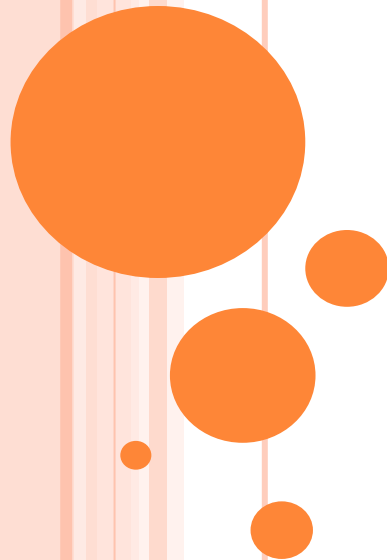


CREDIT EDA CASE STUDY.....

PRESENTATION OF MAJOR ANALYSIS



By

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Bank Loan Application Case Study

In this case study I am going to analyse two bank data set on loan application. One file consist of present status of clients whether a client become defaulter or not. Another file consist of their previous history of loan status like APPROVED OR REFUSE OR CANCELLED OR UNSUED. I am going to do this analysis by applying various EDA techniques.

Problem Statement

The loan providing companies find it hard to give loans to the people due to their insufficient or non-existent credit history. Because of that, some consumers use it as their advantage by becoming a defaulter. Suppose you work for a consumer finance company which specialises in lending various types of loans to urban customers. You have to use EDA to analyse the patterns present in the data. This will ensure that the applicants capable of repaying the loan are not rejected.

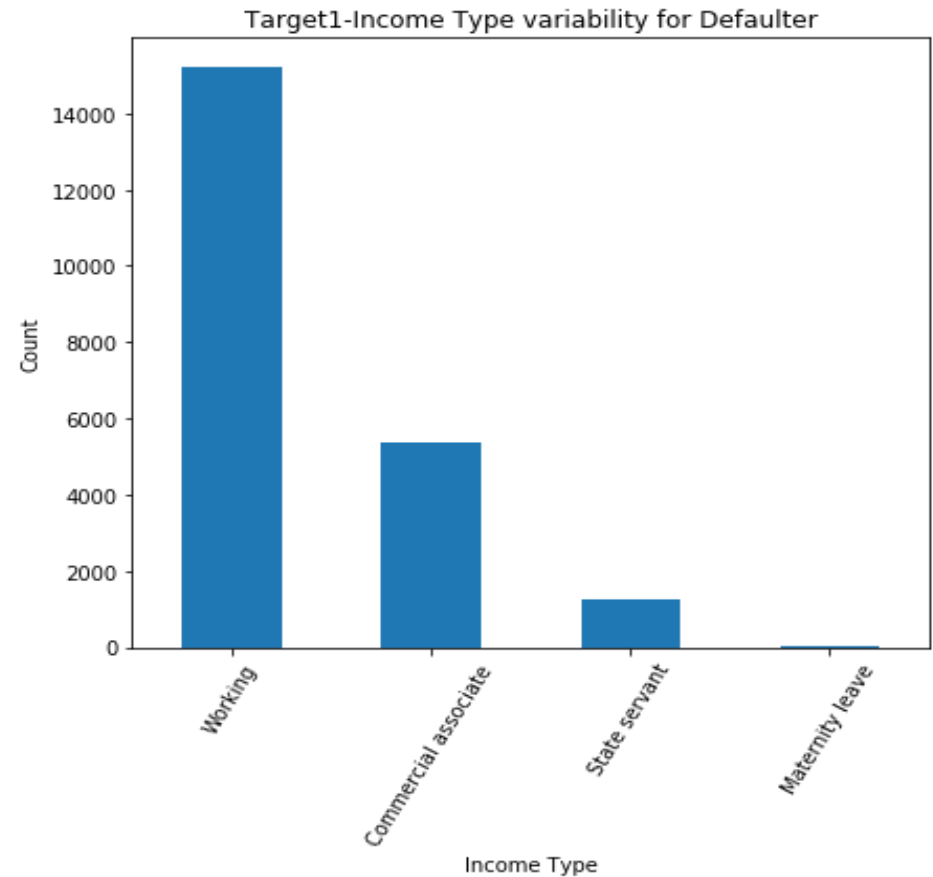
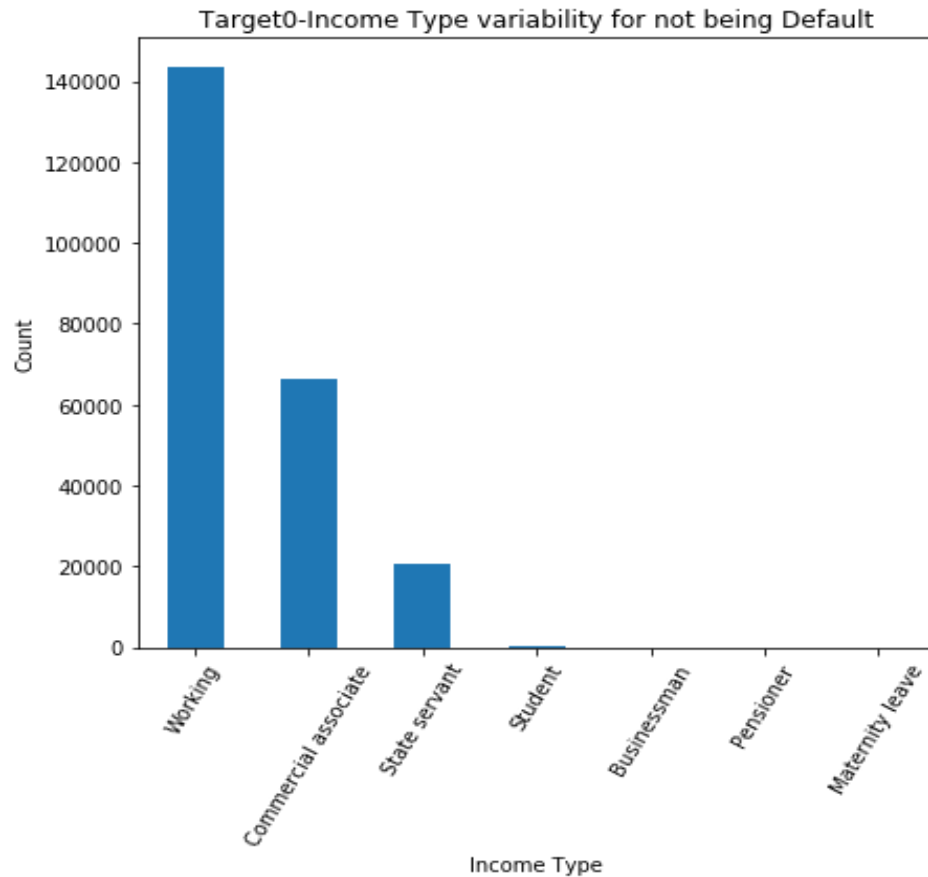
When the company receives a loan application, the company has to decide for loan approval based on the applicant's profile. Two types of risks are associated with the bank's decision:

If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company

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.

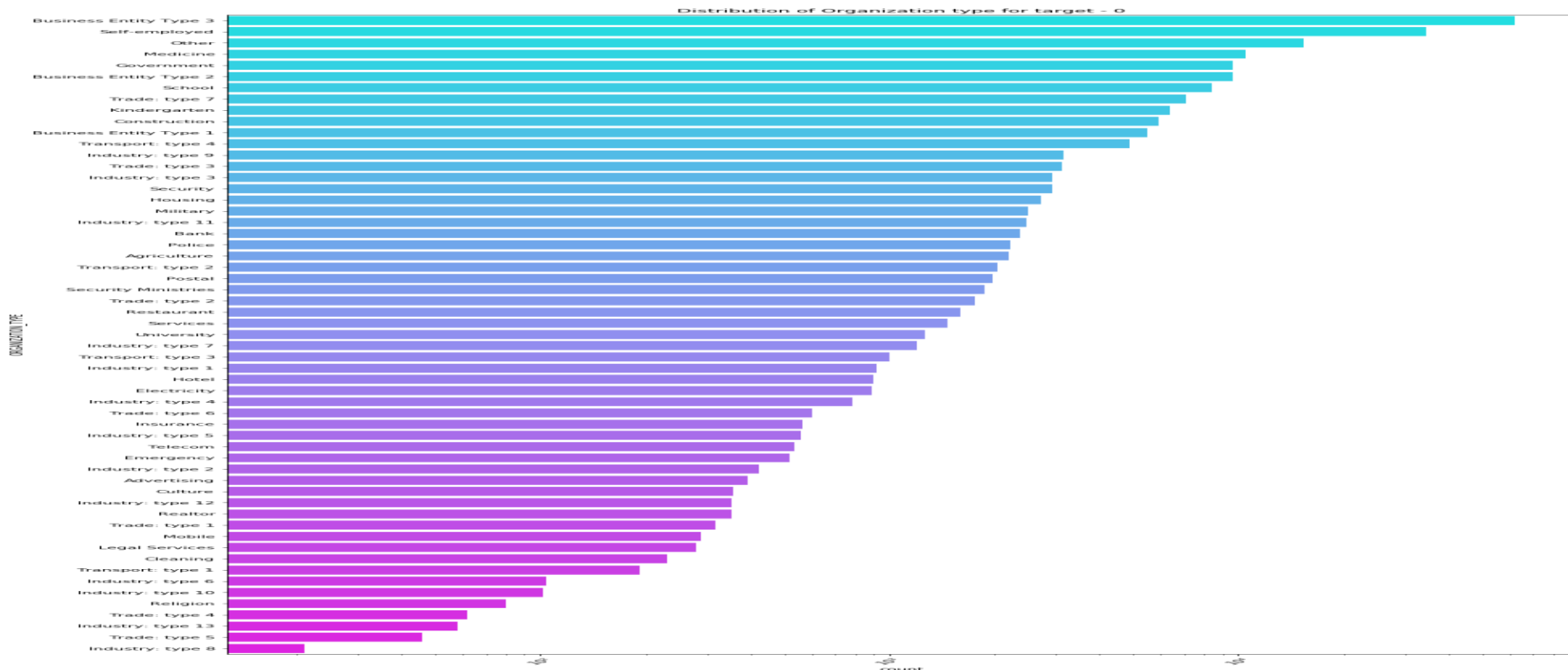


COMPARISON OF INCOME TYPE VARIABILITY FOR BOTH DATASET TARGET0 & TARGET1



As it is seen from the graph that the number of working, commercial associate and state servant in Income Type variable are higher in both the dataset than student, businessman, pensioner and maternity leave. However the **State Servant** in **target 0** dataset is little bit of higher than **target1** dataset. It is also observed that in **target1(Client with payment difficulty)** dataset there is no presence of **student, businessman and pensioner** class, it means they are very much well manner in terms of regular repayment. So finance company should keep more focus on these call specially businessman and pensioners.

DISTRIBUTION OF ORGANIZATION TYPE VARIABLE FOR LOAN APPLICATION- TARGET 0

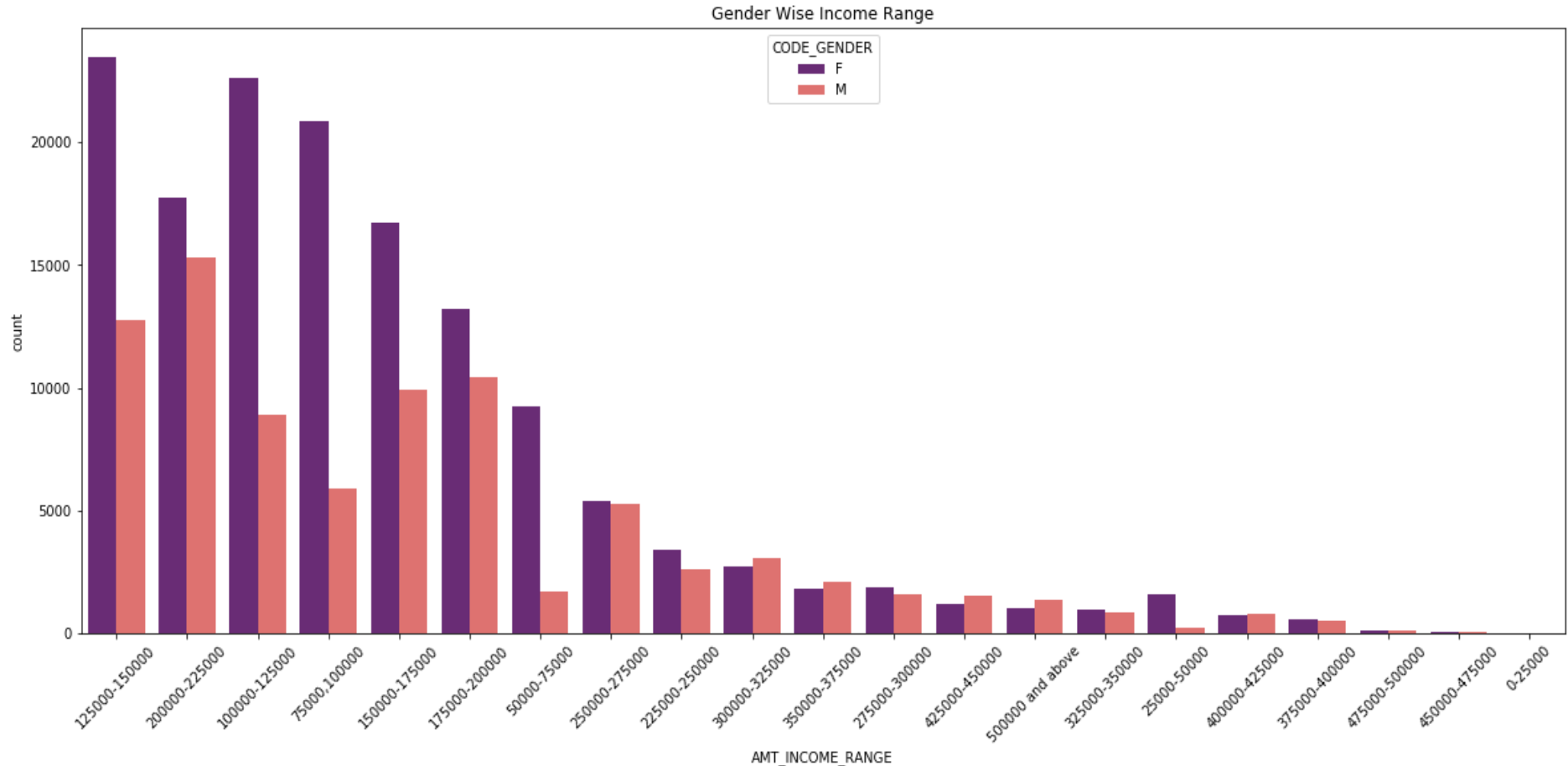


Points to be Highlighted from the above graph.....

Clients which have applied for credits are from most of the organization type 'Business entity Type 3', 'Self employed', 'Other', 'Medicine' and 'Government'. Less clients are from Industry type 8, type 6, type 10, religion and trade type 5, type 4.

For Target 1, The plot are almost same as Target 0 dataset. Difference is that trade type 4 has the lowest number of credit where as in target0 dataset industry type 8 has the lowest number of credit. Refer to Notebook.

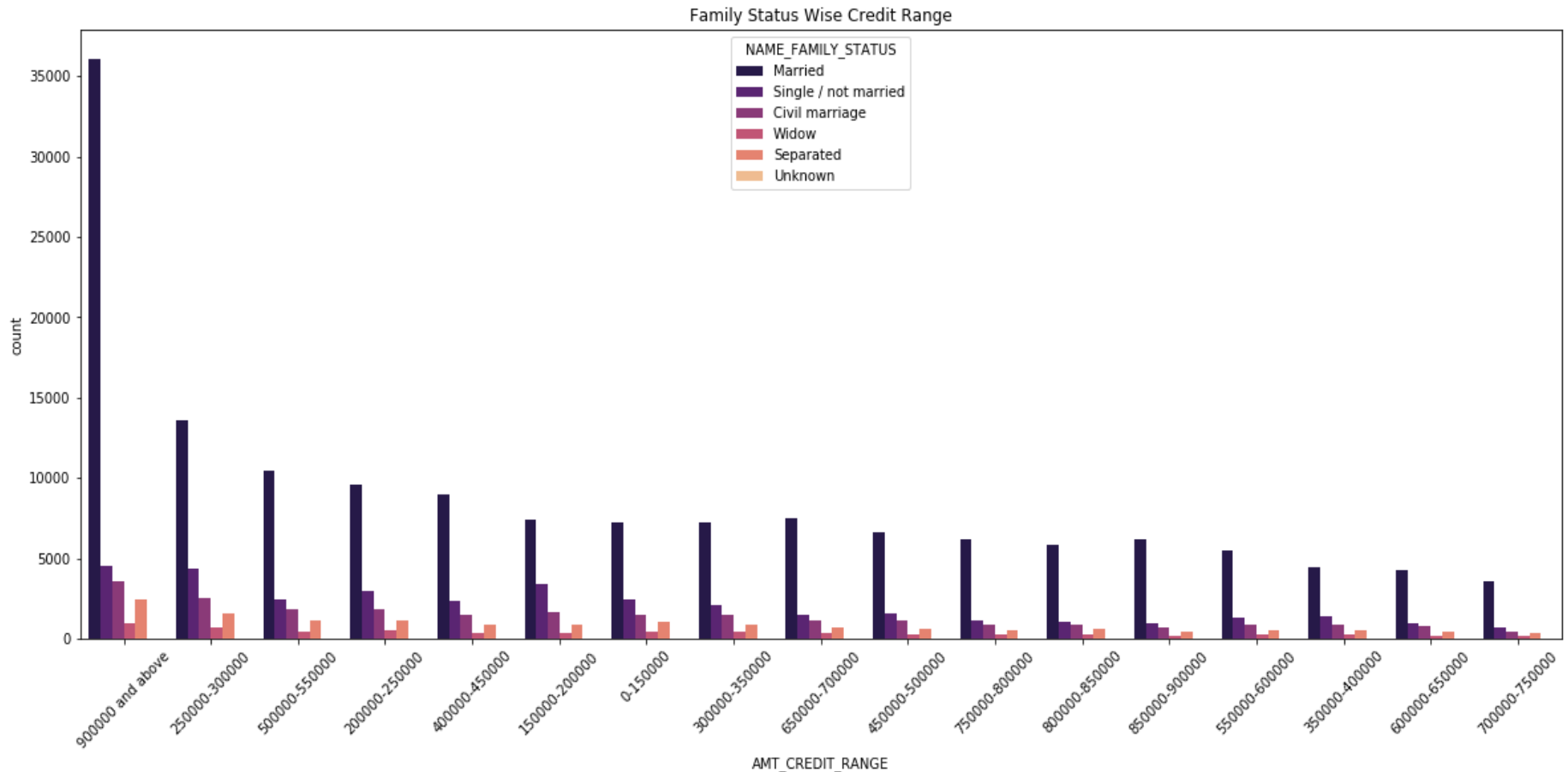
GENDER WISE INCOME RANGE FOR CREDIT ISSUE- TARGET 0 DATASET



Female counts are higher than male. Income range from 100000 to 200000 is having more number of credits. This graph show that females are more than male in having credits for that range. Very less count for income range 400000 and above. And there is almost zero count for range 0-25000. It is also Notice that for income range 75000-100000 there is a huge difference for credit b/w male and female also for range 125000-150000 and 100000-125000



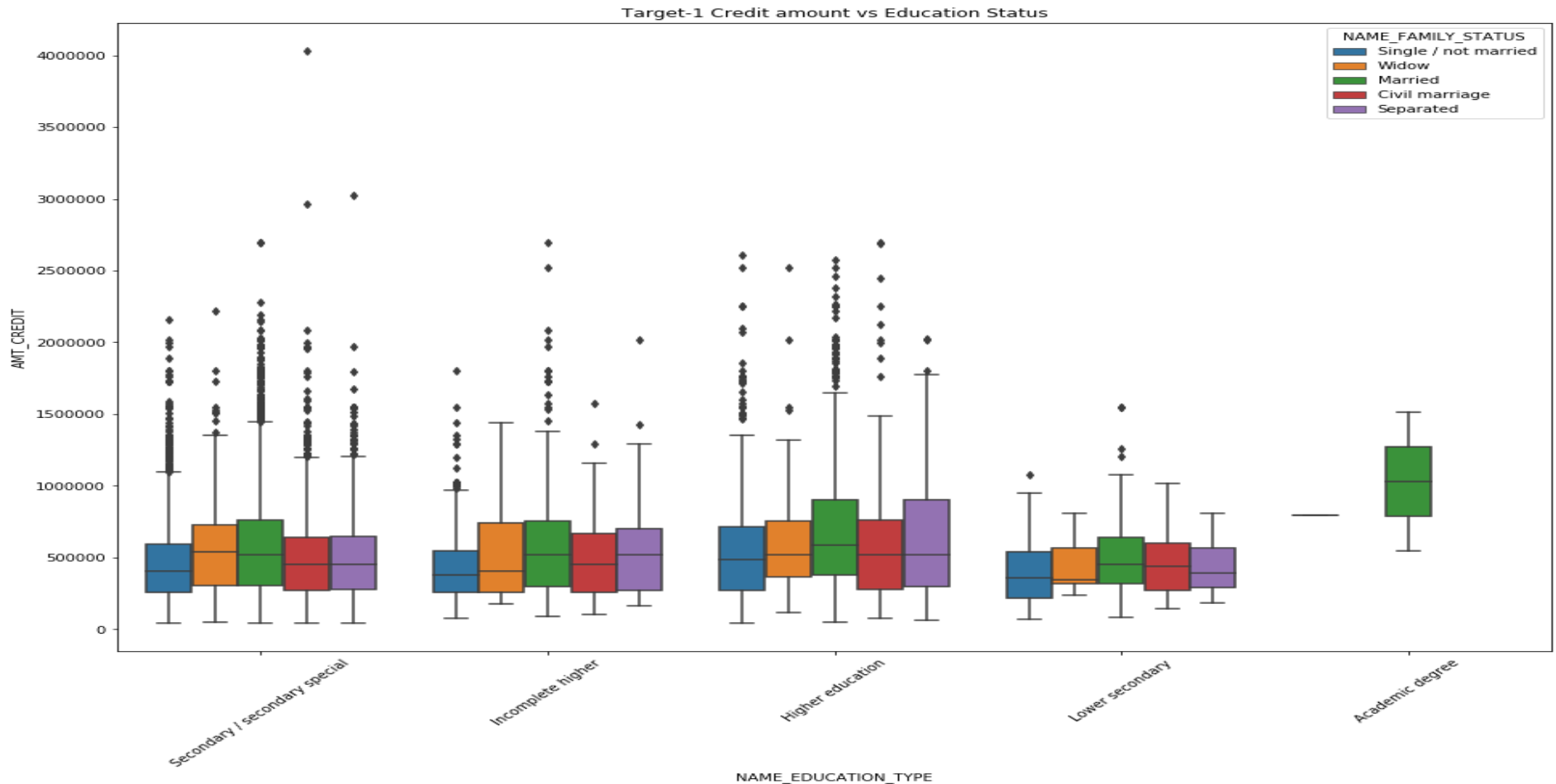
FAMILY STATUS WISE CREDIT RANGE- TARGET 0 DATASET



It is seen from the above graph that most of the credits are lies in the Marriage class of "NAME_FAMILY_STATUS" variable. In credit range of 900000 and above, there are a huge number of credit has been issued to a perticular class of Marriage group. All other class in the FAMILY_STATUS variable are not in a state of comparison with the MARRIAGE class



COMPARISON B/W FAMILY STATUS WISE EDUCATION VARIABLE WITH CONTRAST TO CREDIT AMOUNT FOR TARGET 1 DATASET

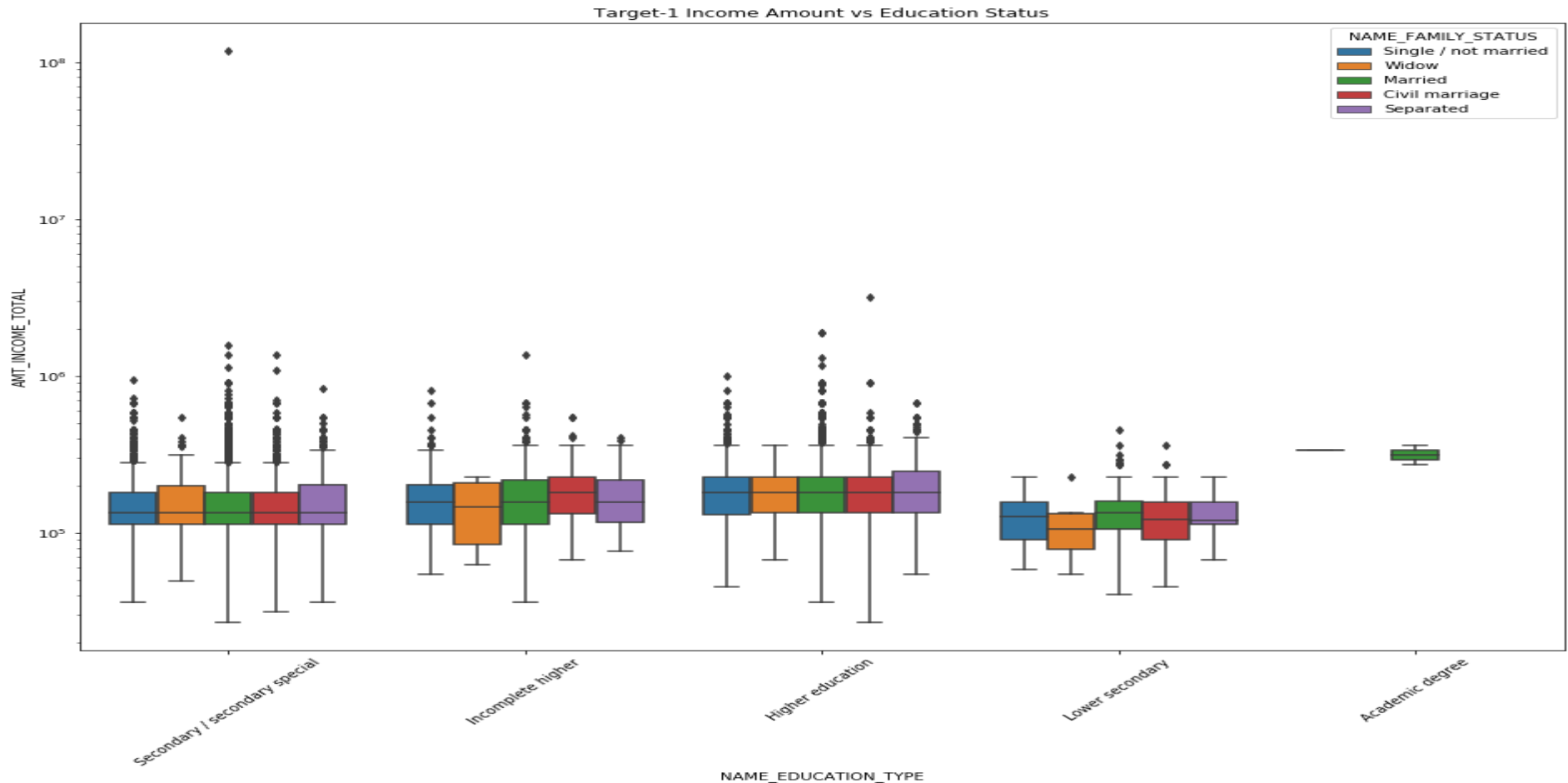


Here, the Civil Marriage class of people has the higher amount of credit than others.

It is important to note that in Academic Degree only the Civil Marriage class of people are exits. **So from that we can say that in one scenario in contrast to credit amount as the Civil Marriage has higher credit side by side this class also has higher number of default case.**

Also in Secondary, Incomplete Higher, And Higher Education almost every class has outliers under the FAMILY_STATUS category. so we can say that finance company should keep that point in consideration before providing high number amount of loan to this class of people.

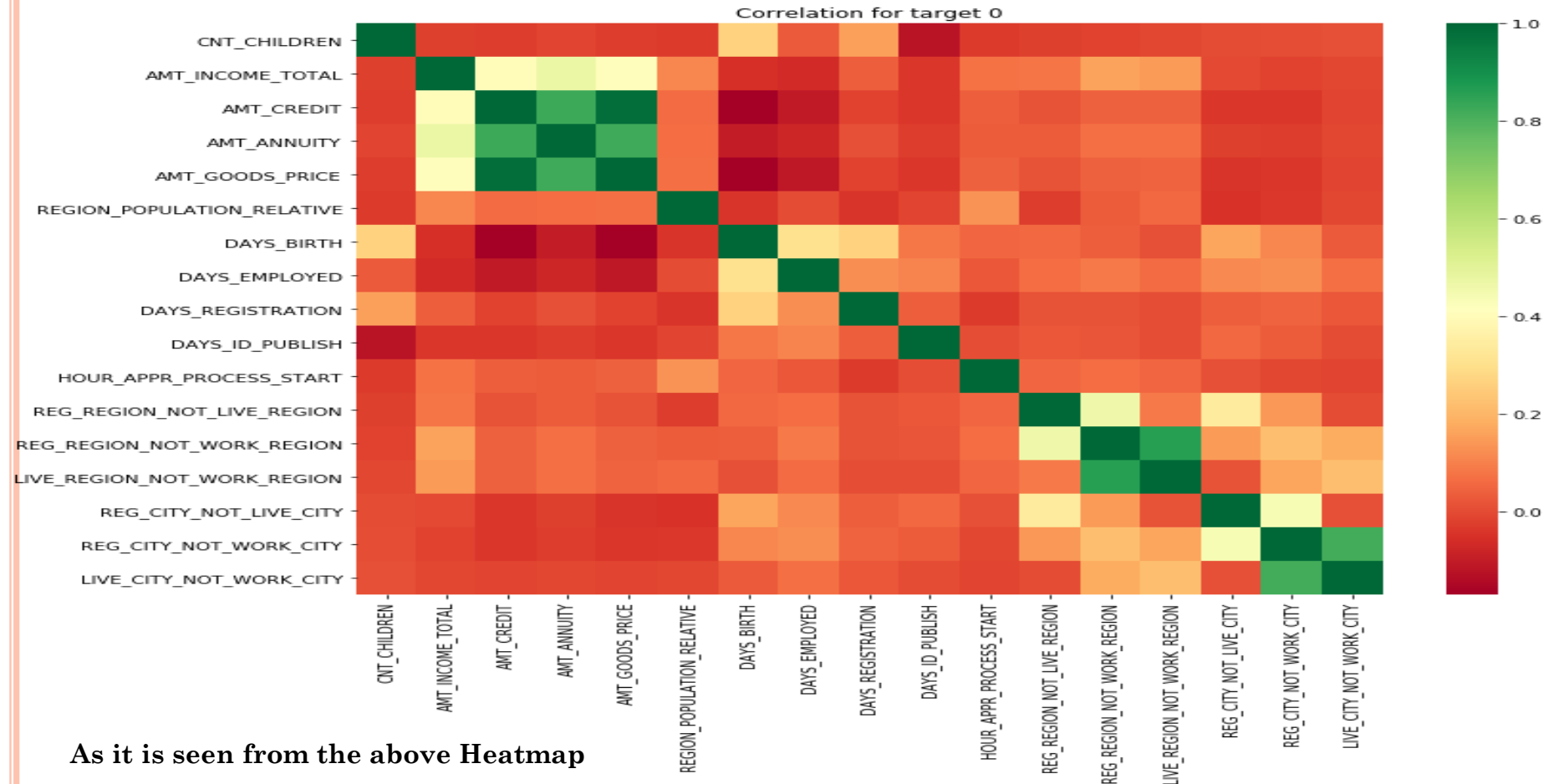
COMPARISON B/W FAMILY STATUS WISE EDUCATION VARIABLE WITH CONTRAST TO INCOME AMOUNT FOR TARGET 1 DATASET



One outlier is seen for Married class under Family Status belongs to Secondary class under Education category, which means in spite of having high income he or she being default for loan repayment. We can consider that as an exceptional cases. Apparently most of the class of Education category are more or less similar type of structure except Academic Degree and Lower Secondary.

In Academic degree, only the Married class exists in moderate income range but in a low quantity. All other class are absent, Which indicate a very positive side that in future bank can do more focus on this particular Education Category for providing loans.

CORRELATION FOR TARGET 0 DATASET



As it is seen from the above Heatmap

Credit amount is inversely proportional to days birth which means less the age has higher credit amount and vice-versa

Credit amount is inversely proportional with number of children, means higher the children count have less amount of credit and vice-versa.

Income amount is also inversely proportional with count of children.

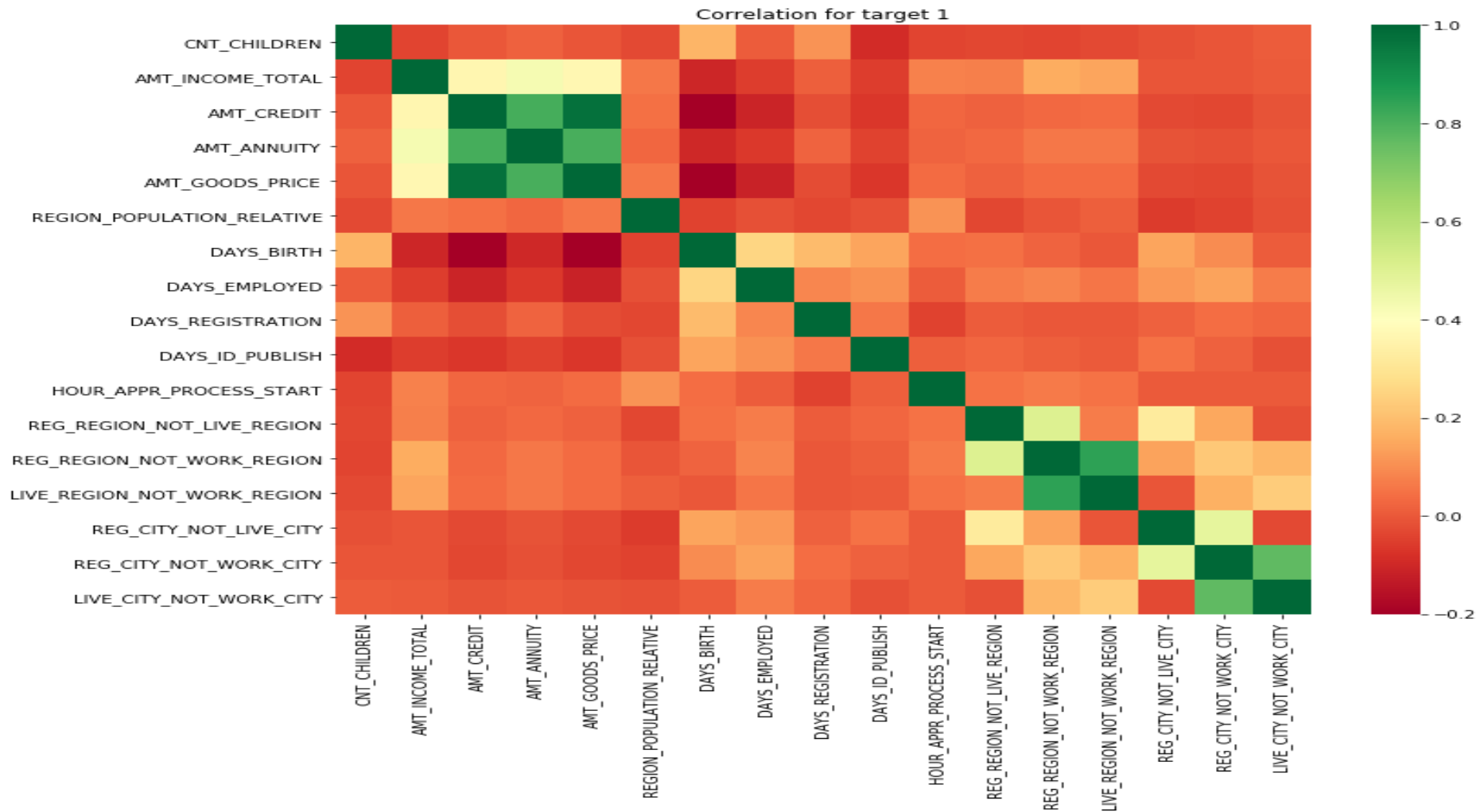
Less children count have found for densely populated area where as more children count have for less densely area.

Credit amount is higher for densely populated area and vice-versa,

Income amount is also high for densely populated area.



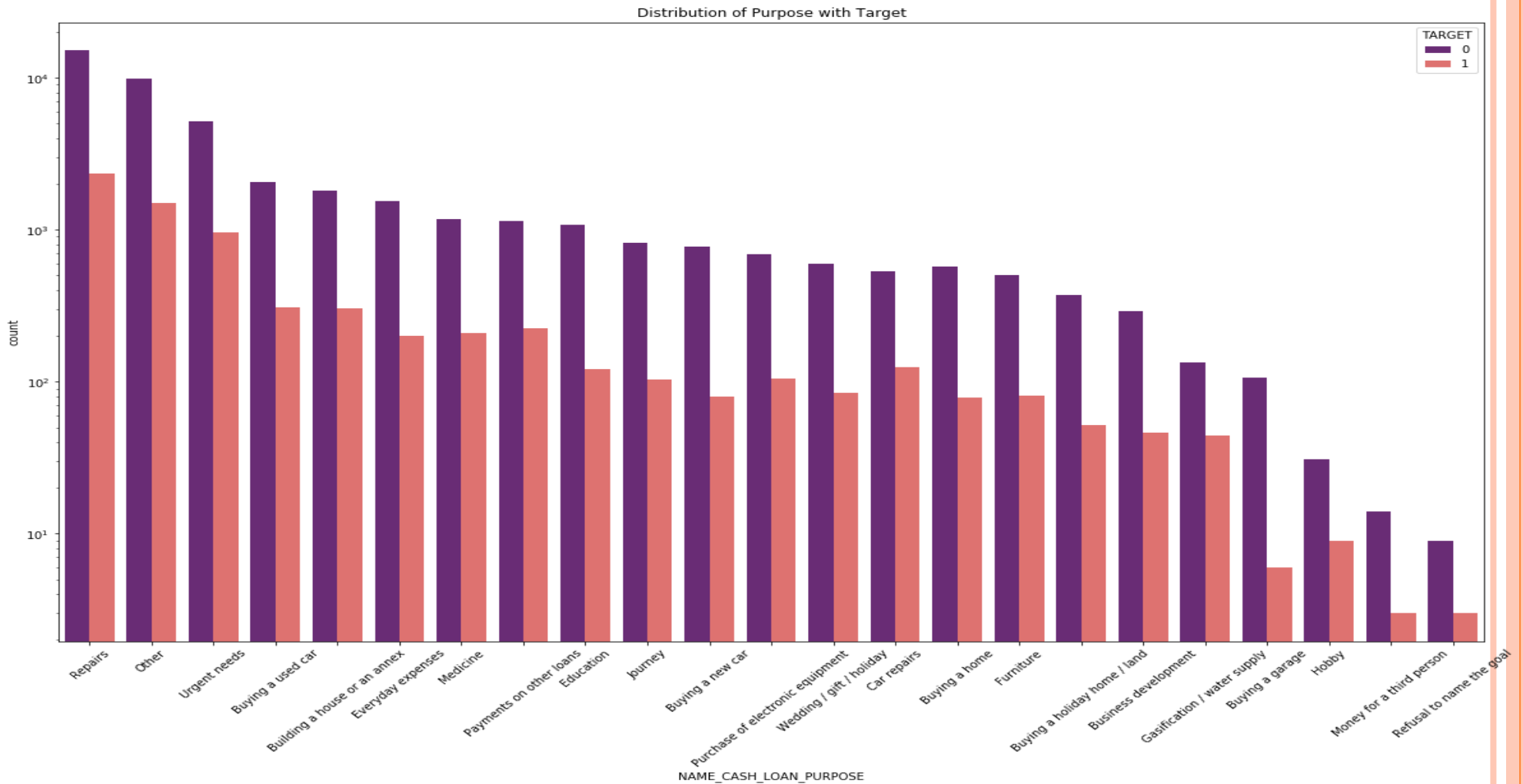
CORRELATION FOR TARGET 1 DATASET



This heatmap is also quite similar with target0 dataset. Few changes are seen..

1. For those clients which permanent address are not matching with their contact address are having less children count and vice-versa.
2. For those clients which permanent address are not matching with their work address are also having less children count and vice-versa.

DISTRIBUTION OF LOAN PURPOSE WITH TARGET COLUMN

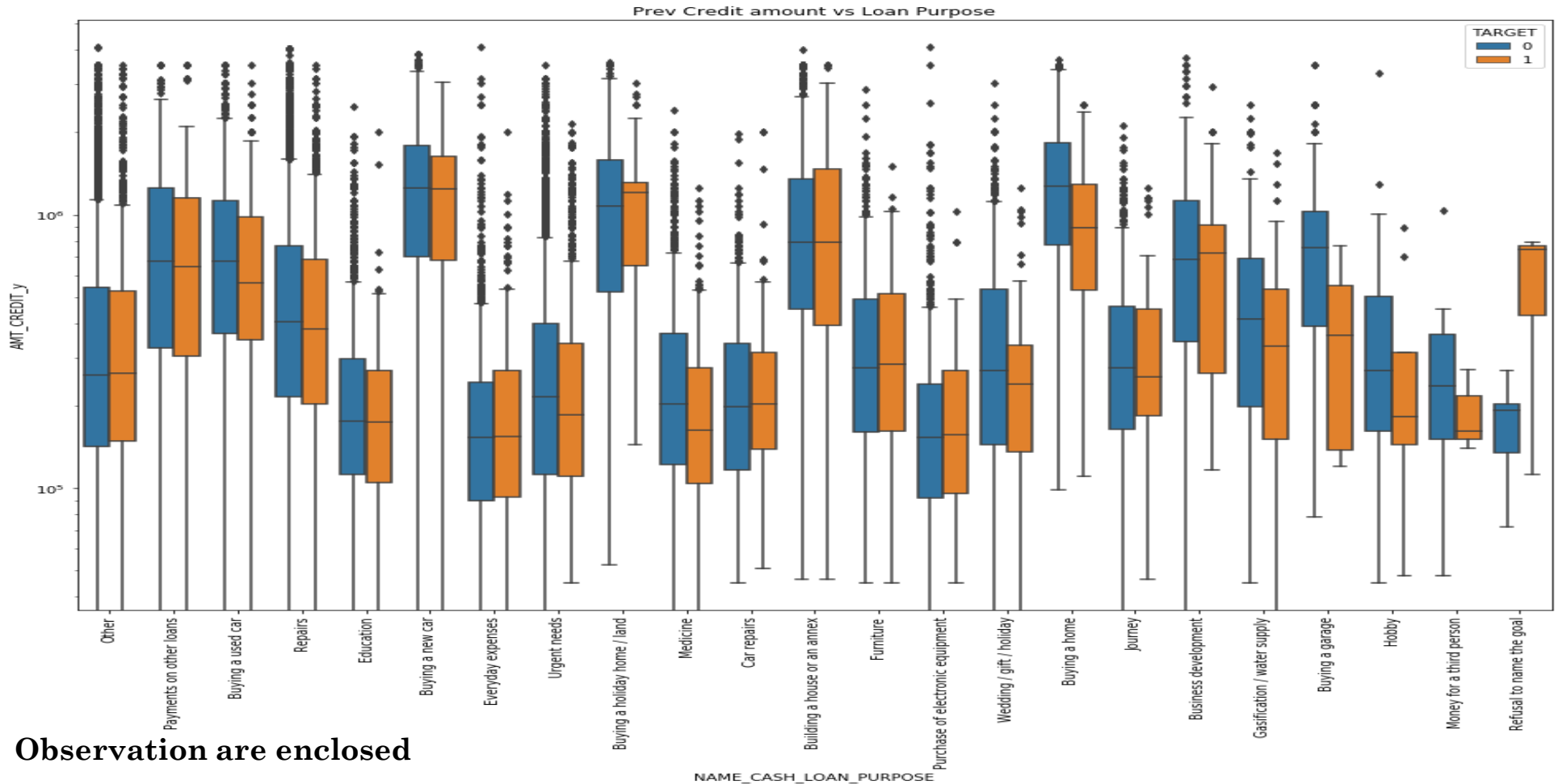


Loan Purposes for "Repair" are having more difficulties for repayment on time.

It is also interesting that there are cases where loan repayment on time are very much high than facing difficulties like- "Buying a New Car, Buying Home, Buying Garage, Education, Buying land, Business Development".

Finance Company should keep this point in consideration of this type of purposes for future lending.

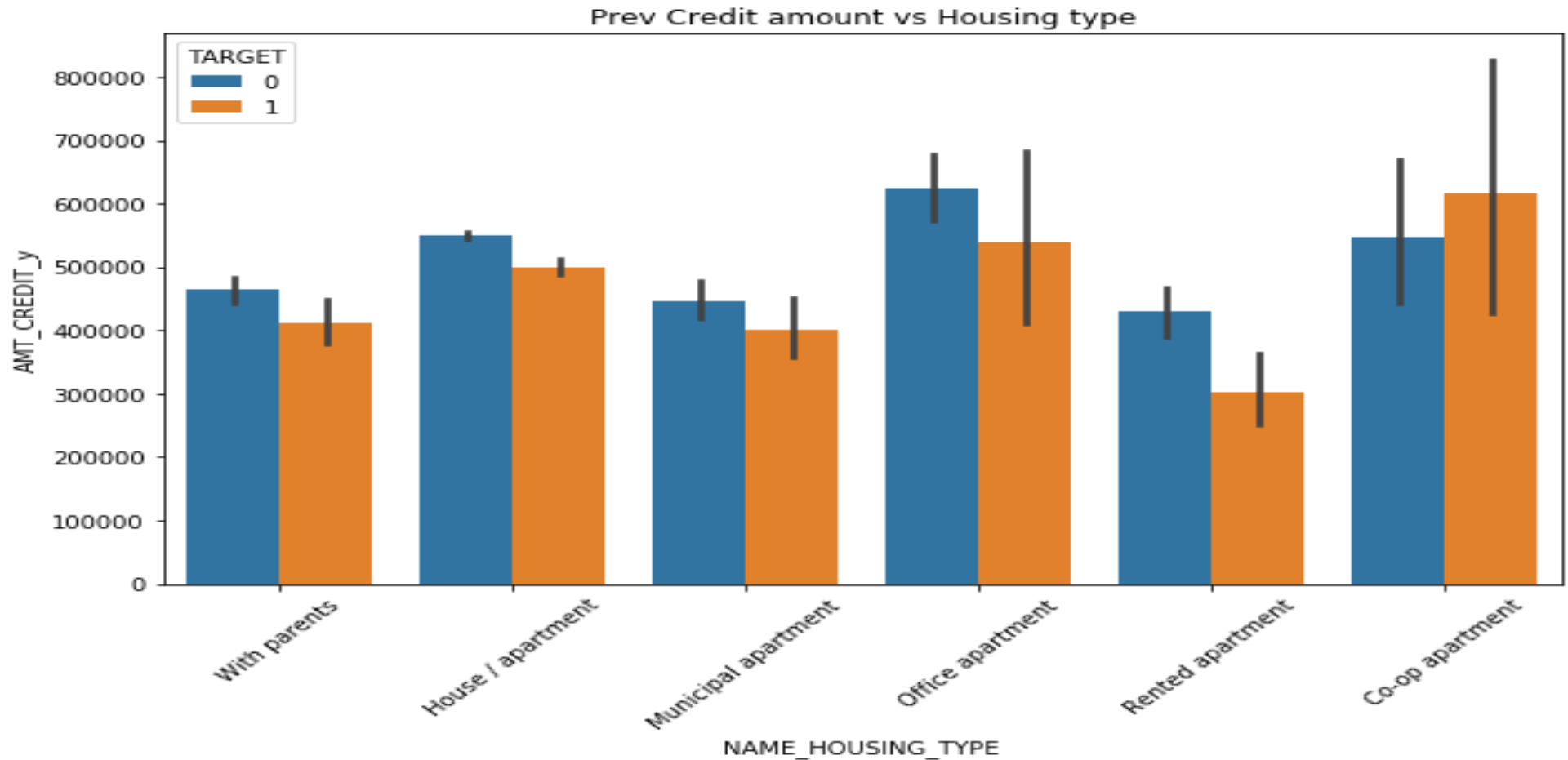
GLIMPSE OF PURPOSE OF LOAN WITH CONTRAST TO THEIR PREVIOUS HISTORY OF CREDIT



Observation are enclosed

Credit amount are very high for "Buying a home, Buying a new car, Buying a land, Building a house" for these purposes of loan. But in spite of having high credit for Building a House there is also defaulter percentage is moderately greater than the timely payment, which is also a contradictory matter. It is also interesting that those who have take loan for Buying a Home, in spite of having high credit amount they are also time committable for repayment, which we have seen in the last plot also.

GLIMPSE OF A COMPARISON OF HOUSE TYPE WITH PREVIOUS CREDIT HISTORY



Here for Housing type, office apartment is having higher credit of more timely payment workout whereas co-op apartment is having higher credit but with more difficulties with repayment. So, we can conclude that finance company should avoid giving loans to the housing type of co-op apartment due to their difficulties in payment. Finance company can focus mostly on housing type like-with parents or House\apartment or municipal apartment for successful repayments.



CONCLUSION AND RECOMMENDATION

- **Consumer Finance Company should do more focus on Students, Pensioners, Businessman as their records are quite good for timely repayment. Also need to avoid the Working class as there is a high chance of difficulties.**
- **Finance Company can do more focus on Academic Degree Education Type with respect to Family Status "Single/not Married" category as their defaulter record is significantly low.**
- **Finance Company should avoid for providing loan for Repairing purpose, where as they can put more concentration on purpose of "Buying Home, Buying a New car, Education, Buying Garage, Business Development etc." as they have very good records of on time loan repayment.**
- **Finance Company try to capture clients more from House type like - With Parents, House/Apartment, Municipal Apartments as they are more time bounded for loan repayment.**



THANK YOU!

