

## **Landing club case study**

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# Step-1: Identify the variables that affect Loan Decision

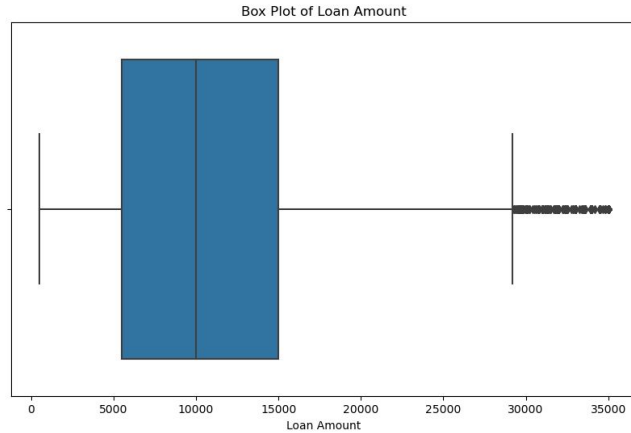
I identified the variables that are usually taken into considerations at the time of deciding on loan.

Some obvious once are:

- Loan Amount
- Loan Type
- Term
- Annual Income
- Interest Rate
- Public Records
- Average current balance
- Delinquent Amount
- Delinquent Accounts
- Debt to Income ratio
- Charge off in last 12 months

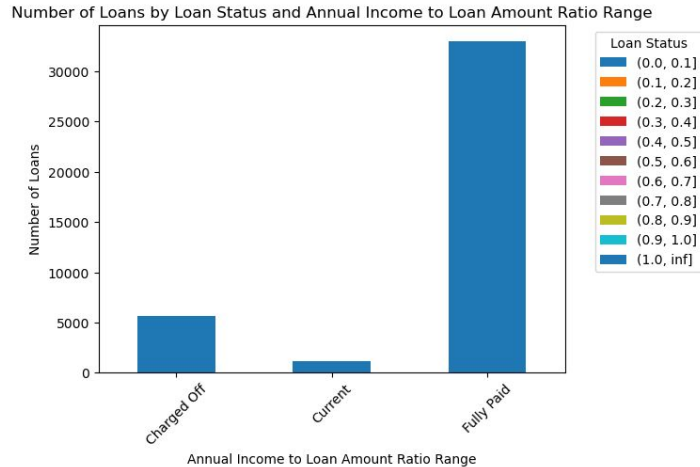
## Loan Amount: `loan_amnt`

We can always do Univariate analysis of loan amount but we will not be getting any useful insight out of it. Because one amount can be easy to pay for one person but hard to pay for another. Therefore, this must be compared to another variable like annual income e.t.c.



# Annual Income & Loan Amount

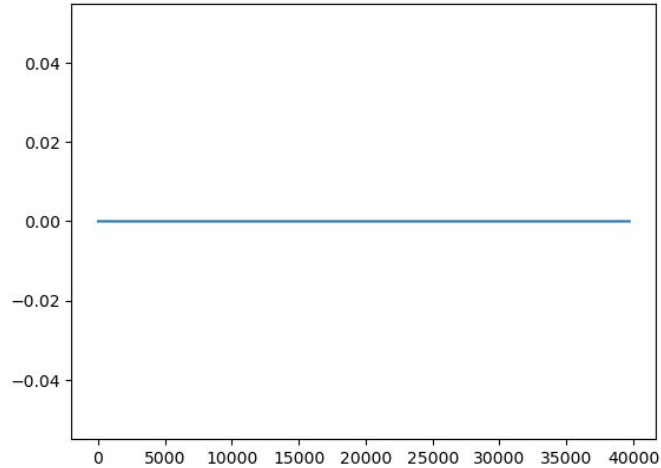
Now Loan amount can make sense of we use annual income. This is a Bivariate analysis because here we are exploring relation between two variables. In this case, we're exploring how loan status (categorical) varies with changes in annual income (continuous) and loan amount (continuous).



In this analysis we came to know that its positive to have a good Income/Debt ration.

# Delinquent Accounts

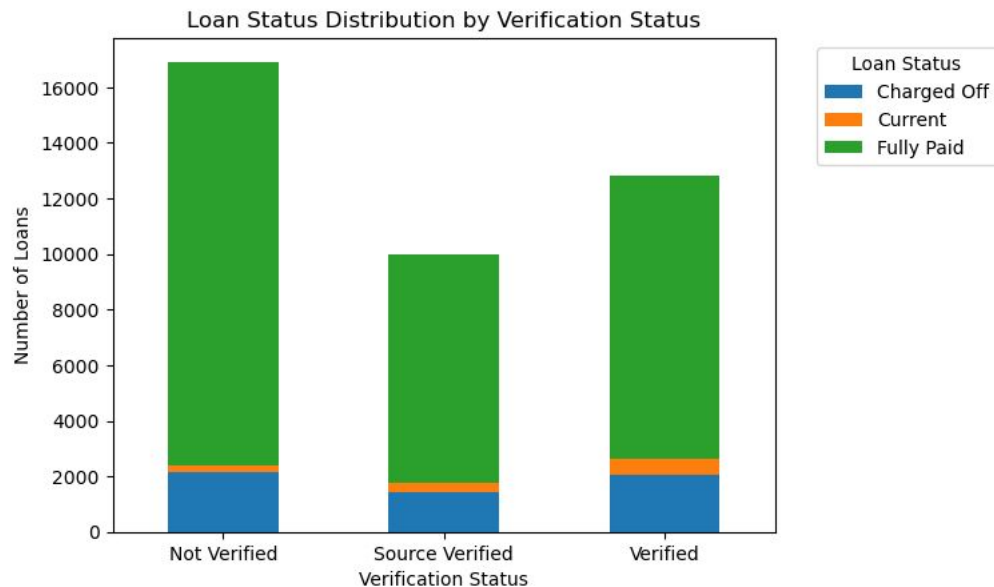
Having Delinquent accounts is not only serious but also rare. When we tried to find stats about this parameter we got confirmation that non of the users have delinquent accounts.



Therefor, its best to reject an application where applicant have any delinquent account.

# Income verification status

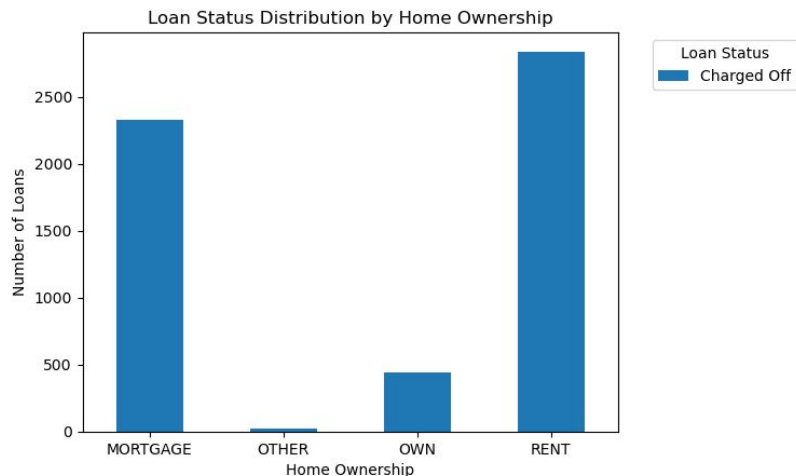
In case of verified income, the bank can be more confident about taking income in consideration especially if its a large annual income.



As you can see there is not much importance of Verification status, but it can put bank in more confident in case a person is dependent on its income and the income is so good that bank think the person will be able to pay the loan.

# Home ownership status

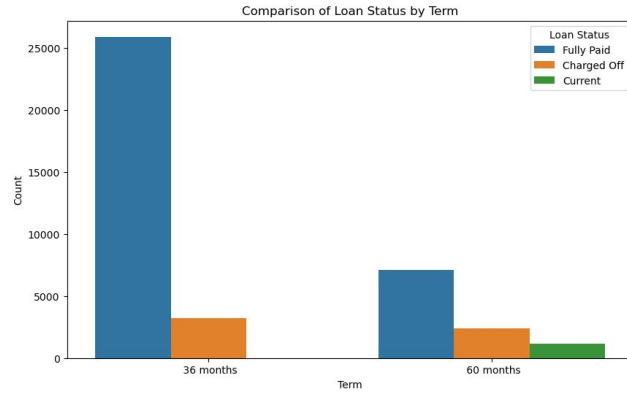
Having own home can reduce a lot of overhead expenses from applicant. If applicant own a house house it states that there are higher lower chances of defaulting.



As you can see above, the applicants who owns house are least expected to default on payments. Hence we can take this factor in considerations.

# Term

Unexpectedly I have found a big difference in ration of paid/default.



As you can see above, there is almost 50% chances of default in 60 months term compared to almost 10% in 36 months. Unless other variables are very strong. The bank should avoid giving 60 months term.

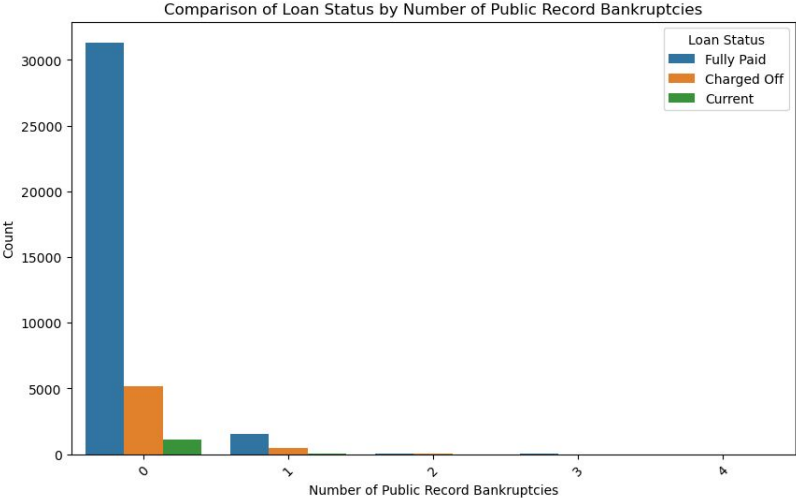


# Interest rate

We did not found a lot of relation with interest rates. Both Fully Paid & Charged off has almost same relation with interest rates, the possible reason can be, the Interest rates are given by bank, and given after analysing all other variable.

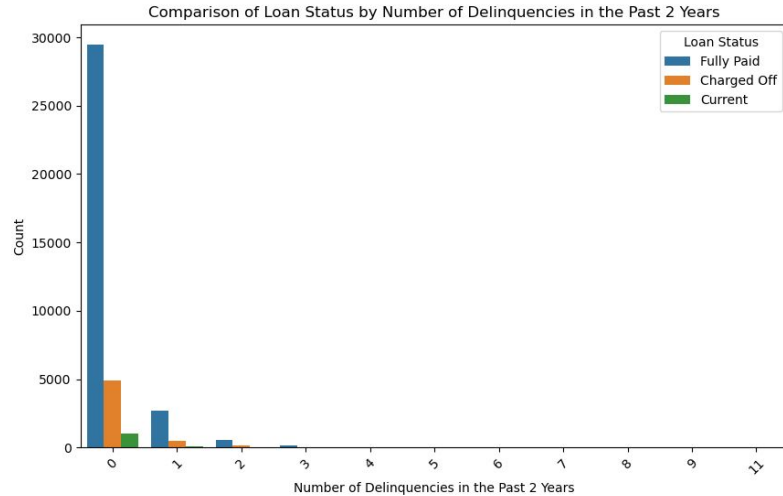
# Public Records

Public records is an important factor stating weather the applicant has been involved in a public incident like bankruptcy. We have noticed that chances of default are 15% if there is no public records. Compared to at least 30% if there is.



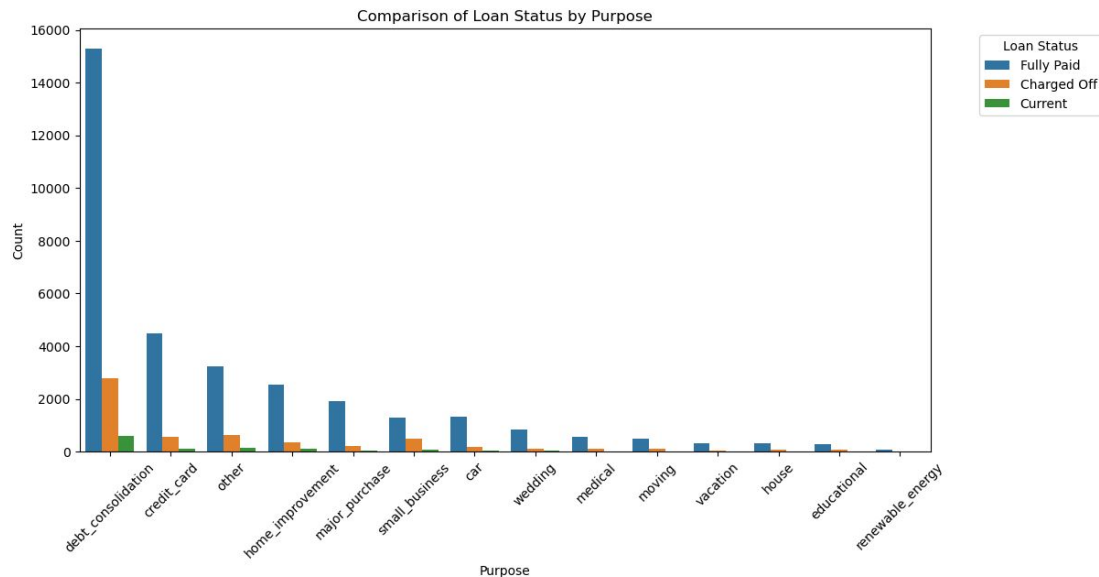
# Delinquencies in Past 2 years

Similar to previous result we have found out that if Number of delinquencies in path 2 years are zero, than its pretty much safe compared to more than zero.



# Purpose

We found out the purpose if loan can help us getting good reliable idea about possibility of a default.



As you can see here, in case of debt\_consolidation the default amount is high but total amount of loans is also very high. In case of small business loan, the default chances are highest meanwhile in case of credit card, the default chances are lowest.

We used Univariate (loan amount analysis), Bivariate(relation b/w loan amount, income and loan status) & Derived Metrics(Ratio of loan amount, income ) concepts to analyse some of the parameters.

We have talked about some of the parameters, we cannot take decision on basis of one of them alone except few like delinquency.

This is how we decide:

1. Give priority to each parameter
2. Give points to each parameter according to priority
3. Decide when points increase & when points decrease
4. Decide immediate rejection parameters
5. Setup a threshold for decision