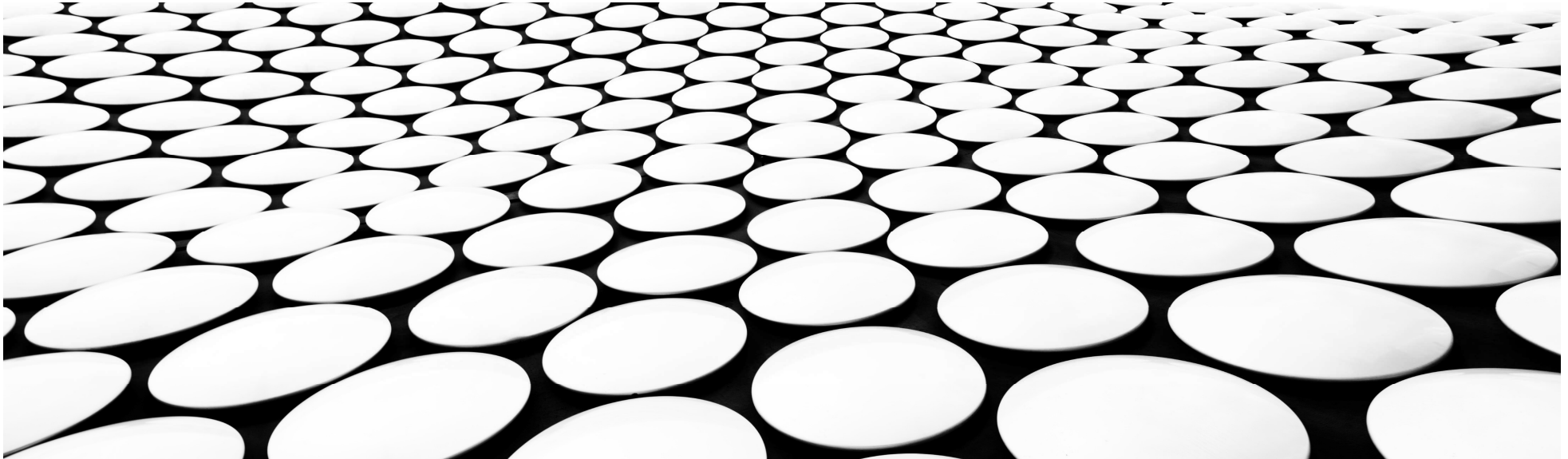# LENDING CLUB CASE STUDY

CHINMAYAJEET OJHA

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PROBLEM STATEMENT

This analysis is for a consumer finance company which specializes in lending various types of loans to urban customers. The problem statement involves analyzing customer profile to make decisions on the loan approval whenever there is an application. There are two types of risks associated with the bank's decision.

➢ Potential business loss if the application is not approved for an applicant who is likely to repay the loan.
➢ Potential financial loss if the loan is approved for an applicant who is not likely to repay the loan.

Hence it is critical for the lending company to take informed decision based on the customer history and considering the factors that can affect the loan repayment by the customer.
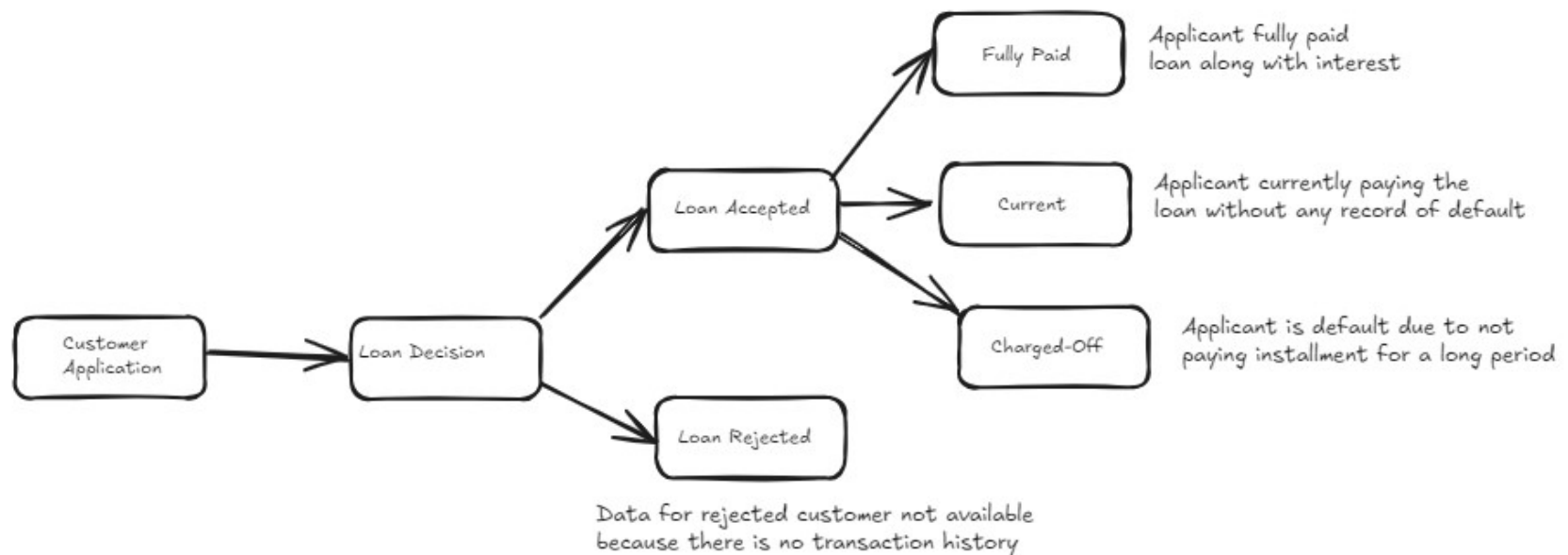
OBJECTIVE OF THIS ANALYSIS

The objective of the analysis is to understand how the consumer attributes and loan attributes influence the tendency of default by using Exploratory Data Analysis (EDA). Identifying the risky application will help companies to reduce such loans there by cutting down on credit loss.
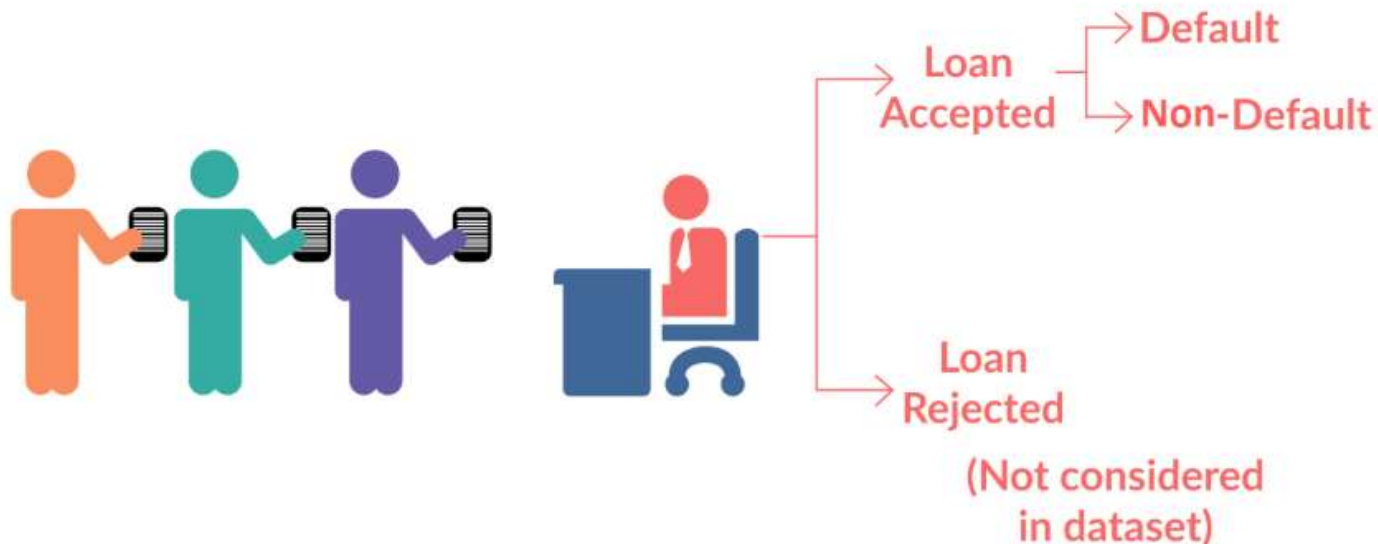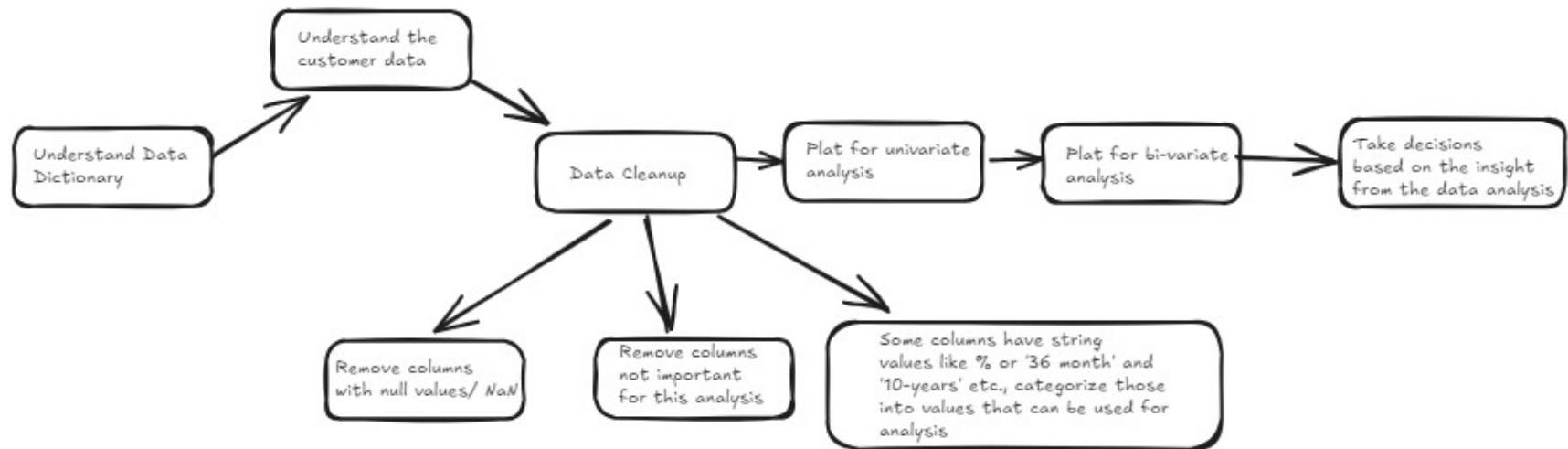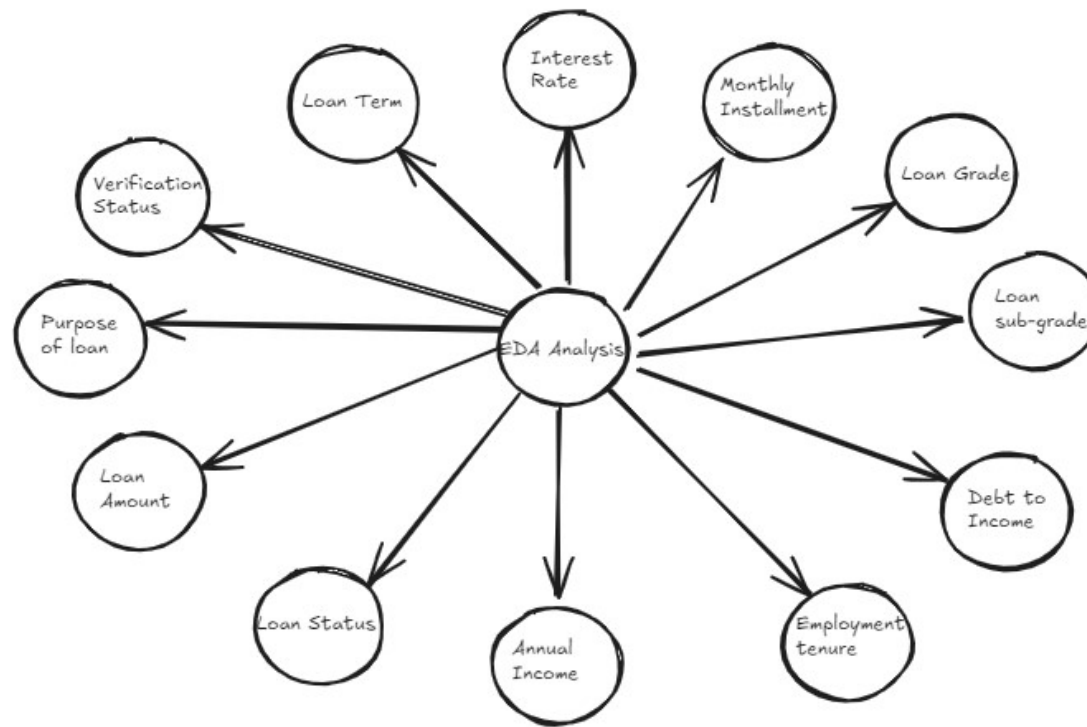
TYPES OF DECISIONS TO BE TAKEN USING THIS ANALYSIS

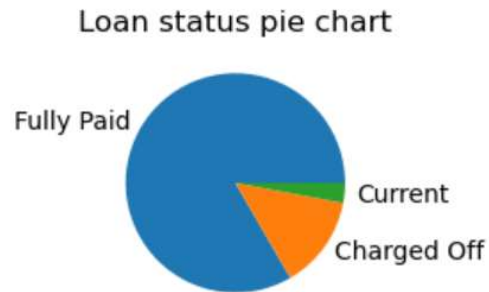Below are some of the key points to be considered to take various types of decisions.

Fully Paid — Applicant fully paid loan along with interest

Current — Applicant currently paying the loan without any record of default

Charged-Off — Applicant is default due to not paying installment for a long period

Data for rejected customer not available because there is no transaction history

DATA ANALYSIS FLOW

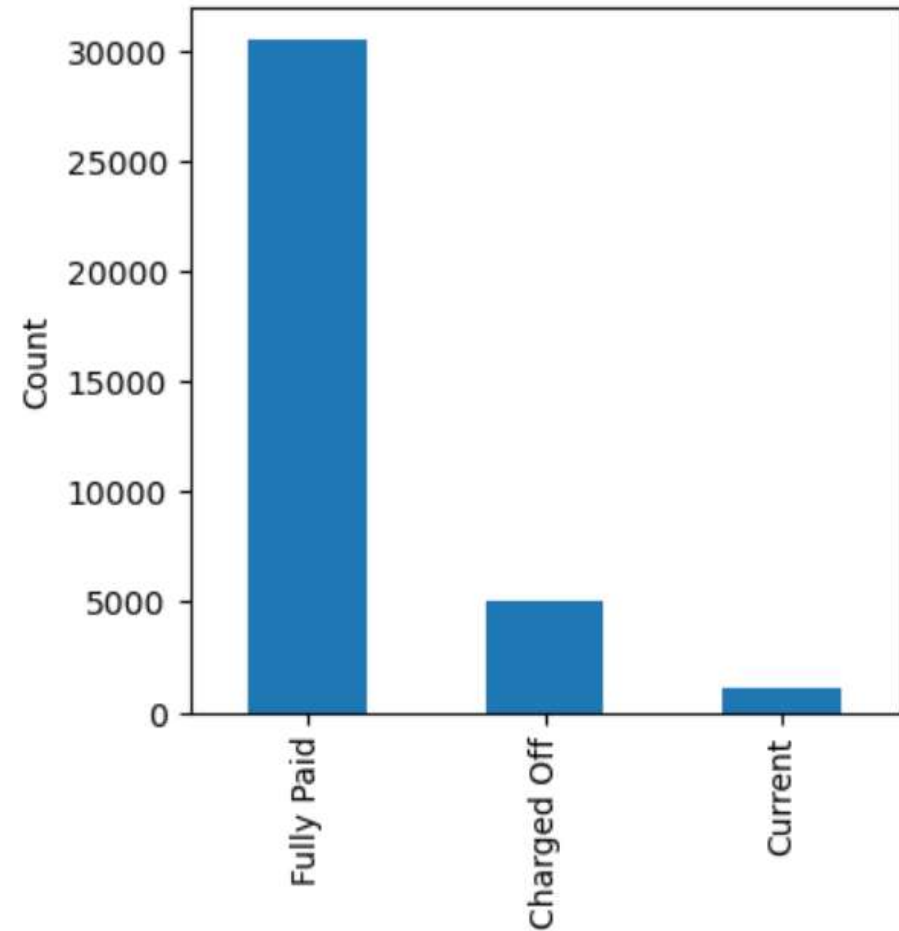# PARAMETERS USED FOR DATA ANALYSIS

OBSERVATION – LOAN STATUS (UNI-VARIATE)

Based on the customer status as univariate analysis:

- Charged off customers marked in a different column as defaulters
- The above graph analysis shows that close to ~13.7% of the customers are in risky category i.e. charged off.
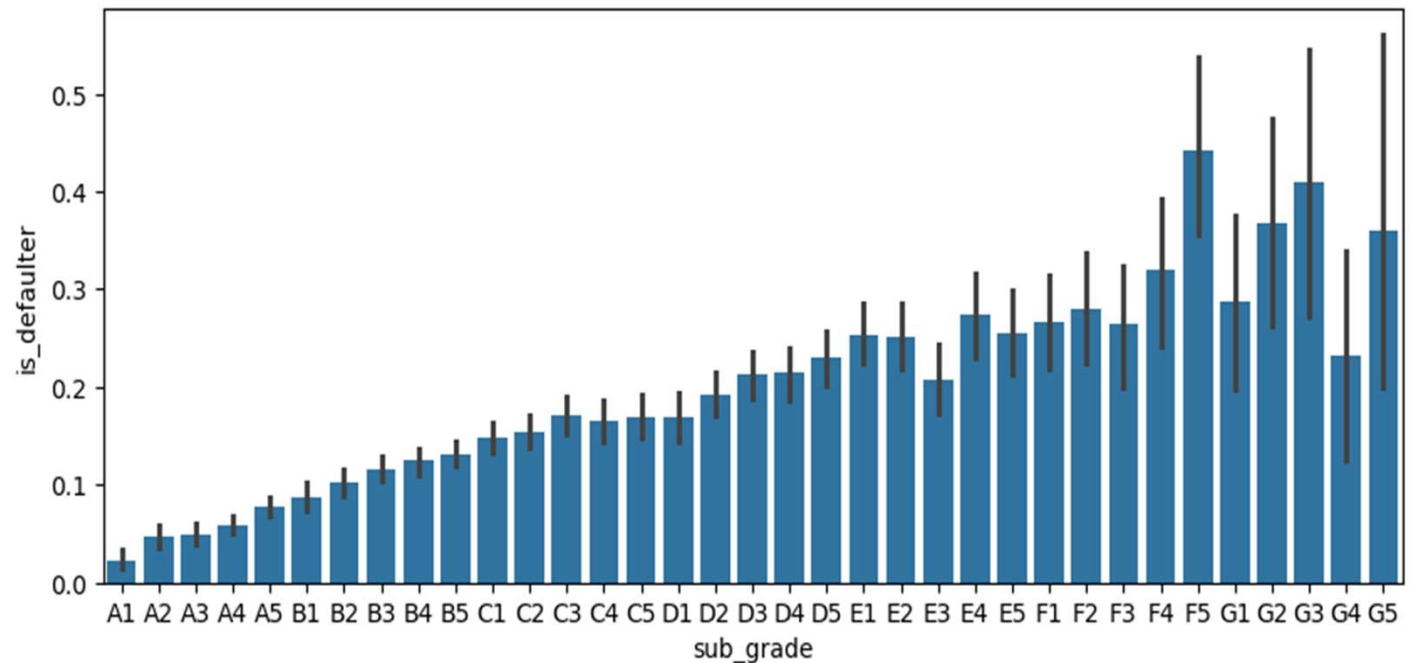
OBSERVATION – GRADE AND DEFAULTERS

As expected, the customers with higher risk grade, are the major defaulters i.e. Grades F and G.
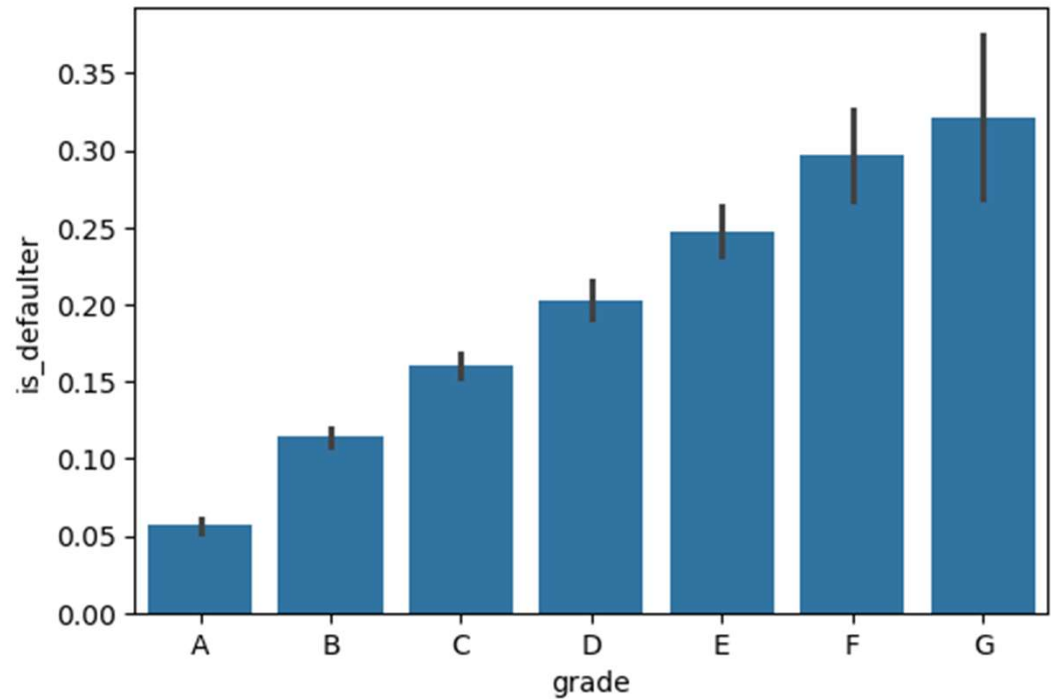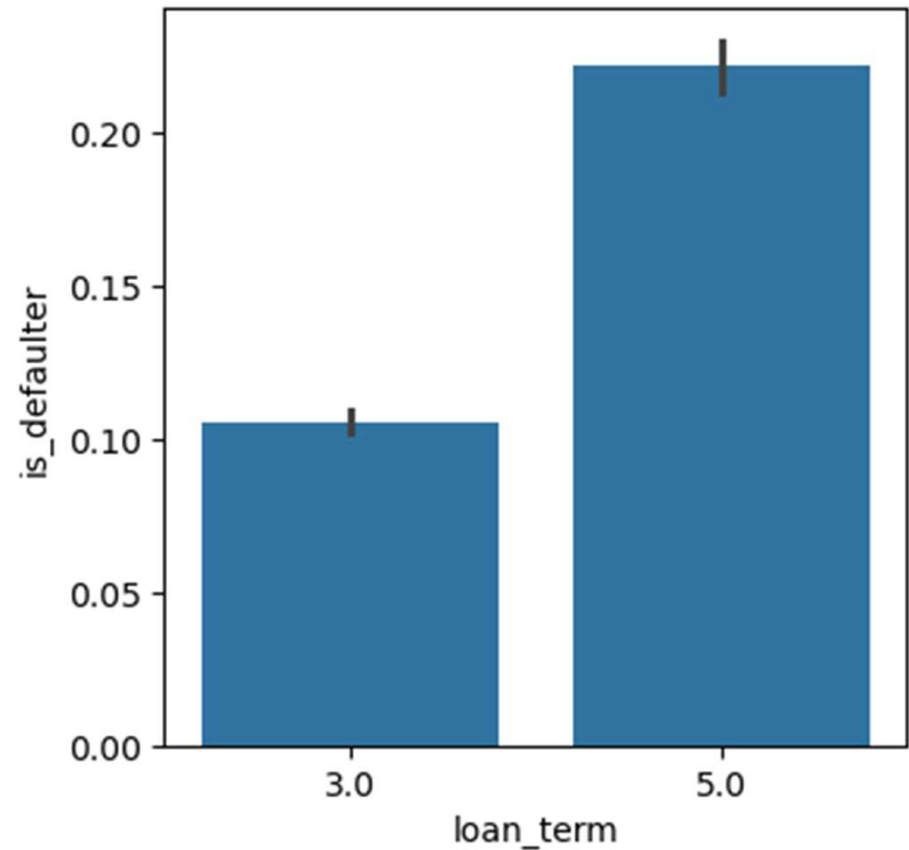
OBSERVATION – SUB-GRADE AND DEFAULTERS

The above analysis shows that customers with higher risk sub-grade are major defaulters even within a grade except few exceptions. The major defaulters are in sub-grade F5 and G3
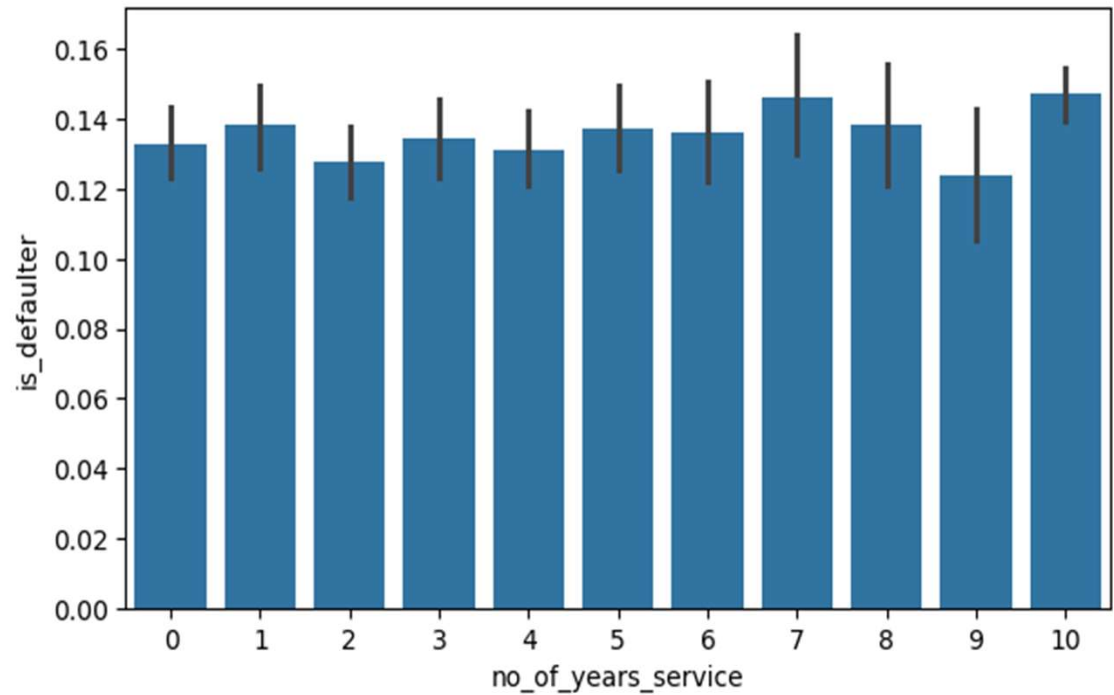
OBSERVATION – SUB-GRADE AND DEFAULTERS

For the analysis,
- we converted the months to years i.e. 3 and 5.
- In this analysis it is clear that customers with higher loan term are in bigger default category
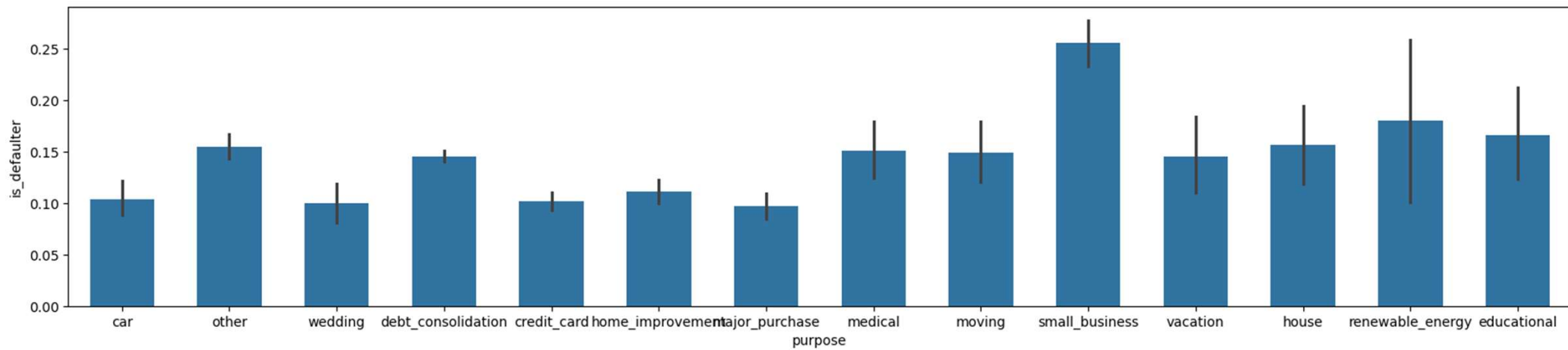
OBSERVATION – YEARS OF SERVICE AND DEFAULTERS

We don't see any pattern in this category. Hence we can conclude that the number of years of service has no impact on the defaulting
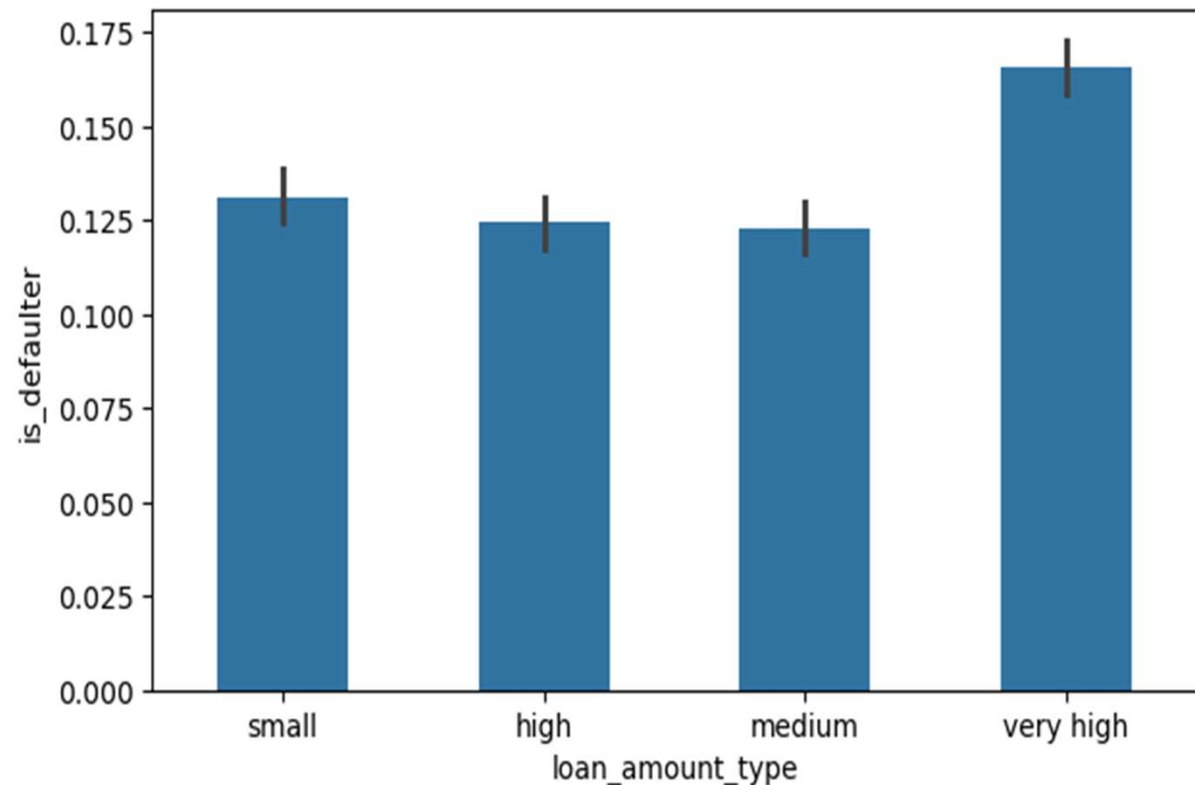
The above analysis shows that the customers taking loan for small businesses are major defaulters compared to any other category

OBSERVATION – LOAN AMOUNT TYPE AND DEFAULTERS

For the analysis
- We categorized the loan amount type as very high (>15000), high (10000-15000), medium (5550-10000) and small (<5550).
- The above analysis shows that The above analysis shows that the customers with 'very high' loan amount i.e. >=15000 are major defaulters compared those with lower loan amount

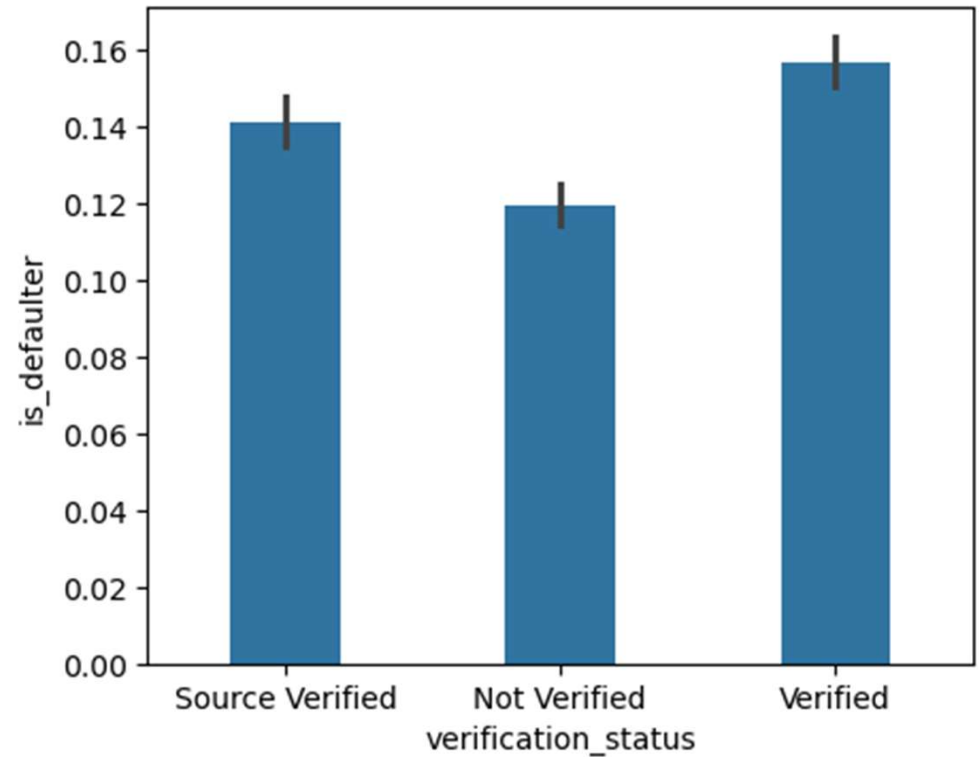## OBSERVATION – INTEREST RATE TYPE AND DEFAULTERS

For the analysis
- We categorized the loan interest type as high (>14%), medium (9-14%), and small (<9%).
- The above analysis shows that the customer who were given loan at high interest are major defaulters i.e. interest rate > 14%
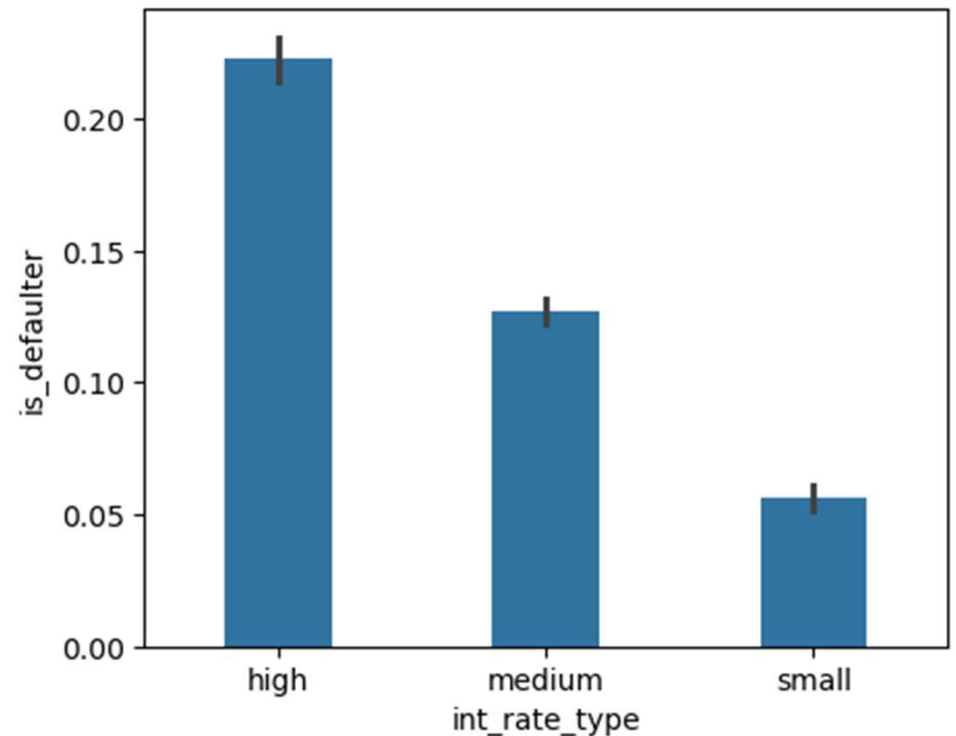
OBSERVATION – VERIFICATION STATUS AND DEFAULTERS

In this case the verified customers seem to be the major defaulters which does not make any sense as verification always reduces risk. Hence this insight does not help in any conclusion.

OBSERVATION – DTI TYPE AND DEFAULTERS

This also does not give any conclusion as the customers at higher risk of DTI are not the defaulters whereas the customers in low and medium risk are the major defaulters.
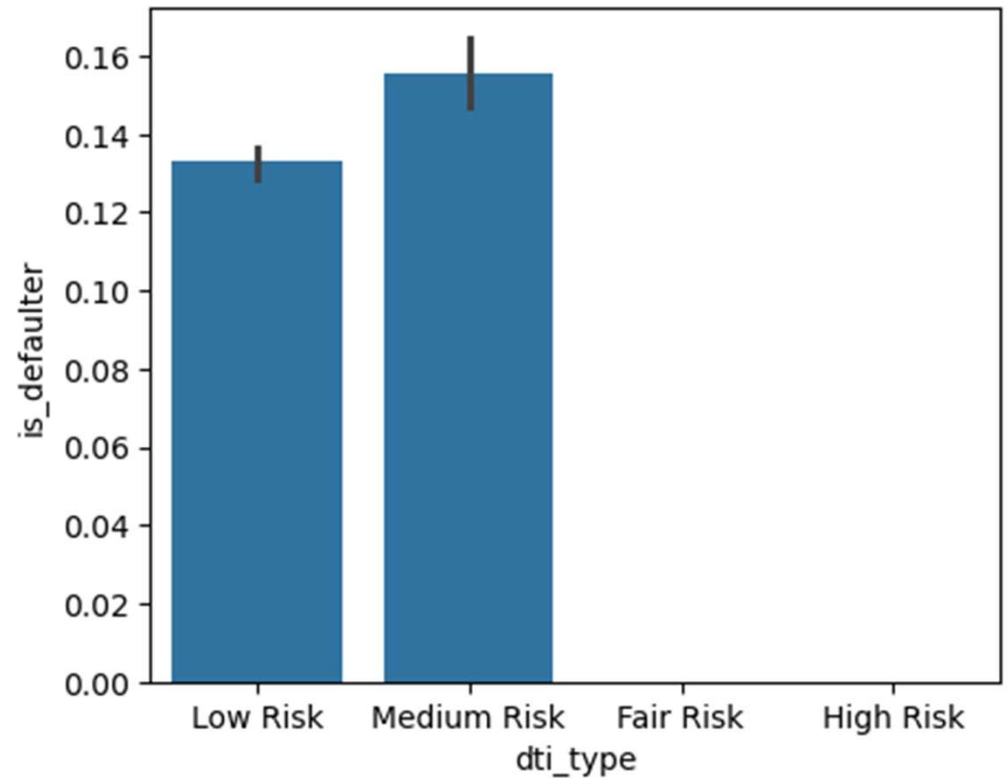
OBSERVATION – EXPERIENCE TYPE AND DEFAULTERS

For this analysis
- We categorized the customers as
  Fresher (<1 year of service),
  Medium Exp (1-8 years service)
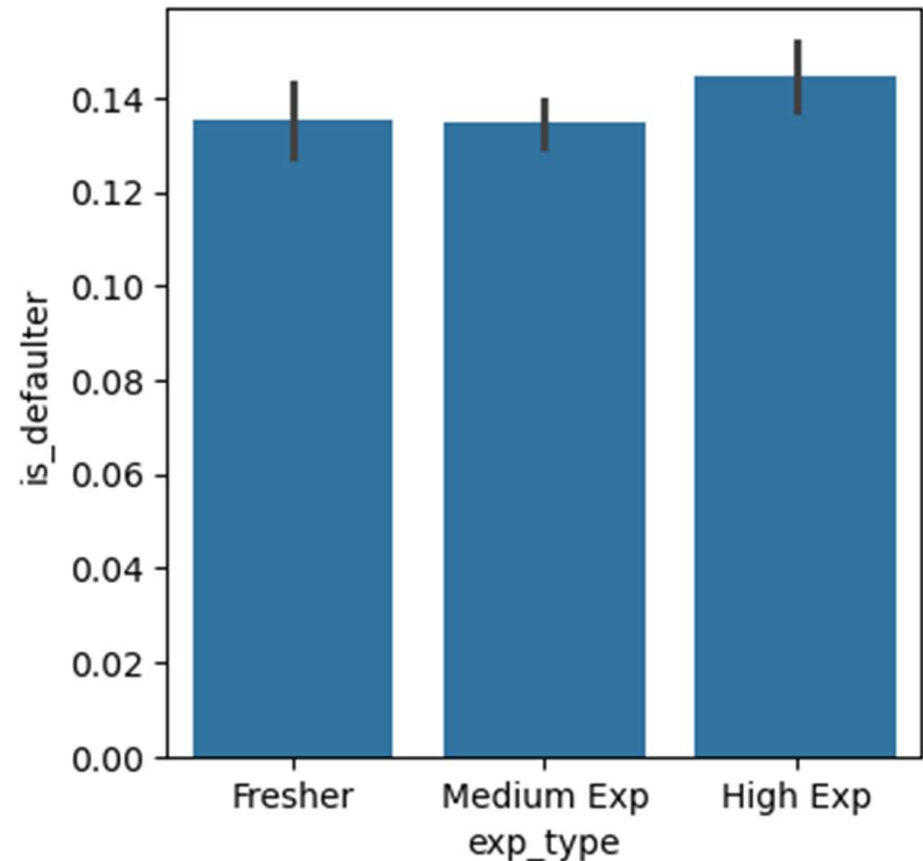 and High Exp (>=8 years service).
- This also does not give any
  conclusion as the customers at
  higher risk of DTI are not the
  defaulters whereas the customers
  in low and medium risk are the
  major defaulters.

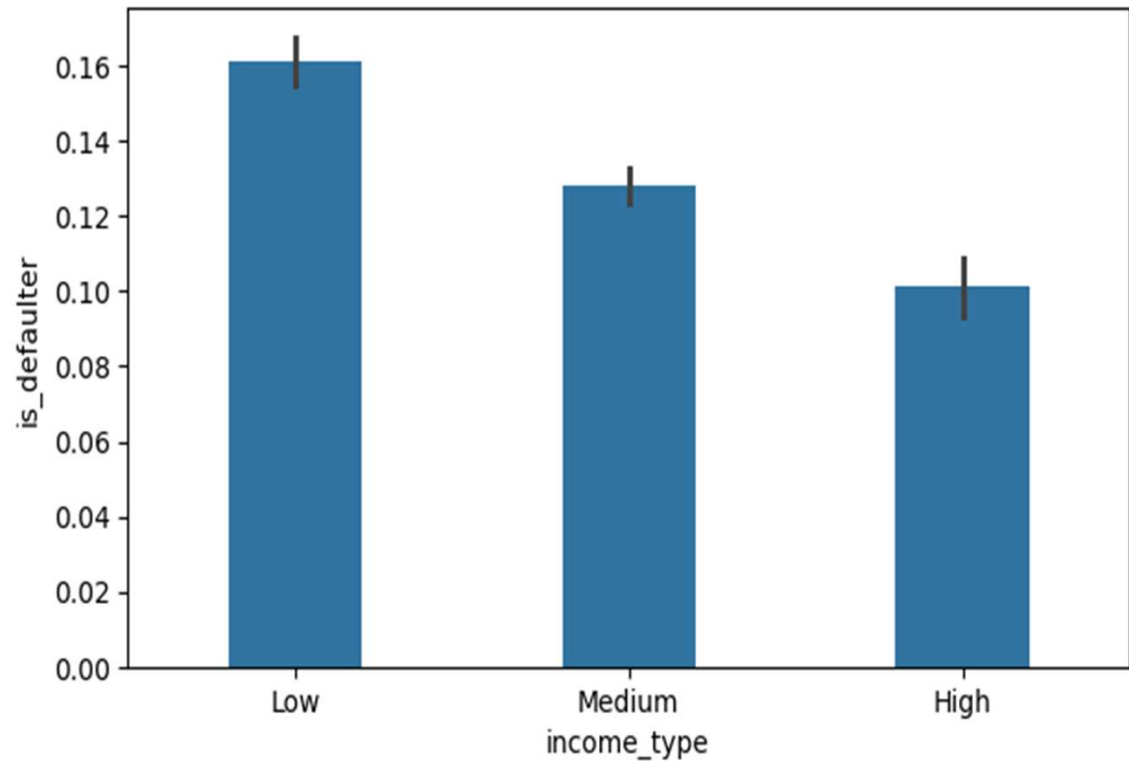## OBSERVATION – INCOME TYPE AND DEFAULTERS

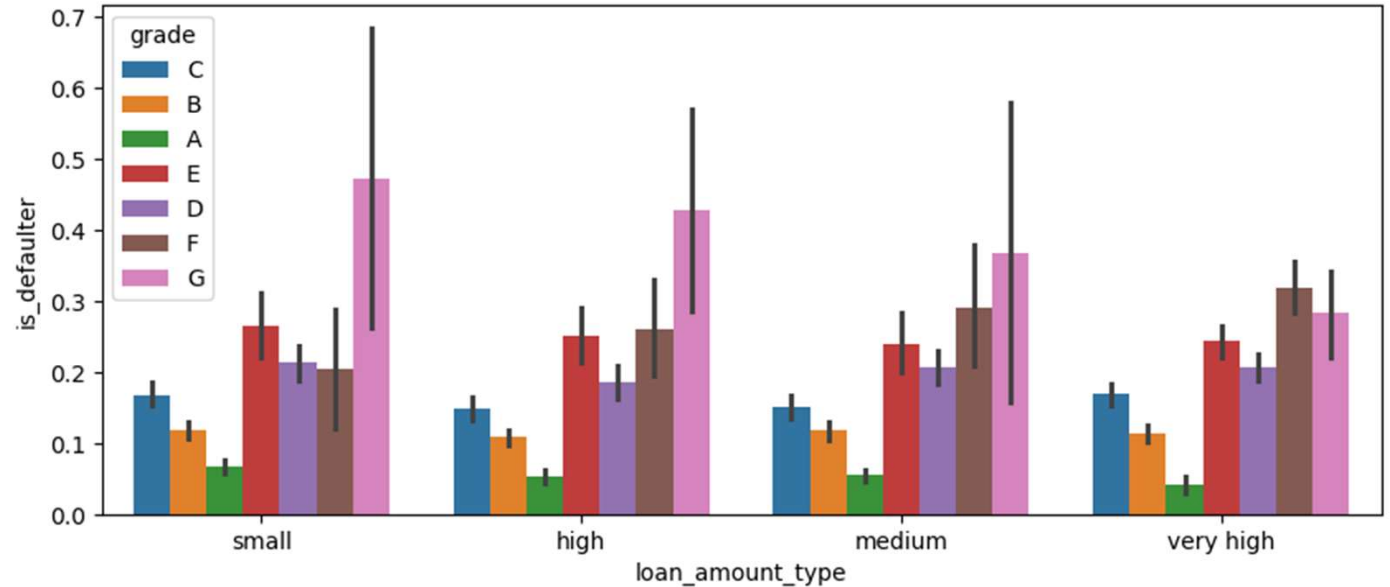For this analysis
- We categorized the customers income type as low (<50000/year), Medium (50k-1Lakh/year) and High (>1 Lakh/year).
- The above graph shows that the customer with lower i.e. <50000 income are major defaulter

OBSERVATION – BIVARIATE

Attributes
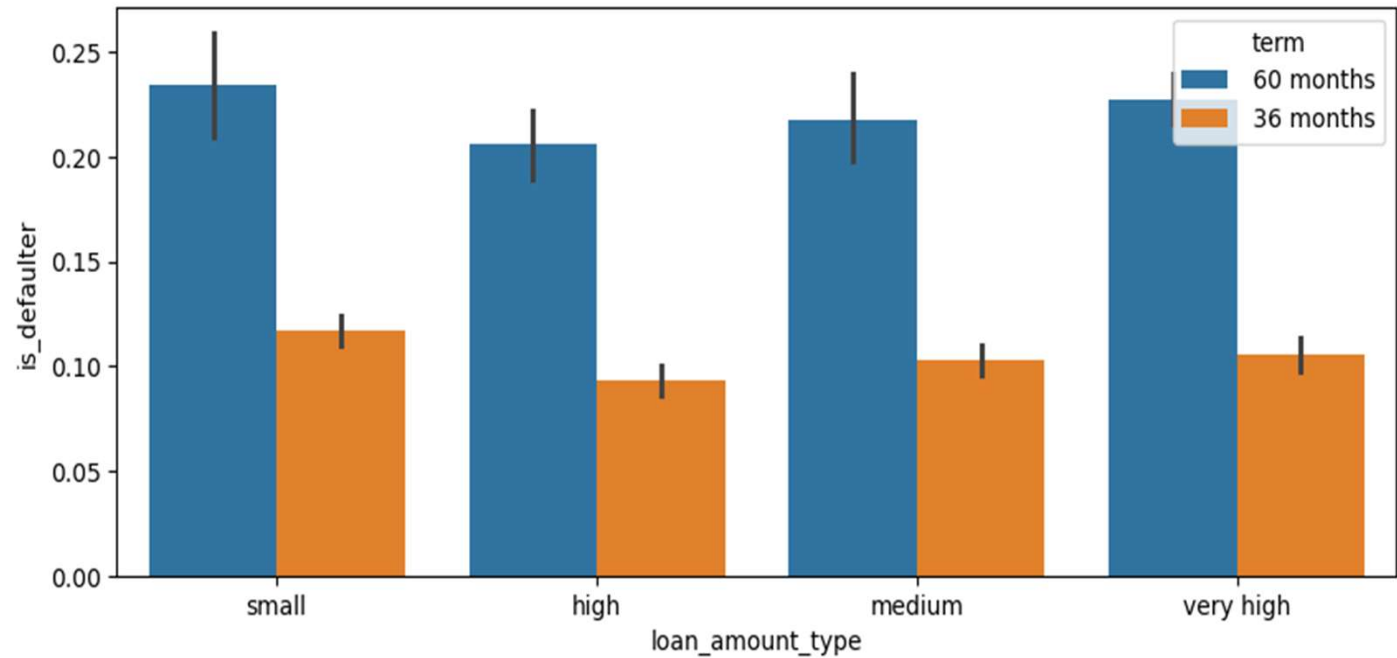- Loan amount type
- Loan status / Defaulter
- Loan Grade

Above analysis shows that the customers with lower grade especially G are into higher defaulter bracket for all loan amount except very high ones.

Attributes
- Loan amount type
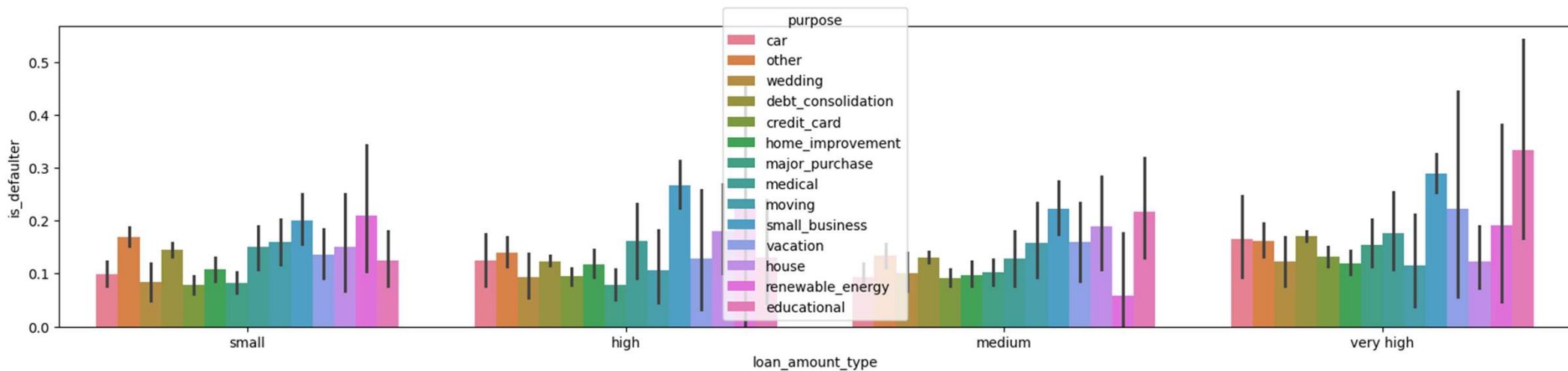- Loan status / Defaulter
- Term

The above graph shows that the loans with higher term (5 years) has more defaulters for any loan amount type

OBSERVATION – BIVARIATE

Attributes
- Loan amount type
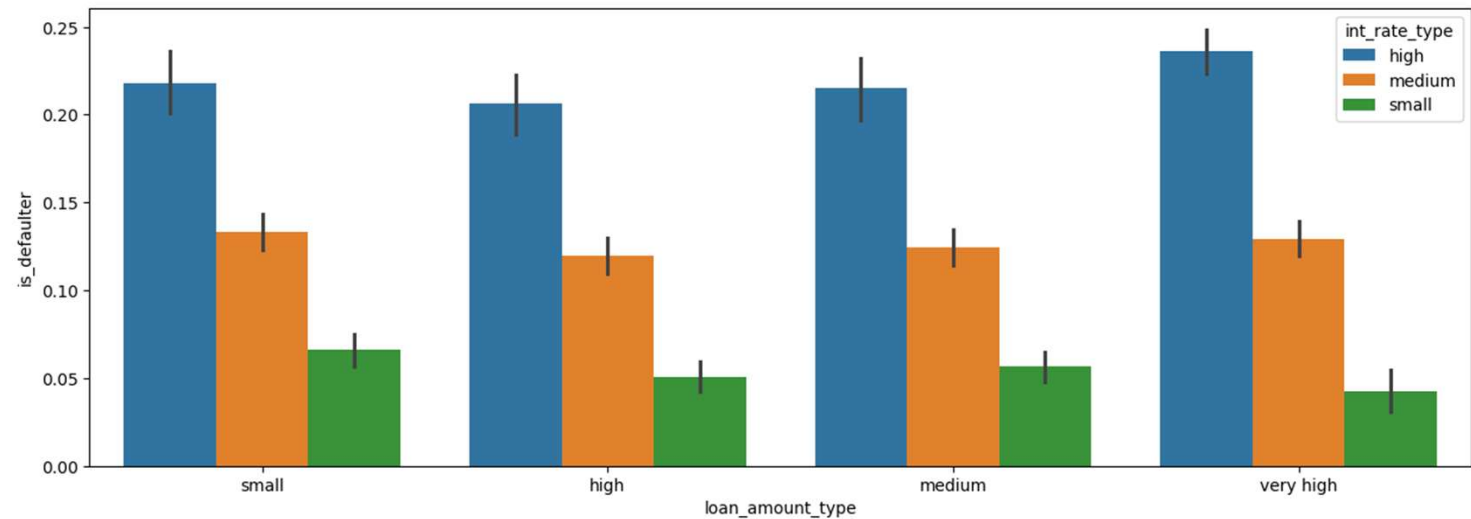- Loan status / Defaulter
- Loan Purpose

Here again we can see the customers taken loan for small businesses are majorly into defaulters for any loan amount type

OBSERVATION – BIVARIATE

Attributes
- Loan amount type
- Loan status / Defaulter
- Interest rate type

Above shows that the customers given loan with higher interest rate (>14%) are major defaulters for any loan amount type

FINAL OBSERVATION BASED ON EDA

- There is a higher defaulter percentage (~14%) in terms of charged off.
- The customers with higher risk-grade are major defaulters i.e. F and G compared to other grades.
- Customers given loan with higher loan term (5 years) are more likely to default compared to lower term.
- Customer taking loan for small businesses are more likely to default compared to other businesses.
- Customer approved higher loan amount (>15000) are more likely to default compared to lower loan amounts.
- Customers given loan with higher interest rate (>14%) are more likely to default compared to lower rate ones.
- Customers irrespective verified or not sometimes can also default based on data analysis. But this sanity is always needed before loan approval.
- Higher DTI may not be a factor for default as most of the low ad and medium risk ones are among the major defaulters.
- Customers in lower income category (<50K/year) are more likely to default than ones with higher income.
- Customer with lower loan Grade G are more likely to default across all loan amount type.
- Customer with higher loan term are more likely to default across all loan amount type.
- Customer with loan for small business more likely to default across all loan amount type.
- Customer with higher interest rates are more likely to default across all loan amount type.
- Whereas
- Number of years in service can not be a factor for default based on the data analysis.
- Number of years of service does not have any impact in non-payments / defaulters.

THANK YOU