SYRIA TEL CUSTOMER CHURN PREDICTION

KYUNG HWAN

WILLIAM KIM

OUTLINE

- **1. Overview** – *Syria Telecom*

- **2. Business Understanding** - Churn

- **3. Methods** – *Type Errors*

- **4. Patterns** – Indicators of Churn

- **5. Modeling** – *Predictive Models*

- **6. Conclusions** - *Summary*

- **7. Future Work** - *Recommendations*

OVERVIEW

- The main focus of this project is to build a model to predict whether a customer will churn or soon stop doing business with Syria Tel, a telecommunications company.

- The process outline initiates by identifying the top attributes of churn and then creating a final machine learning model to predict whether or not a customer will soon churn.

- Several machine learning models were created and their performances were compared to decide on a final predictive model that the stakeholder can use on their current database.

BUSINESS UNDERSTANDING

- Syria Tel is interested in reducing how much money is lost because of customers who don't stick around very long. The question to answer is: are there any predictable patterns here?

- Customer churn is a major problem and one of the most important concerns for large companies. Customer churn not only directly effects company revenues but also poorly reflects on customer satisfaction

- Therefore, finding factors that increase customer churn is important to take necessary actions to reduce this churn.

- The main contribution of this project is to develop a churn prediction model which assists telecom operators to predict customers who are most likely subject to churn.

METHODS

	Prediction	
	Positive	**Negative**
Actual **Positive**	TP	FN
Actual **Negative**	FP	TN

- The nature of this problem is framed by the fact that losing current customers is less expensive than gaining new customers.

- Incorrectly classifying a false negative would pose a higher threat than a false positive because a false negative would mean that the reality of a customer canceling would have been overlooked.

- The occurrence of the false-negative occurring is referred to as a type two error. In order to rank the classifiers on how well they minimized false negatives, measurement of recall has been utilized.

PATTERNS
INDICATORS OF CHURN

- Based on the given dataset, several features were investigated to predict patterns of churn

- The features most related to churn are
  - **Total Charges - $** charged to customers
  - **Number of Customer Service Calls**
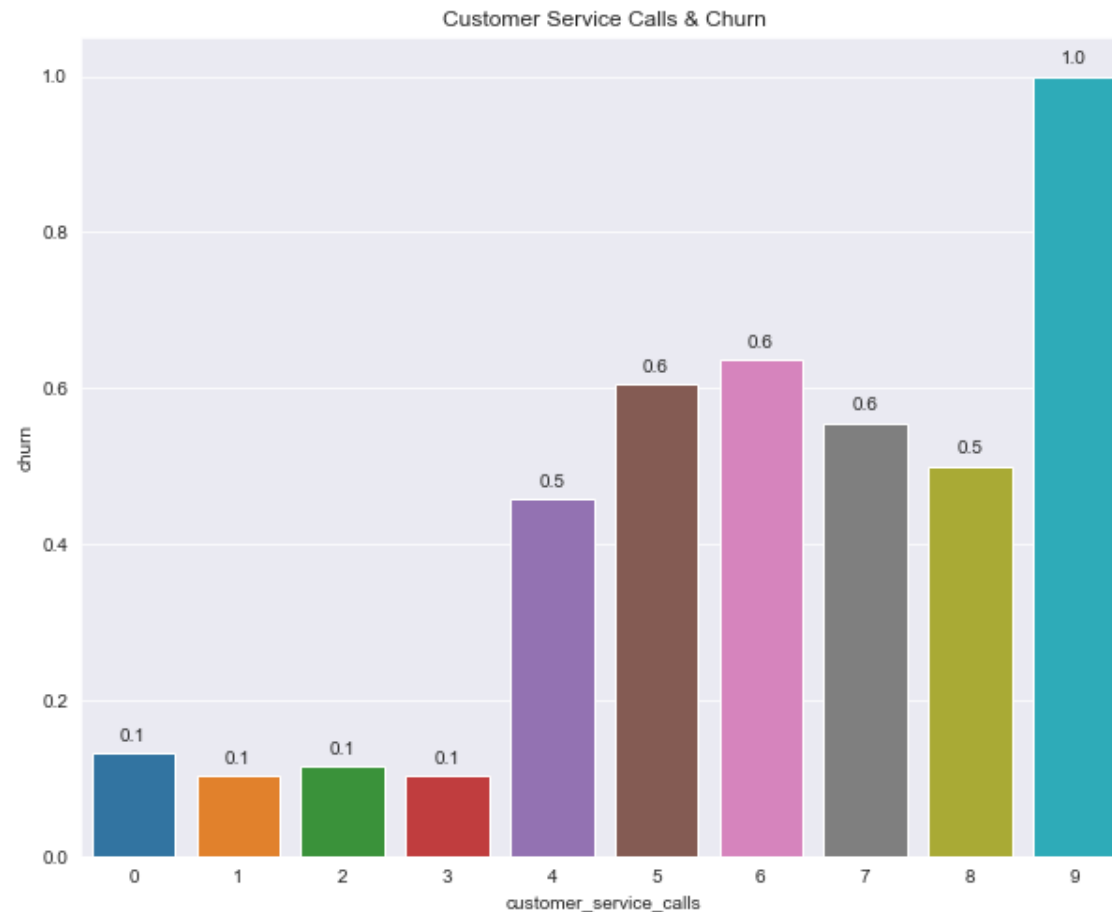 - **International Plan** – whether a customer has an international call plan or not

TOTAL
$ CHARGES
DAY/ EVENING/ NIGHT

* ABOUT 67% OF CUSTOMERS
CHURN IF THEIR BILL IS OVER $70
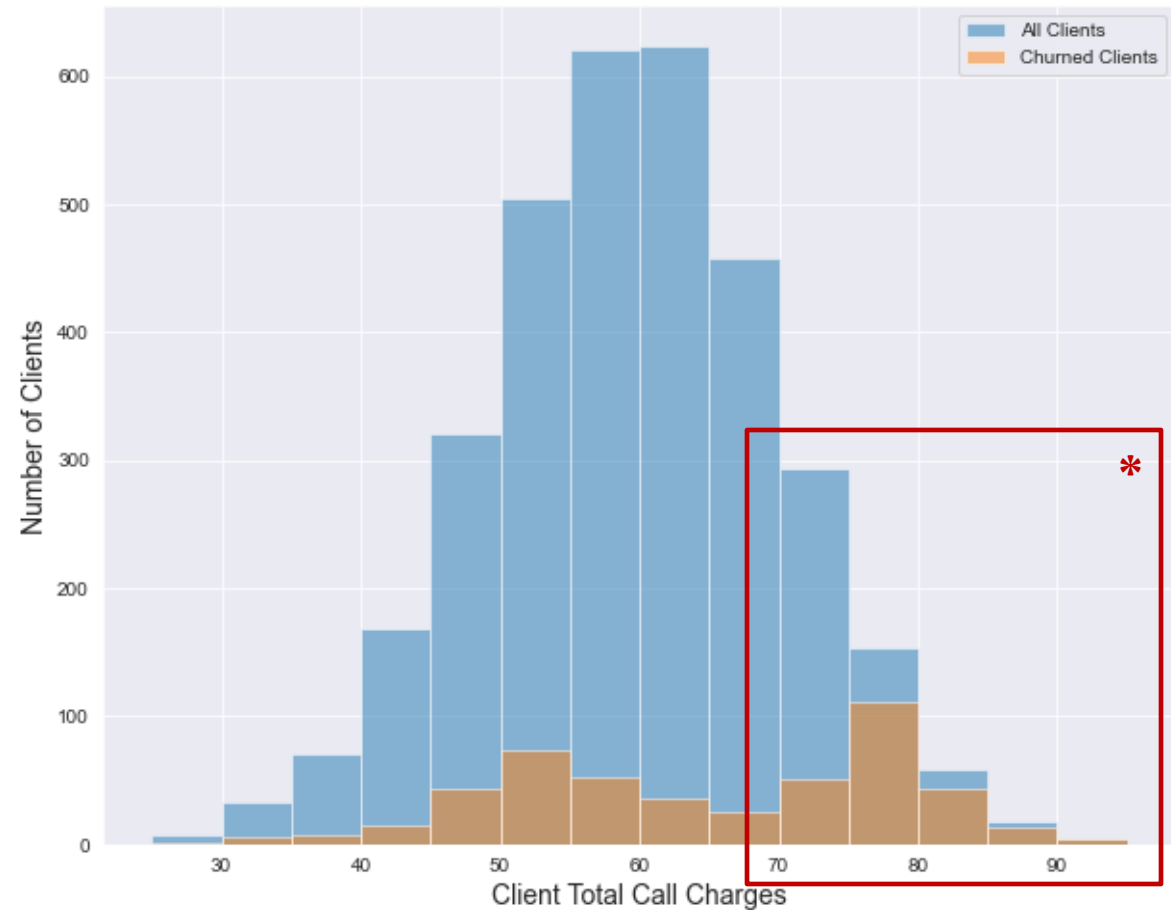
CUSTOMER SERVICE CALLS

ABOUT A 4X INCREASE IN CUSTOMER CHURN AFTER 3 CUSTOMER SERVICE CALLS

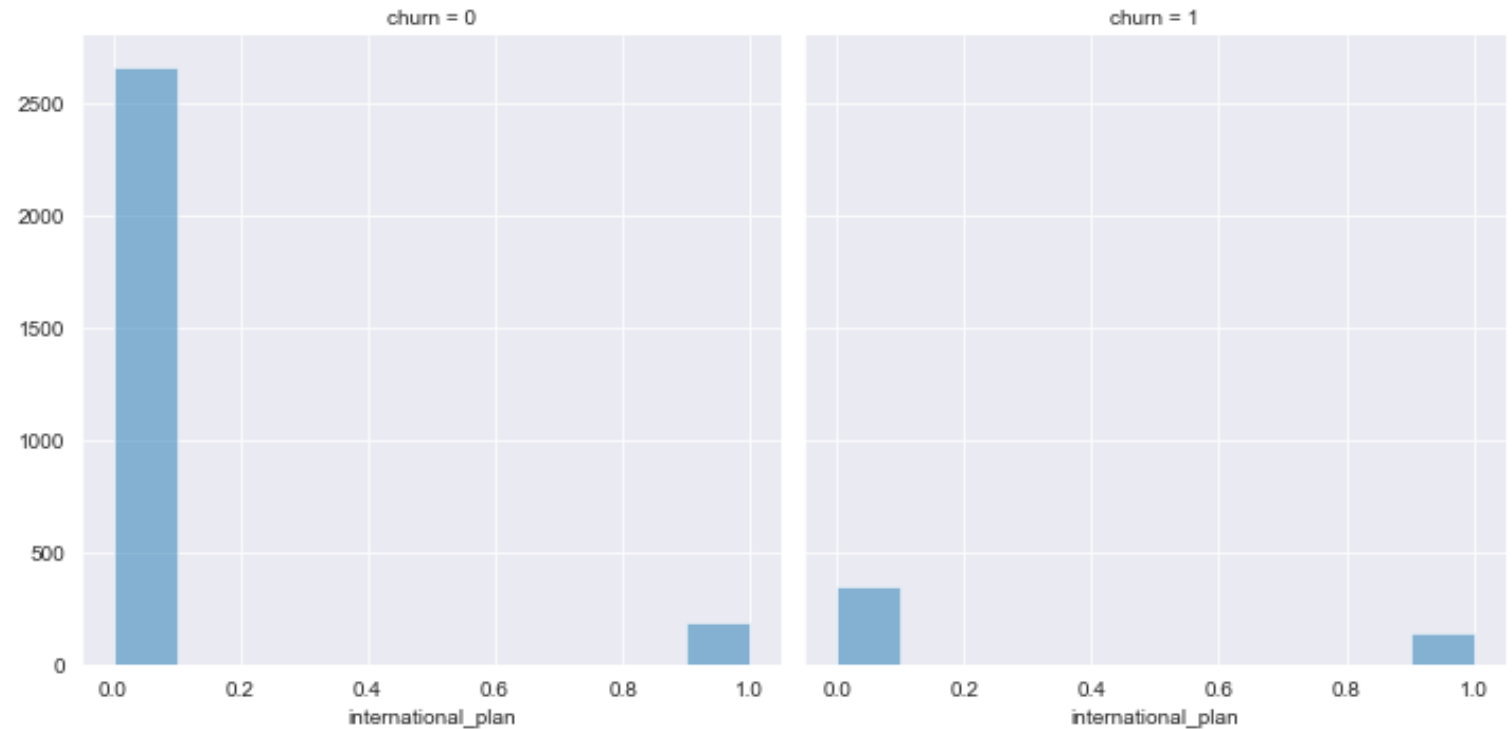Customer Service Calls & Churn

INTERNATIONAL PLAN

COST PER MINUTE

Day Cost/Min: $0.17
Night Cost/Min: $0.05
Eve Cost/Min: $0.09
Intl Cost/Min: $0.27 (Plan)
Intl Cost/Min: $027 (No Plan)

HIGHER % OF CHURN WITH INTERNATIONAL PLAN CUSOTMERS

MODELING

- Several machine learning models were created and their performances were compared to decide on a final predictive model that the stakeholder can use on their current database.

- The model that performed the best was with Random Forest. The recall score was 95.32% meaning that out of all the customers we saw that actually had churn, our model was able to correctly identify 95.32% of them.

CONCLUSIONS

- The importance of this type of research in the telecom market is to help companies make more profit. It has become known that predicting churn is one of the most important sources of income to telecom companies. Hence, this research aimed to build a system that predicts the churn of customers in Syria Tel telecom company

- The final model had a recall score of 95.32%

- Total $ Charges, Number of Service Calls, and having an International plans were the top three indicators of churn

FUTURE WORK
RECOMMENDATIONS

- Customers who called customer service more than three times should be reviewed with more importance. Track metrics from customer service calls. Are clients calling about the same issues? Once we know why these clients are calling we can better alleviate their pain by addressing and correcting these issues.

- Re-evaluate pricing structure for day calls. Consider a tiered pricing structure past a certain dollar amount

- The international plan is not marketed effectively less than 10% of customers have the international plan and are paying the same rate as customers without the plan. The international plan has to be updated.
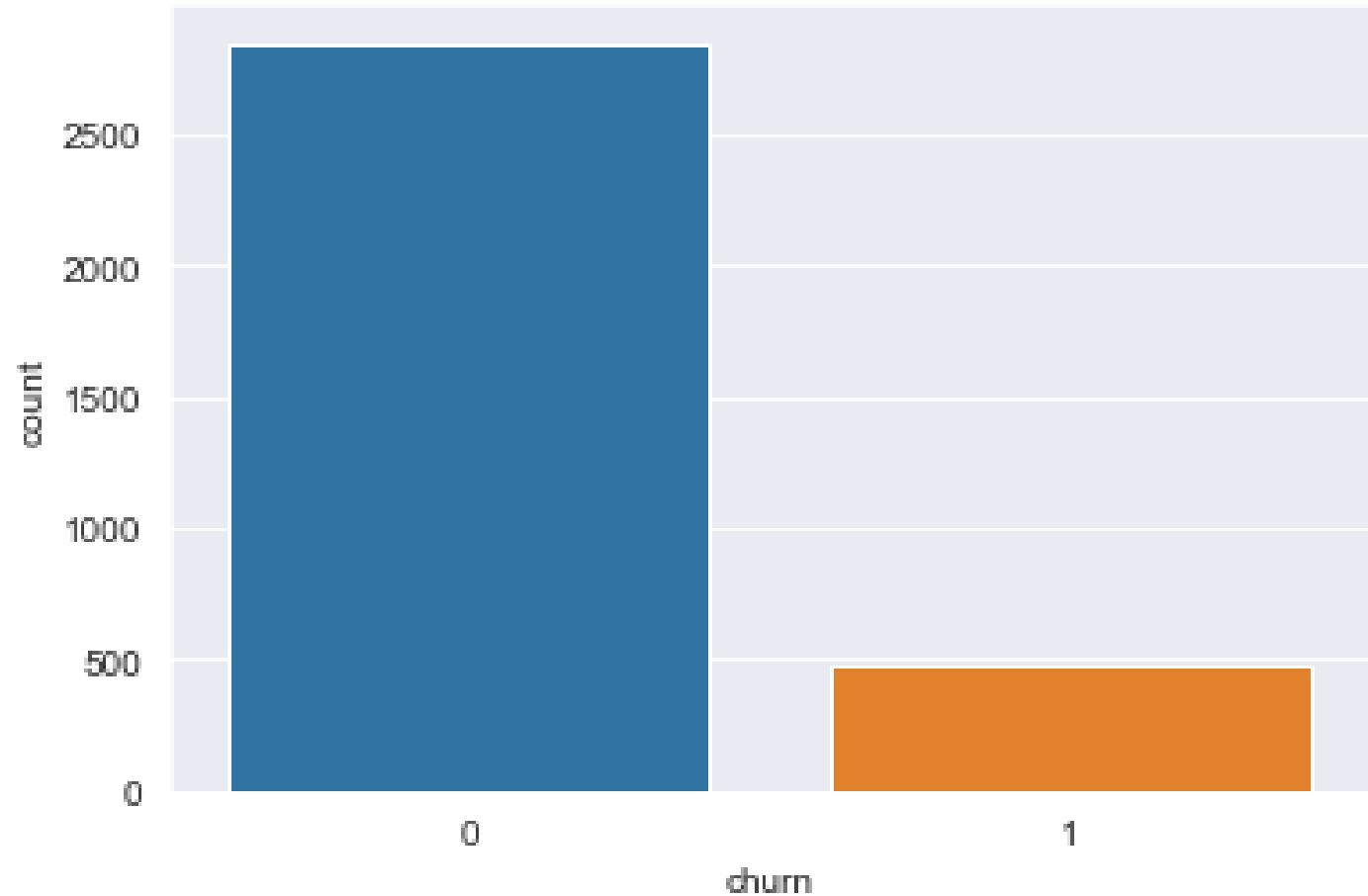
THANK YOU!

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WILLIAM KIM

APPENDIX CHURN

SYRIA TEL HAS A CHURN RATE OF 14.49%

APPENDIX STATES

HIGHEST CHURN
CA, NJ,TX

LOWEST CHURN
AK, HI

Churn By State