

# Predicting Customer Turnover for Telecom company

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# Outline

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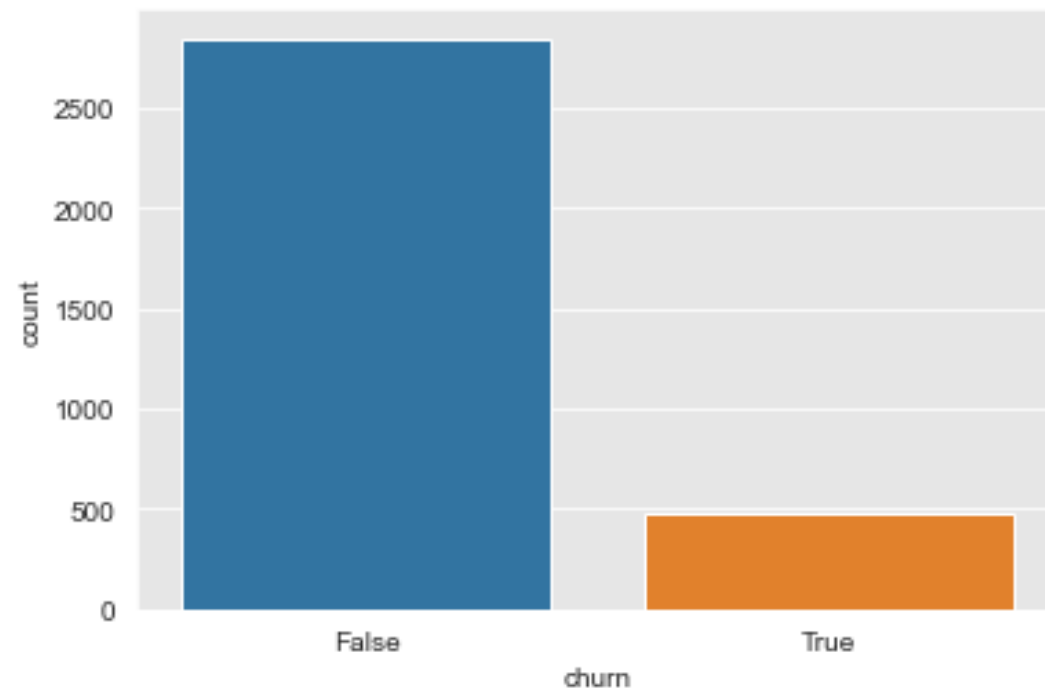
# Background

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- Customer turnover affects every company. For this telecom company, the causes are first identified . Using machine learning identify models that provide the most accurate response for future predictions

# Business Problem

- Maximize customer retention
- Minimize customer turnover
- Identify causes
- Develop models that will help predict customer turnover



# Data

- Using Telecom data set. Dataset has 3333 rows, and 17 columns.
- Contains data including
  - daytime data
  - night time data
  - International data
  - Customer service calls
  - International plan
  - Churn/turnover

# Methods

- Identify variables with statistical significance
  - Non-Necessary variables were removed.
- Calculated outcome occurrence via odds ratio
- Split into Train and Test set
- Fixing Class Imbalance



# Methods

- Developed several models to evaluate performance
  - Precision – correct predictions vs total predictions
  - Recall – Correct predictions vs actual positive predictions
  - F1 score – harmonic mean of Precision and Recall
  - Accuracy
- Plotted Feature importance to understand weight of each feature

## Results

- Looking at Odds ratio data:
  - international plan customers 7 times more likely to leave.
  - customer service callers are 55% more likely to leave.
  - Customers with voicemail plan 84% less likely to leave



## Results

Lowest score model was 0.70

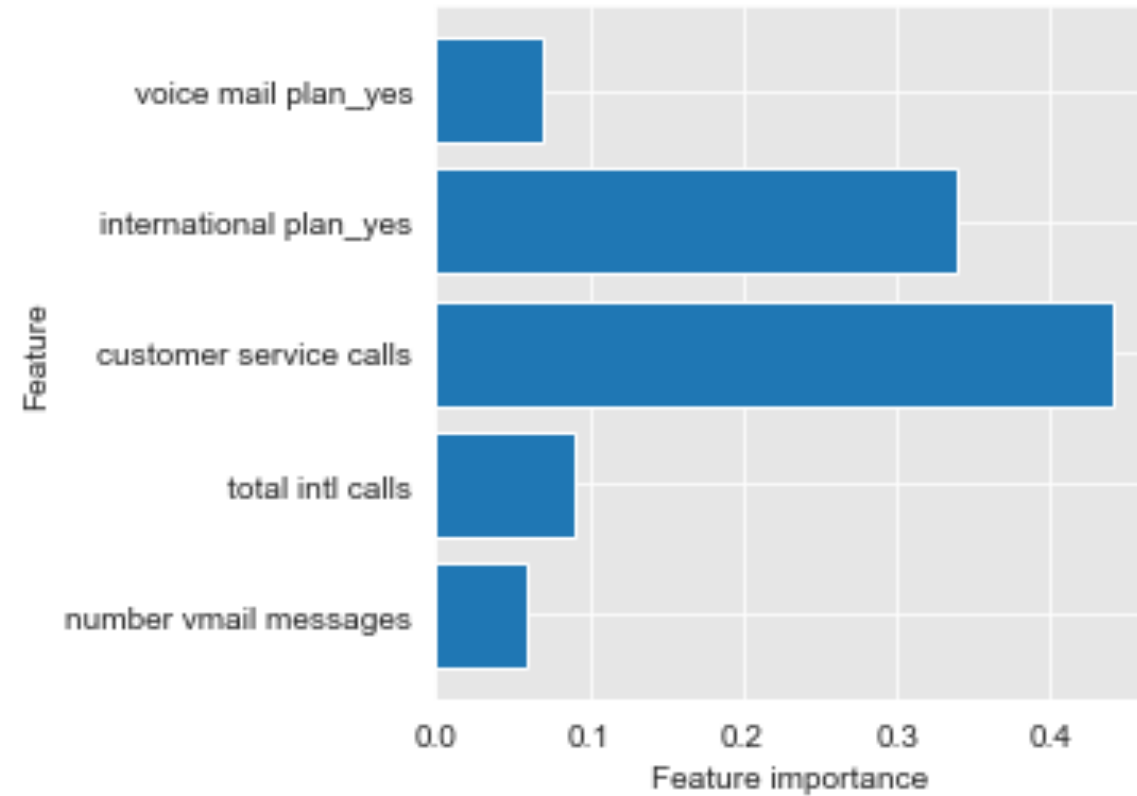
All other models had accuracy score of 0.87

Alternative deciding factor, f1 score

Best scoring model had f1 score of 0.55  
(Random Forests)

# Results

Feature Importance results



Customer service calls and International Plans top two features for turnover.

# Summary of Findings / Conclusion

- International plan holders, are 7 times more likely to leave.
- Customer service callers are 55% more likely to leave.
- customer services calls and total international plans were top two important features
- Most models had similar accuracy
- F1 score, deciding factor. Random Forests best model.





Thank you!