

CREDIT EDA CASE STUDY

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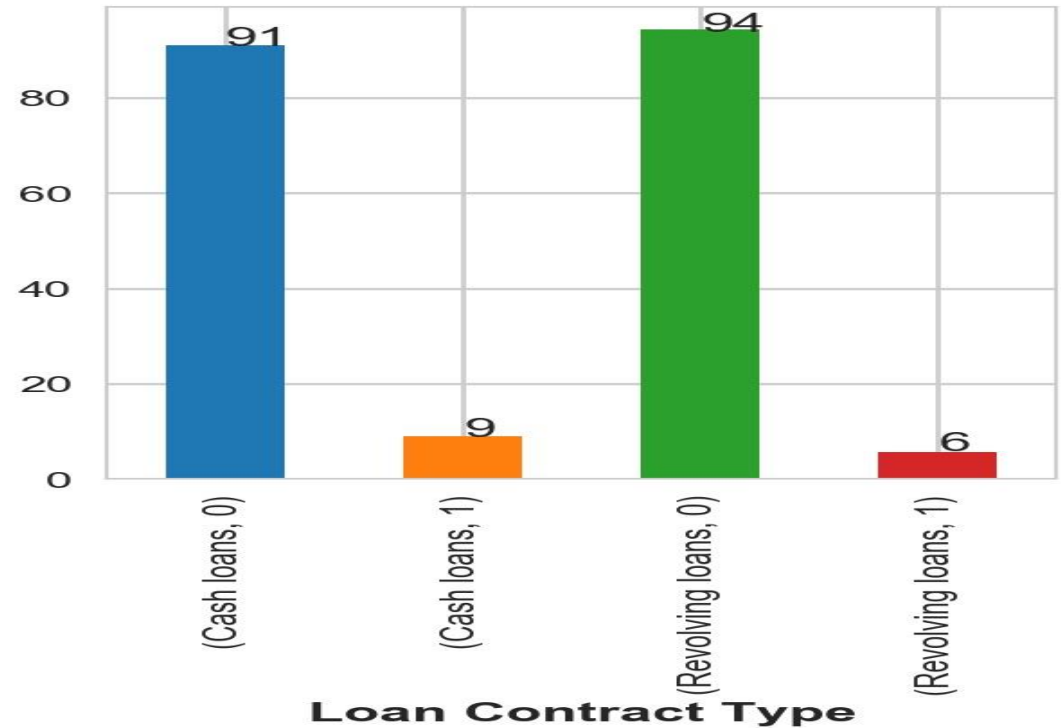
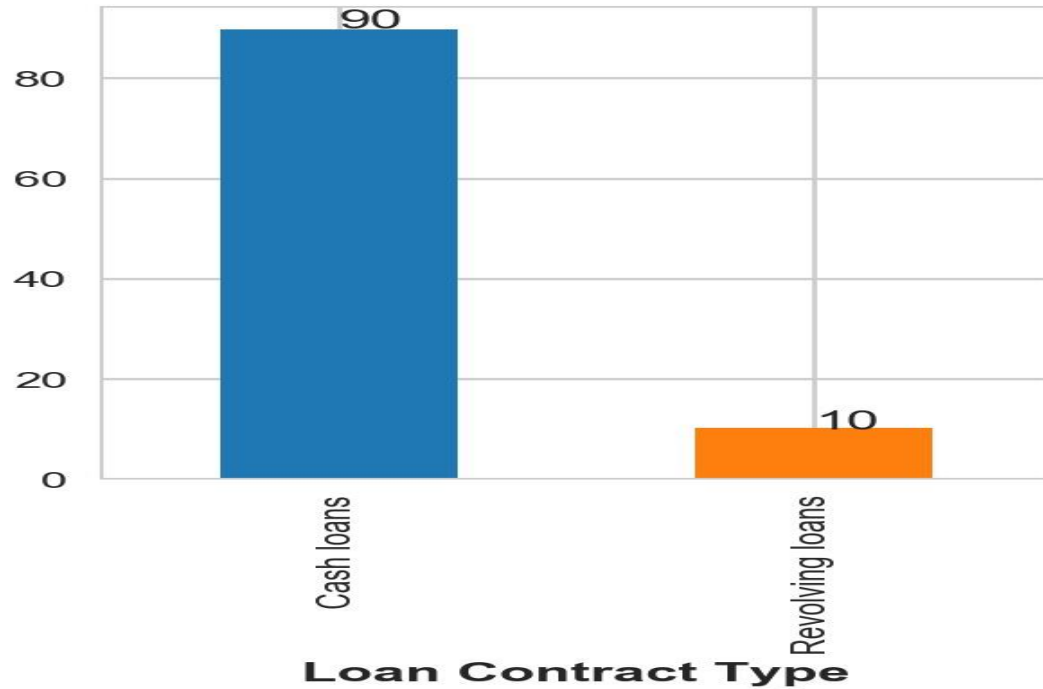
The loan providing companies find it hard to give loans to the people due to their insufficient or non-existent credit history. Because of that, some consumers use it as their advantage by becoming a defaulter. Suppose you work for a consumer finance company which specializes in lending various types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

This case study aims to identify patterns which indicate if a client has difficulty paying their installments which may be used for taking actions such as denying the loan, reducing the amount of loan, lending (to risky applicants) at a higher interest rate, etc. This will ensure that the consumers capable of repaying the loan are not rejected. Identification of such applicants using EDA is the aim of this case study.

BUSINESS OBJECTIVE

VARIANT ANALYSIS – LOAN CONTRACT TYPE

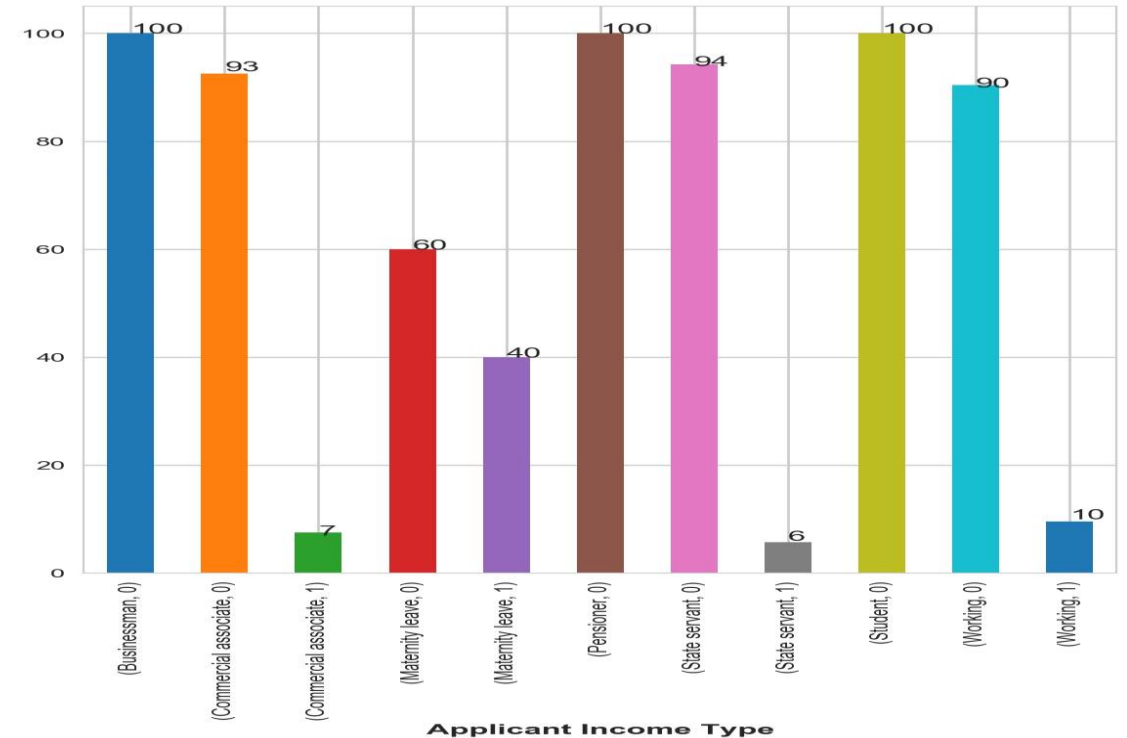
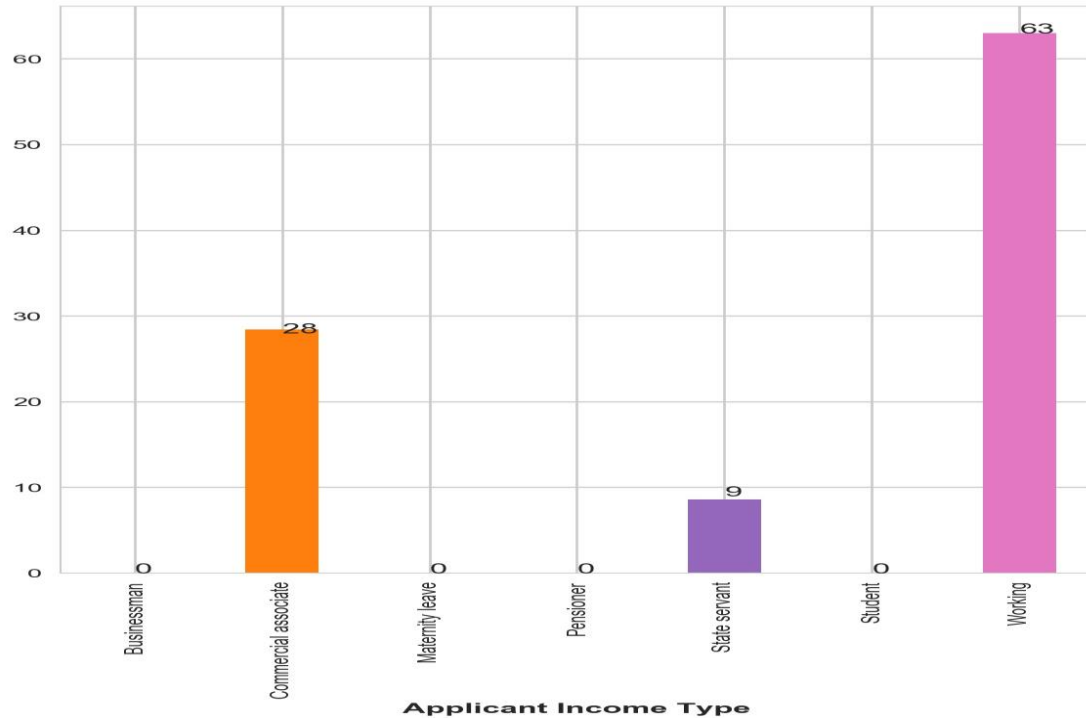
Loan Contract Type with Payment difficulties



1. Majority of loan applications is for Cash Loans which contributes 90% on the total applications.
2. There is no much difference on the applicant with payment difficulties based on Loan contract type. Around 5% to 8% applicants are having the payment difficulty.

VARIANT ANALYSIS – APPLICANT INCOME TYPE

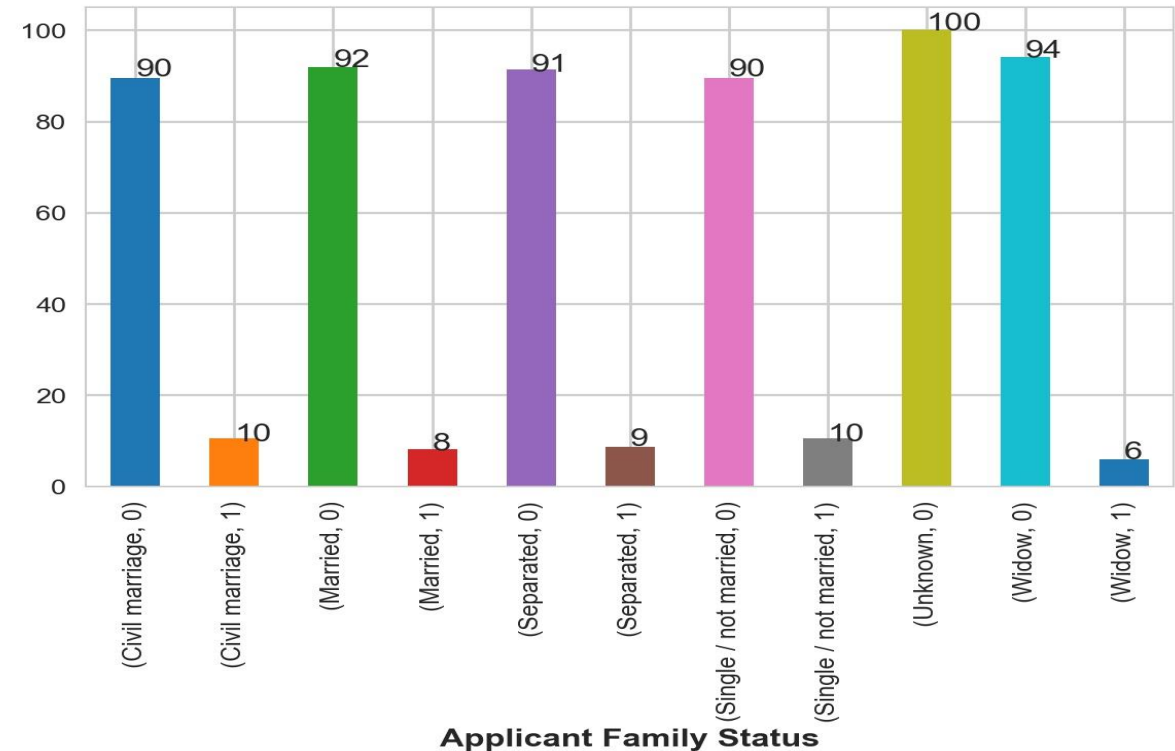
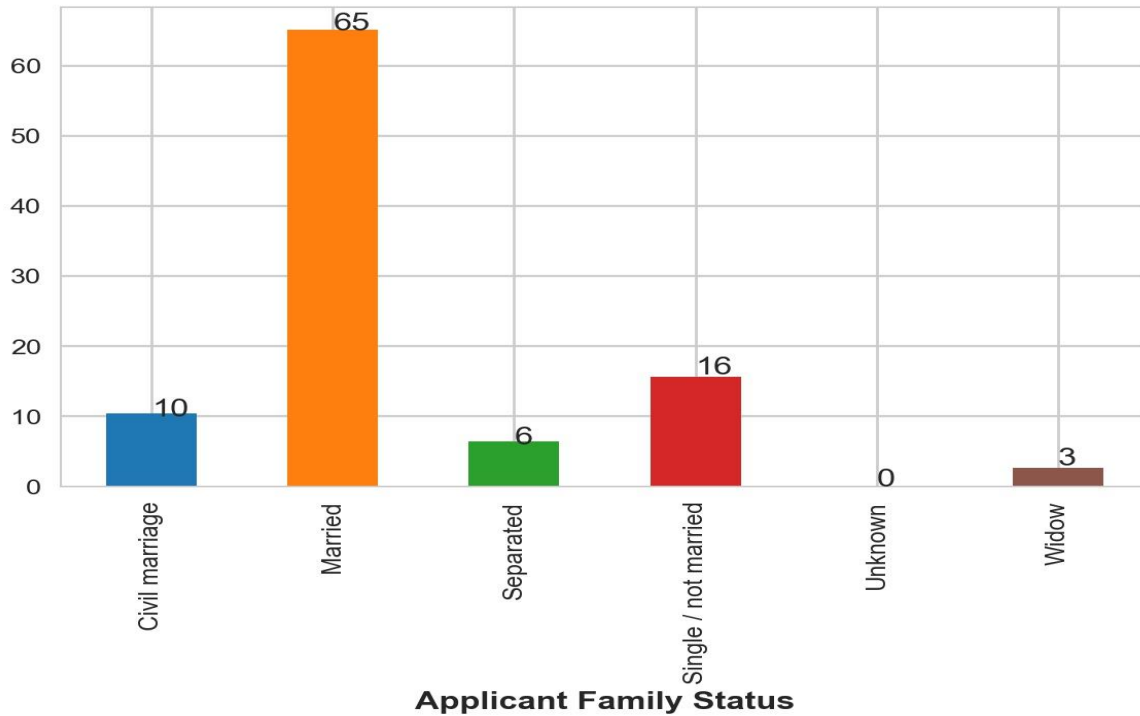
Applicant Income Type with Payment difficulties



1. 50% of loan applications are from Working income type followed by Commercial Associate and Pensioner.
2. Unemployed and Maternity leave class applicants are having more payment difficulties. Around 35% to 40% applicants are having difficulties on payment on that income type. Whereas applicants from other income type have only 5 to 10% of difficulty.
3. Interestingly Businessman and Students do not have payment difficulty.

VARIANT ANALYSIS – APPLICANT FAMILY STATUS

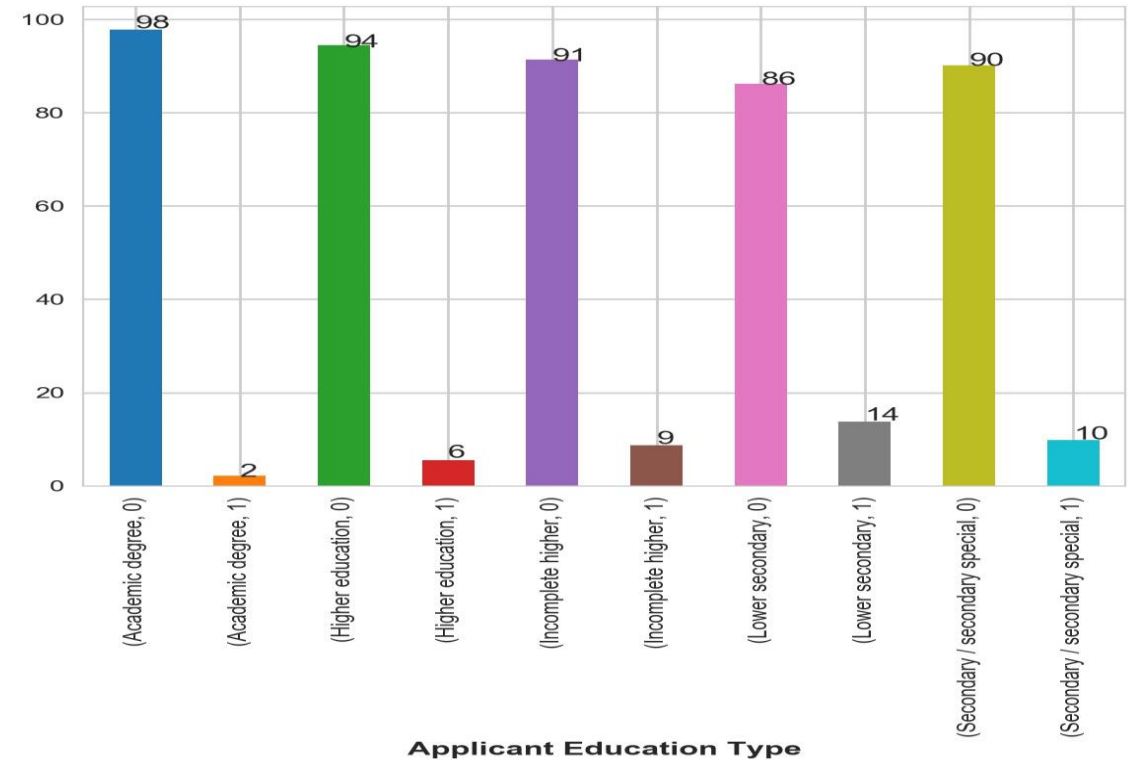
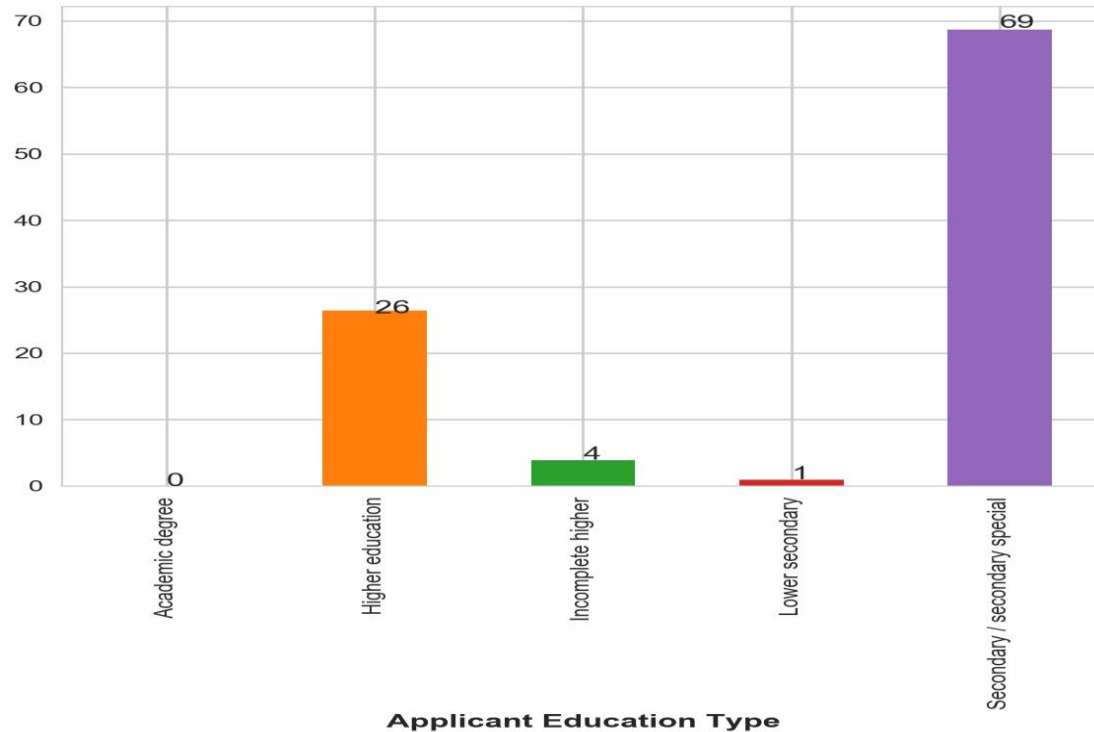
Applicant Family Status with Payment difficulties



1. Married applicants contribute 63% of total applicants.
2. Widowers are having less payment difficulties

VARIANT ANALYSIS – APPLICANT EDUCATION TYPE

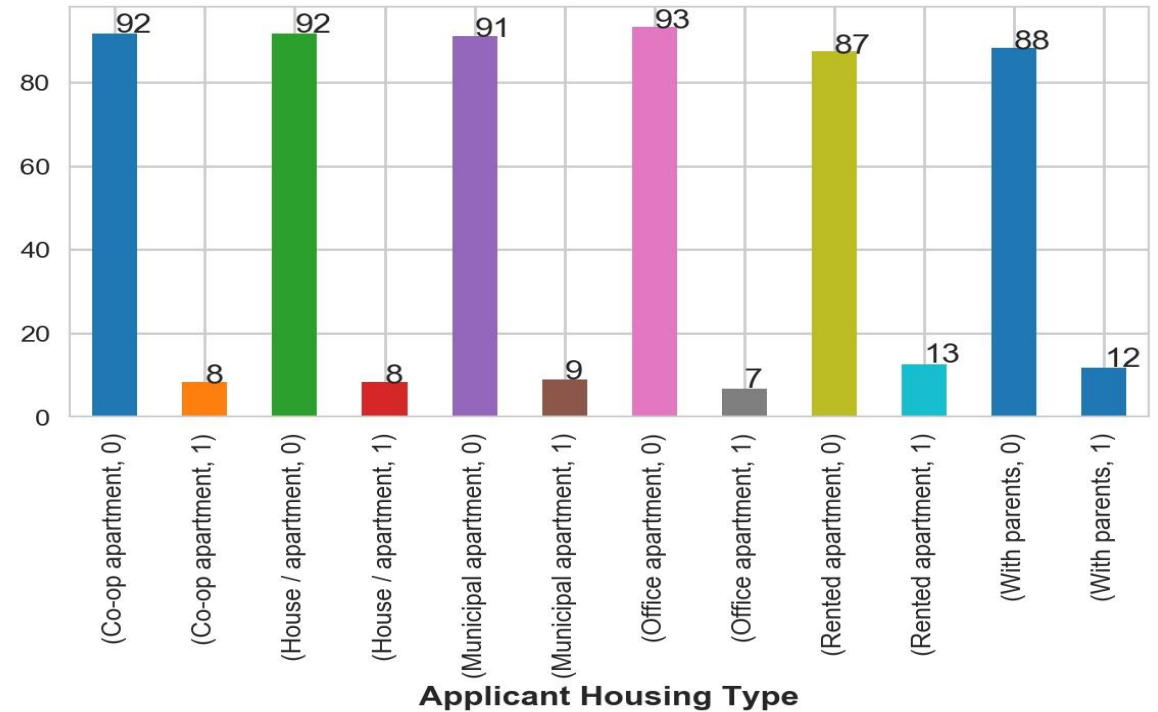
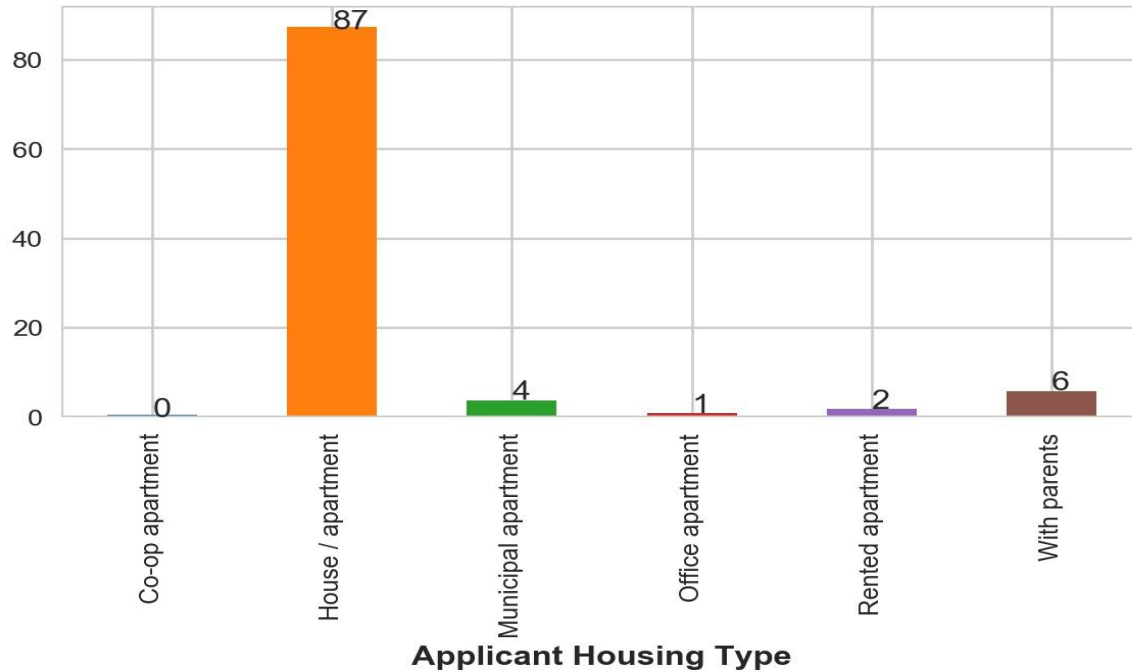
Applicant Education Type with Payment difficulties



1. More applicants are from Secondary Education group around 70% of applicants are from this group.
2. Academic degree applicants are having very less difficulty in the payment of loan whereas other members have 8 to 10% of payment difficulty.

VARIANT ANALYSIS – APPLICANT HOUSING TYPE

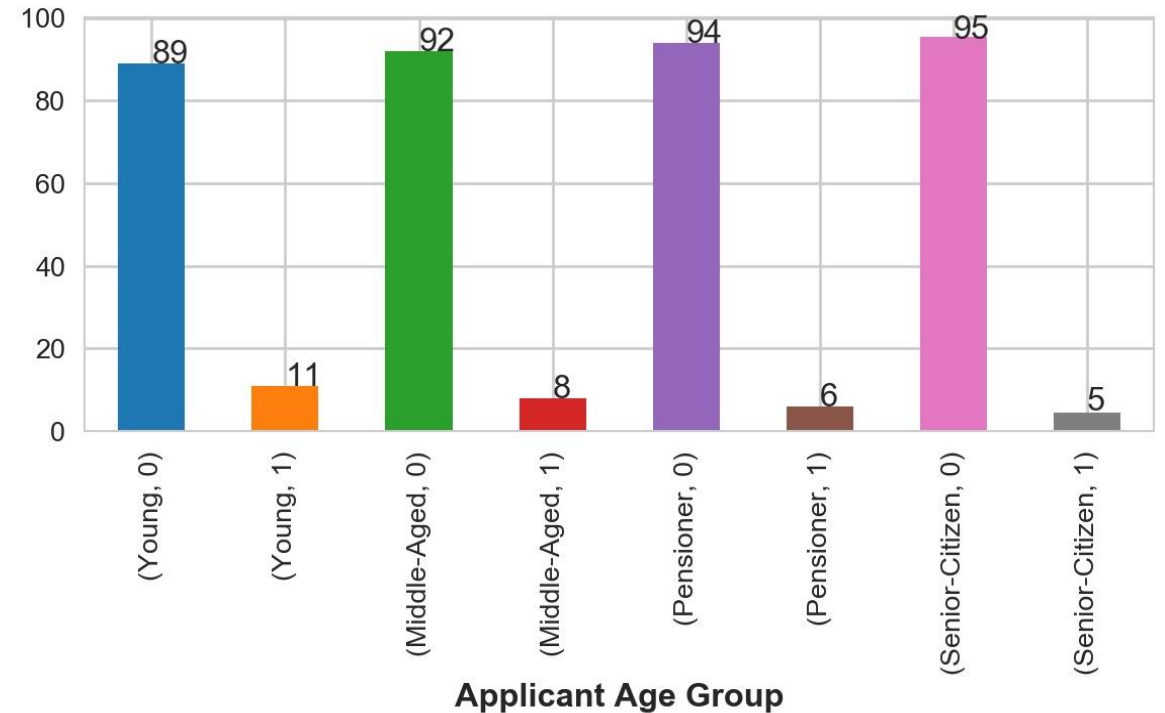
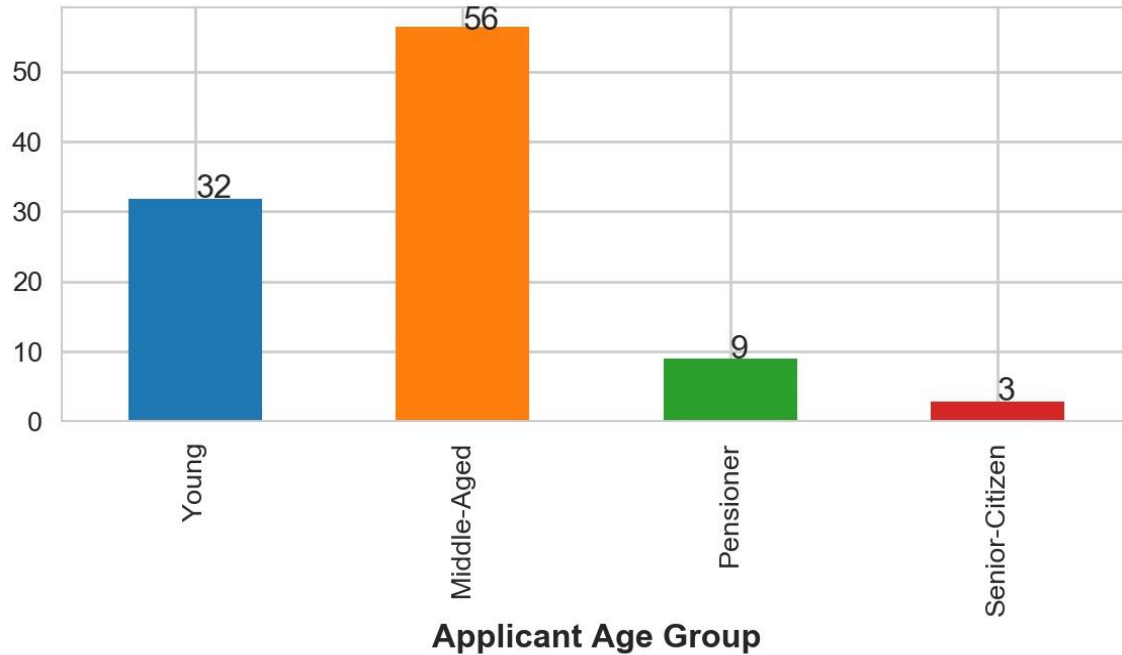
Applicant Housing Type with Payment difficulties



1. Majority of loan applicants own a House/Apartment with 88%
2. People living in Rented apartment and with parents are having payment difficulties.

VARIANT ANALYSIS – APPLICANT AGE GROUP

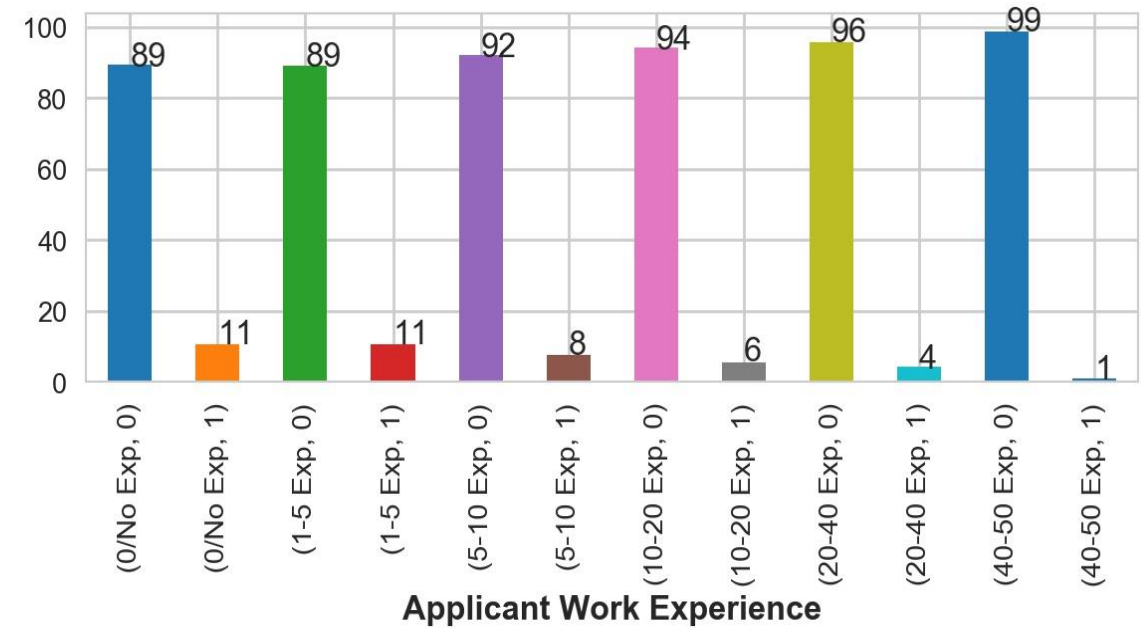
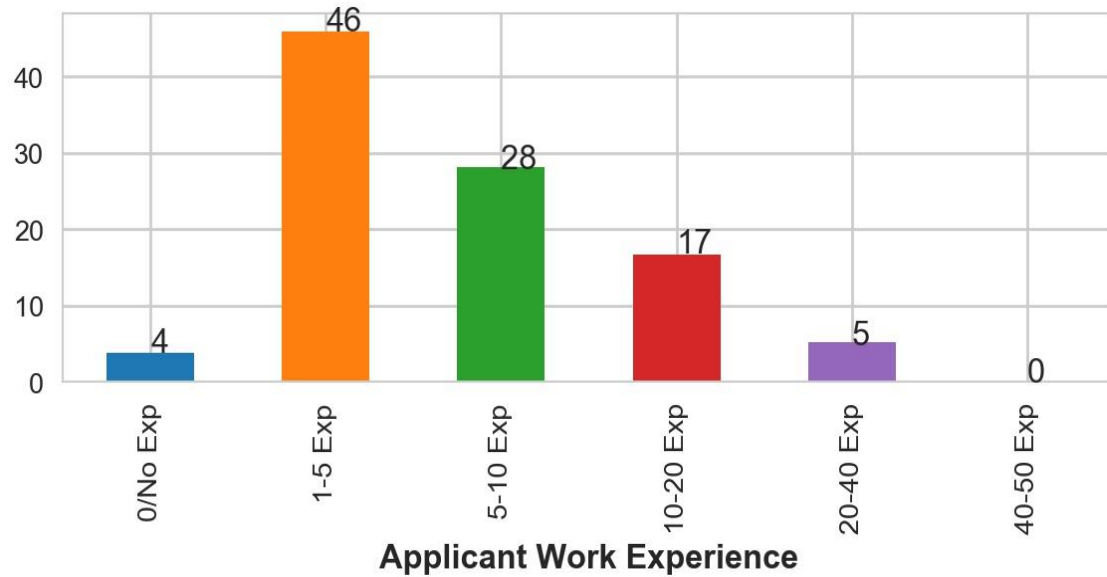
Applicant Age Group with Payment difficulties



1. Middle-Aged persons are looking for loan desperately compared to other age groups, since they contribute 50% of total applicants
2. Pensioner and Senior-Citizens are having less payment difficulties whereas young people have highest payment difficulty

VARIANT ANALYSIS – APPLICANT EXPERIENCE LEVEL

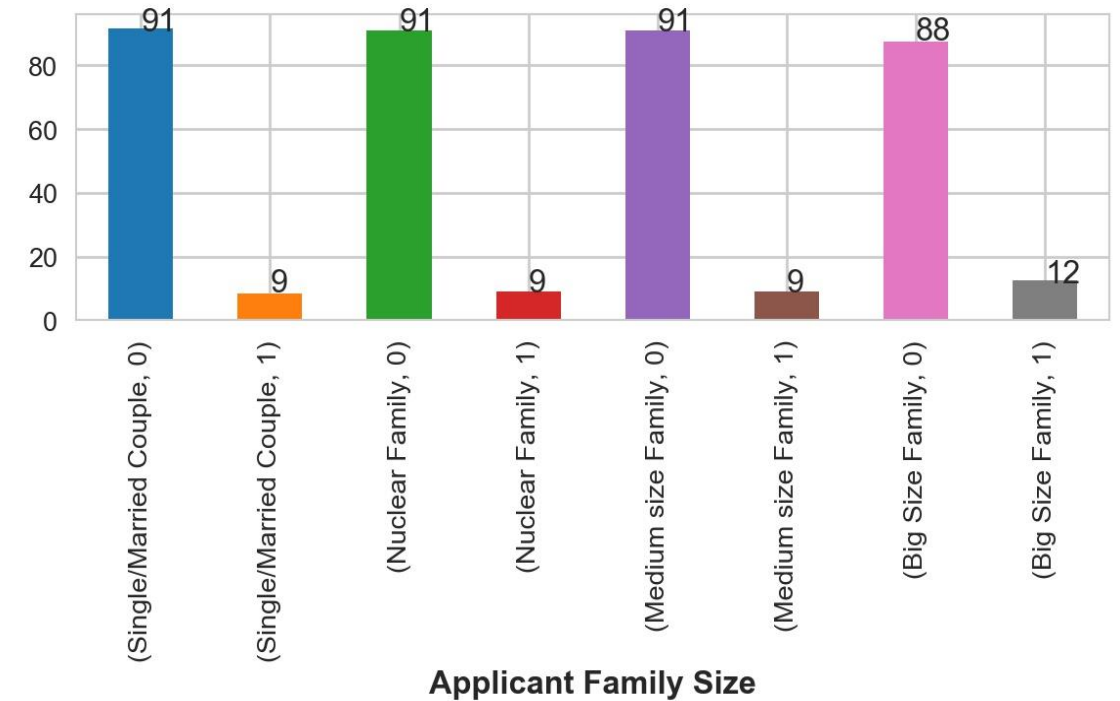
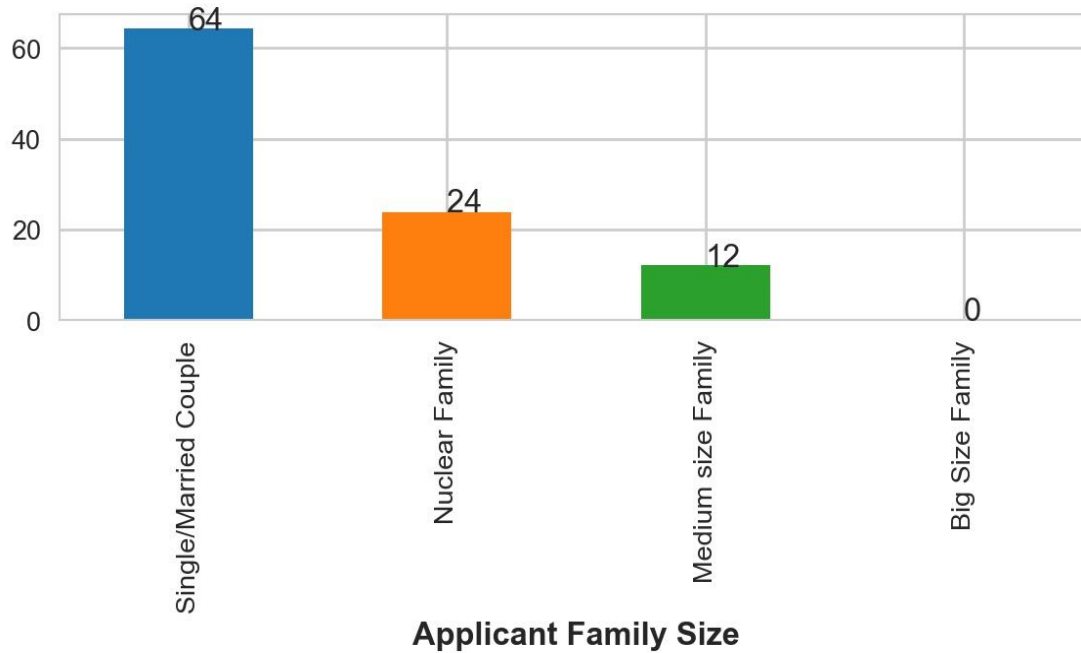
Applicant Work Experience with Payment difficulties



I. People with less or no work experience have payment difficulties

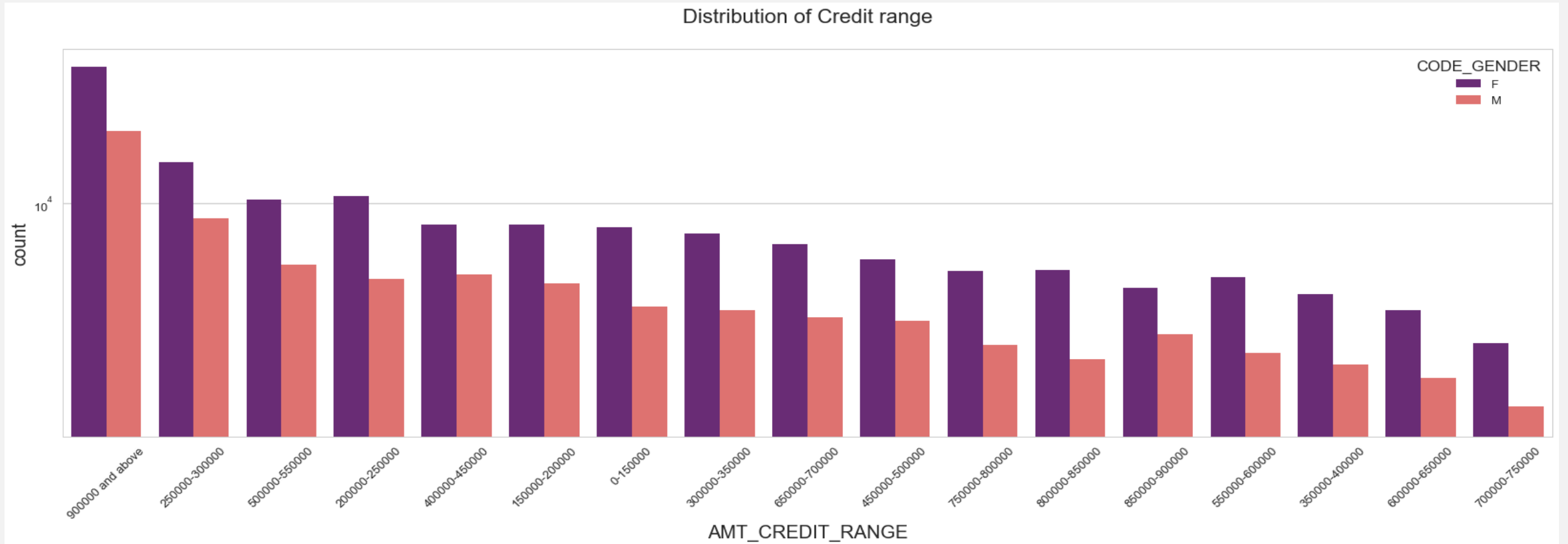
VARIANT ANALYSIS – APPLICANT FAMILY SIZE

Applicant Family Size with Payment difficulties



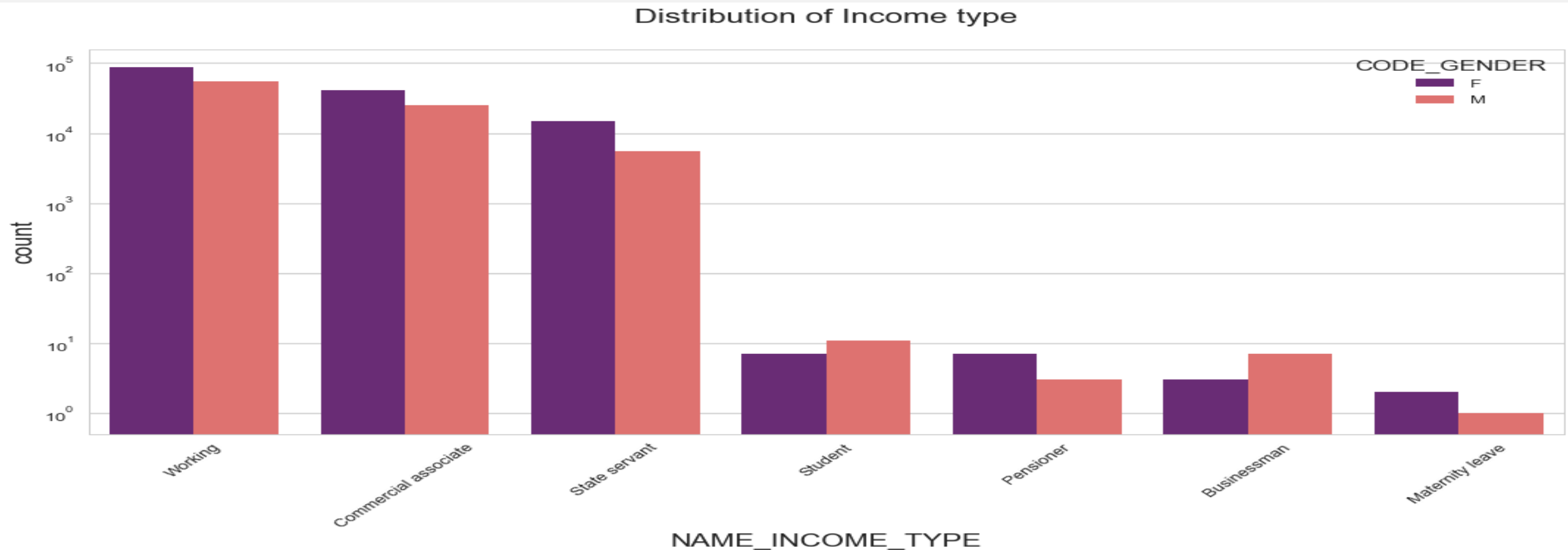
1. It clearly indicates that Major loan applicants are from Single/Married couple with no children
2. Size of family directly have the impact on the Payment difficulty.

DISTRIBUTION OF CREDIT RANGE AMONG GENDER WITHOUT PAYMENT DIFFICULTIES



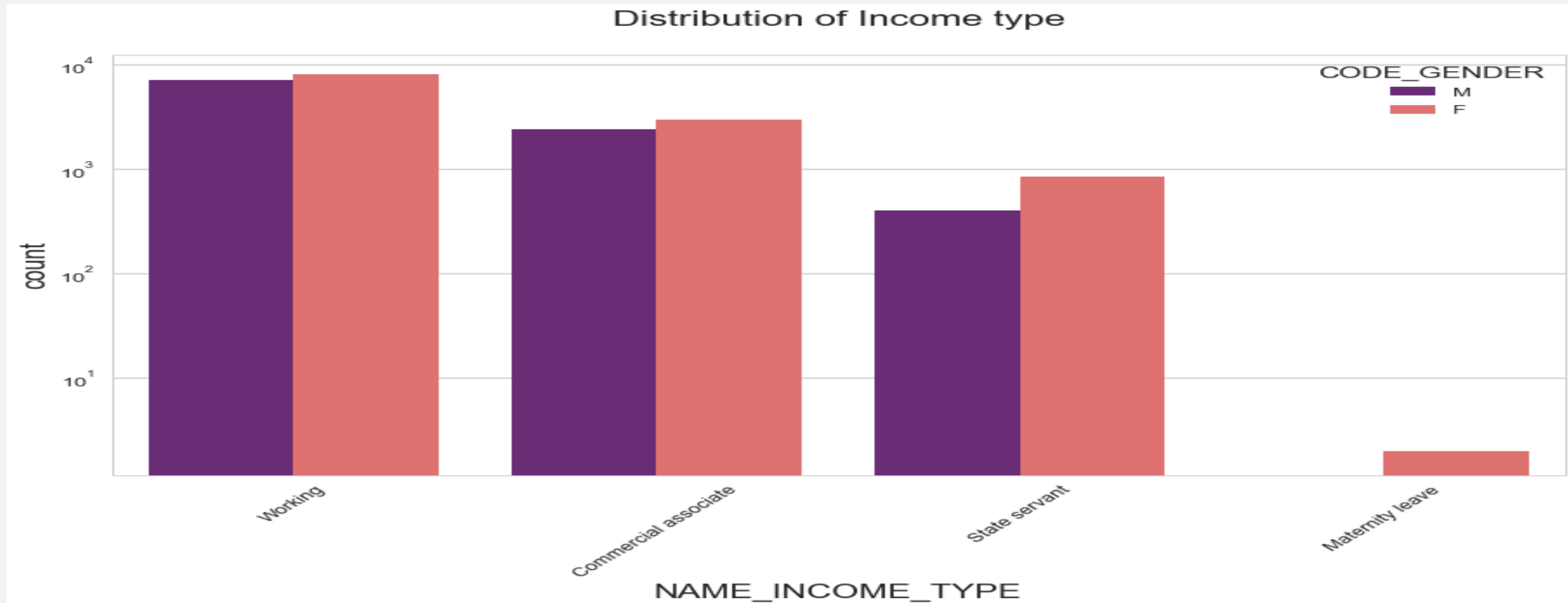
1. Female counts are comparatively higher than male.
2. This graph show that females are more than male in having credits.

DISTRIBUTION OF INCOME TYPE AMONG GENDER WITHOUT PAYMENT DIFFICULTIES



1. For income type 'working', 'commercial associate', and 'State Servant' the number of credits are higher than others.
2. Females in the above mentioned categories have more number of credits than male.
3. Credits are low for income type 'student', 'pensioner', 'Businessman' and 'Maternity leave'.

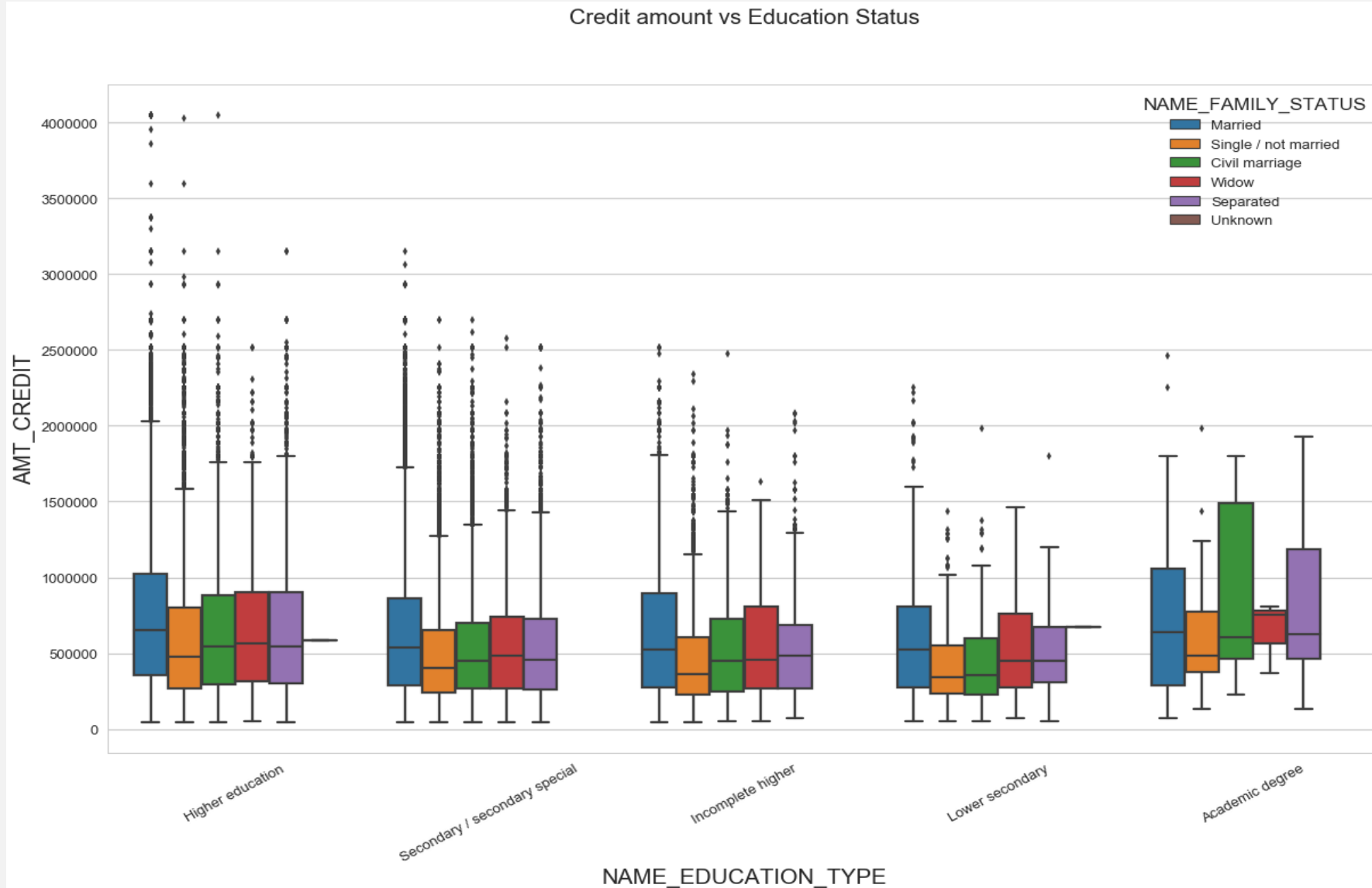
DISTRIBUTION OF INCOME TYPE AMONG GENDER WITH PAYMENT DIFFICULTIES



1. The income type 'working', 'commercial associate', and 'State Servant' have higher number of credits.
2. Less number of credits for income type 'Maternity leave'.
3. For type I: There is no income type for 'student', 'pensioner' and 'Businessman' which means they don't do any late payments.

BIVARIANT ANALYSIS – WITHOUT PAYMENT DIFFICULTIES

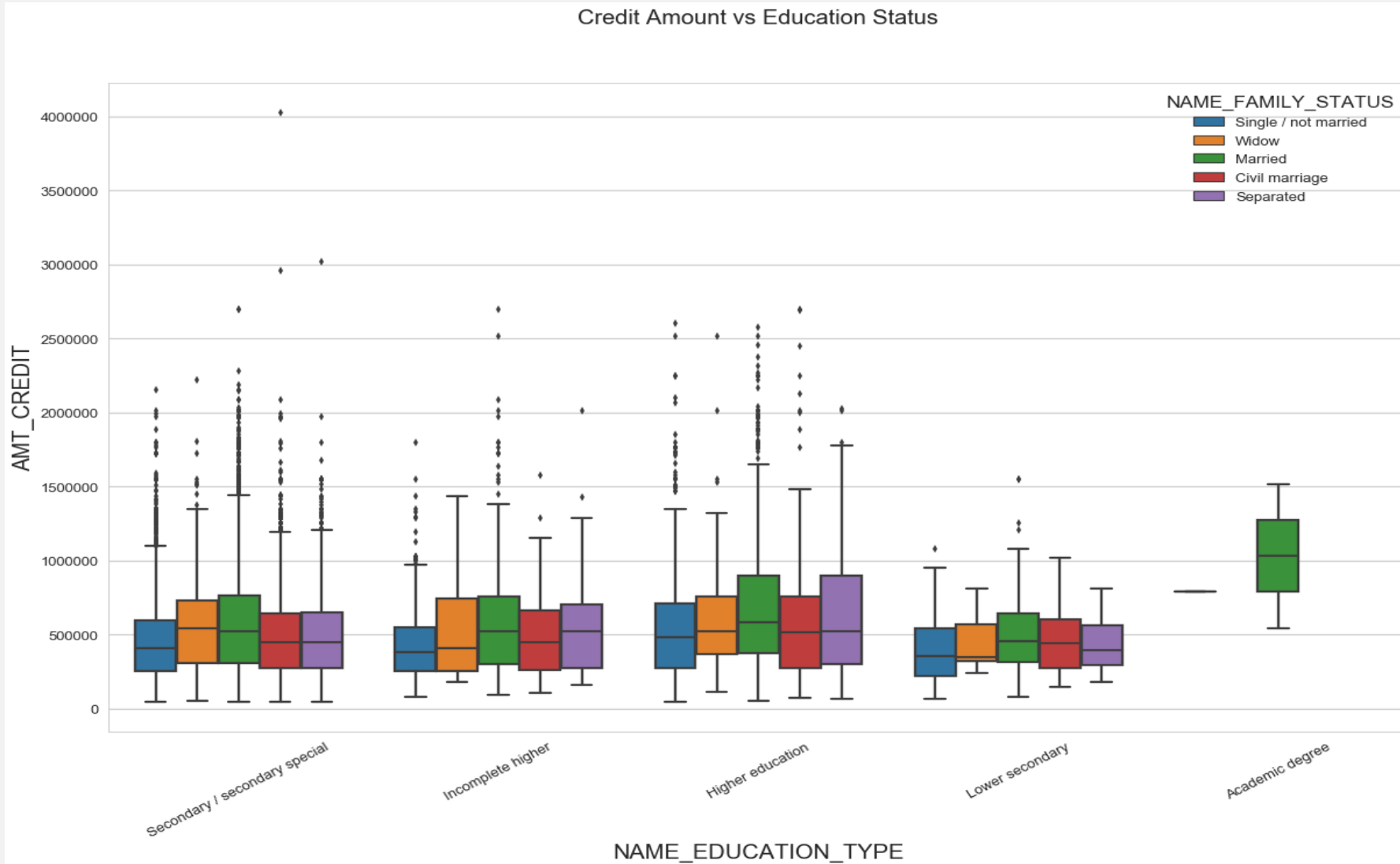
CREDIT AMOUNT VS EDUCATION STATUS



1. Family status of 'civil marriage', 'marriage' and 'separated' of Academic degree education are having higher number of credits than others.
2. Higher education of family status of 'marriage', 'single' and 'civil marriage' are having more outliers.
3. Civil marriage for Academic degree is having most of the credits in the third quartile.

BIVARIANT ANALYSIS – WITH PAYMENT DIFFICULTIES

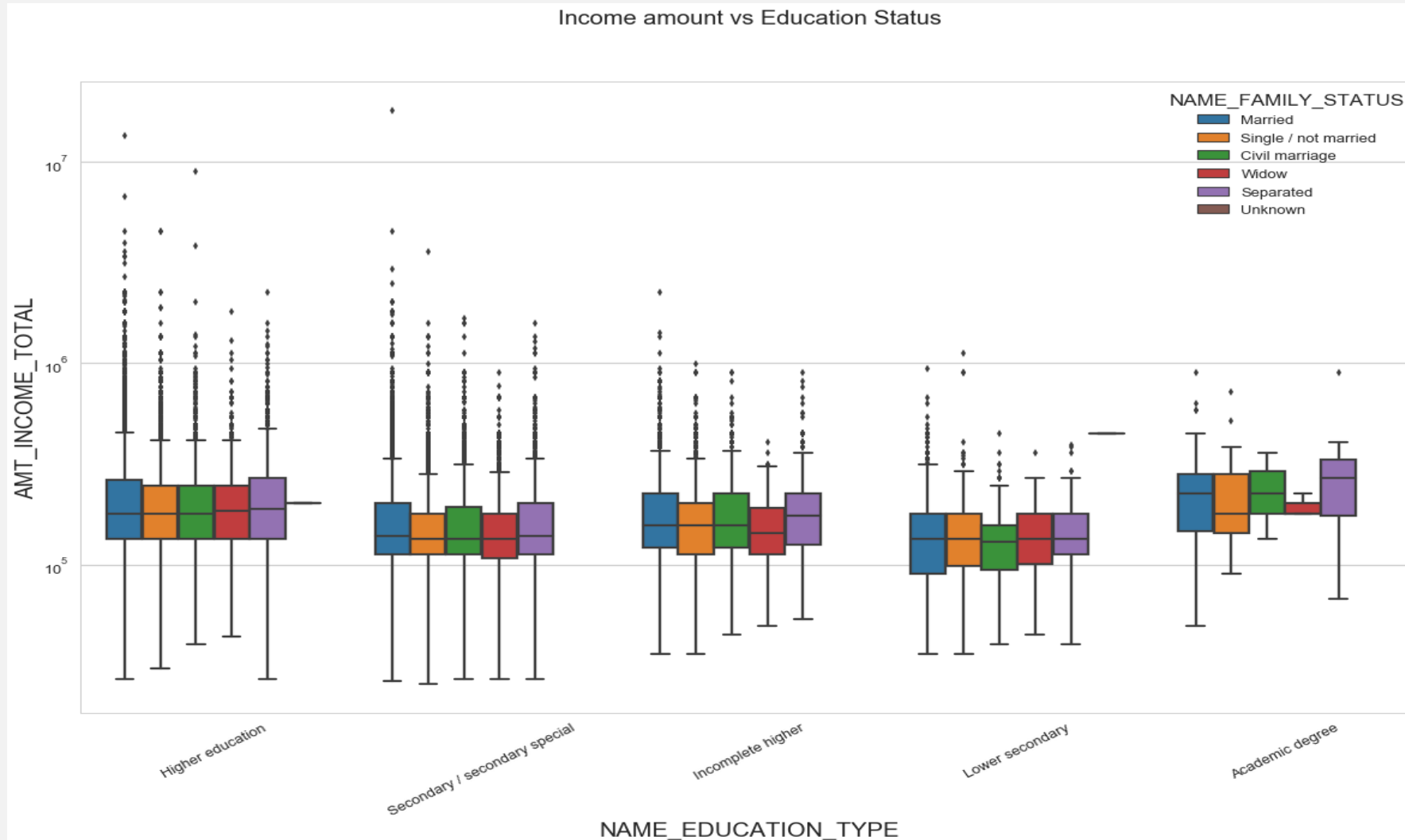
CREDIT AMOUNT VS EDUCATION STATUS



1. Highest outliers are for 'Civil marriage' and 'Separated' in Secondary.
2. 'Married' for Academic degree is having most of the credits in the third quartile.

BIVARIANT ANALYSIS – WITHOUT PAYMENT DIFFICULTIES

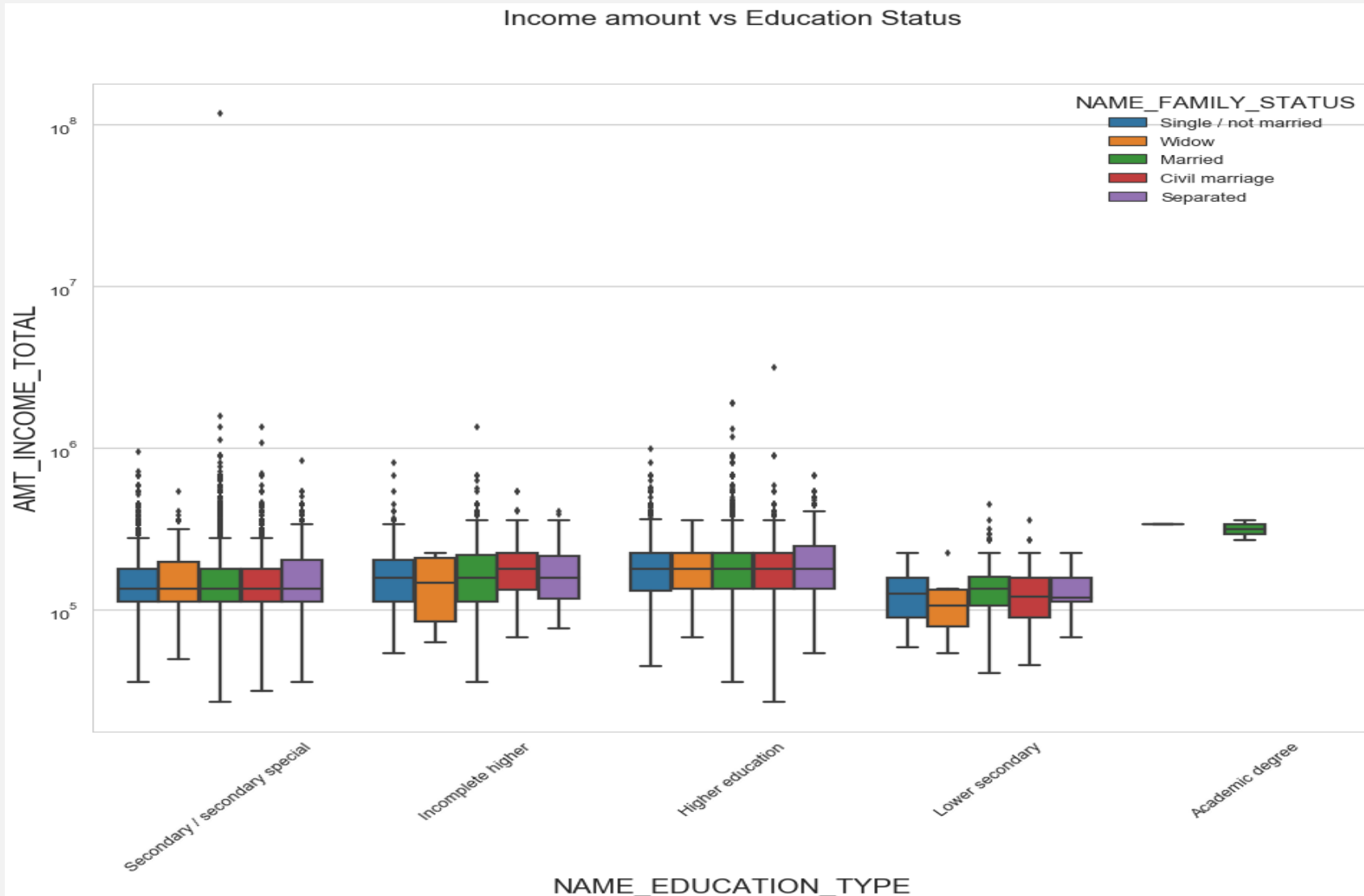
INCOME AMOUNT VS EDUCATION STATUS



1. In 'Higher education' the income amount is mostly equal with family status. It contains outliers. Less outlier are there for Academic degree but the income amount there is little higher than Higher education.
2. Lower secondary of civil marriage family status have less income amount than others.

BIVARIANT ANALYSIS – WITH PAYMENT DIFFICULTIES

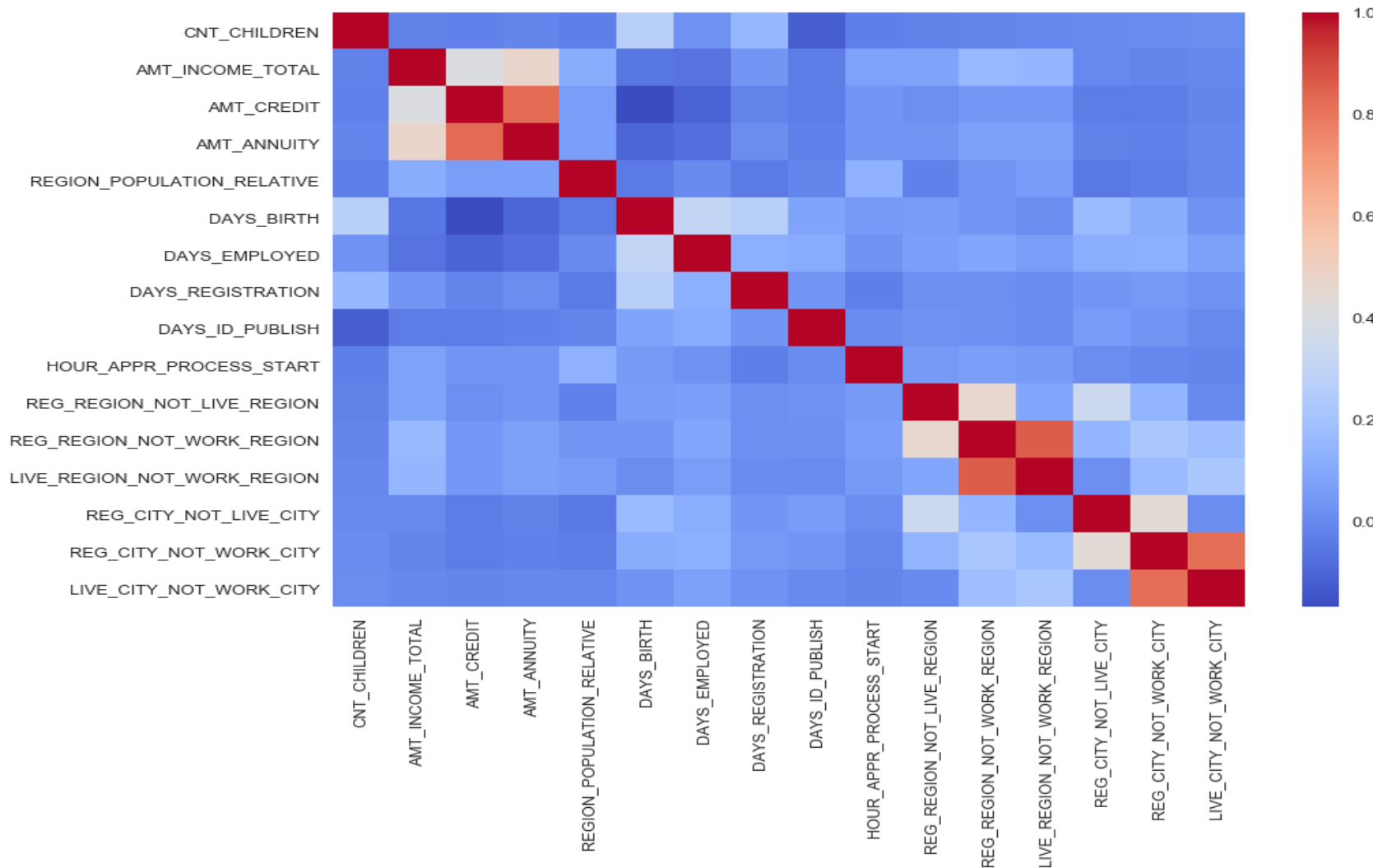
INCOME AMOUNT VS EDUCATION STATUS



1. From above boxplot for Education type 'Higher education' the income amount is mostly equal with family status.
2. Lower secondary are have less income amount than others.

MULTIVARIANT ANALYSIS – WITHOUT PAYMENT DIFFICULTIES

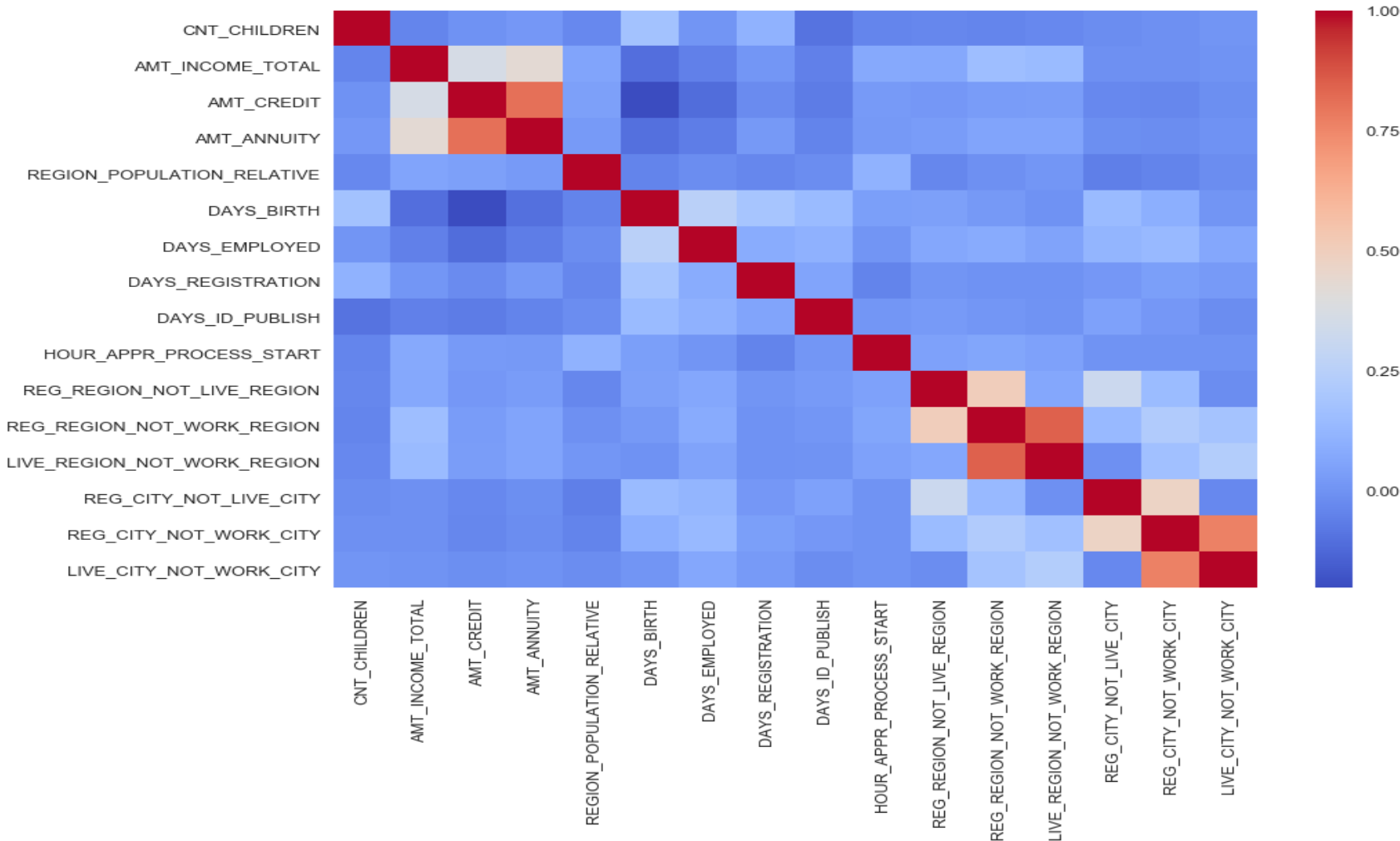
Target 0 Heatmap



1. Credit amount is inversely proportional to the date of birth, which means Credit amount is higher for low age and vice-versa.
2. Credit amount is inversely proportional to the number of children client have, means Credit amount is higher for less children count client have and vice-versa.
3. Income amount is inversely proportional to the number of children client have, means more income for less children client have and vice-versa.
4. less children client have in densely populated area.
5. Credit amount is higher to densely populated area.
6. The income is also higher in densely populated area

MULTIVARIANT ANALYSIS – WITH PAYMENT DIFFICULTIES

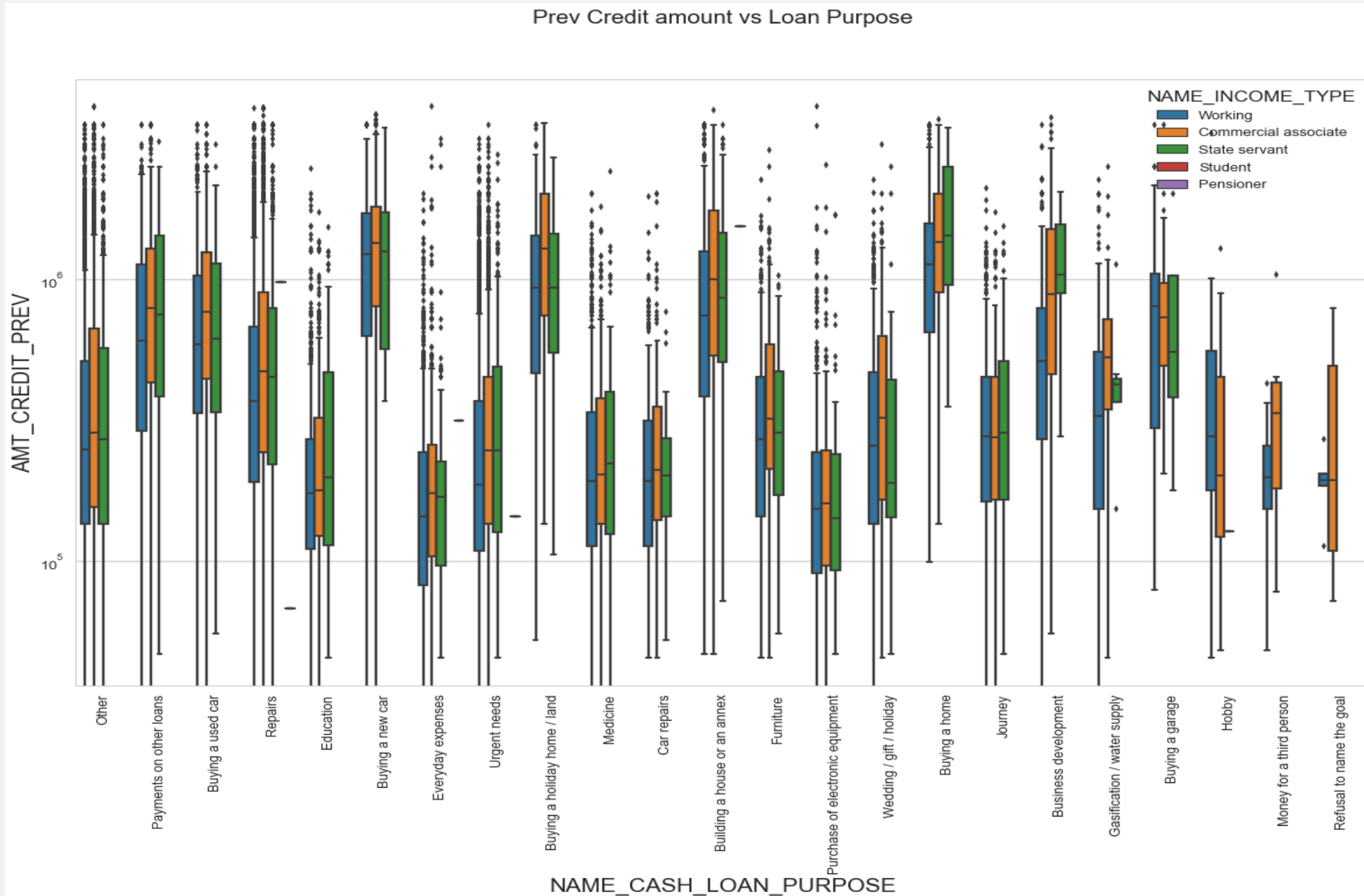
Target 1 Heatmap



1. This heatmap is also having similar observations just like Target 0, but a few points are different. They are listed below.
2. The client's permanent address does not match contact address are having less children and vice-versa
3. the client's permanent address does not match work address are having less children and vice-versa

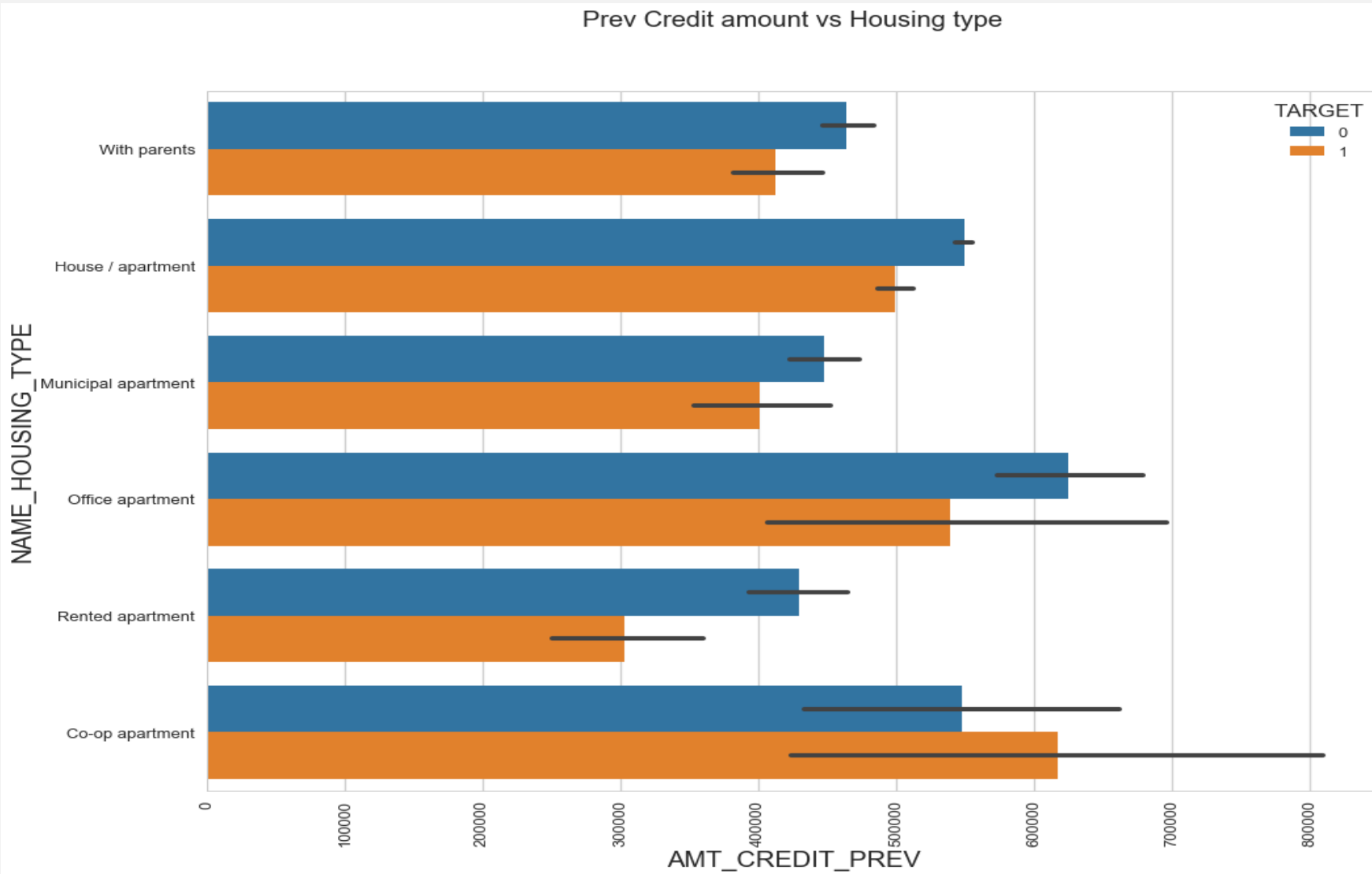
BIVARIANT ANALYSIS – PREVIOUS APPLICATION

CREDIT AMOUNT VS LOAN PURPOSE



1. Credit amount of Loan purposes like 'Buying a home', 'Buying a holiday home / land', 'Buying a new car' and 'Building a house' is higher.
2. Money for third person or a Hobby is having less credits applied.

BIVARIANT ANALYSIS – PREVIOUS APPLICATION CREDIT AMOUNT VS HOUSING TYPE



1. 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 avoid giving loans to the housing type of co-op apartment as they are having difficulties in payment.
3. Bank can focus mostly on housing type with parents or House\apartment or municipal apartment for successful payments.
4. Office apartments have high payment issues

1. Bank can continue to focus on Working Professional, Pensioner and Commercial Associate as they have large number of application and smaller number of defaulters

2. Bank to consider additional care while lending loan to following category of people,

2.1 Young Age People

2.2 Maternity Leave and Unemployed People

2.3 Less Educated (Secondary & Lower Secondary)

2.4 Big Size Family with More children's

2.5 Applicant who live in a Rented Apartment

2.6 Applicant with less or no work experience

**OBSERVATIONS /
RECOMMENDATIONS**



THANK YOU

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