

LENDING CLUB CASE STUDY

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Case Study

Problem Statement

Lending Club is the one of the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures.

The company wants to understand the driving factors behind loan default by analysis data collected over certain duration. The data has mainly

- 1) Borrower's details like member id, employment length, annual income, home ownership and other behavioral data.
- 2) Loan details like loan id, funded amount, interest rate, loan status(Charged off or paid fully) , purpose of loan etc.

Solution

Analyze the data and find the factors which are contributing towards loan default/charged off. Submit a recommendation based on analysis
So that company can take necessary steps to reduce percentage of loans getting default in future.

ANALYSIS STEPS

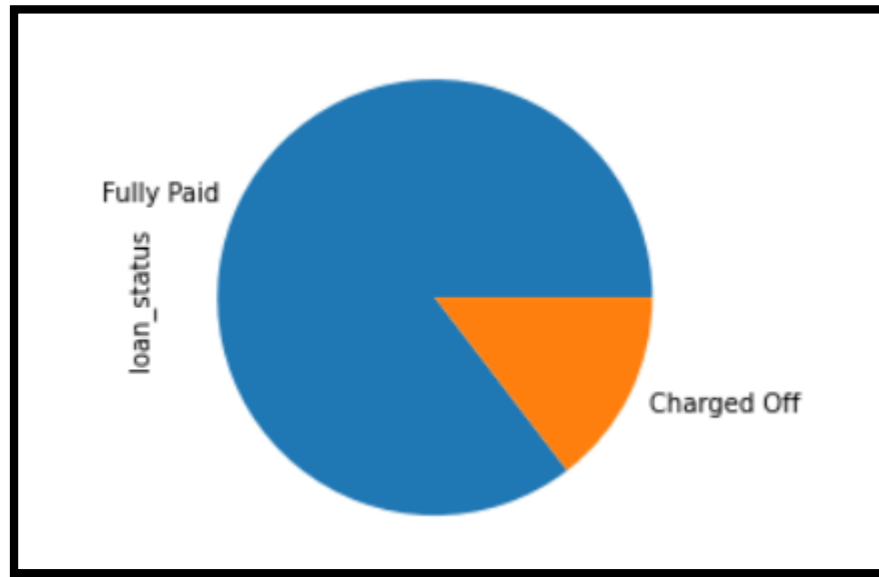
- **Data Cleansing** : Data set has columns which has all null or constant or doesn't play role loan status. Delete such columns to focus on data which can be analysed.
- **Analysis of Outliers** : Dataset has outliers in interest rate, funded amount and annual income.
Necessary steps has been taken to remove outliers.
- **Data Imputation**: In the given data set, in column employee length we have found null values so we have replaced those with 0.
- **Data Analysis**: After data clean-up, various data analysis techniques are performed over Loan_Status and other columns to find the dependency.

DATA CLEANSING

1. Columns with all NA values are dropped.
2. Borrower's Behavioral data removed from dataset.
3. Terms and int_rate columns were formatted and converted to interger column
4. Amount columns rounded up to 0 decimal places
5. Dropped 'loan_amnt' and 'funded_amnt' as they are highly correlated with 'funded_amnt_inv'
6. Current loans are removed.
7. Outliers in column 'annual_inc' removed
8. Replaced NA with 0 for employment length.

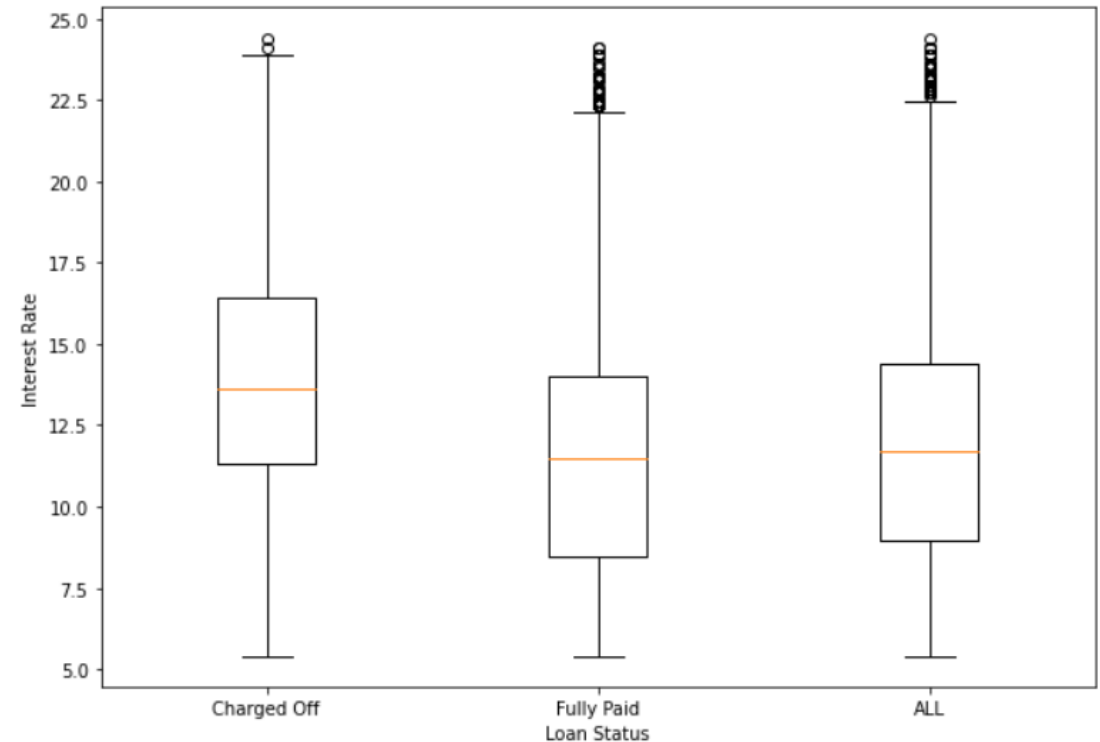
DATA ANALYSIS

- ❖ Used various data analysis techniques and data visualization to understand factors contributing towards default loans.
- ❖ The data provided has high percentage of fully paid loans



ANALYSIS 1: LOAN STATUS VS INTEREST RATE

- ❖ In this analysis we have found that 75% of the loans with interest rate within $\sim 14\%$ are better performing.
- ❖ 50% or 1/2 of the loans with interest rate higher than 14% are charged off. This is huge number as almost half of the loans are getting defaulted above 14%.
- ❖ **Conclusion: 1 out of 2 Loans with interest rate more than 14% are likely to default.**

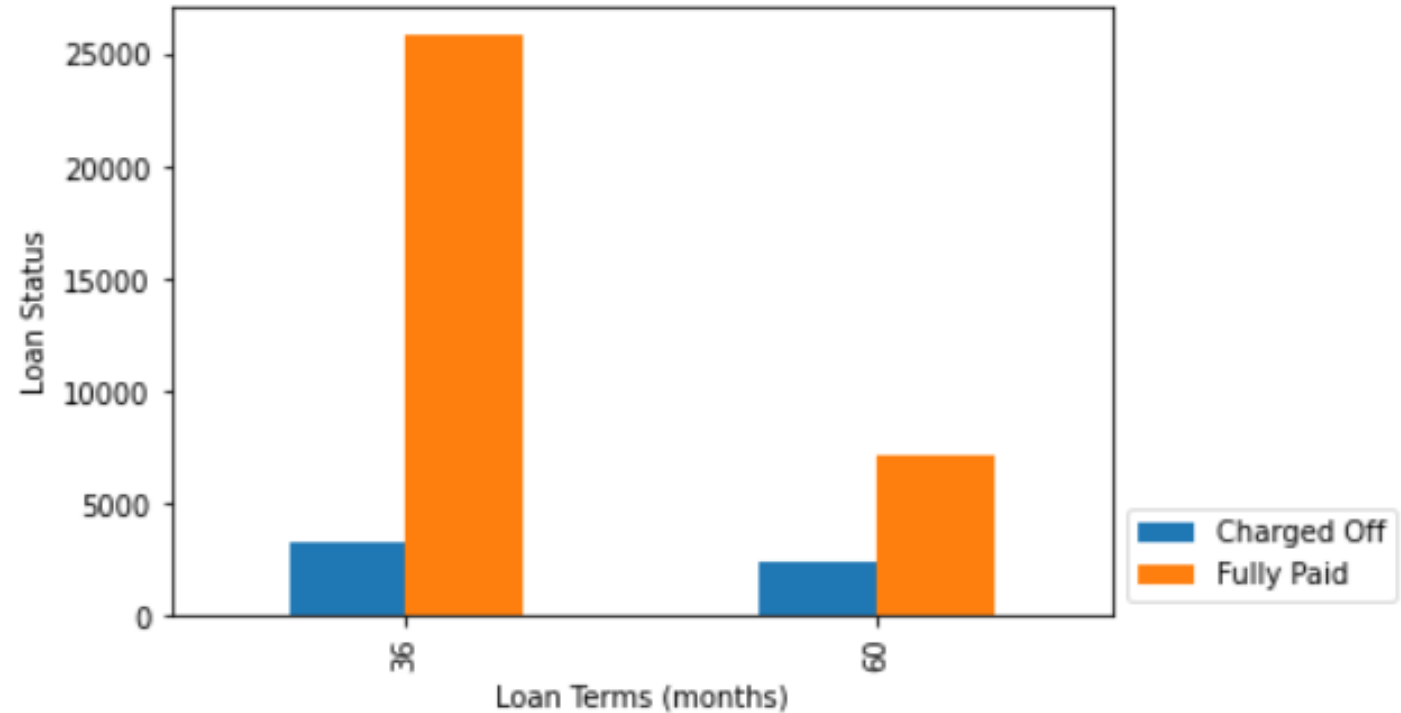


ANALYSIS 2: LOAN STATUS VS LOAN TERMS

- ❖ 25% of the loans taken for 60 months tenure are charged off
- ❖ Percentage of default loans for 60month tenure vs percentage of default loans for 36 month tenure is 2.23.

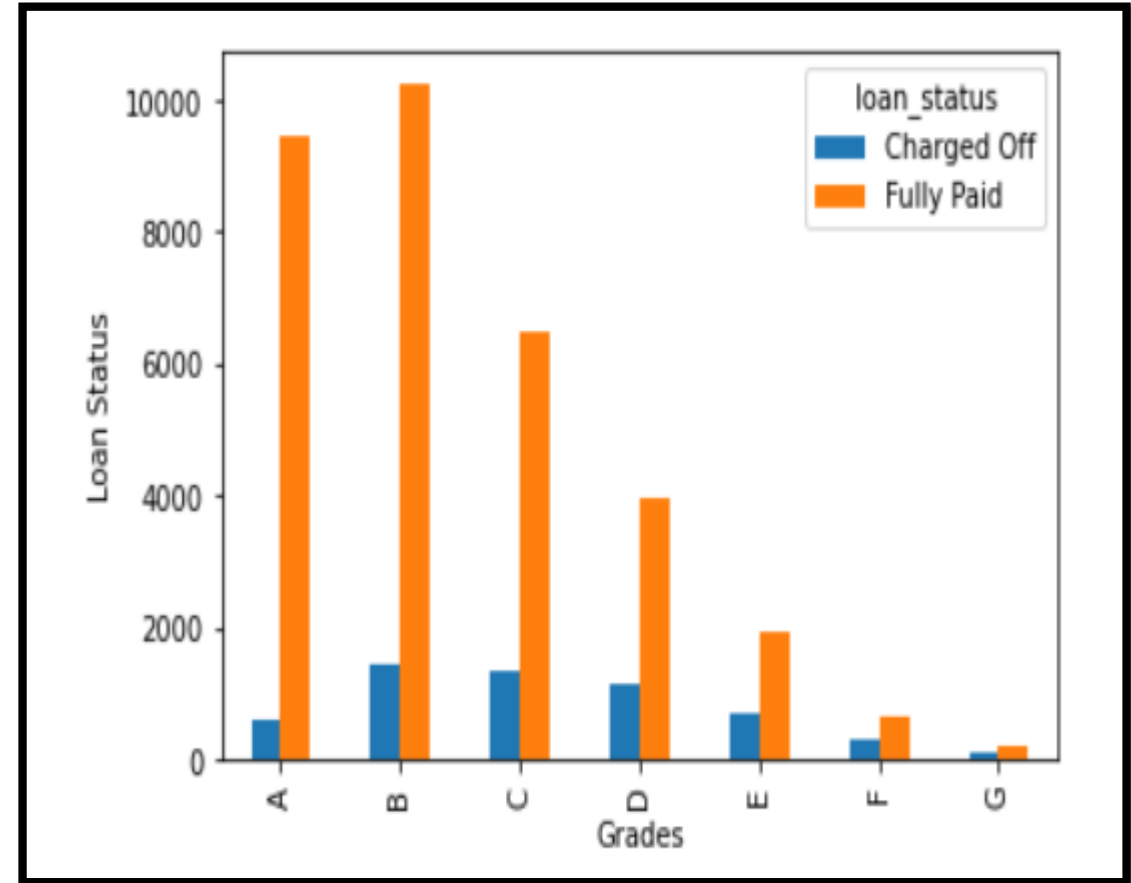
Conclusion:

- ❖ 1 out of 4 loans taken for 60 months tenure are likely to default.
- ❖ Chances of loan getting charged off is twice in 60 months as compared to 36 months tenure loan.



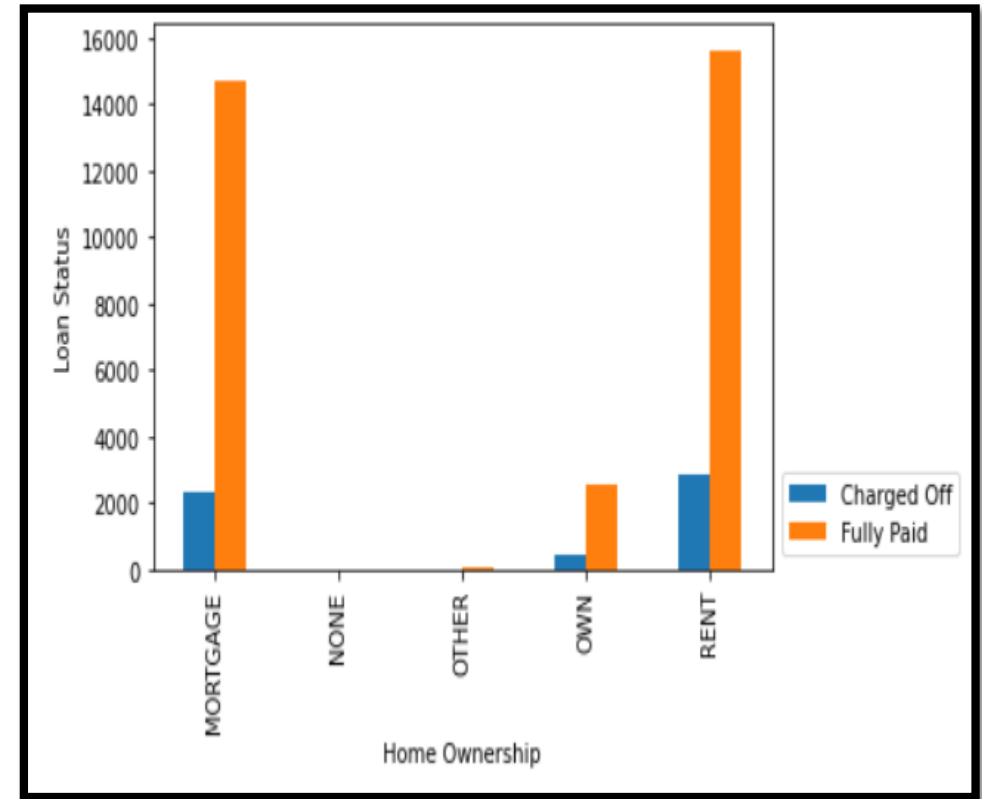
ANALYSIS 3: LOAN STATUS VS GRADES

- ❖ Grade B has highest charged off loans and G has lowest of charged off loans. However % of paid loans vs charged off loans doesn't show significant difference.
- ❖ Conclusion : Not a factor for default loans.



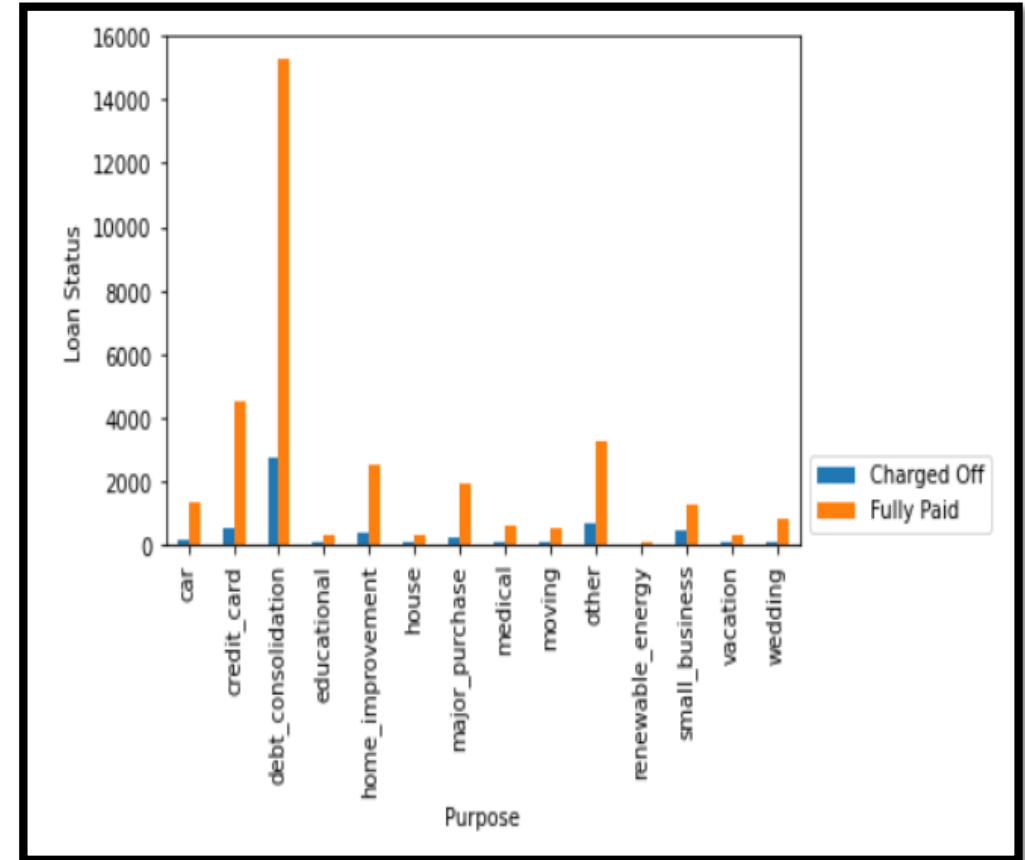
ANALYSIS 4: LOAN STATUS VS HOME OWNERSHIP

- ❖ Borrower's staying in Mortgage house or Rented house have taken more loan.
- ❖ Does not affect loan status
- ❖ Conclusion : Not a factor for default loans.



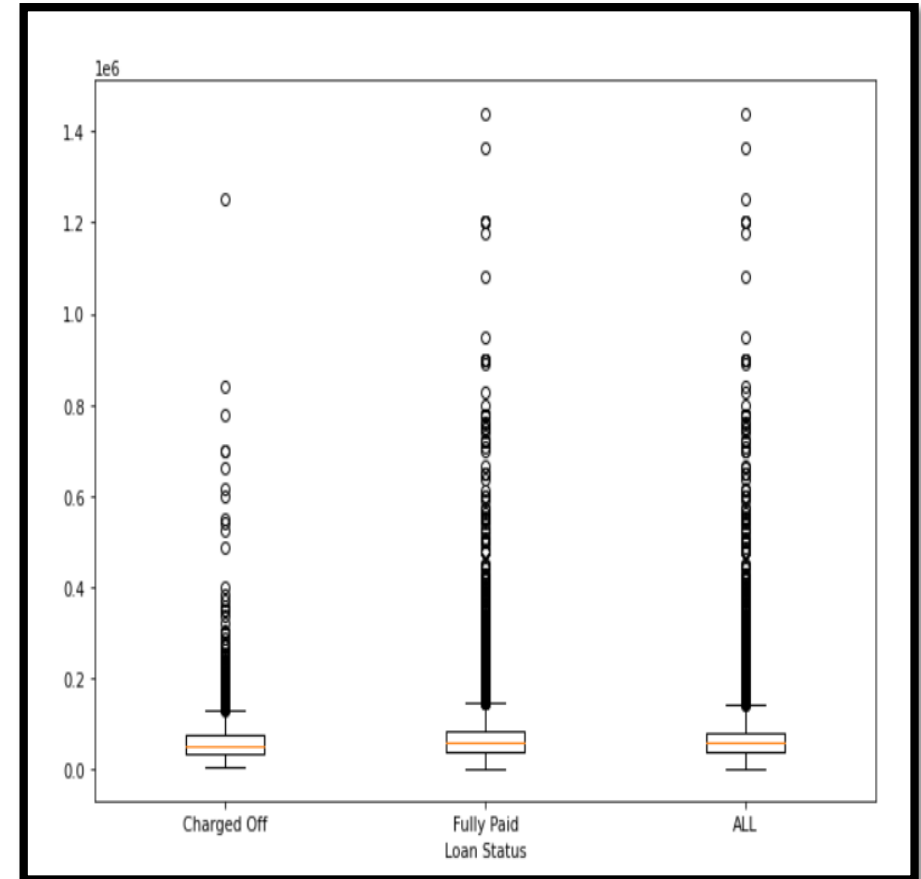
ANALYSIS 5: LOAN STATUS VS PURPOSE FOR LOAN

- ❖ Purpose for which loan is taken is highest for debt consolidation.
- ❖ Does not affect loan status
- ❖ Conclusion : Not a factor for default loans.



ANALYSIS 6: LOAN STATUS VS ANNUAL INCOME

- ❖ Annual income of customer doesn't have significant impact on loan status
- ❖ Conclusion : Not a factor for default loans.



CONCLUSION

- ❖ 50% of the loans with interest rate more than 14% are likely to default.
- ❖ 25% of the loans taken for 60 months tenure are likely to default.
- ❖ Loan taken for 60 months tenure have twice the risk of getting default as compared to 36 months tenure loan.