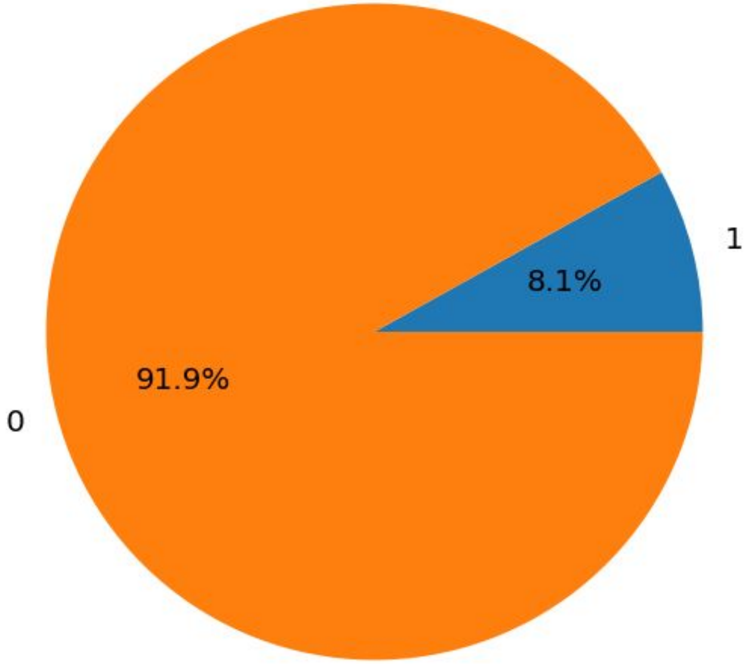
Credit Risk Profiling

June 2020

Introduction

- A consumer finance company that specialises in lending various types of loans is trying to identify the applicants that are capable of repaying the loan
- Two types of risks are associated with the lender's decision to approve/reject an applicant:
  - 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. they are likely to default, then approving the loan may lead to a financial loss for the company
- The company wants to understand the driving factors behind loan default, i.e. the variables which are strong indicators of default
- They plan to utilise this knowledge for their portfolio and risk assessment
- This analysis identifies a few such factors and provides recommendations on how to identify applicants likely to default on their loans

Target Variable



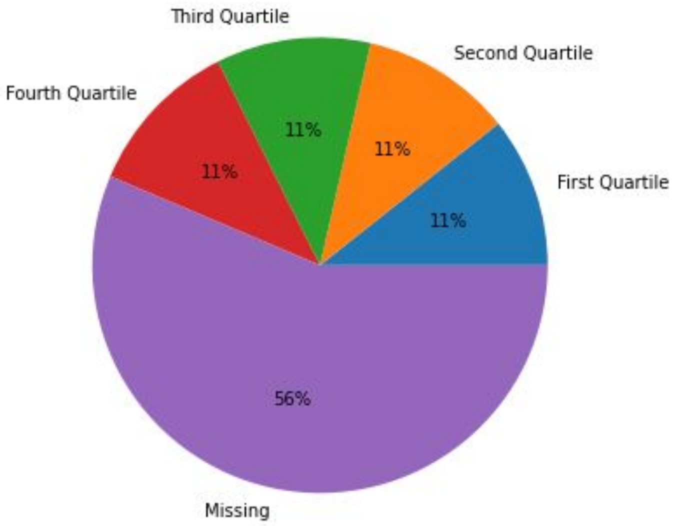
The pie chart on the left shows the imbalance between the values of the Target variable. The data comprises of **8.1% "risky"** applicants**.**

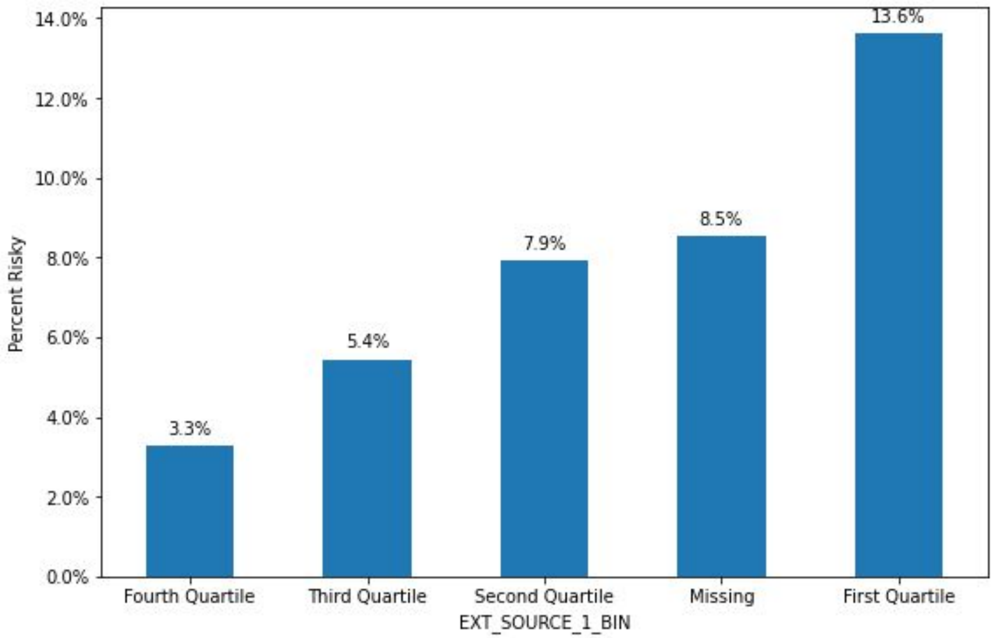
1 - Clients with payment difficulties: they had late payments more than “X” days on at least one of the first “Y” installments of the loan in our sample

0 - All other cases

In the next few slides, we will discuss the influence of a variety of features on this target. We will also provide recommendations on how to identifying risky applicants.

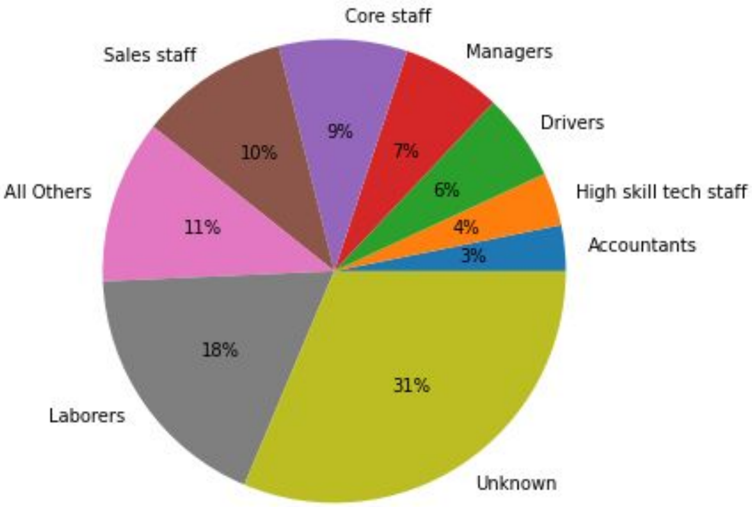
External Data Source 1 Score

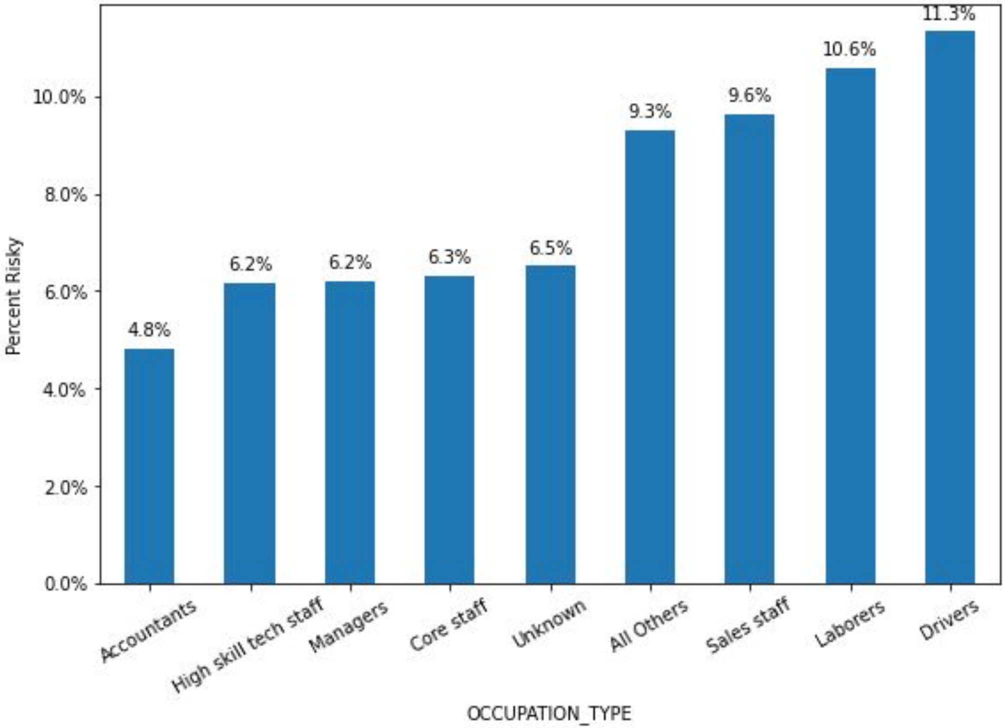




The riskiest segment under "EXT_SOURCE_1_BIN" is "First Quartile" whereas the least risky is "Fourth Quartile". This is a binned variable (into four equal quartiles and one bin for "missings") from "EXT_SOURCE_1" variable.

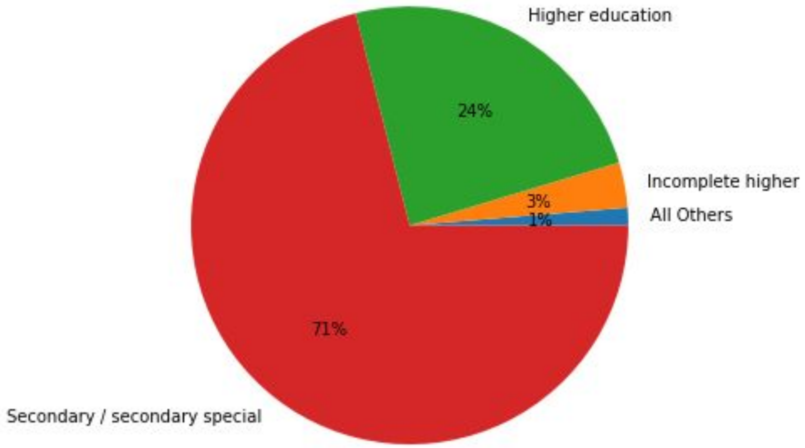
Client’s Occupation Type

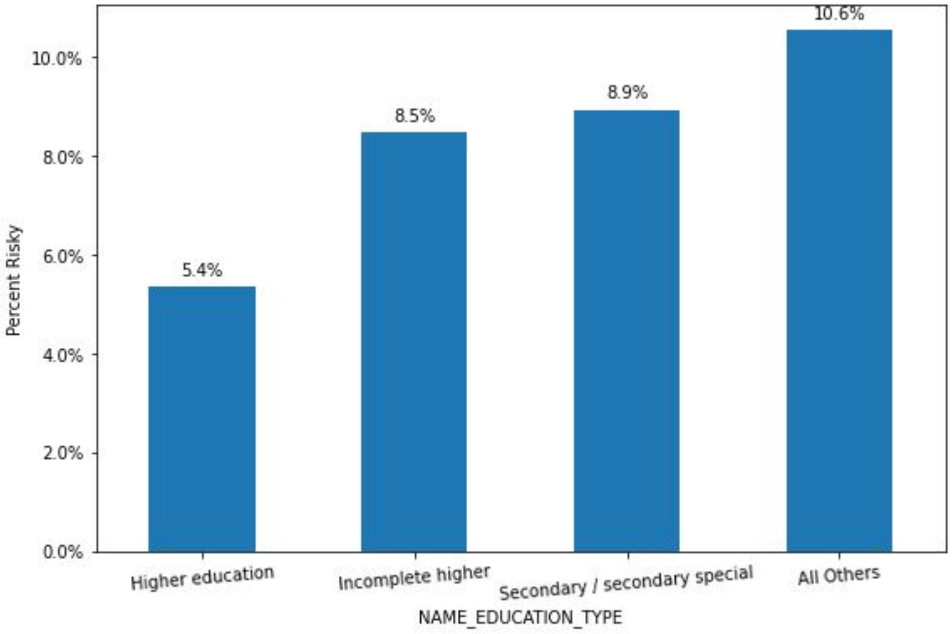




The riskiest segment under "OCCUPATION_TYPE" (client’s occupation type) is "Drivers" whereas the least risky is "Accountants"

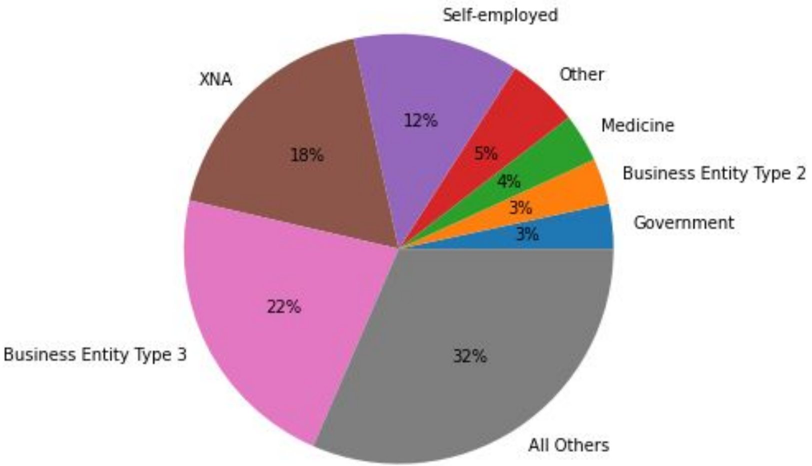
Client’s Education Type

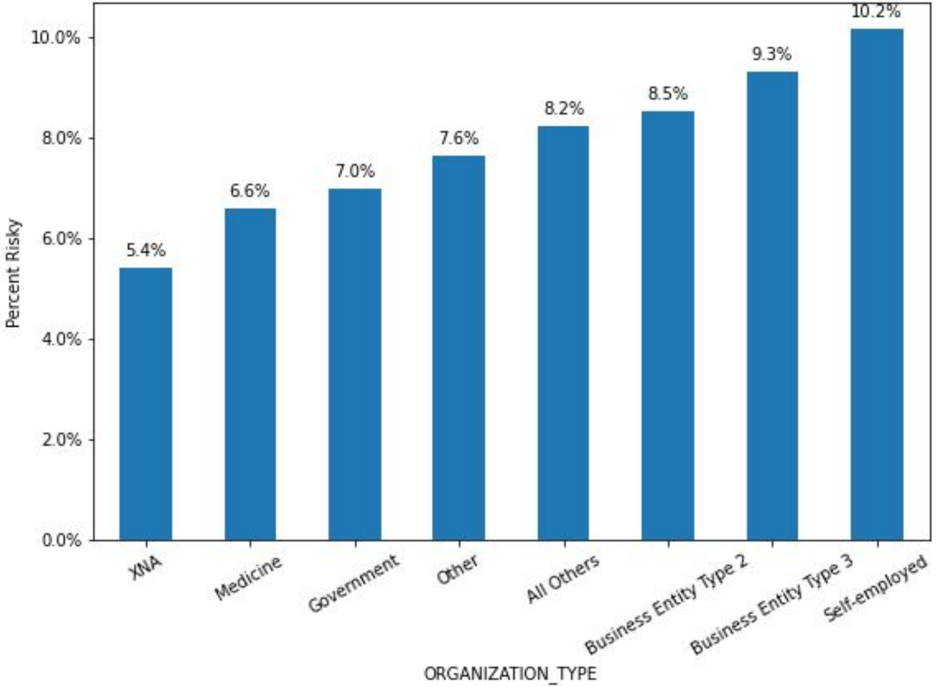




Clients with a higher education are less risky than the ones without

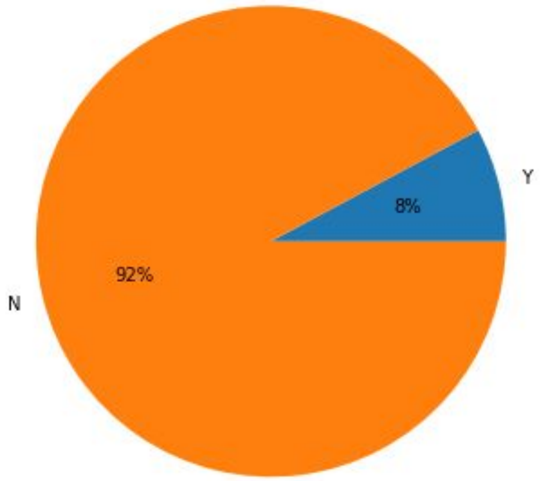
Client's Work Organization Type

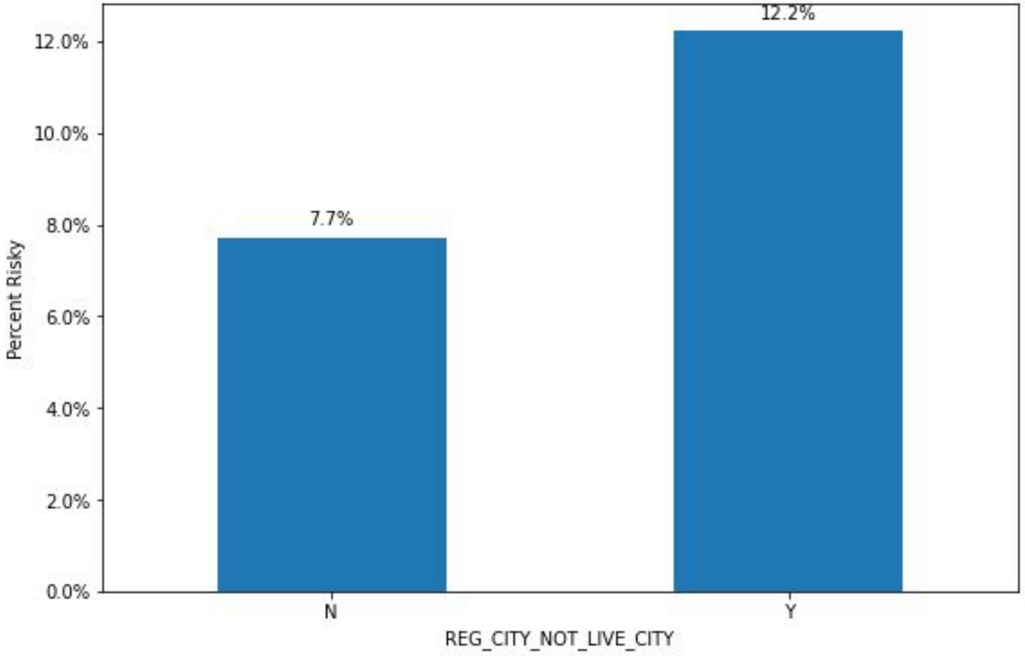




The riskiest segment under "ORGANIZATION_TYPE" (client's work organization type) is "Self-employed" whereas the least risky is when the "ORGANIZATION_TYPE" is unavailable

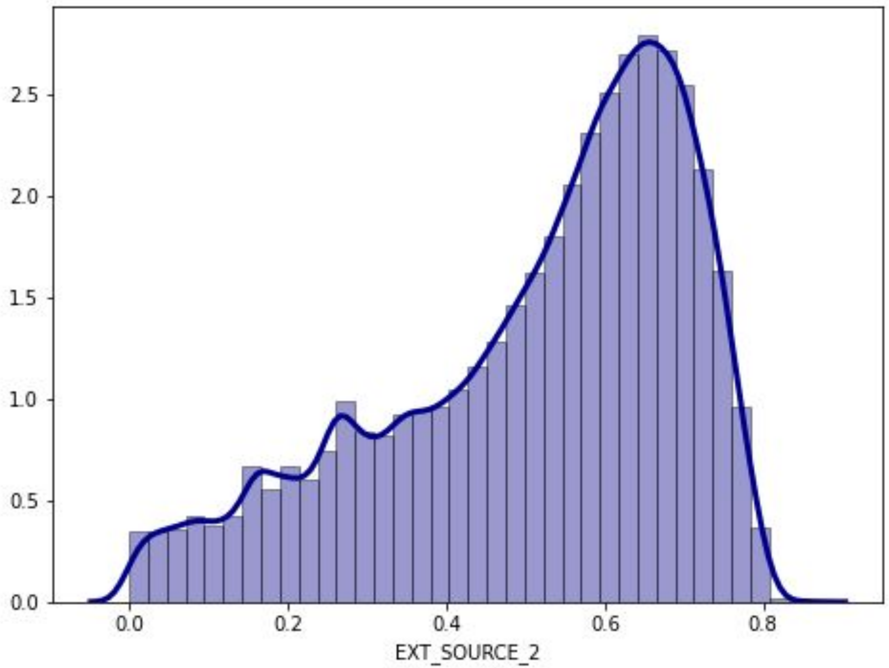
Mismatch between client’s permanent and contact address

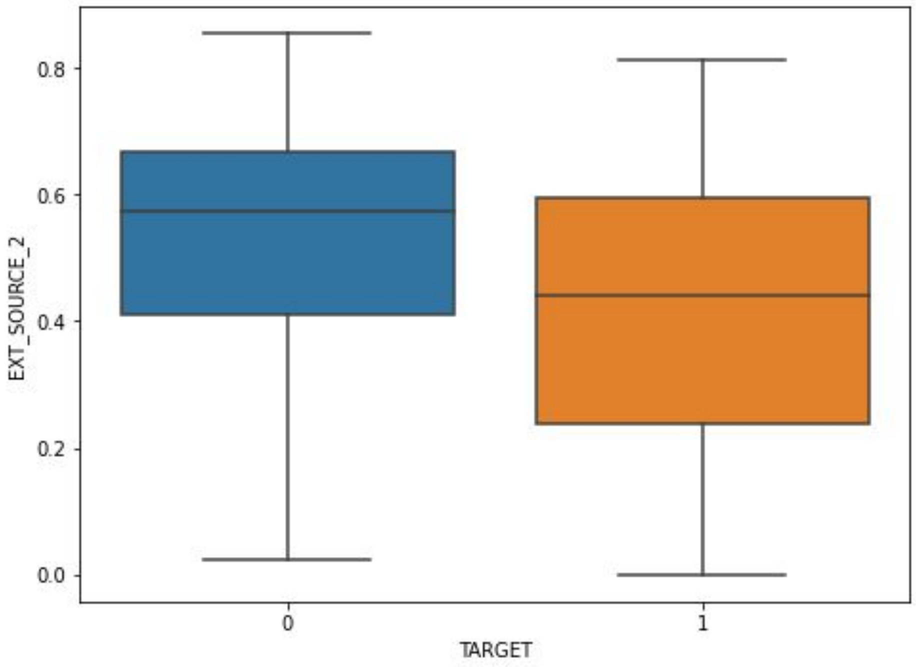




Client's with a mismatch between permanent and contact address are riskier

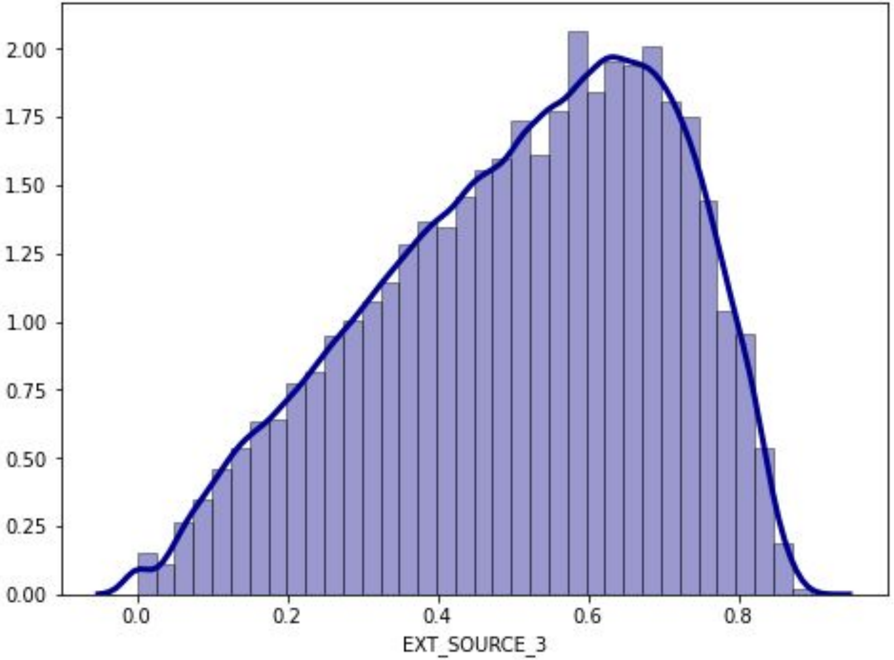
External Source 2 Score

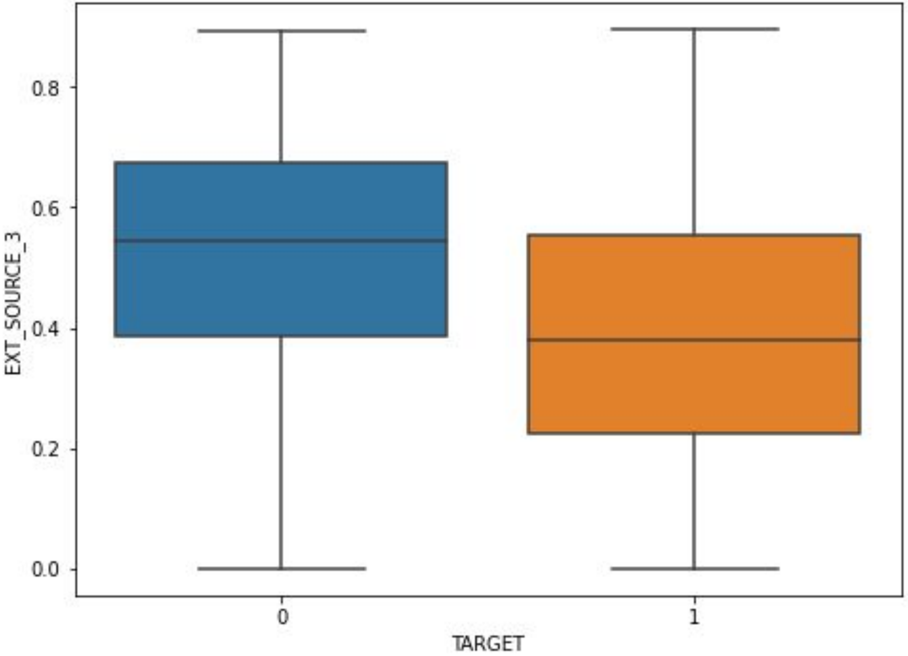




Non risky clients have higher values of "EXT_SOURCE_2" compared to risky customers

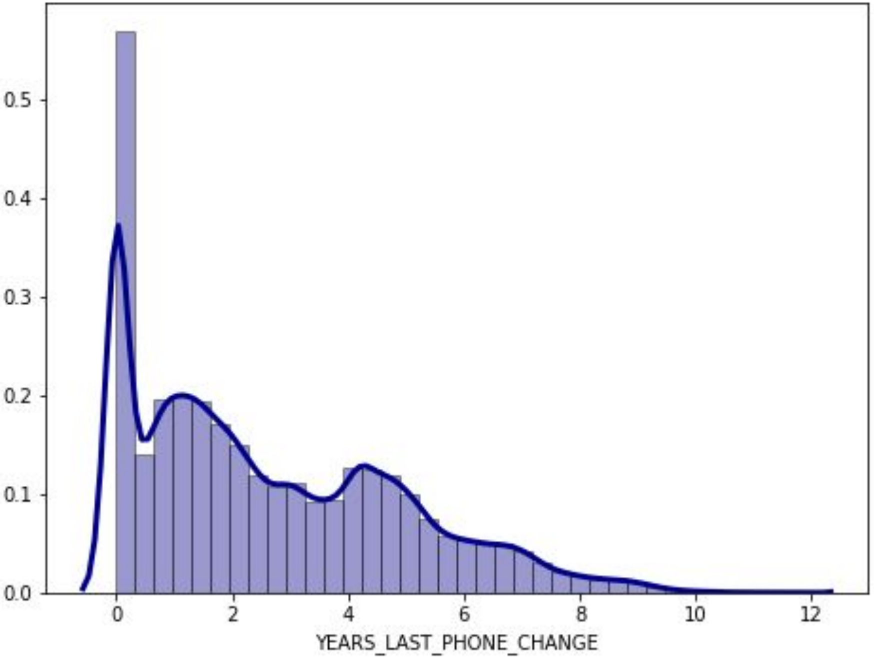
External Source 3 Score

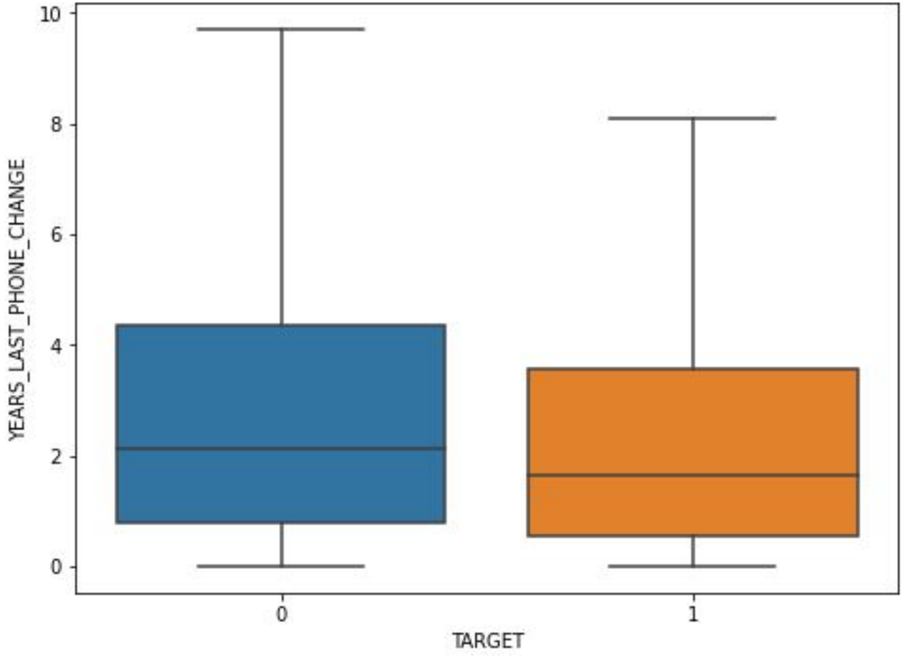




Non risky clients have higher values of "EXT_SOURCE_3" compared to risky customers

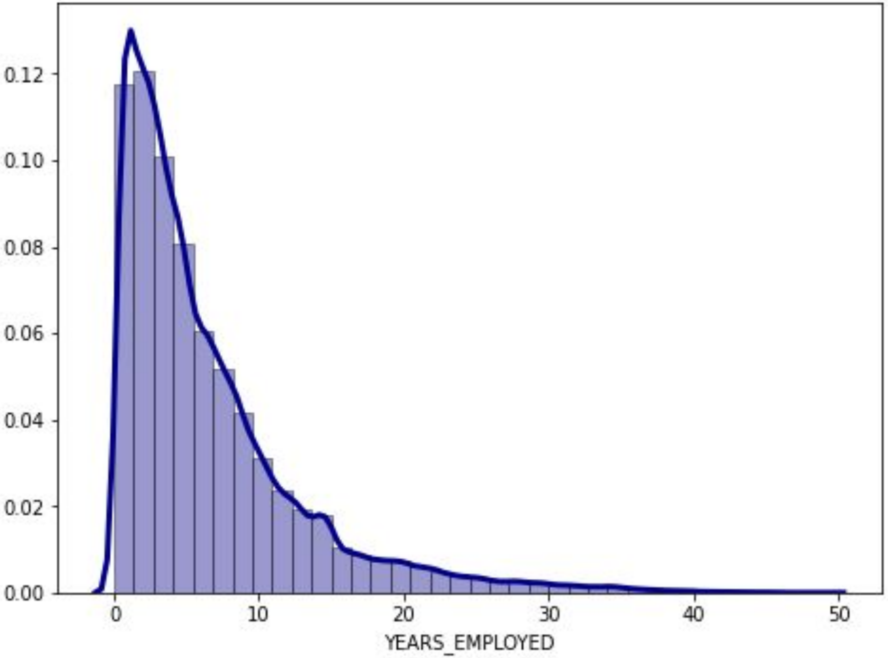
Phone Number Change Recency

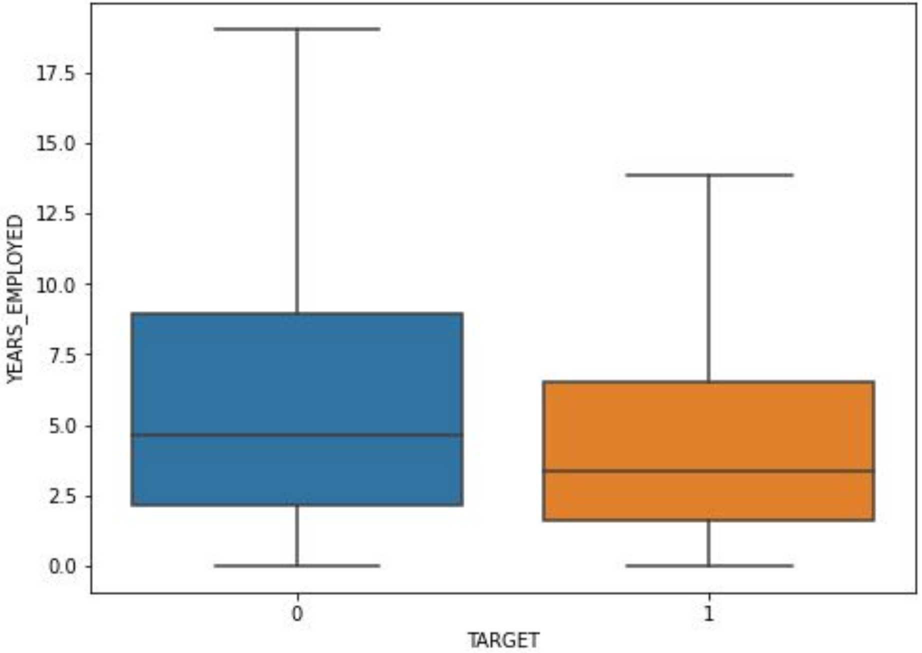




Clients with recent phone number changes seem to be riskier

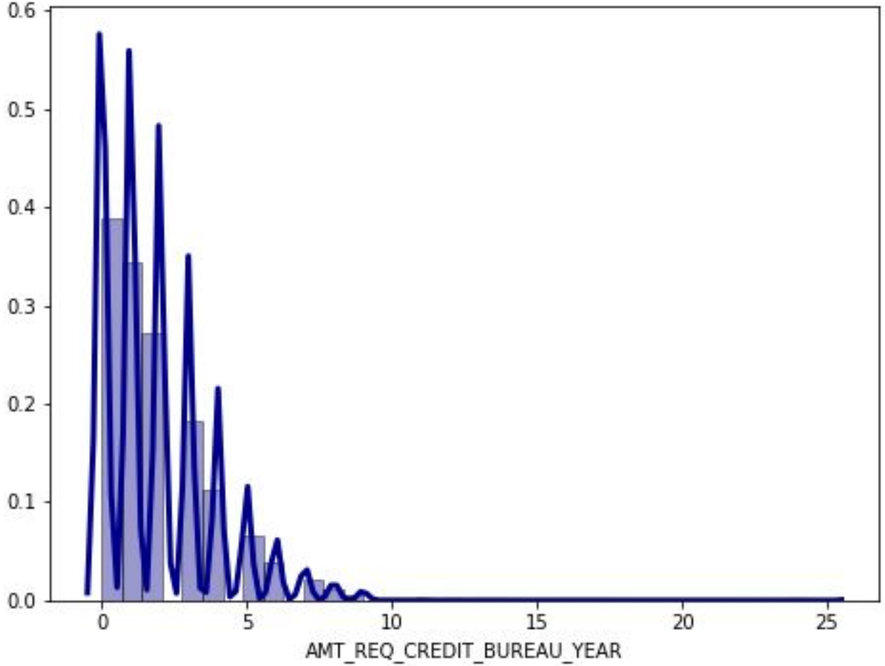
Client’s Current Employment Duration

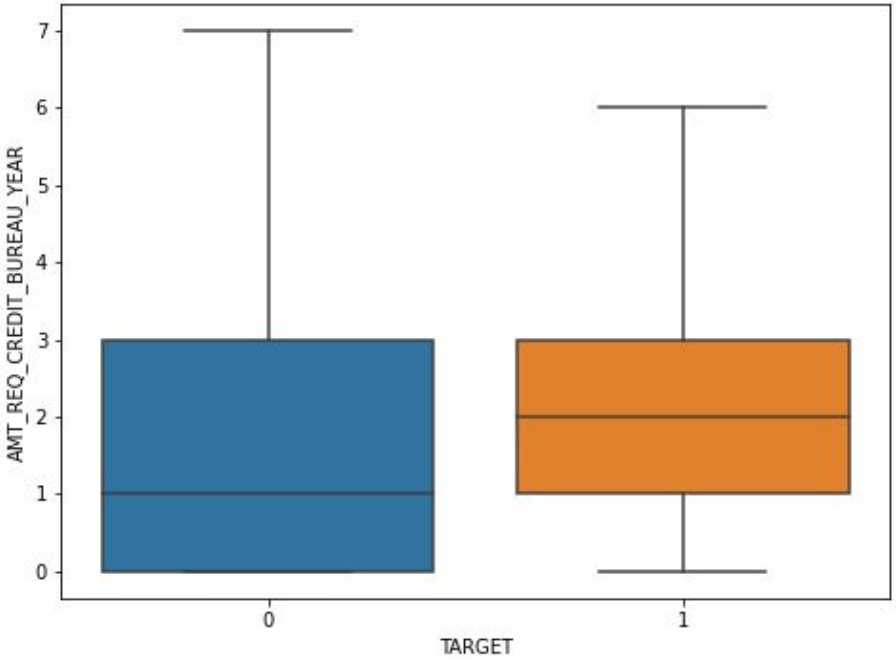




Clients with smaller durations of current employment are riskier

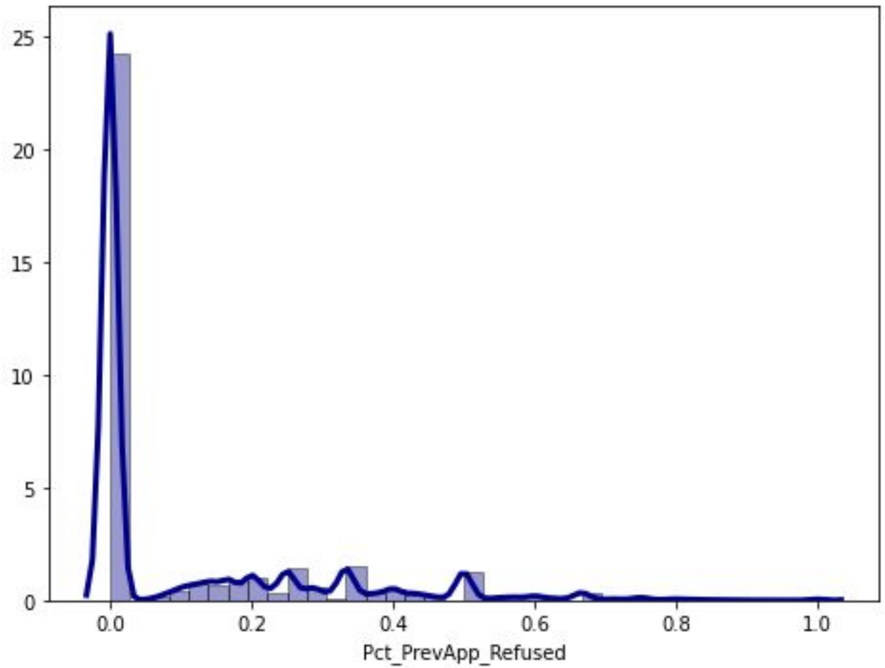
Client's Credit Bureau Inquiries in a Year

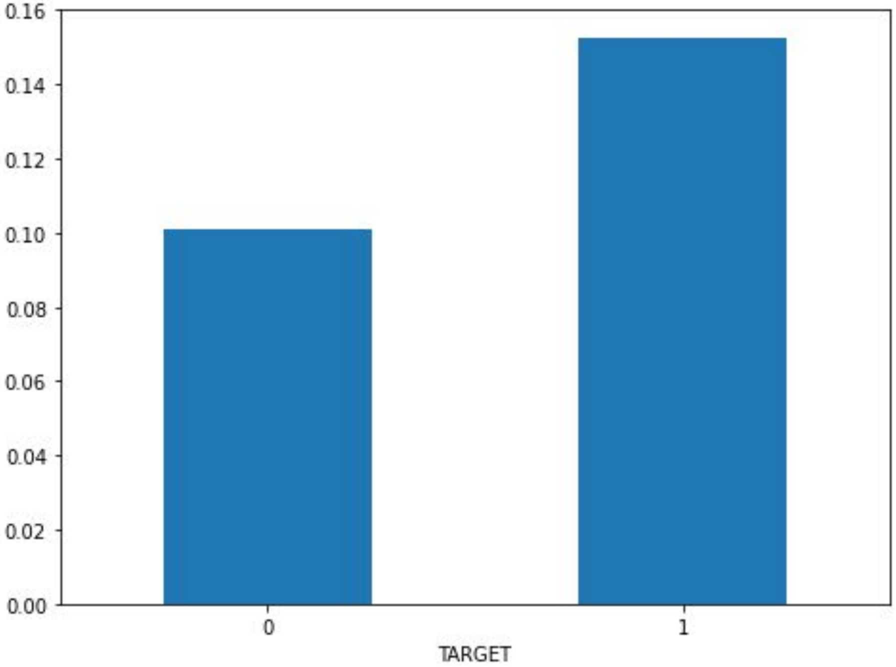




Clients with more number of credit bureau inquiries (in a year) are riskier

Client's Previous Application Refusal Rate





Clients with higher proportion of past refusals are riskier

Recommendations and Conclusion

We recommend to only approve applicants with the following characteristics:

- Higher Values For: External Source Scores 1/2/3, Client's Current Employment Duration and Phone Number Change Recency
- Lower Values For: Client's Previous Application Refusal Rate and Credit Bureau Inquiries in a Year
- Who are Highly Educated and who provide the correct Contact/Permanent Address
- Occupation Type In: Accountants, Managers and High Skill Tech & Core Staff
- Work Organization Type Not In: Self Employed and Business Entity Types 2/3

Following the above guidelines should help the company in getting the clients least likely to default