

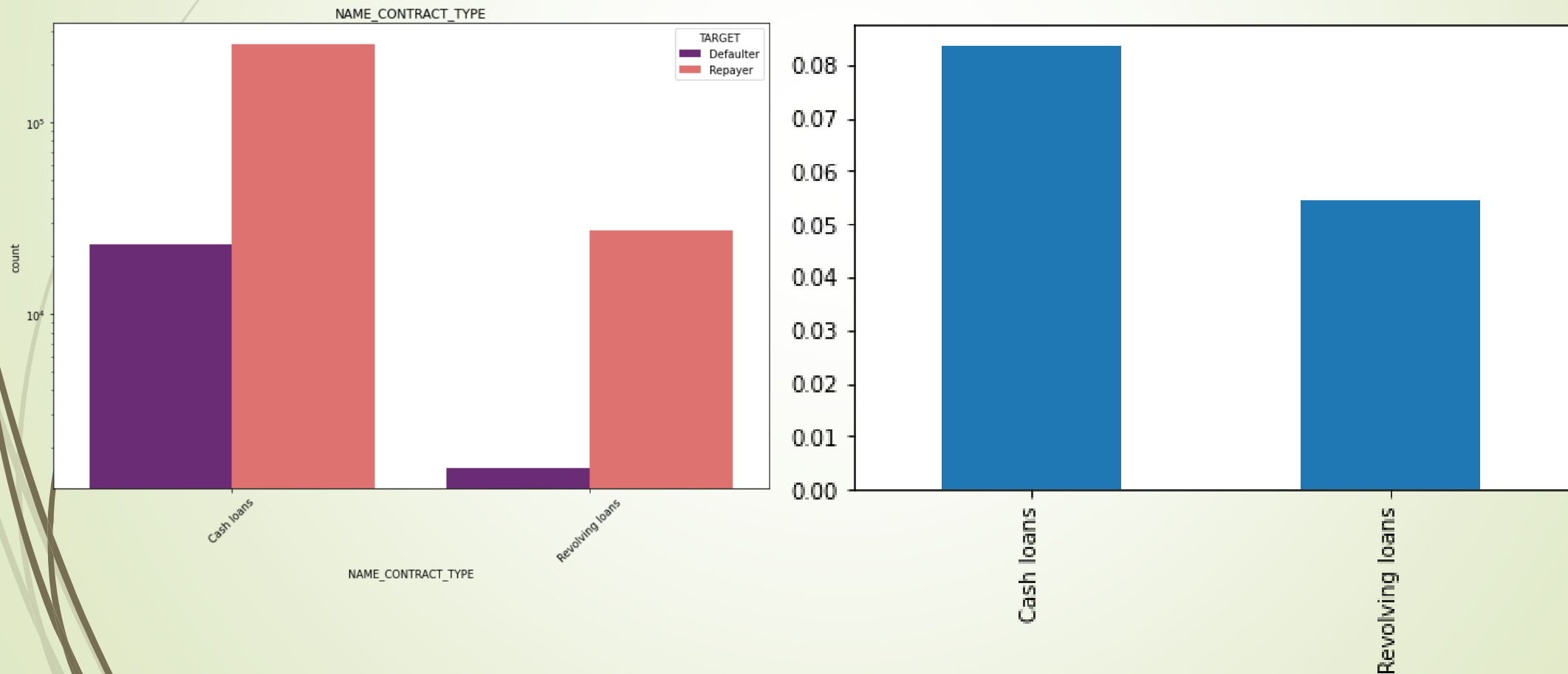
# CREDIT – EDA CASE STUDY



Presented by ,  
Sahil Pattiwar

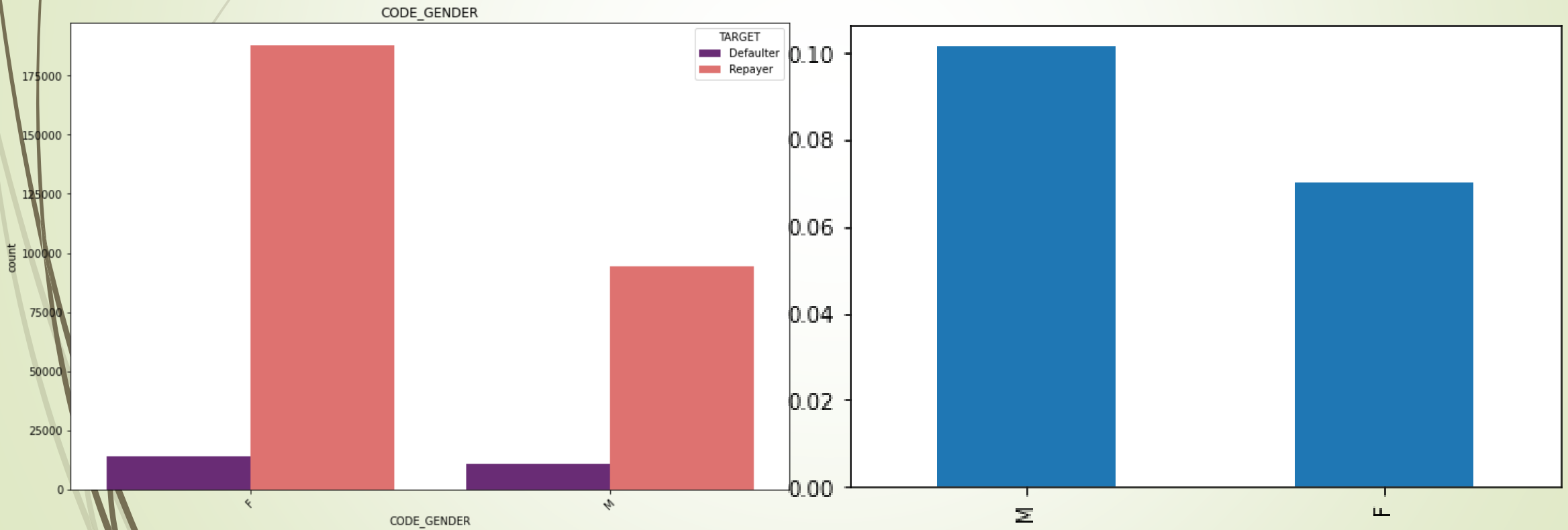
# Univariate Analysis

Contract Type – Revolving Loans Are Much Safer Than Cash Loans



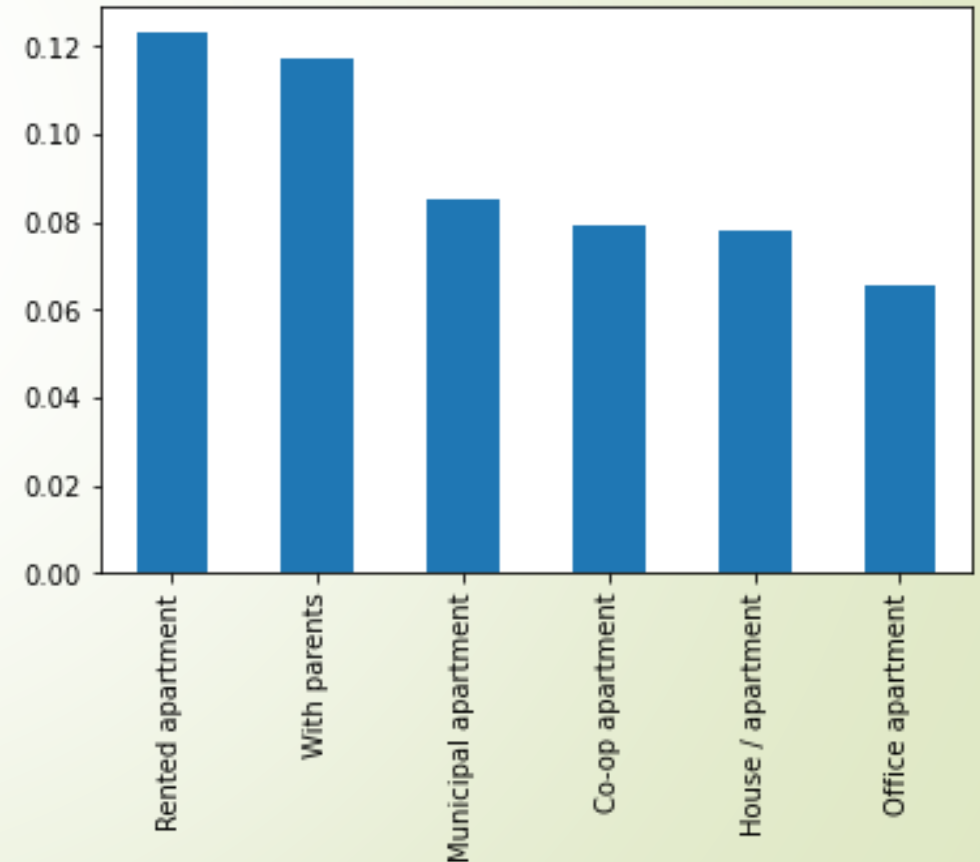
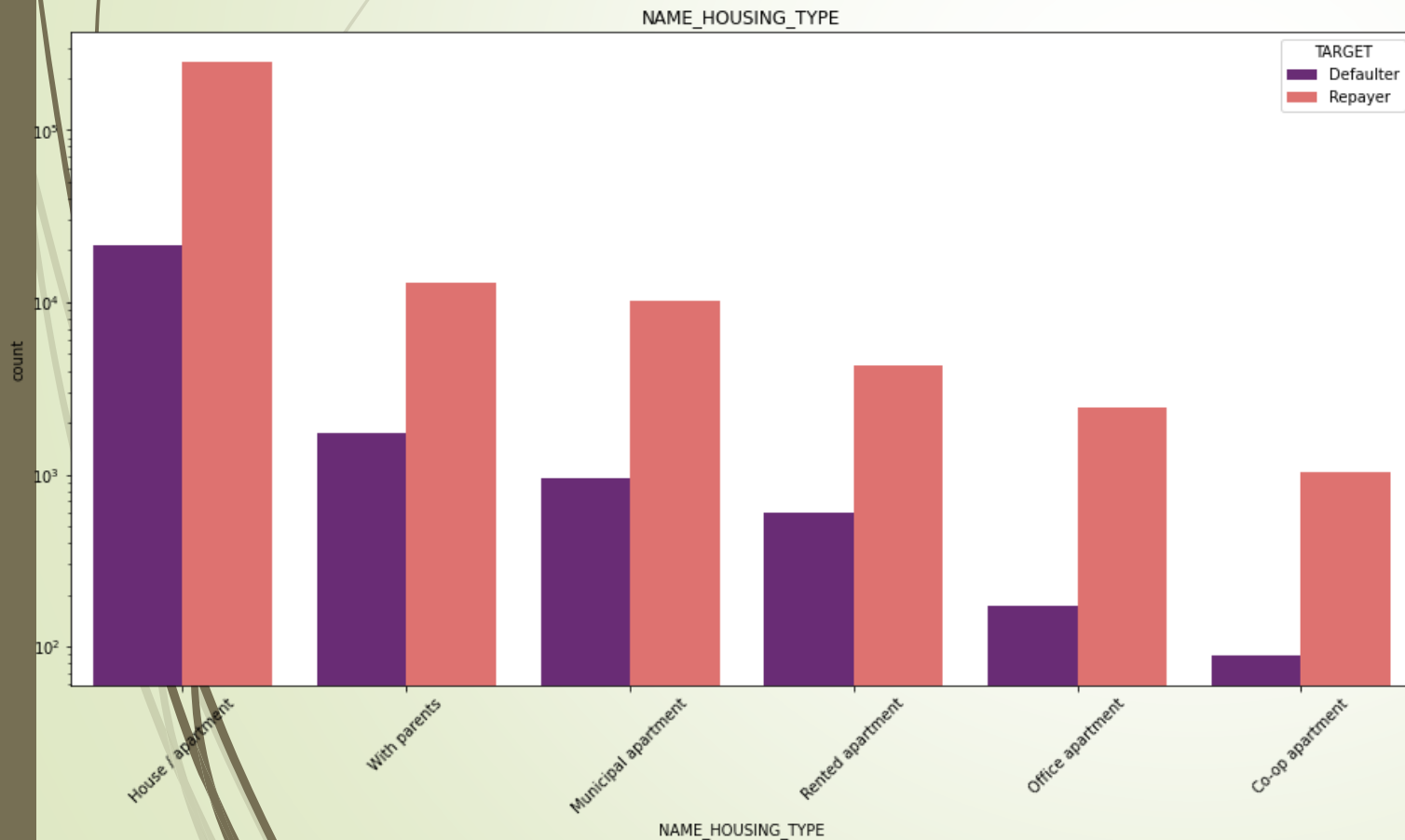
# Univariate Analysis

Gender– Based on the proportion of defaulted credits, males have a higher chance of Default , comparing with women



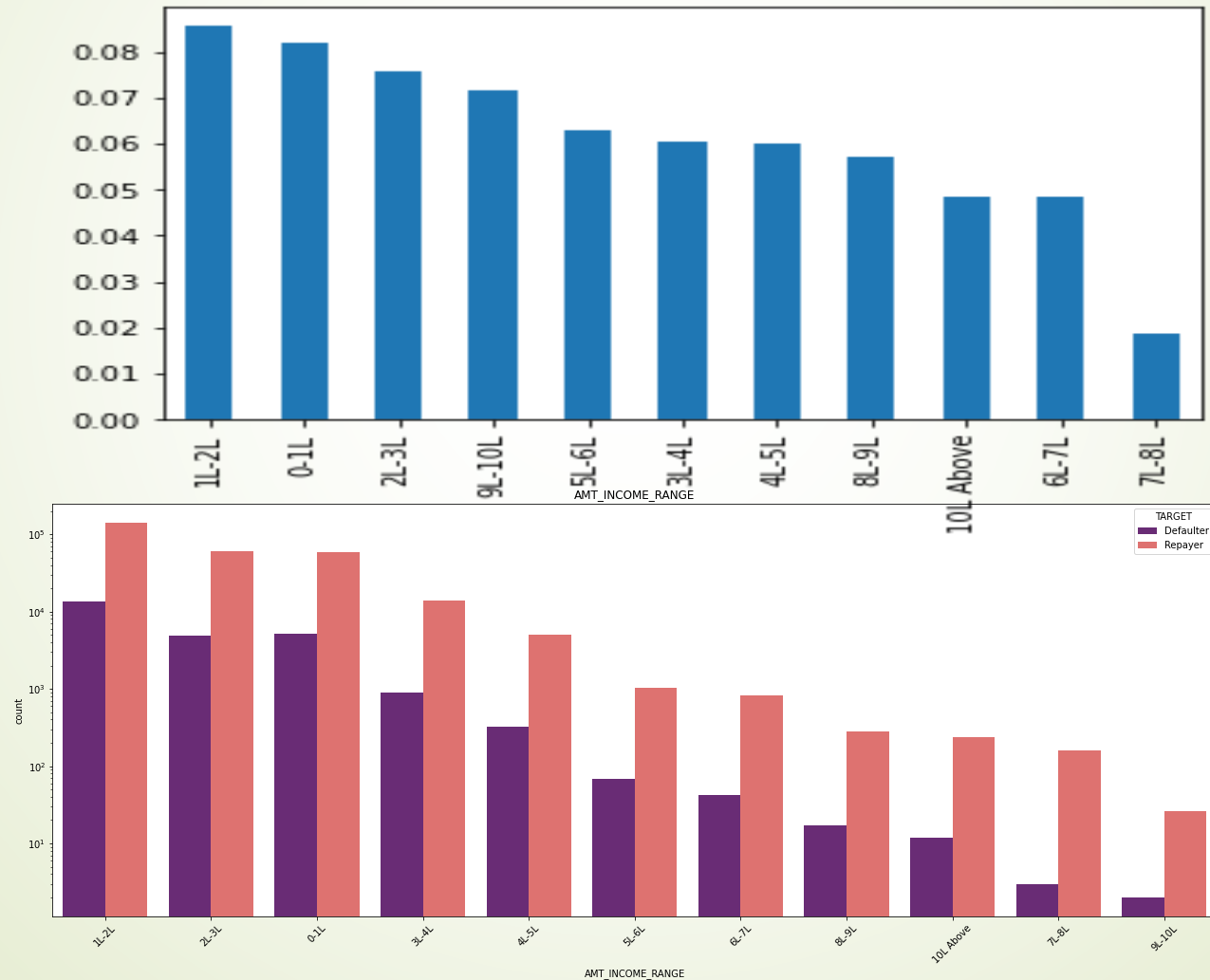
# Univariate Analysis

Contract Type -People living in office apartments have lowest default rate and People living with parents (~11.5%) and living in rented apartments(>12%) have higher probability of defaulting



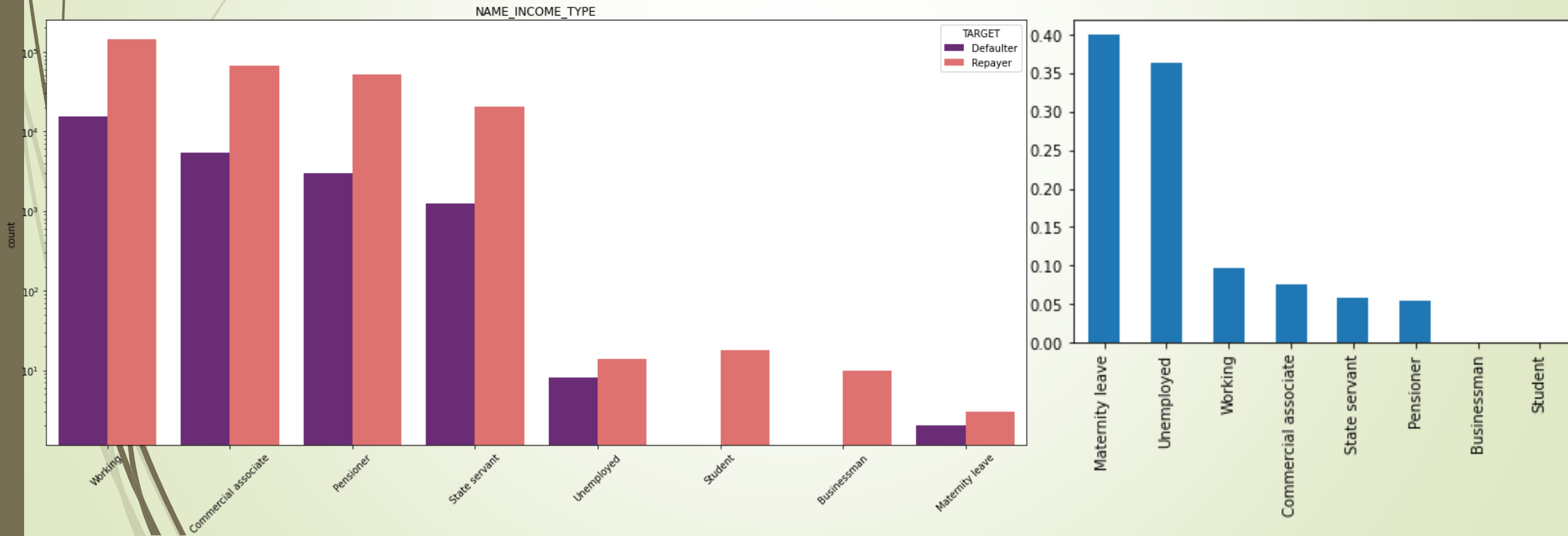
# Univariate Analysis

AMT\_INCOME\_RANGE– People With Higher Income tends to less Default



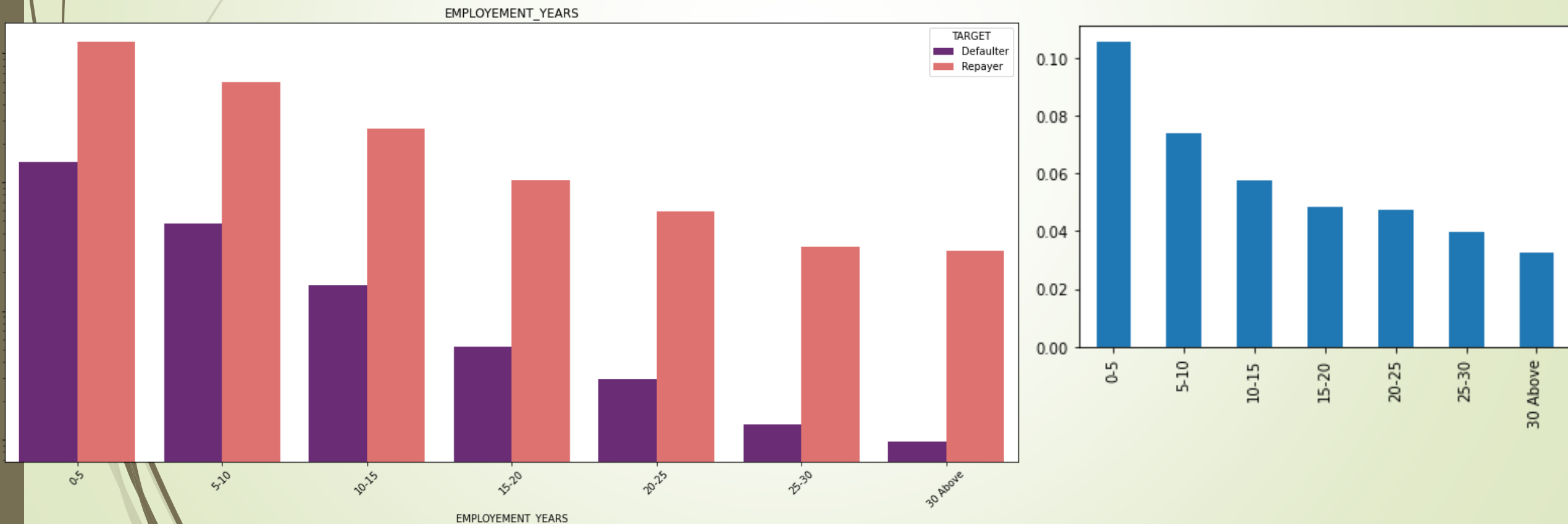
# Univariate Analysis

Income Type – Even though Student and Businessmen though less in numbers, they are still safest among the clients with minimum Defaulter.



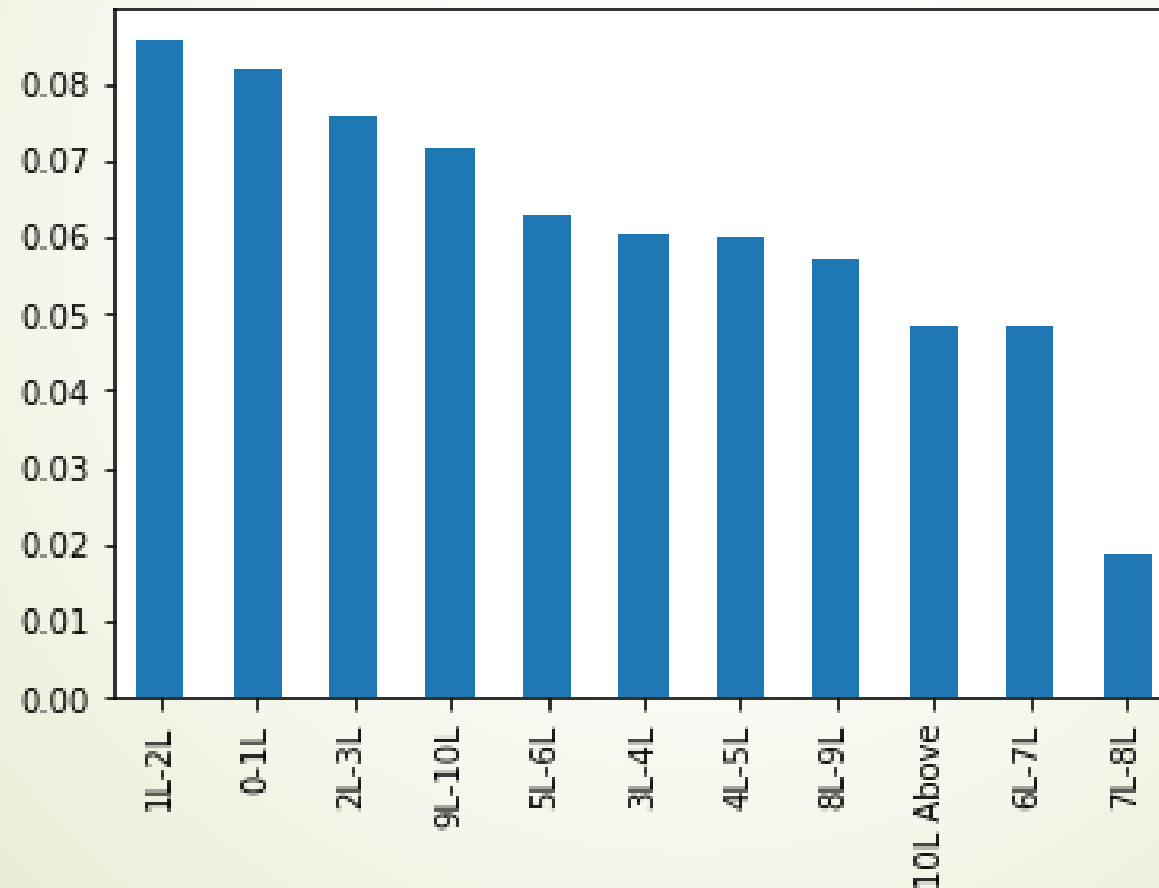
# Univariate Analysis

Experience Type – Here we can see as experienced increase Loan application reduces and default rate also reduced



# Univariate Analysis

Income Range –We can See Pattern That Higher Income Class Have Less chances of Default

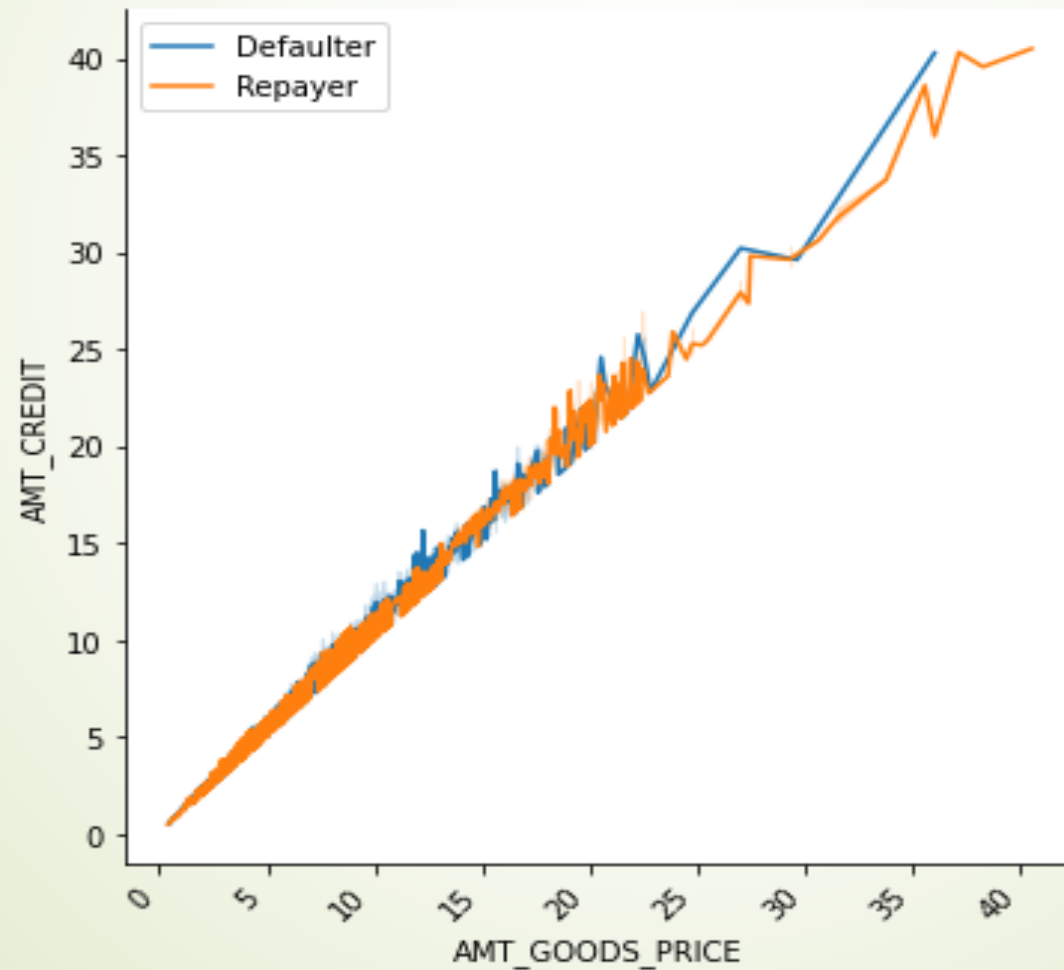




# Bivariate Analysis

'AMT\_GOODS\_PRICE' Vs 'AMT\_CREDIT'

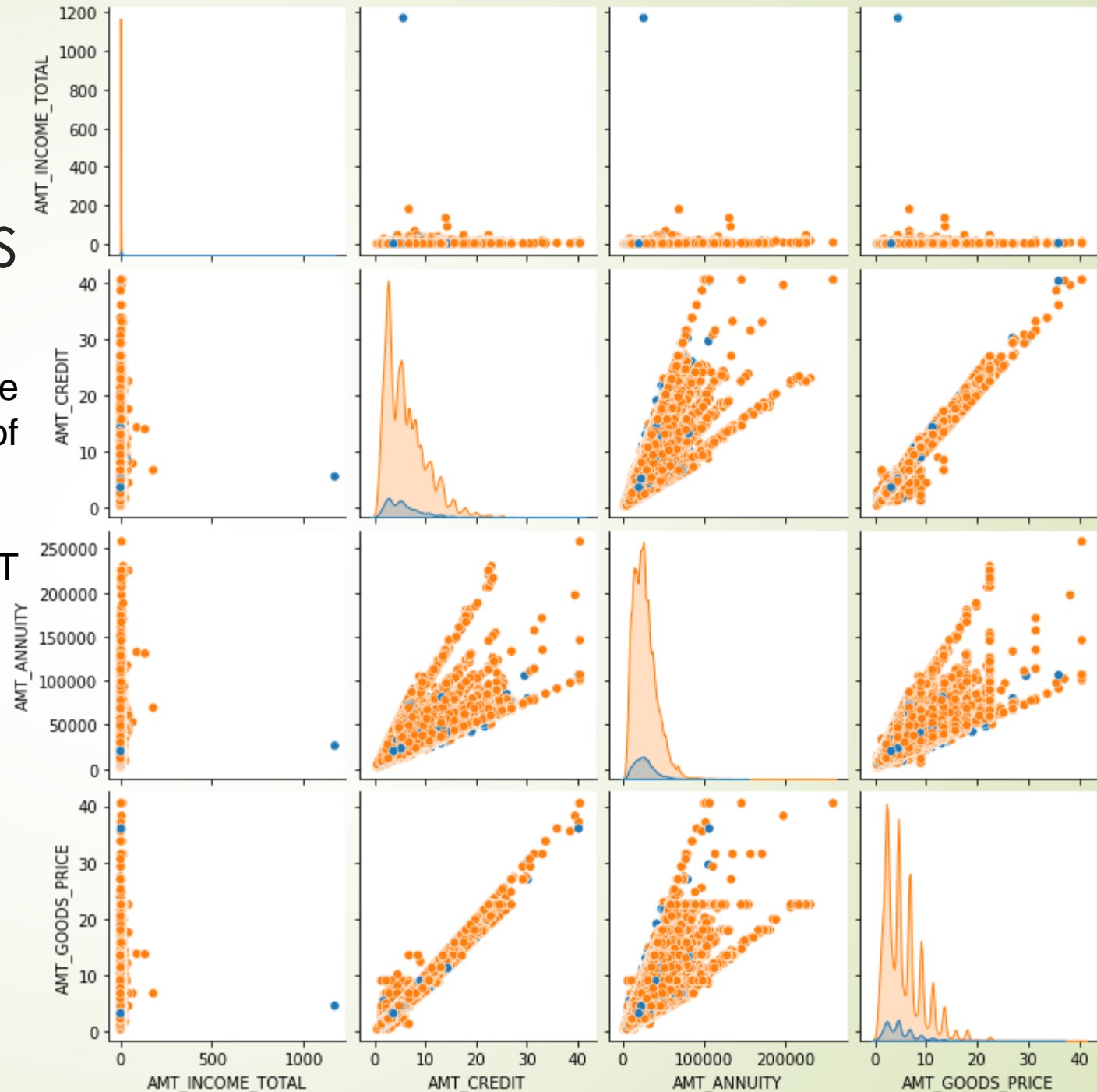
Loan Amount 30L Have Higher Default Rate



# Bivariate Analysis

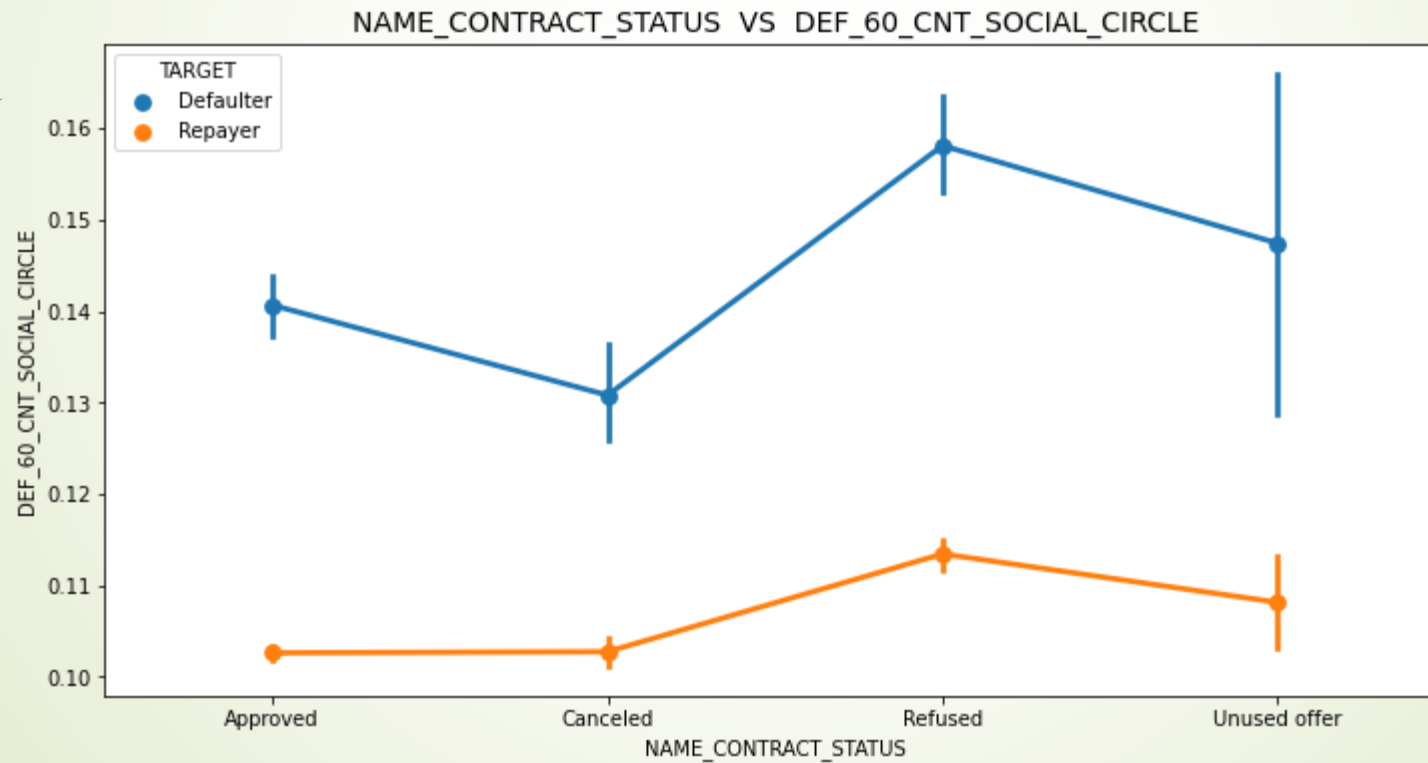
When Annuity Amount > 15K and Good Price Amount > 20 Lakhs, there is a lesser chance of defaulters

There are very less defaulters for AMT\_CREDIT > 20 Lakhs



# Bivariate Analysis

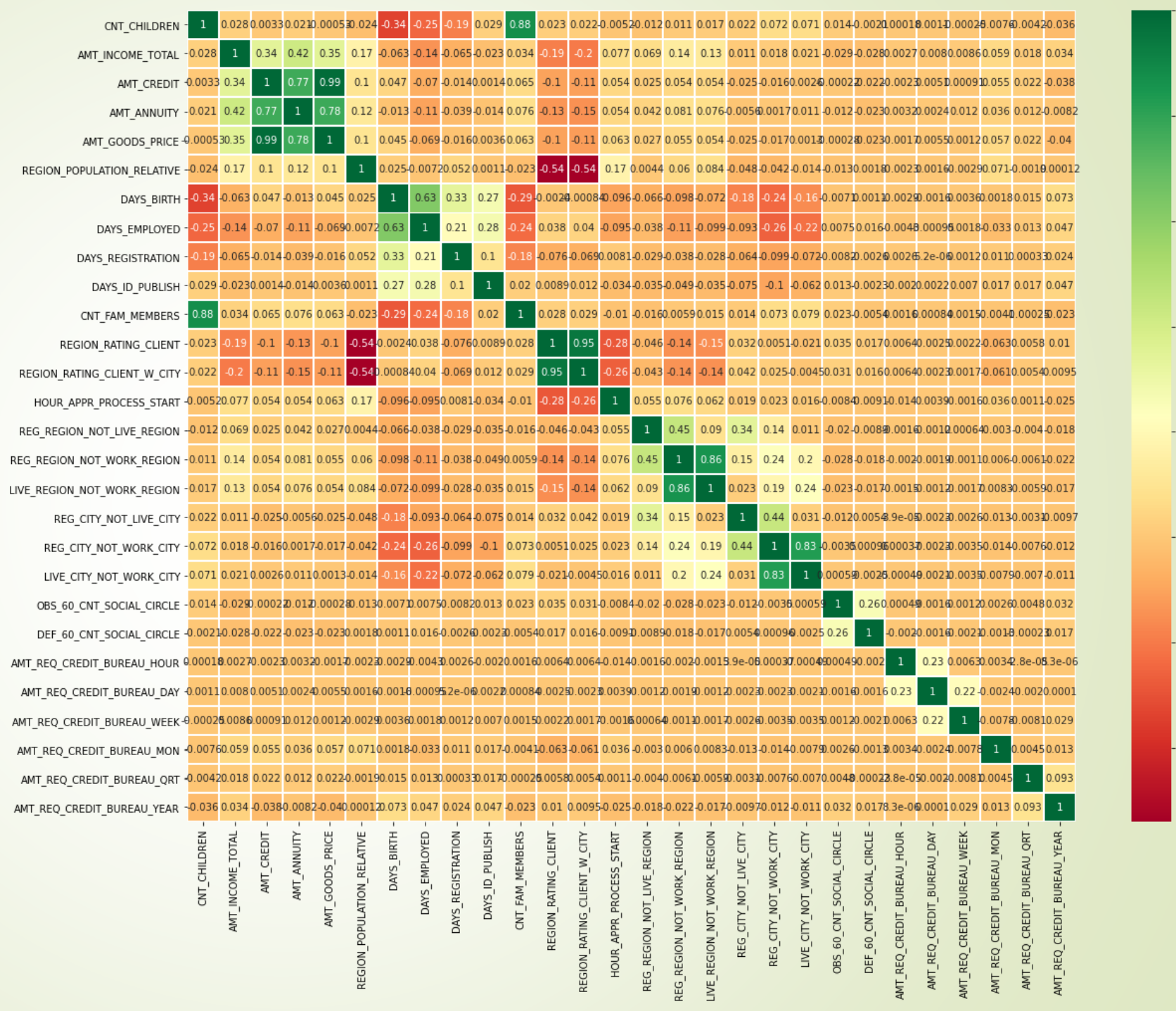
Social Circle– Clients Whose Social Circle has Higher Defaulters Are more likely to default More



## Multivariate Analysis

Credit amount is highly correlated with among repayers

- Goods Price Amount
- Loan Annuity
- Total Income





# Multivariate Analysis

## Correlating factors

- Loan annuity correlation with credit amount has lightly reduced in repayors(0.77) when compared to defaulters(0.75)
- We can also see that repayors have high correlation in number of days employed(0.63) when compared to defaulters(0.58).
- There is a severe drop in the correlation between total income of the client and the credit amount(0.038) amongst defaulters whereas it is 0.34 among repayors.

CNT_CHILDREN	1	0.00490	0.0160	0.031	-0.0081	0.032	-0.26	-0.19	-0.15	0.032	0.89	0.041	0.043	-0.024	-0.024	-0.021	-0.012	0.011	0.046	0.053	0.025	-0.0049	0.0032	0.0110	0.0930	0.0088	0.013	-0.027
AMT_INCOME_TOTAL	-0.0048	1	0.038	0.046	0.0380	0.0910	0.0031	0.0150	0.0016	0.0420	0.0670	-0.021	-0.023	0.0140	0.0076	0.015	0.013	-0.0022	0.0030	0.0010	0.0046	0.0048	0.0011	0.0001	0.0009	0.0057	0.0010	0.0045
AMT_CREDIT	-0.0016	0.038	1	0.75	0.98	0.069	0.14	0.0019	0.026	0.052	0.051	-0.059	-0.071	0.032	0.019	0.033	0.033	-0.033	-0.038	-0.016	0.02	-0.03	-0.0038	0.0043	0.01	0.056	-0.0073	0.021
AMT_ANNUITY	-0.031	0.046	0.75	1	0.75	0.072	0.014	-0.081	-0.034	0.017	0.076	-0.074	-0.089	0.031	0.035	0.066	0.064	-0.0059	0.0023	0.01	0.0066	-0.027	0.0138	6e-06	0.029	0.049	-0.0073	-0.01
AMT_GOODS_PRICE	-0.0081	0.038	0.98	0.75	1	0.076	0.14	0.0066	0.026	0.056	0.047	-0.066	-0.077	0.044	0.022	0.036	0.035	-0.034	-0.039	-0.017	0.021	-0.0260	0.0025	0.0054	0.011	0.059	-0.0061	0.023
REGION_POPULATION_RELATIVE	-0.0320	0.0091	0.069	0.072	0.076	1	0.048	0.015	0.056	0.016	-0.03	-0.44	-0.45	0.14	-0.022	0.022	0.046	-0.06	-0.052	-0.02	0.0069	0.0180	0.0078	0.0048	0.0035	0.065	-0.0045	0.003
DAYS_BIRTH	-0.26	-0.0031	0.14	0.014	0.14	0.048	1	0.58	0.29	0.25	-0.2	-0.034	-0.034	-0.062	-0.055	-0.07	-0.046	-0.16	-0.22	-0.12	0.0059	0.0034	0.012	0.0080	0.0083	0.011	0.023	0.084
DAYS_EMPLOYED	-0.19	-0.0150	0.019	-0.081	0.0066	0.015	0.58	1	0.19	0.23	-0.19	-0.0035	0.0029	-0.06	-0.035	-0.091	-0.079	-0.088	-0.25	-0.2	-0.0085	0.0054	0.0073	0.019	0.013	-0.023	0.012	0.031
DAYS_REGISTRATION	-0.15	-0.0001	0.026	-0.034	0.026	0.056	0.29	0.19	1	0.097	-0.15	-0.1	-0.1	0.033	-0.02	-0.021	-0.016	-0.049	-0.088	-0.062	-0.0150	0.0091	0.0048	0.0079	0.0023	0.0033	0.013	0.014
DAYS_ID_PUBLISH	-0.032	0.0042	0.052	0.017	0.056	0.016	0.25	0.23	0.097	1	0.032	-0.0014	0.0015	-0.022	-0.033	-0.033	-0.02	-0.068	-0.07	-0.032	0.02	-0.048	0.0048	0.0140	0.0037	0.024	0.0079	0.056
CNT_FAM_MEMBERS	0.89	0.0067	0.051	0.076	0.047	-0.03	-0.2	-0.19	-0.15	0.032	1	0.044	0.048	-0.027	-0.026	-0.027	-0.017	0.0054	0.046	0.061	0.043	0.0001	0.0064	0.0150	0.0068	0.0030	0.045	0.0021
REGION_RATING_CLIENT	-0.041	-0.021	-0.059	-0.074	-0.066	-0.44	-0.034	0.0035	-0.1	-0.0014	0.044	1	0.96	-0.29	-0.032	-0.11	-0.12	0.043	0.0096	0.022	0.03	0.0098	0.0098	0.0030	0.0051	0.054	0.0077	0.012
REGION_RATING_CLIENT_W_CITY	-0.043	-0.023	-0.071	-0.089	-0.077	-0.45	-0.034	0.0029	-0.1	0.0015	0.048	0.96	1	-0.28	-0.029	-0.11	-0.11	0.053	0.031	-0.0064	0.022	0.0086	0.0059	0.0039	0.0120	0.0530	0.0053	0.015
HOUR_APPR_PROCESS_START	-0.024	0.014	0.032	0.031	0.044	0.14	-0.062	-0.06	0.033	-0.022	-0.027	-0.29	-0.28	1	0.052	0.069	0.053	0.009	0.019	0.015	-0.012	0.0077	0.015	-0.0140	0.0041	0.039	0.0032	-0.023
REG_REGION_NOT_LIVE_REGION	-0.0240	0.0076	0.019	0.035	0.022	-0.022	-0.055	-0.035	-0.02	-0.033	-0.026	-0.032	-0.029	0.052	1	0.5	0.069	0.32	0.15	-0.0066	0.0280	0.0016	0.0095	-0.0060	0.0075	0.0190	0.0009	0.023
REG_REGION_NOT_WORK_REGION	-0.021	0.015	0.033	0.066	0.036	0.022	-0.07	-0.091	-0.021	-0.033	-0.027	-0.11	-0.11	0.069	0.5	1	0.85	0.14	0.24	0.19	-0.038	-0.0140	0.0015	0.0022	0.0077	0.011	-0.006	-0.022
LIVE_REGION_NOT_WORK_REGION	-0.012	0.013	0.033	0.064	0.035	0.046	-0.046	0.079	-0.016	-0.02	-0.017	-0.12	-0.11	0.053	0.069	0.85	1	5.1e-05	0.18	0.24	-0.027	-0.019	0.0035	1e-09	0.0049	0.016	-0.0071	0.014
REG_CITY_NOT_LIVE_CITY	-0.0012	0.0022	0.0330	0.0059	0.034	-0.06	-0.16	-0.088	-0.049	-0.068	0.0054	0.043	0.053	0.009	0.32	0.14	5.1e-05	1	0.47	-0.011	-0.027	0.0120	0.0036	0.0071	0.0087	0.0040	0.0043	-0.014
REG_CITY_NOT_WORK_CITY	-0.046	-0.003	-0.0380	0.0023	-0.039	-0.052	-0.22	-0.25	-0.088	-0.07	0.046	0.0096	0.031	0.019	0.15	0.24	0.18	0.47	1	0.78	-0.0210	0.0046	0.0074	0.0054	0.011	-0.013	-0.013	-0.019
LIVE_CITY_NOT_WORK_CITY	-0.053	-0.0013	0.016	0.01	-0.017	-0.02	-0.12	-0.2	-0.062	-0.032	0.061	-0.0220	0.0064	0.0150	0.0066	0.19	0.24	-0.011	0.78	1	-0.0082	0.0190	0.0092	0.0036	0.0088	0.012	-0.021	-0.011
OBS_60_CNT_SOCIAL_CIRCLE	-0.025	-0.0046	0.02	0.0066	0.0210	0.0069	0.0059	0.0085	0.015	0.02	0.043	0.03	0.022	-0.012	-0.028	-0.038	-0.027	-0.027	-0.0210	0.0082	1	0.26	0.0015	-0.0080	0.0016	0.0062	0.0088	0.038
DEF_60_CNT_SOCIAL_CIRCLE	-0.0049	0.0048	-0.03	-0.027	-0.026	0.0180	0.0034	0.0054	0.0091	0.048	0.0030	0.0090	0.0088	0.0077	0.0016	-0.014	-0.019	0.012	-0.0046	0.019	0.26	1	0.0038	0.0037	0.0051	0.0003	0.0020	0.0068
AMT_REQ_CREDIT_BUREAU_HOUR	0.00032	0.0011	0.0038	0.013	-0.0028	0.0073	0.0120	0.0073	0.0048	0.00048	0.00068	0.00099	0.00055	0.0150	0.0095	0.0150	0.003	-0.0036	0.0074	0.0092	0.0015	0.0038	1	0.25	0.0085	0.0037	0.012	0.0044
AMT_REQ_CREDIT_BUREAU_DAY	-0.011	0.00013	0.0043	6e-06	0.0054	0.0046	0.008	0.019	0.0079	0.014	-0.015	0.0030	0.0039	0.014	-0.0060	0.023	1e-05	0.0072	0.0054	0.0036	0.0080	0.0037	0.25	1	0.19	-0.0086	0.006	0.008
AMT_REQ_CREDIT_BUREAU_WEEK	-0.0098	0.00093	0.01	0.029	0.0110	0.0035	0.0083	0.013	-0.0023	0.0037	0.0068	0.0054	0.0120	0.0040	0.0075	0.0077	0.0049	0.0087	0.0110	0.0080	0.0160	0.0050	0.0085	0.19	1	-0.0029	0.0018	0.032
AMT_REQ_CREDIT_BUREAU_MON	-0.0088	0.0057	0.056	0.049	0.059	0.065	0.011	-0.0230	0.0033	0.024	-0.003	-0.054	-0.053	0.039	0.019	0.011	0.016	-0.004	-0.013	-0.0120	0.0062	0.0036	0.0037	0.0086	0.0025	1	0.019	0.025
AMT_REQ_CREDIT_BUREAU_QRT	-0.013	0.001	-0.0073	0.0073	0.0061	0.0045	0.023	0.012	0.013	0.0079	0.0045	0.0077	0.0053	0.0032	0.0009	0.0060	0.0071	0.0043	-0.013	-0.0210	0.0088	-0.002	0.012	0.0060	0.0018	0.019	1	0.13
AMT_REQ_CREDIT_BUREAU_YEAR	-0.0270	0.0045	-0.021	-0.01	-0.023	0.003	0.084	0.031	0.014	0.056	-0.0021	0.012	0.015	-0.023	-0.023	-0.022	-0.014	-0.014	-0.019	-0.011	0.0380	0.0068	0.0044	0.008	0.032	0.025	0.13	1

## Top Correlation For Repayment

1. NAME\_EDUCATION\_TYPE: Academic degree has less defaults.
2. NAME\_INCOME\_TYPE: Student and Businessmen have no defaults.
3. ORGANIZATION\_TYPE: Clients from Security Ministry have Least Default rate
4. DAYS\_BIRTH: People above age of 50 have low probability of defaulting
5. DAYS\_EMPLOYED: Clients with 40+ year experience having less than 1% default rate
6. AMT\_INCOME\_TOTAL: Applicant with Income increase the chances of default are also less , Income above 700,000 are safest
7. NAME\_CASH\_LOAN\_PURPOSE: Loans bought for Hobby, Buying garage are being repayed mostly.
8. CODE\_GENDER: Men are at relatively higher default rate
9. NAME\_EDUCATION\_TYPE: People with Lower Secondary & Secondary education
10. OCCUPATION\_TYPE: Avoid Low-skill Laborers, Drivers and Waiters/barmen staff, Security staff, Laborers and Cooking staff as their default rate is huge.
11. DAYS\_BIRTH: Avoid young people who are in age group of 20-40 as they have higher probability of defaulting
12. DAYS\_EMPLOYED: People who have less than 5 years of employment have high default rate.
13. AMT\_GOODS\_PRICE: When the credit amount goes beyond 3lakhs, there is an increase in defaulters.

# Final Suggestions

1. Banks should focus more on contract type 'Student' , 'pensioner' and 'Businessman' with housing 'type other than 'Co-op apartment' for successful payments.
2. Banks should more on loans Amount Of less than 30Lacks as they have less Default Rate
3. Banks Can ignore loan application from Unemployed Clients as they have High chance of default about 40 %
4. People living in office apartments and with parents has lowest default rate so Focus can be increased there
5. There are very high No of clients whose Loan was Cancelled but those are among the higher repaying client
6. Refusal reason should be recorded for further analysis as these clients could turn into potential repaying customer.