



Lending Club Case Study

Exploratory Data Analysis (EDA)

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Problem Statement

When the company receives a loan application, the company must decide whether to approve the loan or not based on the applicant's profile.

The company needs to find a way to identify the driving factors that can provide insights about the applicants. Lending money to 'risky' applicants is the largest source of financial loss or credit loss.

Based on a list of previous applicants, the aim is to identify patterns which indicate if a person is likely to default, which may be used for taking actions such as denying the loan, reducing the amount of loan, lending (to risky applicants) at a higher interest rate, etc.

Approach to EDA

I have chosen a few variables/attributes of the previous applicants that might provide insights to the defaulting behavior.

Some of the attributes are

- Number of years of employment at the time of receiving the loan
- The debt-to-income ratio of the applicant
- The purpose of taking the loan
- Study the pattern of the other attributes against the loans that were charged-off.

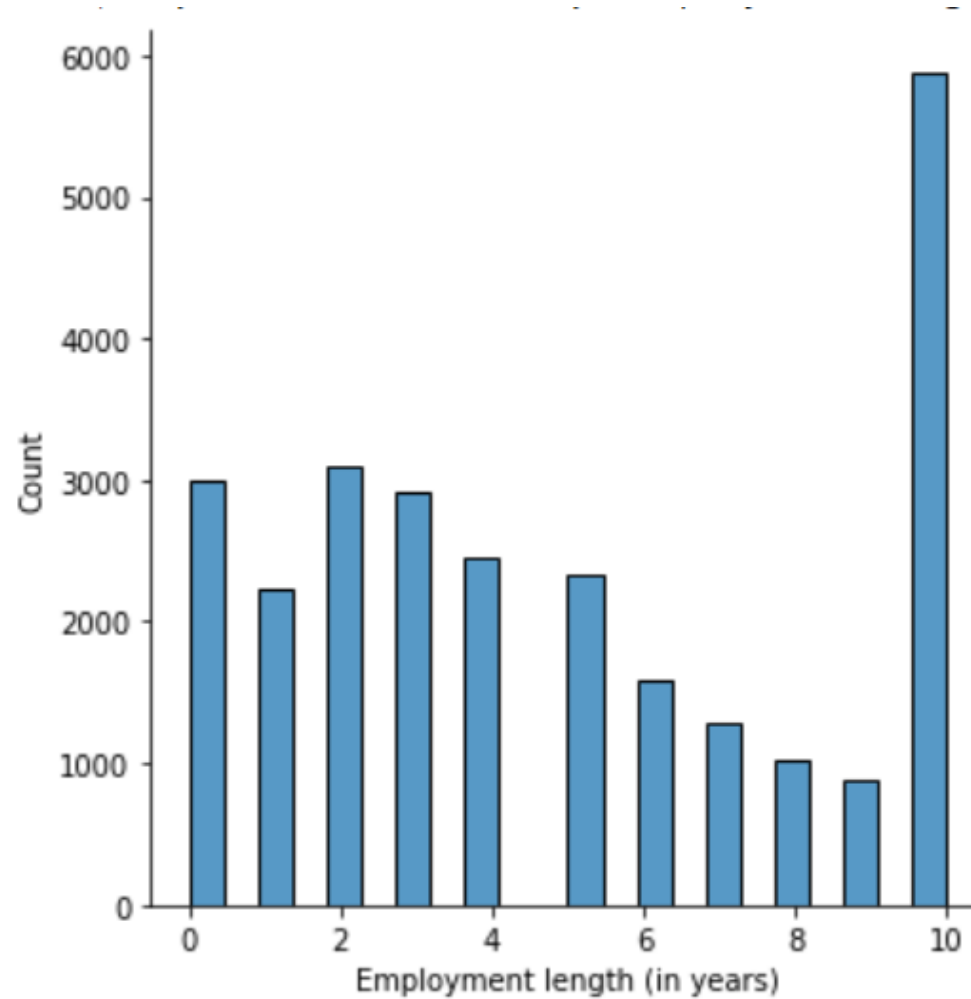
Approach to EDA, continued...

As per the normal process after the data is understood and prepared according to the requirements for analysis, I have plotted a few Univariate and Bivariate charts to show the behavior of the attributes.

A couple of heat maps show the trend of the funding amount and the “debt-to-income(dti)” with the loan status.

The following slides show the charts that are plotted using the Python libraries.

Univariate Analysis



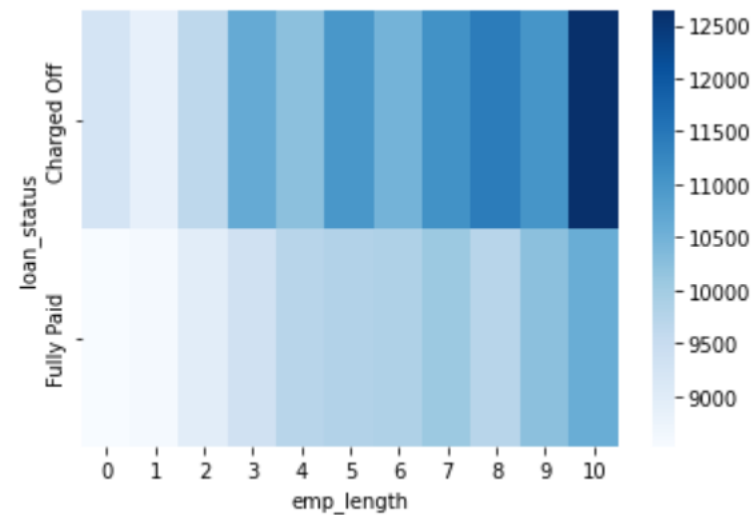
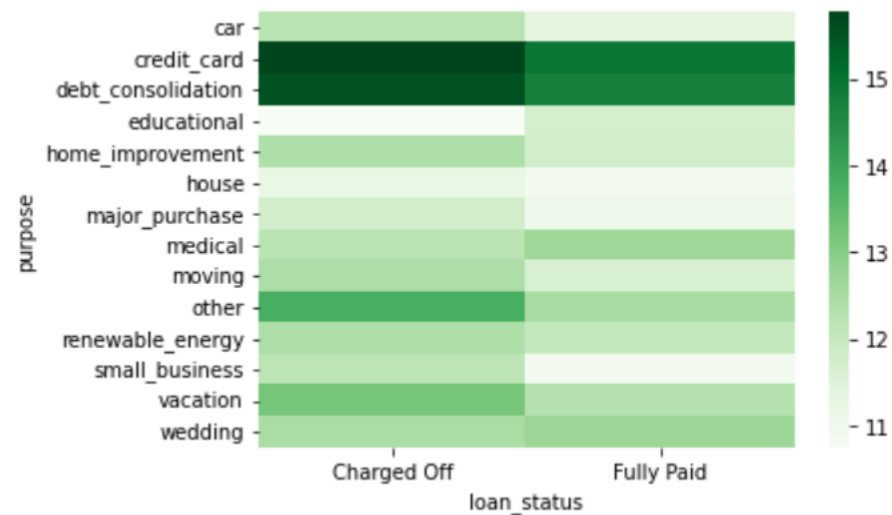
This number of employees with tenure more than 8 years are the most applicants and in need of the loan.

Bivariate Analysis



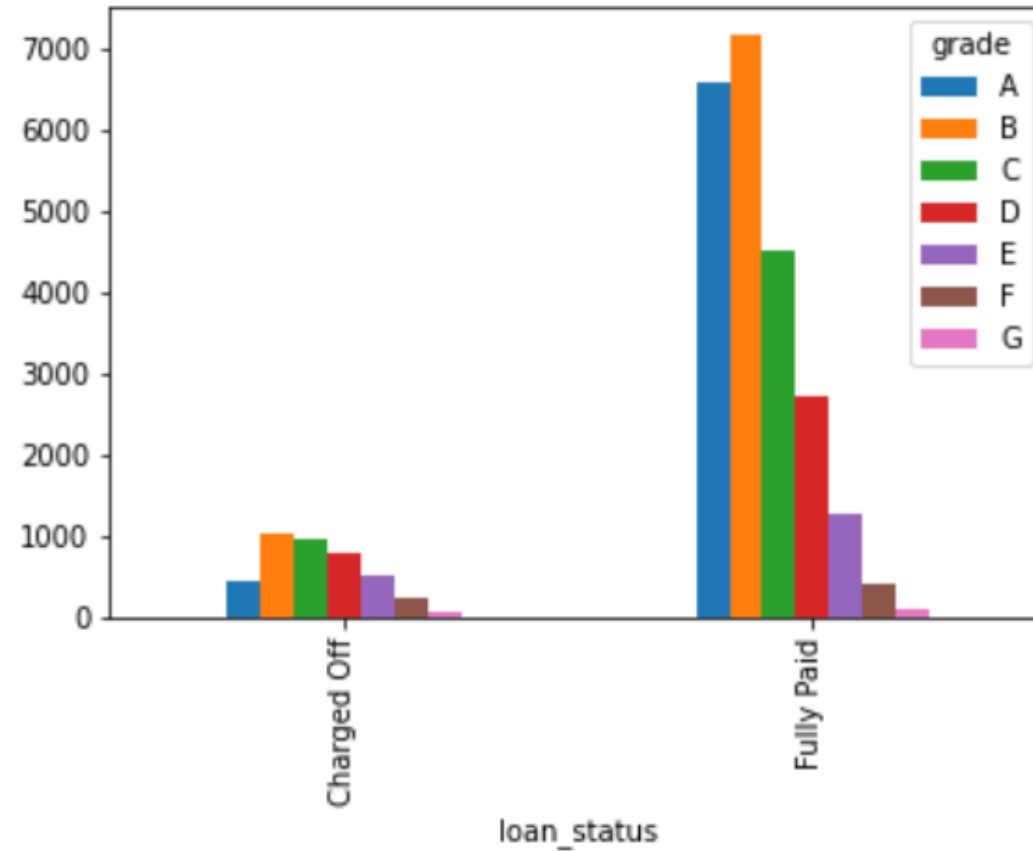
This complements the univariate analysis that the most applicants with charged-off loans are in the employment range 8 – 10 years.

Heat Maps



The heat maps show the main purpose and the amount taken as loan that constitute the applicants whose loans were charged-off.

Crosstab chart



The chart clearly indicates that the Grade of the loan has no part to play in the defaulting pattern and hence need not be considered while approving the loan.

Deductions and Recommendations

- In summary,
 - The employees with more tenure are likely to apply for a loan
 - The most common reason for obtaining the loan is “Debt Consolidation”.
 - The debt-to-income ratios of such applicants is high.
- It is recommended to be cautious while providing loans to such applicants.
- It is mandatory to verify the applicant’s background before providing the loan and solicit a collateral to mitigate the risk.

