

# CREDIT RISK ANALYSIS

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# Objective

To evaluate the strong indicators of loan defaulters to minimise risk.

# Data Understanding and Process

- ▶ Two Data Sets:
  - ▶ Application Data: The data of all the current applications made.
    - ▶ It has the data of applicants who had either payment difficulties (Target variable=1) and those he did not (Target variable=0).
    - ▶ The data was analysed separately for Target=1 and Target=0.
  - ▶ Previous Application Data: It has all the records of all the previous applications made by current applications in the past.
    - ▶ It presents the information such as the types of loans requested earlier, their reasons for rejection etc.
- ▶ Extensive study was done on both data sets, focussing more on the Application Data followed by merging it with the previous applications' data for further analysis.
- ▶ Programming Language: Python.
- ▶ Libraries Used: Python's Pandas, Matplotlib and Seaborn for Data Visualization.
- ▶ Tools used: Exploratory Data Analysis

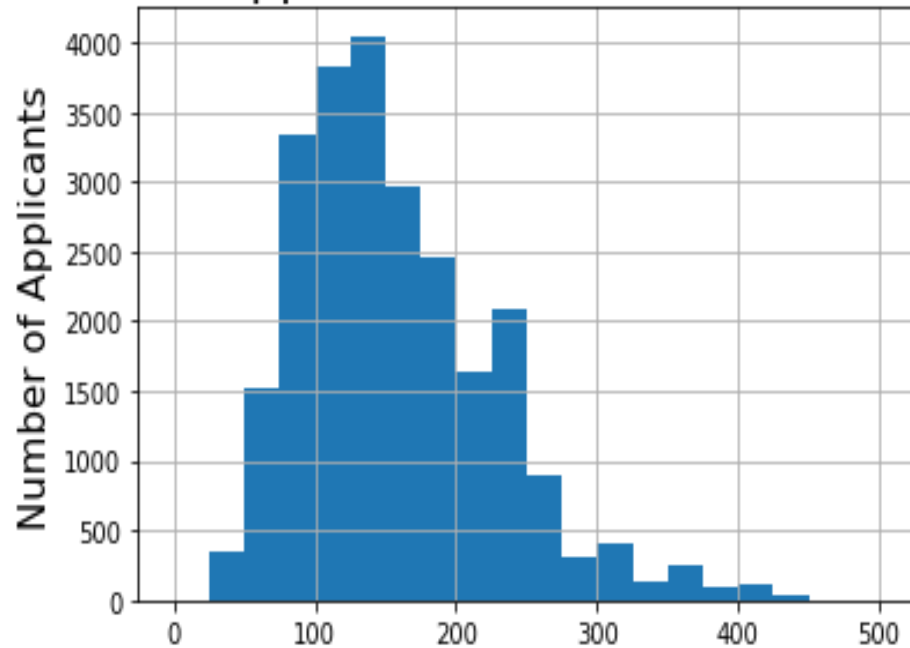
# Income Comparison

A majority of applicants who have either payment difficulties or defaulted in the past fall in the income range of INR 50,000 to INR 200,000.

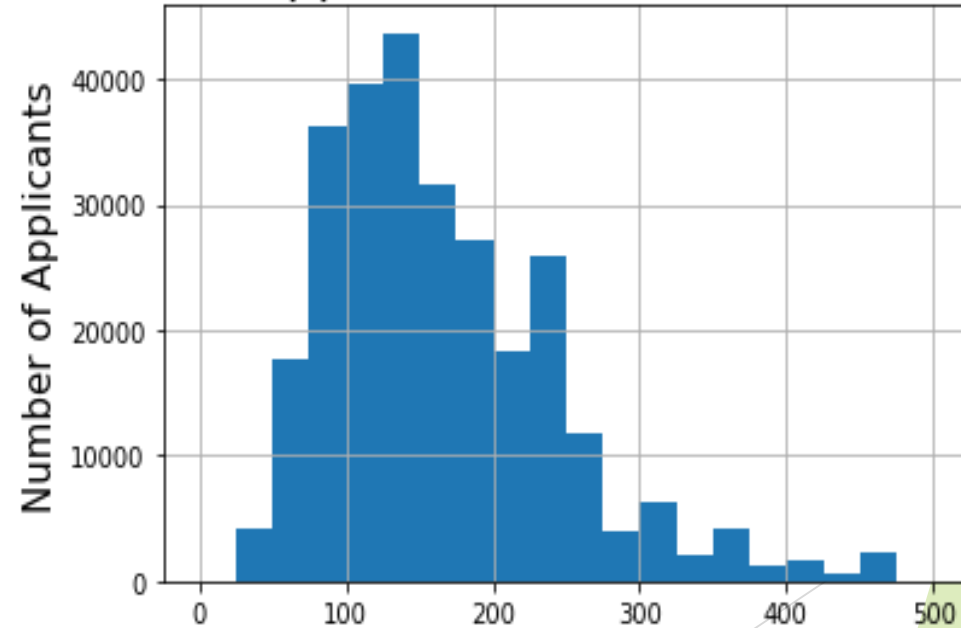
Income in most cases can be used to assess an applicant's capability to repay. However, it is not a strong indicator of default.

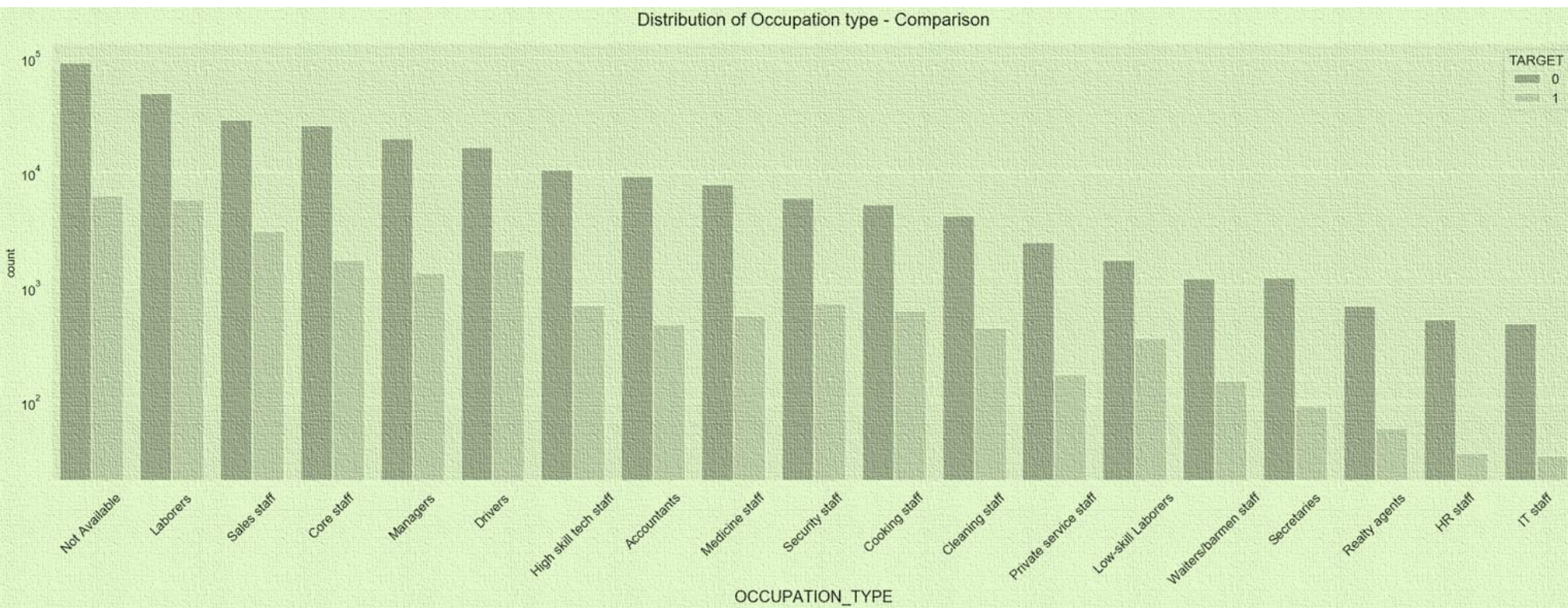
The non defaulters have incomes spread across INR 80,000 to INR 250,000 majorly

T1: Applicant Income Distribution



T2: Applicant Income Distribution





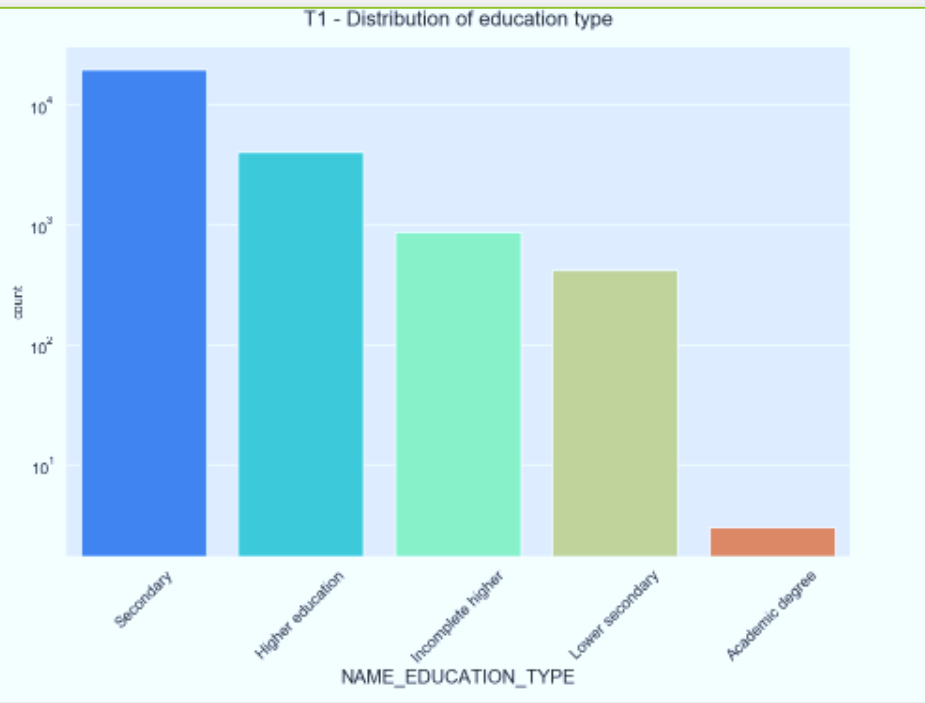
## Occupation Types: Defaulters vs Non-Defaulters

From "Distribution of Occupation type - Current Application" we notice that most applications are from "Labourers" and least are from "IT-Staff"

2. From "Distribution of Occupation type - Comparison", we see that the number of applications in T1 and T2 follow a similar trend as in the entire current application data.

3. Its worth noting from the comparison that the percentage of "Labourers" defaulting is higher than the percentage of "IT-Staff" defaulting. Infact, "Labourers" and "Drivers" have the highest Default percentage.

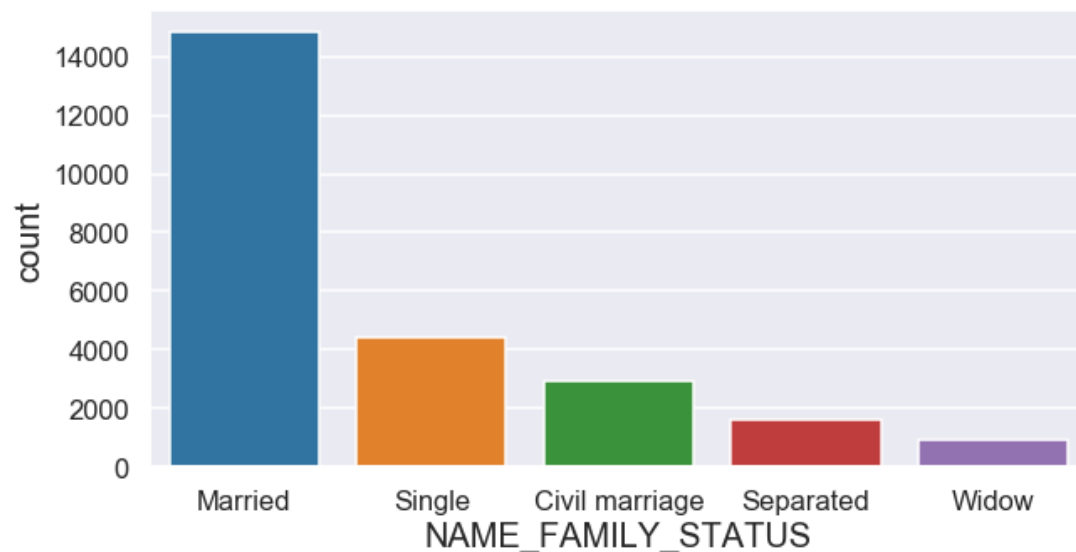
# Education: An Indicator of default?



- ▶ People with "Secondary" education have highest default rate
- ▶ People with "Academic degree" have lowest default rate
- ▶ This could be due to lack of awareness among those with no academic degrees. Further investigations are required in order to understand the underlying cause.

# Family Status: An indicator of default?

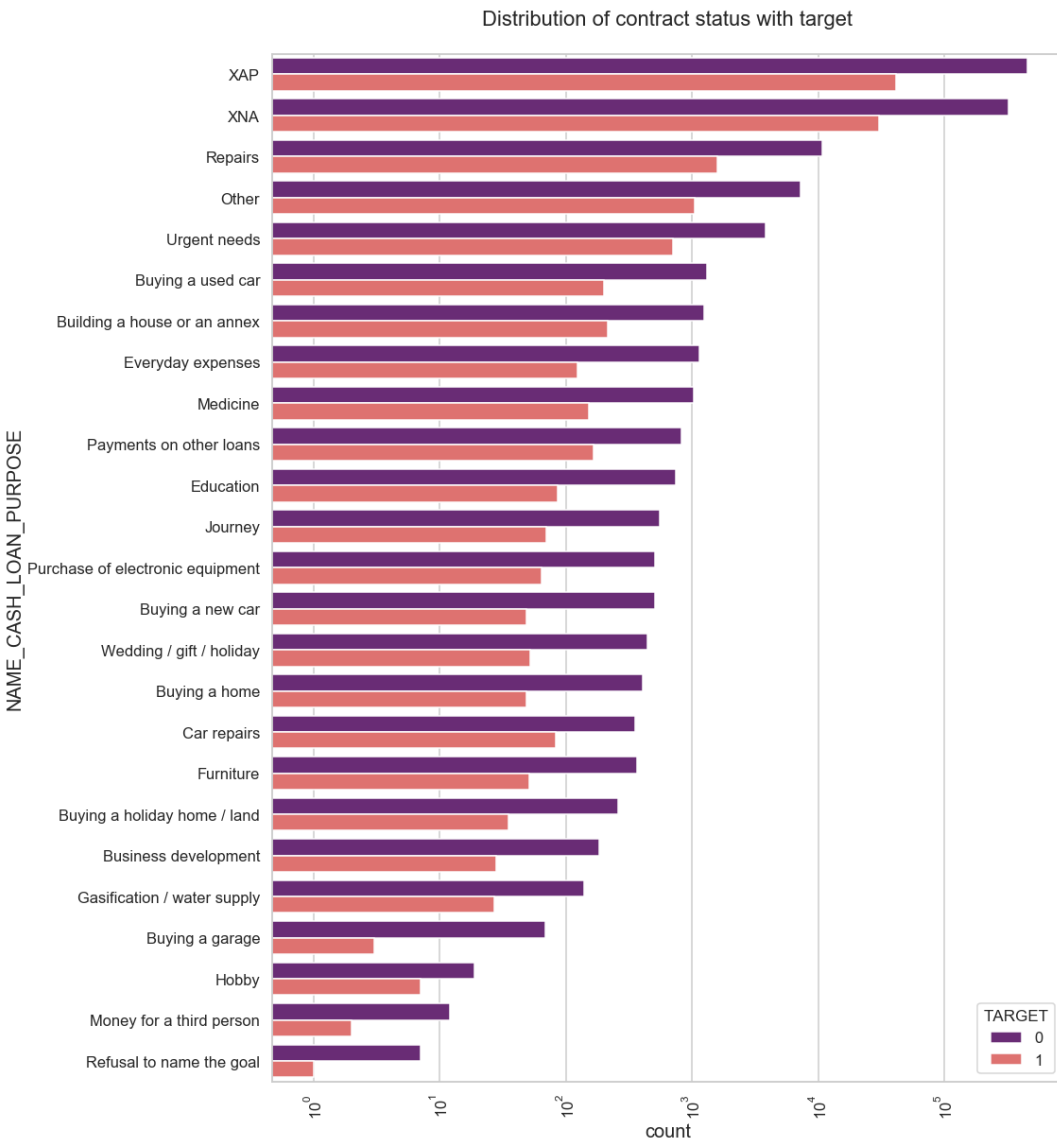
Number of Applicants vs Family\_Status



## Graph Interpretation:

- ▶ Although a major number of applicants are married, they are most likely to default.

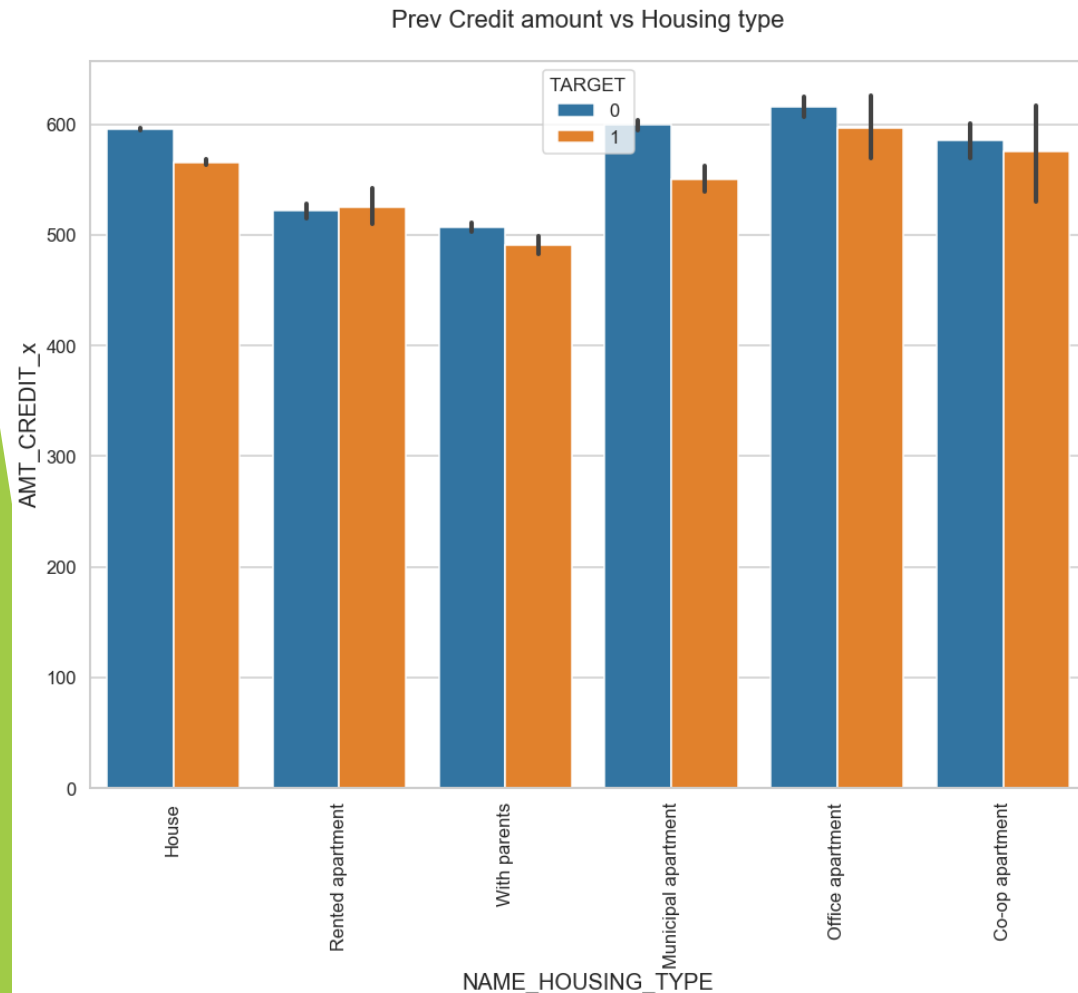
# Loan Purpose: An indicator of default?



- ▶ Loan purposes with 'Repairs' are facing more difficulties in payment on time.
- ▶ There are few places where loan payment is significant higher than facing difficulties. They are 'Buying a garage', 'Business development', 'Buying land', 'Buying a new car' and 'Education'



# Housing Type: An Indicator of default?



- ▶ Here for Housing type, office apartment is having higher credit of target 0 and co-op apartment is having higher credit of target 1.
- ▶ 2. So, we can conclude that bank should think before giving loans to the housing type of co-op apartment as they are having difficulties in payment.

# Final Words

- ▶ The Consumer Finance Company must pay attention to the following parameters while granting loans in order to predict defaulters:
  - ▶ **Income** is not a strong indicator of defaulting as per the data provided. However, a majority of applicants who have either payment difficulties or defaulted in the past fall in the income range of INR 50,000 to INR 200,000.
  - ▶ Stricter measures could be taken while assessing the loans of labourers and Drivers as they have the highest percentage among those with payment difficulties. They are more likely to default. However, Student and Businessman have negligible default percentage. Nevertheless, there are defaulters spread across all **occupation types** irrespective of their incomes
  - ▶ **Education** can be another parameter to predict defaulters. While applicants with "Secondary" education have highest default rate, applicants with "Academic degree" have lowest default rate.
  - ▶ **Loan purposes** with 'Repairs' are facing more difficulties in payment on time. There are few places where loan payment is significantly higher than facing difficulties. They are 'Buying a garage', 'Business development', 'Buying land', 'Buying a new car' and 'Education' Hence we can focus on these purposes for which the client is having for minimal payment difficulties.
  - ▶ The Company should think before giving loans to the **housing type** of co-op apartment as they are having difficulties in payment.