# GRAMENER CASE STUDY

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# Abstract for Gramener Case Study

## Company

- The case study is about a Finance company which is the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures. Borrowers have an easy access to lower interest rate loans through a fast online interface.

## Business constraints

- Like most other lending companies, lending loans to ‘risky’ applicants is the largest source of financial loss (called credit loss). The credit loss is the amount of money lost by the lender when the borrower refuses to pay or runs away with the money owed. In other words, borrowers who **default** cause the largest amount of loss to the lenders. In this case, the customers labeled as 'charged-off' are the 'defaulters'.

## Problem Statement

- If one is able to identify these risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss. Identification of such applicants using EDA is the aim of this case study.

## Analysis

- In other words, 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.

# Financial Goals

## Business

- The company earns on the Interest income by providing loans at varying interest rates to its customers

## Conditions

- It is the company's prerogative to provide loans to customers who will not Default and stick to the agreed upon conditions and period of repayment

## Risk

- But this may not always be true and company may suffer losses due to bad loans

## Risk Analysis

- Hence, Risk Analytics plays a vital role in this case which enables the company to provide loans only to customers who may not Default

## Role of EDA

- This can be achieved by analyzing the historical data using Exploratory Data Analytics and figuring out the probability and conditions under which a customer will have a higher chance of Default.

# Problem solving methodology

**Problem Statement**
- Company Objective

**Data Understanding**
- Risk Analytics
- Variable types

**Data Gathering**
- Data load from loan.csv

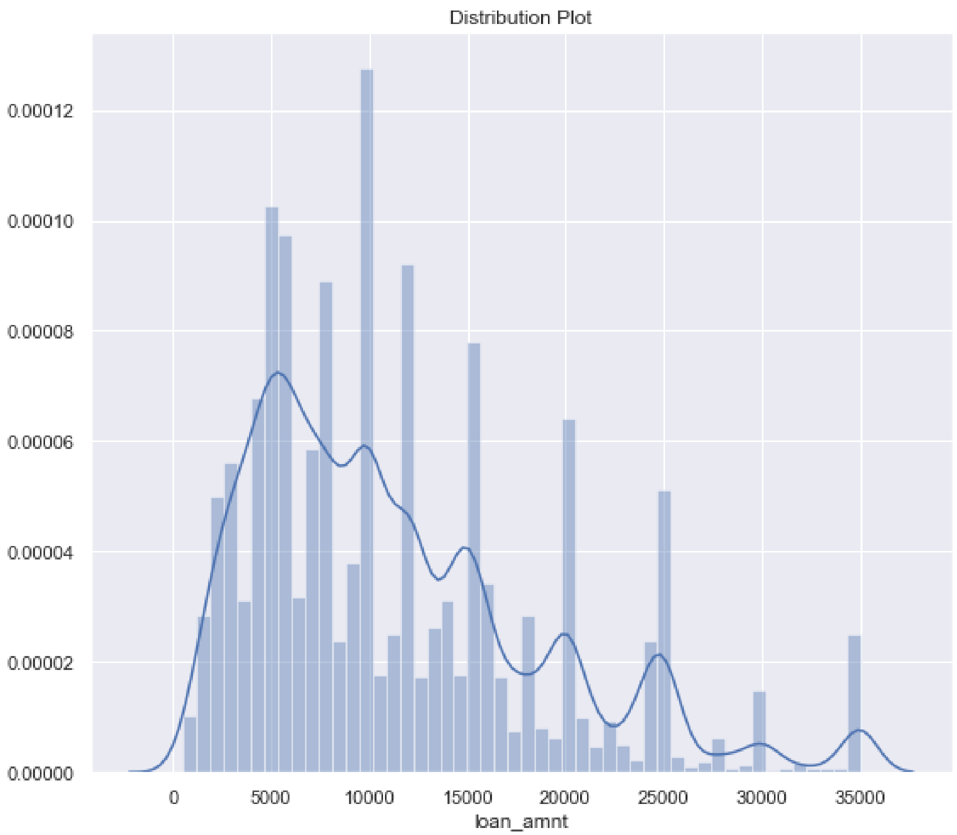
**Data Cleaning**
- Dropped Unnecessary fields
- Dropped maximum columns with NA values
- Converted Objects into suitable datatypes
- Removed Null Rows
- Removed units from columns(like ‘months’, ‘%’ etc)

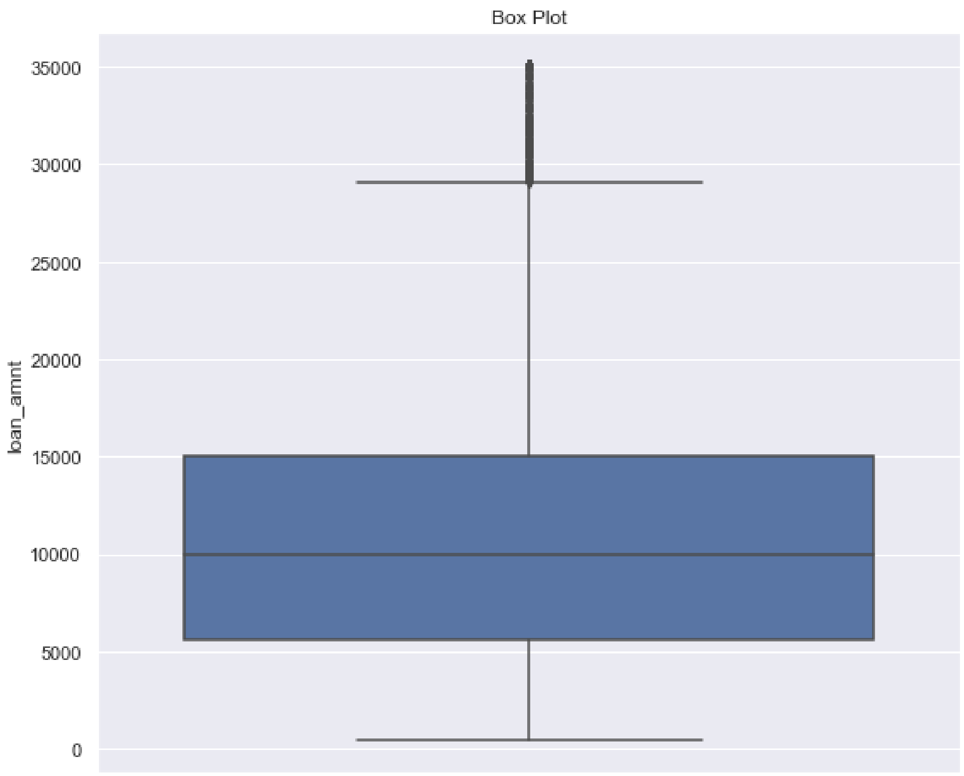
**Derived Metrics**
- Created Bins for ‘Loan amount’, ‘Interest Rate’ etc.
- Derived Month and Date from datetime columns
- Created dictionary for ‘employee_length’
- Change order for ‘months’

**Data Analysis and Visualization**
- Univariate Analysis
- Bivariate/Multi variate Analysis
- Observations

**Conclusion**
- Based on the insights
- Overall conclusion

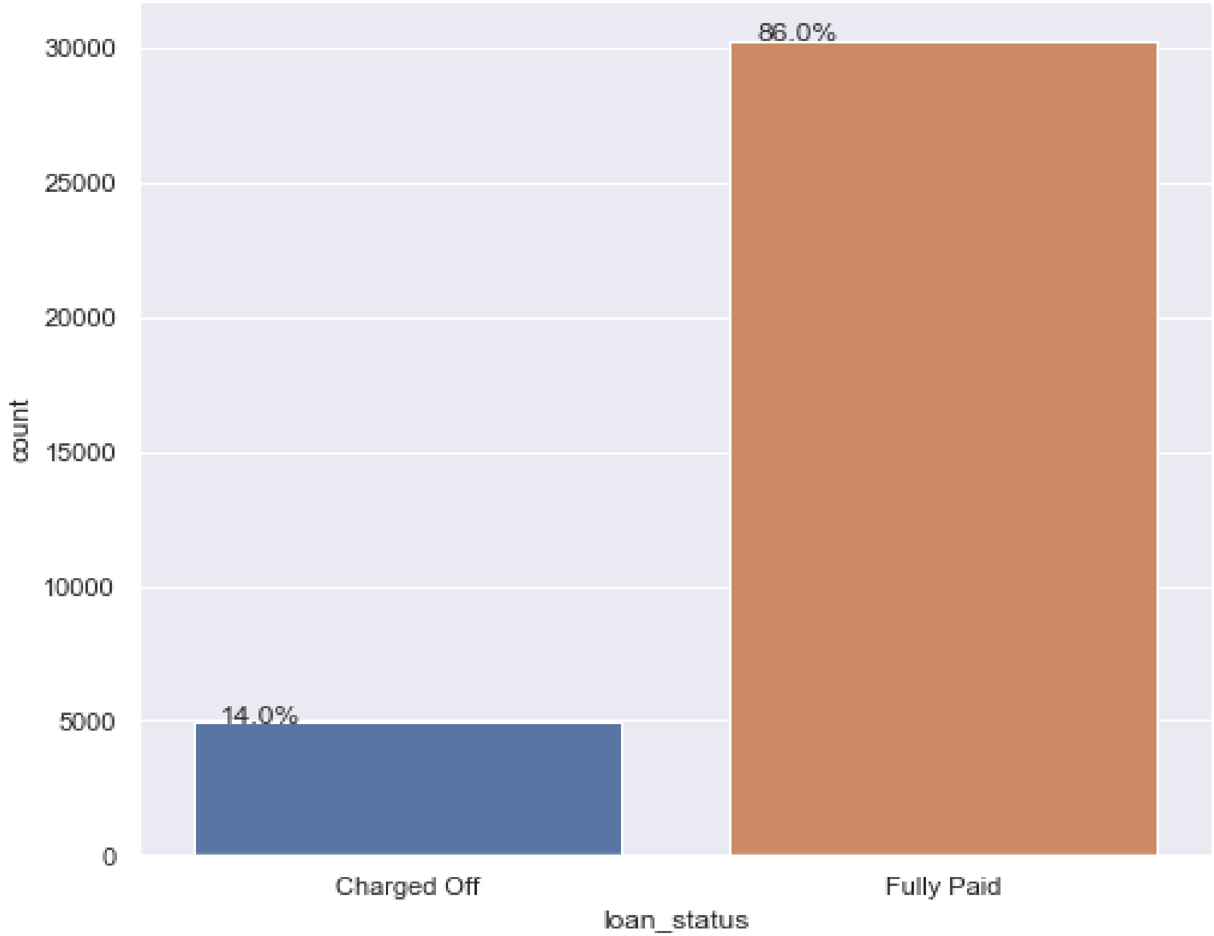
# Distribution of Loan amount



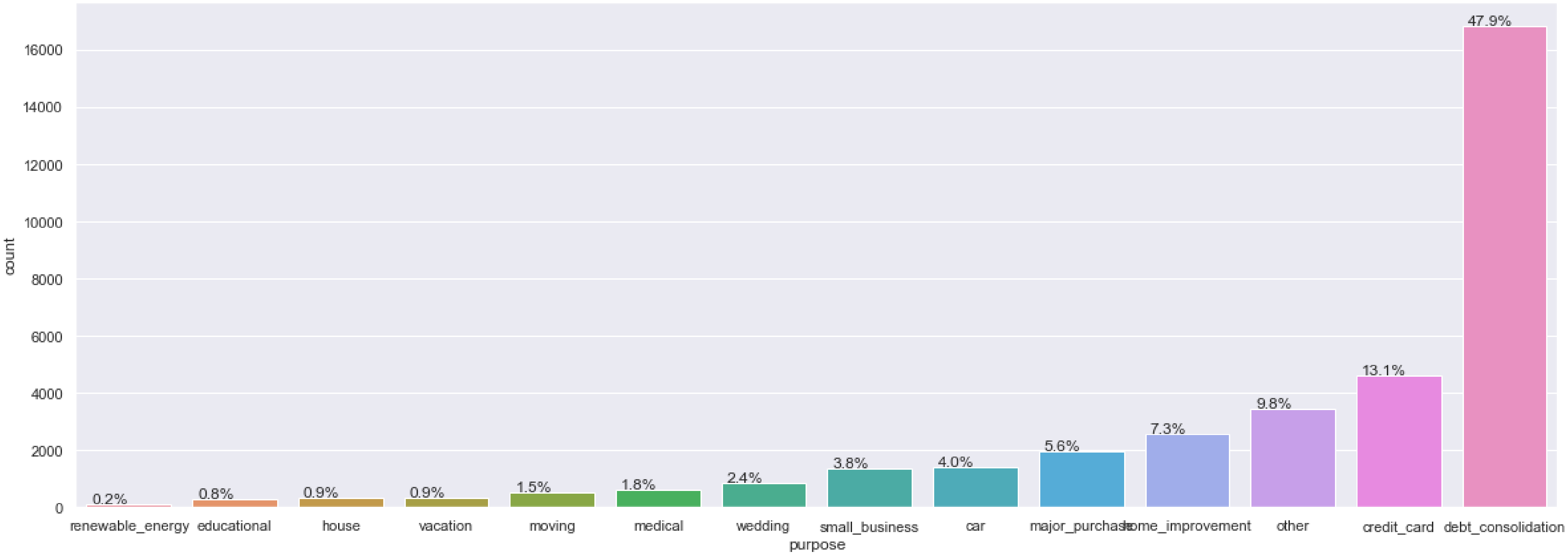

Most of the loan amounts are distributed between 5000 to 15000

# Loan Status



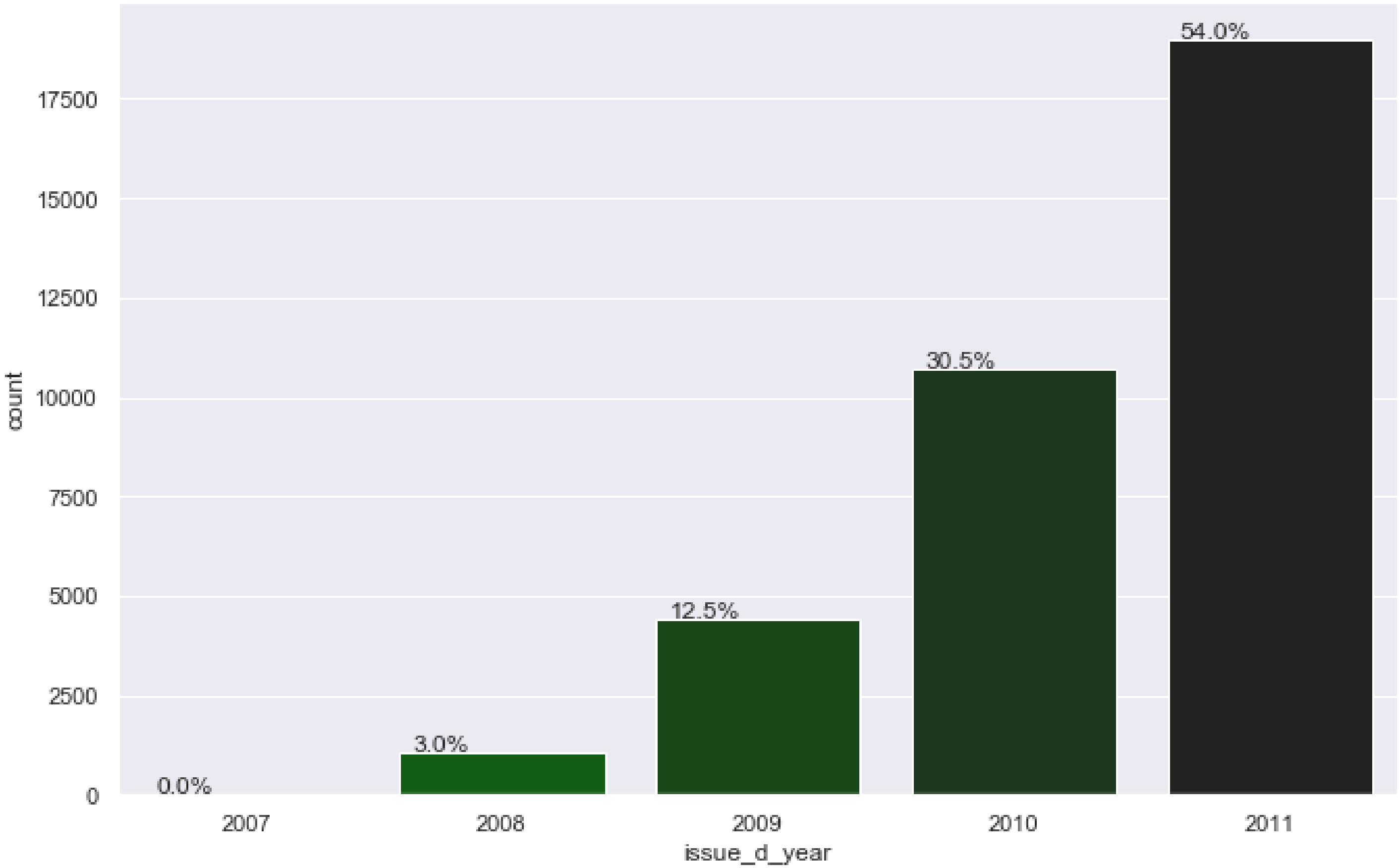

Approximately 14% of the total loans are defaulted

# Purpose for loan application



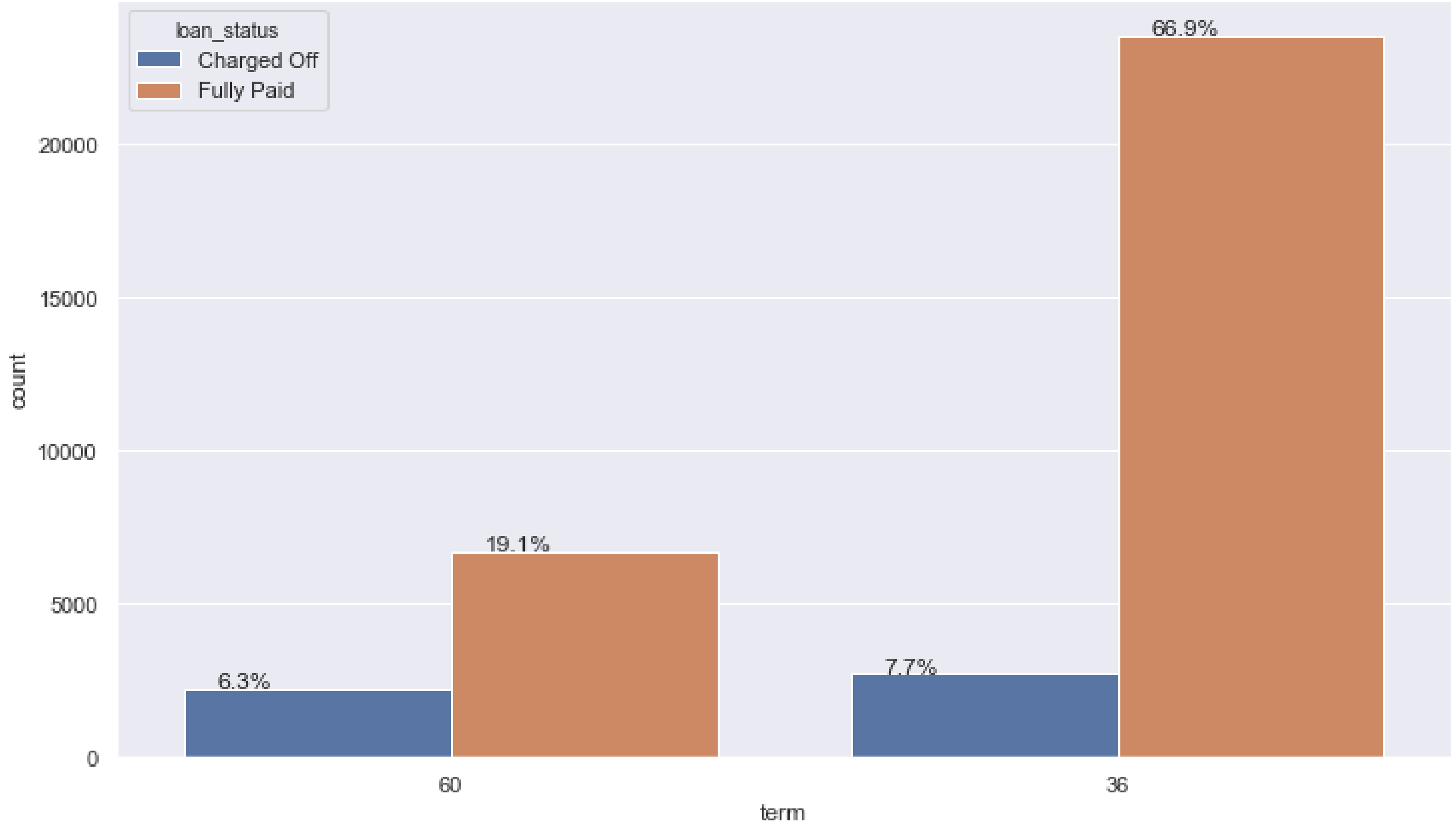

~ 48 % of the applicants need loan for Debt Consolidation

# Loan Disbursals Year-wise



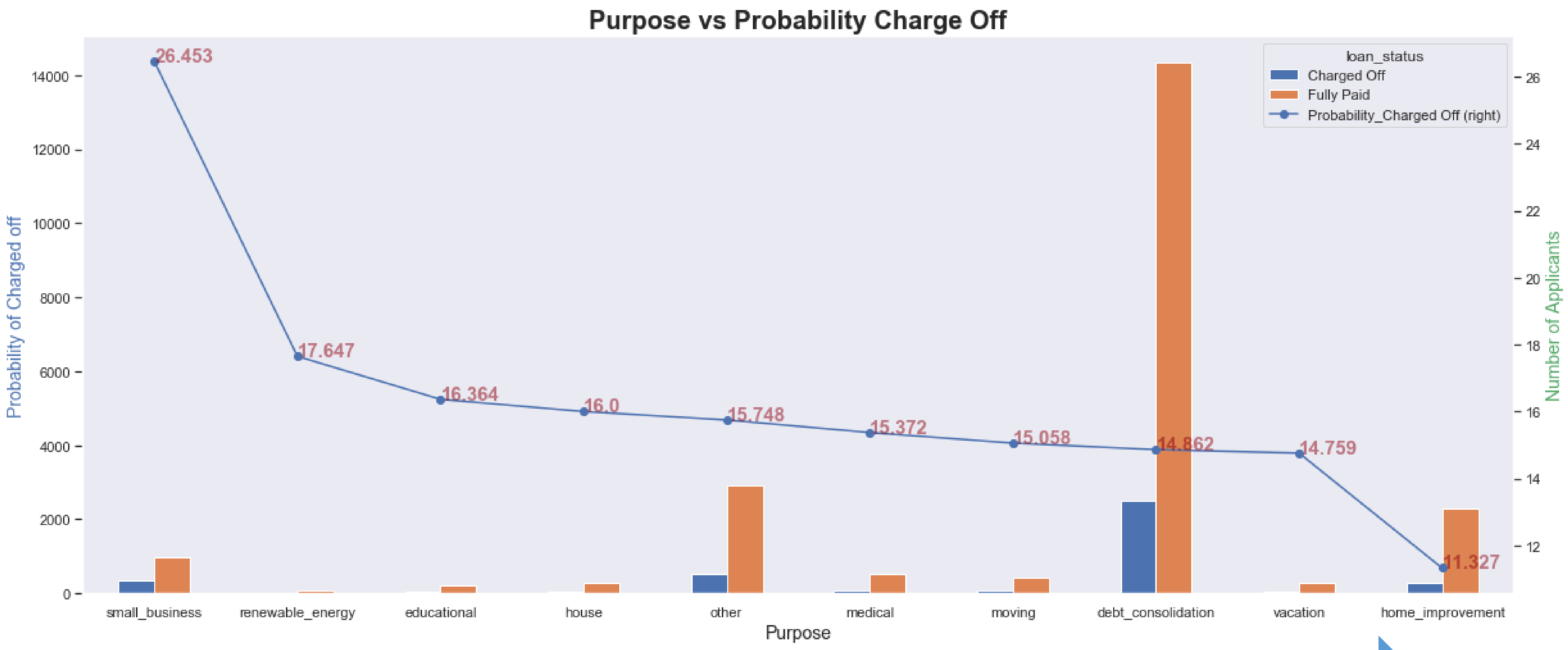

Loan applications are increasing year on year, approx 55% of loan applications received in 2011

# Loan term vs Defaulters



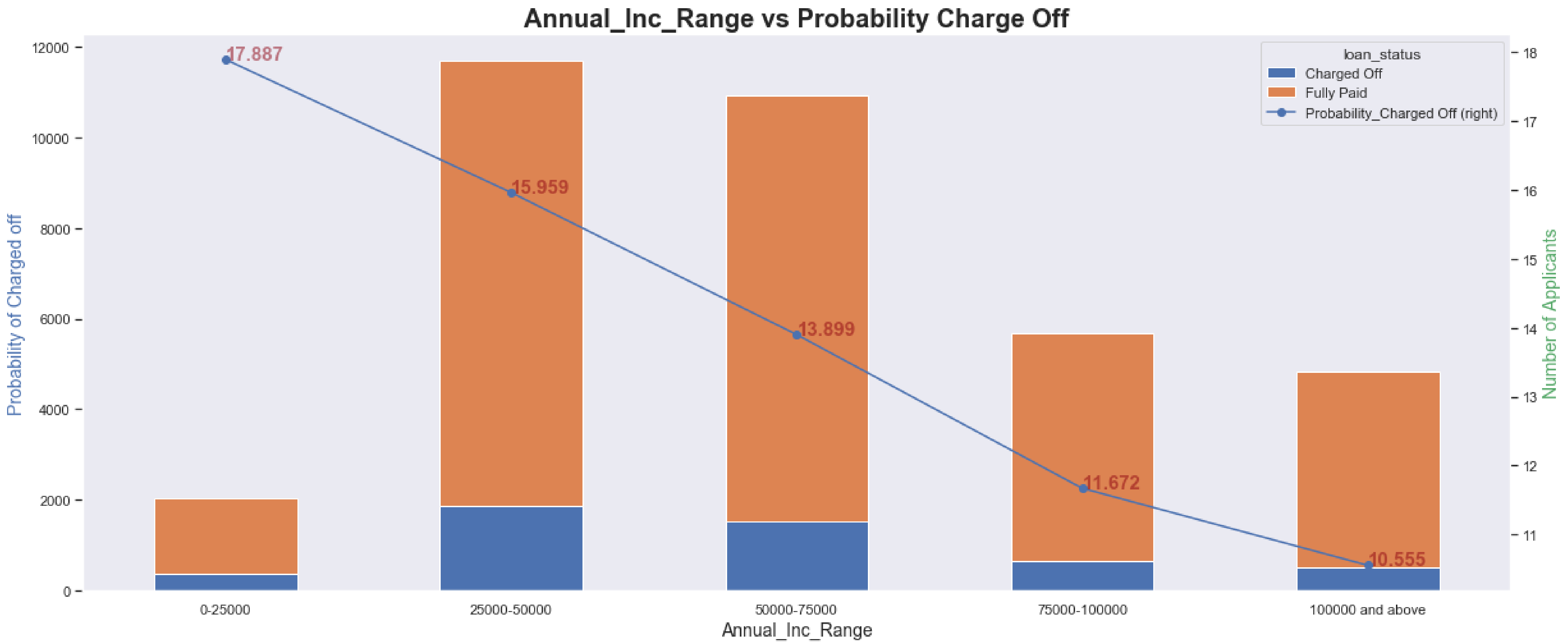

Max applications received for 36 month term and the default percent is 6.5% and 8 % for 60 & 36 months respectively

# Loan Purpose vs Defaulters



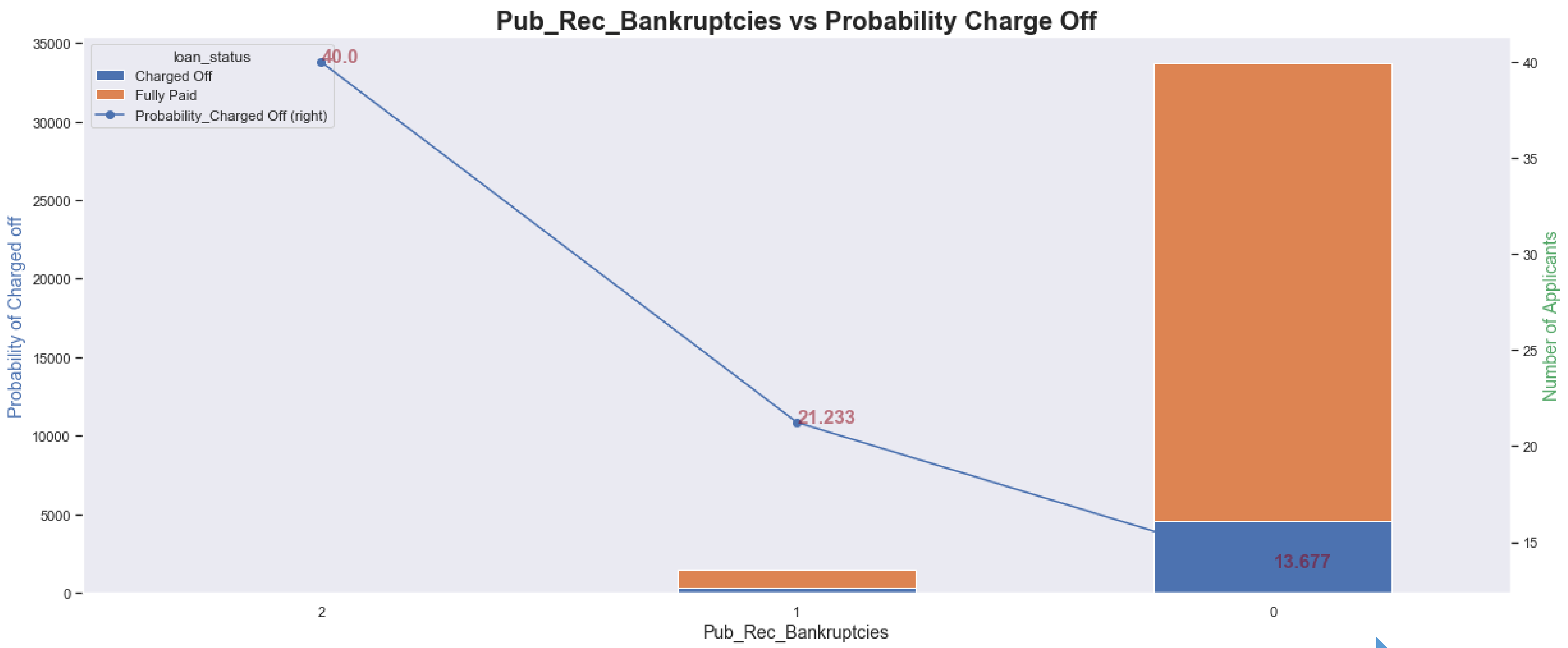

With regards to the Purpose of loans, the highest percentage of default is seen for Small Businesses, hence it can be considered risky

# Annual Income vs Defaulters



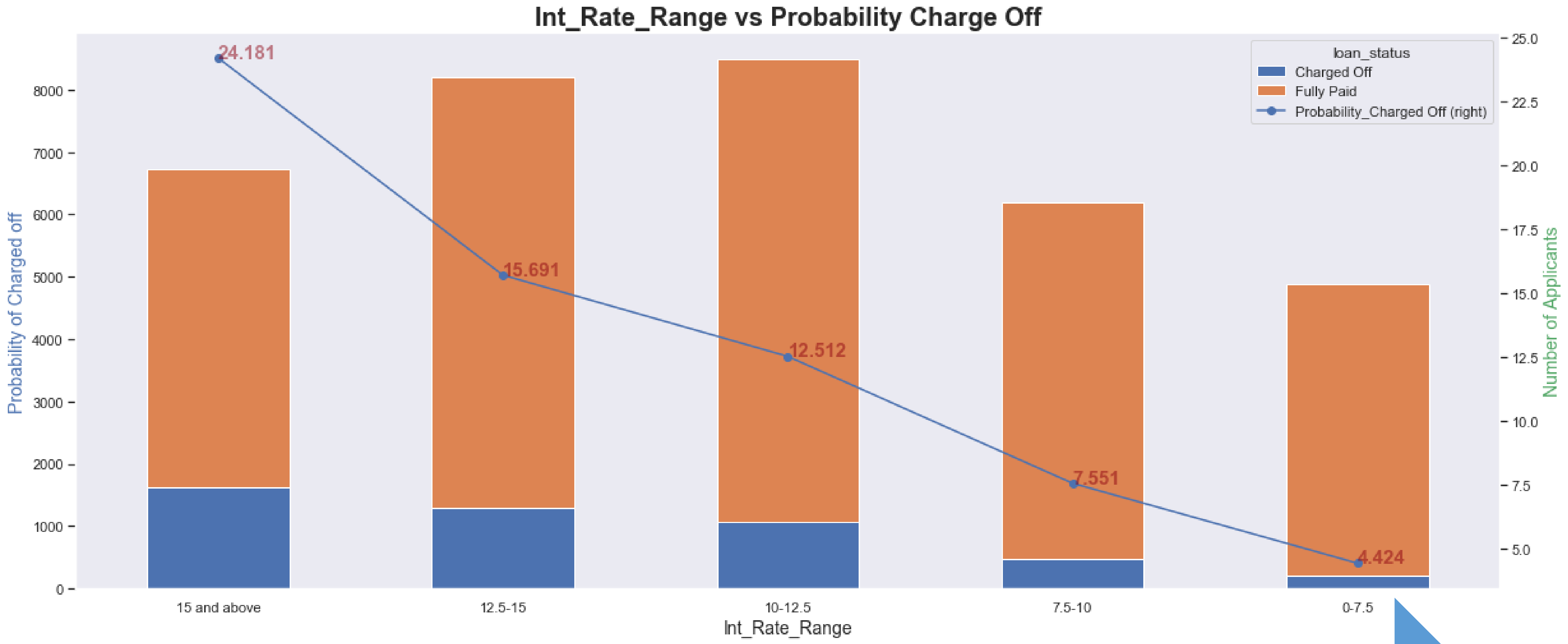

The annual income in the range of $0 – 25000 has high percentage of defaults

# Credit History vs Default probability




Number of Prior bankruptcies does seem to increase the chance of default

# Interest rate vs Defaulters




Higher the interest rate, higher is the probability to default, maximum being 15% and above with a probability of 24%

# Conclusion & Recommendations

- Loan Sanctions for Small Businesses should be carefully watched as the probability of default is higher
- Banks should also consider the Credit History or prior bankruptcy to reduce the default percent
- Loans with Higher interest rates and lower loan term should have a Collateral condition before sanctions
- Applicants with Annual income bracket of $0- 25000 have a higher chance of default
- Probability of default increases with increase in dti. Hence, the threshold value for dti should be reconsidered