



Analyzing a Portuguese Bank Campaign

Insights for stakeholders and decision makers

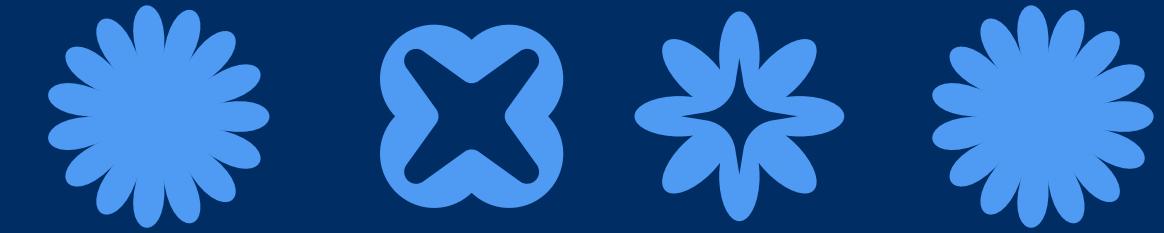
Insights from Exploratory Data Analysis



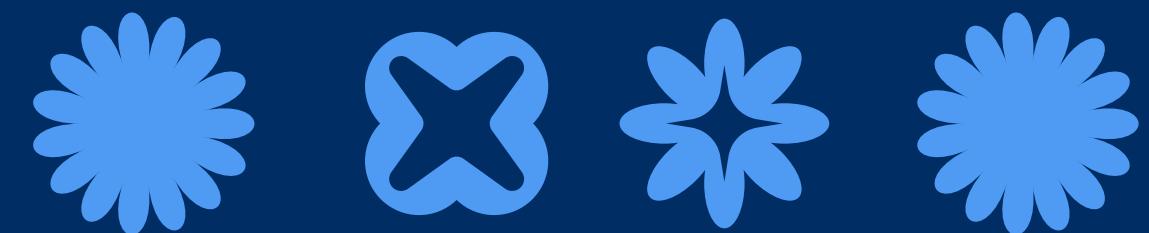
Dataset
Bank Term Deposit Campaign
(Portuguese Bank, 2008-2010)

Total Records
45,211

Target Variable
y (Term Deposit Subscription)



Client Demographics Analysis



Marital Status Insights

The majority of clients are married, indicating stability in financial decisions.

Education Levels Overview

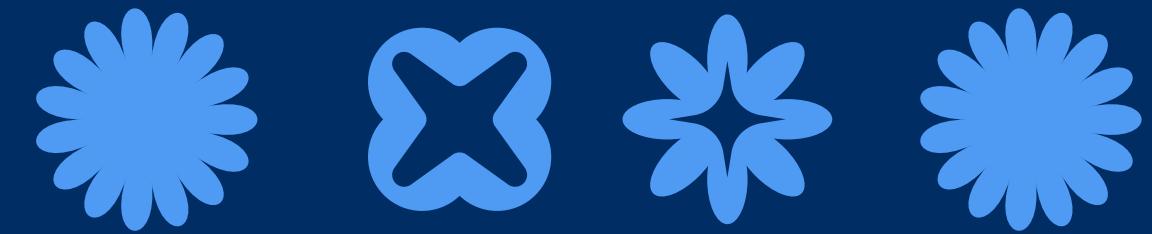
Most clients have secondary education, with fewer holding tertiary degrees.

Age Distribution Effects

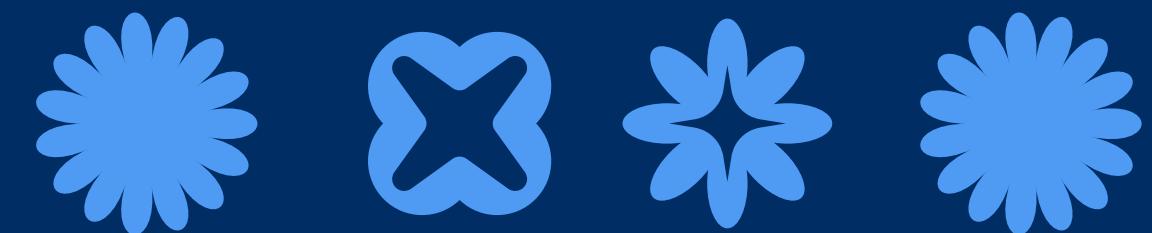
Clients aged 30-40 show the highest engagement with the campaign.

Balance Insights

Most clients have balances below €2,000; balance shows weak correlation with deposit subscription.



Financial Profile Insights



Average Balance

Most clients have balances under €2,000, but there are outliers above €10,000. A few negative balances indicate overdraft usage.

Credit Default

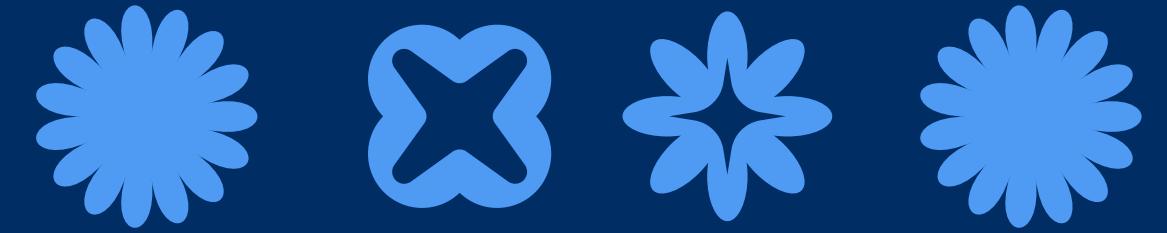
Only 1.8% of clients have defaulted before, indicating a largely creditworthy population.

Housing Loans

Nearly 50% of clients have an active housing loan.

Personal Loans

Fewer clients, approximately 15–20%, have personal loans



Marketing Communication Behaviour



Preferred Contact Methods

Majority were contacted via cellular, with fewer through telephone or unknown means.

Last Contact Timing (Day)

Most contacts occurred between the 15th and 25th of the month.

Last Contact Timing (Month)

Heaviest campaign activity was in May, August, and October.

Call Duration

Most calls lasted under 300 seconds, but longer durations correlated positively with subscription.

Campaign Performance

Current Campaign Contacts:

- Most clients were contacted 1-2 times, with a steep drop after that.
- Rarely more than 10 calls were made.

Previous Campaign Contacts:

- Over 35,000 clients had no previous contact.
- A minority had 1-3 prior contacts.

Days Since Previous Contact:

Large spike at -1, meaning most were never contacted before.

Past Outcome:

Majority marked as "unknown", with "failure" and "success" being rare.

Subscription Outcome (Target Variable)

- 88.5% of clients did not subscribe
- Only 11.5% subscribed
- Highlights significant class imbalance



Correlation with Subscription

- Most positively correlated features with y :
- *duration* (+0.41) — Longer calls = higher chance of success
- *poutcome* (past campaign success) indirectly helps
- Weak or negative correlations:
- *campaign* and *pdays* show weak or inverse relationships
- *balance*, *previous* show minor positive trends
- *age* and *education* have small but noticeable correlations



Key Insights

- Longer conversations are strongly linked to subscription success.
- Previous campaign success significantly improves chances.
- Majority of clients are contacted only once, and often without prior interaction.
- Most clients say no, showing a high need for targeted outreach.
- Job, age, and balance provide partial signals, but duration is the strongest predictor.



THANK
YOU