Project on Exploratory Data Analysis

Credit EDA Assignment

By: Bhupendra Gautam

Design

- Problem Statement: When the company receives a loan application, the company has to decide for loan approval based on the applicant's profile. Two types of risks are associated with the bank's decision:

1. If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company
2. If the applicant is not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company.
3. The company wants to understand the driving factors (or driver variables) behind loan default, i.e. the variables which are strong indicators of default. The company can utilise this knowledge for its portfolio and risk assessment.

Analysis Approach:

To analyze the dataset provided in case study, I have opted following steps First of all, I have analyzed both the data sets one by one.

1. Step1: Load the application data set in Jupyter notebook and perform basic metadata checks(Like shape, describe, info, value_counts, head) for the basic data understanding.

2. Then I have find missing value % in each column.

3. Decided threshold 50% , and exclude the data which contains more than 50% missing counts.

4. Then I have replaced missing values in some of the columns with mean, median and mode.

5. For numeric values if I found outlier I have replaced with median, If outlier is there I have replaced with mean.

6. For categorical values: Replaced with mode.

7. After identifying and replacing a few missing values, I have performed Univariate and Bi-variate analysis with the help of Bar graphs, Boxplots, distribution plots and find some observations on current data set. I have divided the data set into 2 part because of data imbalance and performed analysis for defaulters and Non Defaulters on various parameter.

Then I have performed analysis for both the Target variables defaulters and non defaulters separately.

8. Repeated the process for the previous data as well.

9. Merged the both data set again and performed the analysis.

Target variable for Application dataset – TARGET **[1-for non default, 0-default]**

Target variable for Previous dataset - NAME_CONTRACT_STATUS

To proceed with loan application I have analyzed the following parameters thoroughly:

NAME_EDUCATION_TYPE, AMT_INCOME_TOTAL, DAYS_BIRTH, AMT_CREDIT, DAYS_EMPLOYED, AMT_ANNUITY, NAME_INCOME_TYPE, CODE_GENDER, NAME_HOUSING_TYPE,

Observations/Predictions:

1. Less family members got more approval.(Nuclear Families, Having 2-3 members)

2. Mostly, repeater application got approved for again loan grant.

3. For Married applicant more loan approval is there then any other marital status

4. Those who are having secondary/ secondary special education level gets loan approval more than any other education level.

5. Highest number of loan approval for the working people, than commercial associate and pensioners. least approval for the state servants.

6. from above graph we can say that working people take more loans Pensioners are high is number for the non defaulter cases. while income source and the defaulters both categories are higher in count for working people

7. Those who do not have any car, takes more loan and falls under the category of defaulters.

8. Those who falls under the age bracketed of 27 years to 41 years, Takes more loans and maximum comes under defaluters

9. People those who are having Medium total income are more likely falls under the category of defaulters with compare to high and low Total income.

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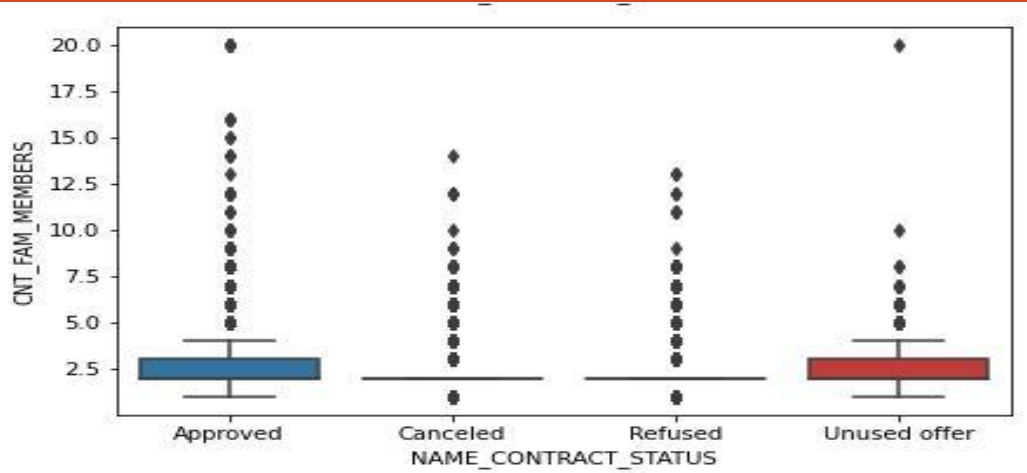

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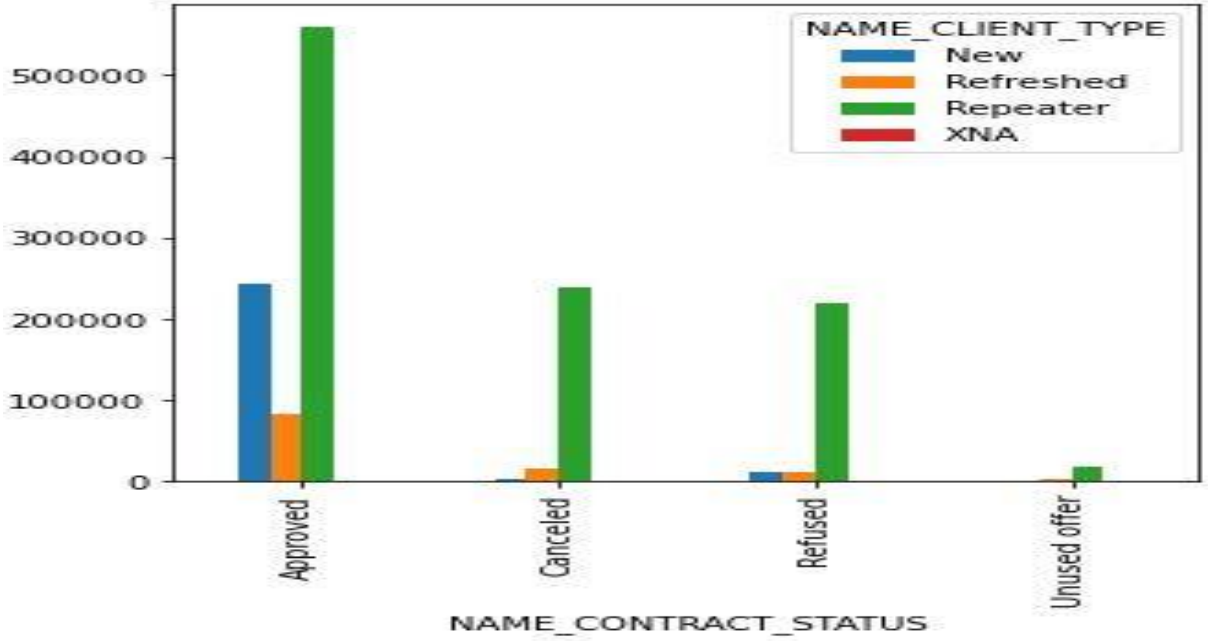

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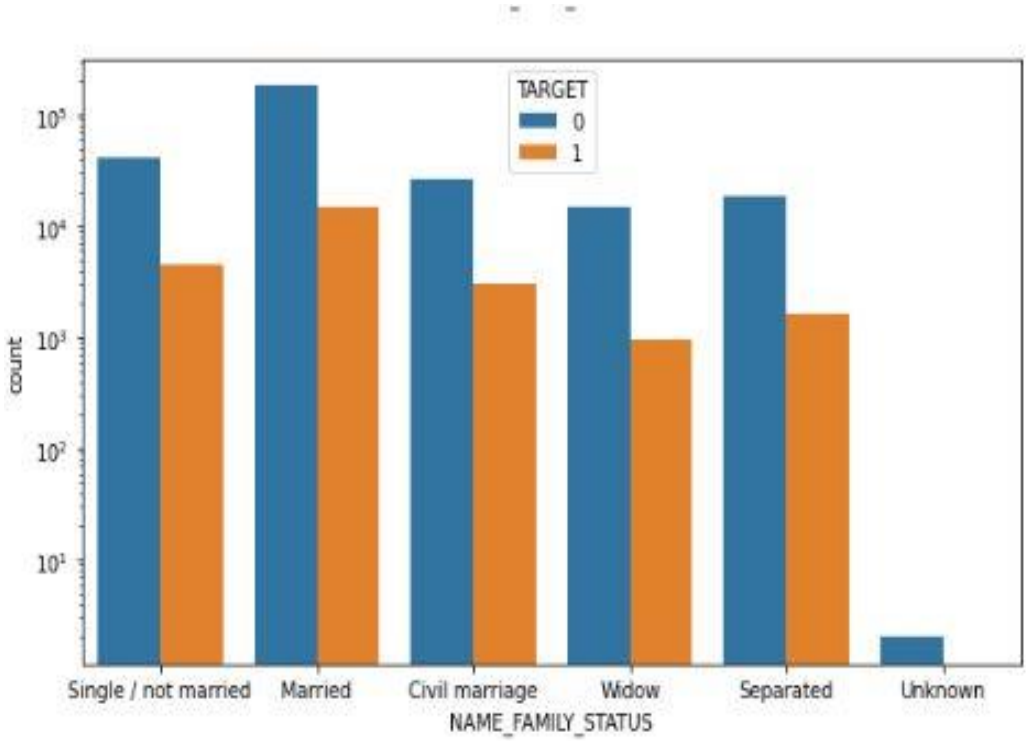

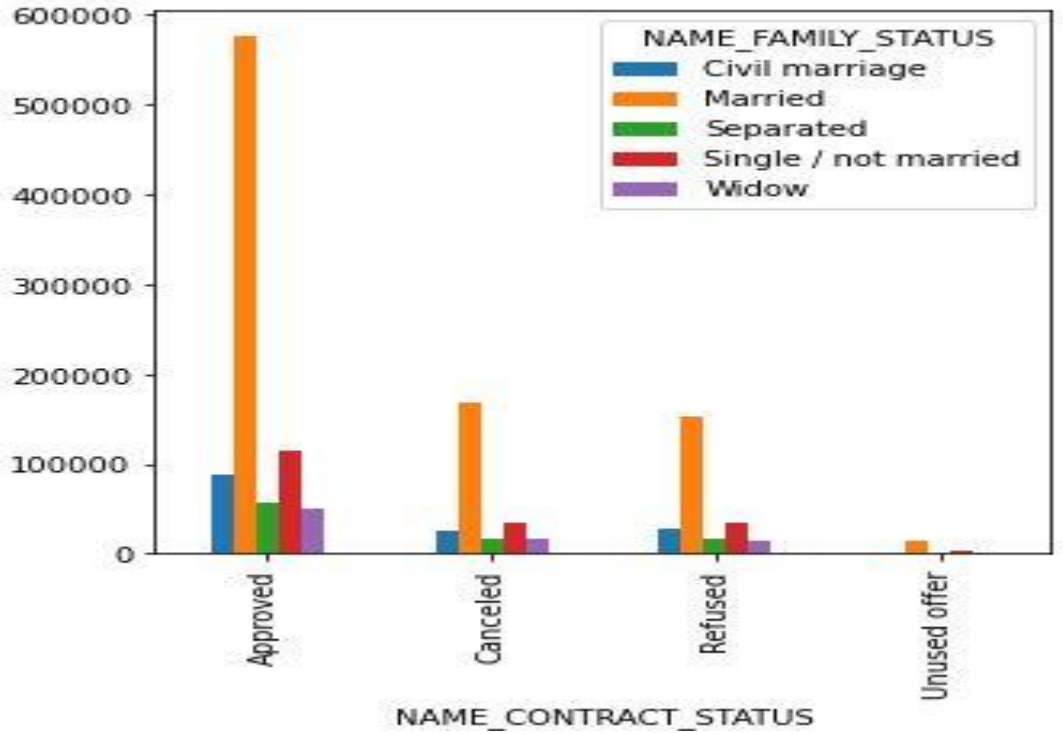

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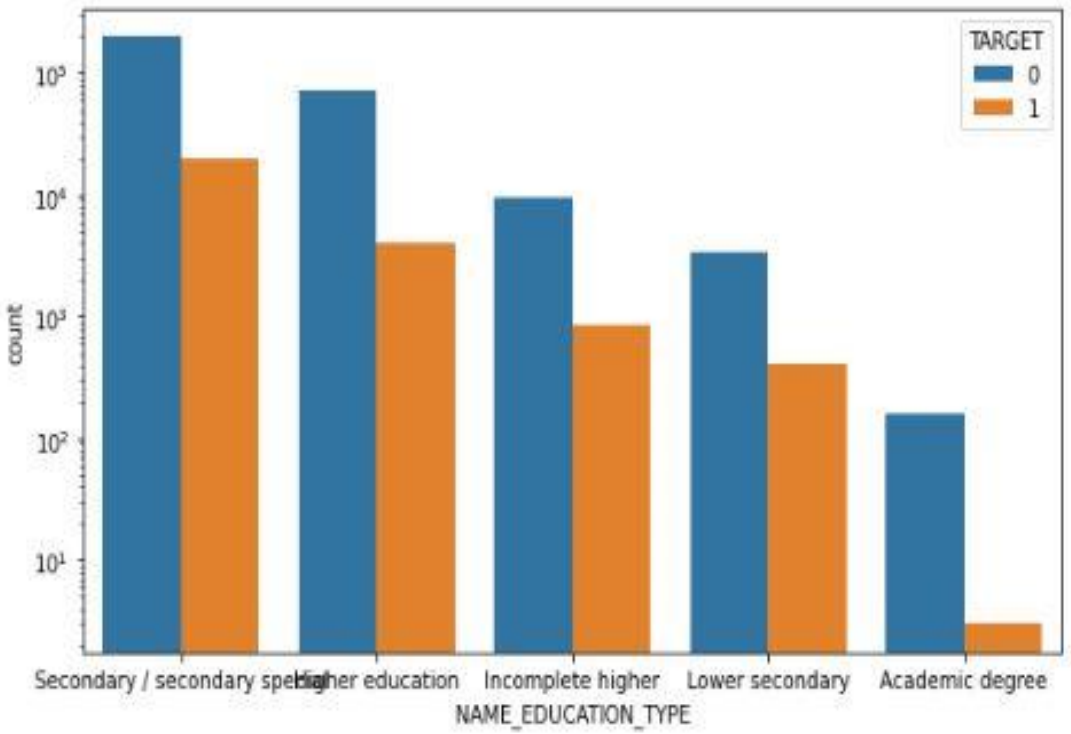

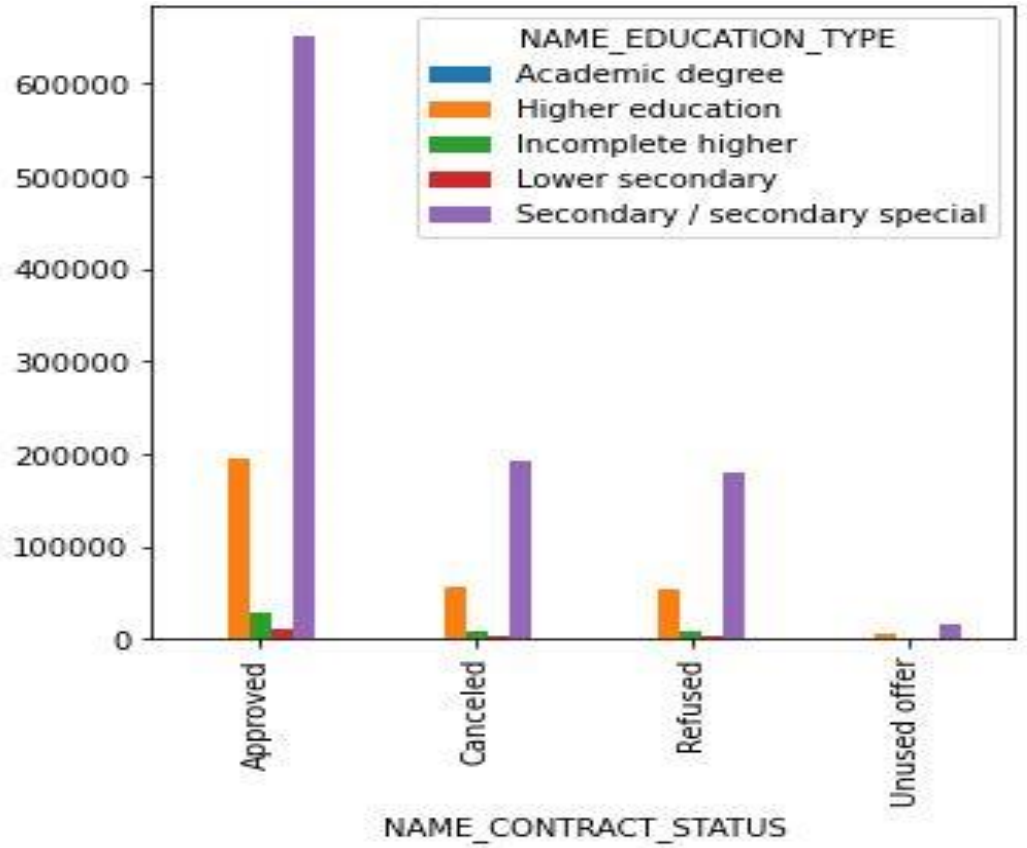

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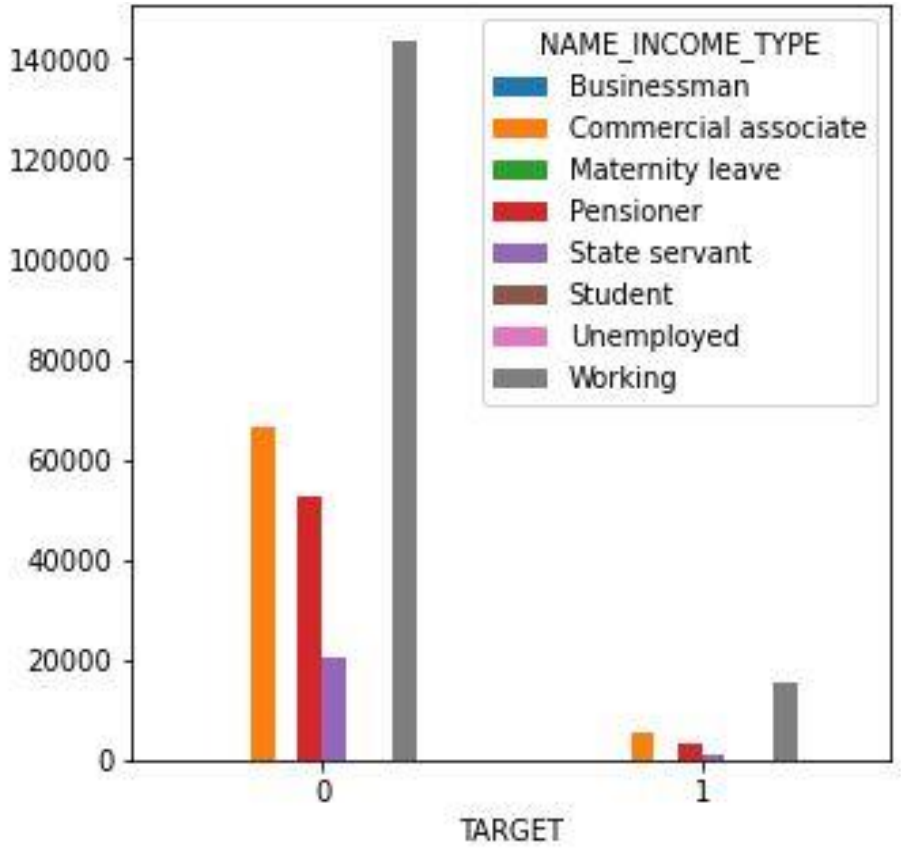

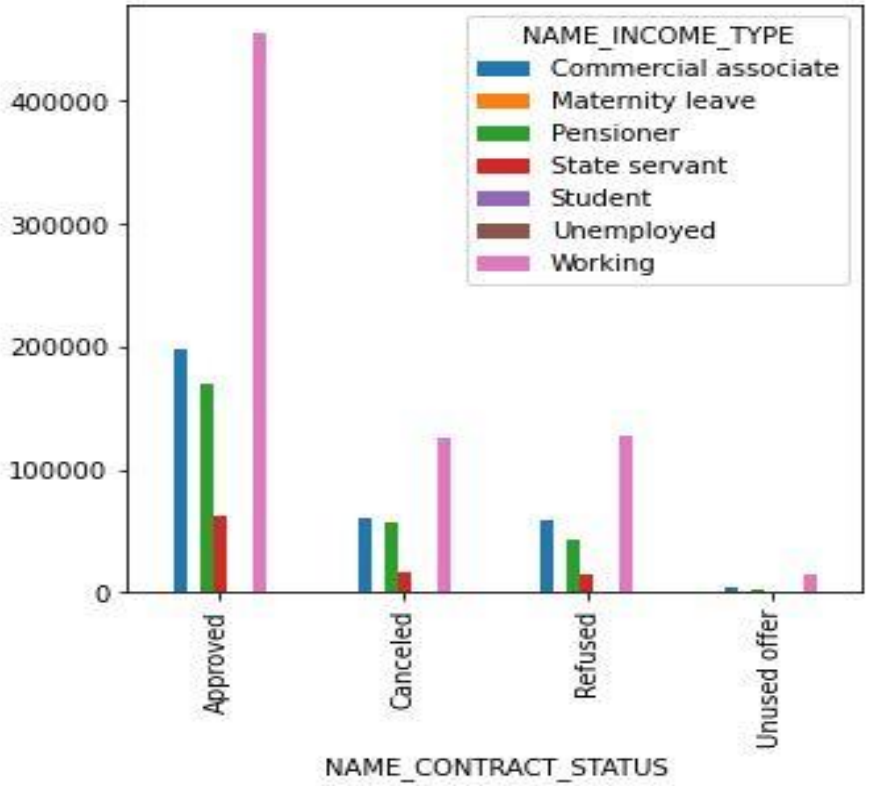

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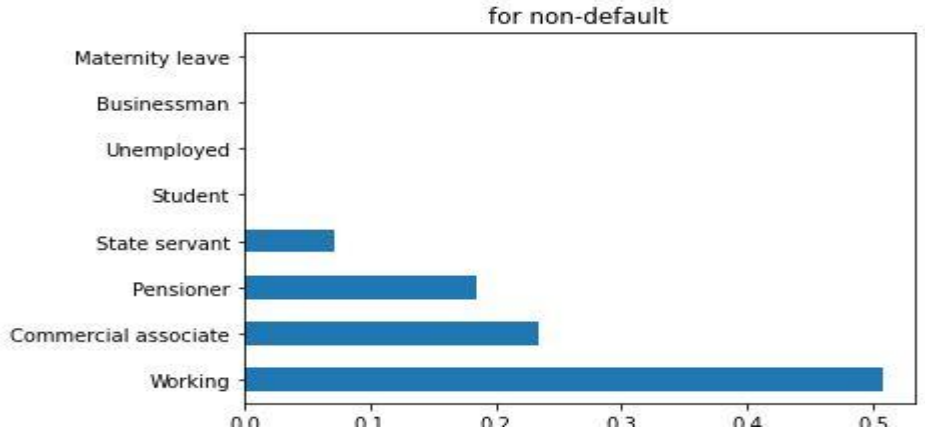
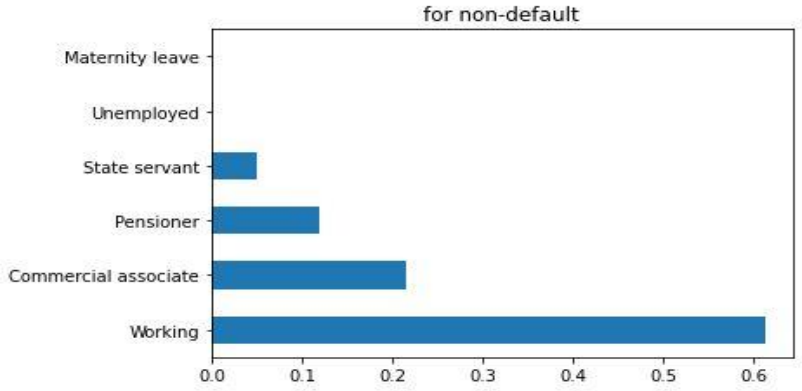
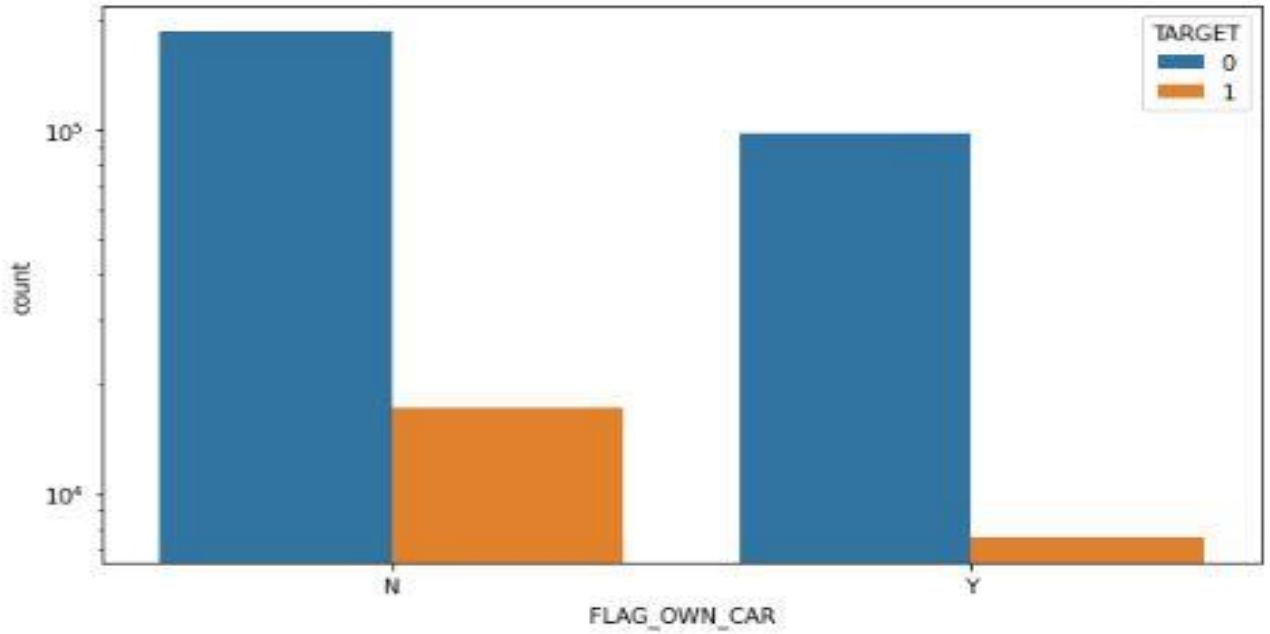




7. Those who do not have any car, takes more loan and falls under the category of defaulters.



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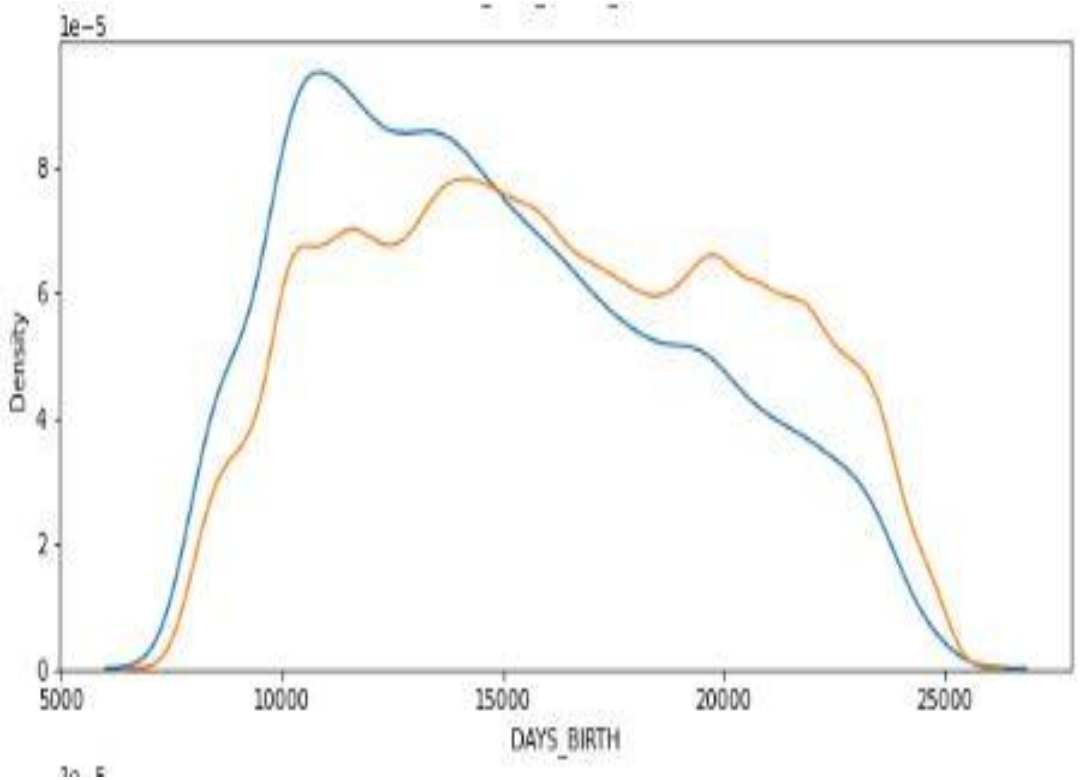

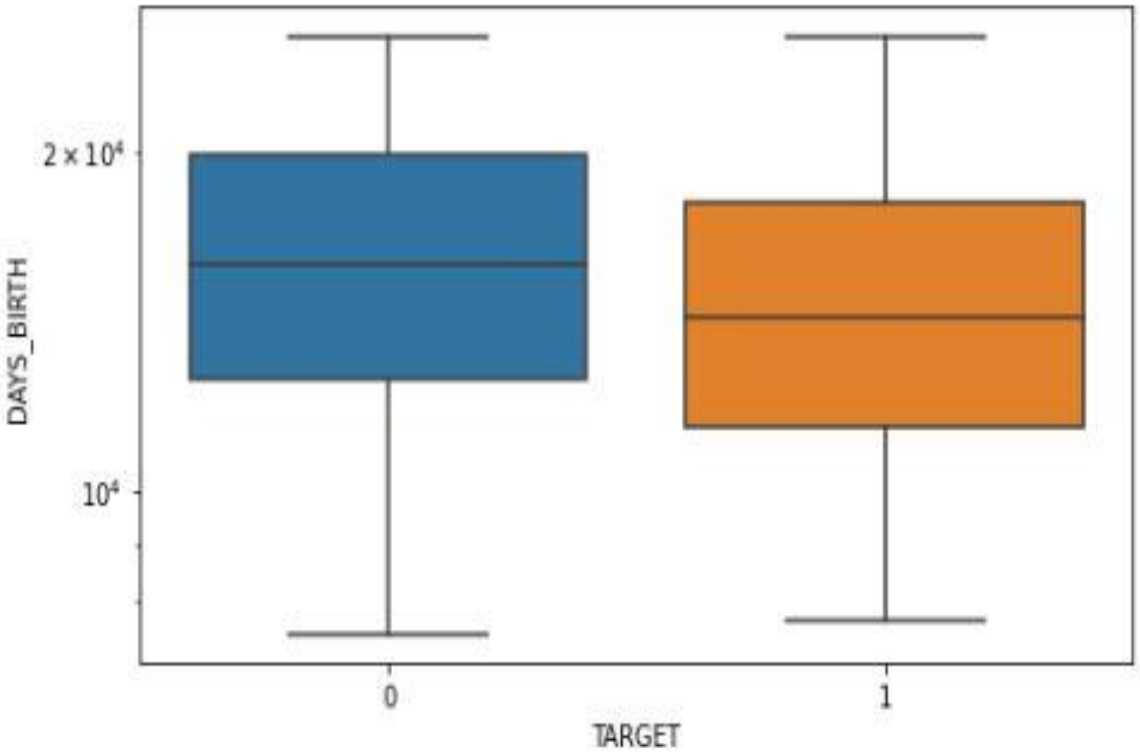

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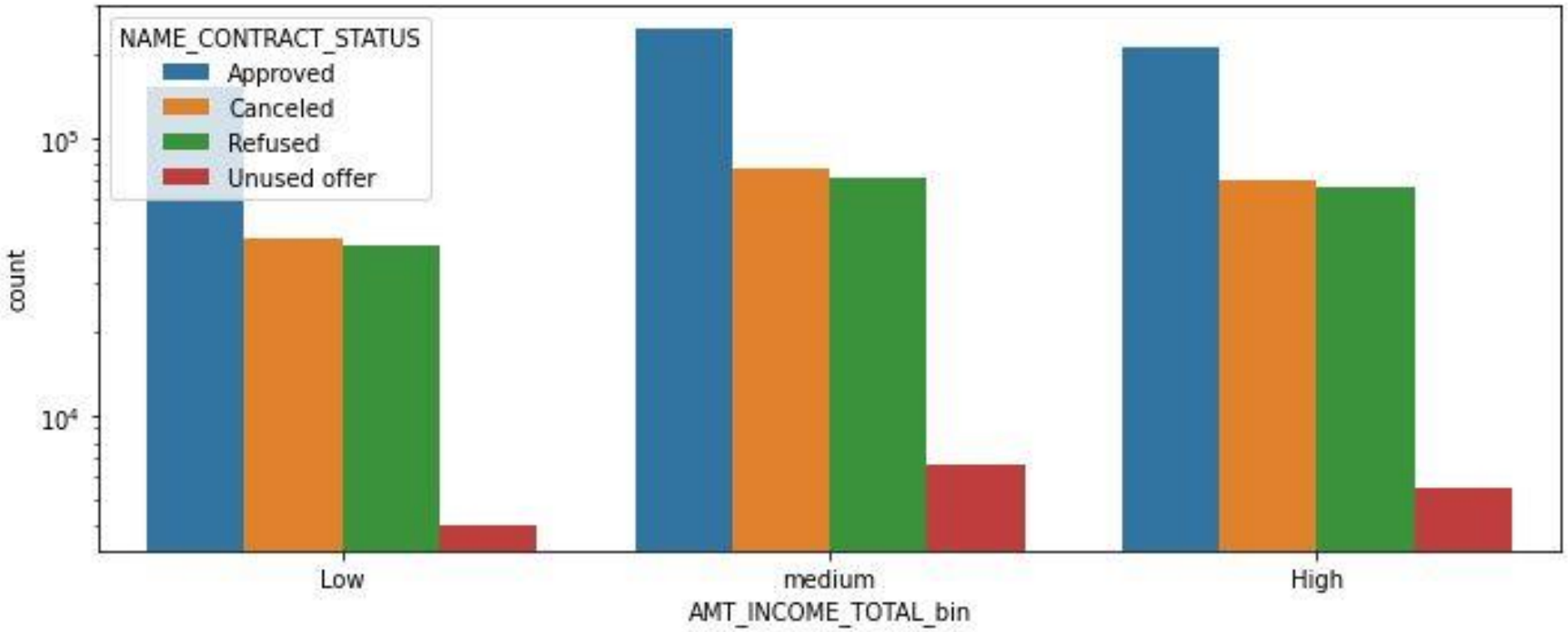

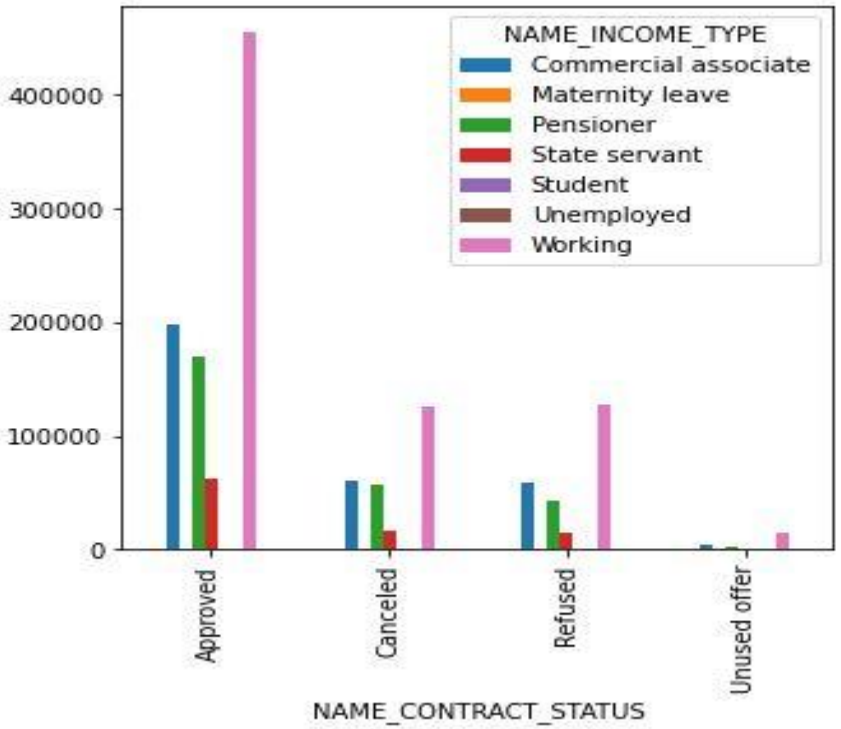
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Maternity leave
Pensioner
State servant
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Unemployed
Working
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300000
200000
100000
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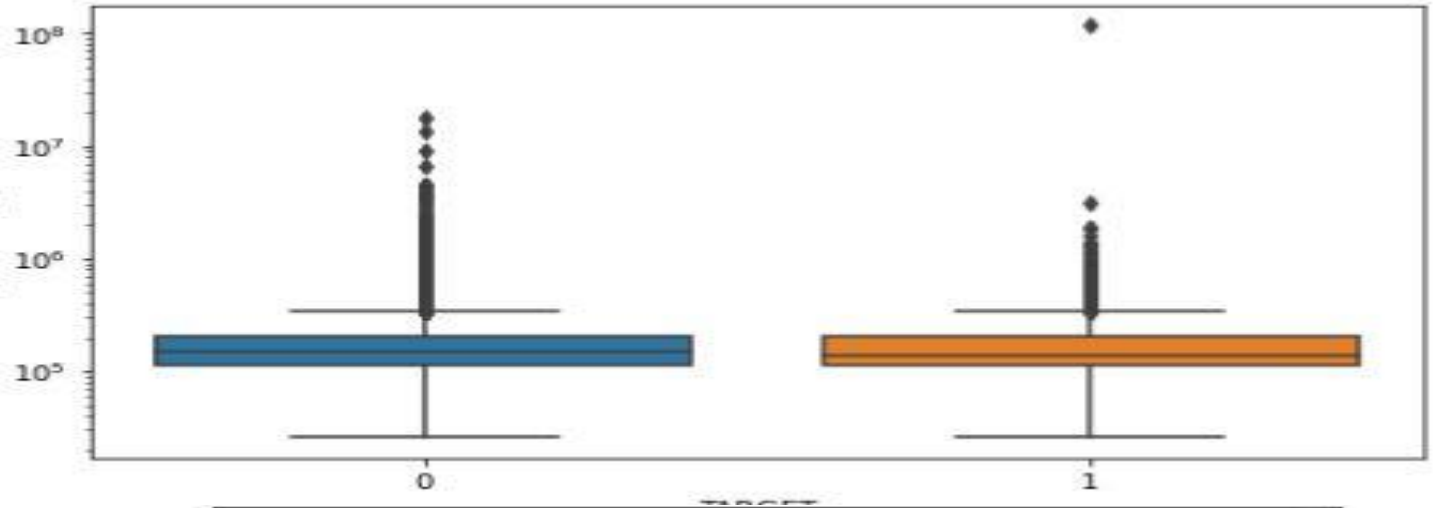
Approved
Canceled
Refused
Unused offer
NAME_CONTRACT_STATUS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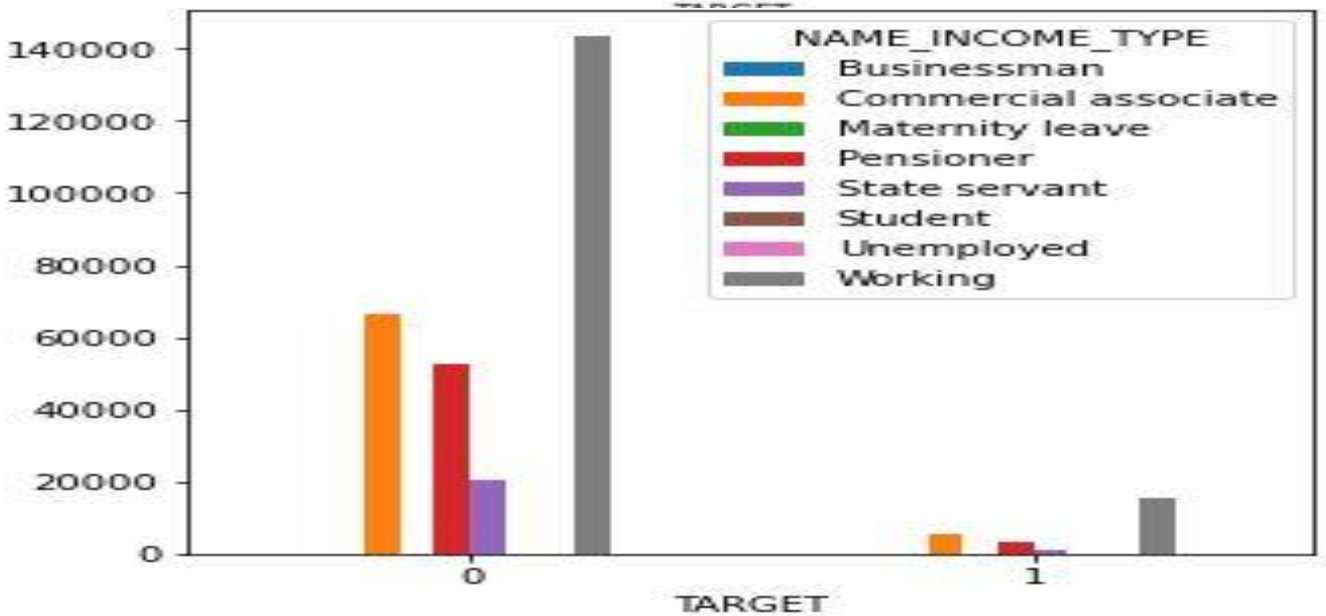
NAME_INCOME_TYPE
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Commercial associate
Maternity leave
Pensioner
State servant
Student
Unemployed
Working
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120000
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40000
20000
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0
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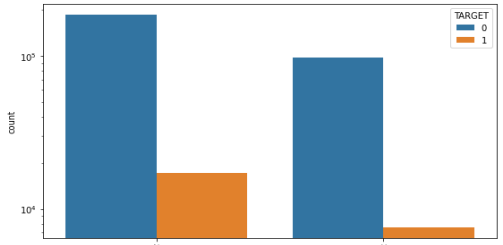
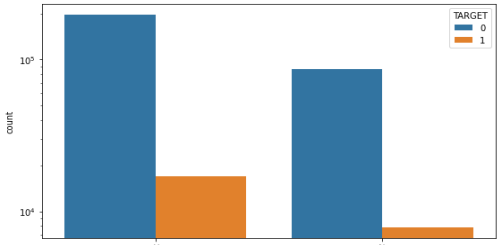
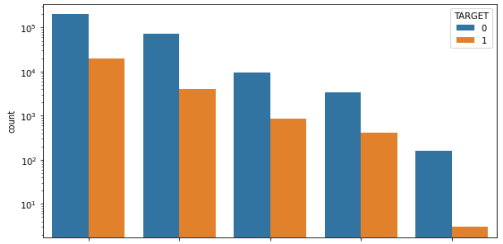
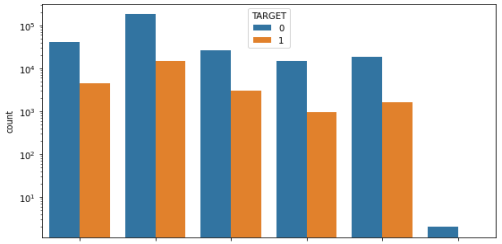
TARGET

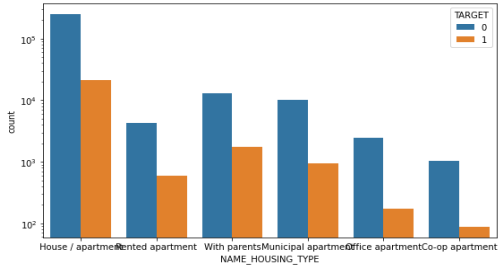
Extra graphs

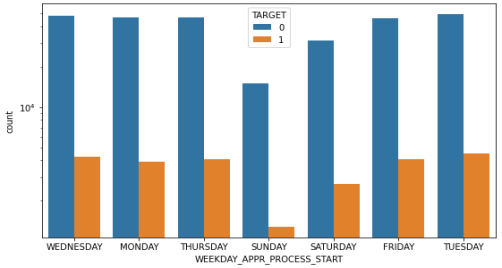


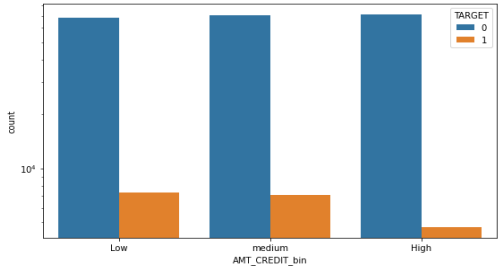


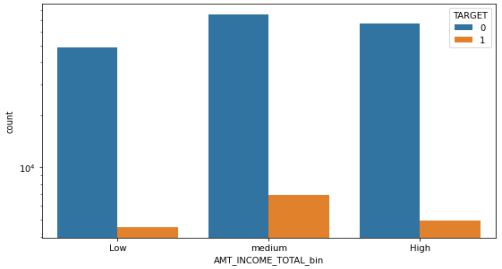


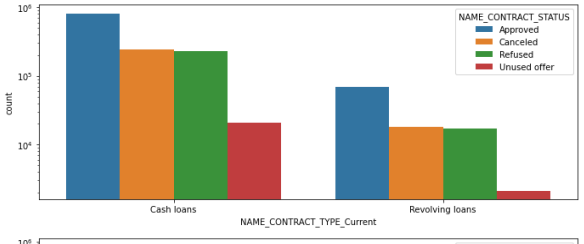


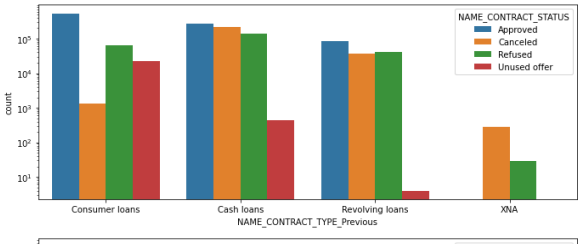


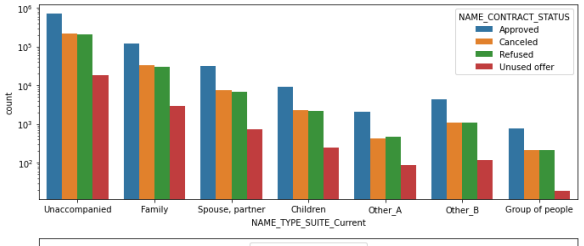


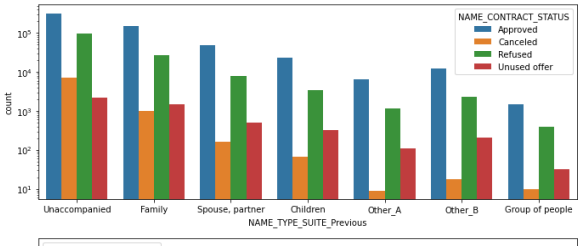


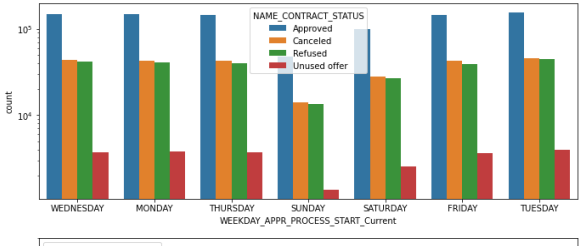


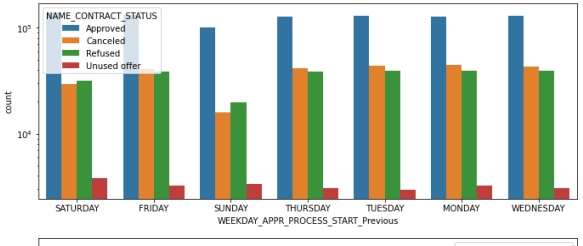


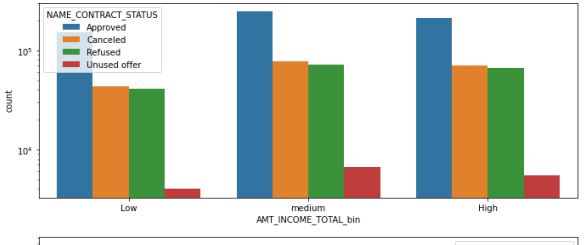


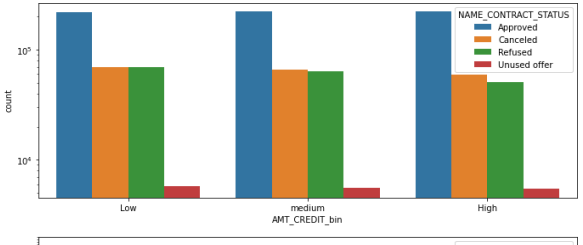


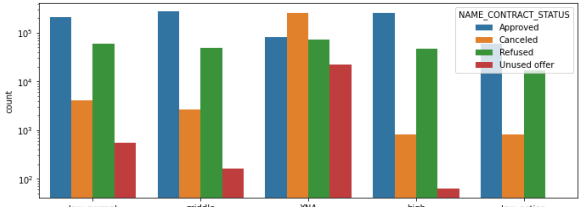


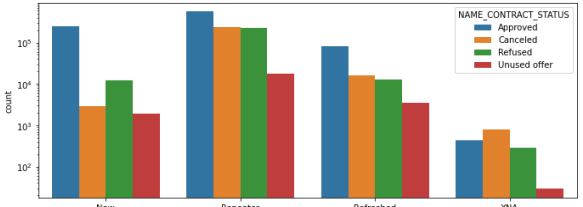


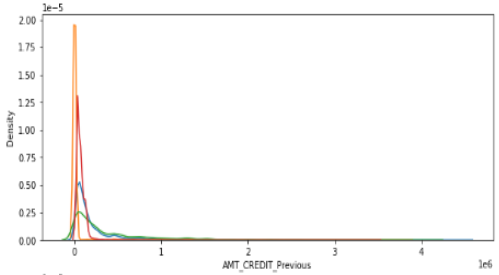








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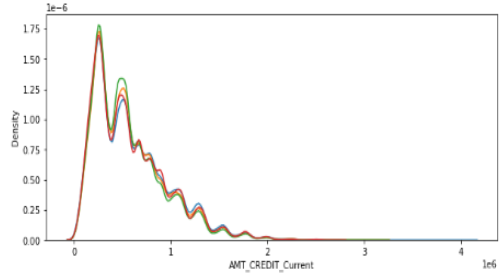
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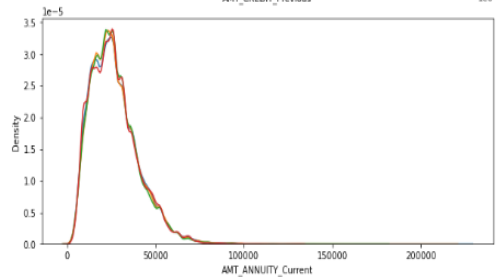
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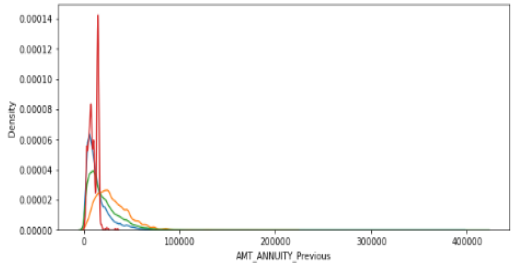
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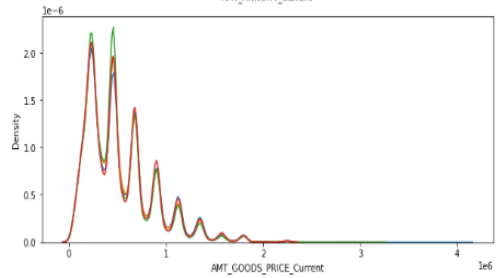
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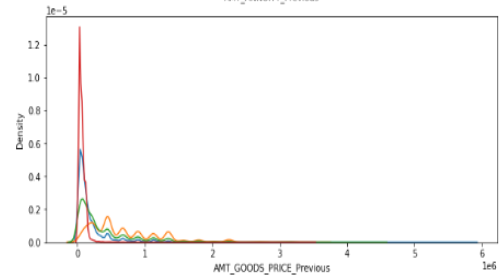
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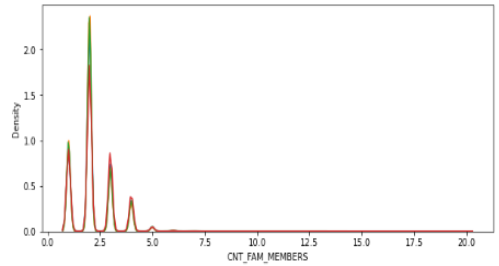
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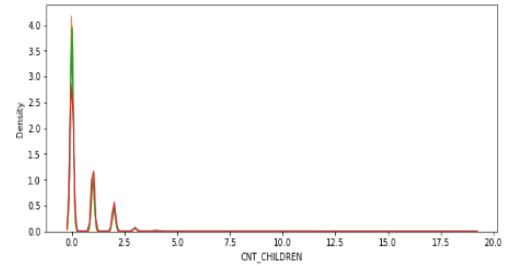
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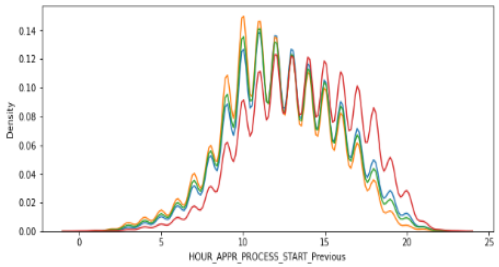
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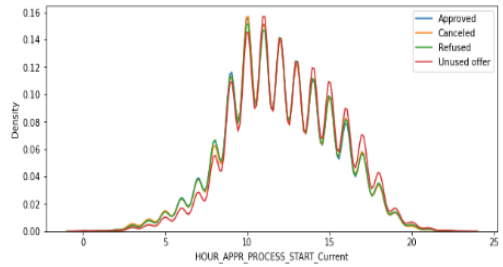
Approved
Canceled
Refused
Unused offer
Density
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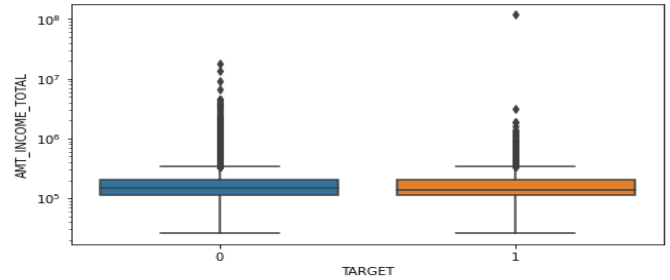
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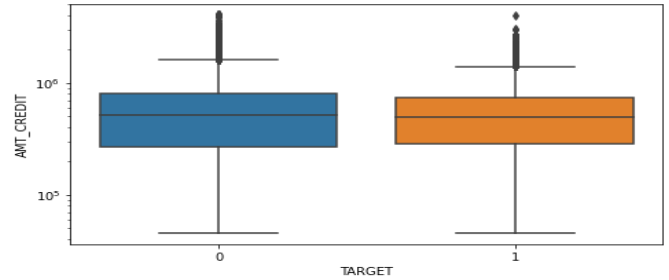
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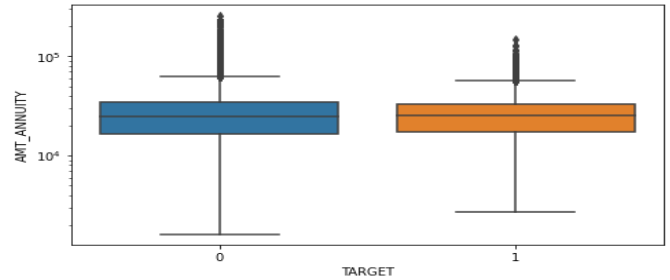
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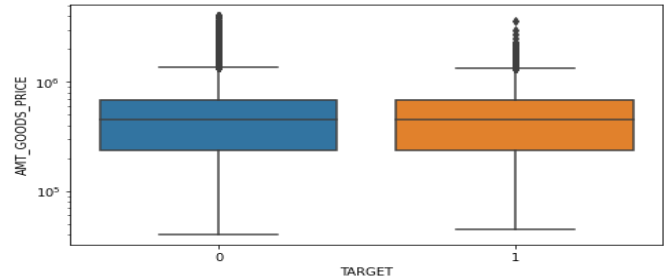
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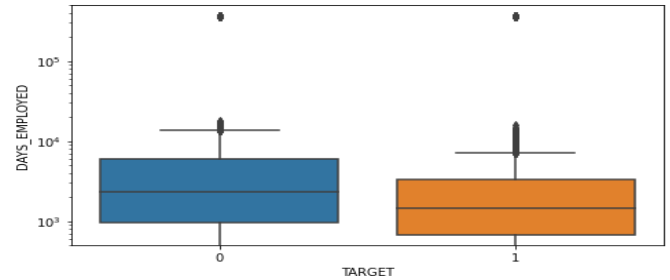
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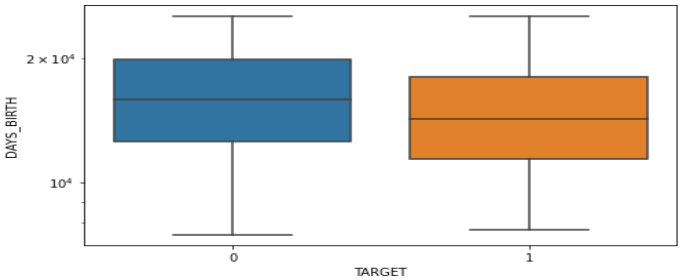
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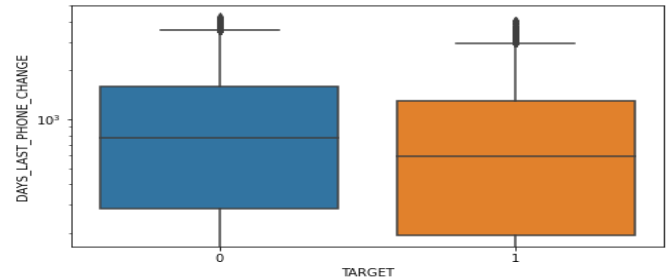
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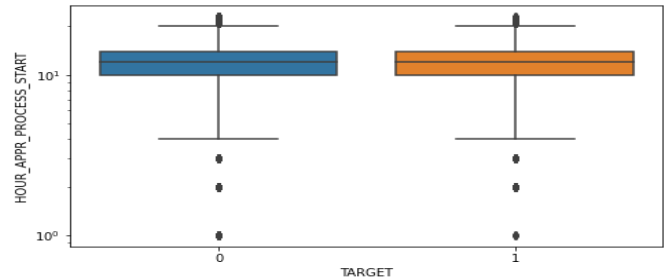
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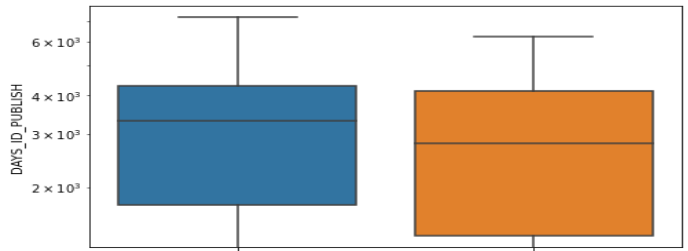
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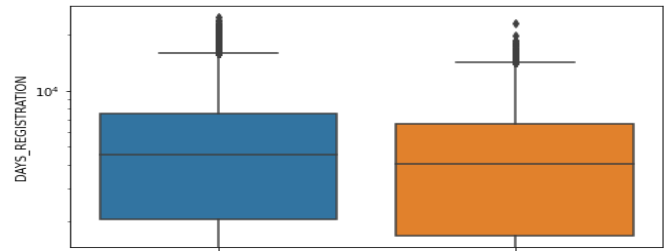
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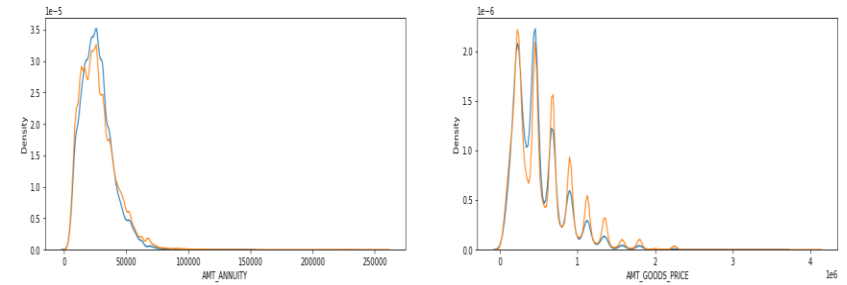
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AMT_ANNUITY

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Density
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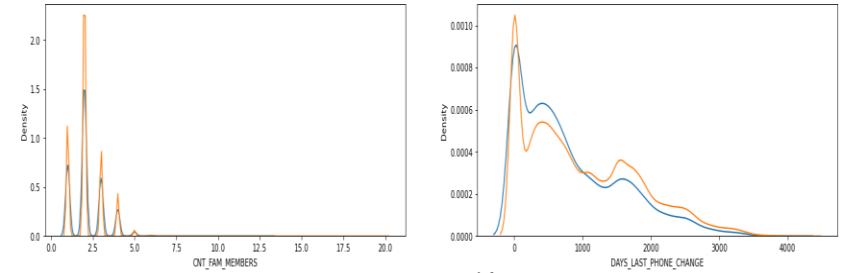
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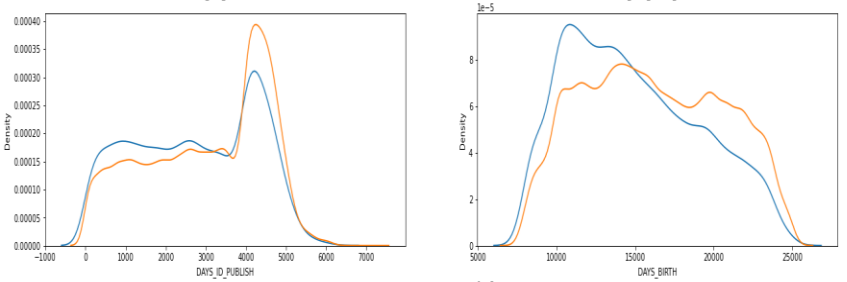
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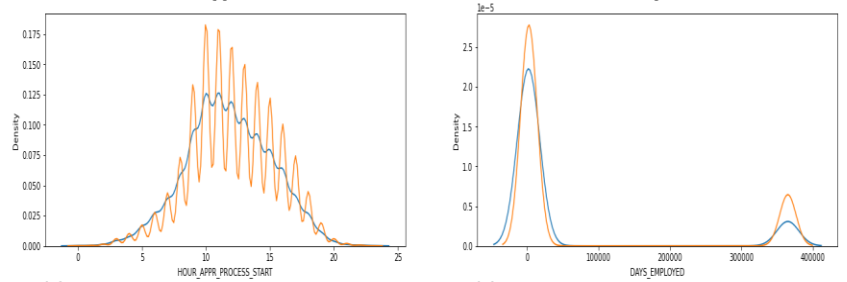
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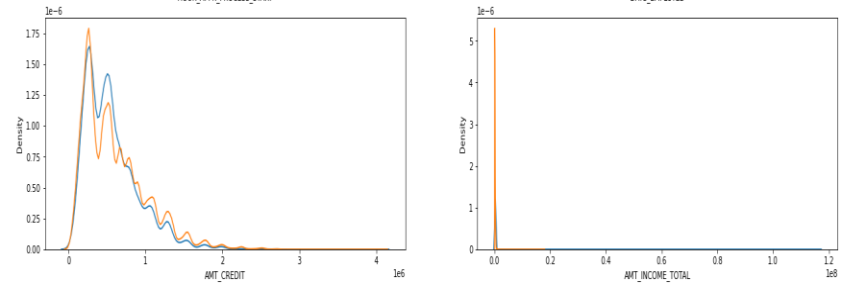
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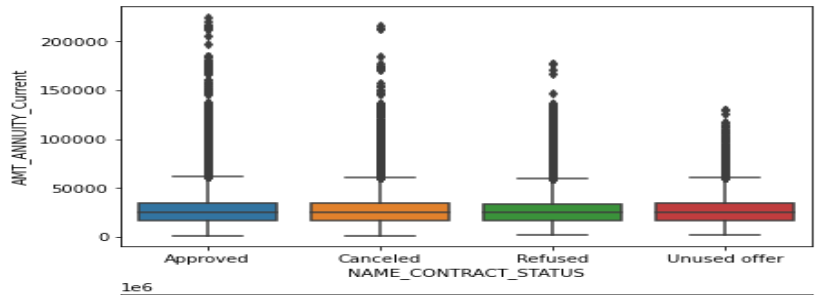
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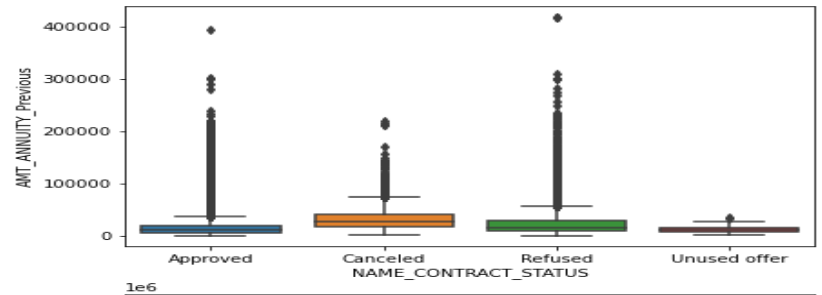
Approved
Canceled
Refused
Unused offer
NAME_CONTRACT_STATUS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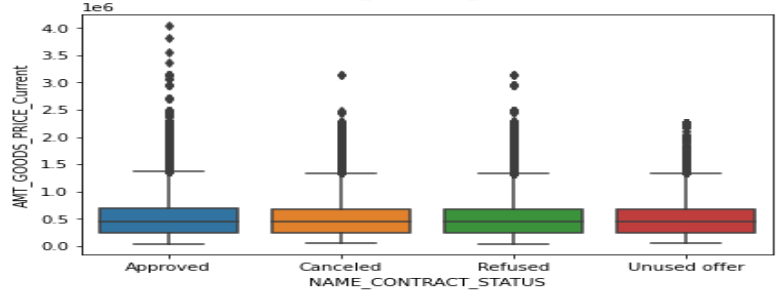
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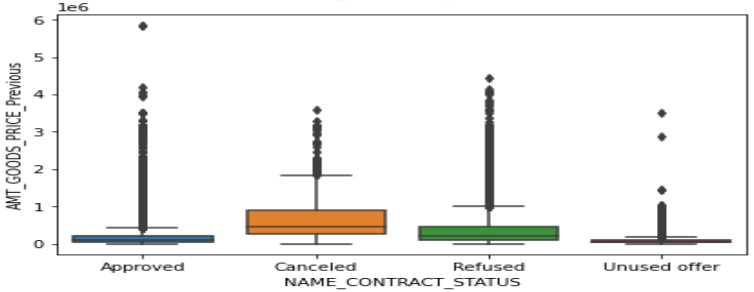
NAME_CONTRACT_STATUS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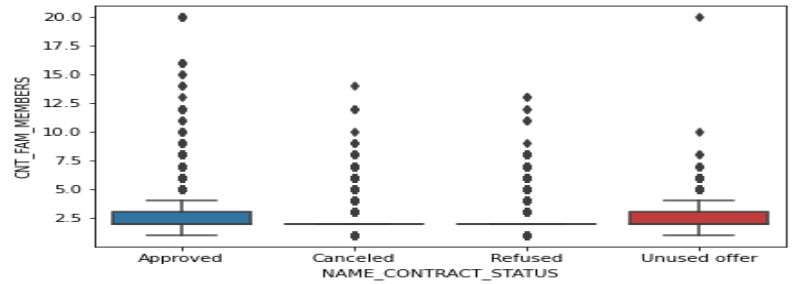
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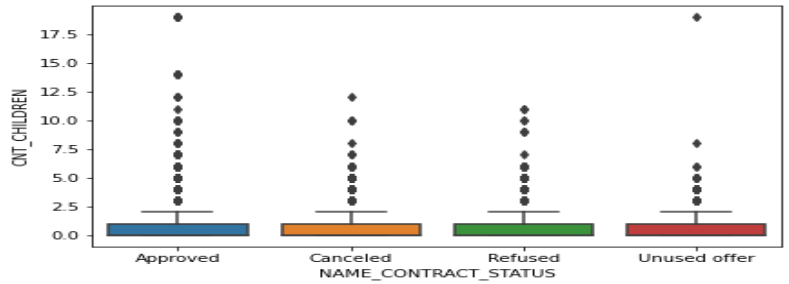
NAME_CONTRACT_STATUS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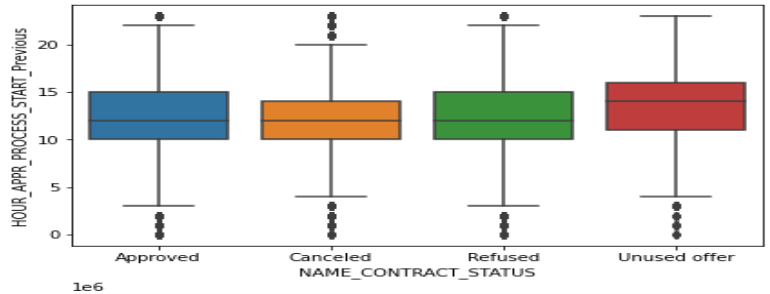
HOUR_APPR_PROCESS_START_Previous
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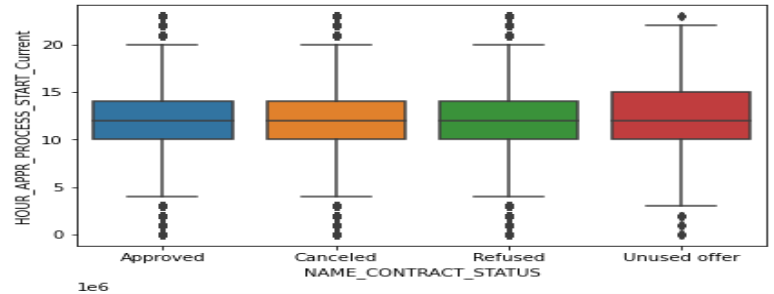
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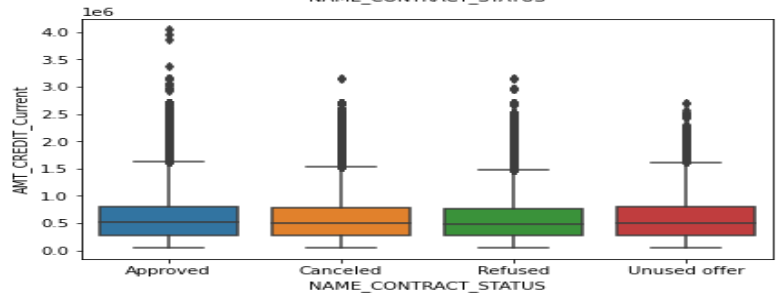
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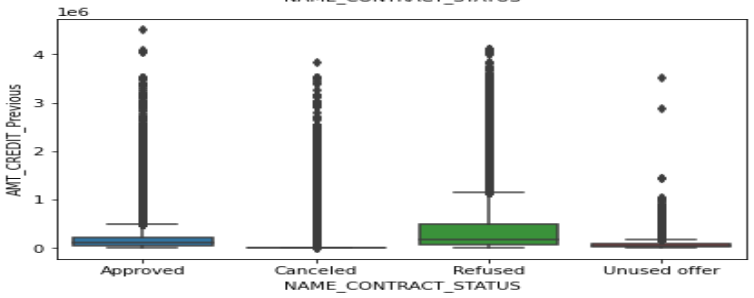
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Approved
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NAME_CONTRACT_STATUS

Thank You