# GRAMENER EDA CASE STUDY

# SUBMISSION

Group Name:
1. Deepshikha Raghuwanshi
2. Husain Ismail Madraswala
3. Piyush Sharma
4. Richa Jasuja

# Business Objective

- ## Executive Summary

  - Consumer finance company has provided data of its loan customer.

  - Data contains historic and present data comprising defaulters of loans, running and prospect customers.

  - Apart from this a lot of additional information is presented about all the customers

- ## Business Objective

  - To reduce the risk of credit loss or financial loss by

    - Understanding of historical data and analysis of loans

    - Understanding driving factors for loan defaults

# Methodology

- Data Cleanse
  - Loan data sheet contains lots of missing values and unwanted columns.
  - The file is cleansed for missing values
  - Many redundant columns are removed to simplify analysis
  - For example there are about 58 columns which does not even contain any data (annual_inc_joint to total_il_high_credit_limit )
  - Date columns are formatted properly

- Data Analysis
  - Univariate and Multivariate analysis to understand and analyse the past loans.
  - Correlations between some of the variables(important being – Debt to income ratio, Revolving Credit Utilization) to generate some insights.

# Understanding – Loan Purposes



Purpose of Loan
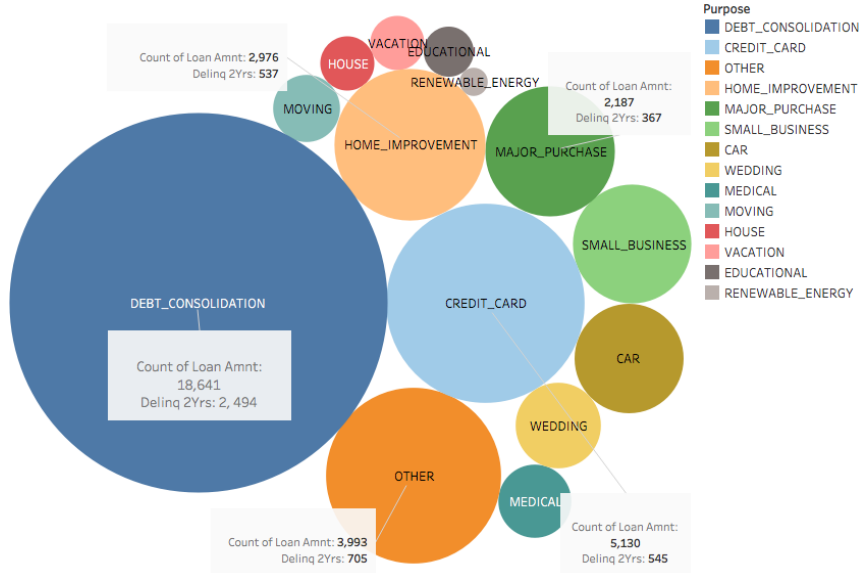
Distribution of Various Purposed by Loan Status v/s Number of Loan Requests
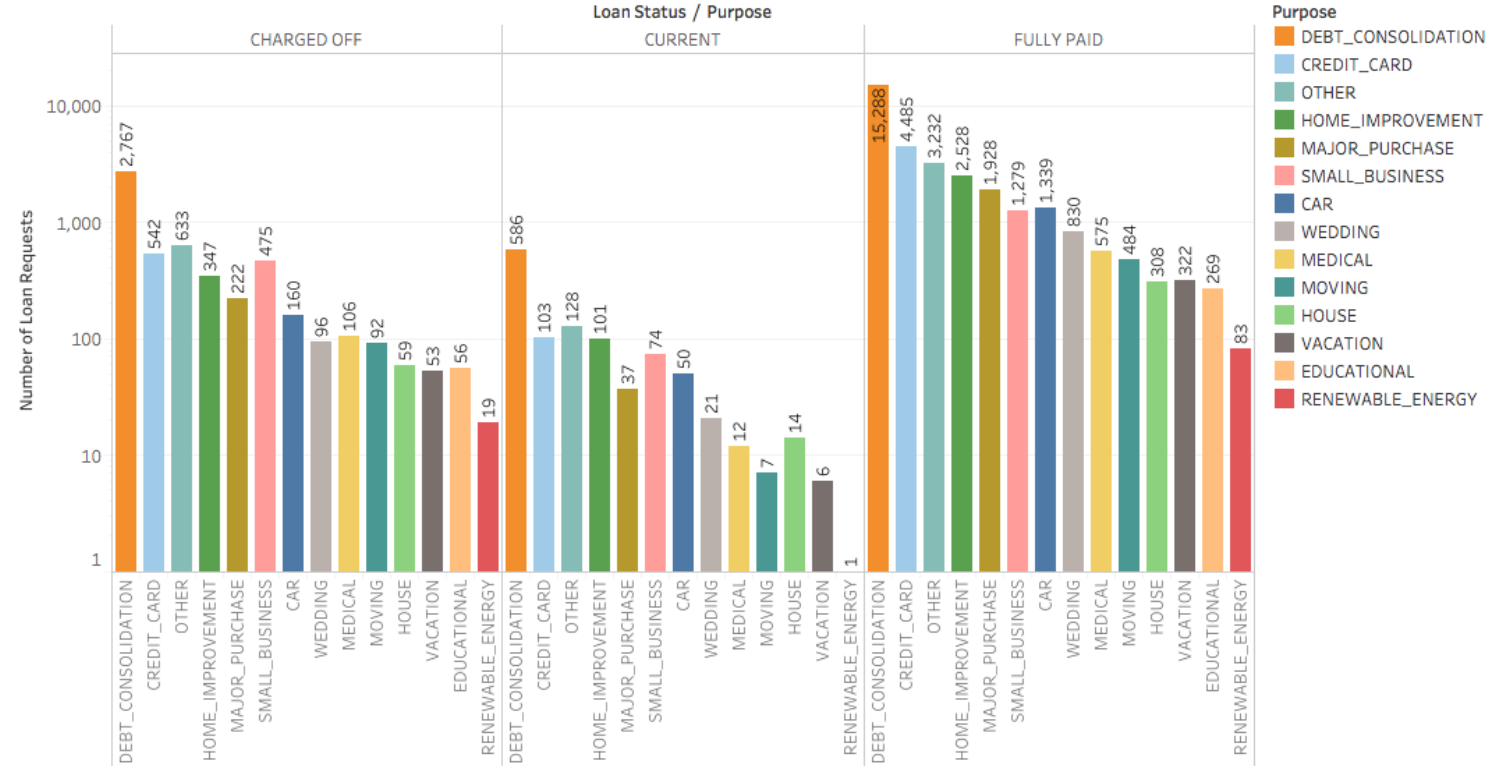
- Bigger % of loan comprise s of Debt Consolidation, Credit Card, Other(Unknown), and Home improvement, Major Purchase & Small Businesses. These are important customers for company.
- Also, Number of Loans charged off over the years are also High for these categories. This is a clear watch out for the company
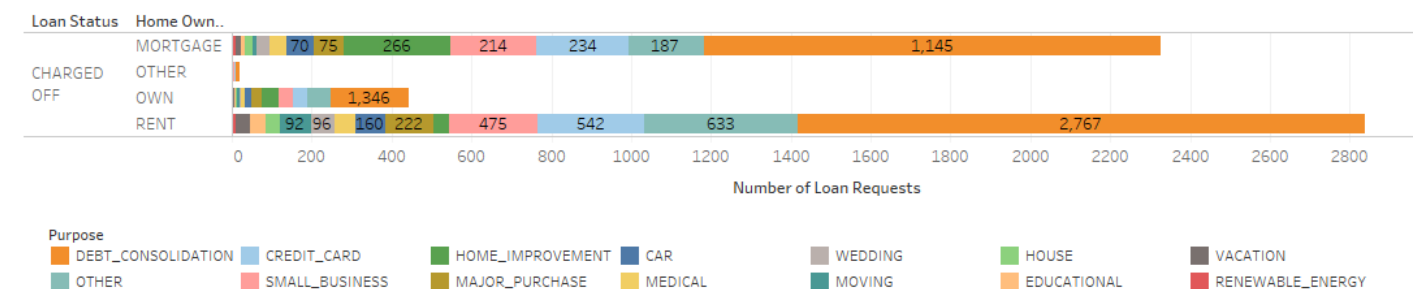
# Understanding - Purpose of loans



Spread of Loans acc to Housing Type
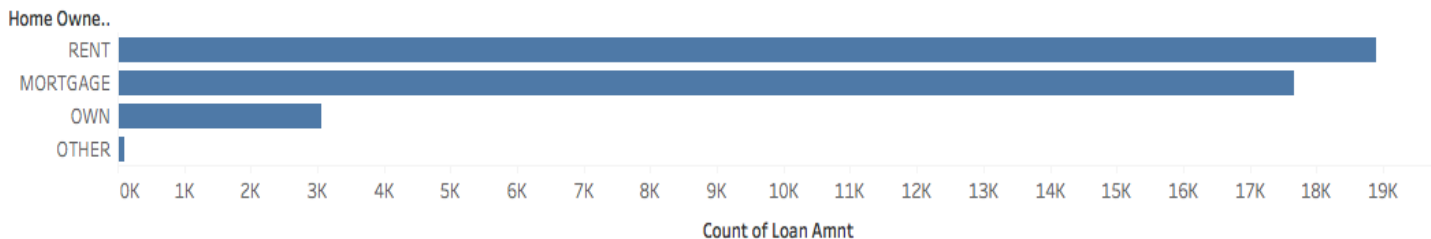
Charged off Loans by Home Ownership status v/s Number of Loans by Intended Purpose
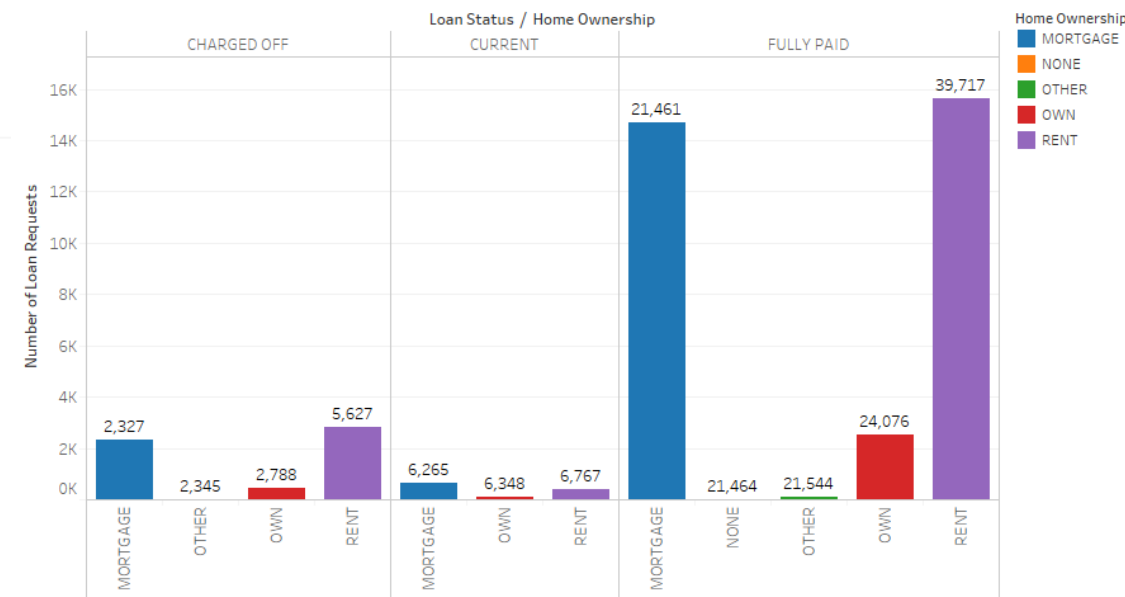
Charged off Loans by Home Ownership status v/s Number of Loans by Intended Purpose

- It seems that People living in Rented or Mortgaged properties have a higher tendency of taking Loans for various intended purposed
- Higher number of charged off loans also belong to these two categories with top 6 commonly occurring reasons for taking a loan being – Debt Consolidation, Other (Unknowns), Credit Card, Small Business, Home Improvements & Major Purchases.

# Understanding – Loan Status v/s Employee Tenure

Impact on count of Loan Requests by Employee Tenure



- Highest number of Loan Requests come from tenured Employees with work experience of 10 years and more. These are important customers for the company,
- However, coincidentally higher Number of Charged off also come from this range. Hence no important conclusion can be derived based on Loan Count and Employee Tenure.

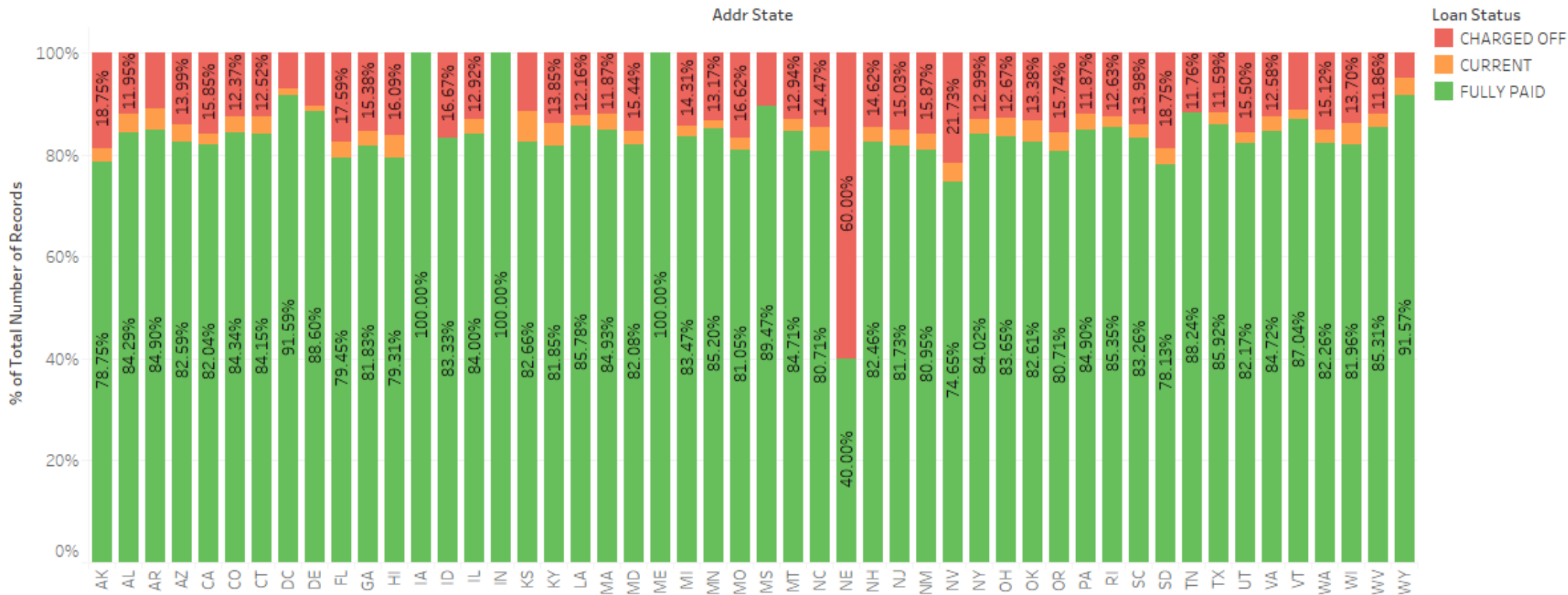# Top 10 States against count of loan status

## Loan Status vs State
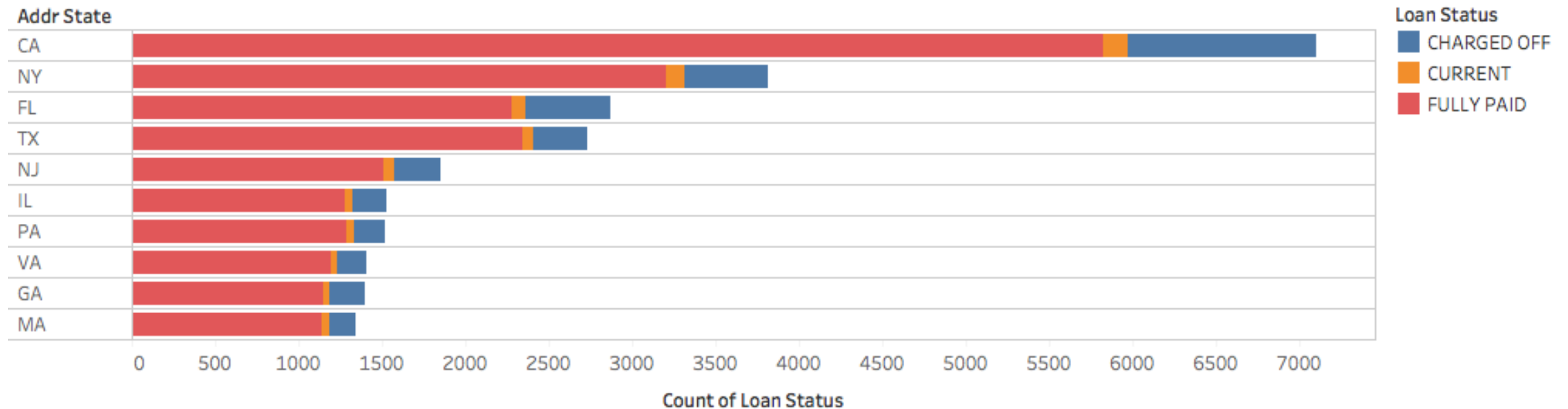


- Though data tells CA has larger % of charged off, further analysis shows that NE has higher probability of defaulters

# Understanding - Loan Defaults – State wise Probability



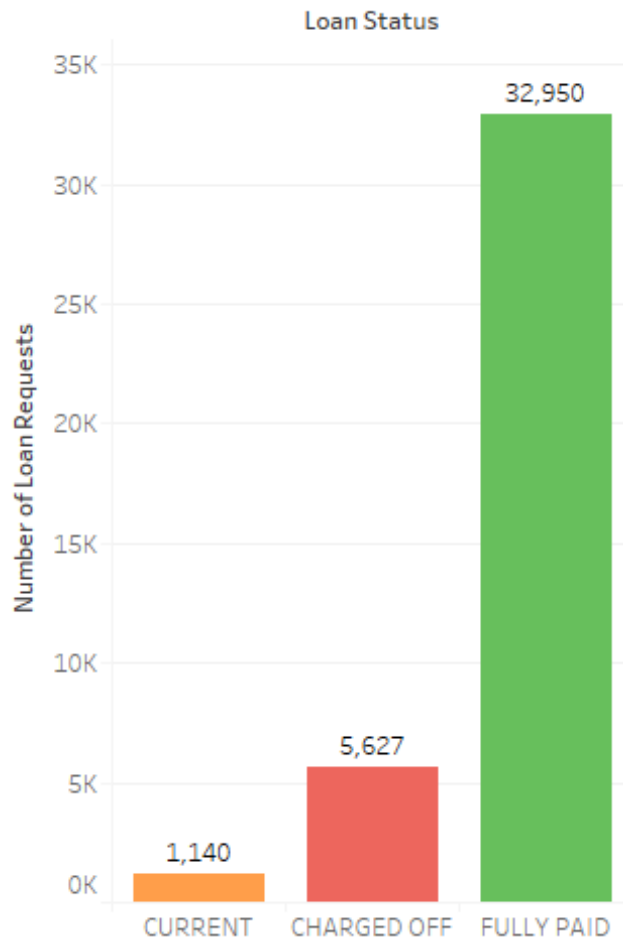Proportion of Loans requests by Loan Status per State

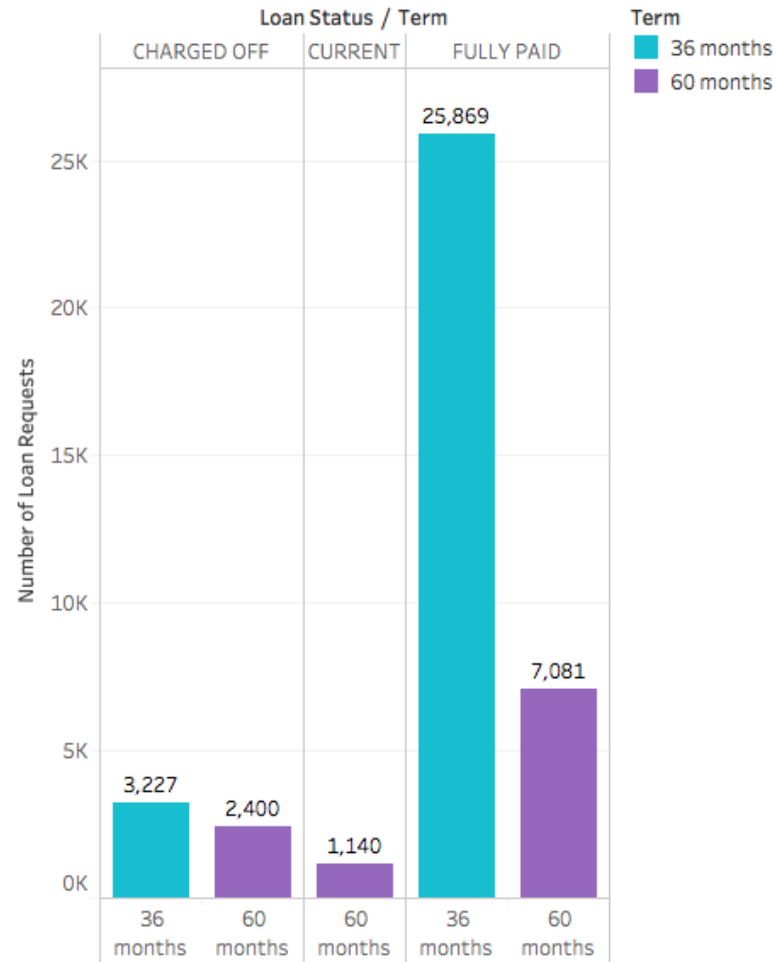- NE has higher probability of defaulters

# Understanding - Loan Amounts and Terms

## Distribution of Number of Loan requests by Loan Status



## Loan Status by Loan Terms v/s Number of Loans



- About 14 % of total loans have been charged off which is significant loss of revenue to the company.
- Out of total charged off loans 57 % loans are 36 months term length and 43% are 60 months term length.
- However customers with Loan Tenure of 36 months have a higher chance of paying the loan. Hence LC needs to keep a close on loans with 60 % term length
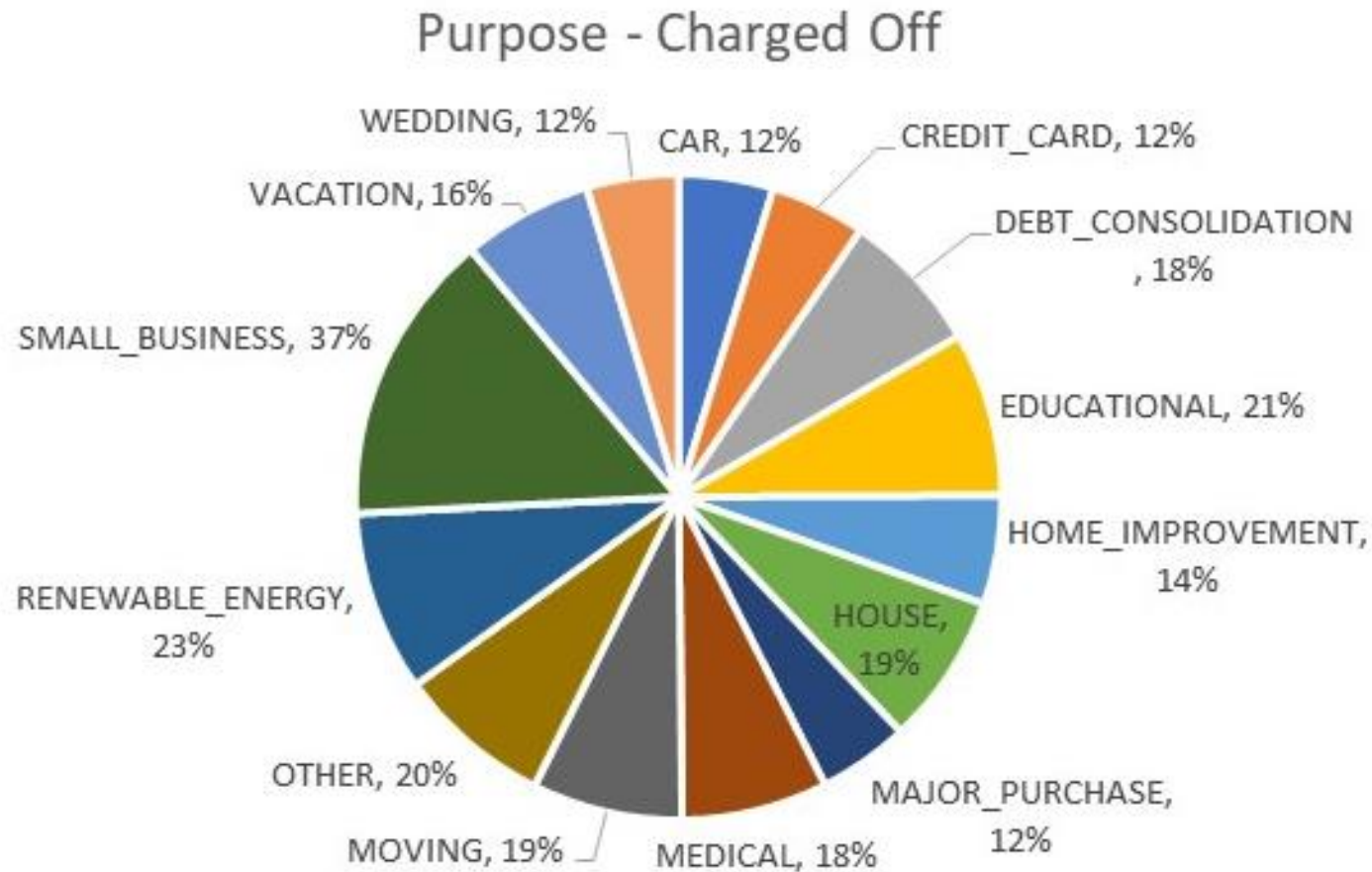
# Understanding – Verification of Requests



Proportion of Verification Status per Year v/s Number of Requests
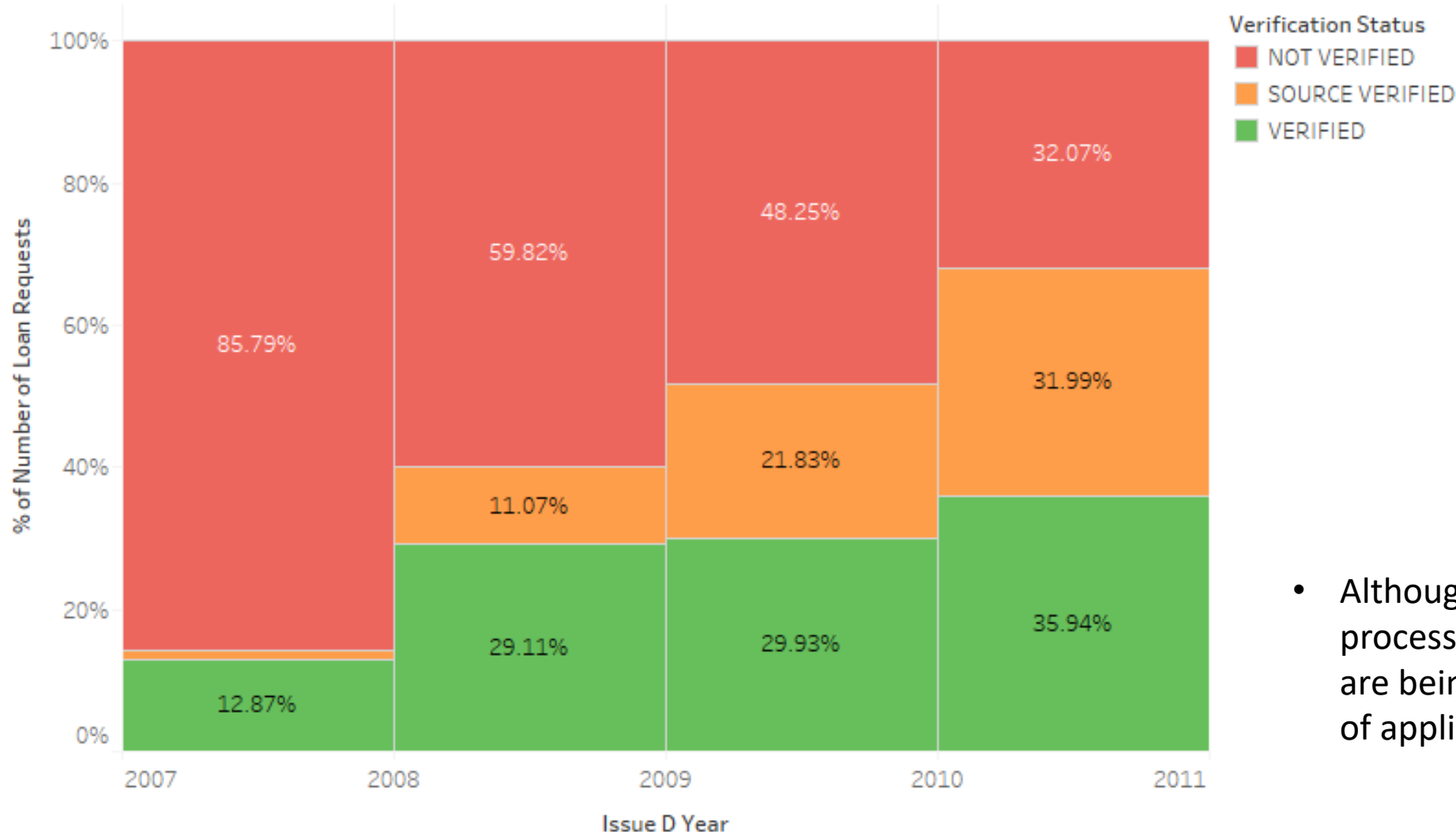
- Although company has improved processes and now more verifications are being carried out, but still majority of applications are not verified.

# Insight – Purpose of loan and link of Default



Purpose - Charged Off

- About 37% of defaulters are from small business purpose, suggest may be the business is not is not generating stable income. And while approving the loan, it's important to verify the past income trend from the business.

- Other important category to monitor are – Education, House/ Rent/Renewable Energy.
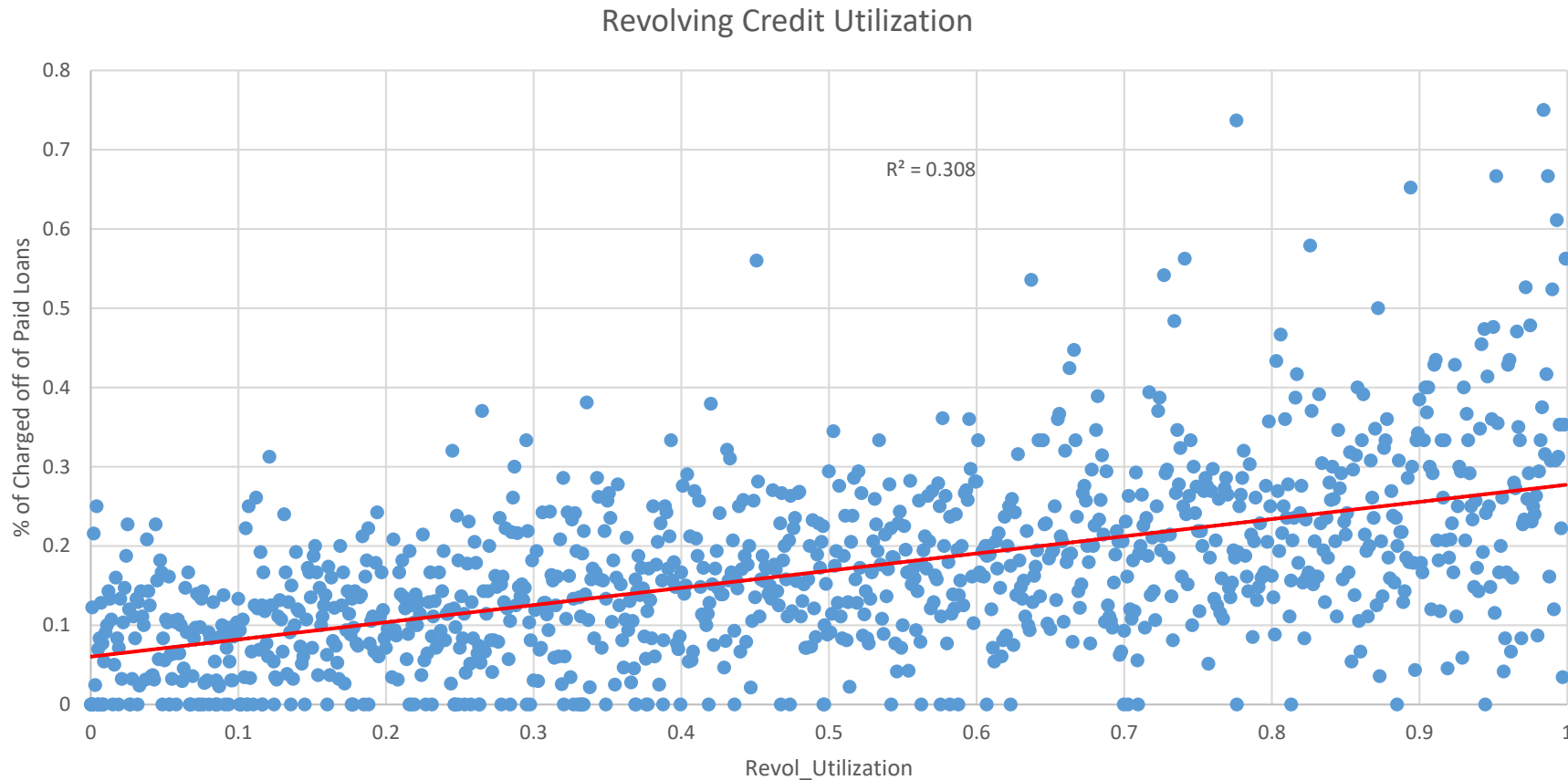
# Insight – Proportion of Defaulters grade wise.

Proportion of Loan Status by Customer Grade v/s
Number of Loan Requests
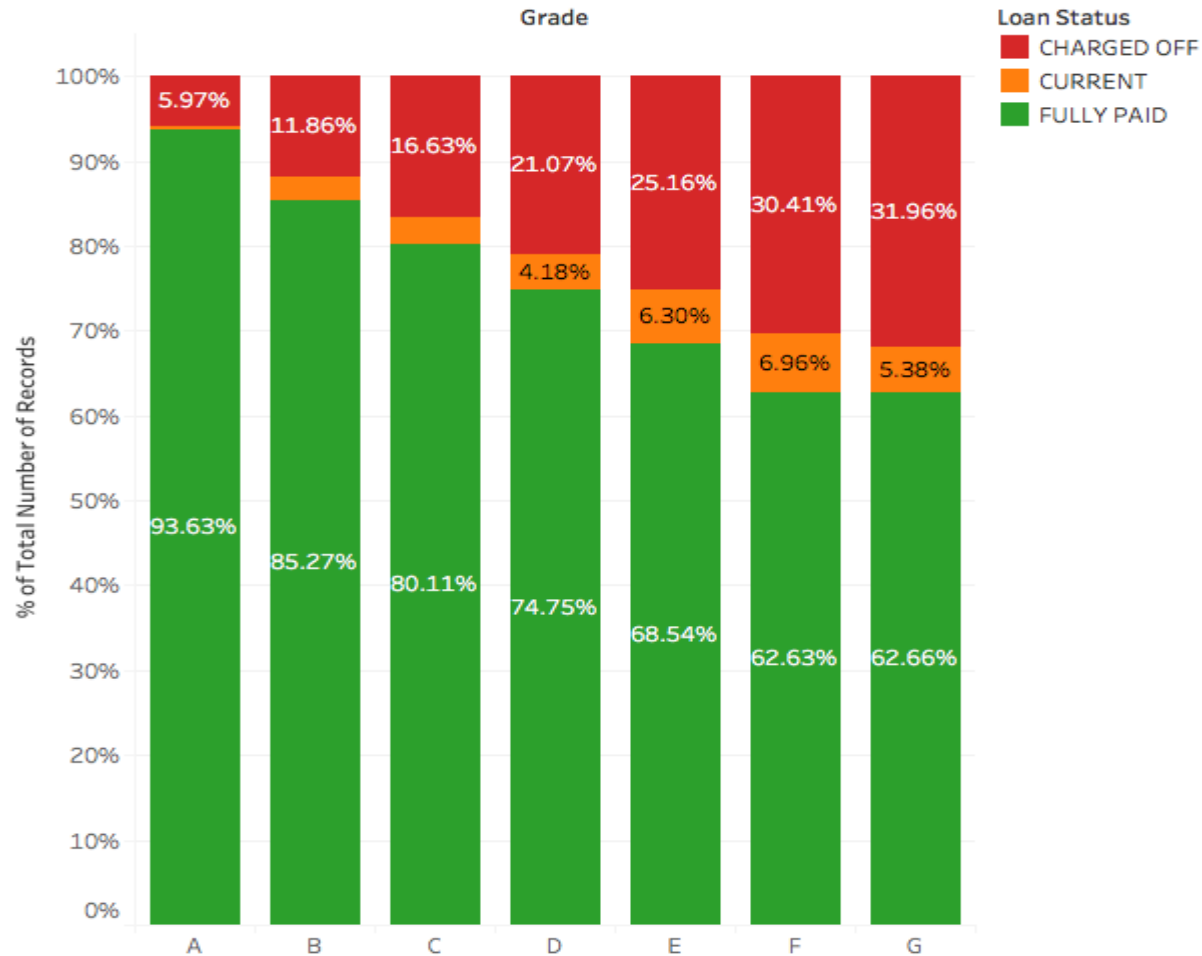


- As the customer grading increasing, the % of defaulters is being increased.
- Company Needs to keep a Close watch on Customers basis their Grade

# Correlation between Credit Utilization and Loan Default

Revolving Credit Utilization



- As the credit utilization increasing, % of charged of loans to total loans is increasing. This is an important insight for keeping an eye on those – who are utilizing larger % of their credit.

- R-Square = .3 (shows they are correlated)

# Understanding – Debt to income Ratio



Trend lines showing Debt Income Ratio by Loan Status per Year
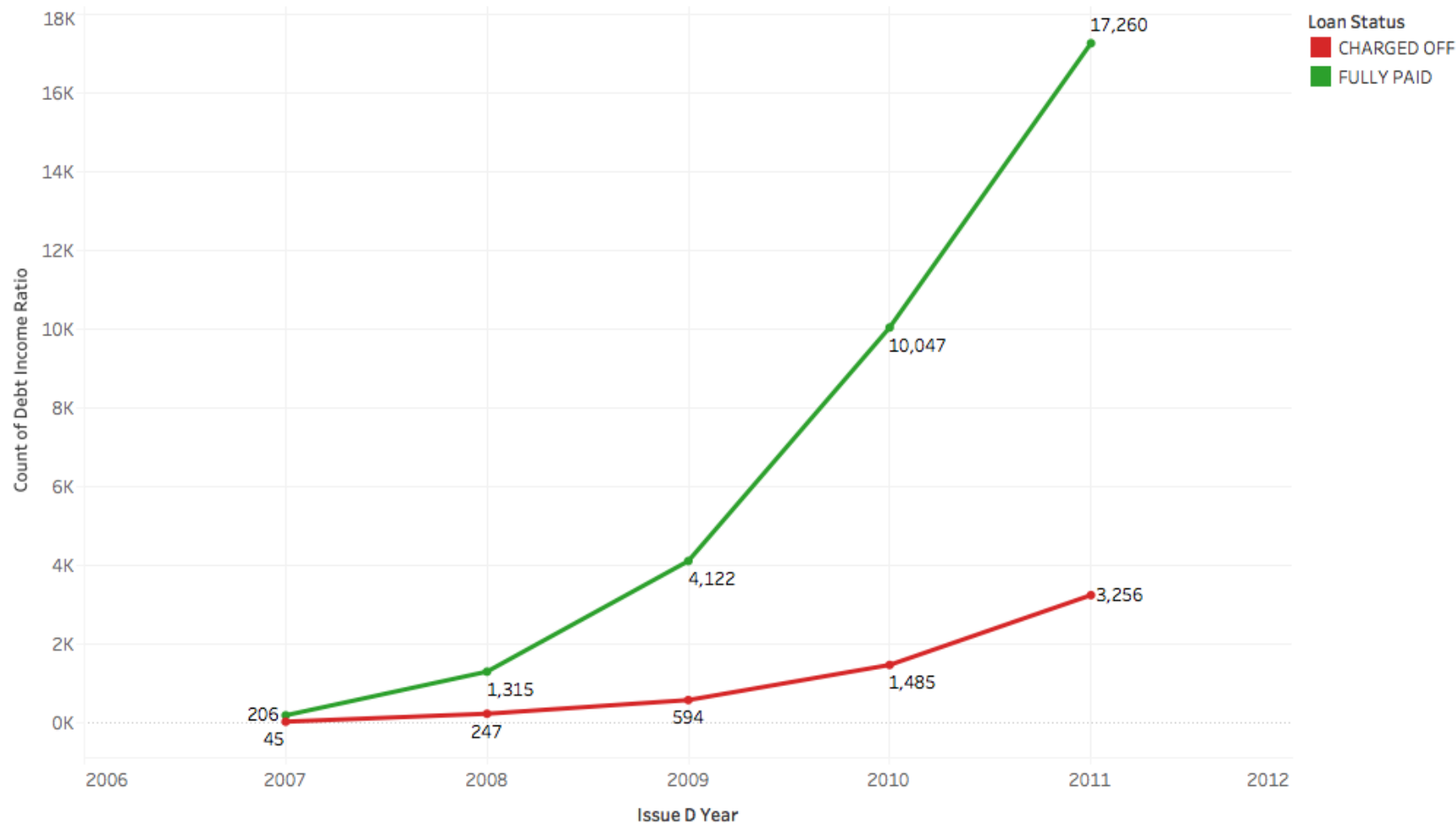
# Insight – Correlation between Debt to Income Ratio and Charged of % to fully paid



Correlation - Debt to income ration of Charged of as % of Fully paid
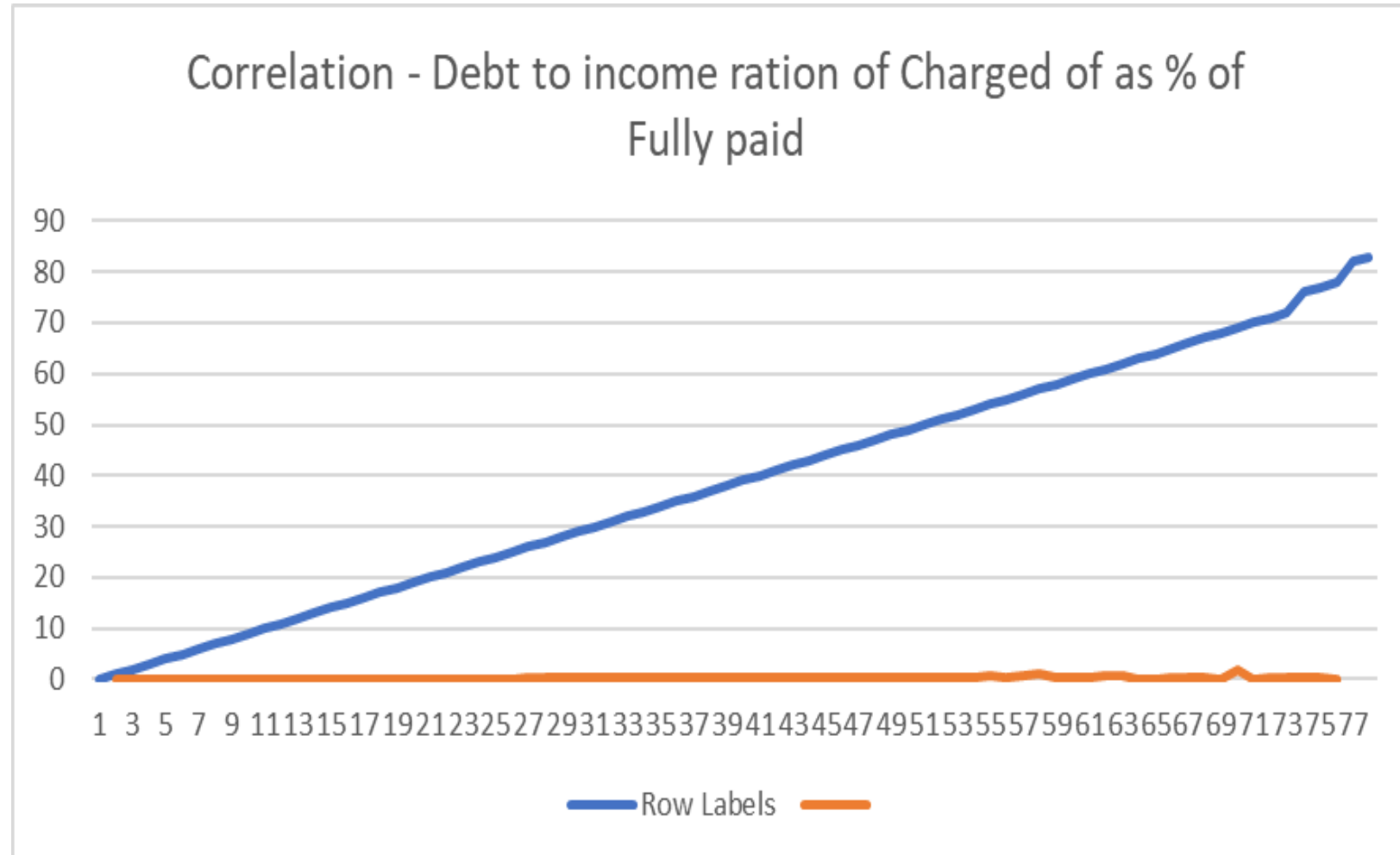
- There seems to be strong relation between Debt to income ratio and being defaulters.
- As the debt to income ratio is increasing, % of defaulters is increasing. Which is logical too, as more the debt burden, difficult would it be for customer to pay off if the income source is limited.

# Conclusion.

- As understood by the analysis, following insights have been generated
  - The company doesn't do rigorous verification of application.
  - Important categories to do rigorous verification and monitor throughout the loan tenures are – Small Business, Housing, Education Loans, Renewable Energy.
  - **People utilizing their revolving credit facilities are to be monitored during the whole tenure.**
  - **If the debt to income ratio is more, that's a clear risk of being a defaulter.** Company either needs to give loan against security or bring in extra controls if want to extend their loans to such customer.
  - Grade wise Stringent Checks to be followed during loan approval.