




# SyriaTel Customer Churn



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Flatiron: Self-Paced



# Overview

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The goal of this project was to build a binary classifier to predict whether a customer would "soon" leave the telecommunications company, SyriaTel.

Using the provided dataset, I discovered that the current "churn" rate for SyriaTel is about 14%.

The following questions were addressed:

- \* What features are the primary determinants of customer "churn"?
- \* Are there any predictable patterns?
- \* How can SyriaTel use these findings to implement cost-effective solutions?

# Determining the Best Metric: Type I and Type II Errors

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SyriaTel would save the most money by prioritizing the retention of current customers over the acquisition of new customers.

In statistics, a type I error is a false-positive result, meaning that a null hypothesis is rejected when it is actually true. A type II error is a false-negative result, meaning that a null hypothesis is not rejected when it is actually false.

For this project, incorrectly classifying a false-negative (type II error) would be worse than incorrectly classifying a false-positive. **A false negative would mean that the reality of a customer canceling would have been overlooked.**

My goal was to **build a classifier that minimizes false negatives.**

# Building a Classifier

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The following models were built and evaluated for recall.

The decision tree model, with a recall score of 74%, was chosen for further analyses.

Logistic Regression

K-Nearest Neighbors

**Decision Tree Model**

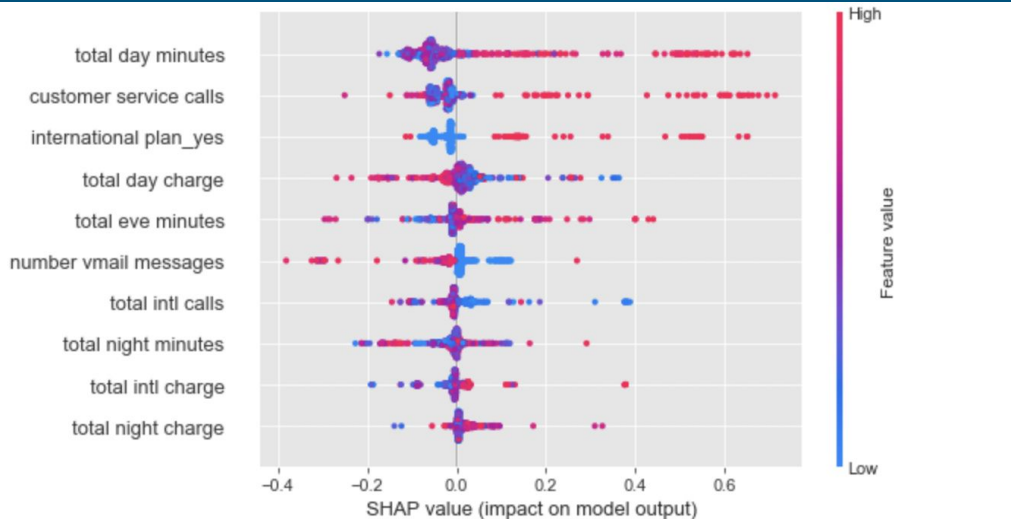
Bagged Trees

Adaboost

Gradient Boost

XBoost

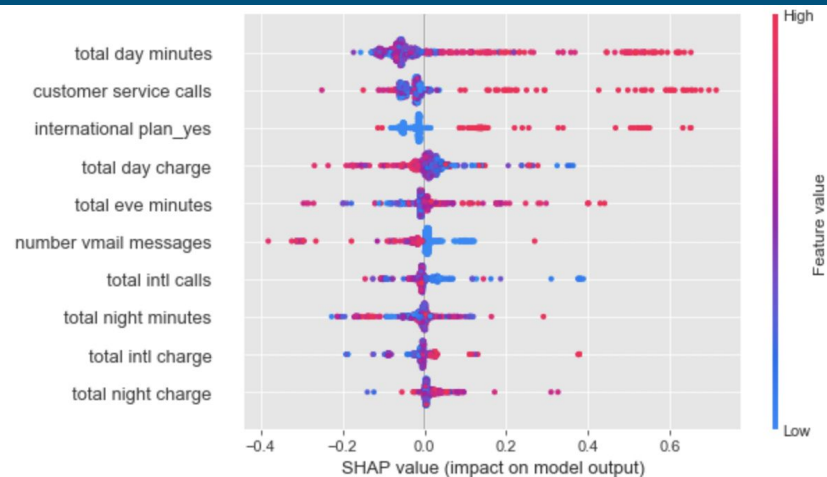
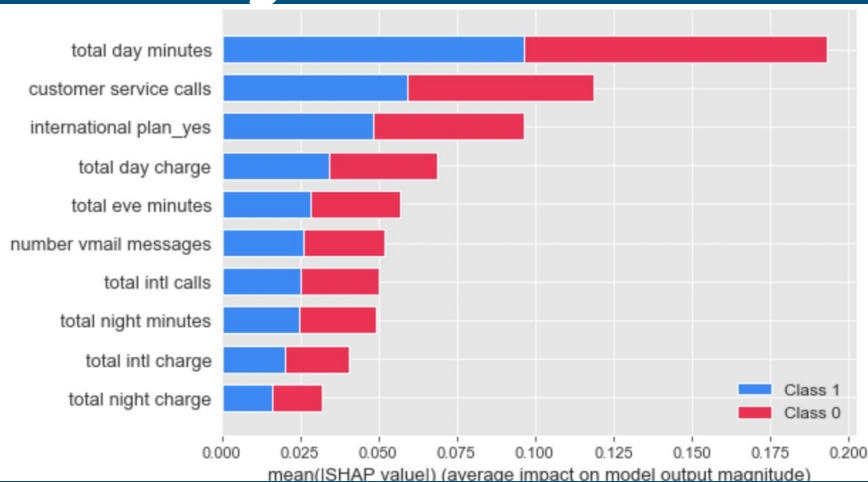
# Findings



On the right side of the graph, the legend for feature value indicates that RED is HIGH feature value and BLUE is LOW feature value. On the y axis, the features are divided individually. The x axis ranks how significant the impact is.

If the feature has a tail going to the right, it means that those values are causing an impact on model output, pushing customer churn from zero (not churning) to one (churn).

# Findings



## Highest contributors of customer churn:

- Having an international plan
- Total number of day minutes
- High number of customer service calls
- Total number of evening minutes

## Lowest contributors of customer churn:

- Number of Voicemail Messages
- Total international calls
- State
- Area code

*It is evident that SyriaTel charges customers based on the number of minutes they use to make calls. The highest contributors of customer churn are factors that lead to a higher bill.*

# Findings and Recommendation

- It is evident that SyriaTel's current business model charges customers per minute of phone use. The highest contributors of customer churn are factors that lead to a higher bill.
- According to the data, the average charge per user is about \$60. My recommendation would be for the company to charge a flat monthly fee to the demographic of customers who are charged \$50 or less monthly and a higher tier plan for those who use their phones more.
- The goal would be to reduce their churn rate to from 14% to 7% (about half of their current rate).

Thank you.