

LENDING CLUB CASE STUDY

SUBMISSION

Group Members

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Project Brief

Business Objectives

- Identify the driving factors or variables behind loan default.
- LC can then use these variables to perform risk assessment.

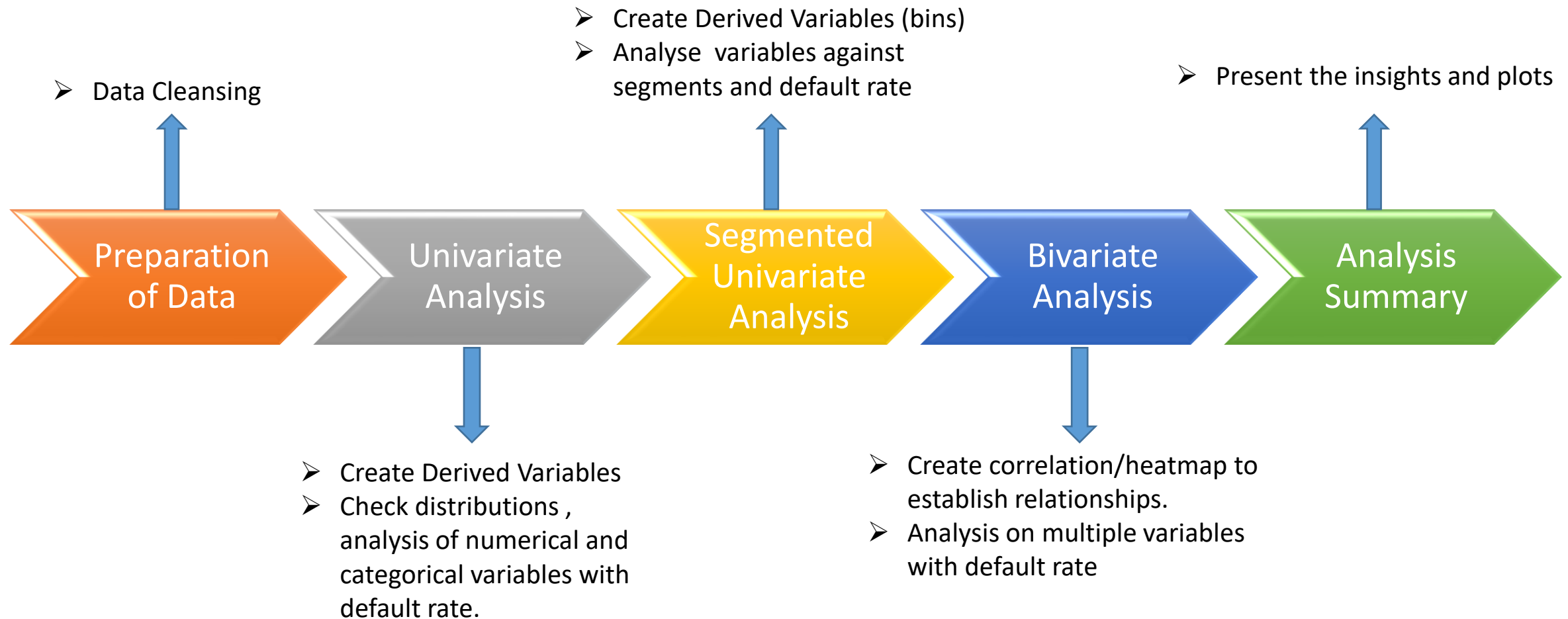
Problem Statement

- Analyse the given dataset containing past loan applicants.
- Understand how **consumer** and **loan attributes** influence the tendency of default.

Approach

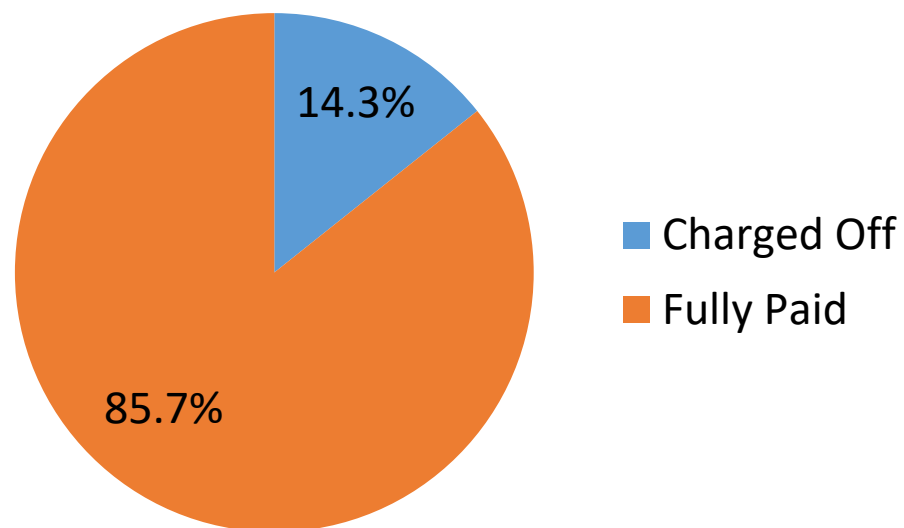
- Data Understanding
- Data Cleaning
- Univariate Analysis
- Segmented Univariate Analysis
- Bivariate Analysis
- Plots to support decisions

Problem Solving Methodology



Analysis: Overall Loans

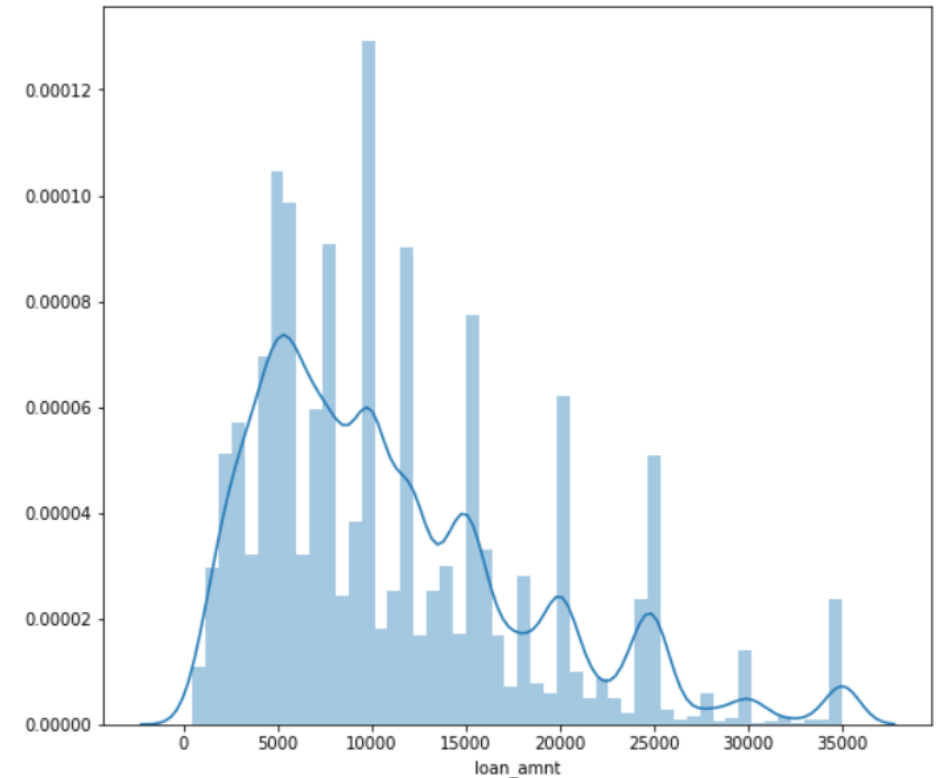
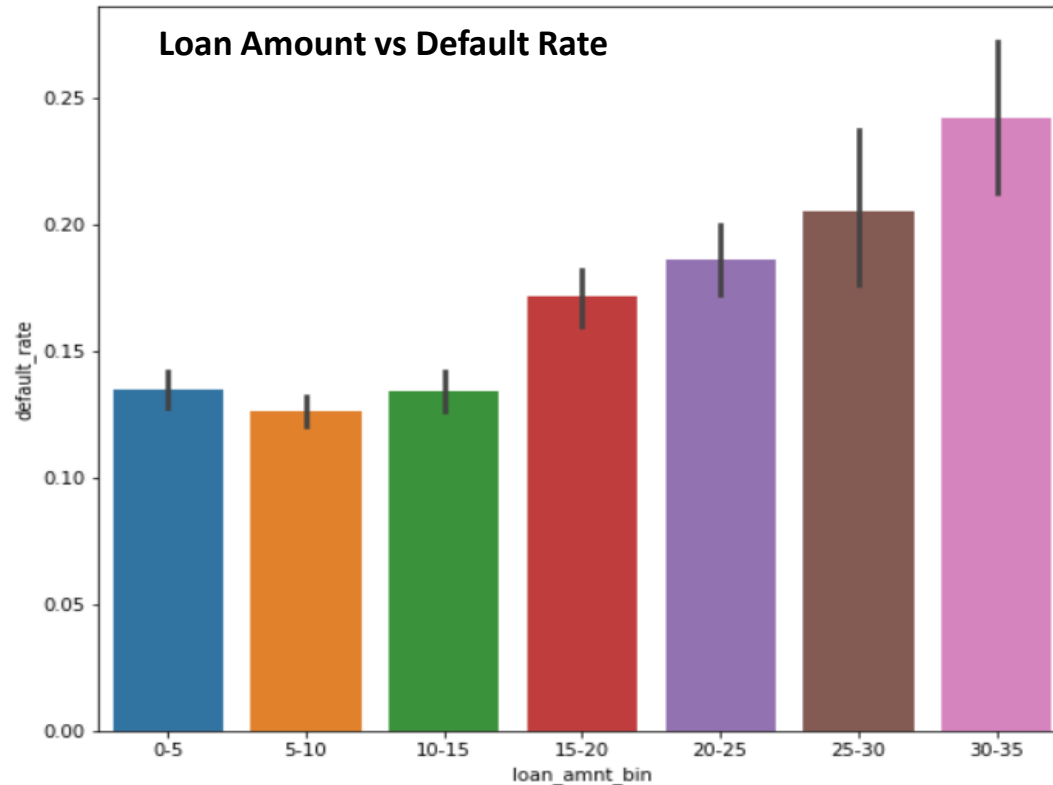
Total Loans



Loan Status	Number of loans
Full Paid	31,534
Charged Off	5,266
Current	1,098

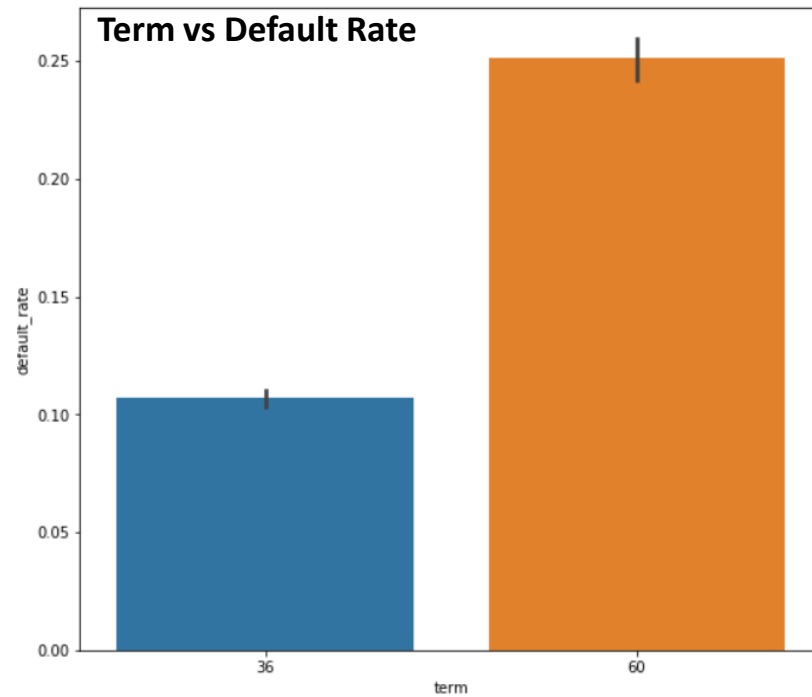
➤ About 14% of the total loans are defaulted

Loan Amount vs Default Rate: Analysis

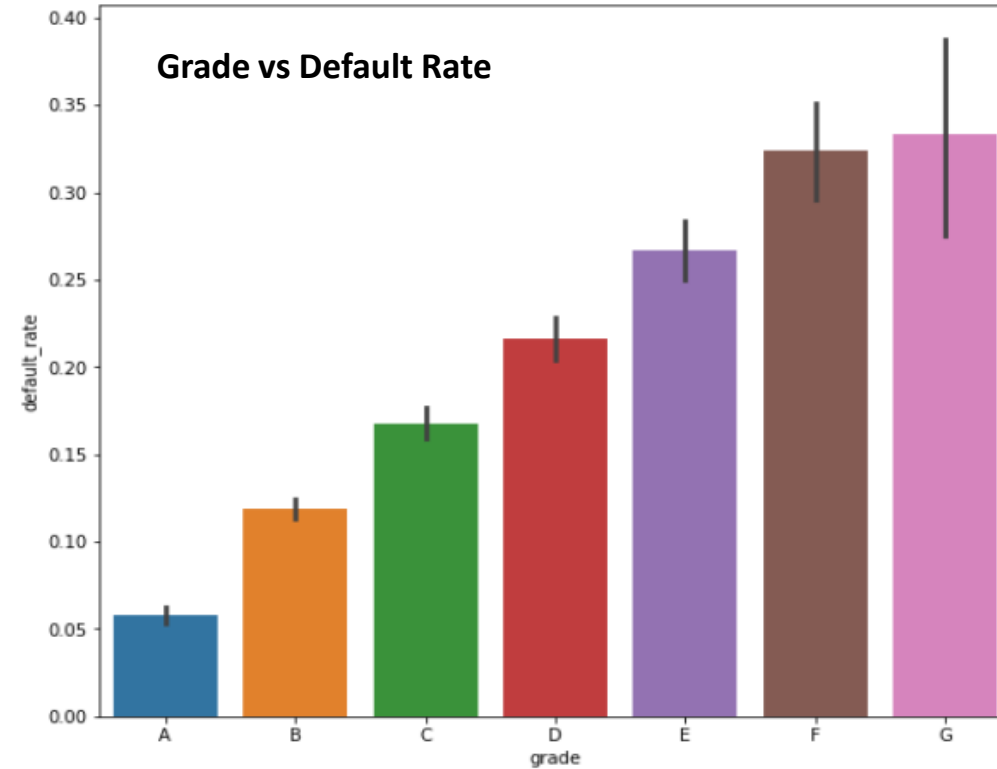


- As the loan amount increases, the default rate or the risk also increases.
- There is a spike for every increment of 5000 in the total loan amount.

Term, Grade Vs Default Rate: Analysis

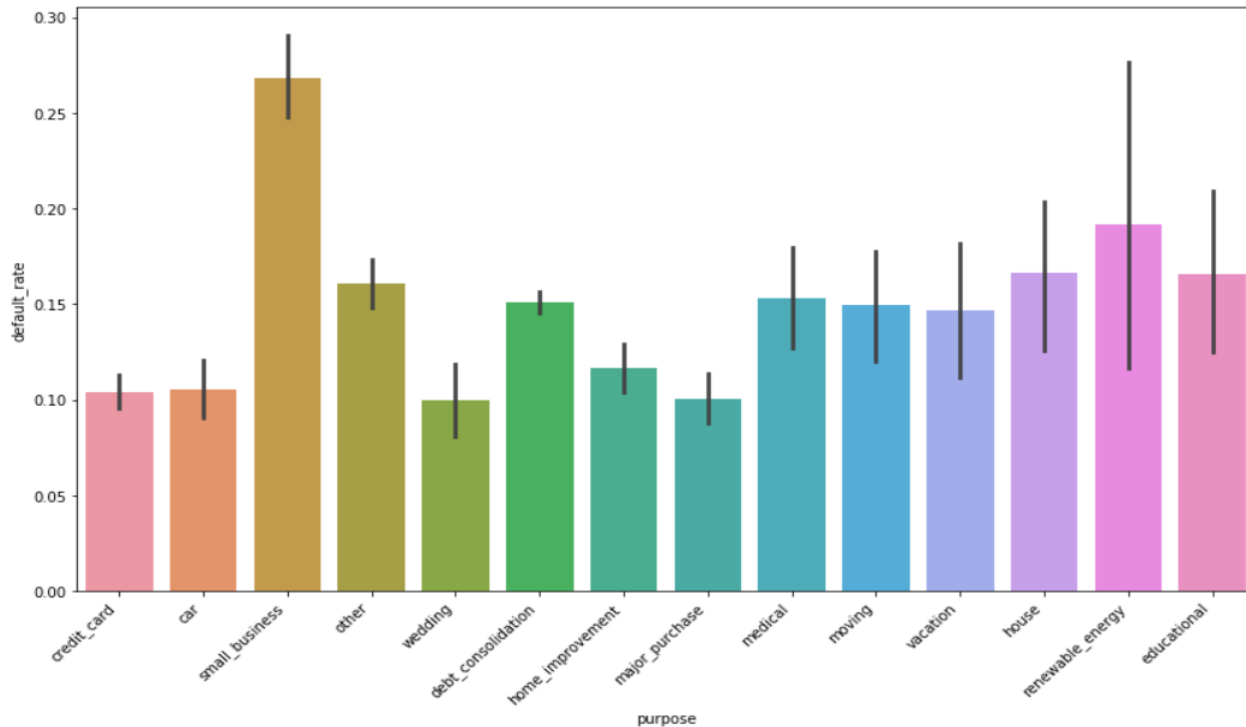


- ✓ Default rate is more in loans having more Term period (60 months).



- ✓ As the grade of loan decreases, the default rate also decreases.
- ✓ Interest Rate also increases as the loan grade becomes worse (A to G).

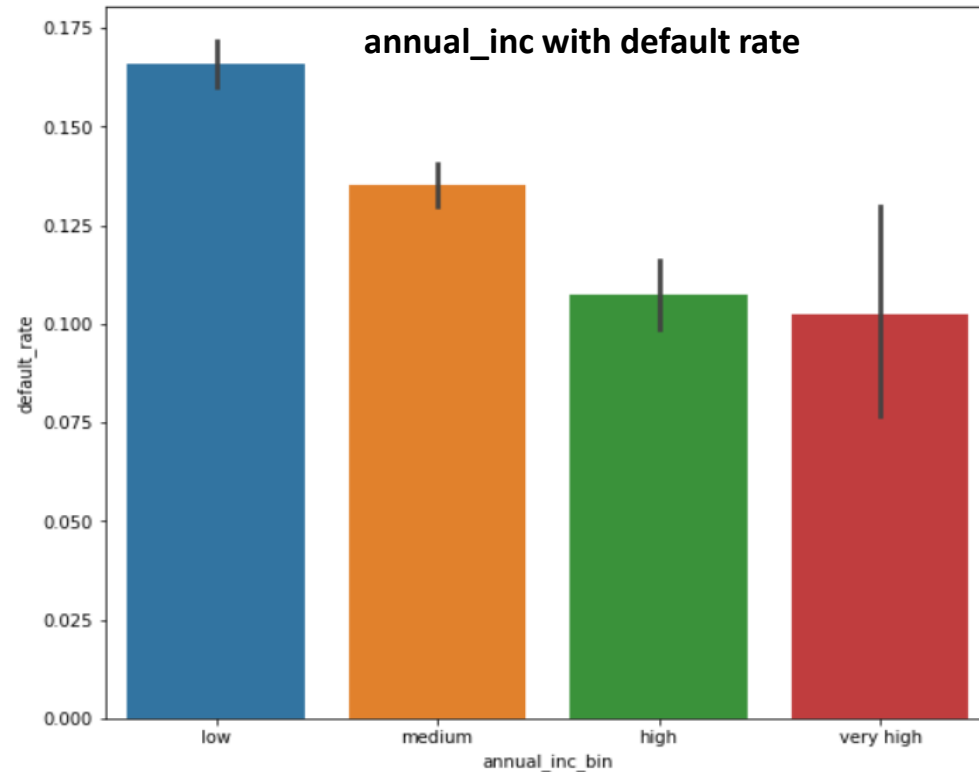
Purpose of Loan: Analysis



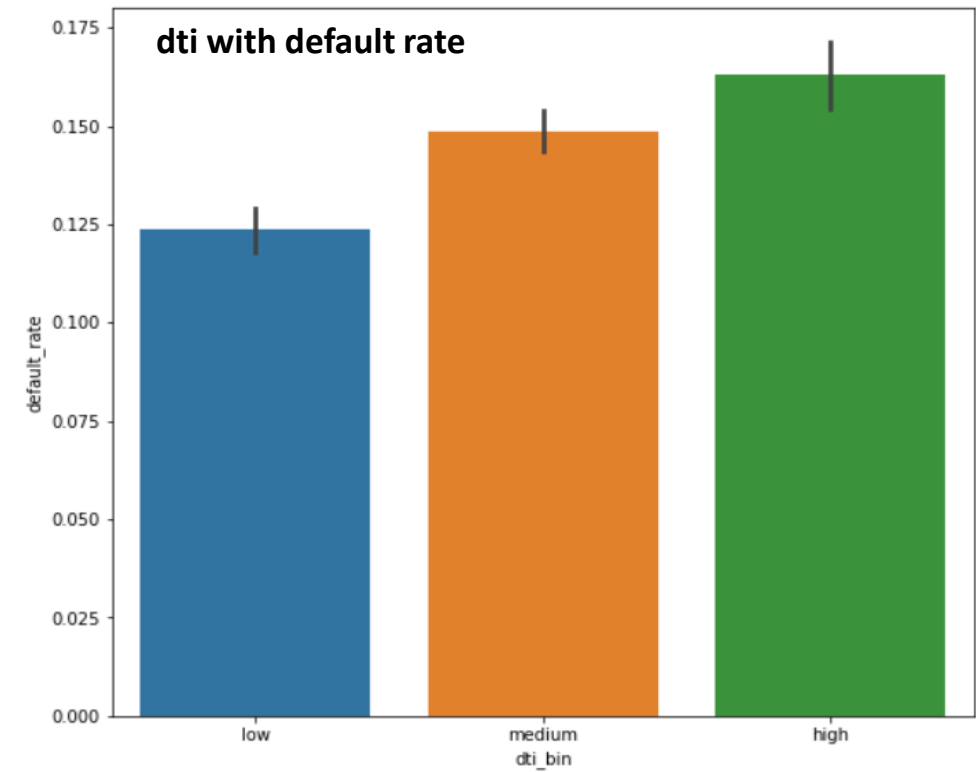
- Default rate is maximum for **Small Business, Renewable Energy.**
- Maximum number of loans are applied for **Debt Consolidation** and **Credit card.**

Loan Purpose	Number of Loans Applied	Default Rate
Debt Consolidation	17,373	15.0%
Credit Card	4,799	10.4%
Other	3,595	16.0%
Home Improvement	2,734	11.7%
Major Purchase	2,055	10.0%
Small Business	1,656	26.8%
Car	1,429	10.6%
Wedding	893	9.9%
Medical	645	15.3%
Moving	541	14.9%
House	349	16.5%
Vacation	341	14.7%
Educational	296	16.6%
Renewable Energy	94	19.1%

Annual Income, Debt to Income vs Default Rate: Analysis

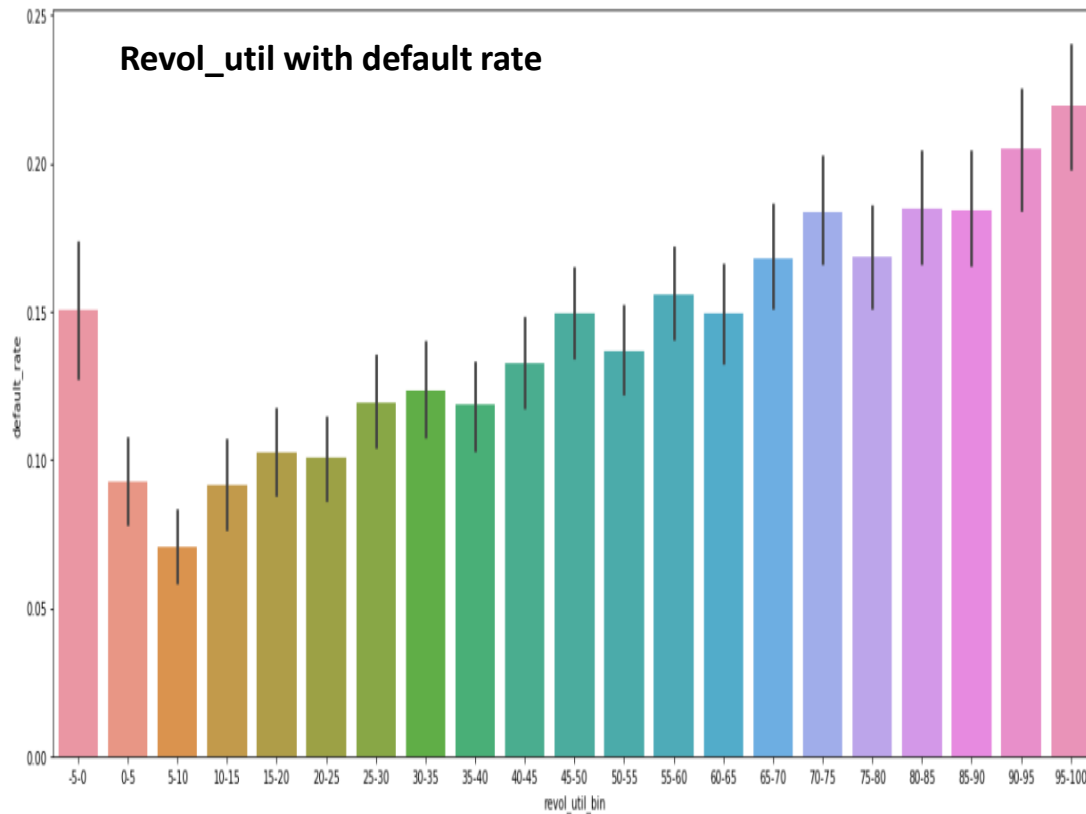


- Default rate is maximum for people having **lower annual income** range.

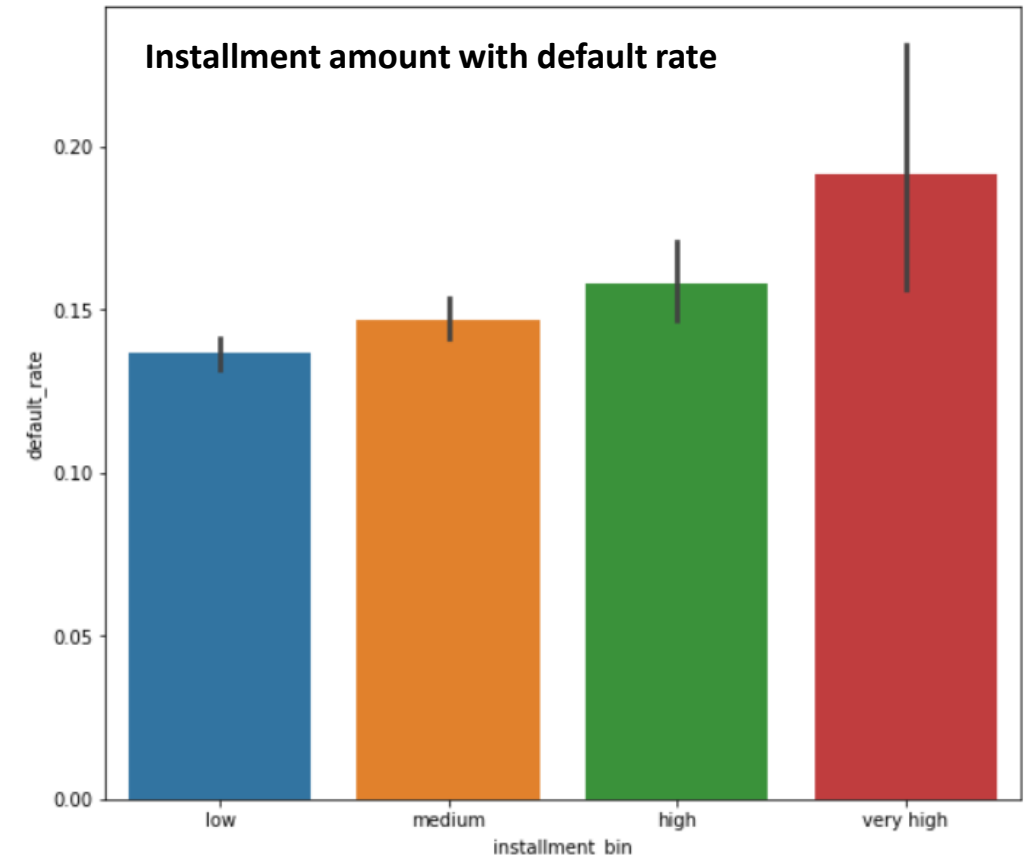


- As expected, **higher** debt to income ratio means higher default rate, and increases risk rate.

Revolving Utilization Rate, Installment vs Default Rate: Analysis

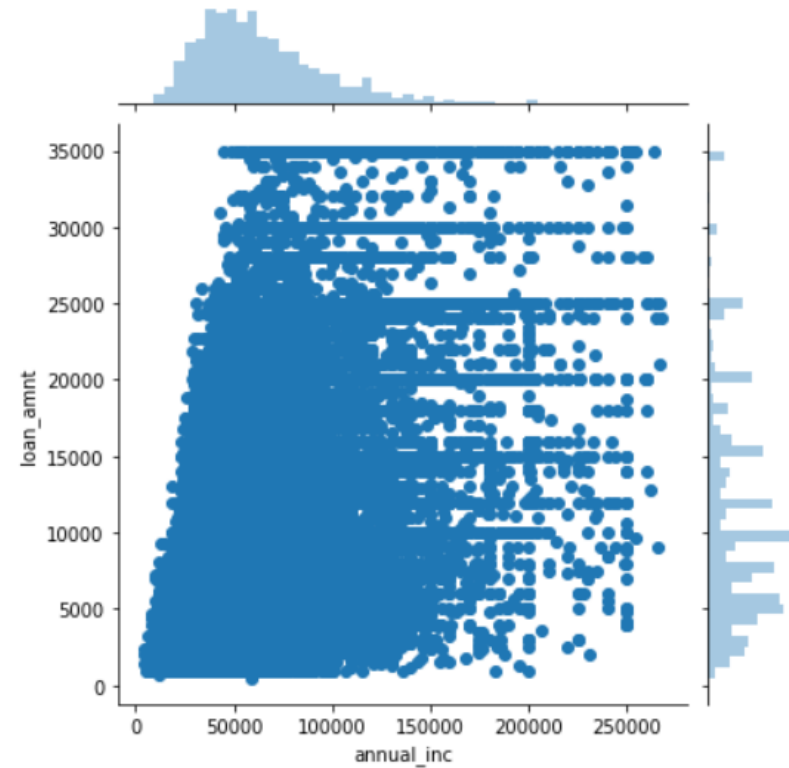
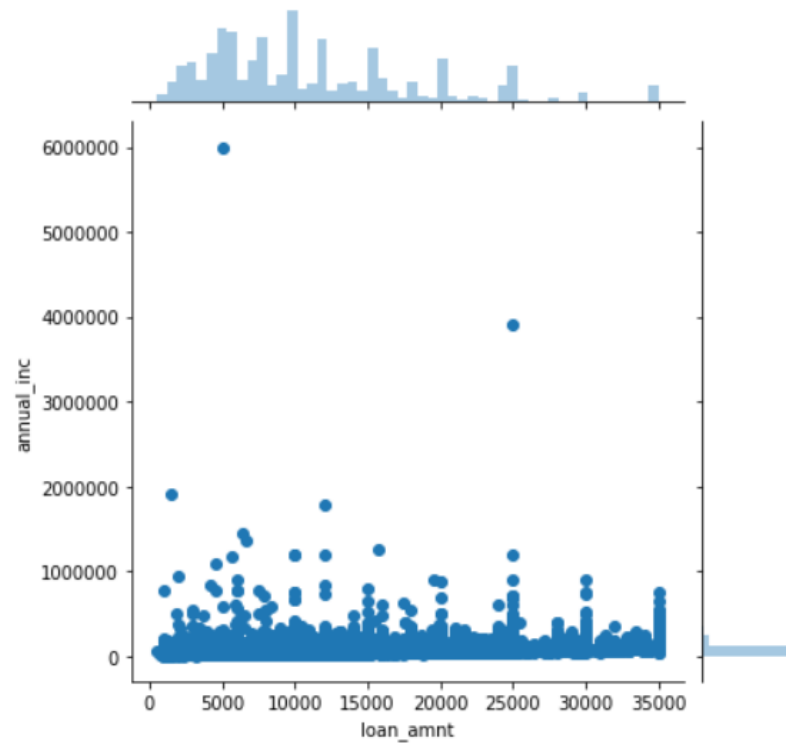


- Higher the revol_util, higher the risk/default rate.
- Loans with revolving utilization greater than 80 % are risky.



- The default rate increases as the installment amount for the loan increases.

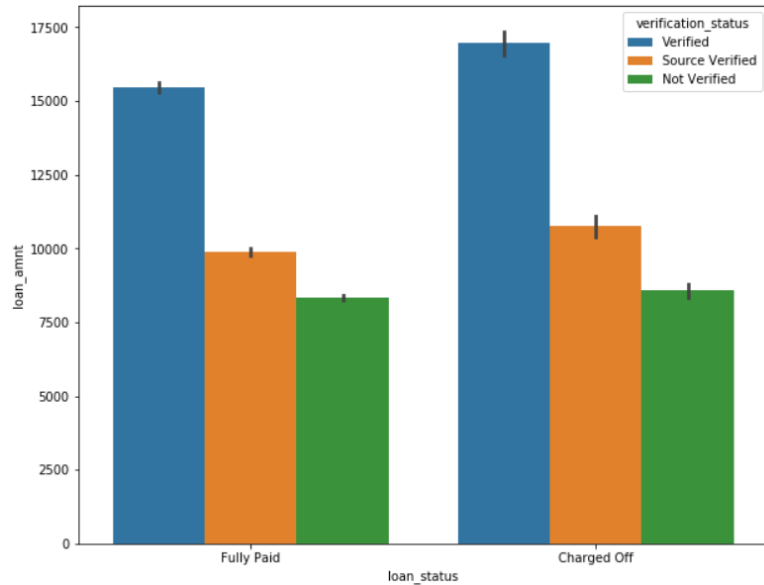
Loan amount vs Annual Income: Analysis



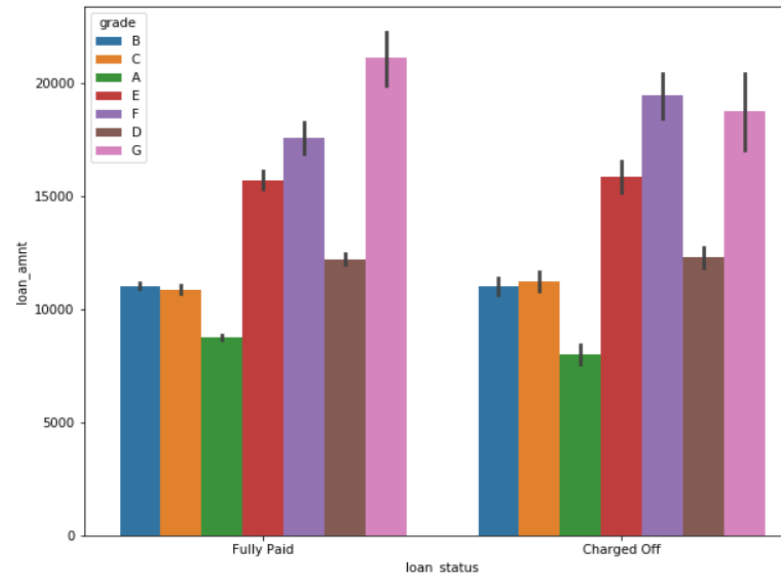
- Higher amount of Loans are seen with Lower income persons.
- These can become risky loans as default rate is higher with larger amount of loans.

Loan amount and Status : Analysis

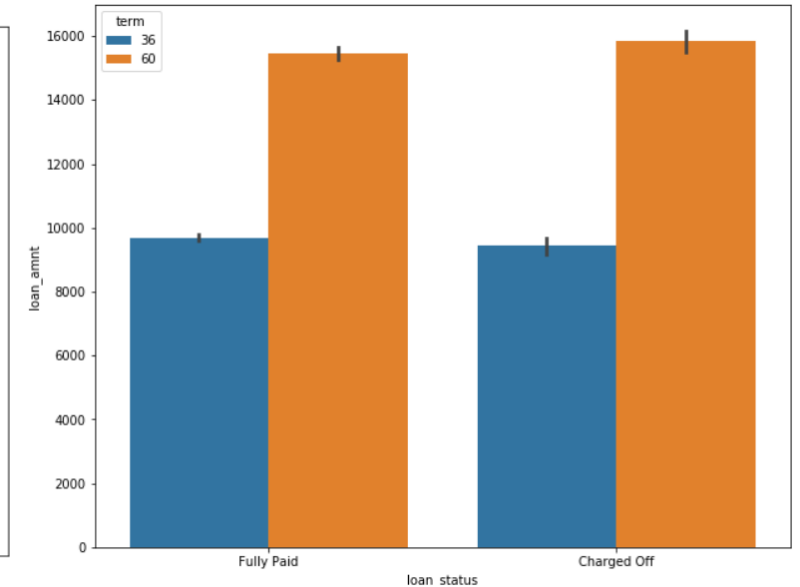
Verification Status



Grade



Term

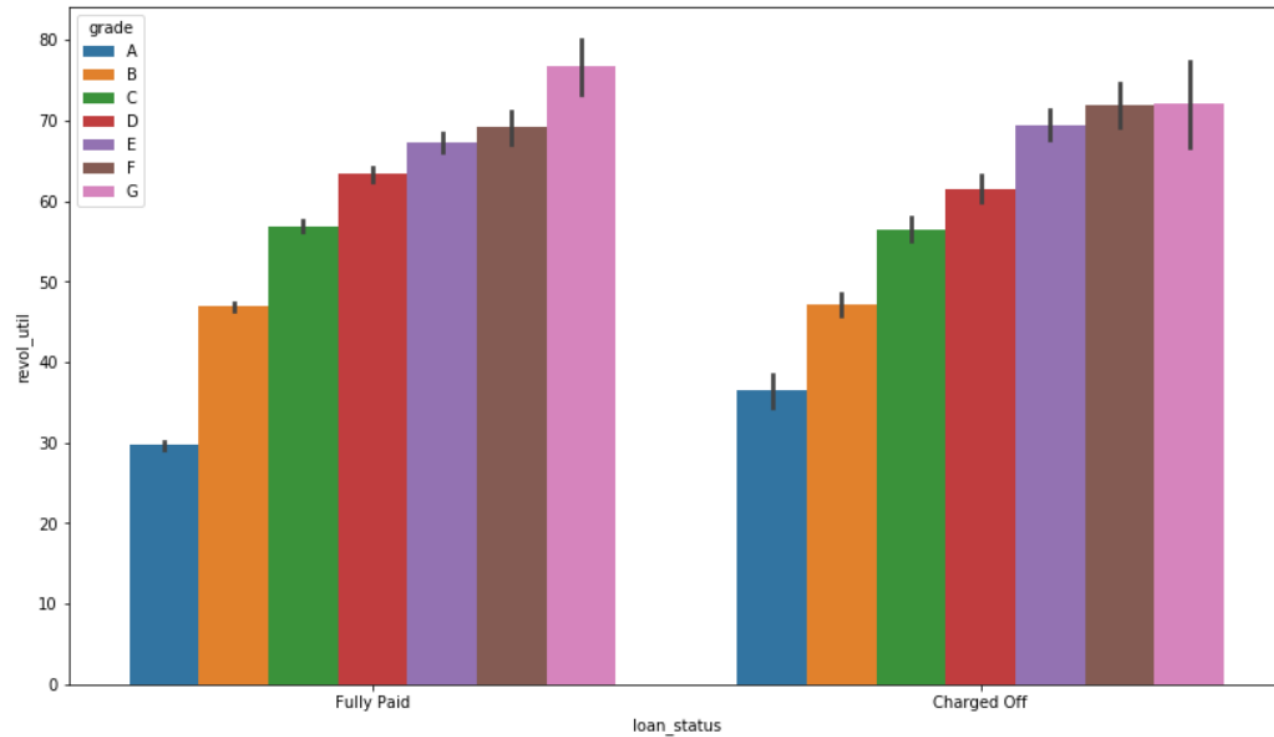


➤ Higher loan amounts which are verified by LC are defaulted more.

➤ Higher loan amounts with higher interest(Grade F & G) seems riskier than others.

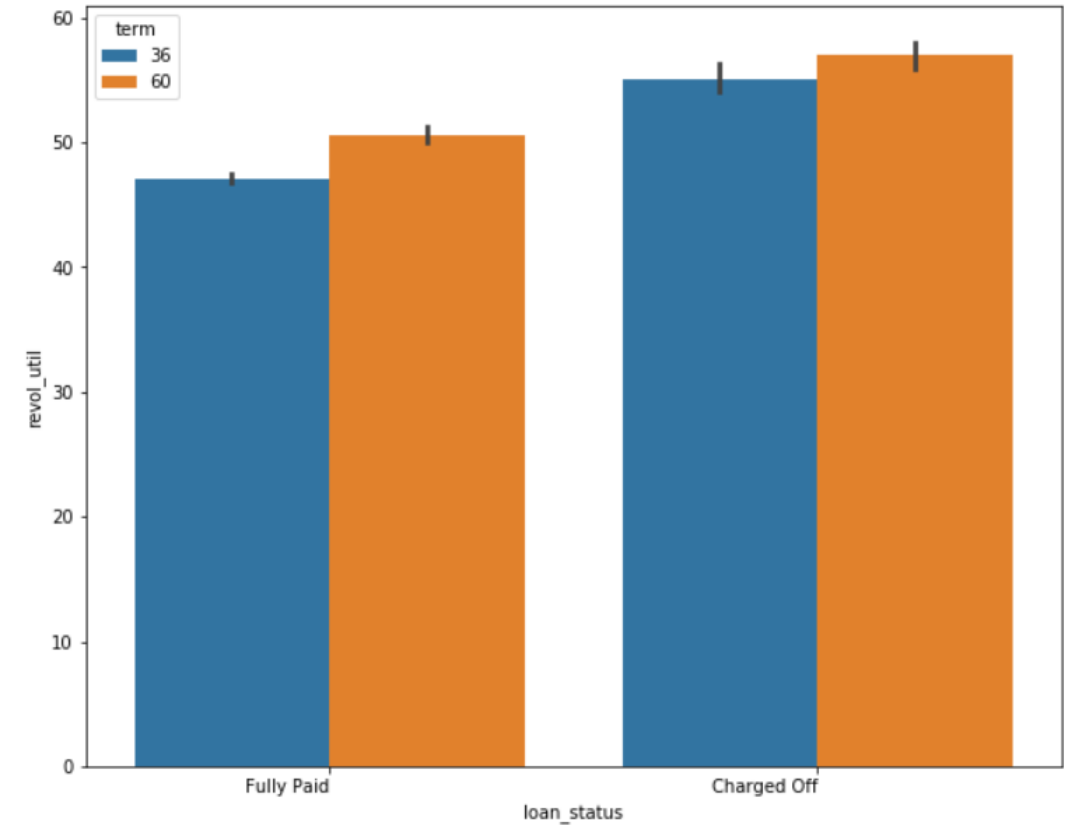
➤ Higher loan amounts usually comes with larger term period, also got higher risk rates.

Grade



- Loans having higher term period with larger revol_util has got more risk rates.

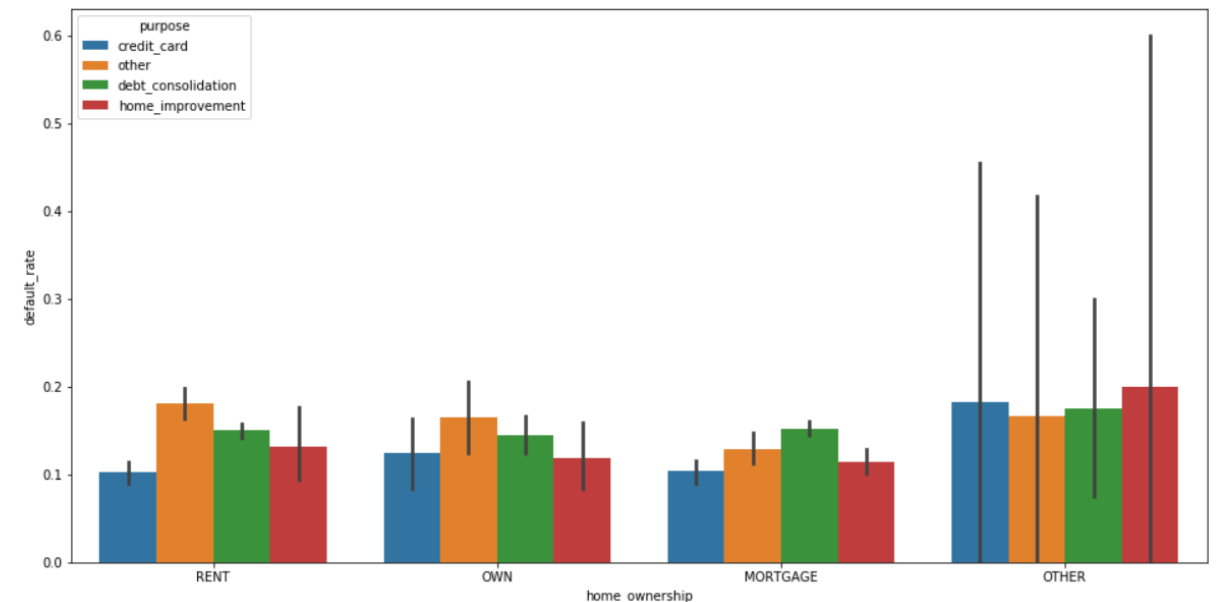
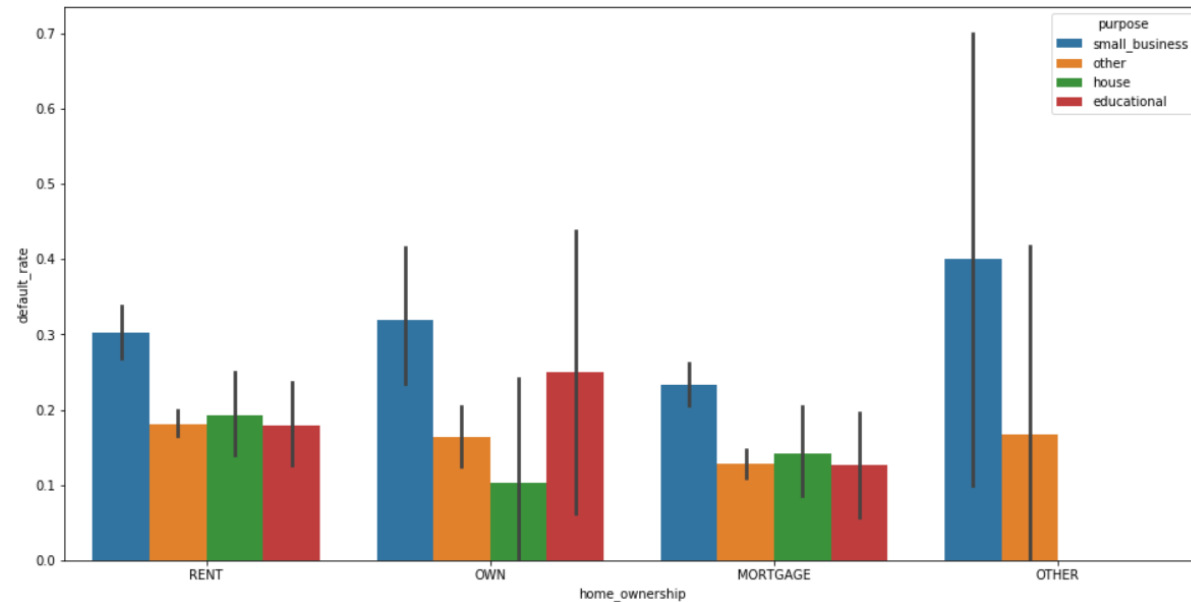
Term



- Loans having higher term period with larger revol_util has got more risk rates.

Purpose and Default rate: Analysis

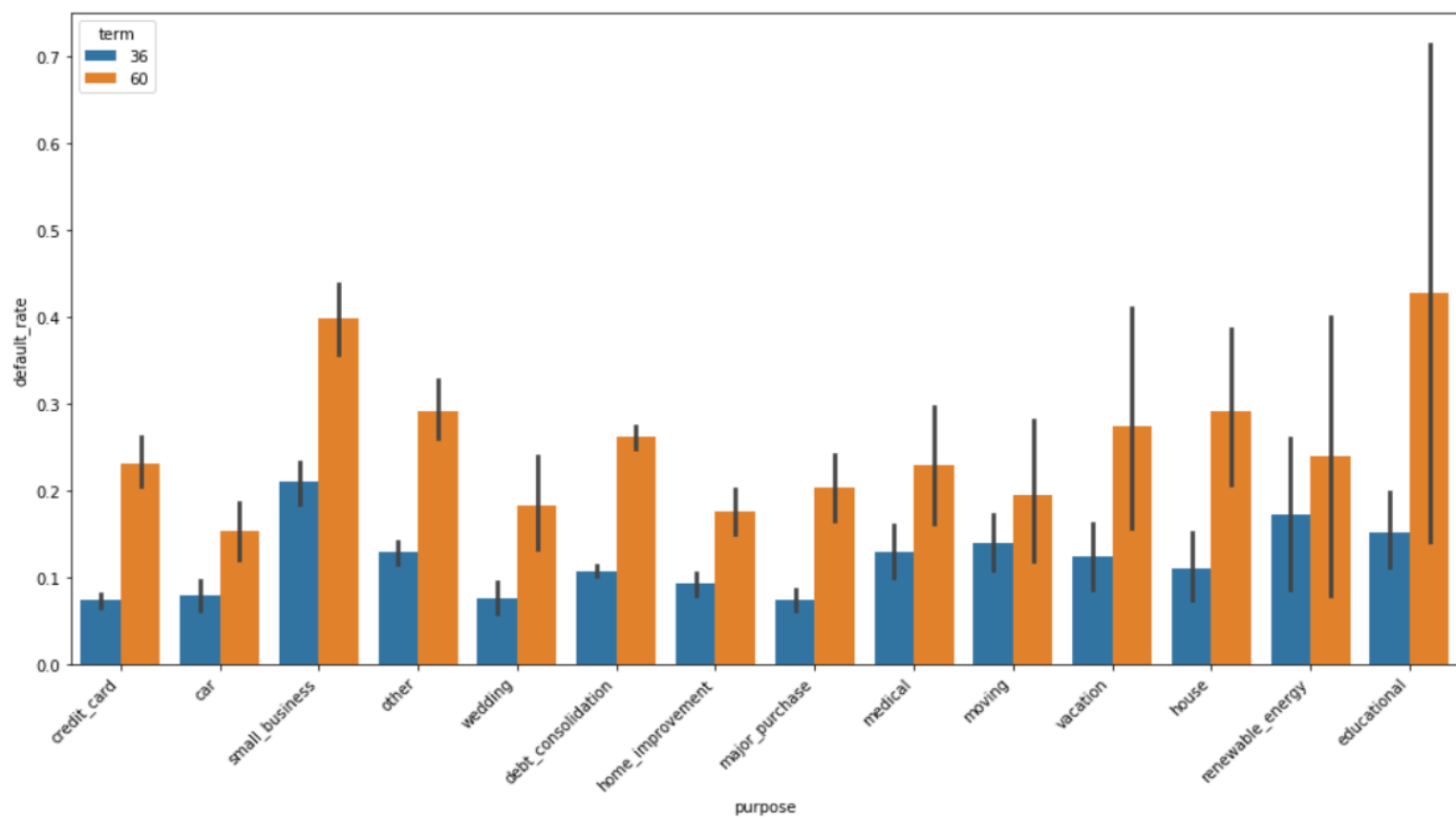
Home Ownership



- Based on the number of loans applied, **debt_consolidation** has got the maximum default rate.
- Based on the default rate across all the purpose applied, **small business** has got the highest rate.
- Within the small business purpose loans, the category with **Other** home ownership has got maximum default rates.

Purpose and Default rate: Analysis

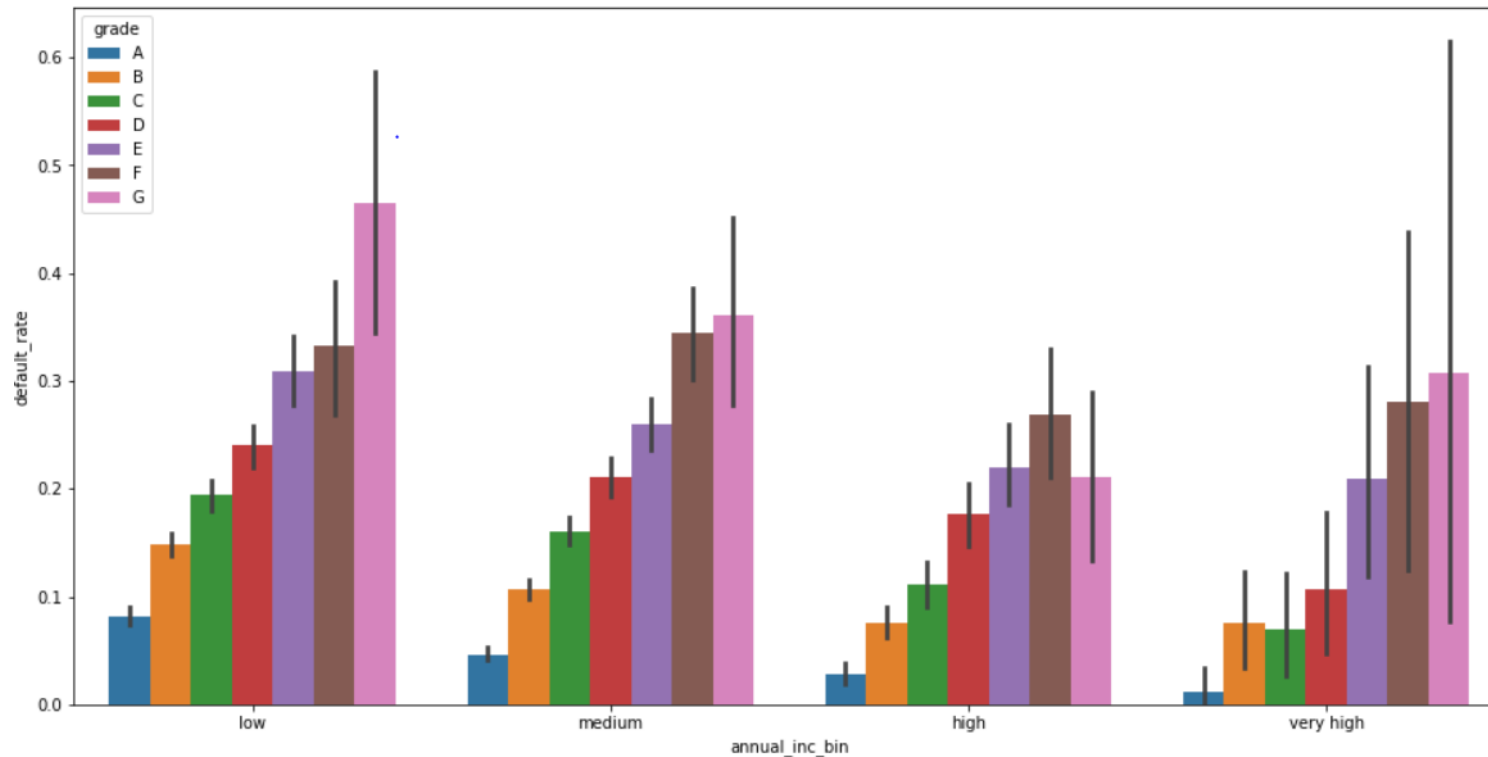
Term



➤ Higher term loans taken for **small_business**, **educational**, **other** and **house** purposes has got higher risk rates.

Annual income and Default rate: Analysis

Grade



- As the interest rate increases within the low and medium income groups, the default rate also increases.

Conclusions

✓ Bad Loans:

- Loans which comes under small business and educational purpose tend to have higher risk rate of being defaulted.
- Loans that were borrowed by low income category had more chances of becoming a bad loan.

✓ Interest Rate/Grade:

- The low income category has got higher interest rates except for most of the loan applications except small business, medical.

✓ Frequent Purpose:

- Most of the loans applied to LC is for debt consolidation.
- The least purposes loan applied to LC is renewable energy.

✓ Most driving factors for bad loan:

- purpose, annual income, term, grade and debt to income ratio.

Recommendations

- ✓ Increase verification criteria for approving loans with highest loan amount.
- ✓ Reduce the number of loan approvals where purpose is small business with 60 months term period.
- ✓ Reduce the approvals of high-value loans when revolving the utilization rate is greater than 80%.
- ✓ Extra scrutiny for high loan amount with high interest rates, as the risk rate is very high.
- ✓ Increase verification criteria for approving loans to low income applicants for all grade types.