

# Bank Marketing Analysis

refining predictions for marketing campaigns

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### business context

scenario: bank marketing campaign

main goal: increase campaign efficiency

bank pays call center to reach out to existing clients

### future campaign goals:

 fewer wasted calls while minimizing missed deposits

### previous campaign results

11.7% positive

88.3% negative



### data overview

- 50,000 client records from previous campaign
- shows whether client made a term deposit
- also contains clients'
  - age
  - avg. checking account balance
  - education level
  - career type
- and whether the client
  - made a term deposit before
  - has a loan
  - has defaulted before



## process overview

- 1. run three kinds of classification **models**:
  - each begins with baseline
  - make gradual improvements
  - evaluate based on deposit predictions
- 2. summary of findings
  - which models work best
  - helpful findings from other models

# classification model predictions

#### true positive

**accurate** prediction of new term deposit

#### true negative

**accurate** prediction of client refusal

#### false positive

incorrect prediction
that a client would
 make a deposit
(wasted phone call)

#### false negative

incorrect prediction
that a client wouldn't
 make a deposit

(missed deposit)

### best overall predictor: decision tree model

#### model correctly predicts:

- 62% of positives
- 92% of negatives

why the relatively low positive rate?

• reducing wasted calls while minimizing missed term deposits

true positives

7.3%

true negatives **81.2**%

false positives

7.1%

false negatives

4.4%

## if focus shifts to new deposits:

#### **Logit model predicts:**

- positives 82% correctly (20% better than before)
- negatives 84% correctly (8% worse than before)

This model maximizes term deposits, but results in over twice as many wasted calls than the previous model.

true positives

9.6%

true negatives

73.7%

false positives

14.6%

false negatives

2.1%

# other recommendations

numerous calls to a client won't help

• cut losses early on when client refuses or won't answer

repeat depositors

• previous depositors much more likely to do so again

average checking balance

• higher balances = much higher deposit likelihood

# thank you

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