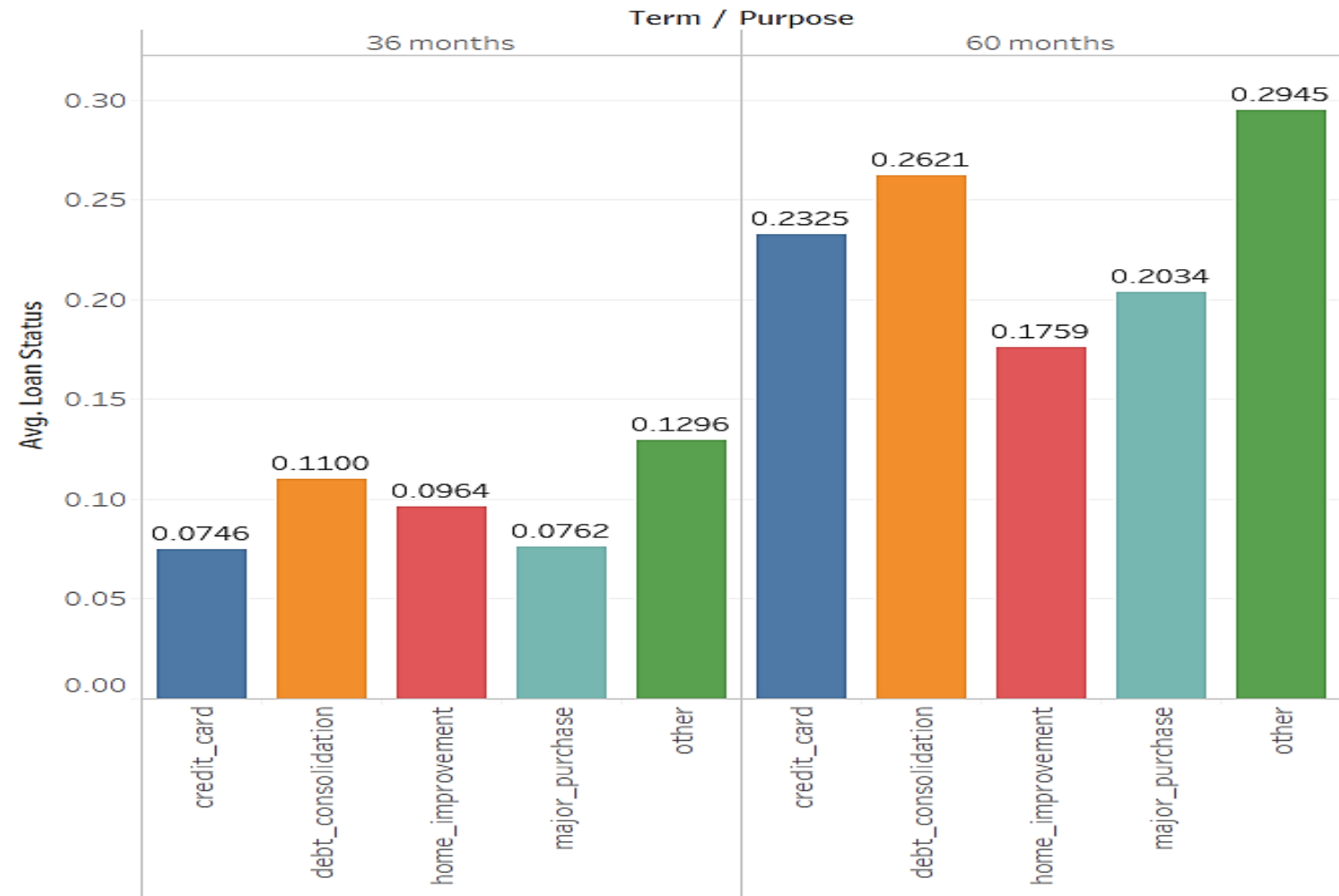
Defaulters Rate Across various Grades of loan for top 4 product



Loan Term and Default Rate Distribution

- 60 month (longer) term has more default rate than 36 month (shorter) term for all the purposes.

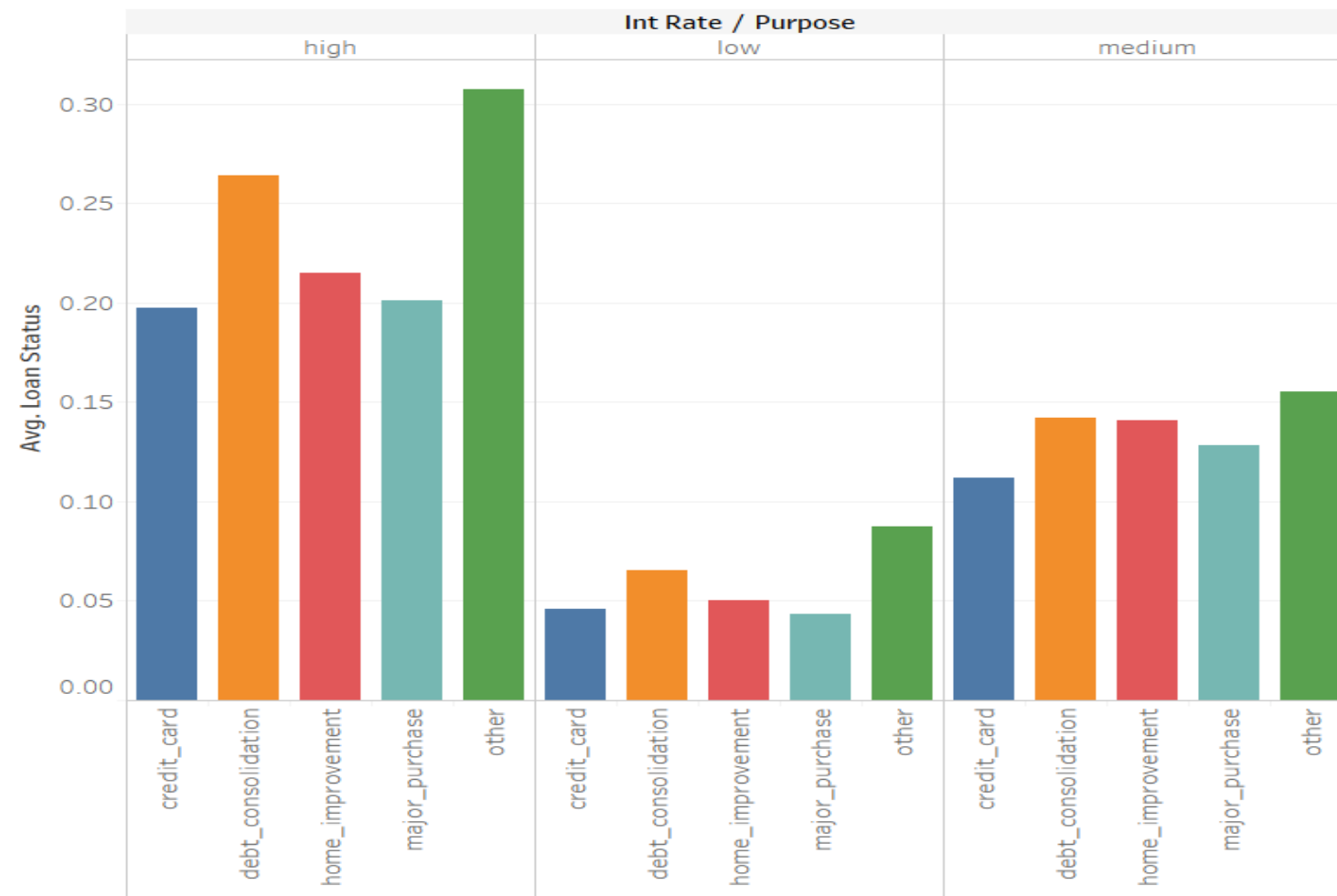
Loan term and Default Rate Distribution



Interest Rate and Default Rate Distribution

- As expected, Higher the interest rate higher the default rate.
- There is almost 19% increase in the default rate from low to high interest rates.

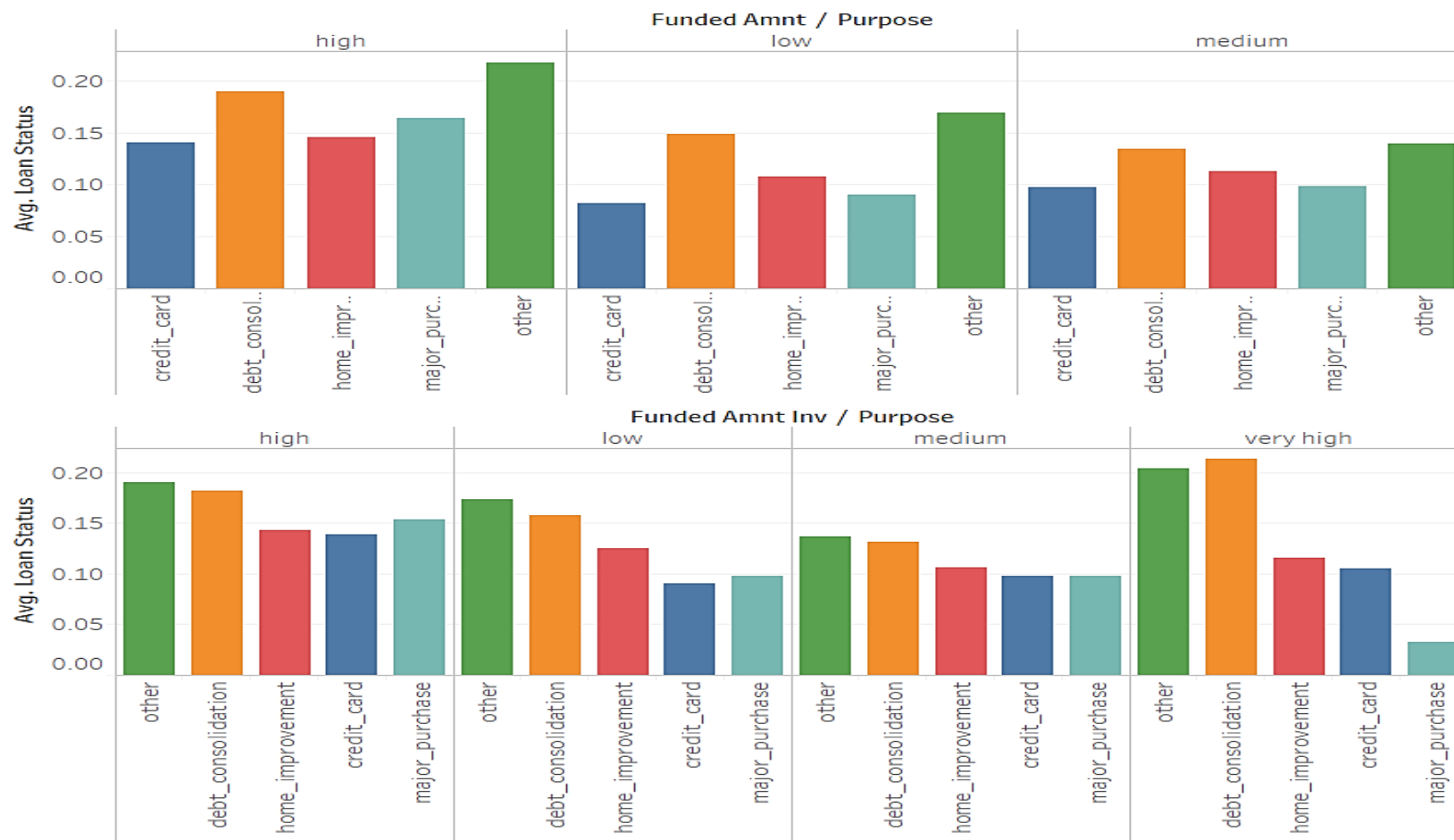
Loan Interest Rate and Default Rate Distribution



Default Rate Distribution with Funded amount and Funded Amount Inv

- As expected, higher the Funded amount or Funded amount Inv higher the default rate.

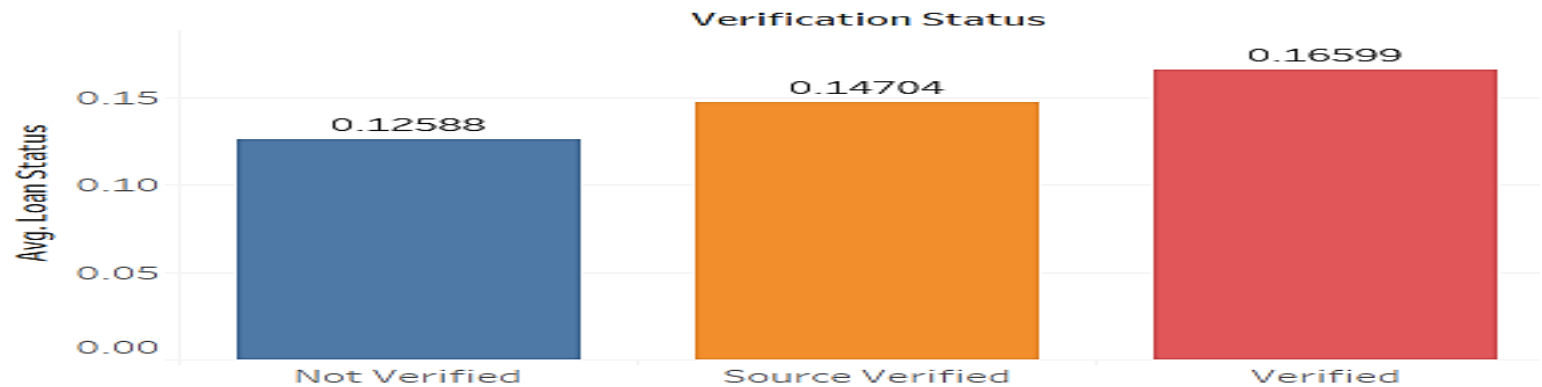
Default Rate with Funded amount and Funded Amount Inv



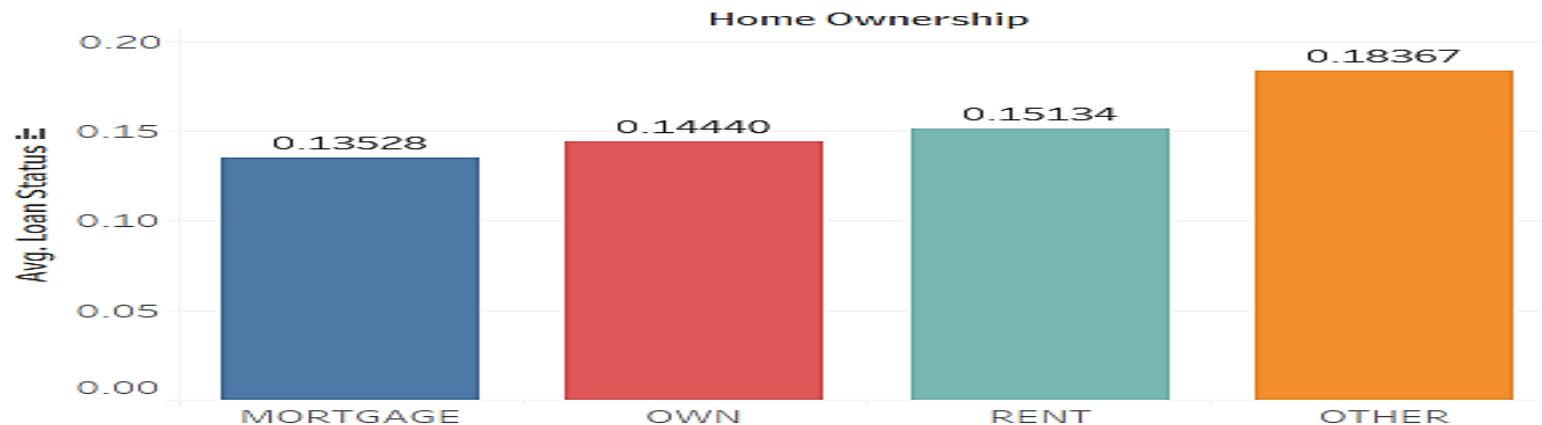
Default Rate Distribution with Income Source Verification Status and Home ownership

- There is not much effect of verification status and Home ownership on the default rate.
- These 2 are not a good predictor of default rate.

Default Rate with Income source Verification Status



Default Rate with Home ownership



Conclusion

1. The most number of application are with `debt_consolidation` purpose. This means `debt_consolidation` is the most famous type of loan.
2. The loan with purpose `small_business` has the highest default rate among all other purposes.
3. 25% of all loans under consideration issued for a term of 60 months results in credit loss or loan default.
4. Borrowers with grades E to G have the highest chance of resulting in credit loss.
5. These are good predictors of loan defaulters- Purpose, Grade of loan, Sub grade of loan, Term of loan, Loan amount, Interest rate, Loan amount, Funded amount, annual income