

HOME
CREDIT



HOME CREDIT SCORE CARD MODEL

Presented by Ibnu Richo Kurniawan



List of Contents

01

Problem Research

02

Data Preprocessing

03

Business Insight

Machine Learning
Models

04

Business Recommendation

05

Feature Importance

06





Problem Research

Many people struggle to obtain loans due to inadequate or even non-existent credit histories. Unfortunately, this group often becomes a target for unfair lending practices. Home Credit strives to expand financial inclusion for those who are unbanked by providing a safe and positive borrowing experience. To ensure that this group has a good loan experience, Home Credit utilizes various alternative data to predict clients' repayment abilities. With this approach, they can ensure that individuals who are capable of repayment are not denied loans, and they offer loans with amounts, terms, and repayment schedules that are appropriate, thus helping clients achieve success.

Data Preprocessing

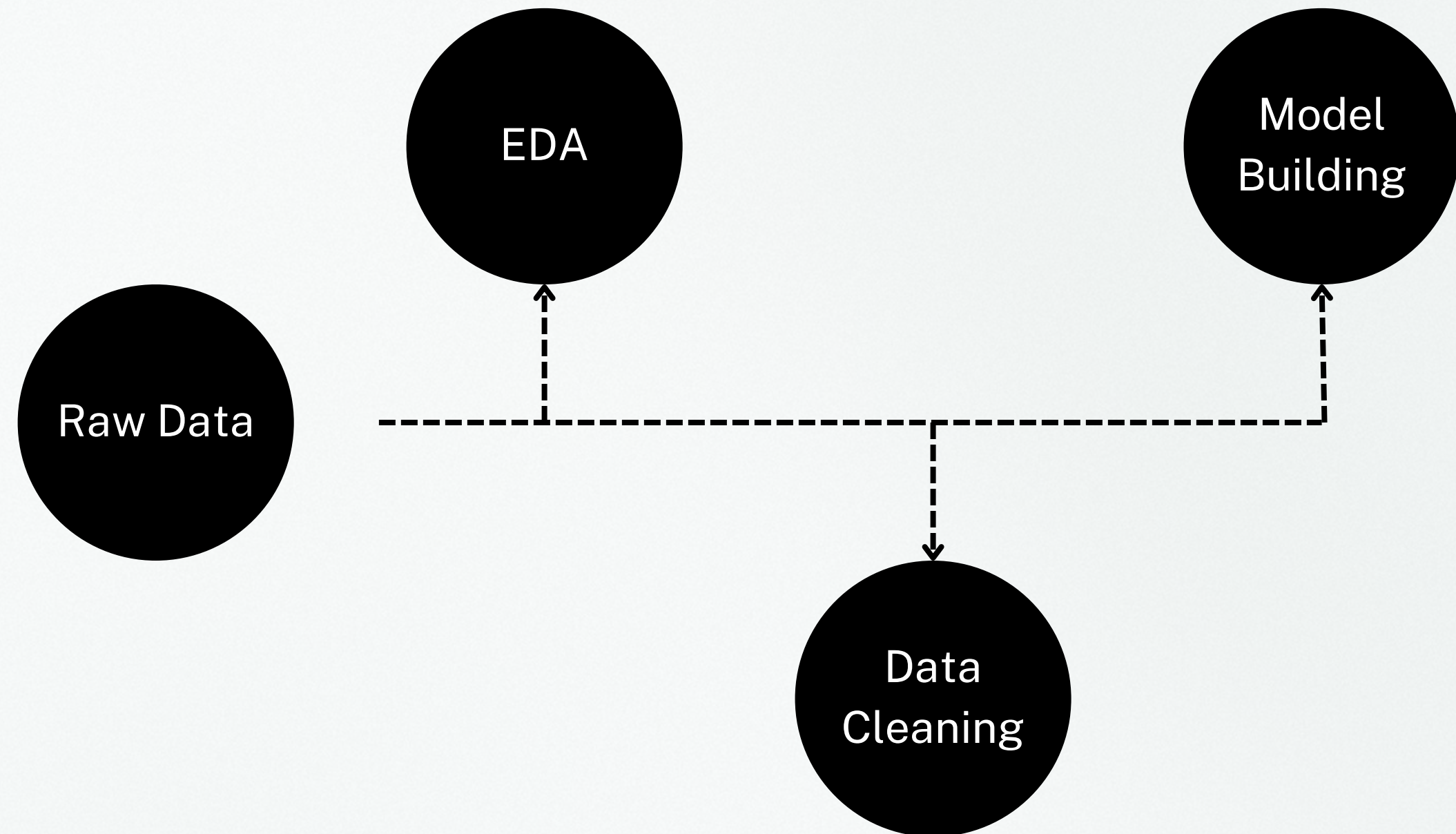
Data Application
Train

122

Number of Columns

307,511

Number of Rows



Data Preprocessing

Data Application Test

121

Number of Columns

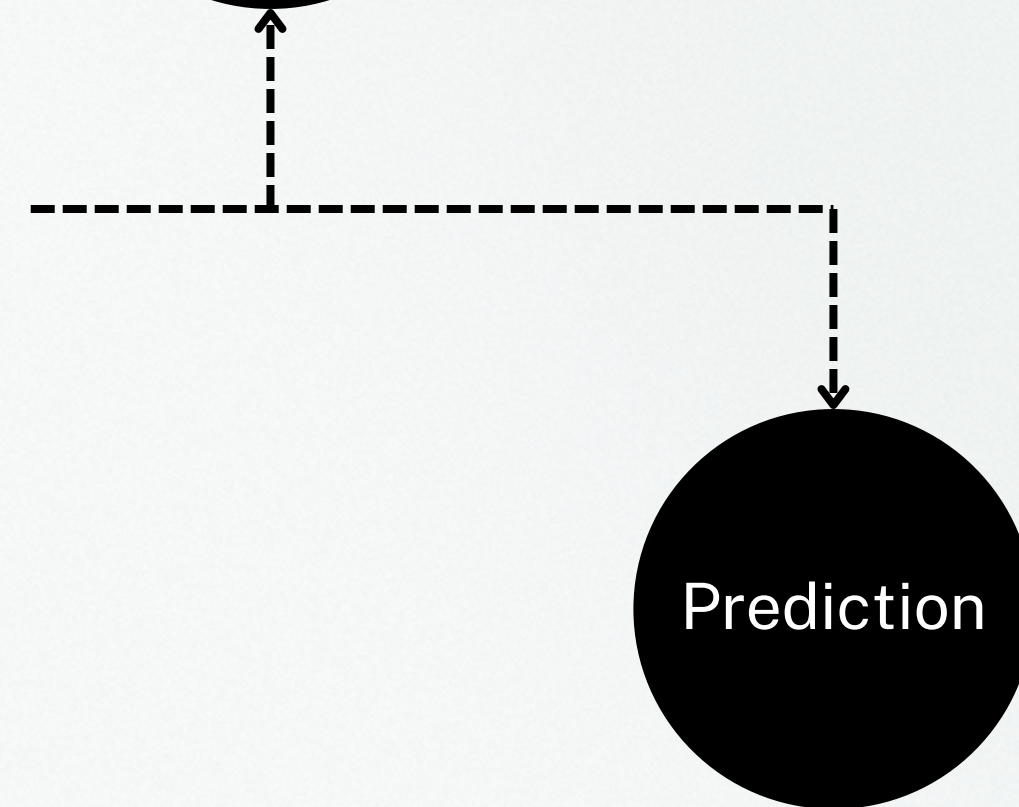
48,744

Number of Rows

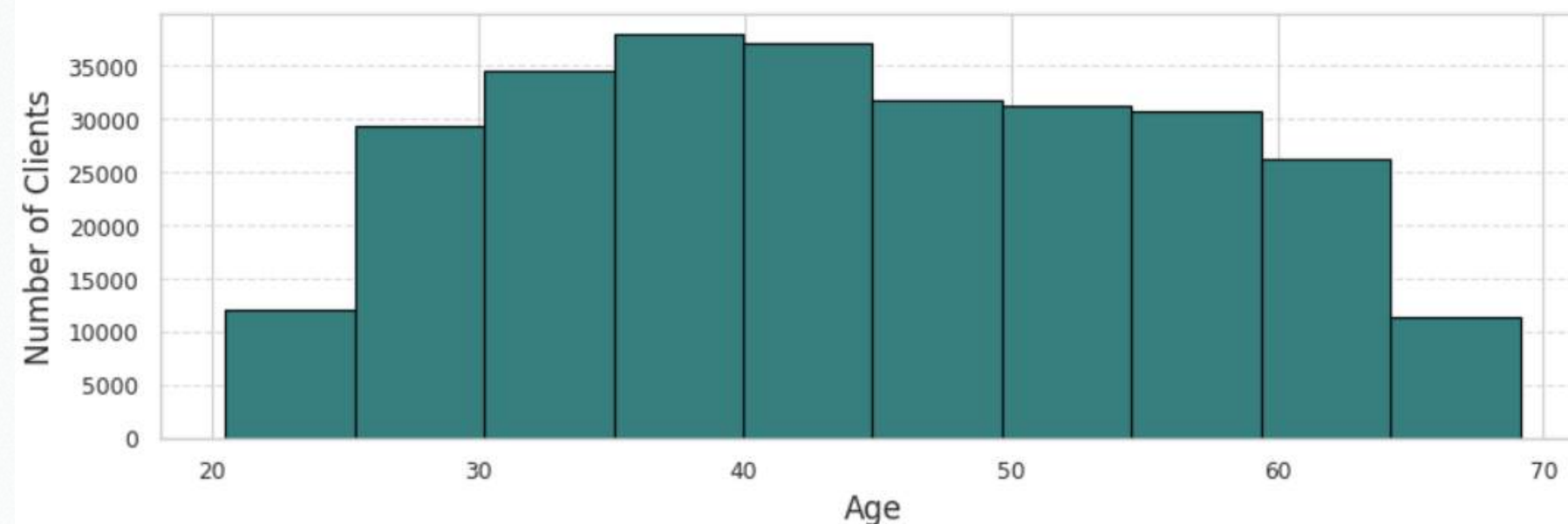
Raw Data

Data
Cleaning

Prediction

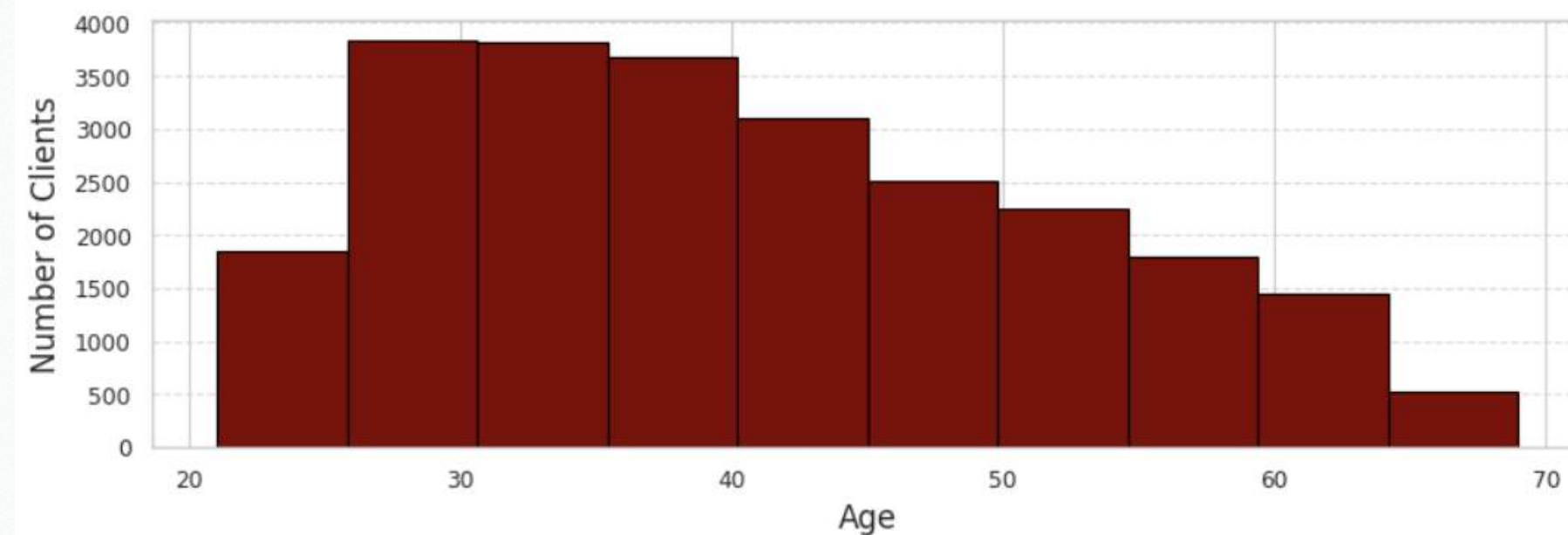


Age of Client (in years) who have No Payment Difficulties

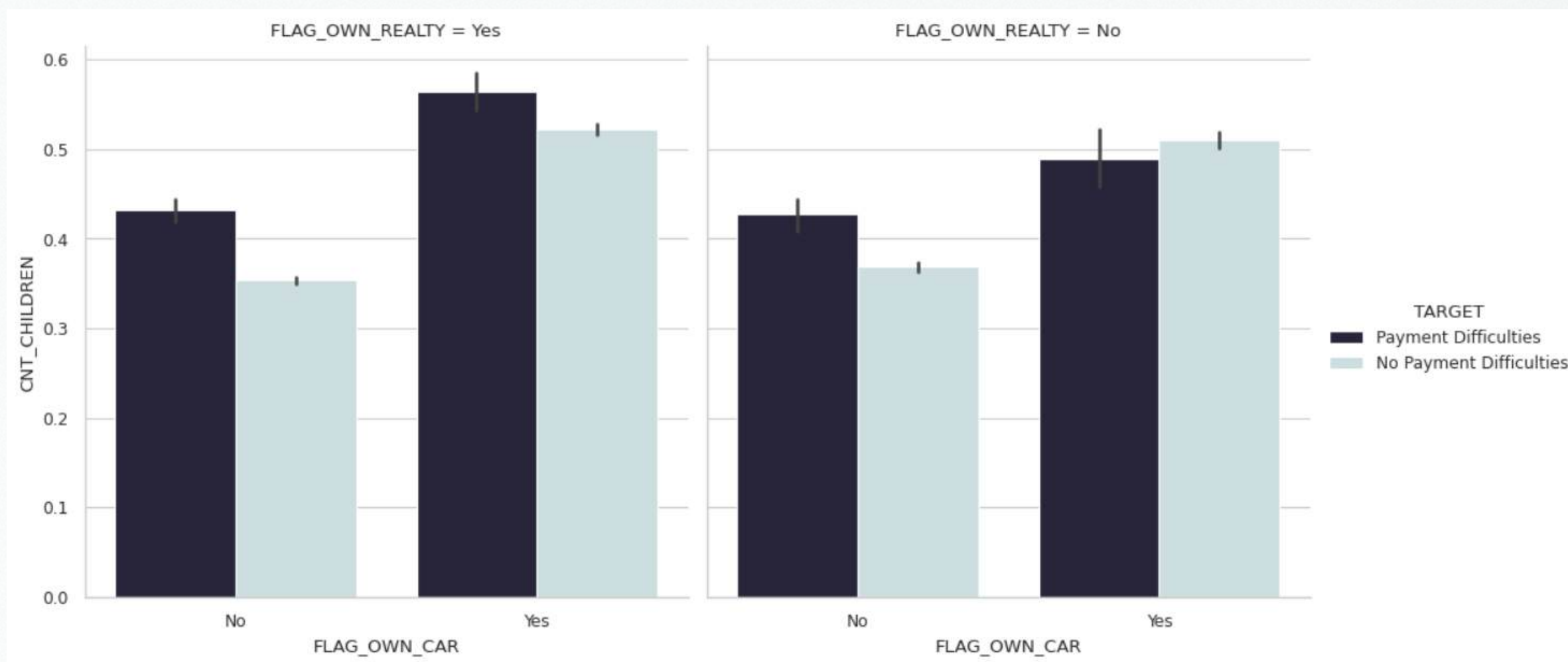


The majority of clients applying for loans fall within the age range of 35 to 40 years. In contrast, the number of applicants who are younger than 25 or older than 65 is quite minimal.

Age of Client (in years) who have Payment Difficulties



- Clients without payment difficulties predominantly belong to the age group of 35 to 45 years. These individuals can be prioritized as your target audience.
- On the other hand, clients experiencing payment difficulties are primarily those aged between 25 and 35 years.



All student clients face no challenges in repaying their loans, whether they are cash loans or revolving loans, as long as the credit amounts are categorized as low to medium.

In the case of maternity leave as an income source for cash loans, all clients face challenges in repaying loans of medium credit amounts. Conversely, clients on maternity leave who have revolving loans experience no difficulties in repaying their loans.

For unemployed clients with cash loans, over 50% encounter difficulties in repaying loans with medium credit amounts. In contrast, all unemployed clients with revolving loans do not face any challenges in repaying their loans.

Machine Learning Models

Algorithm	Training Accuracy Score	Testing Accuracy Score	Error Margin	ROC Score
Logistic Regression	67.21%	67.15%	0.06%	0.6715
Gaussian Naive Bayes	59.91%	60.1%	0.19%	0.6008
Decision Tree	100%	85.32%	14.68%	0.8532
Random Forest	100%	99.69%	0,31%	0.9969

The prediction accuracy for both the training and testing datasets in the Random Forest model shows minimal differences, indicating that the model performs exceptionally well. This suggests the absence of underfitting or overfitting, making the Random Forest model the optimal choice for predicting clients' repayment capabilities.

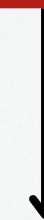
Business Recommendation

Clients classified as students are highly capable of repaying loans, with a 100% approval rate for their applications, although they represent only 0.005% of total applications. Accountants also show strong repayment ability, with 95% of their applications approved, but they make up just 3.19% of applications. Similarly, high-skilled tech staff and managers are reliable borrowers, yet their applications are quite limited.



Create a campaign so that more student, accountant, high skill tech staff, manager interested in applying for a loan

Clients on maternity leave with cash loans are unable to repay, as 100% of their applications are rejected. In contrast, all clients on maternity leave who take revolving loans have their applications approved. For unemployed clients, over 50% struggle to repay cash loans, while those taking revolving loans demonstrate full repayment capability.



Need further analysis, you can survey to find out if there is a problem if a client with maternity leaves or unemployed takes a cash loans contract. So, in the future, if there are clients with that type of income, you can recommend the right contract type so that their applications will be approved

Feature Importance

- **Car Ownership:** Increased car ownership correlates with a higher likelihood of timely payments.
- **Credit Activity:** More active credit usage is associated with a greater chance of smooth payment.
- **Item Price:** Higher priced items indicate a higher probability of successful payments.
- **House Size:** Larger houses are linked to an increased likelihood of timely payments.
- **Job Position:** A higher job position correlates with a greater chance of smooth payment.
- **Employment Duration:** Longer tenure in a job increases the likelihood of timely payments
- **Age at Application:** Younger applicants tend to have less smooth repayment experiences.
- **City Rating:** A higher city rating number is associated with a lower likelihood of smooth payments.
- **Recent Phone Number Change:** Applicants who have recently changed their phone numbers are more likely to experience repayment issues.

Link Portfolio



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THANKS**

