



Predicting Churn Rate of Telecommunications Customers

Presented by Sam Oliver



Outline

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Business Problem

- SyriaTel aims to reduce customer churn rate to minimize losses resulting from customers terminating services.
- Identify patterns in churned customers to predict which customers will churn in future periods.
- Propose strategies and recommendations to reduce churn rate.

$$\frac{\text{USERS AT BEGINNING OF PERIOD} - \text{USERS AT END OF PERIOD}}{\text{USERS AT BEGINNING OF PERIOD}} = \text{CHURN RATE}$$



Data

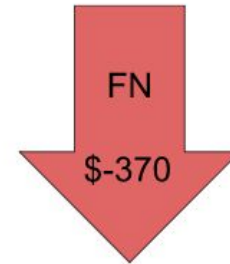
- 3,333 total data points
- Data from CrowdAnalytix (data science competition platform like Kaggle)
 - Anonymized
 - US company
- 21 different variables
 - which US state the customer is located, how many calls the customer has made, whether or not the customer has an international plan, etc.
- 85.5% retained & 14.5% churned

Methods

- Exploratory Data Analysis (EDA)
 - Find trends- main findings:
 - churn rate for customers with an international plan is 42.41% (11.5% without plan)
 - 4+ calls to customer service- likely to churn
- Predictive Modelling
 - Classify customers as “Churn” or “Retain”
 - Evaluate classification:
 - Retention Strategy
 - Discounted rate of 50% / 6mos.
 - Score
 - Penalize FN's more than FP's



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



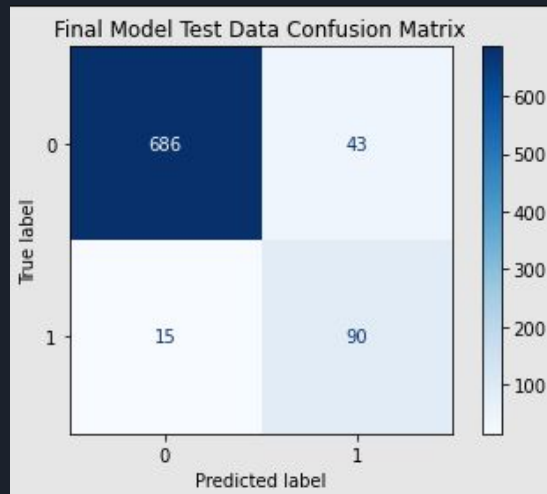
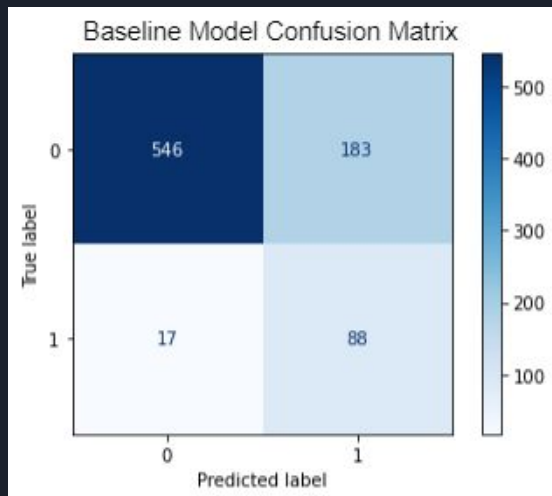
False Negative: Customer classified as retained but in reality churned. Especially costly because no attempt can be made to retain the customer



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

Predictive Modeling

- Baseline vs. Final Models



Evaluation of Final Model

- Most influential features:
 - Total charge (day, eve, night calls)
 - Total international call charge
 - Total calls
- Estimated \$336M saved
 - SyriaTel customers total around 8M.
 - No strategy represents loss of \$429.2M
 - Total loss from discount strategy = \$93.3M





Conclusions and Further Recommendations

Main conclusions:

- Predictive modeling and retention strategies will decrease losses realized from customer churn rate.
- Offer more comprehensive plans
 - International call plans should decrease charges to the customer for calling internationally.
- Prioritize solving customer service problems quickly if the customer calls multiple times.

Further Recommendations:

- Utilize more data to create more robust predictions.
- Create models that account for unique qualities in the Syrian telecommunication industry
- Continually update predictions with data from SyriaTel.



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/>