



Predicting Churn Rate of Telecommunications Customers

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Outline

- Business Problem
- Data
- Methods
- How to Evaluate Modeling Results
- Predictive Modeling
- Evaluation of Final Model
- Conclusions and Further Recommendations
- List of Sources



Business Problem

- SyriaTel - reduce customer churn rate
- Identify patterns
- Propose solutions

USERS AT BEGINNING OF
PERIOD - USERS AT END OF
PERIOD

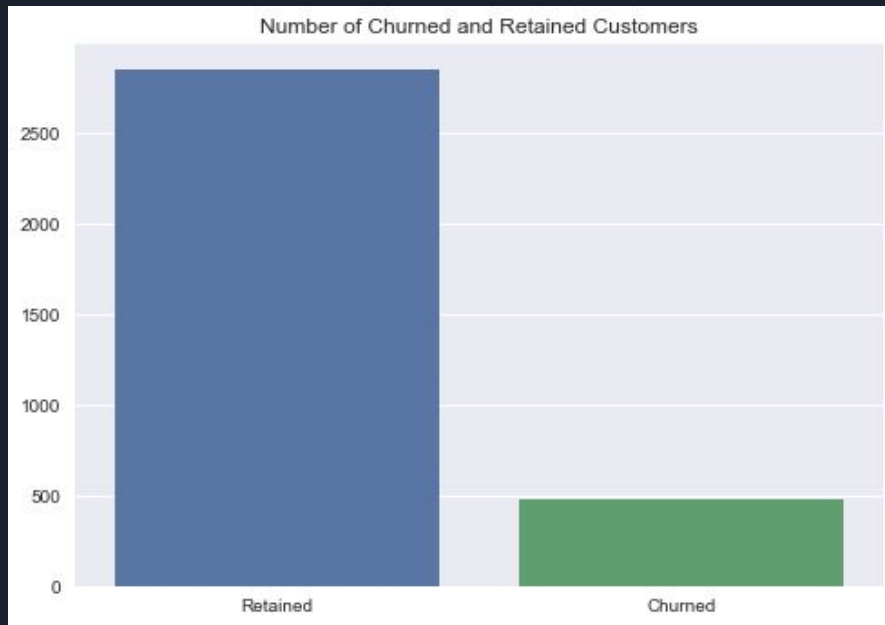
USERS AT BEGINNING OF
PERIOD

=

**CHURN
RATE**

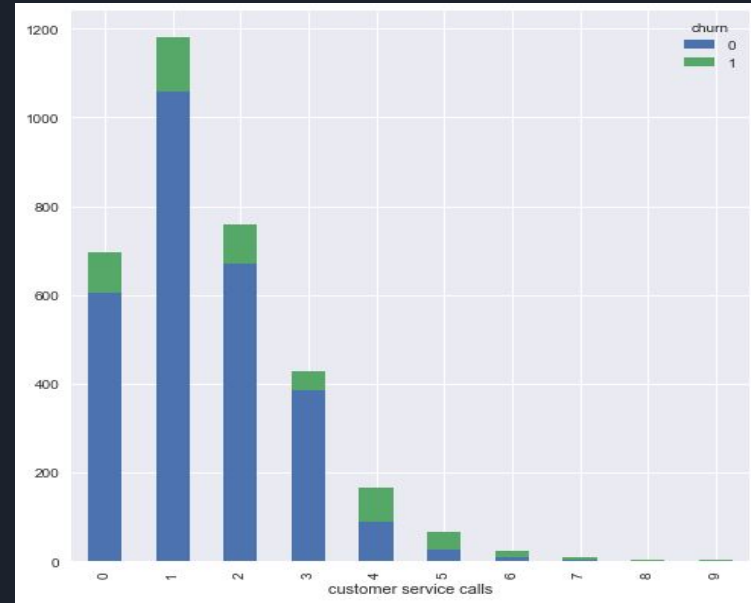
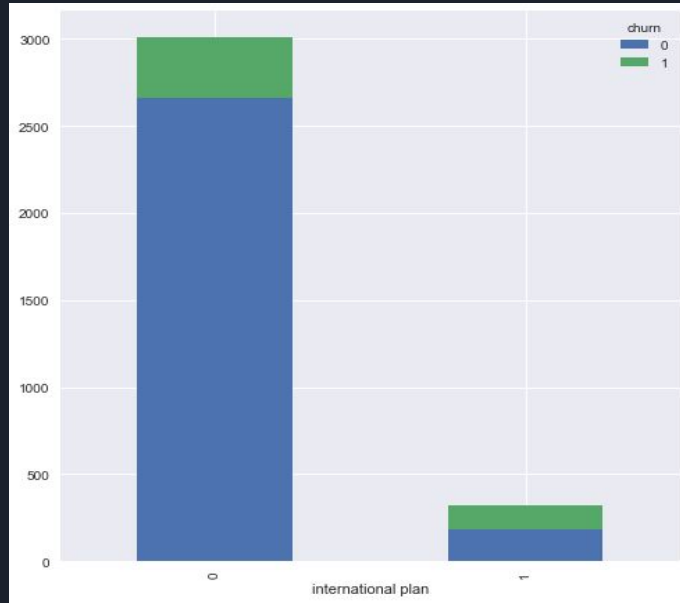
Data

- 3,333 customers
- Data from CrowdAnalytix
 - Anonymized
 - US company
- 21 different variables
 - # calls, plans, etc.



Methods

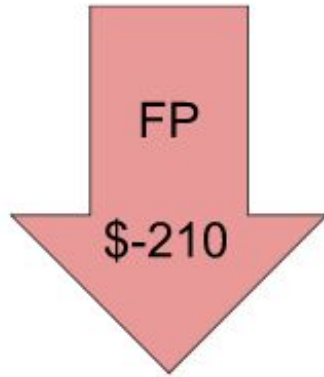
- Cleaning - prepare data
- Exploratory Data Analysis (EDA) - find trends



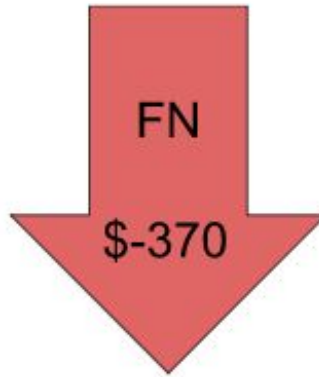
- Predictive Modelling - Machine Learning

How to Evaluate Model Results

- Retention strategy - discount rate 50%/6mos.
- Cost of False Positives, False Negatives, and True Positives



False Positive: Customer classified as churned but in reality did not.



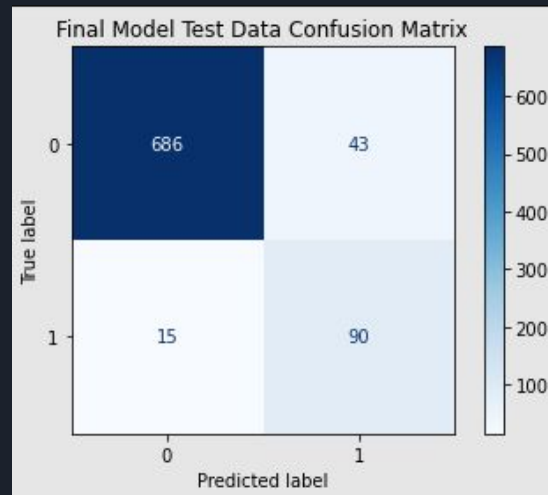
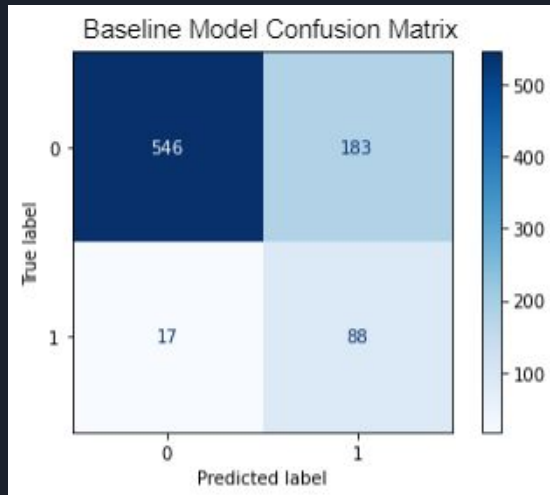
False Negative: Customer classified as retained but in reality churned. Especially costly because no attempt can be made to retain the customer



True Positive: Customer classified as churned and in reality did churn.

Predictive Modeling

- Baseline vs. Final Models
- Reduction in FN's and FP's





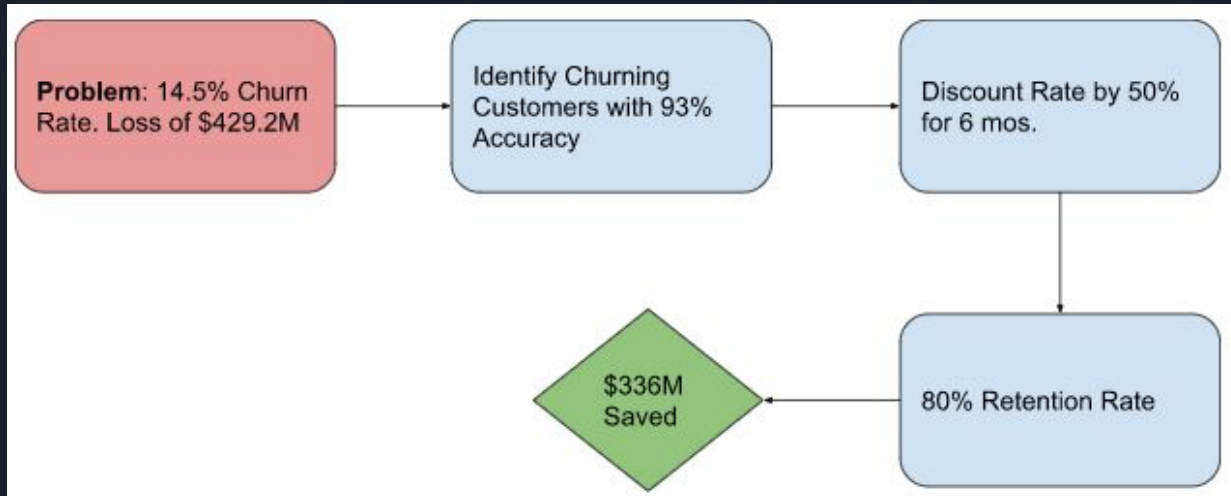
Evaluation of Final Model

- Most influential features - total charge, total calls
- Estimated \$336M saved
 - SyriaTel - 8M customers
 - No strategy = \$429.2M loss
- Cost breakdown



Conclusions and Further Recommendations

- Use retention strategy
- Improve customer service, international plan
- Evaluate more data, use internal data





List of Sources

- Average cost to acquire a new customer in the US telecommunications industry (\$300):
 - <https://www.forbes.com/sites/forbestechcouncil/2020/10/30/acquiring-subscribers-is-only-half-the-battle/https://www.entrepreneur.com/article/225415>
- Average single user phone bill cost (\$70/mo):
 - <https://www.usmobile.com/blog/cut-cell-phone-bill/>