Lending Club Defaulters Study

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Objective of the Case Study

- The Objective is to identify risky loan applicants who may default on the loan. Through EDA, we are going to find patterns of defaulters from the past loan applicants data

- This study will enable the Lending Club to predict borrower defaults, guiding business decisions and reducing credit losses

Factors of Loan Default

- 'dti' - Ratio of total debt to total income. Higher number could lead to default

- 'revol_util' - The amount of credit the borrower is using relative to all available revolving credit. A higher ratio could lead to default.

- 'Home_ownership' - The home ownership status provided by the borrower. Own home owners are likely to close the loan since there is no obligation to pay rent

- 'open_acc' - The number of open credit lines in the borrower's credit file. Higher number could lead to defaults

- 'delinq_2yrs' - number of delinquencies in the past 2 years. Higher number could lead to defaults

- 'emp_length' - Employment length in years. Borrowers with high employment length may tend to default

Exploratory Data Analysis

- Histograms have been plotted for the columns below, and univariate analysis has been conducted

    i.   dti
    ii.   revol_util
    iii. emp_length
    iv.   purpose
    v.   term
    vi.   home_ownership
    vii. Interest_rate

- A box plot has been created for the columns 'employment_length' and 'annual_income'

Exploratory Data Analysis

- A heatmap has been plotted for the columns listed below to identify the correlations between them

        i.   dti
        ii.   annual_income
        iii. revol_util
        iv. emp_length
        v.   purpose
        vi. term
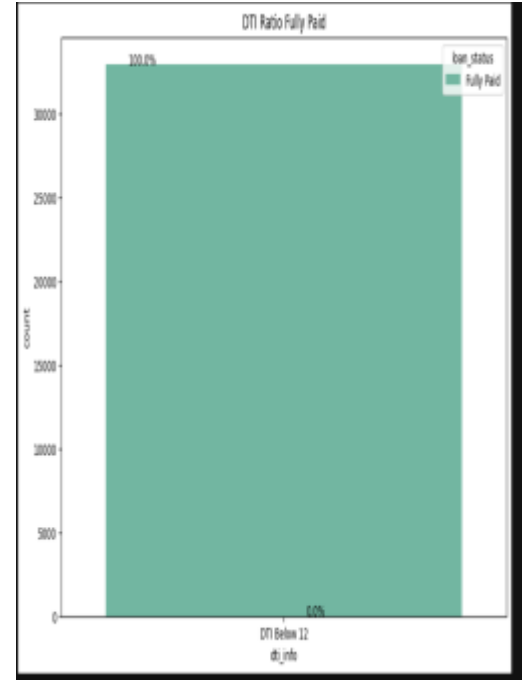   vii. home_ownership
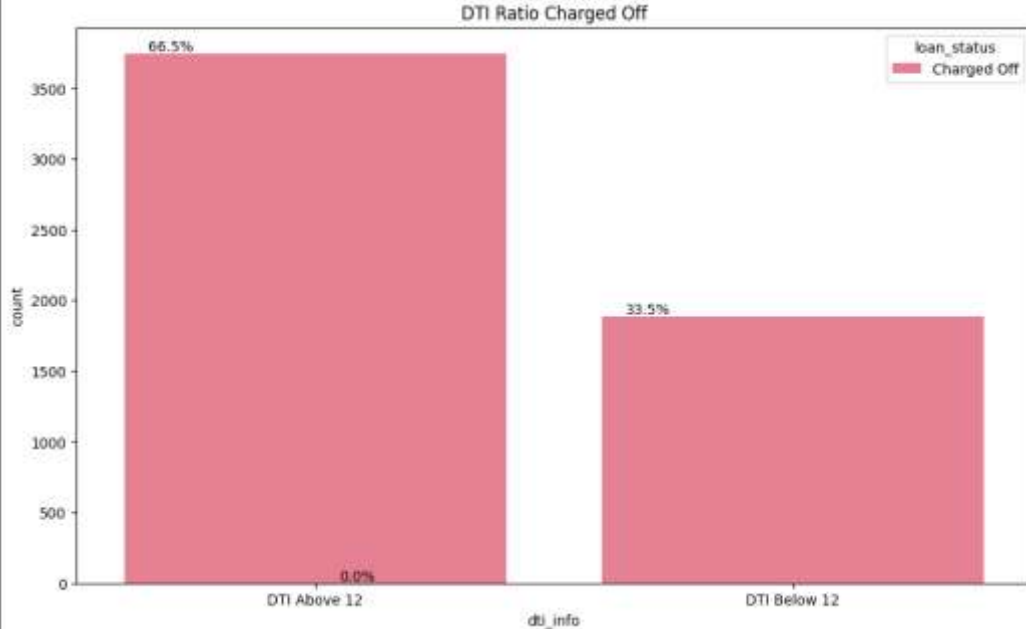   viii. interest_rate

Findings of Loan Default

- Insights from '**Revolving line utilization rate**' - It has been observed that the number of defaults increases when the 'Revolving Line Utilization Rate' exceeds **50%**
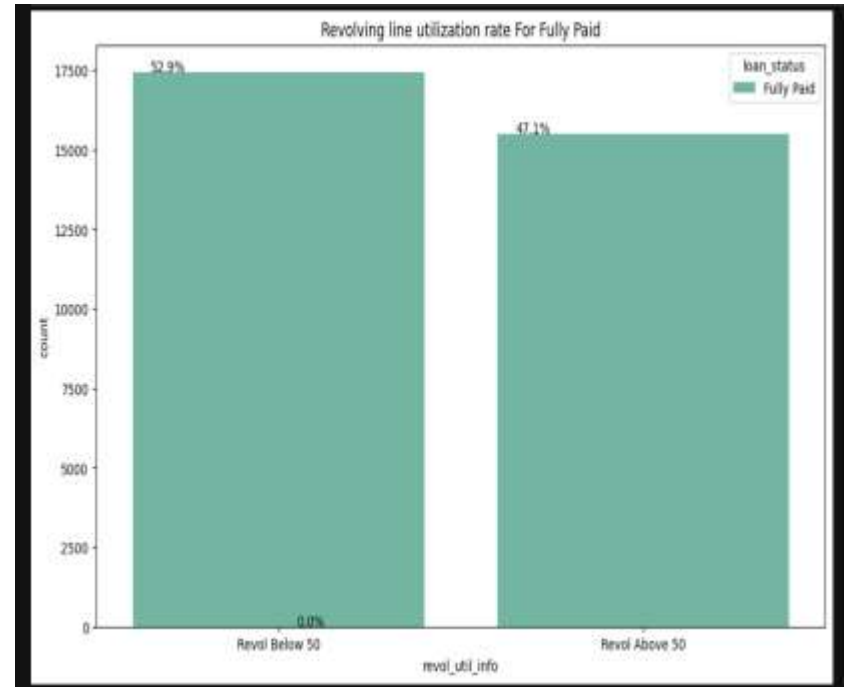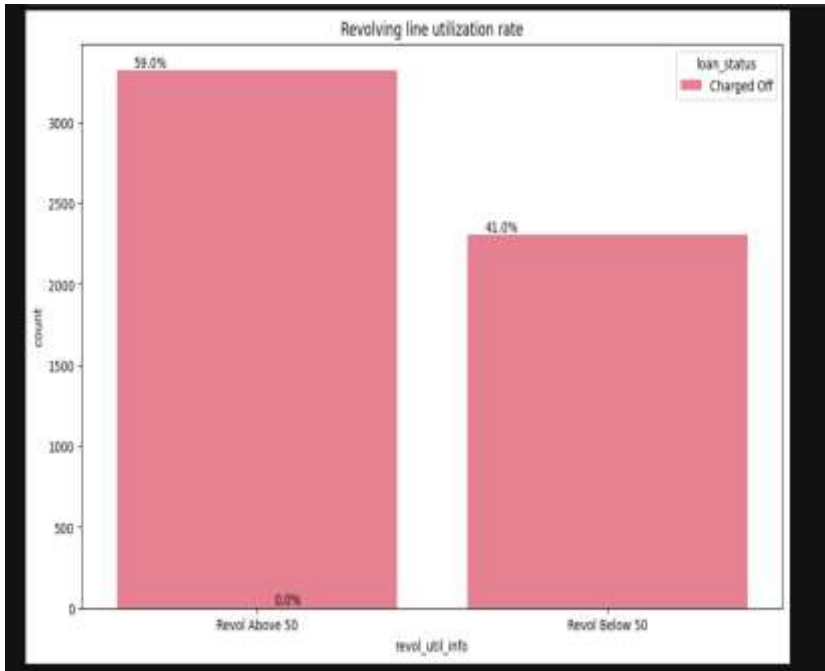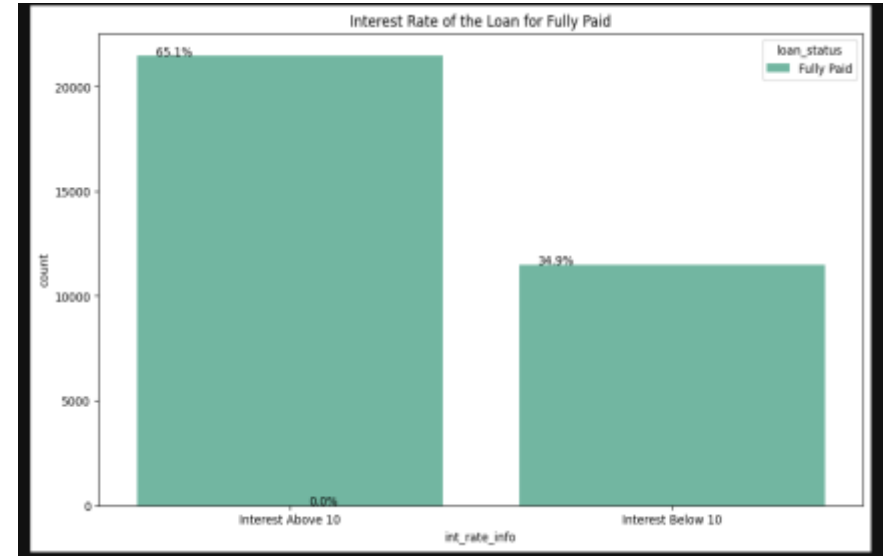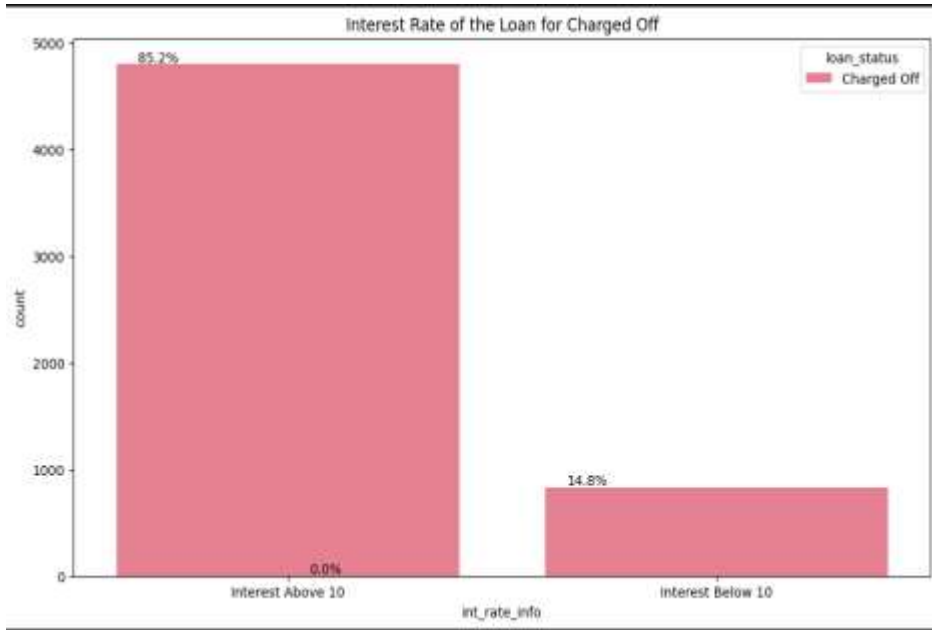
Findings of Loan Default

- Insights from '**Debt to Income Ratio**' - It has been observed that the number of defaults increases when the 'Debt to Income ratio' exceeds **12%**
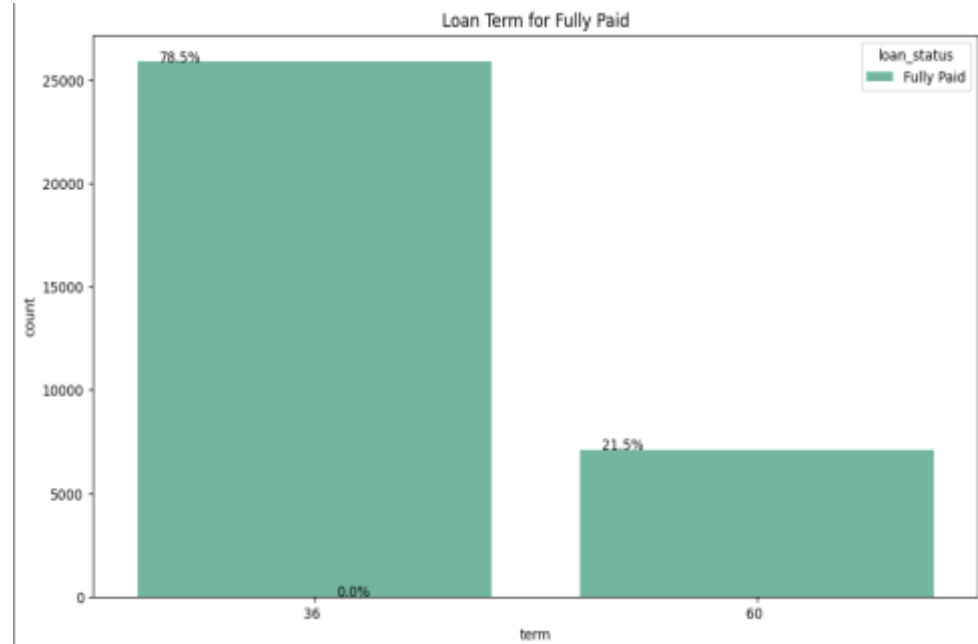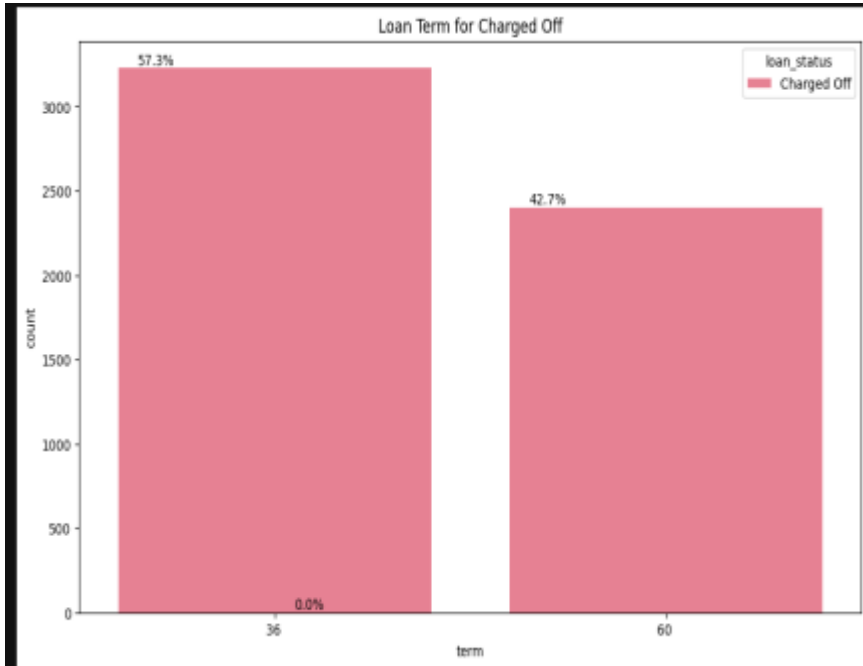
Findings of Loan Default

- Insights from '**Interest Rate**' - It has been observed that the number of defaults increases when the 'Interest Rate' exceeds **10%**


Interest Rate of the Loan for Charged Off

Interest Rate of the Loan for Fully Paid

Findings of Loan Default

- Insights from **'Term'** - It has been observed that the number of defaults increases when the 'Term' is 60 months
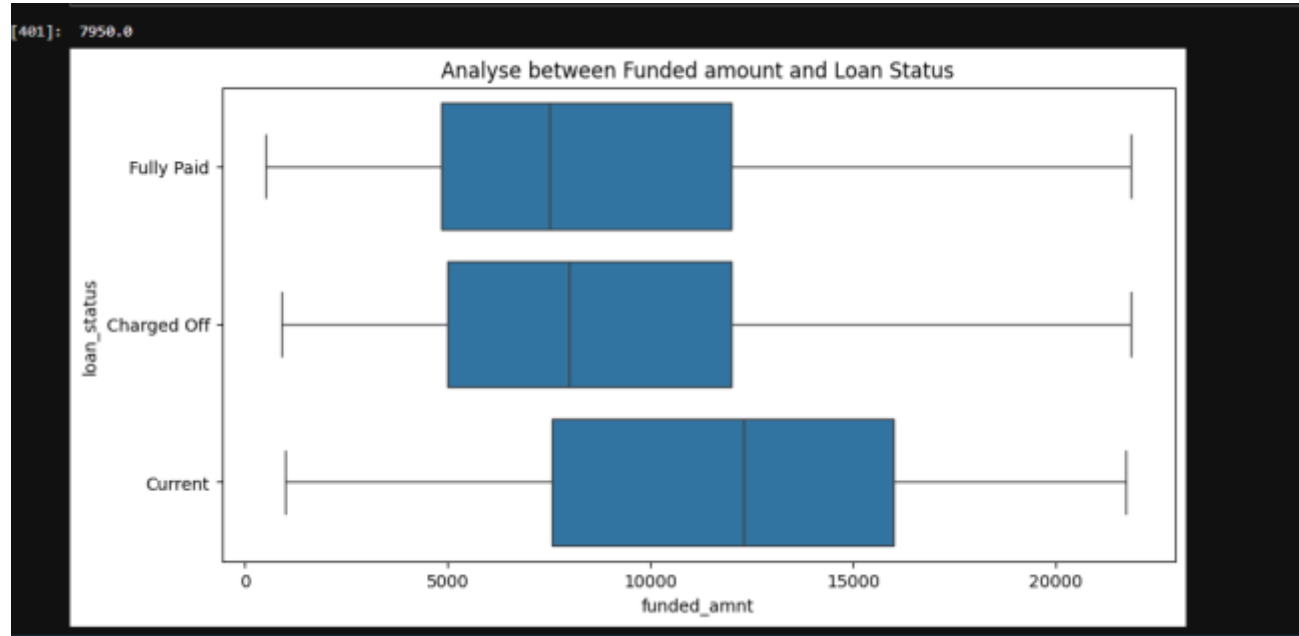
Findings of Loan Default

- Insights from **'Home Ownership'** - It has been observed that the number of defaults increases when the home is rented by the borrower
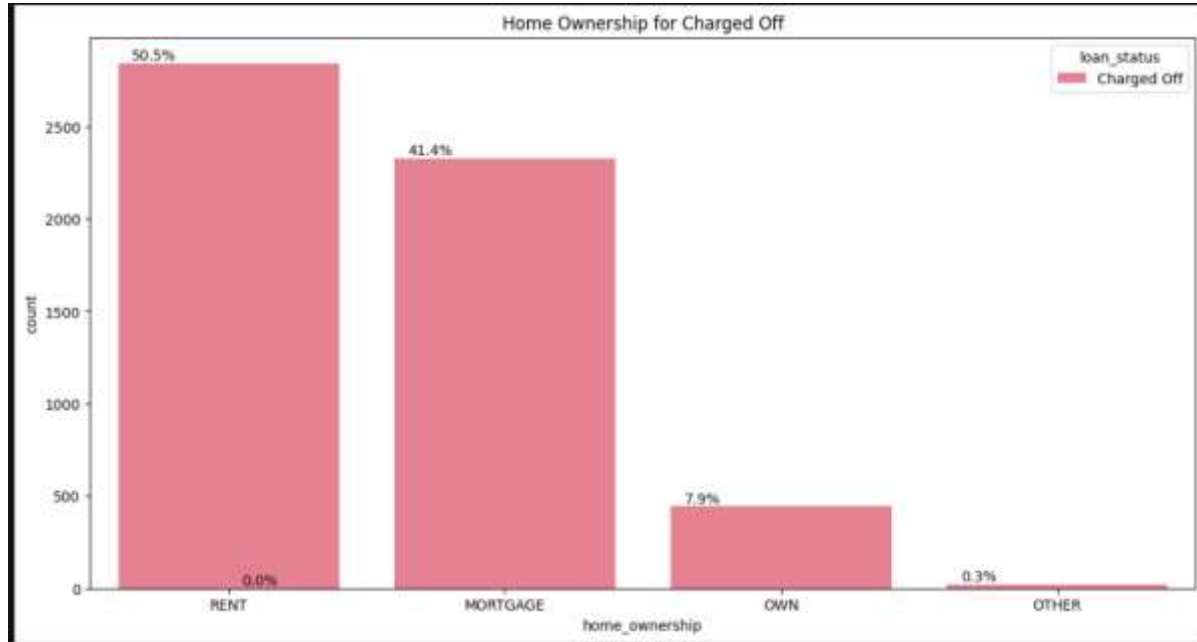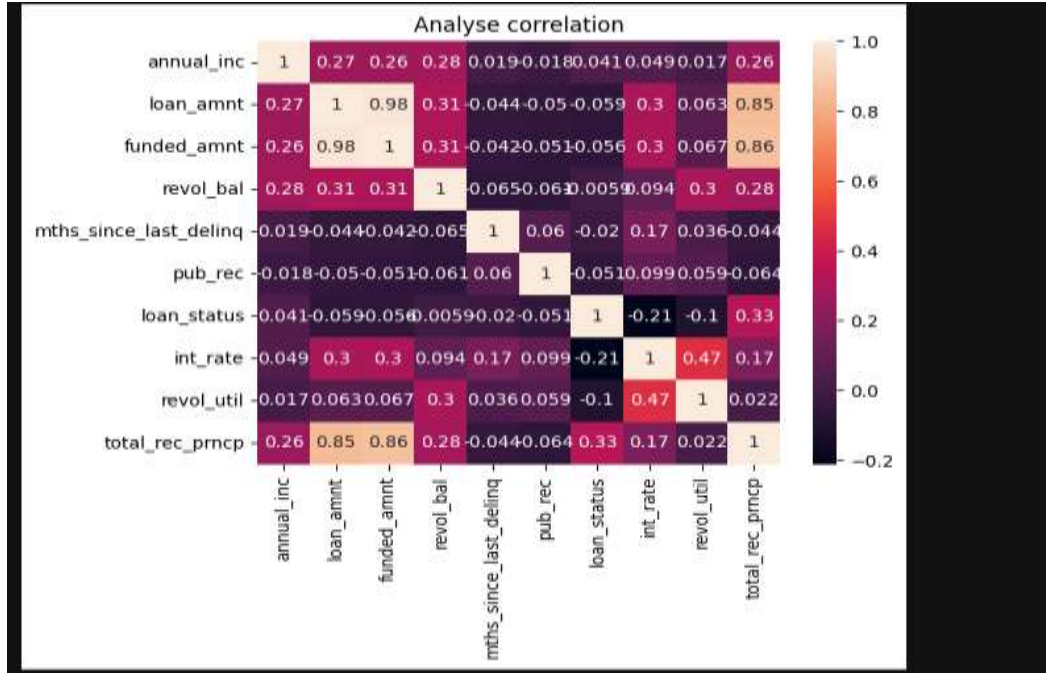
Findings of Loan Default

- Relationship between **'Funded Amount'** & **'Loan Status'** - The median funded amount is slightly on the higher side for charged-off loans. This also means that when the above factors combine with higher loan funded amounts, it could lead to a default.

Findings of Loan Default

- Heat Map showing the correlations between different fields

Key Findings

- Borrowers with the following traits are more likely to default

  a. The 'Revolving Line Utilization Rate' exceeds **50%**

  b. The 'Debt to Income ratio' exceeds **12%**

- When the loan has the following features, the number of defaults increases

  a. the 'Interest Rate' exceeds **10%**

  b. the 'Term' is 60 months

  c. the home is rented by the borrower

- A borrower with higher 'Revolving Line Utilization Rate' and 'DTI' ratio is likely to default when **they are funded with higher loan amount or with higher interest rate or with higher term**

Recommendations

- Target for borrowers with lower 'Revolving Line Utilization Rate'

- Target for borrowers with lower 'Debt to Income ratio'

- Borrowers with higher ''Revolving Line Utilization Rate' or 'Debt to Income ratio' shall not be funded with higher loan amounts

- Borrowers with higher ''Revolving Line Utilization Rate' or 'Debt to Income ratio' shall not be funded with the 'Term' of 60 months

- Borrowers with higher ''Revolving Line Utilization Rate' or 'Debt to Income ratio' shall not be funded when their home is a **rented** one

Thank You