

# Calling Clients: Predicting Product Subscriptions

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# Agenda

- ↓ Problem Context & Process Overview
- ↓ Preliminary Findings & Model Results
- ↓ Recommendations

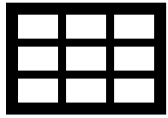
Hiring more bank employees will **not** improve marketing campaign outcomes for term deposit subscriptions.

# Context

- ↴ The bank seeks to predict client subscription to a term deposit through a direct marketing campaign
- ↴ Data contains client, bank, and macroeconomic information from May 2008 to November 2010
- ↴ Use model output to guide marketing strategy

# Process Overview

Dataset



General Analysis



Predictive Modeling



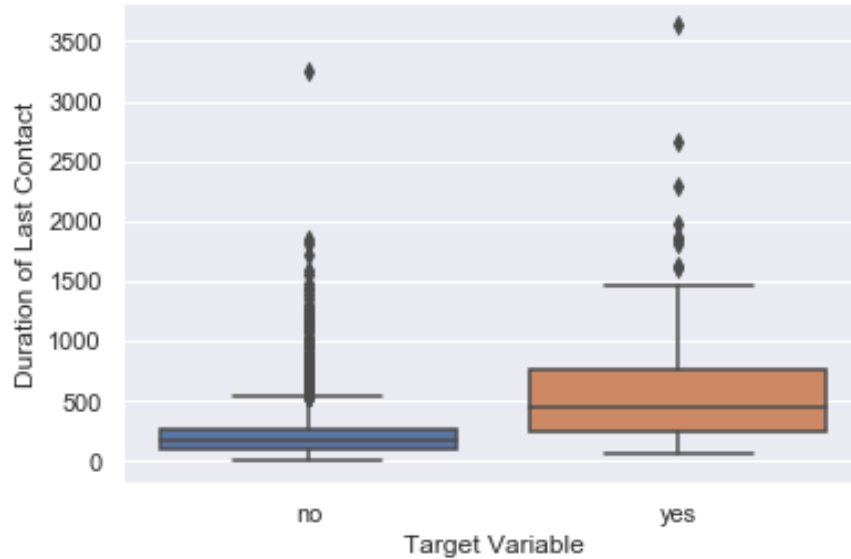
Problem Context & Overview

Analytical & Modeling Results

Recommendations

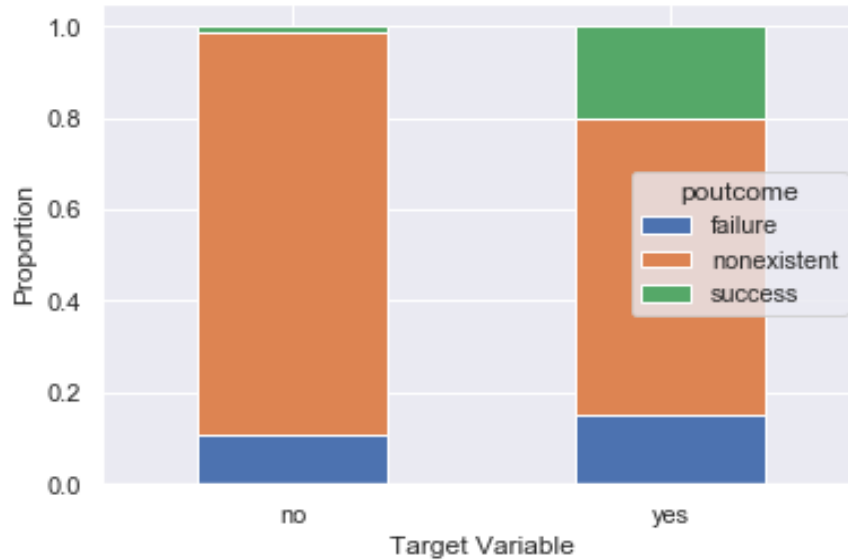
# Longer Calls: Bigger Hauls

Boxplot of Call Duration vs Term Deposit Subscription

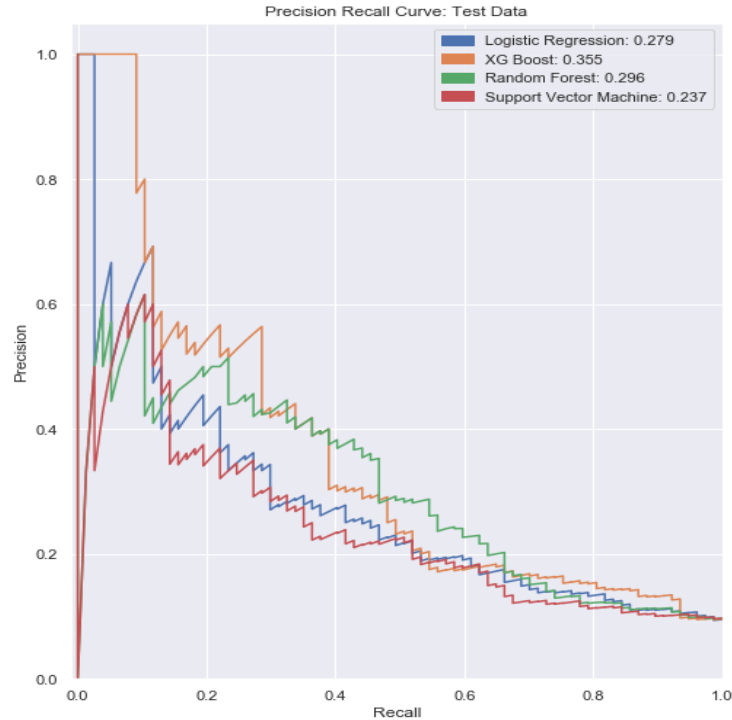


# Success Breeds Success

Proportion Plot of Prior Outcome vs Term Deposit Subscription



# Modeling Results: XG Boost





# Model Results: Feature Importance

Feature	XGBoost Importance	Logistic Reg. Coef. Sign
Number of Employees	0.122	Negative
Job Title: Management	0.041	Negative
Contact: Telephone	0.040	Negative
Job Title: Housemaid	0.037	Negative
Job Title: Blue-Collar	0.036	Negative

# Recommendations: Marketing

- ⤵ Consider reducing hiring efforts and maximizing effectiveness of existing employees
- ⤵ Use XGBoost model feature importances to guide marketing strategy in an effective manner
- ⤵ Encourage bank employees to keep conversation going for as long as possible with clients to maximize chances of term deposit subscription
- ⤵ Contact clients who have been deemed “successes” in previous marketing campaigns

# Recommendations: Analytics

- ⤵ Work with domain experts to select and conceptualize better features to get the most out of data
- ⤵ Reconsider resampling and scaling techniques to reduce noise and bring out better signal
- ⤵ Reconsider hyperparameters for subsequent models to reduce overfitting

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