



Churn in Telecom

Elimelech Berlin - June 2023



Summary

Based on modeling to predict customer churn, identified strategies to retain their patronage:

- Offer discounts on high minutes usage plans
- Ensure customers' issues are resolved within 3 customer service calls
- Offer discounted international service



Overview

- Business Understanding
- Data
- Modeling Results
- Recommendations
- Limitations/Further Investigation
- Thank You



Business Understanding

- Identify customers who are likely to churn
- Devise & implement targeted policies to retain such customers

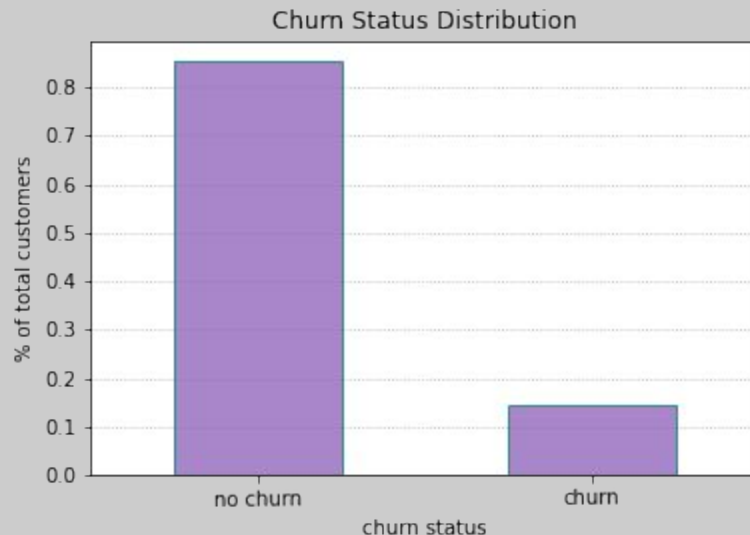
Data

Dataset (from Kaggle) describes
3k+ US telecom service accounts.

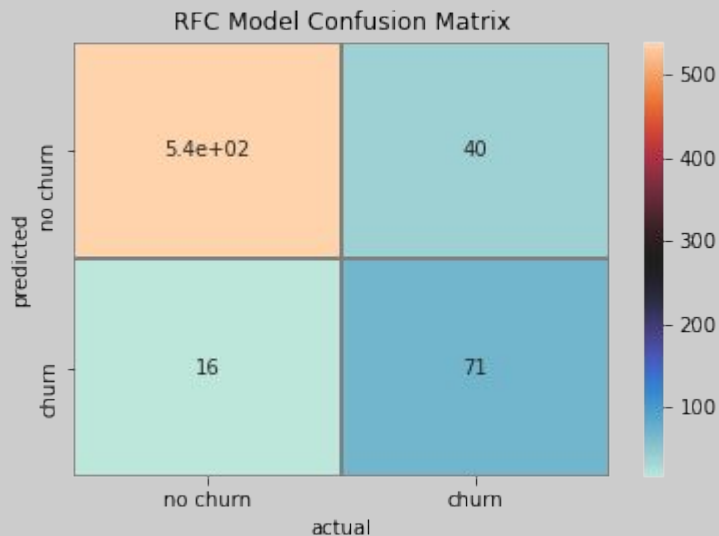
Includes a variety of details, including:

- Phone number
- International plan status
- # of customer service calls
- Total usage type minutes (day/night)

Target Variable Distribution:



Modeling Results



Confusion Matrix Interpretation

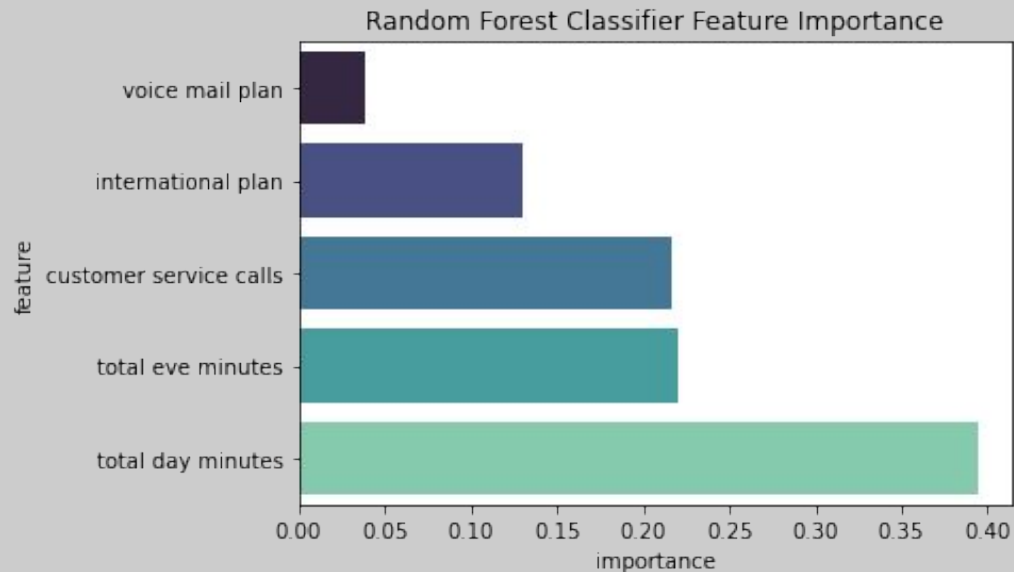
- Of 87 predicted to churn, 16 were *false positives*
 - *False positives* will cause a waste of resources on those who aren't at risk of terminating service
- Of 111 who churned, 40 were *false negatives*
 - *False negatives* will exclude some customers from efforts to retain their business

To overcome the shortcomings of focusing exclusively on either metric, model performance is assessed by *f1-score*, which is derived from both precision (false positive rate) & recall (false negative rate).
This model has an *f1-score* of .71.



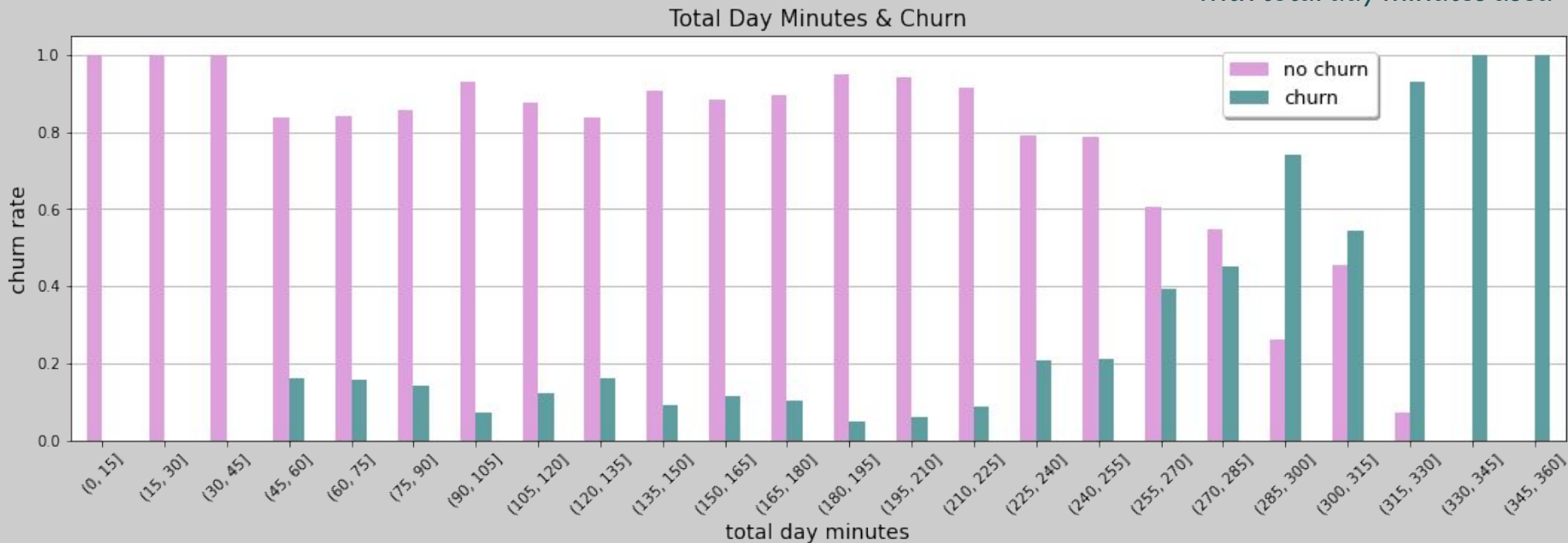
Modeling Results

The best-fit model yields
the following insights
about feature importance:



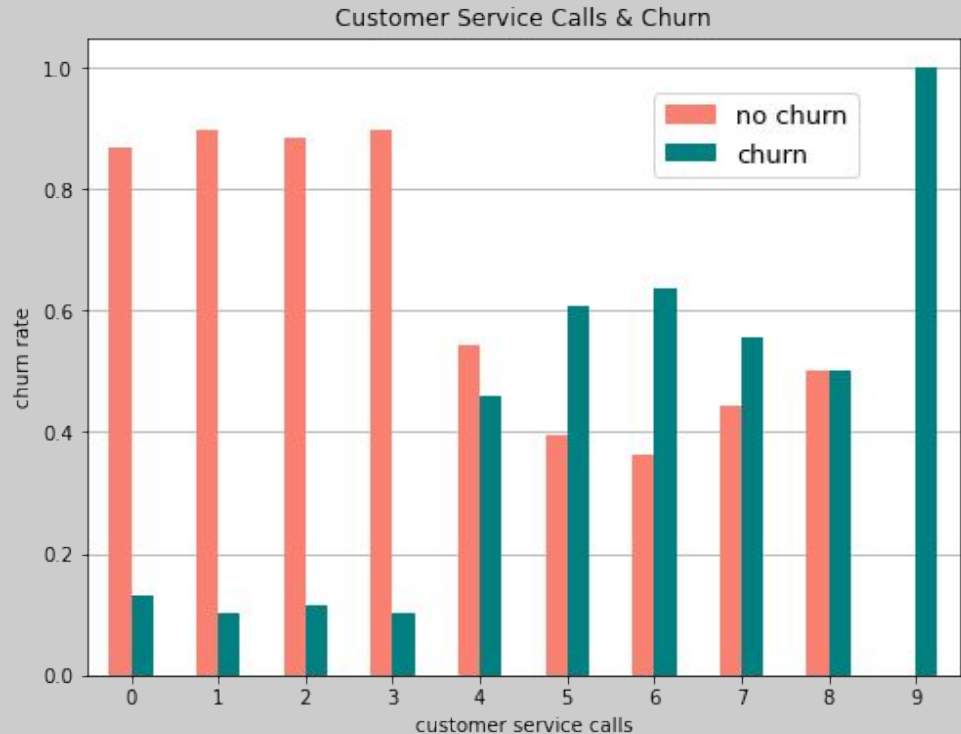
Total Day Minutes

*Churn rate increases
with total day minutes used*



Customer Service Calls

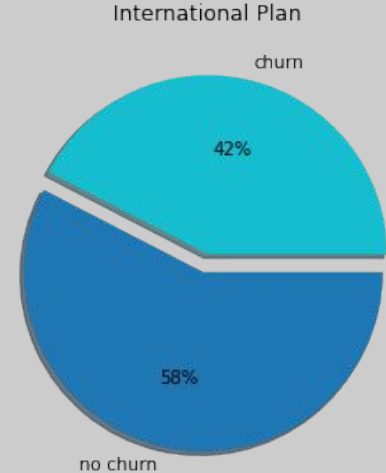
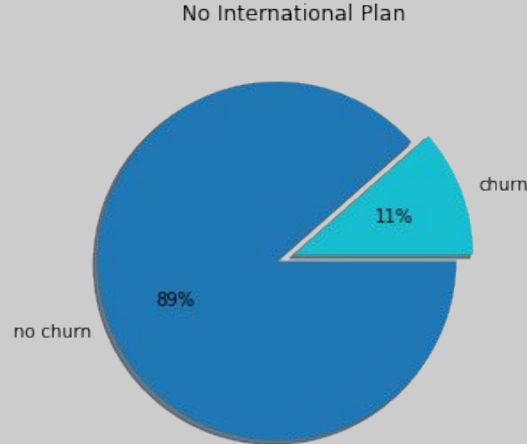
*Churn rate jumps
at 4 service calls*



International Plan

International Plan Churn Rate

Churn rate of customers with international plan is nearly 4x of those without





Recommendations

- Offer discounted high minutes usage plans
- Resolve customer issues within 3 service calls
- Offer discounted international service plans



Limitations/ Further Investigation

- Model's limited predictive ability (*further exploration of different models needed*)
- Consider other metrics to assess models' performance based on business context (*recall vs. precision vs. f1-score*)
- Determine underlying cause of patterns revealed by the model




Thank You!

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