


# Understanding Customer Satisfaction

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# Goal:

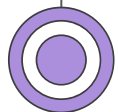
**Build a model that predicts customer satisfaction for the purpose of understanding contributing factors**



# What is CSAT?



- Common metric
- Based on survey results
- Multiple approaches, so calculation varies



# Customer sees...



How would you rate the support you received?



Good, I'm satisfied



Bad, I'm unsatisfied

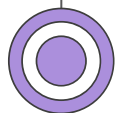
Add a comment about the quality of support you received (optional):

I'm happy with the support I received. Thank you.



zendesk

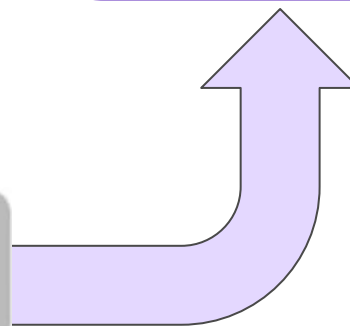




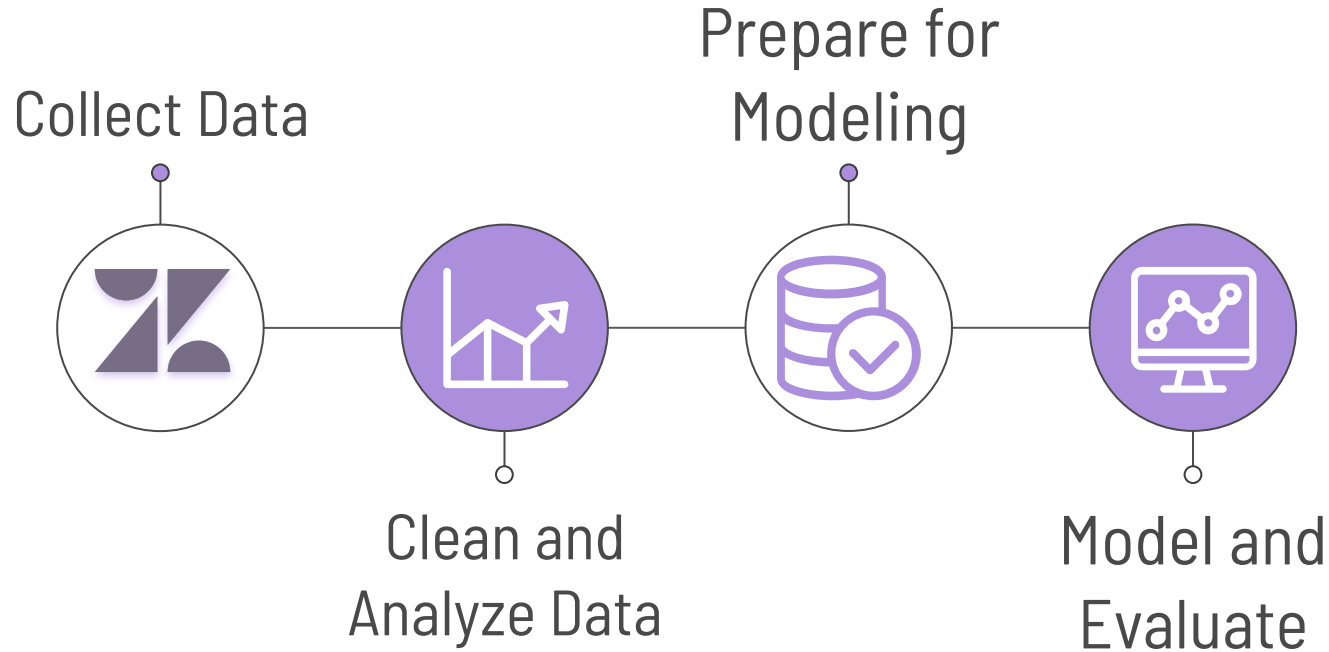
# Business sees...



$$\text{Score \%} = \frac{\text{Total Positive Ratings (60 days)}}{\text{Total of all Ratings (60 days)}} \times 100$$

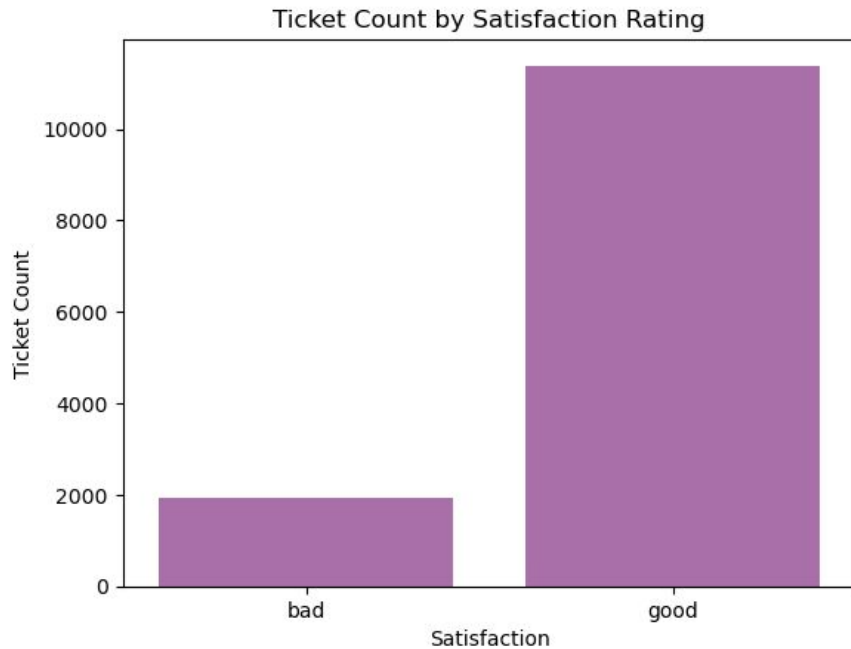


# Project Approach



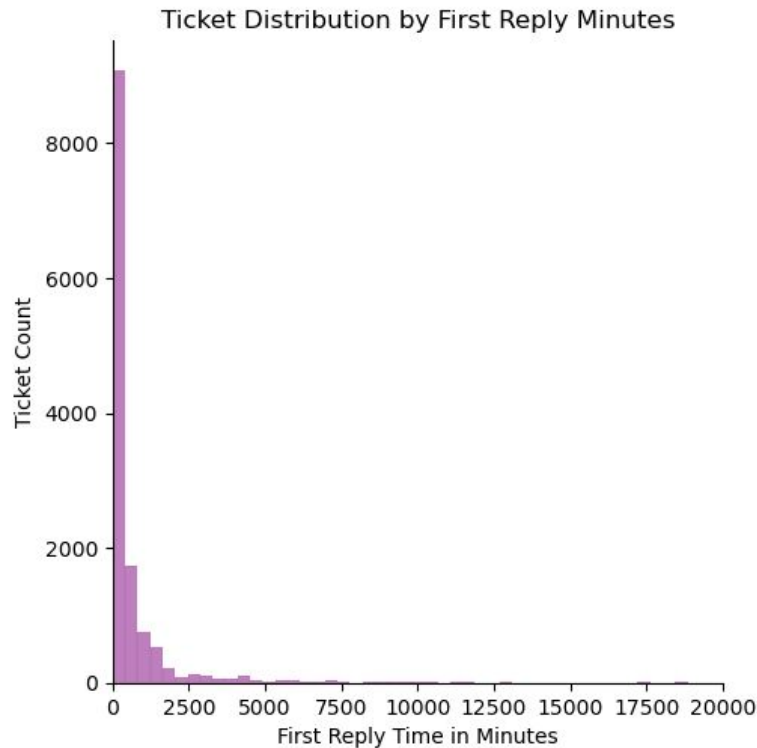
# Data Insights

**85%**  
Tickets rated "Good"



# Data Insights

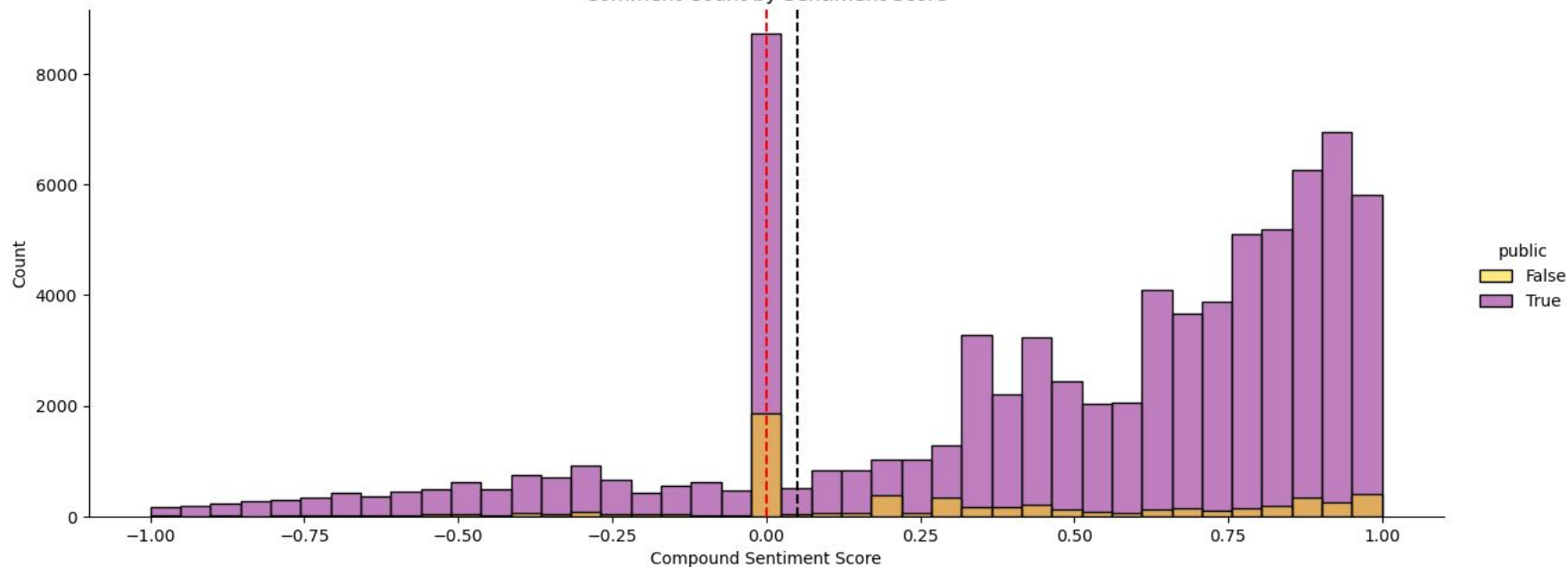
Features not  
normally distributed





# Data Insights

Comment Count by Sentiment Score



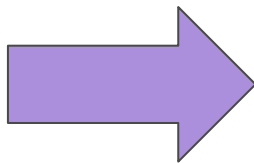
# Modeling

A decorative network diagram is positioned in the background. It features several purple circular nodes, some of which are double-ringed. These nodes are connected by thin black lines. The diagram is partially obscured by a large, light purple, irregular blob that serves as a backdrop for the word 'Modeling'. Ellipses (...) are used to indicate that the network continues beyond the visible nodes.

# Initial Model

**85.46%**

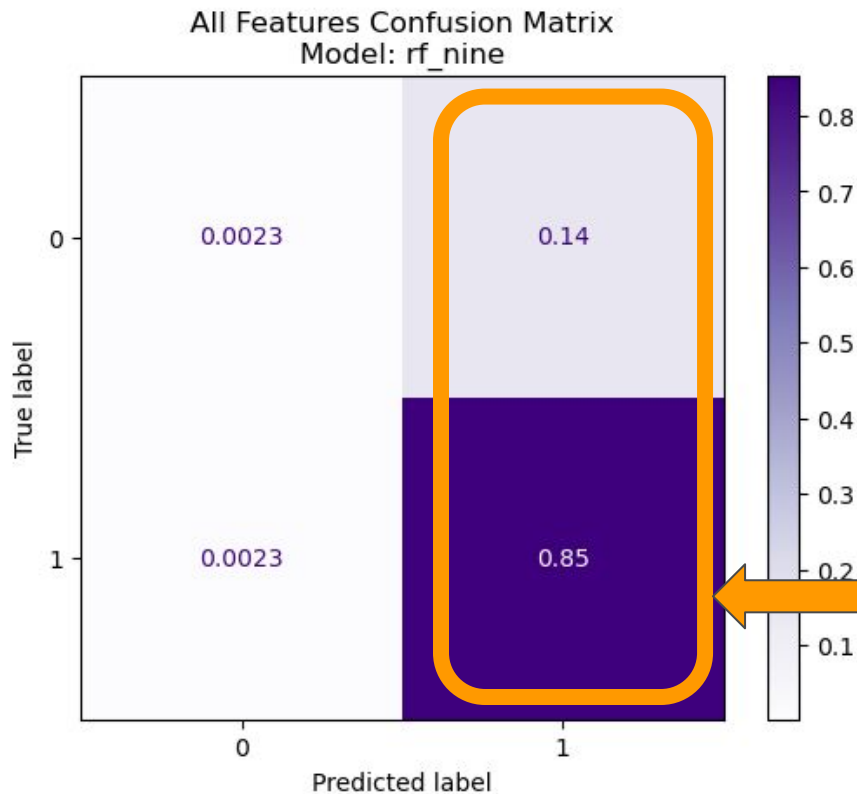
Baseline



**85.59 %**

Model Accuracy

# Initial Model



**99%**  
Majority Class  
Predictions

**Class Imbalance?**

**Wrong Features?**

**Data Issue?**





## **Class Imbalance**

Ad-hoc manual  
sampling

SMOTE

## **Features**

Feature  
Engineering

Feature  
Selection



# Algorithmic Feature Selection

01

...

Tree-based feature selection

02

...

Univariate feature selection

03

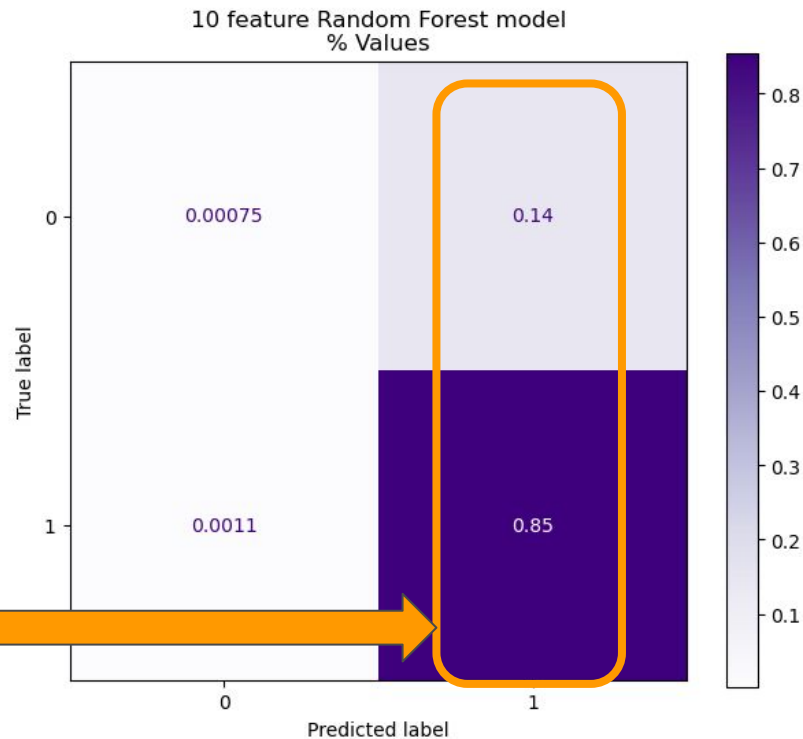
...

Recursive Feature Elimination



# Results – Performance

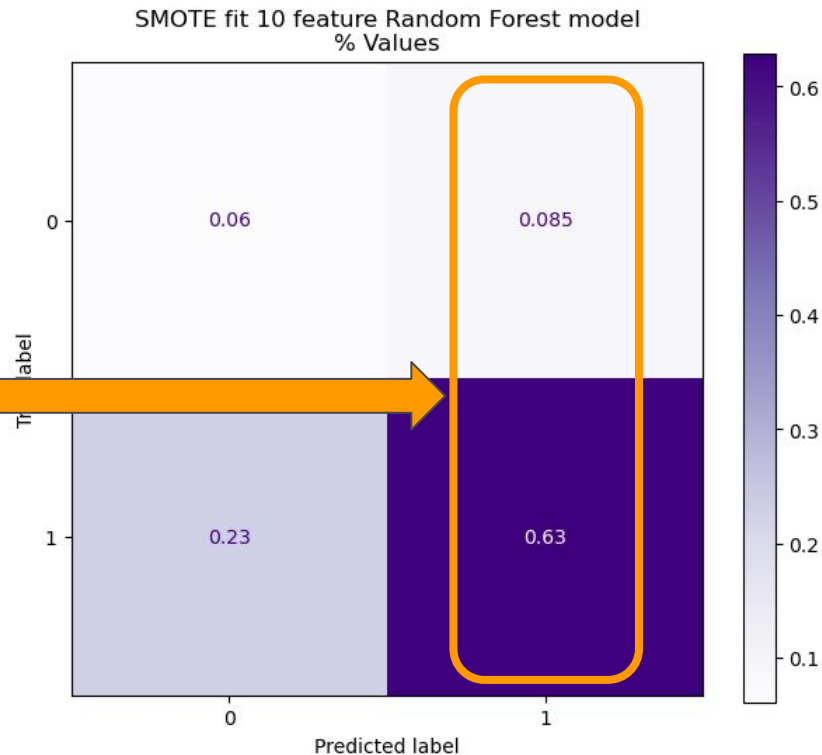
**99%**  
Majority Class  
Predictions





# Results - Performance

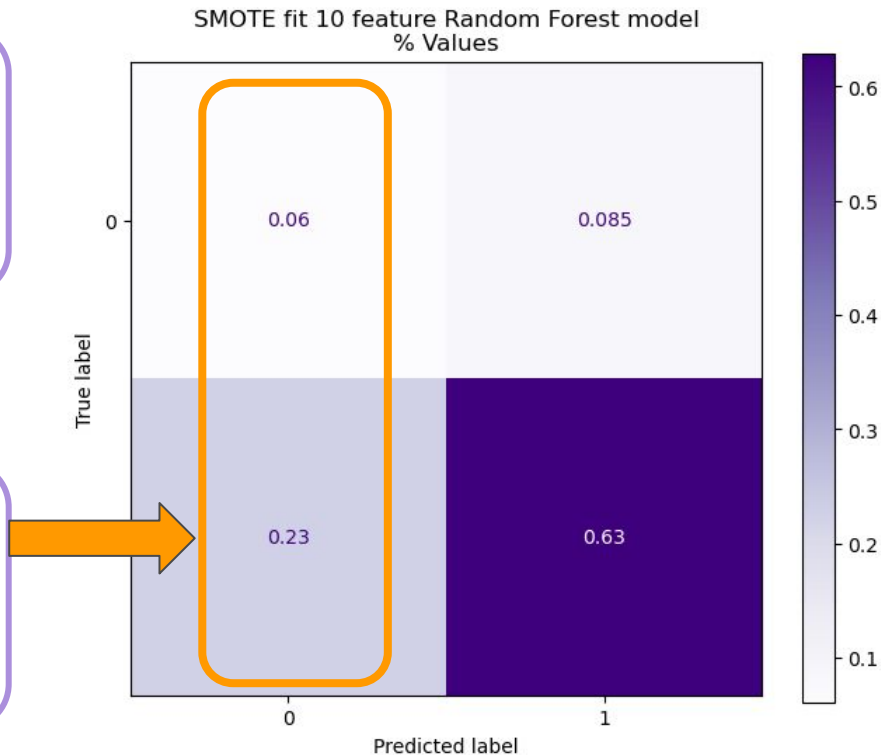
**~71%**  
Majority Class  
Predictions



# Results - Performance

~71%  
Majority Class  
Predictions

~23%  
False Negatives



# Results – Impact Features



01

Ticket Reply and  
Comment Activity

02

Ticket Sentiment

03

Resolution Time

# Next Steps

**Increase  
Confidence**

**Sentiment  
Algorithms**

**Investigate  
Data**



# Thank you!

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