

Lending Club Case Study

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Objective

The Objective of this case study is to implement EDA technique on a real world problem and understand the insights and present in a business first manner via presentation.

Benefits of the case study:

- Gives a idea about how EDA is used in real life business problems.
- It also develops a basic understanding of risk analytics in banking and financial services.
- How the data is used to minimize loss of money while lending it to clients.
- It improves our understating of visualization and what charts to use for real life data.

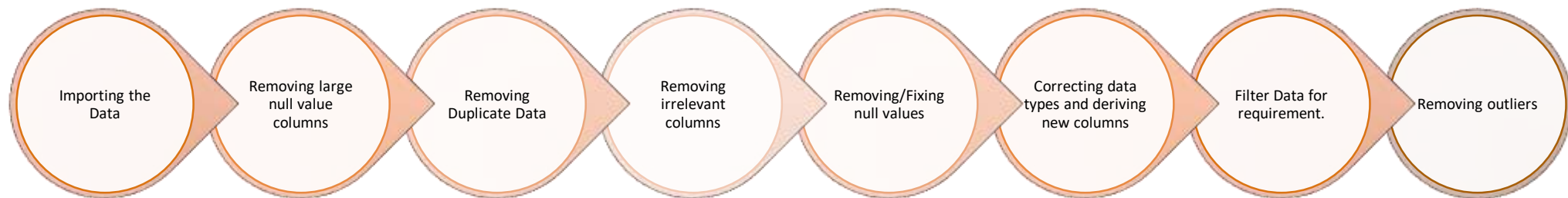
Business Understanding

The business objective is to take a decision whenever they receive a loan application whether to reject or approve based on certain variables.

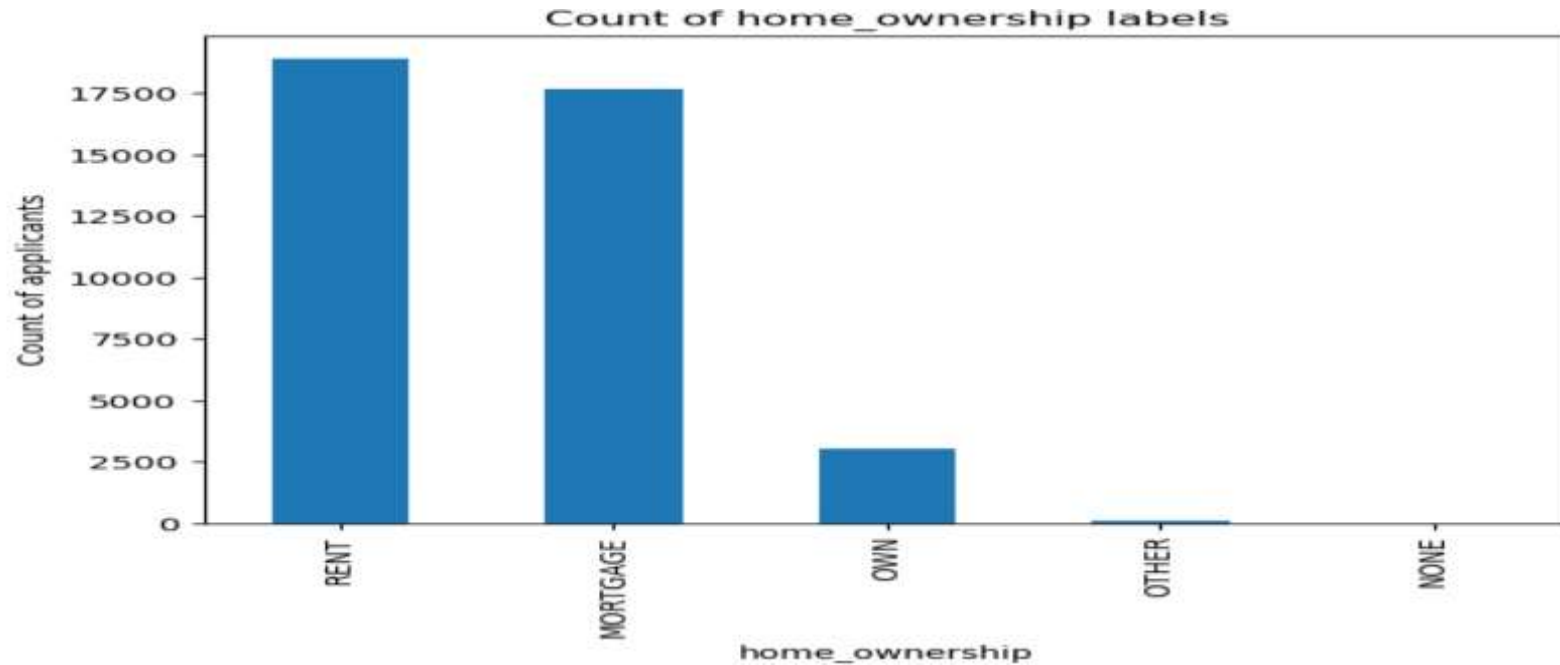
Dataset Details:

The data given below contains information about past loan applicants and whether they 'defaulted' or not. Data has details regarding approved loan not the rejected ones. It has 3 status of loan which is Fully Paid, Current and Charged-Off.

Data Clean-up and preparation process:



Home ownership of the applicant

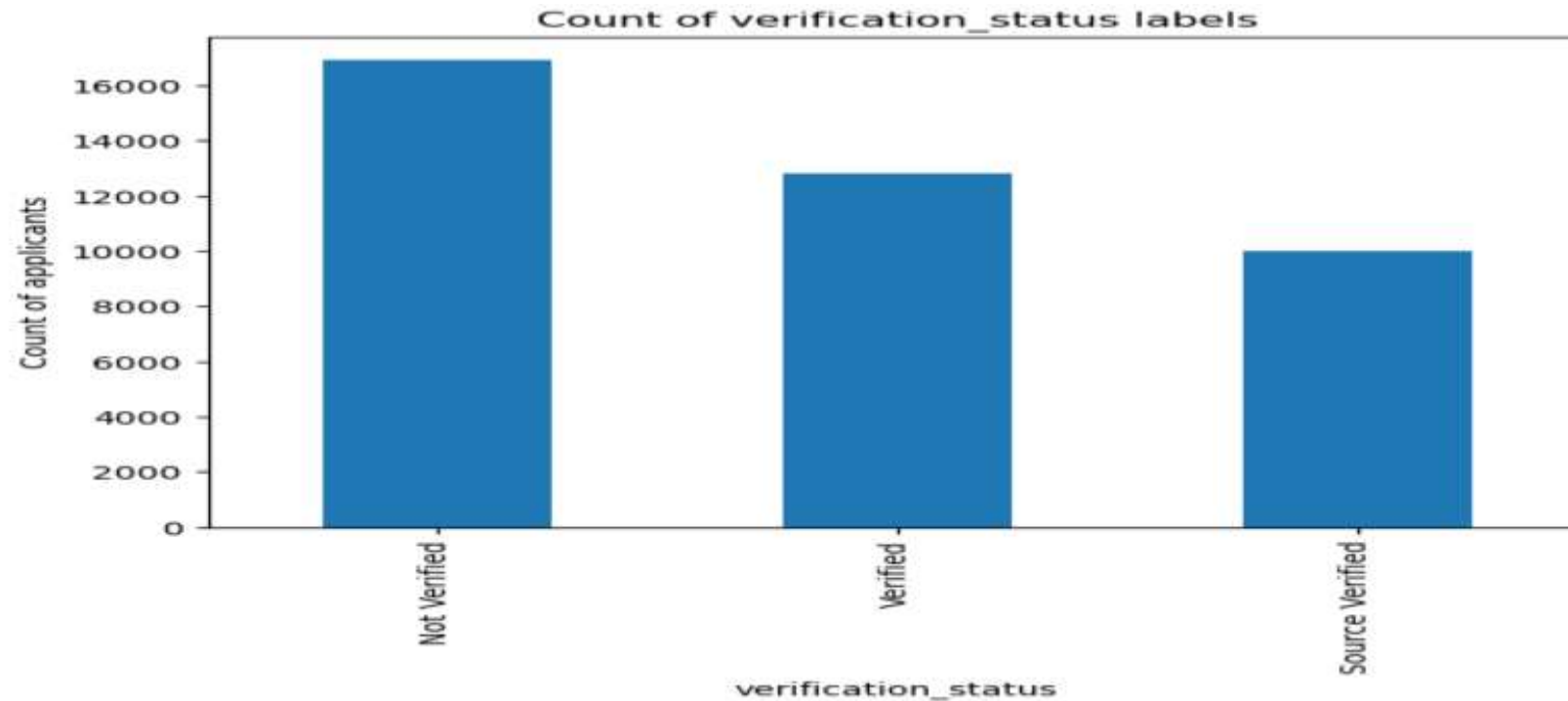


- **Observations:**

Rent and Mortgage have the highest number of loan applicant covering 90% of our data.

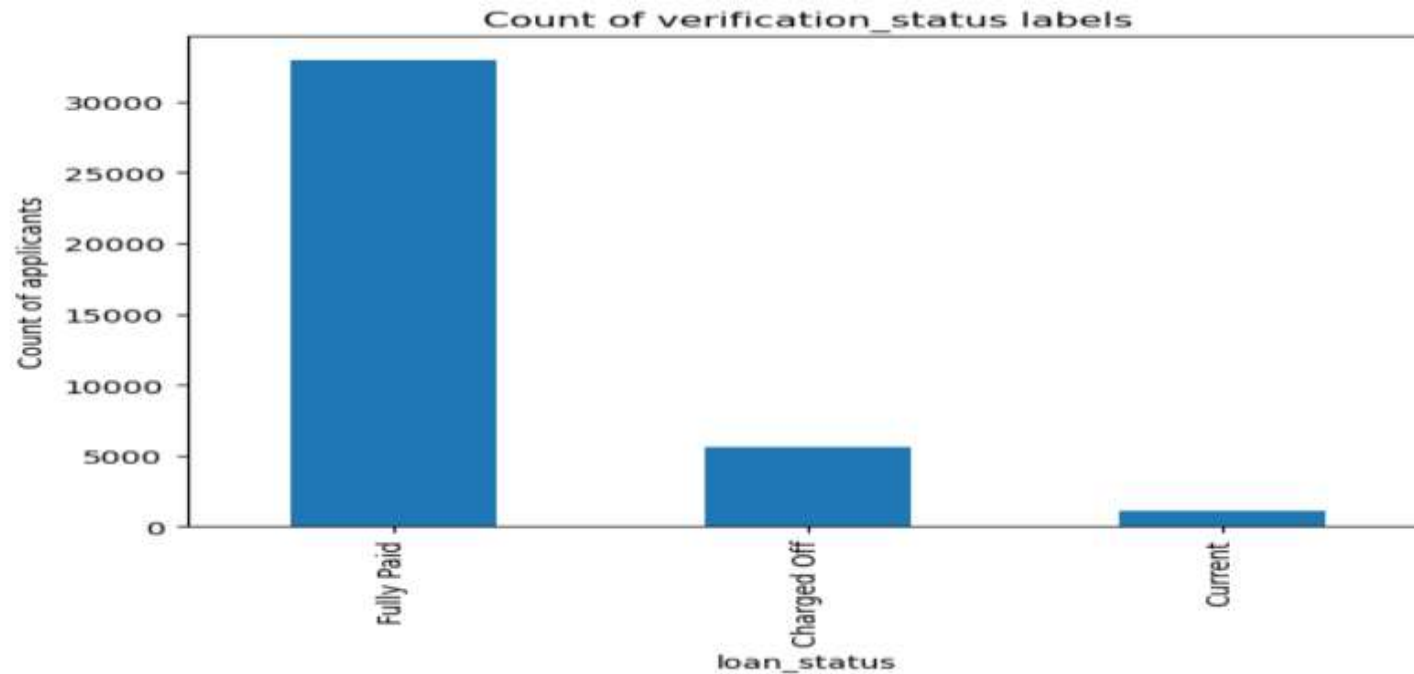
It is fair to assume that, people with own house have better finance management and are less likely to apply for a loan.

Verification Status of the loan application



- **Observation:** High number of applicants (43%) are not verified before lending a loan which might be risk to the lender.

Loan Status - Dependent column

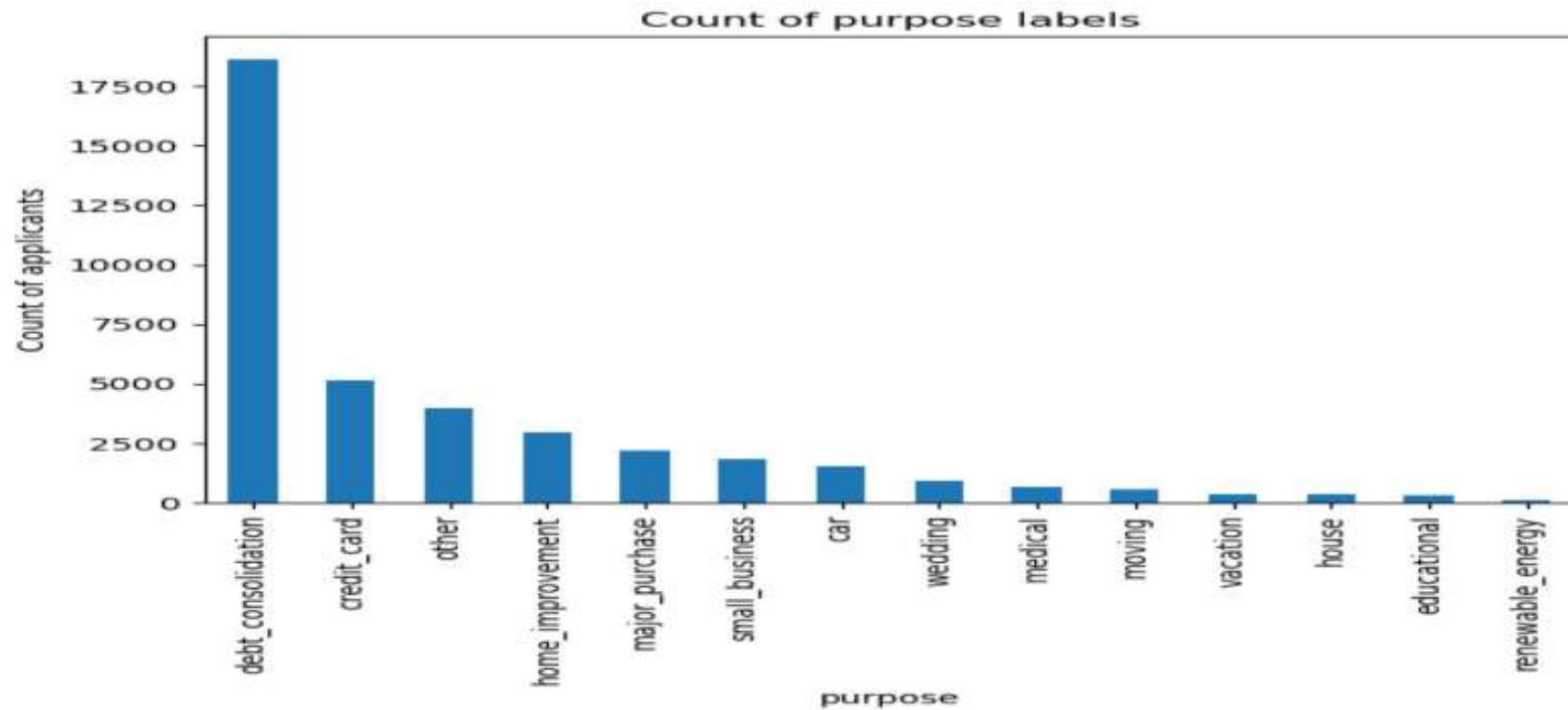


■ Observations:

The loan approved are majorly of hi High chances of Default for Charged Off applicants.

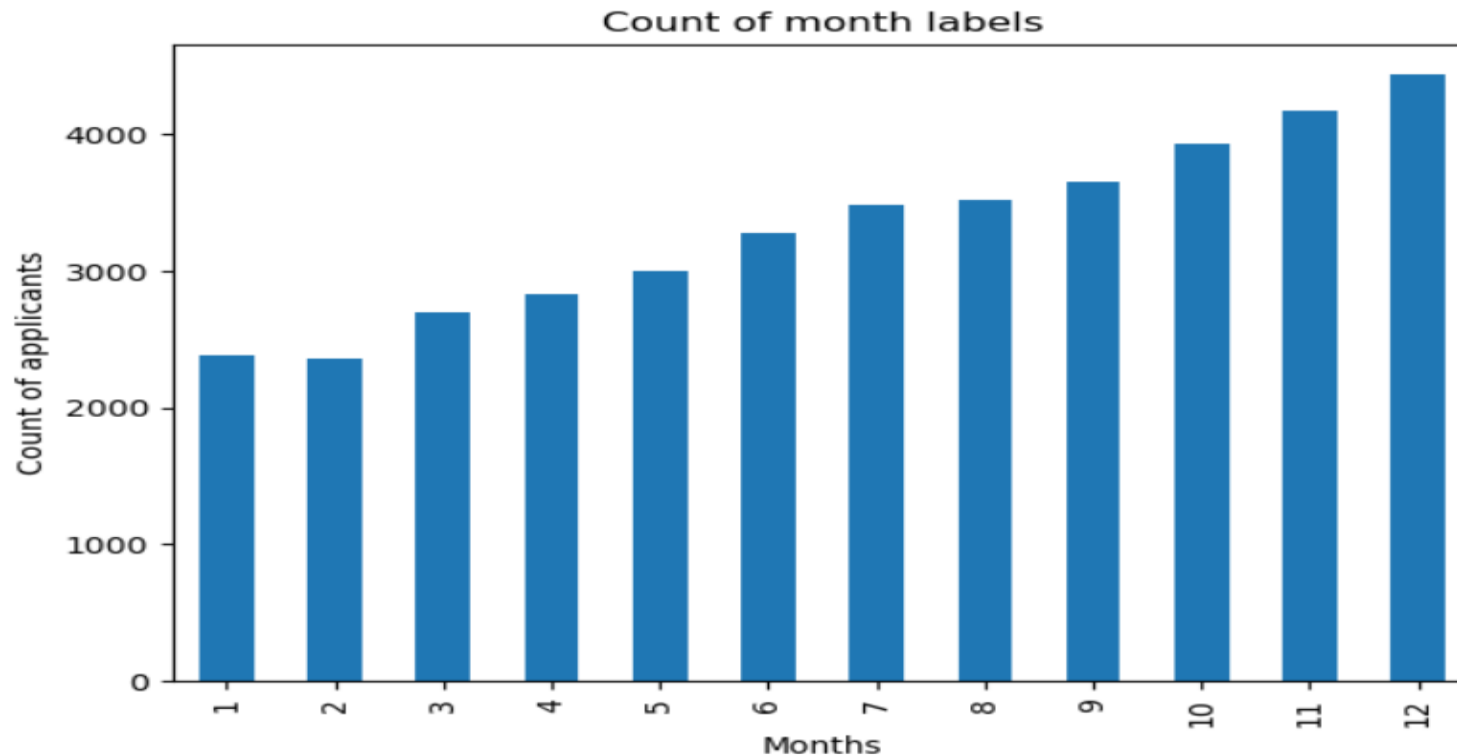
Applicants who are still paying loan may not be able to pay more installment. Check the eligibility.

Purpose of the loan given by applicant



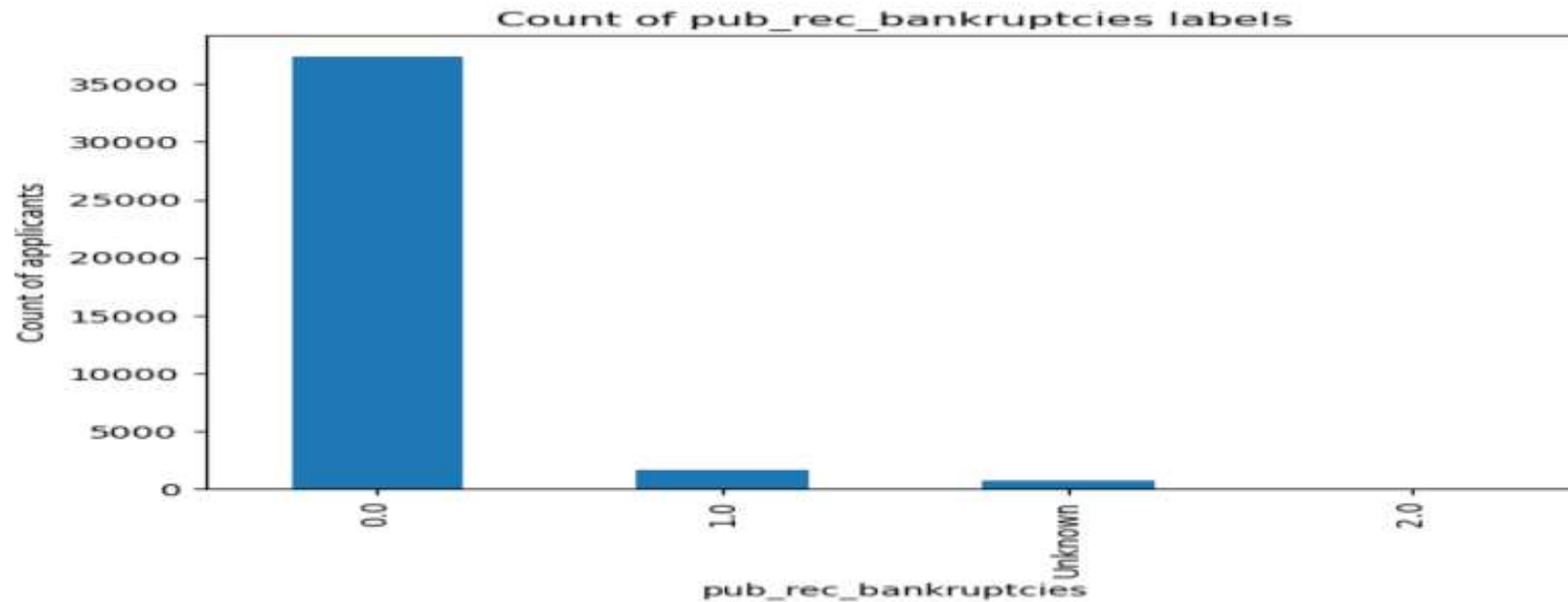
- **Observation:** Debt consolidation signifies mismanagement of financials. Be vary of such applications.

Month on which loan was applied



- **Observation :** More debt at the end of the year indicates more money spent on shopping during year end sales without proper financial planning.

Number of publicly recorded bankruptcies applied by the applicant

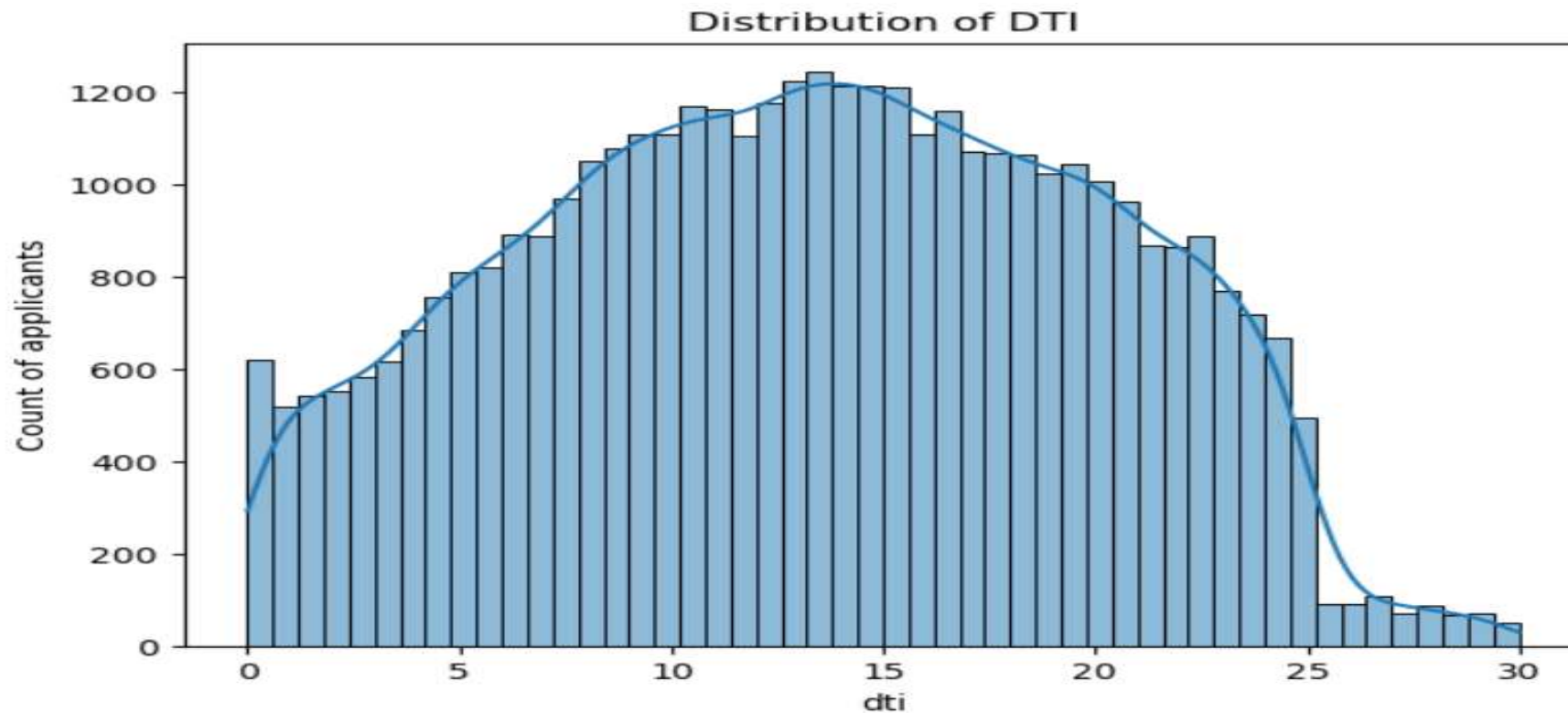


- **Observations:**

Most of the applicants haven't filed bankruptcies.

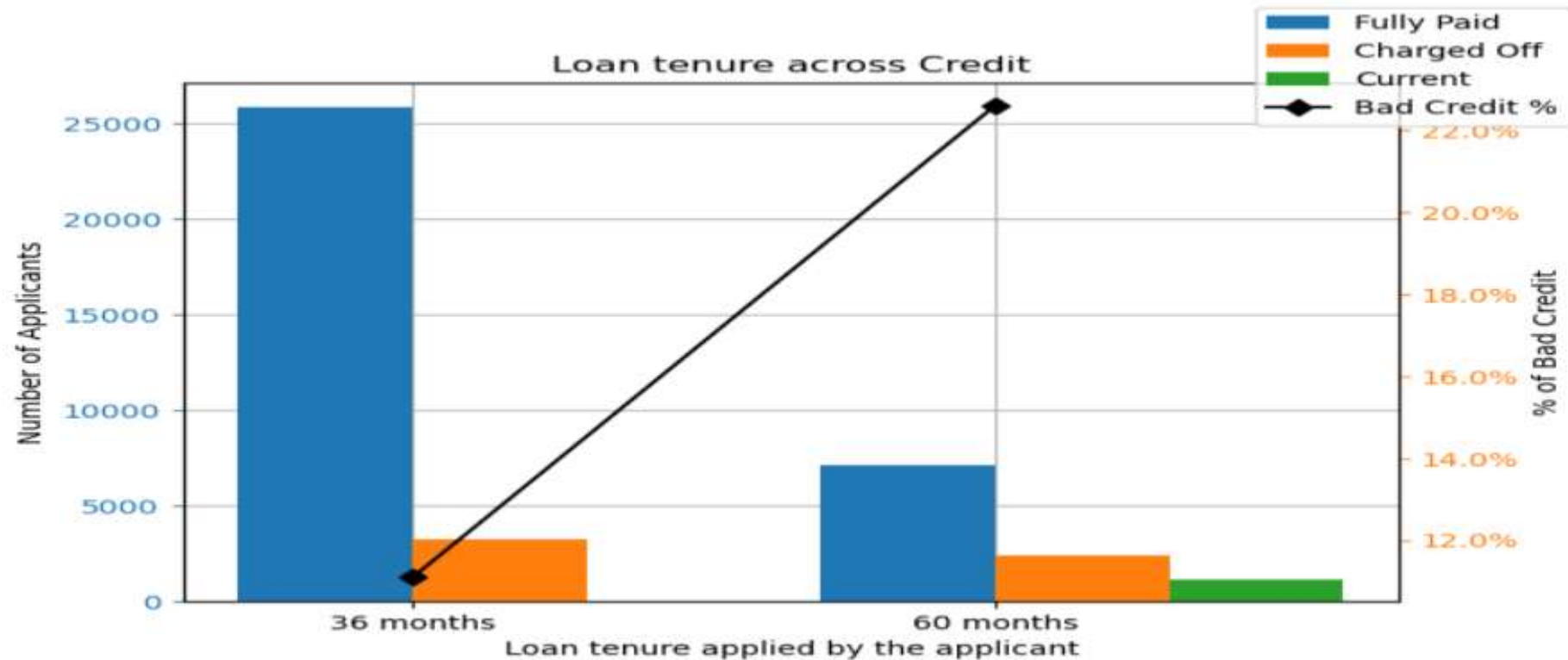
Very few records are available for the labels 1 and 2.

Debt-to-income ratio of the customer



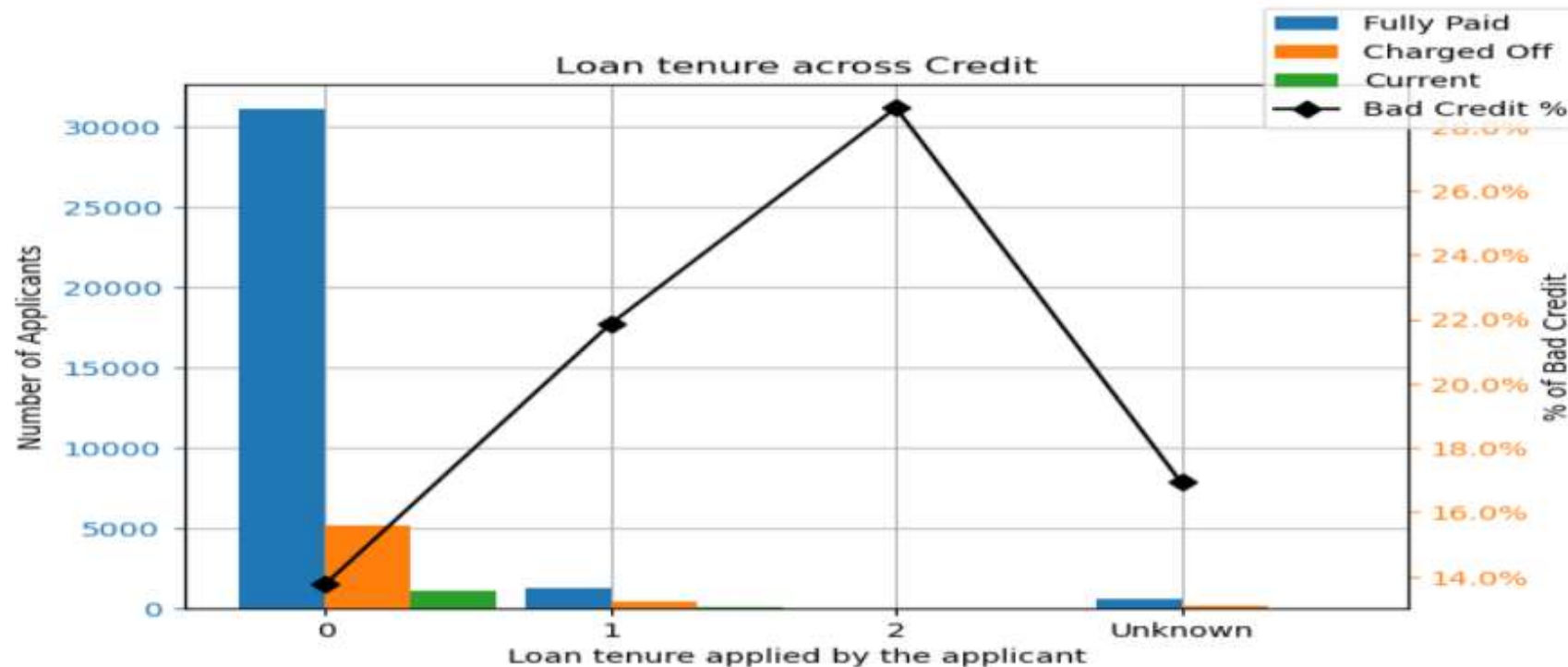
- **Observation:**
Dti follows normal distribution !

Loan tenure to loan status correlation



- **Observation:**
Higher tenure have higher possibility for default.

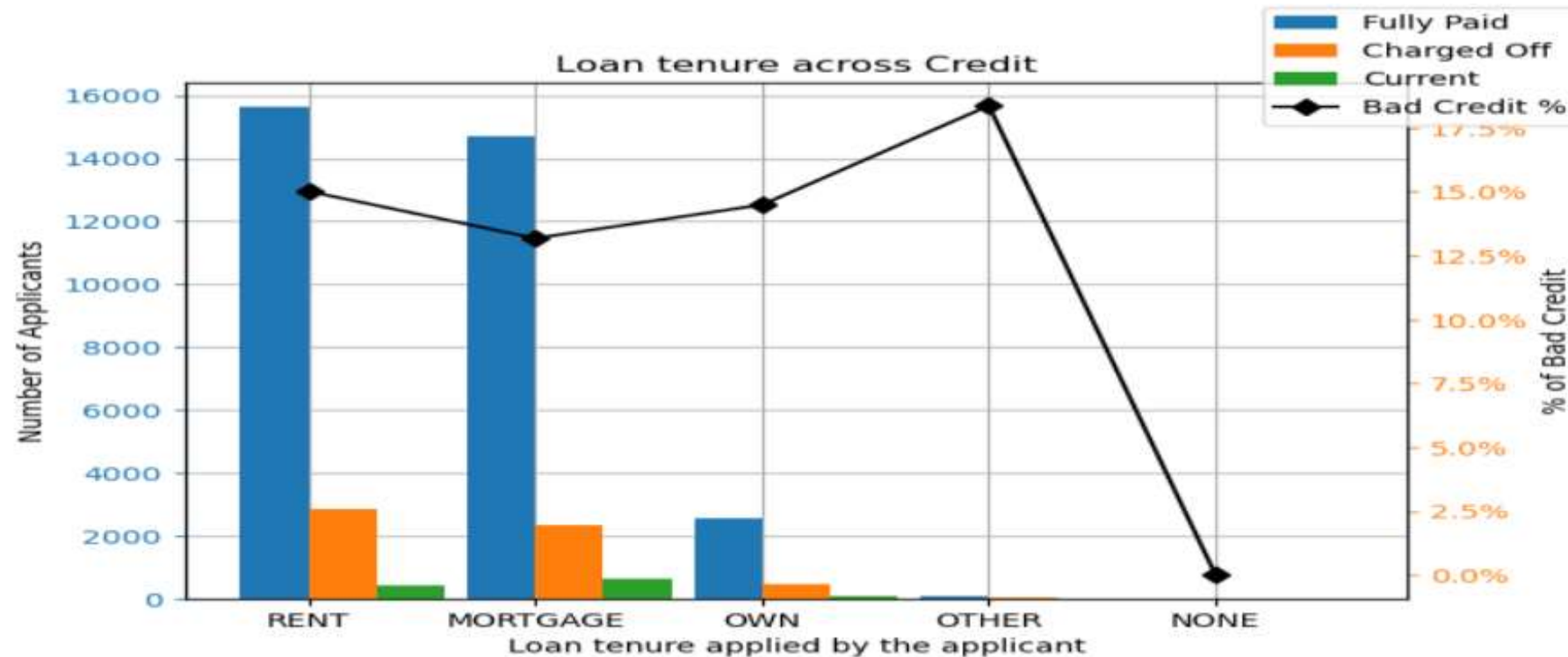
Loan status and public bankruptcies of the applicant correlation



■ Observation:

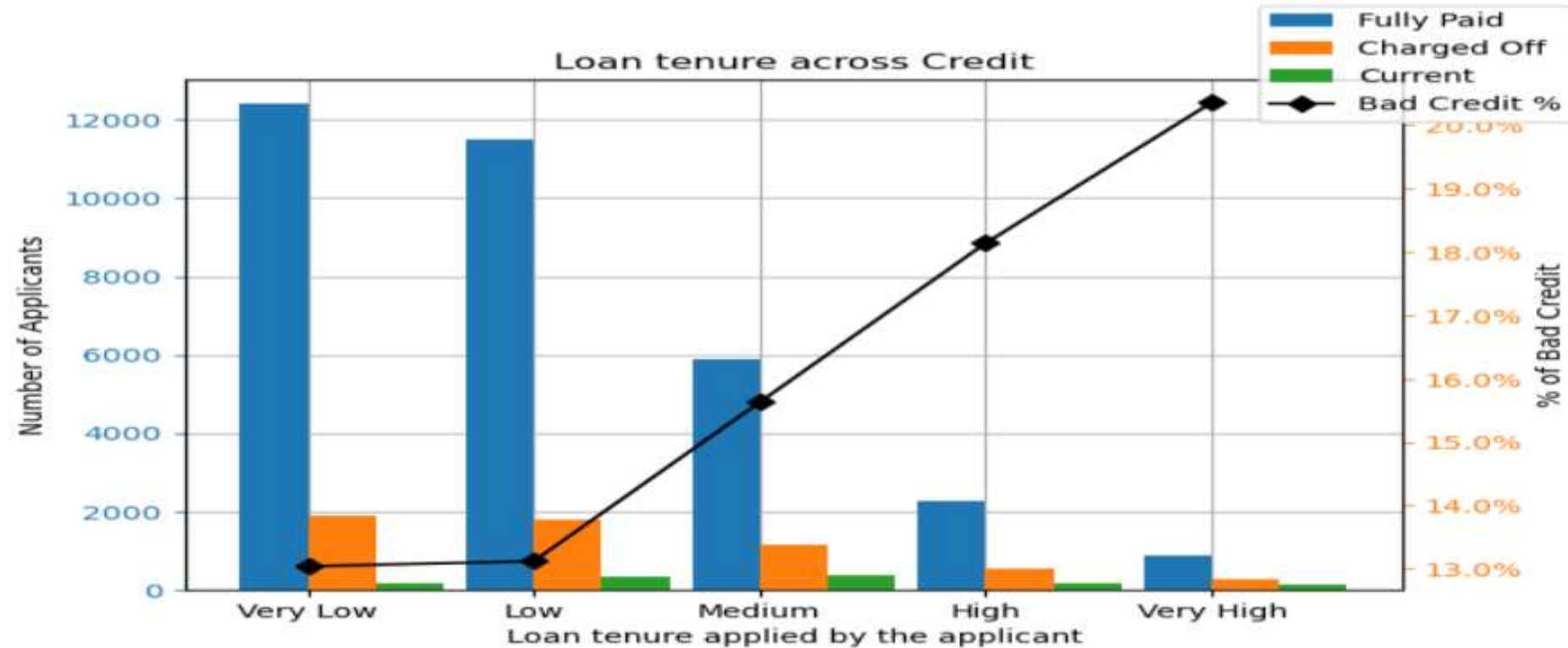
Applicants with public record of bankruptcies have higher default rates.

Loan status and home ownership of the applicant correlation



- **Observation:**
No trend is observed with home ownership attribute.

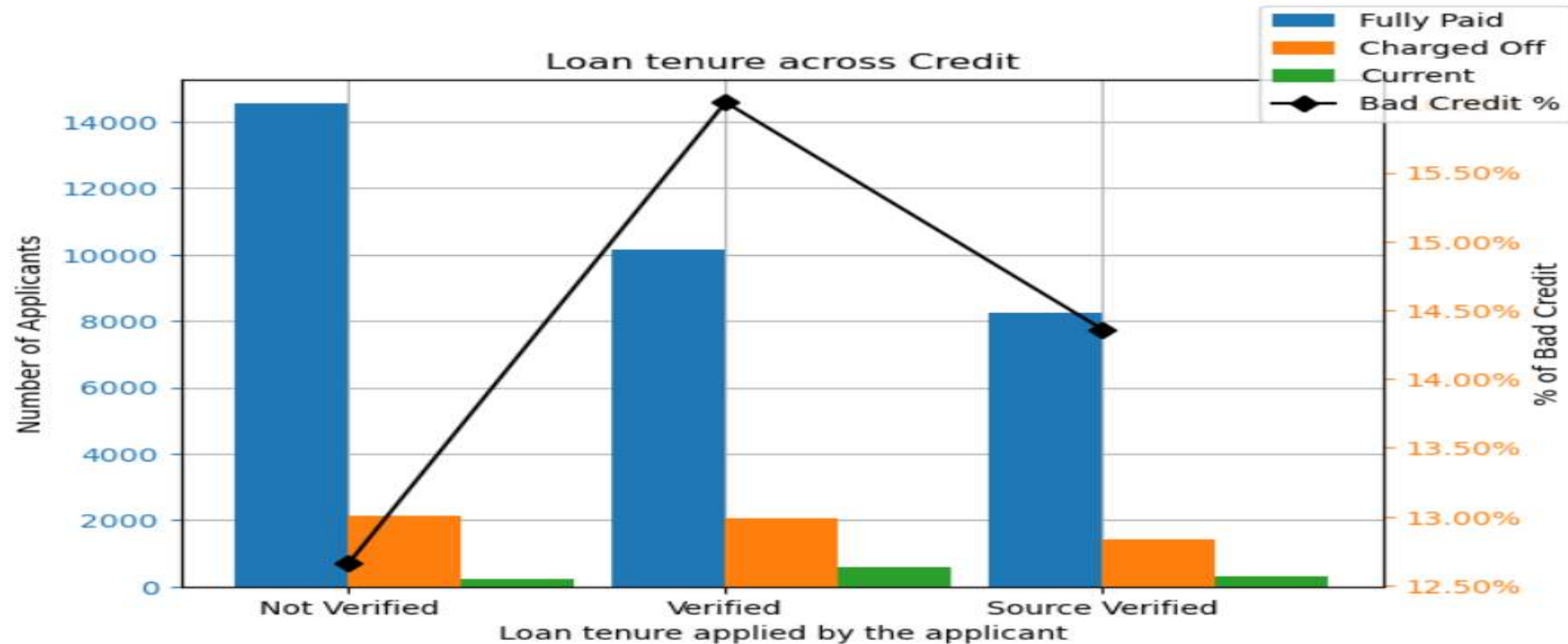
Loan status and loan amount of the applicant correlation



■ Observation:

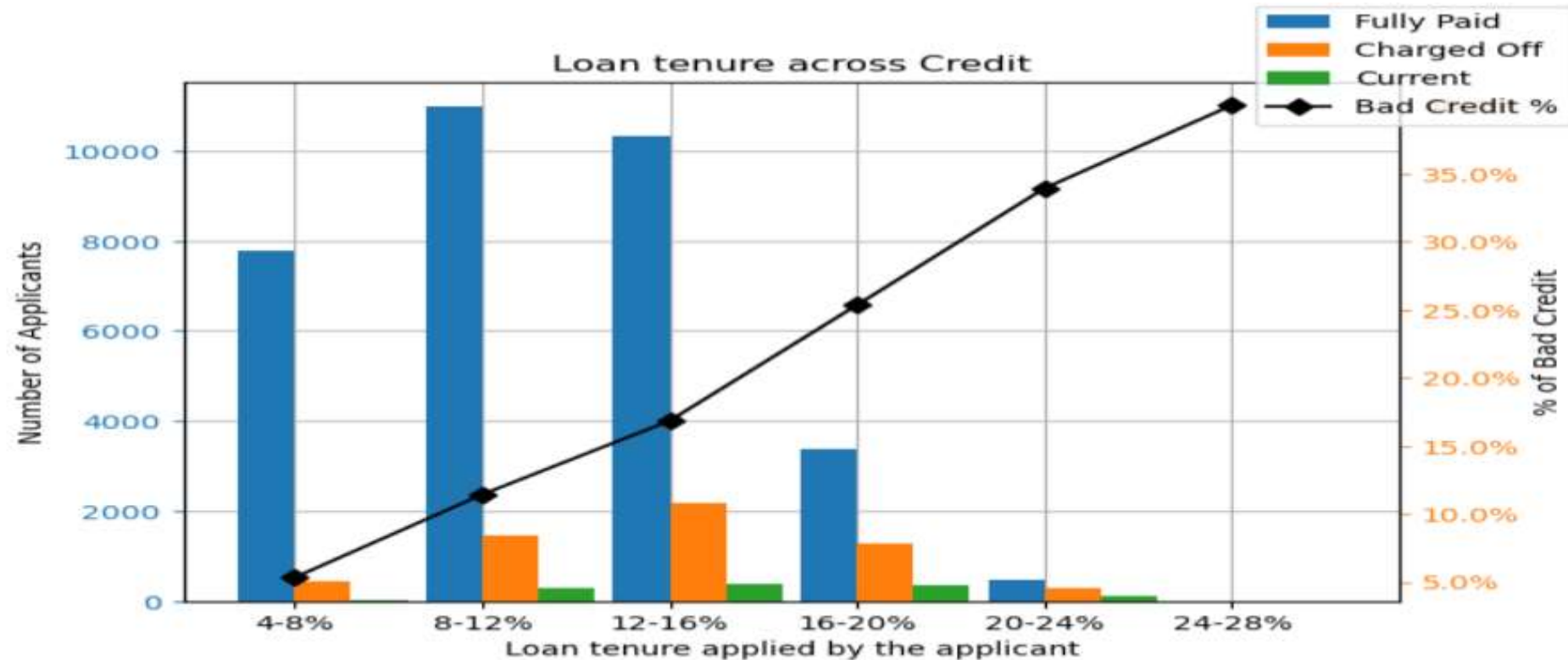
Very Low and Low loan have lower percentage of defaults. It increase with the loan amounts.

Loan status and Verification Status of the application correlation



- **Observation:**
No trend observed using verification status.

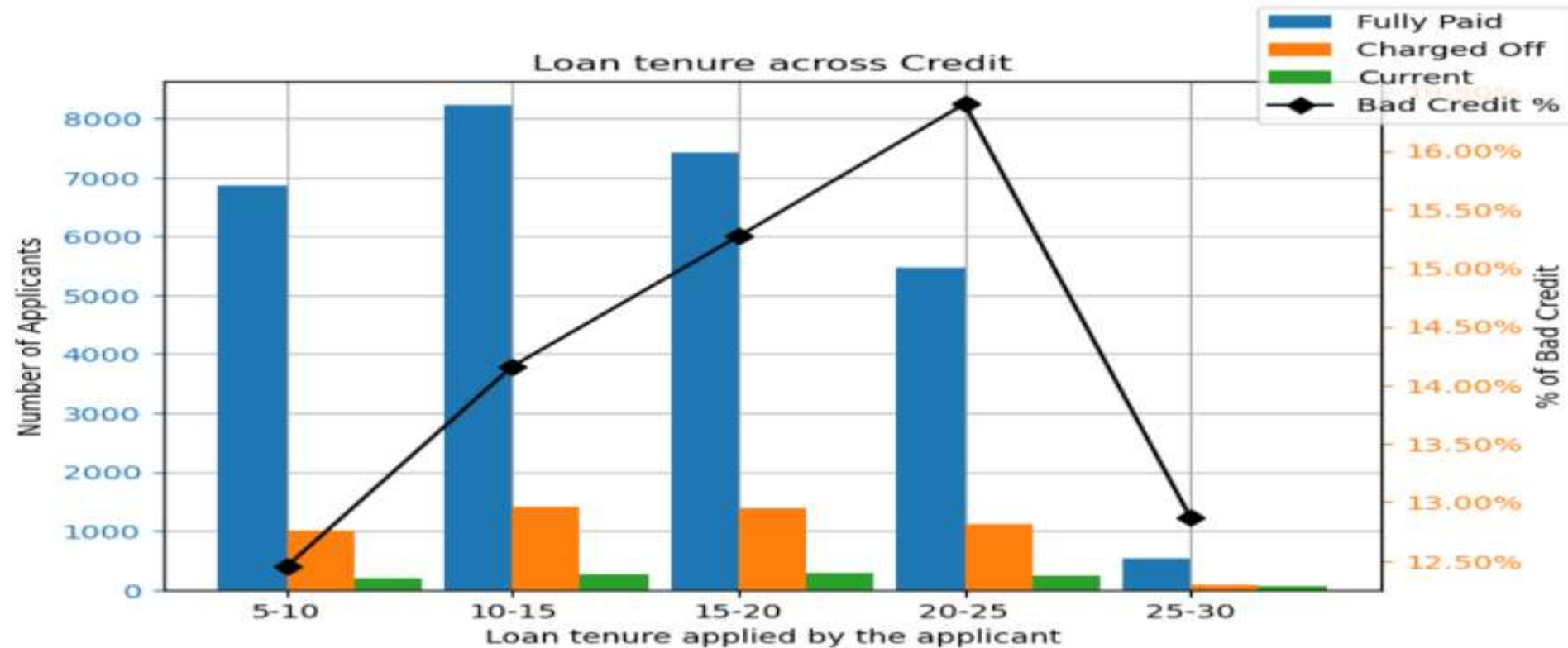
Loan status and interest rates of the loan correlation



■ Observation:

Applicants who availed loans with lower interest rates have lower defaults.

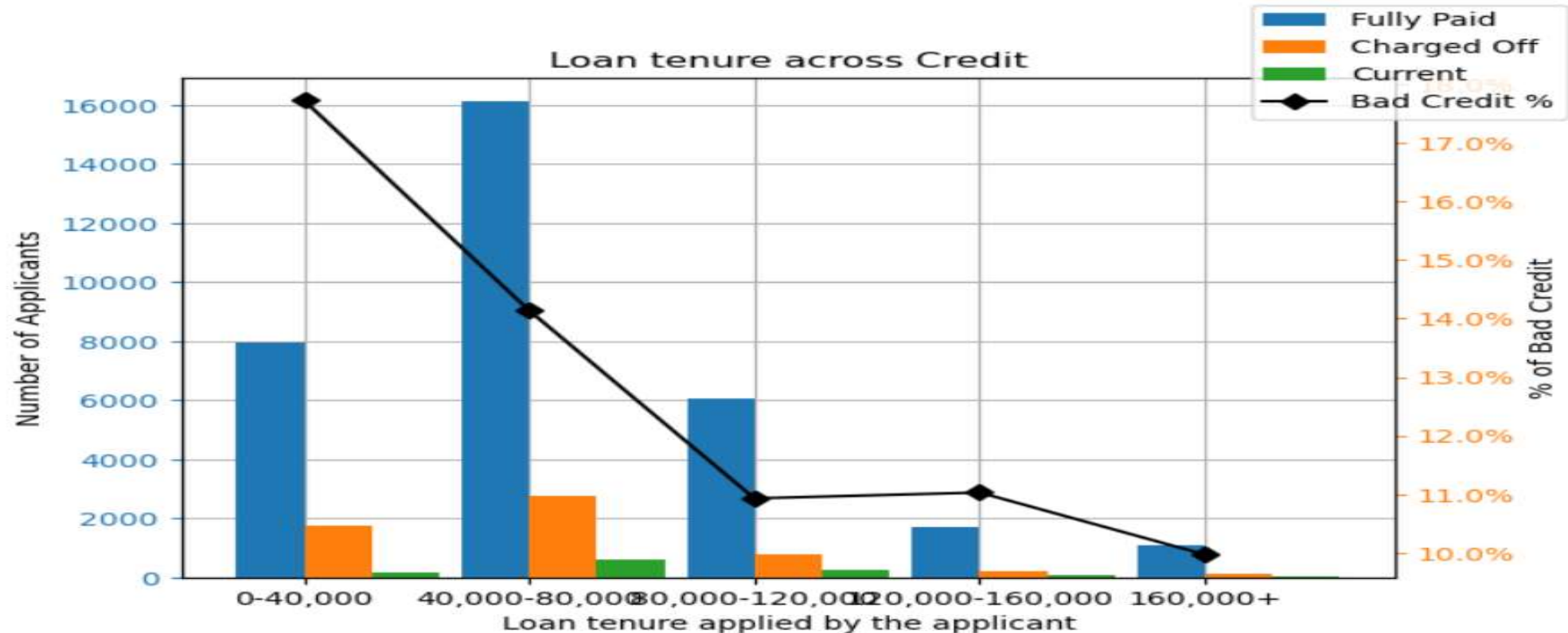
Loan status and debt-to-income ratio correlation



- **Observation:**

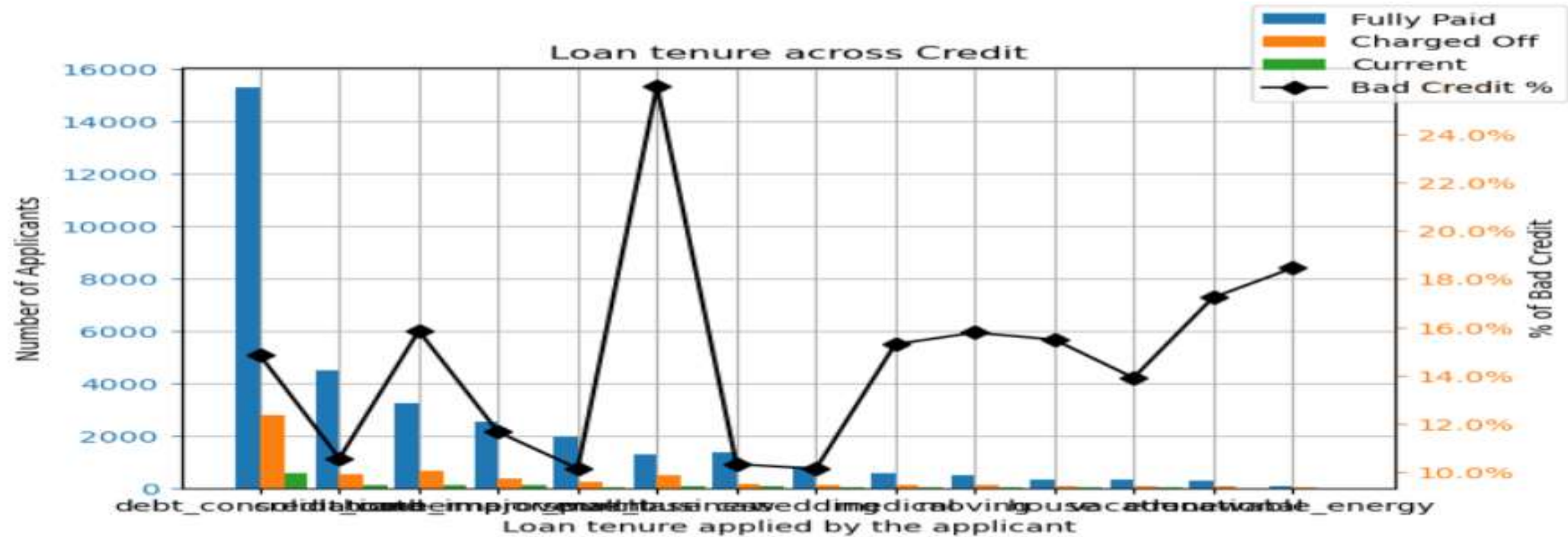
Debt to income is directly proportional to the bad credit %.

Loan status and annul_inc of the applicant correlation



- **Observation:**
Applicants with lower income have higher bad credits %.

Loan status and purpose of loan correlation



■ Observation:

Small business tend to default more than others. This might be due to the high risk involved in running a business..

Recommendations

Major Driving factor which can be used to predict the chance of defaulting and avoiding Credit Loss:

1. Home ownership of the applicant
2. Verification Status of the loan application
3. Loan Status - Dependent column
4. Purpose of the loan given by applicant
5. Month on which loan was applied
6. Number of publicly recorded bankruptcies applied by the applicant
7. Debt-to-income ratio of the customer
8. Loan tenure to loan status correlation

Recommendations

- 9. Loan status and public bankruptcies of the applicant correlation
- 10. Loan status and home ownership of the applicant correlation
- 11. Loan status and loan amount of the applicant correlation
- 12. Loan status and Verification Status of the application correlation
- 13. Loan status and interest rates of the loan correlation
- 14. Loan status and debt-to-income ratio correlation
- 15. Loan status and annul_inc of the applicant correlation
- 16. Loan status and purpose of loan correlation