

# Bank Telemarketing Classifier

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Goal: Fewer  
and more  
effective  
phone calls

- Telemarketing records from a Portuguese bank
  - May 2008 to November 2010
- 41000 rows
  - Unbalanced
  - Categorical
  - 20 features, 1 target

# Exploratory Data Analysis



Customer  
Profile



Month  
Day of Week



Economic  
Indicators

# Approaches

## Columns

EDA

Context

All

## Oversampling

Random

Synthetic

## Model

Logistic Regression

Random Forest

Boosting

## Metrics

- Scored with F1
- Queried my results based on
  - F1
  - AUC
  - Recall (True Positives)

# Top 10

## Columns

3 EDA

3 Context

4 All

## Oversampling

6 Random

4 Synthetic

## Model

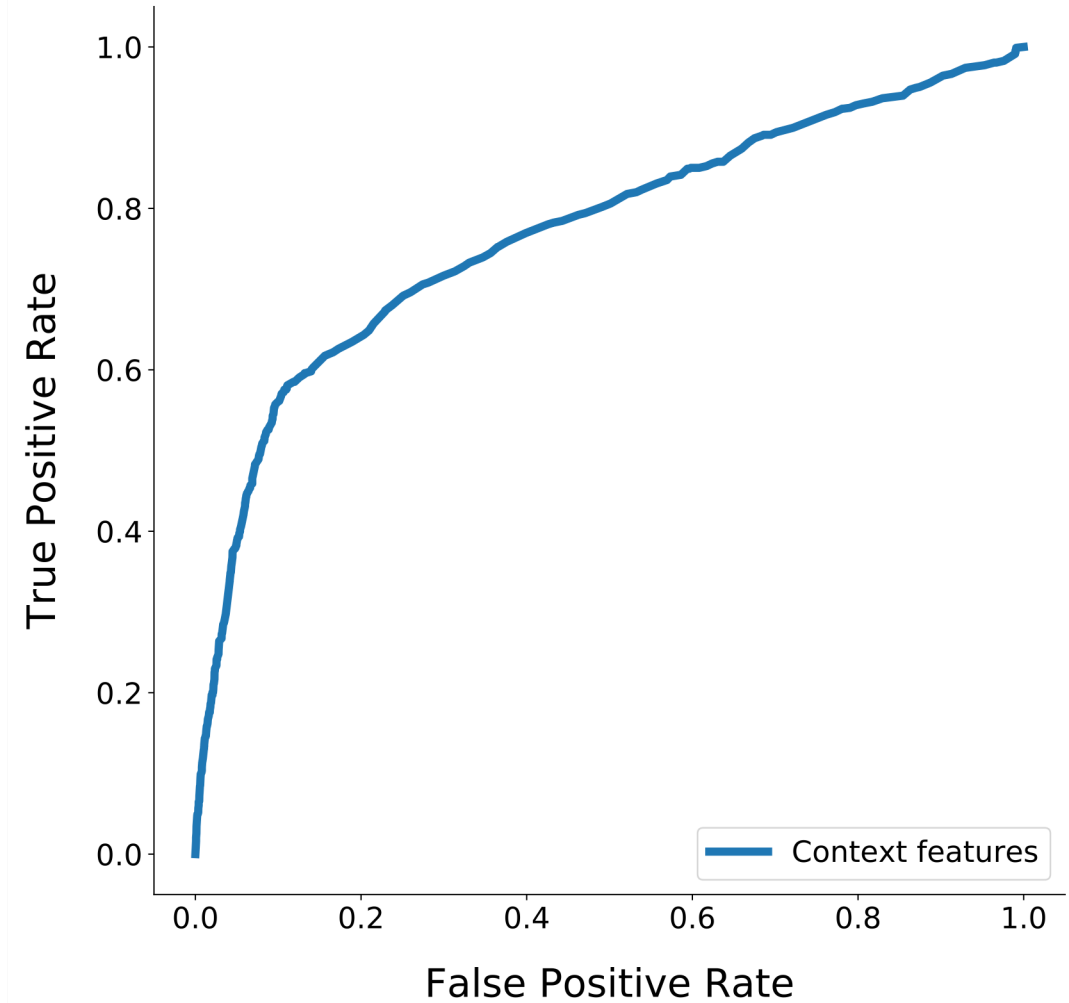
4 Logistic  
Regression

3 Random Forest

3 Boosting

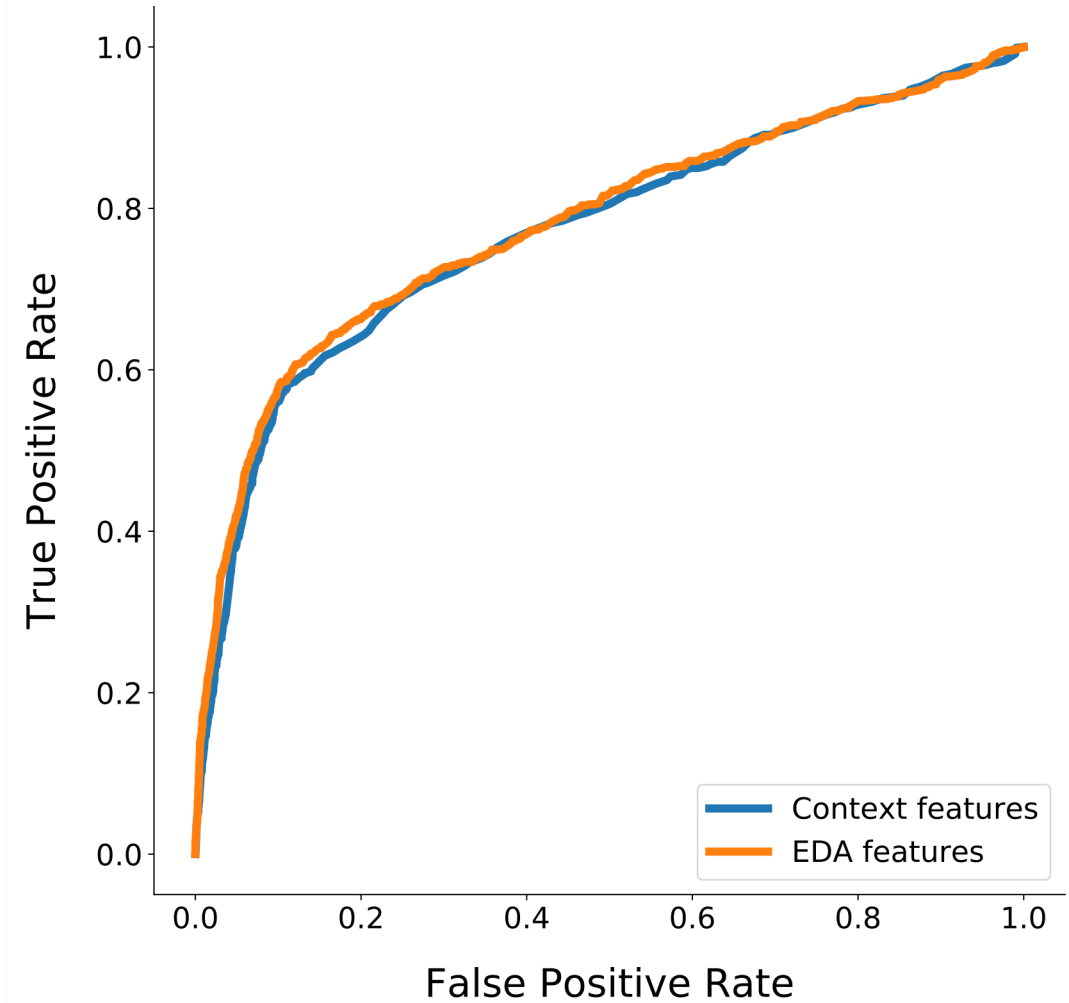
# ROC Curve

- External Context



# ROC Curve

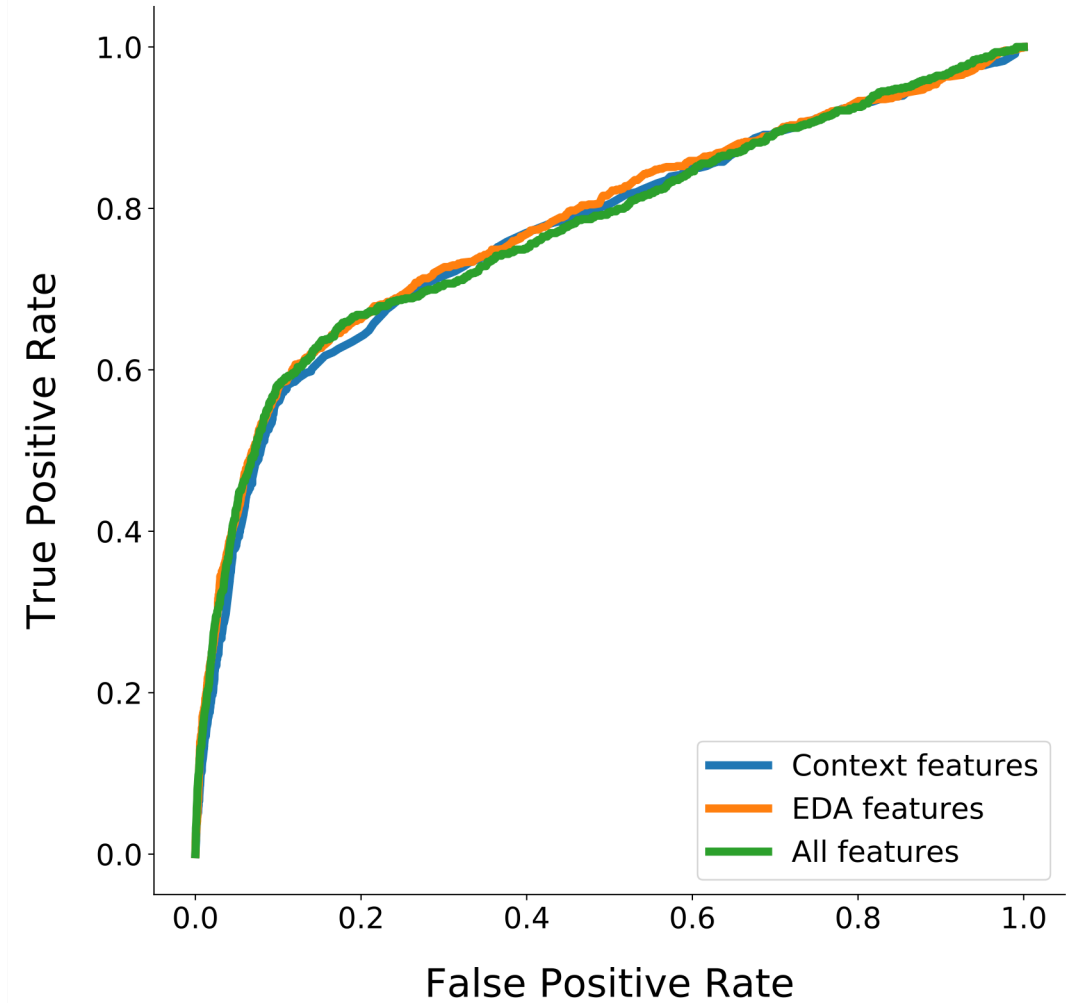
- External Context
- Exploratory



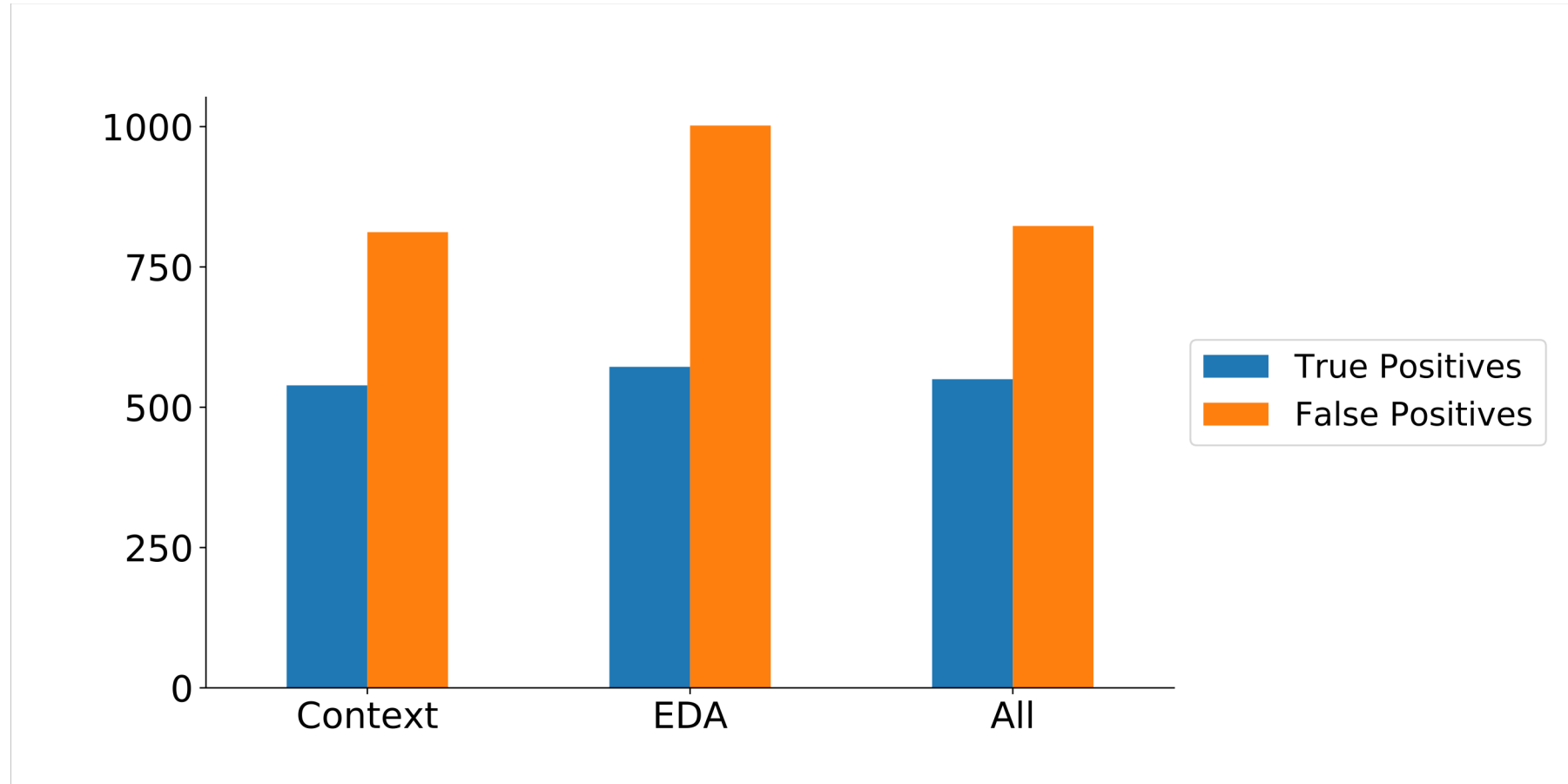


# ROC Curve

- External Context
- Exploratory
- All Features



## Holdout Set – Positive Labels



Conclusion:  
Match the  
product to the  
market conditions



Thank You