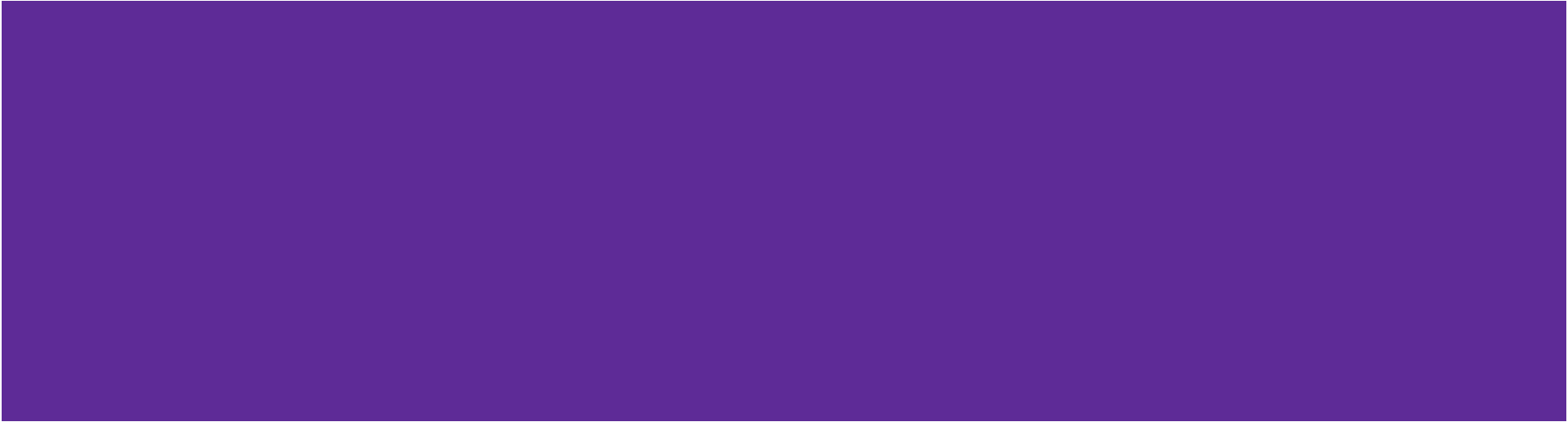


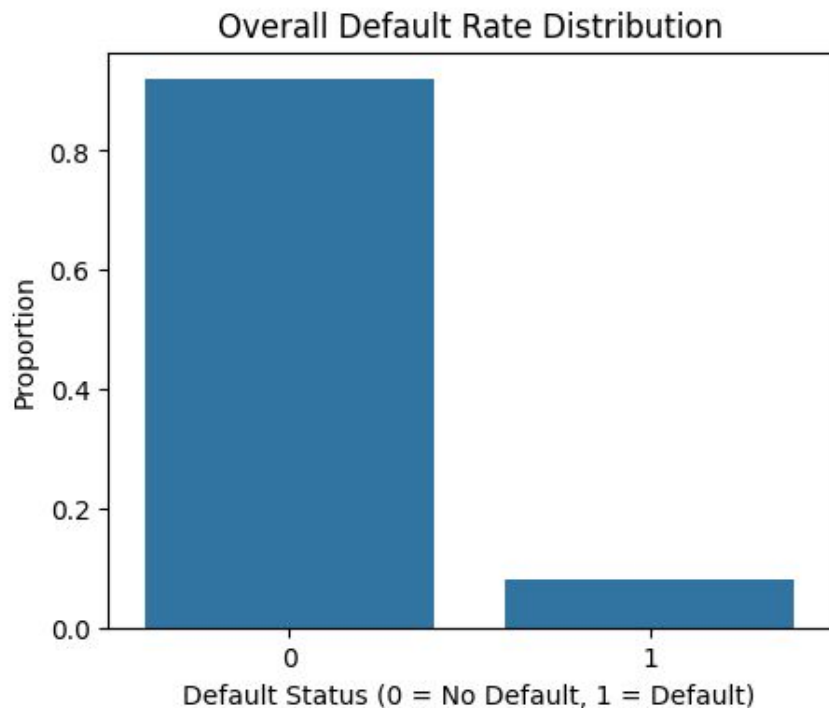
EDA Findings

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Overview and Baseline





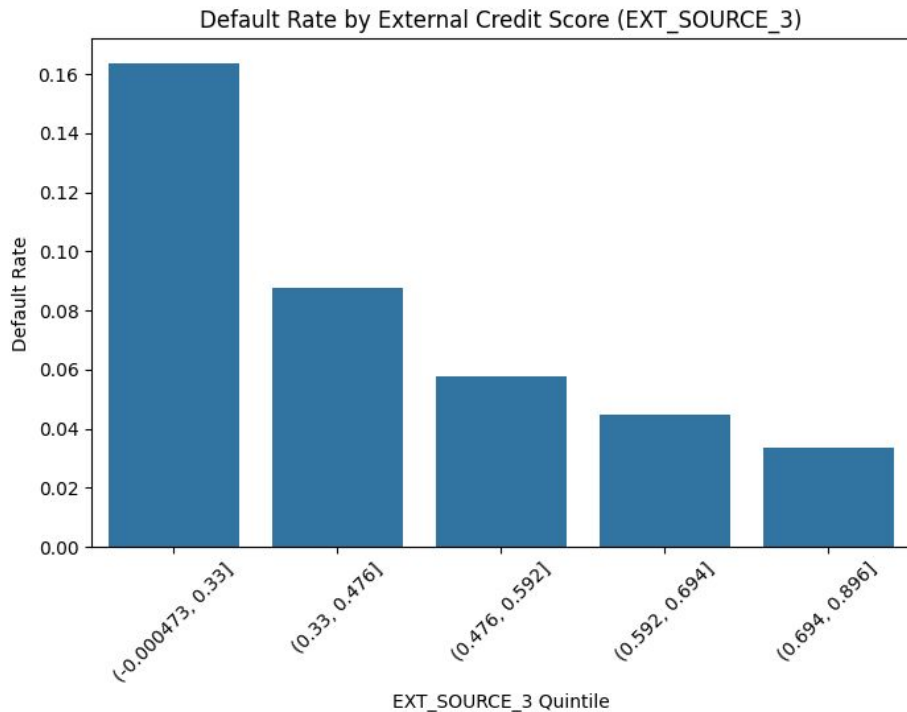
The overall default rate is approximately 8%, indicating a highly imbalanced dataset where most applicants do not default.

This imbalance is typical in credit risk datasets and highlights the importance of identifying strong predictive variables that can distinguish the relatively small group of likely defaulters from the majority of safe applicants.

External Credit Indicators



External Credit Score (EXT_SOURCE_3)



A strong and nearly monotonic decreasing relationship is observed between EXT_SOURCE_3 and default rate.

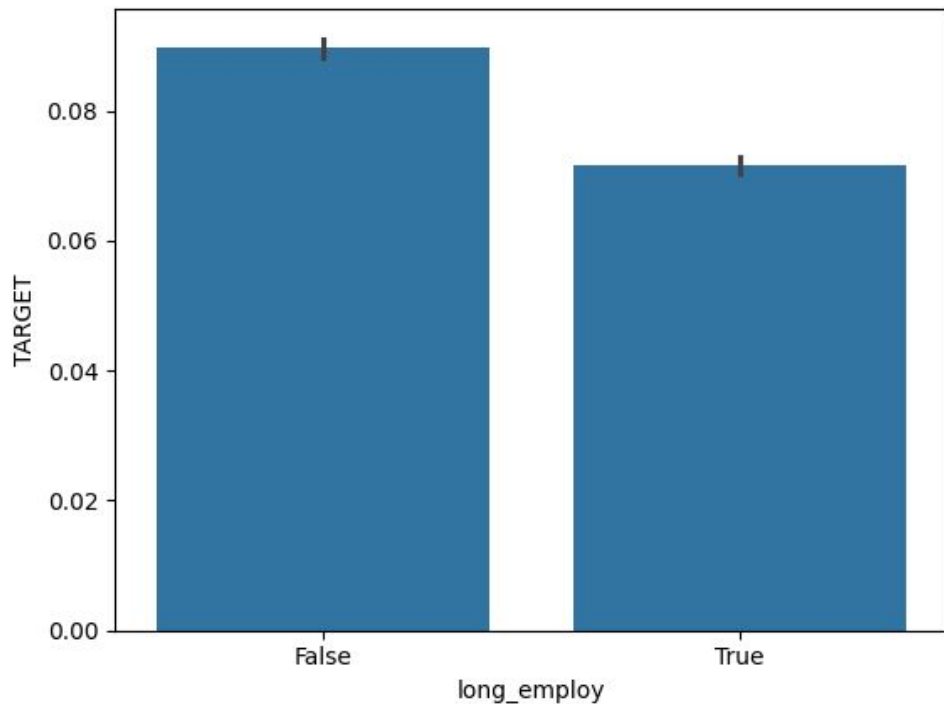
Applicants with lower external credit scores exhibit significantly higher default probabilities.

This variable demonstrates one of the strongest predictive signals in the dataset and is highly valuable for identifying high-risk applicants during loan approval.

Applicant Financial Profile



Income Type (NAME_INCOME_TYPE)



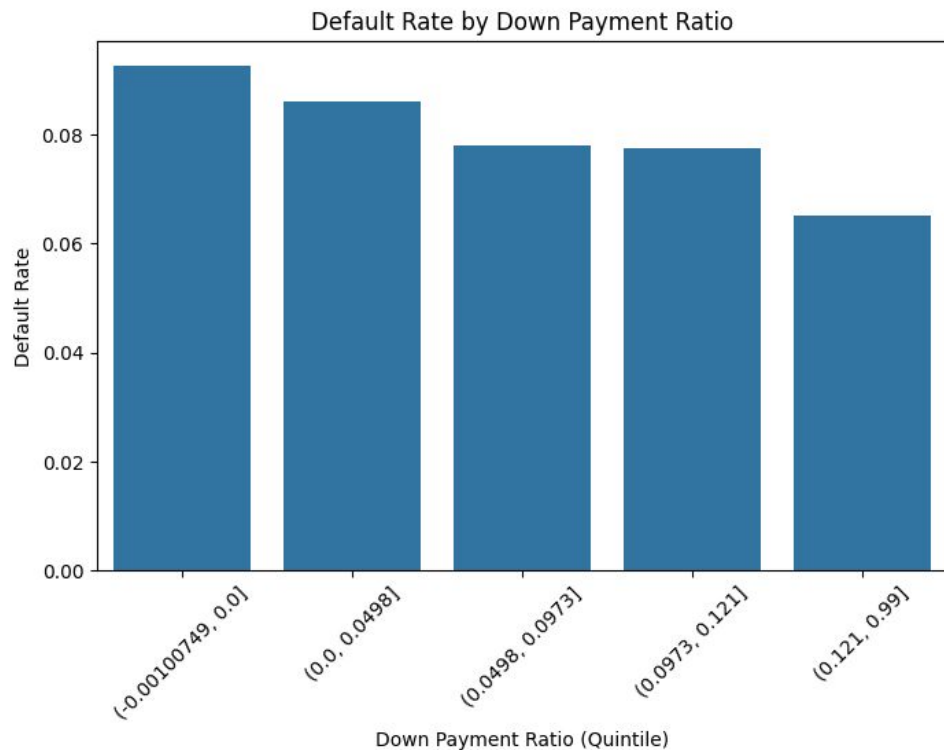
For large groups, Working has a 9.6% default rate, Commercial associate has a 7.5% default rate, State servant has a 5.8% default rate, Pensioner has a 5.4% default rate.

Extremely high default rate for Maternity and Unemployed, but so few data entries that just a few people defaulting artificially skews the data very high, so this is not statistically significant. These groups are too small to be reliable.

Historical Loan Behavior



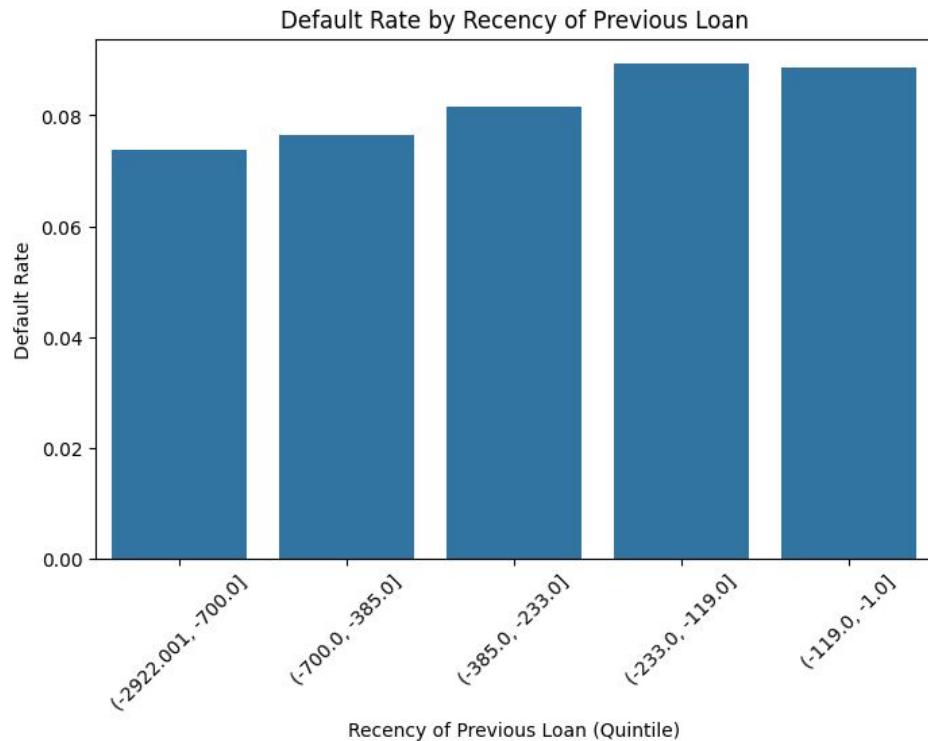
Down Payment Ratio (RATE_DOWN_PAYMENT)



A clear decreasing trend is observed: higher down payment ratios are associated with lower default rates.

Clients who contribute more upfront capital are likely to be financially stronger and less risky, making down payment ratio a strong protective indicator against default.

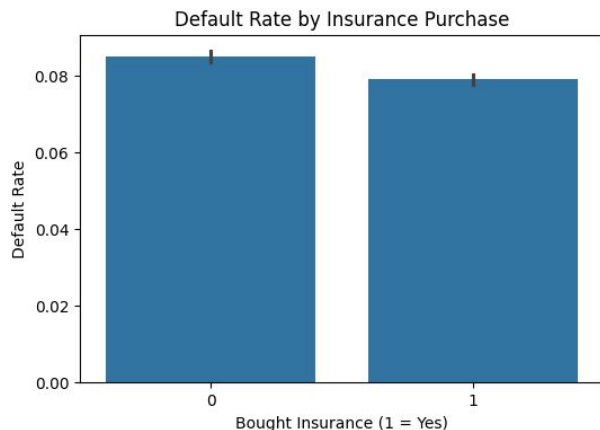
Recency of Previous Loan (DAYS_DECISION)



Clients who borrowed more recently tend to show higher default rates.

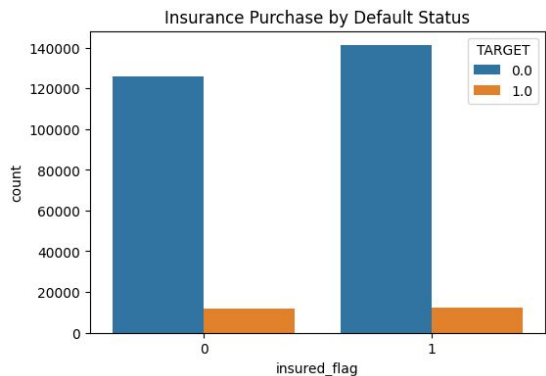
This suggests that frequent or recent borrowing activity may reflect ongoing financial pressure or increased debt burden.

Insurance Purchase Behavior (NFLAG_INSURED_ON_APPROVAL)

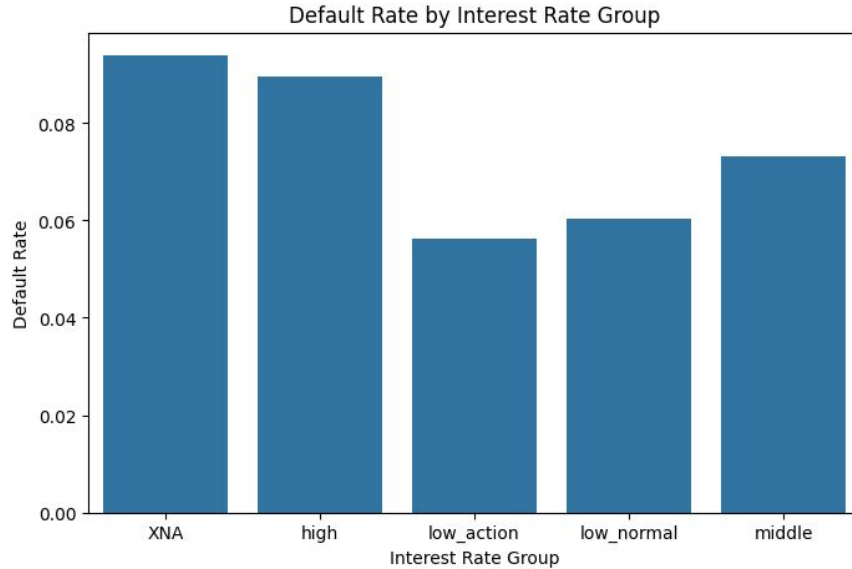


Default rates differ between clients who purchased insurance and those who did not.

Insurance purchase behavior may reflect underlying risk characteristics and contains additional predictive information.



Interest Rate Group (NAME_YIELD_GROUP)



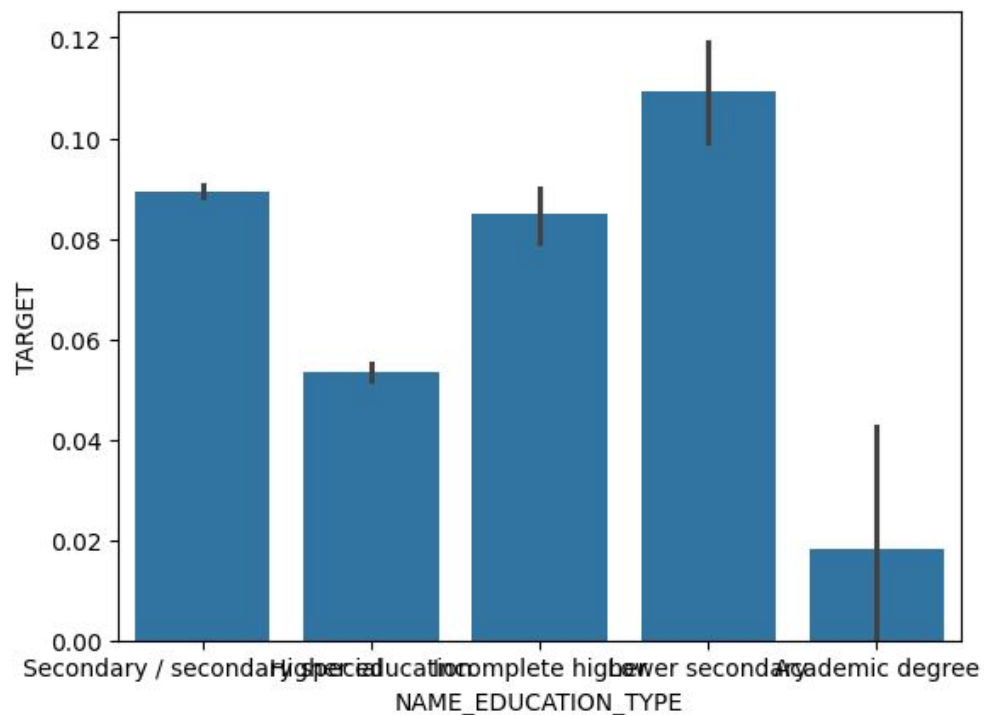
Higher interest rate groups exhibit higher default rates, which aligns with risk-based pricing principles.

This confirms that interest rate assignment captures meaningful information about borrower risk and default likelihood.

Personal Demographics



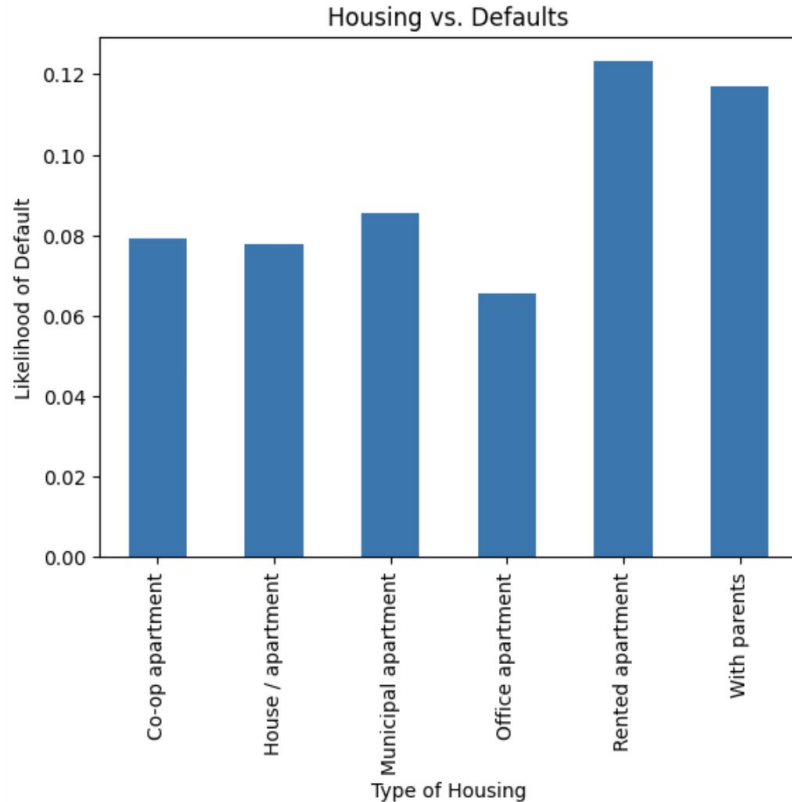
Education Level (NAME_EDUCATION_TYPE)



Default risk decreases steadily as education level increases. Lower secondary education has a 10.9% default rate, secondary education has a 8.9% default rate, higher education has a 5.4% default rate, academic degree has a 1.8% default rate.

Applicants with lower education have roughly double the default risk

Housing Type (NAME_HOUSING_TYPE)



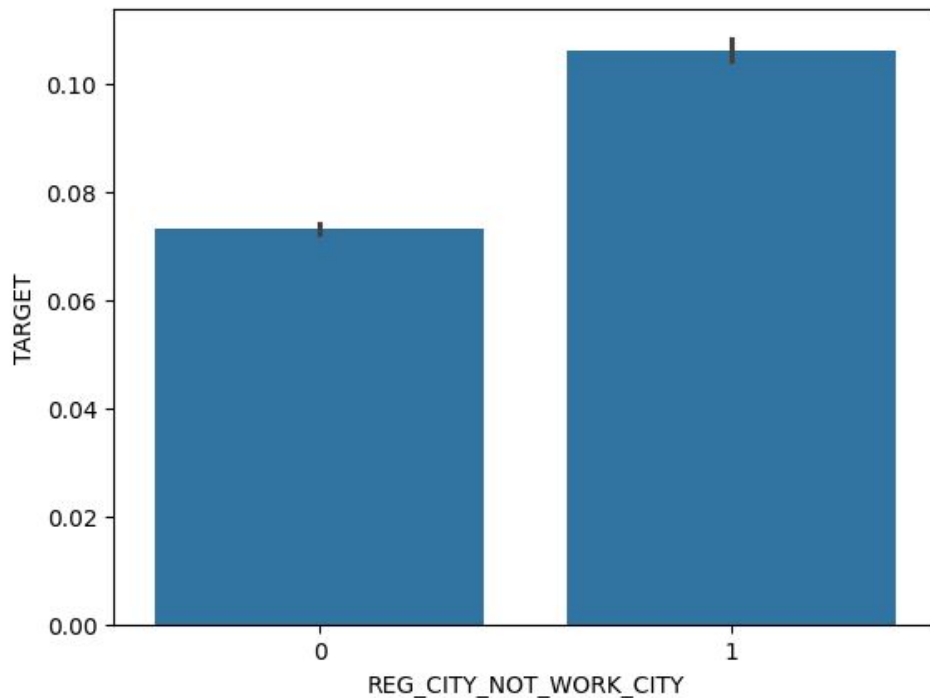
Individuals in more stable or ownership-oriented housing, such as office or co-op apartments, maintain the lowest default rates, ranging between 6.5% and 8.5%.

A significant upward trend in risk appears for those in rented apartments or living with parents, where the likelihood of default peaks at over 12%.

Geographic and Contractual Risk



City Registration Mismatch (REG_CITY_NOT_WORK_CITY)

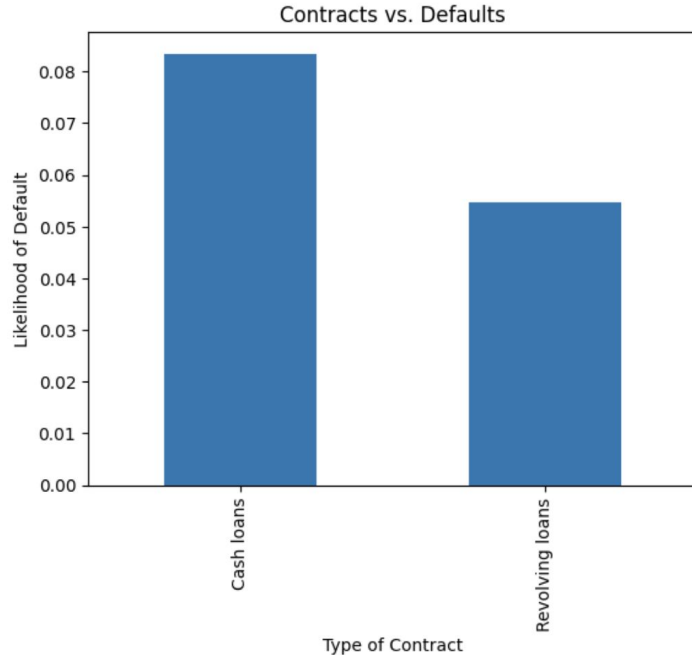


Borrowers whose registered city is different from their work city have slightly higher default rates.

Difference is moderate, registered city being different suggests some instability.

Default rate increases from 7.31% to 10.61% when registered city doesn't match work city, which is a 49% increase in default risk.

Contract Type (NAME_CONTRACT_TYPE)



Individuals with cash loans have a notably higher default risk, with a likelihood of approximately 8.3%. Conversely, those with revolving loans demonstrate a significantly lower default rate, which is situated near 5.5%.

This disparity suggests that the type of financial contract is a strong indicator of repayment reliability, with revolving credit posing less risk than cash loans.