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Lending Club Case Study

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Objective

Identification of risky applicants using EDA is the objective of this case study.

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Lending Club Analysis Overview

- Understanding the data
- Data Cleaning/ Processing
- Outlier Detection and Removal
- Univariate Analysis
- Bivariate Analysis

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Understanding the data

- Among the loan dataset, we had 111 columns and 39717 rows.
- More than 50% of column has 100% null values.
- We found columns with single unique value.
- Data included both numeric and non-numeric

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Data Cleaning / Processing

We'll clean the dataset and handle the missing data, data conversion and categorical variables.

- Data Removal

✓ Removed columns with null values having more than 30%

✓ Removed Rows with null values having more than 30%

- Data Conversion

✓ Converted all date column object to datetime type

✓ Casted all continuous variables to numeric so that we can find a correlation between them

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Outlier Detection and Removal

- Here, any value which out of range of 5th and 95th percentile are considered as outlier.
- For handling such outliers, we have **removed the values containing Outliers**.
- After removing the outliers, we have filled the missing values with the estimated one.
- In this case, we have gone with **Generalized Imputation** i.e., we calculate the median for all non missing values of that variable and replace missing values with median.

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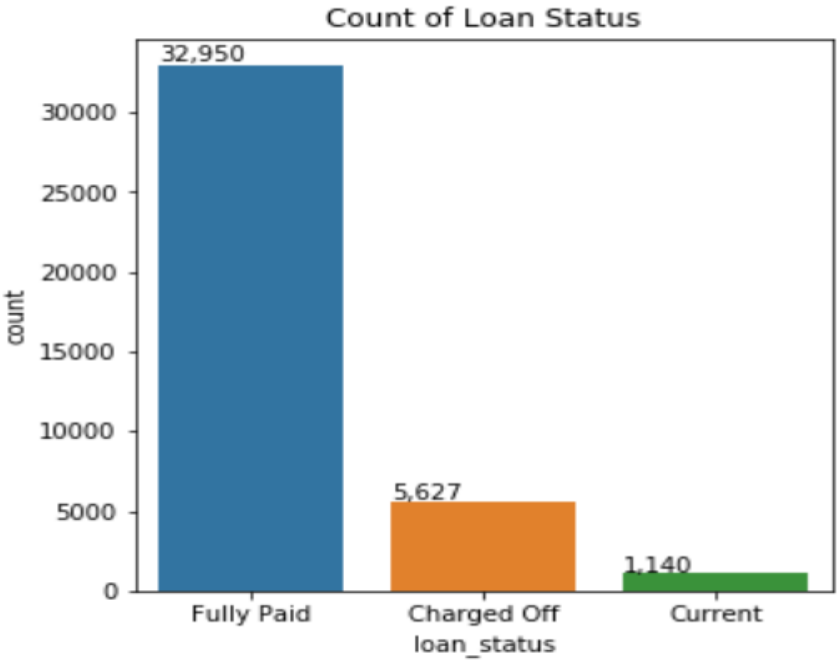
Univariate Analysis

Loan Status Count



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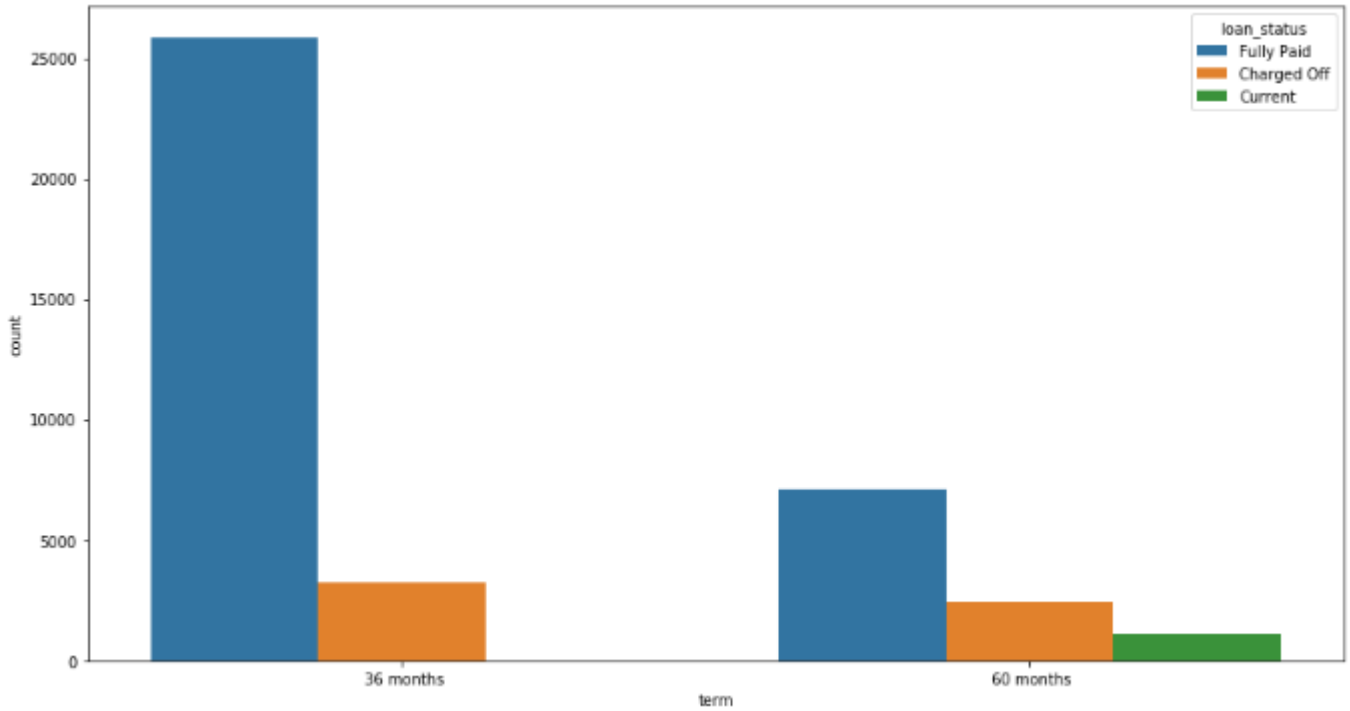
Term(Tenure)



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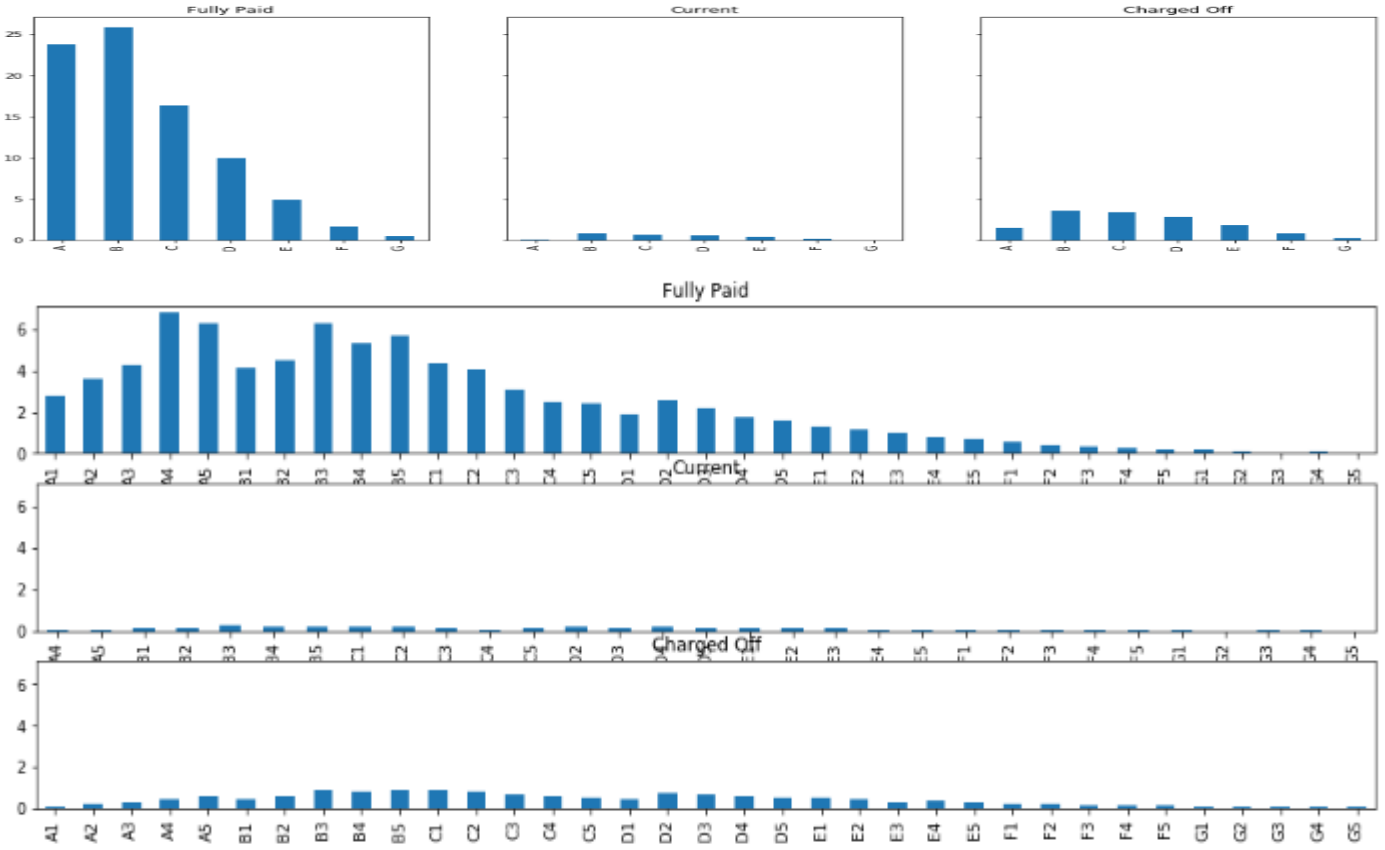
Grade and its Sub Grade



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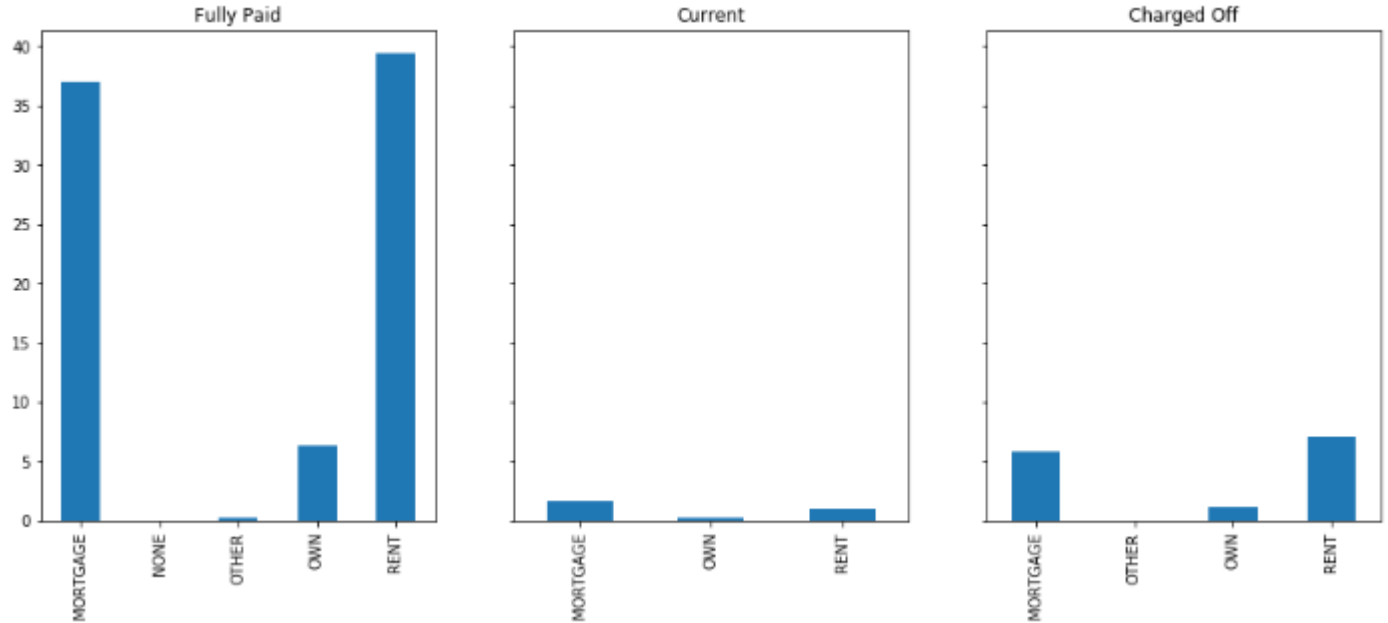
Home Ownership



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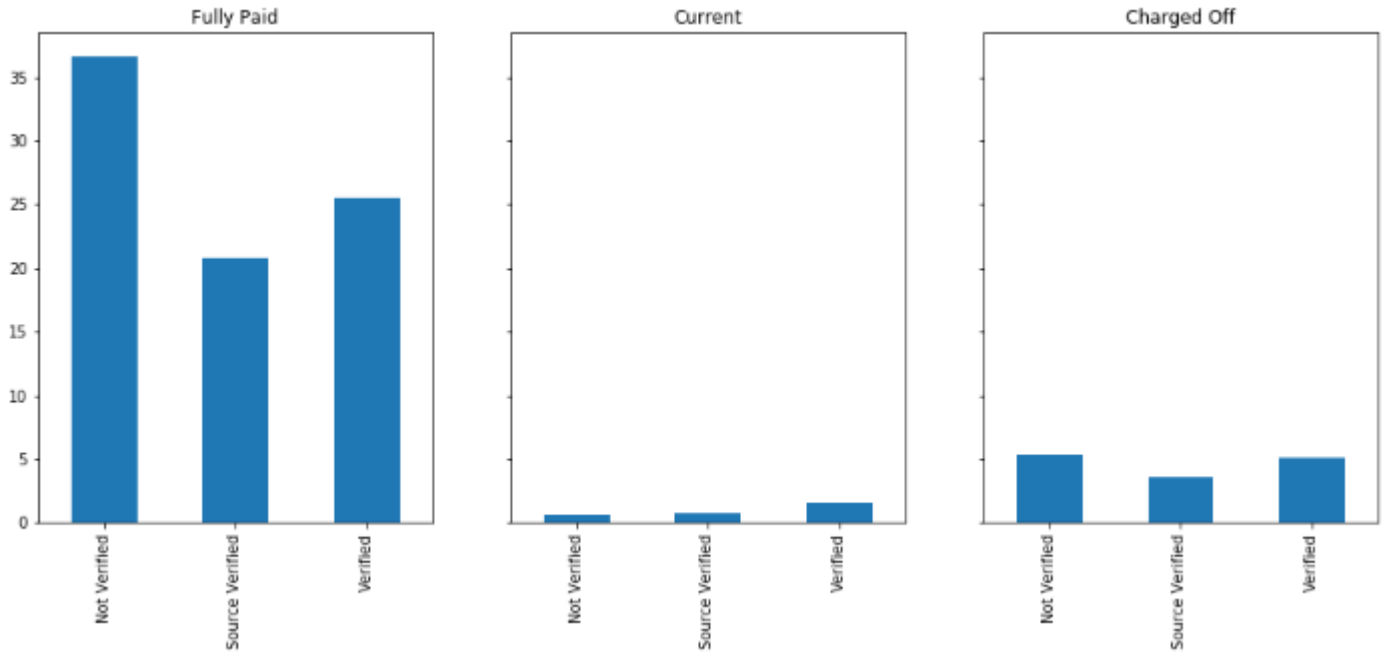
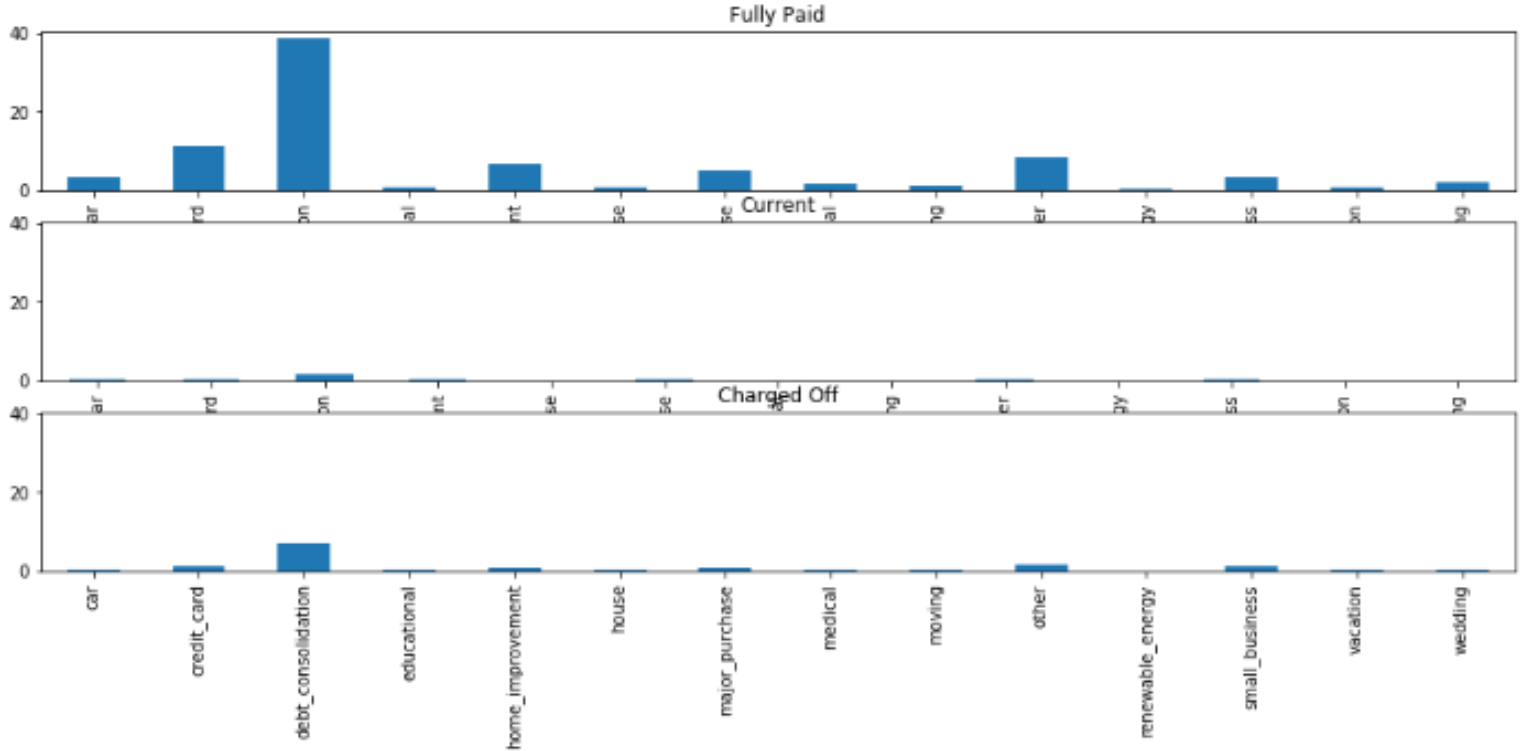
Verification Status



Loan Purpose



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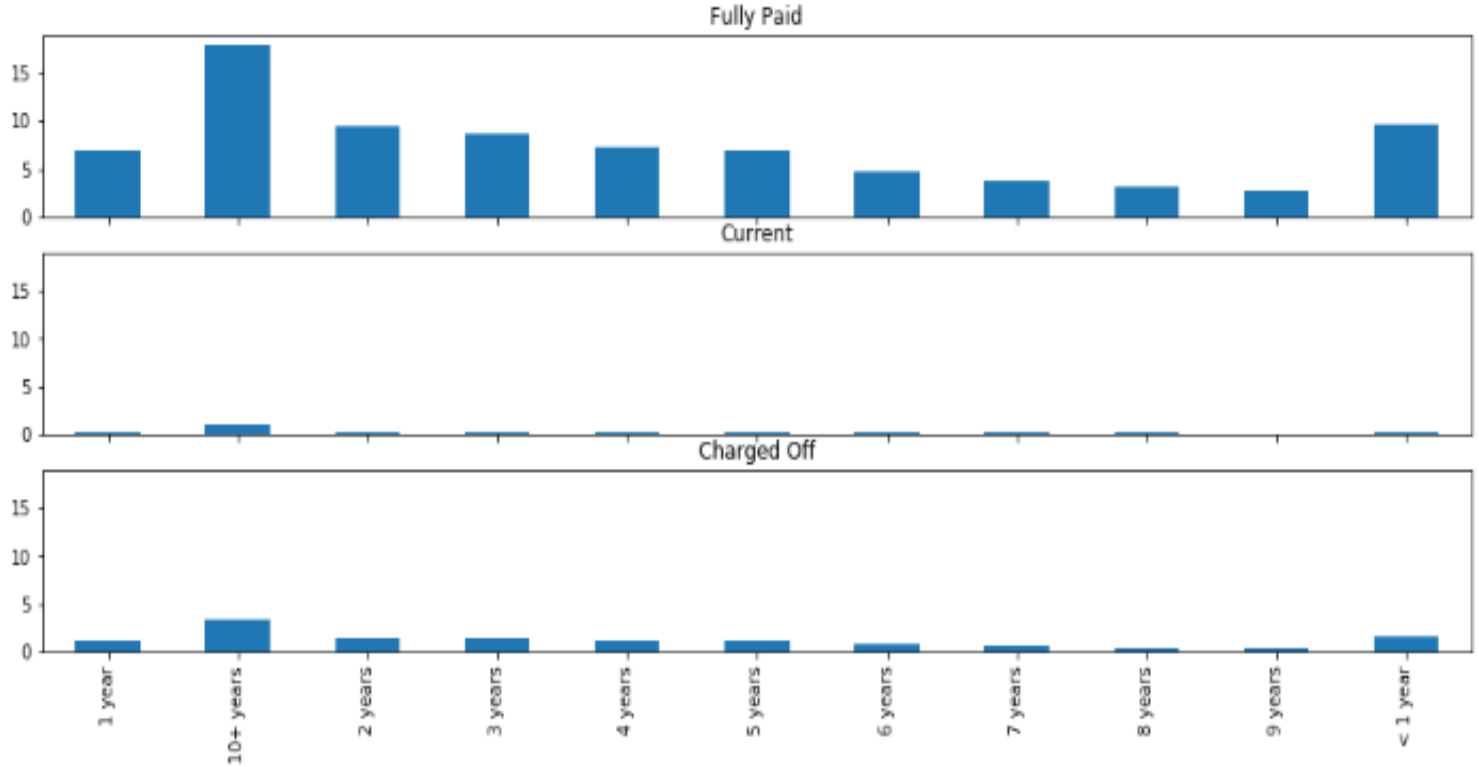
Employment Length



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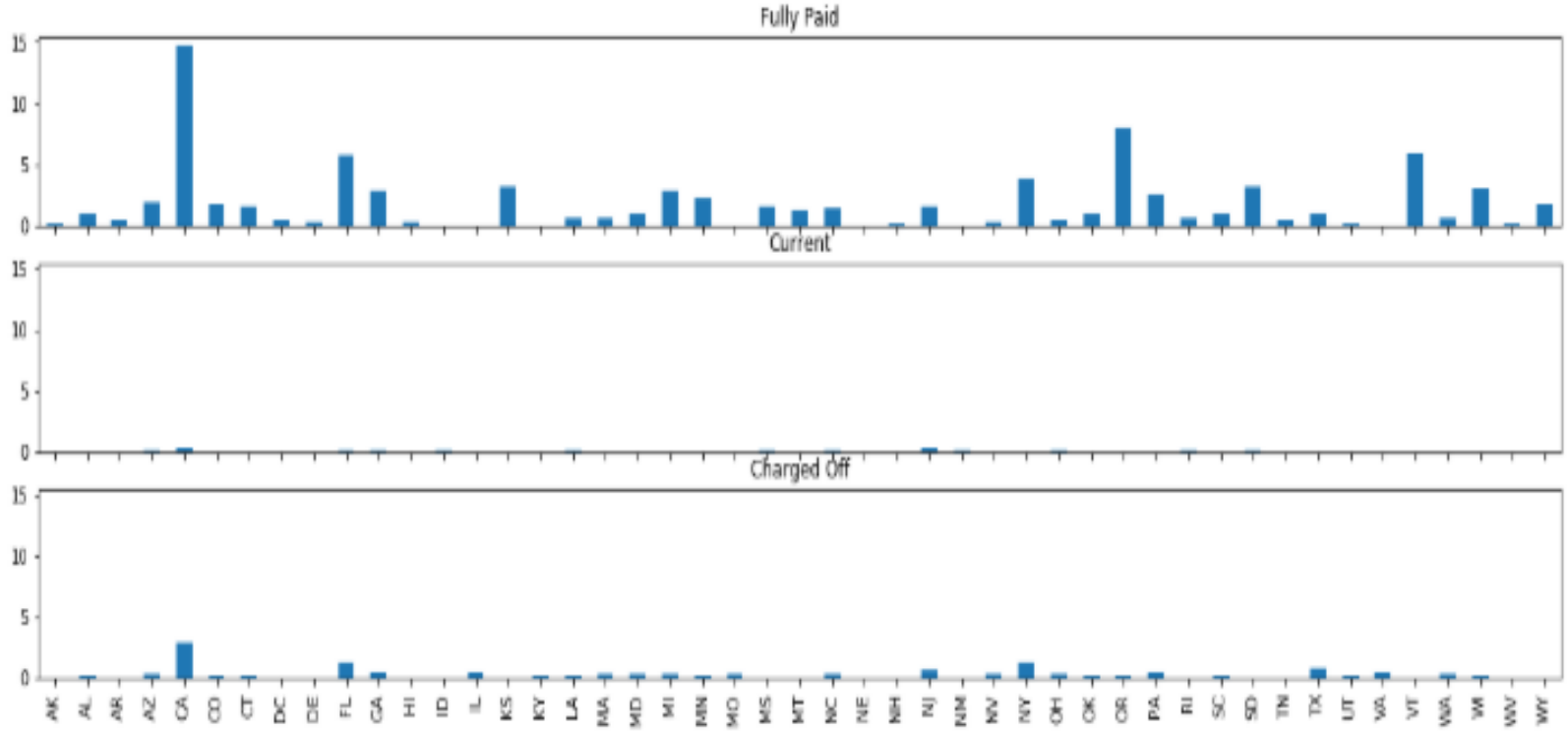
Address State



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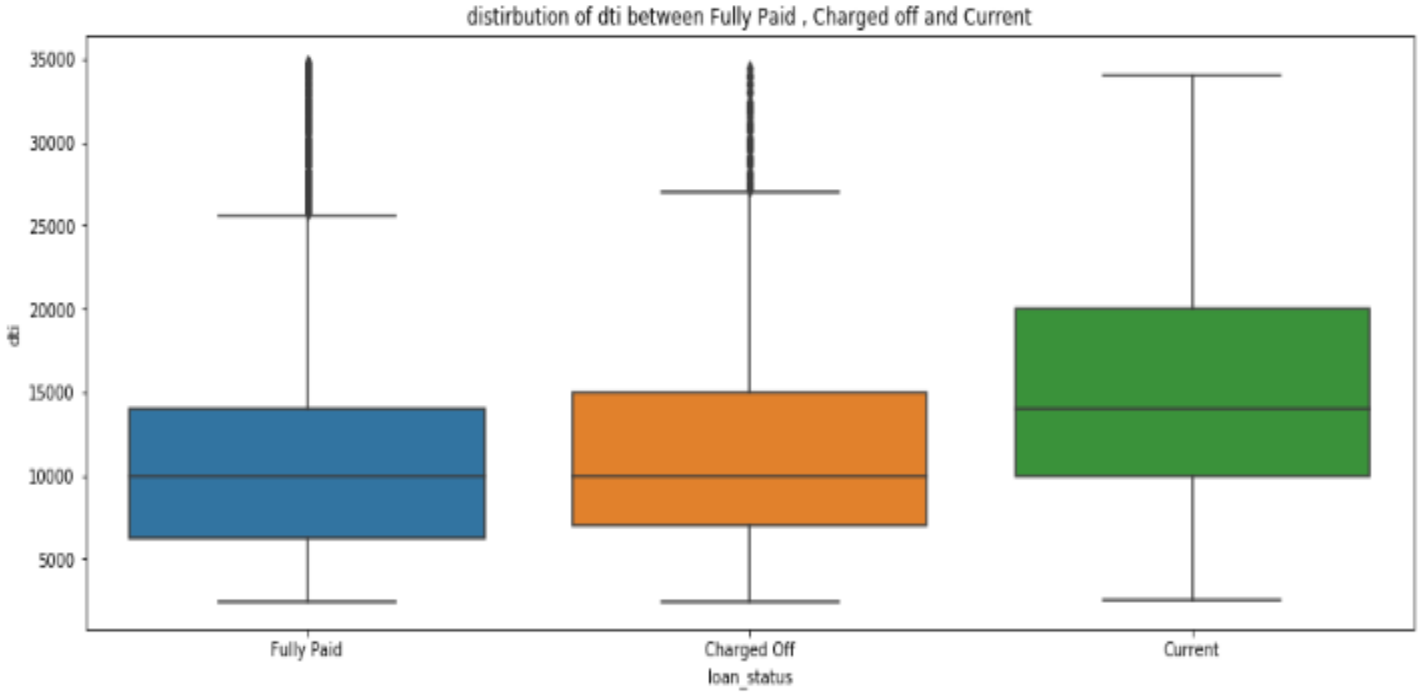
Distribution of DTI



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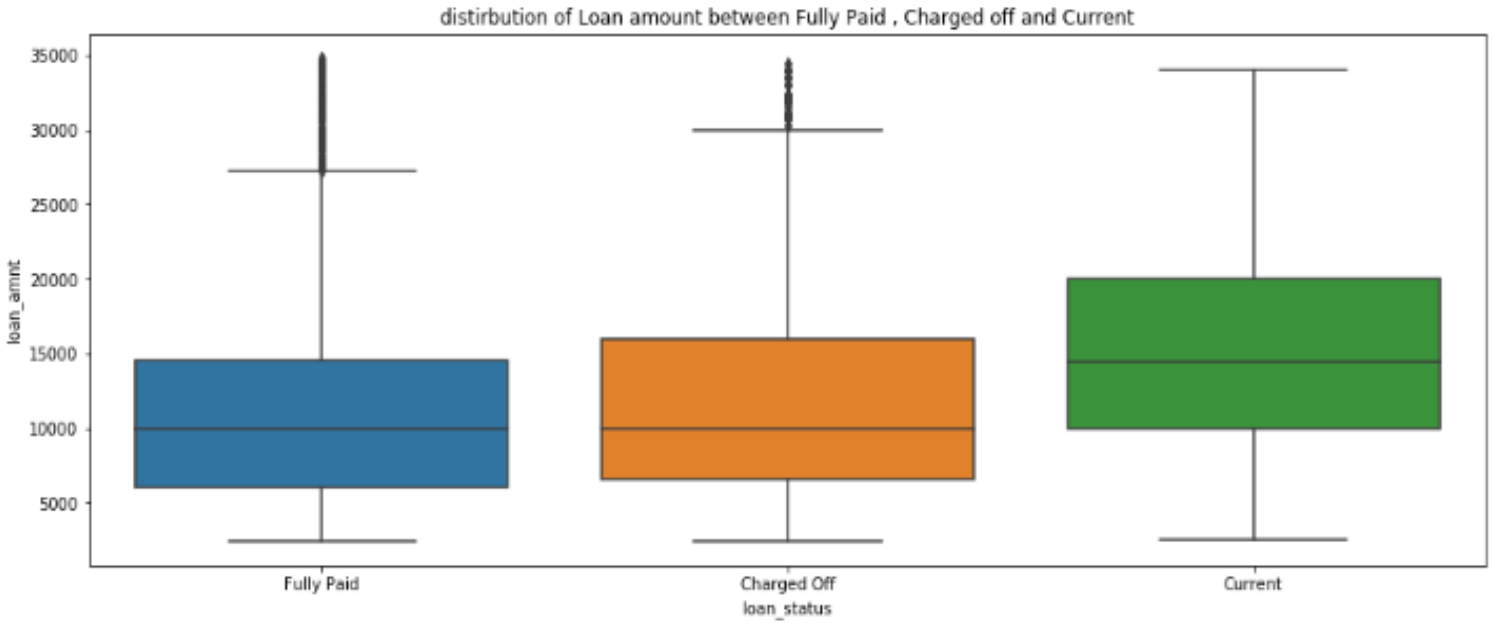
Distribution of Loan Amount



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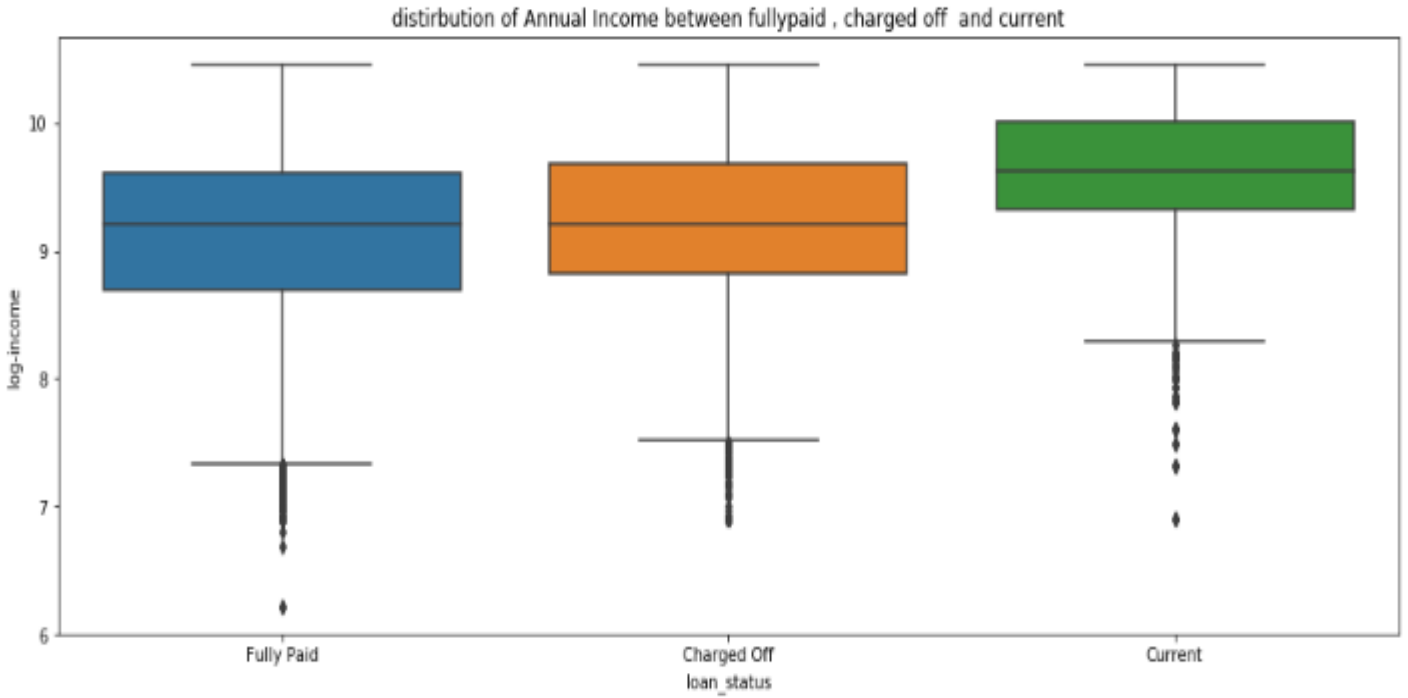
Distribution of Annual Income



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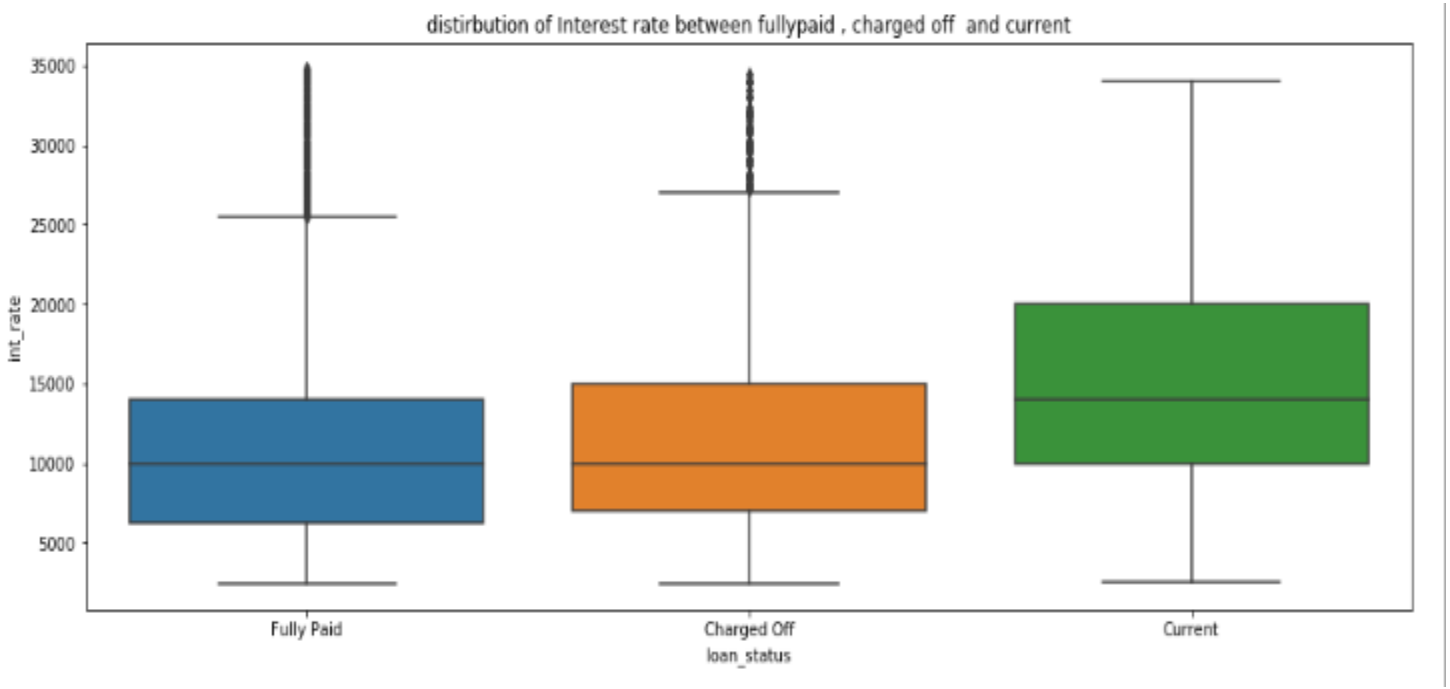
Distribution of Interest Rate



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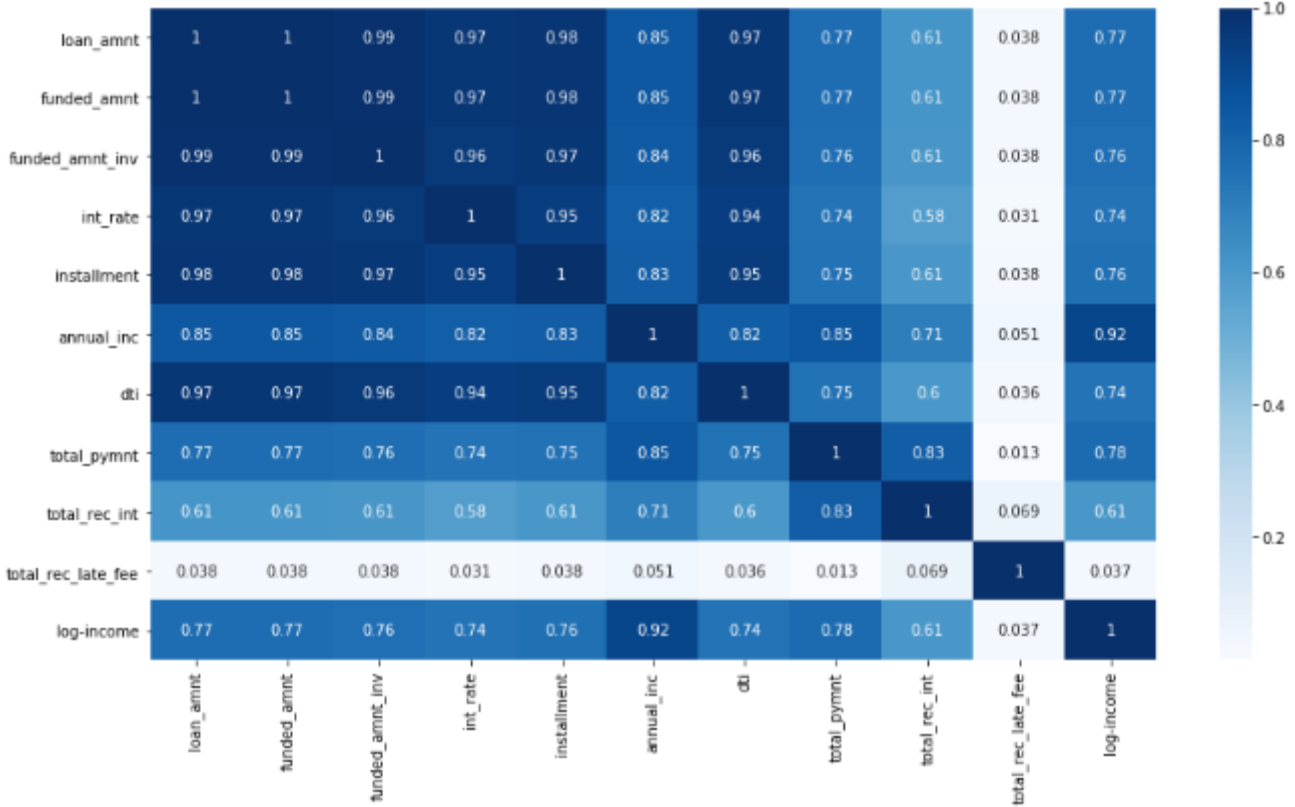
Heat Map with the continuous variables



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Bivariate Analysis

Distribution of Interest Rate v/s Term

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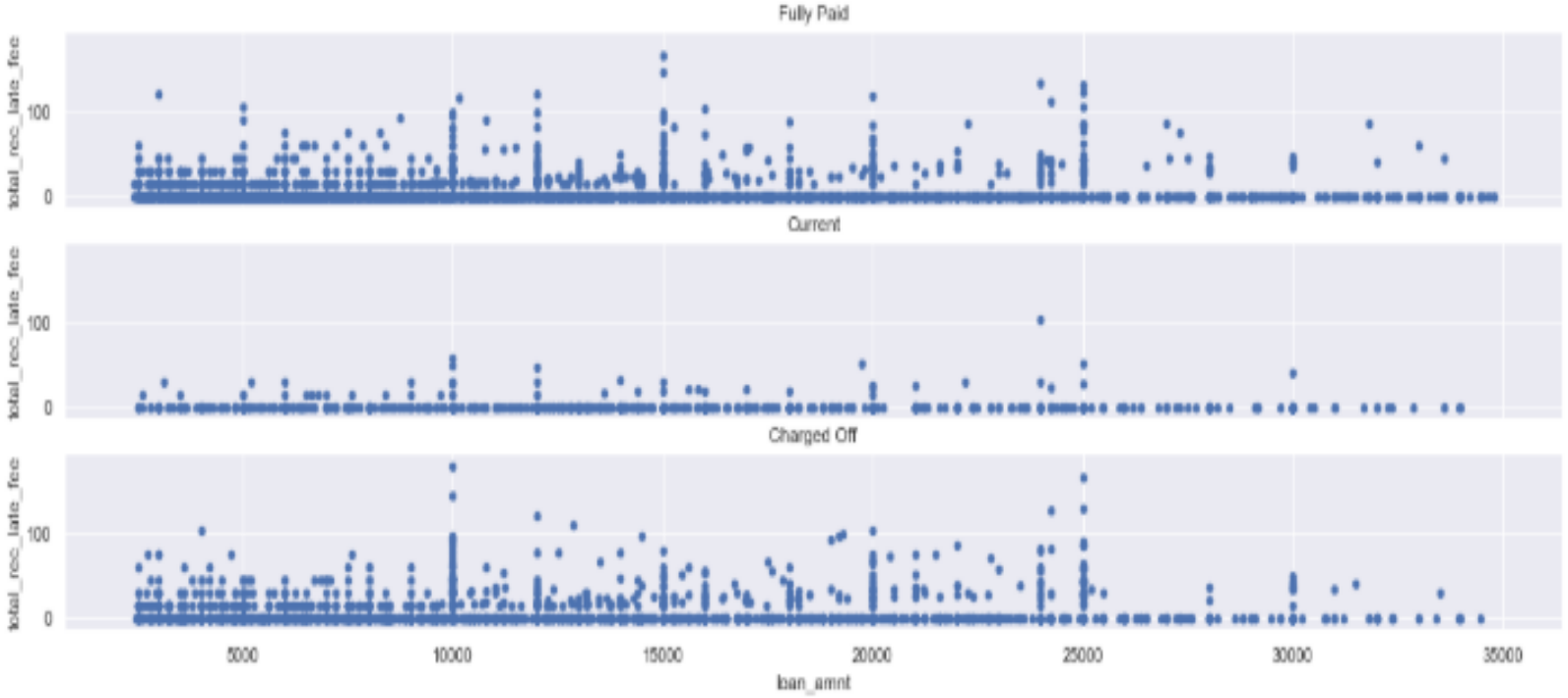
Distribution of loan amount v/s total recovery late fee



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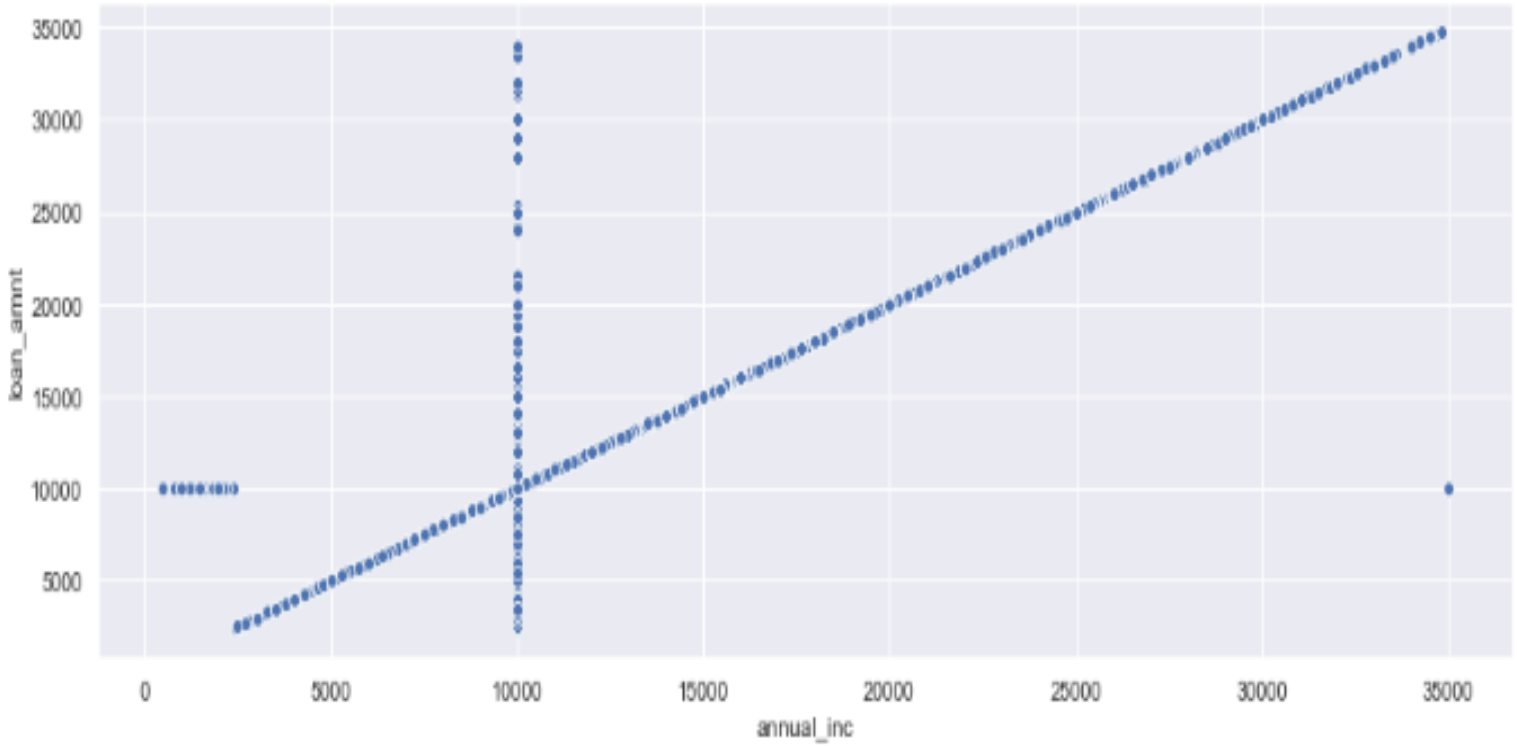
Distribution of Annual Income v/s Loan Amount



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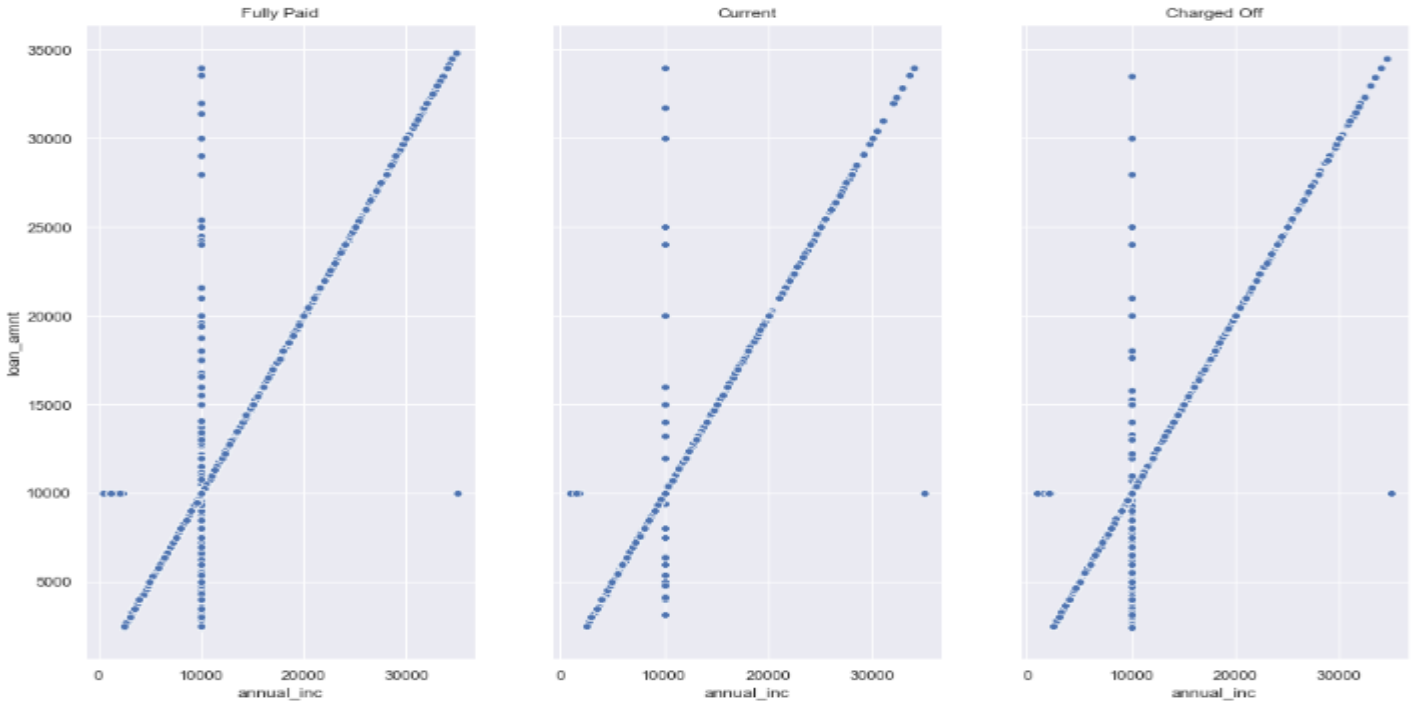
Distribution of Annual Income v/s Loan Amount based on loan status



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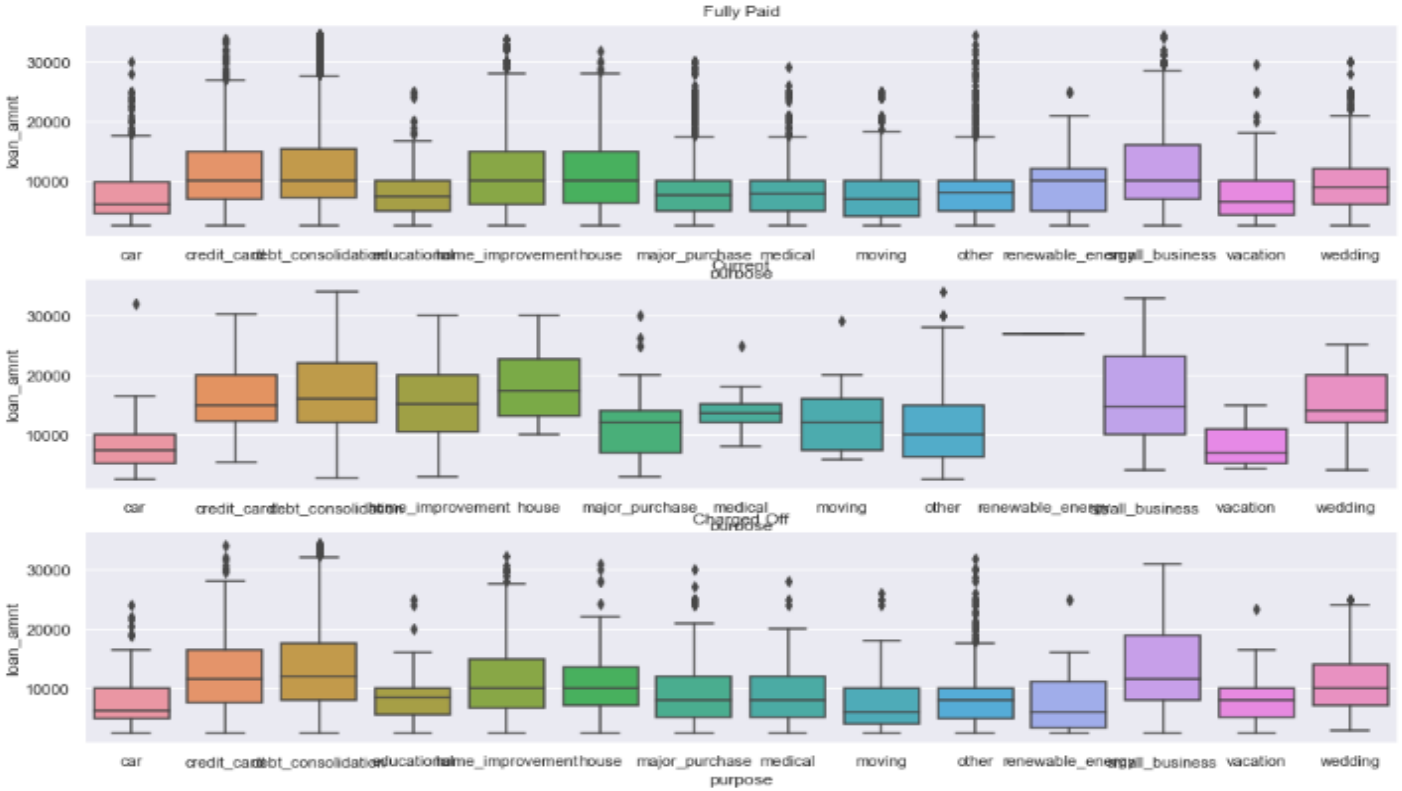
Distribution of Loan Amount v/s Purpose



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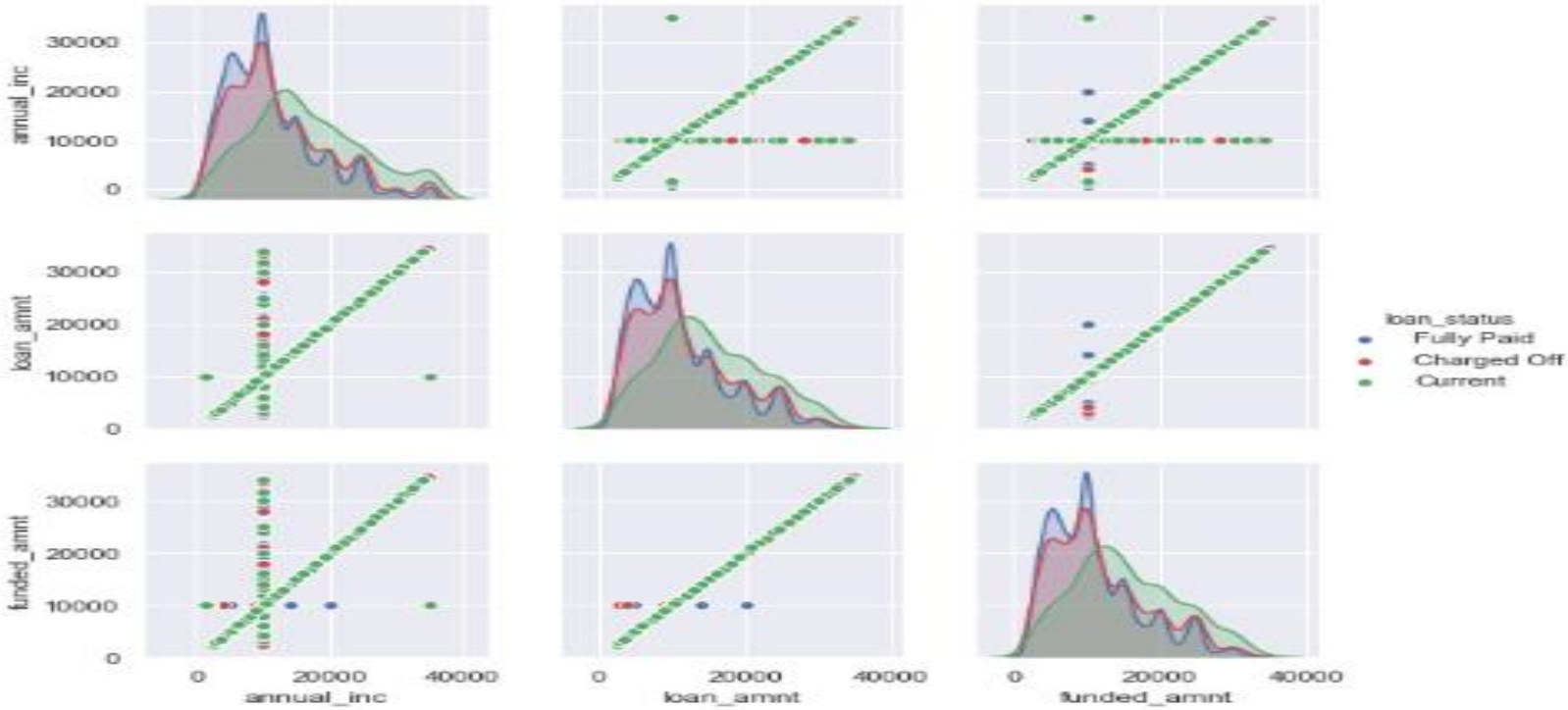
Pair plot for Annual income, loan amount, funded amount and purpose based on loan status



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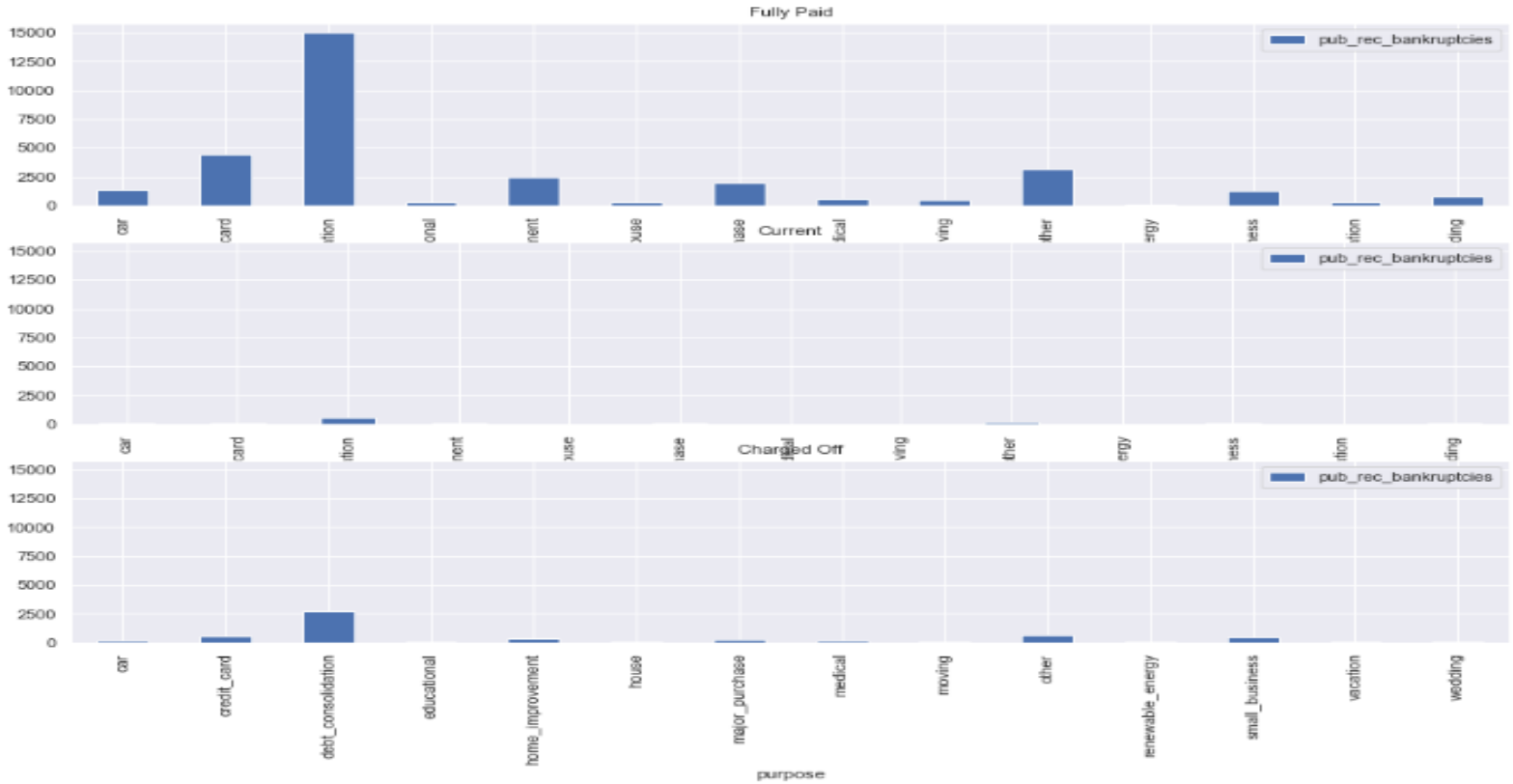
Pivot table for purpose against bankruptcies based on loan status



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Summary

After exploratory analysis of lending club case, following variables need to be verified to prevent from approving the loan for borrowers who likely to default

1. Address state
- a. states with CA,FL,IL,NJ,NY,PA and TX are defaulted more.

2. Purpose
- a. Credit_card, debt_consolidation, small_business and others are defaulted more

3. Employment length
- a. employers with > 10 years and > 1 year are defaulted more

4. Loan amount
- a. Defaulters take higher range of loan amount

5. Interest rate
- a. Defaulters goes for higher range of interest rate

6. Term (tenure)
- a. Defaulters goes for higher tenure(term)

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Thank You