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The University of Texas at Austin
McCombs School of Business

UNDERSTANDING TELCO CHURN: A DATA DRIVEN ANALYSIS

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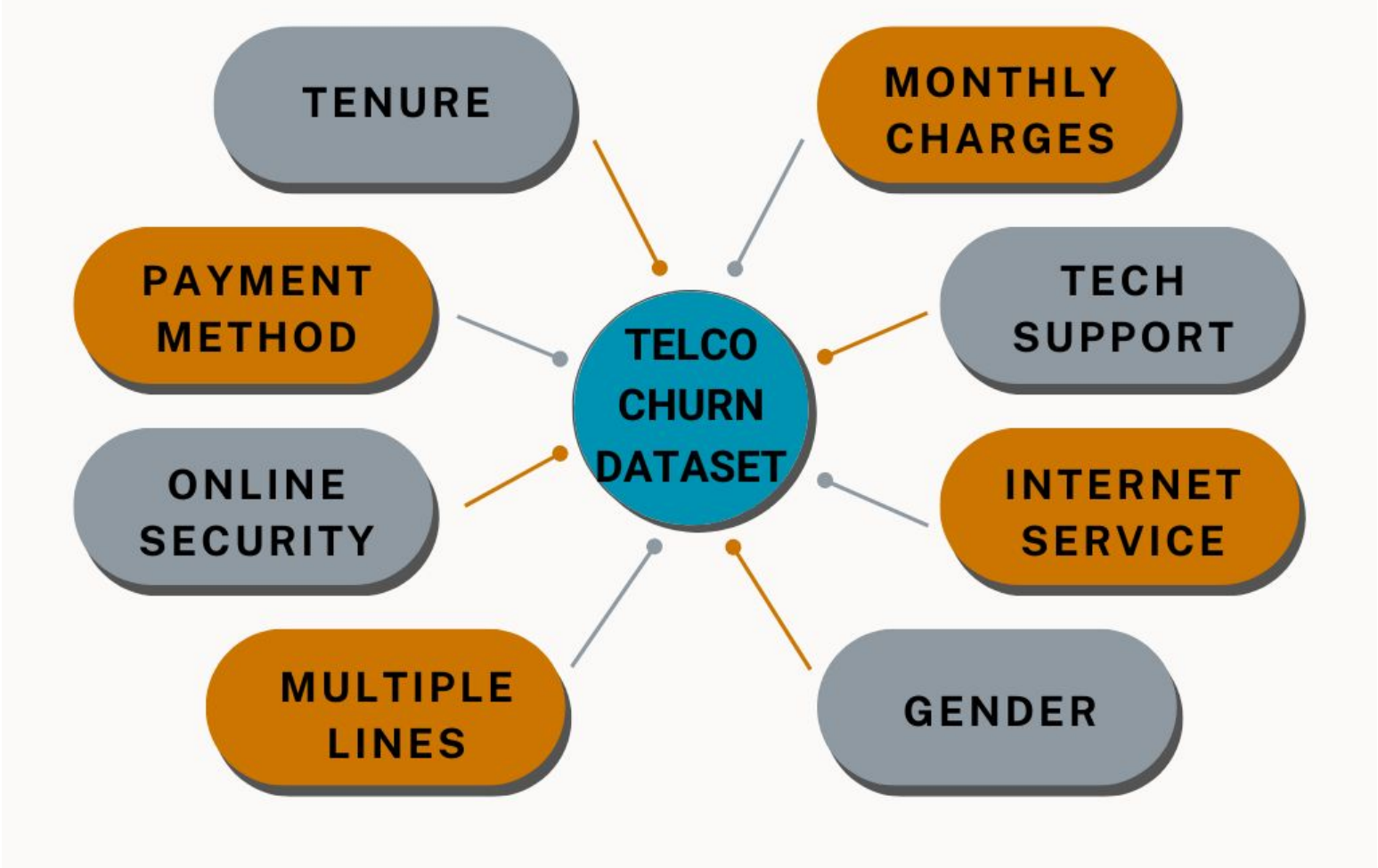
OBJECTIVE OF THE STUDY

What's causing this telcom company to lose customers?

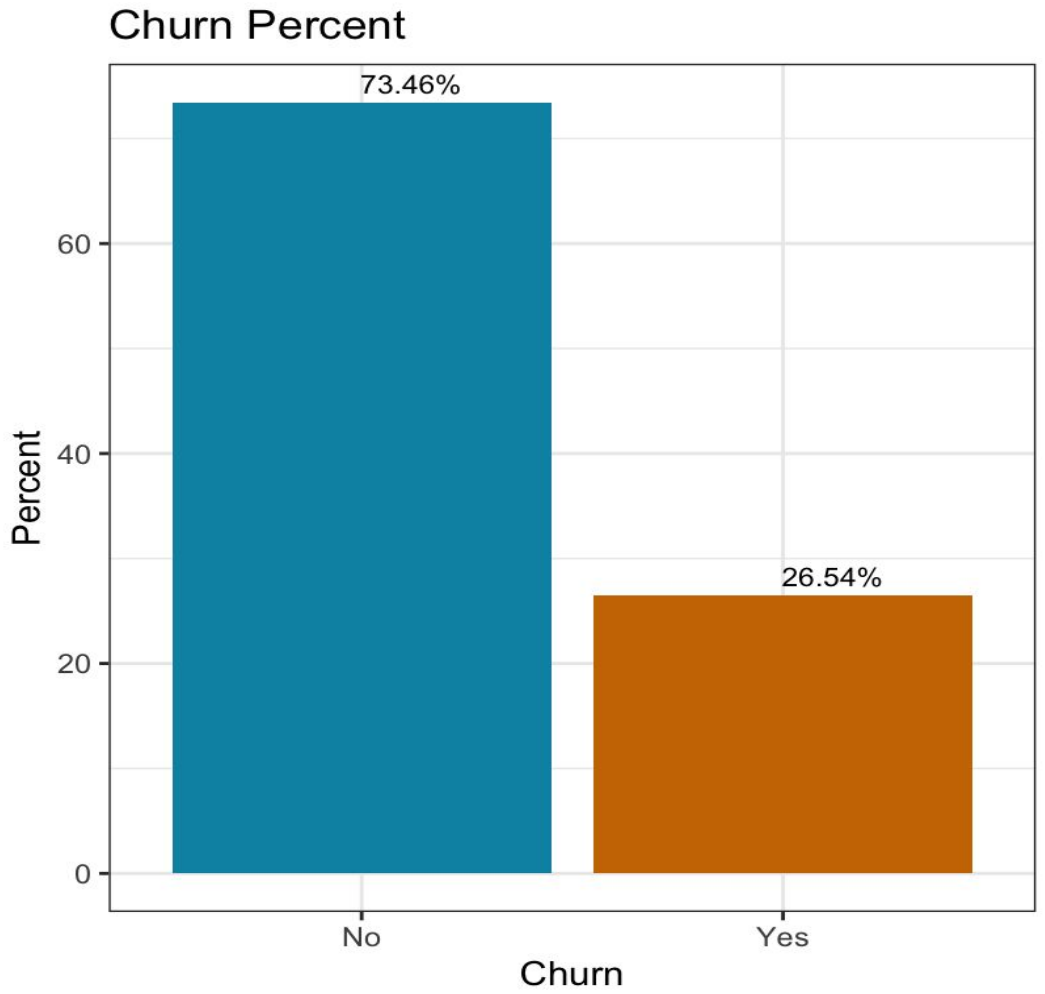
What can they do about it?

EXPLORATORY DATA ANALYSIS

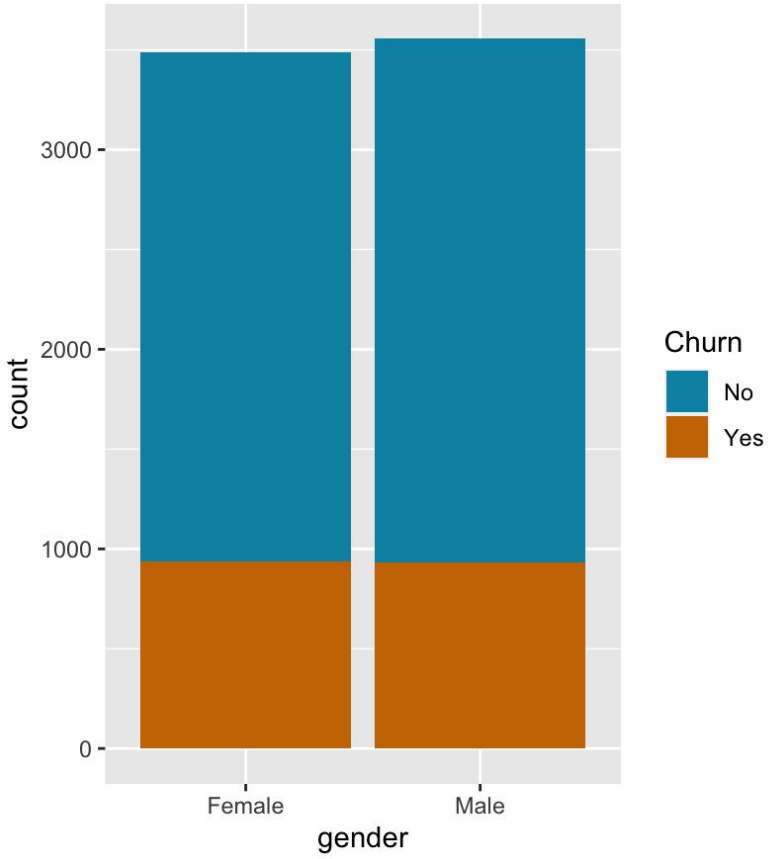
TELECOM CHURN DATASET

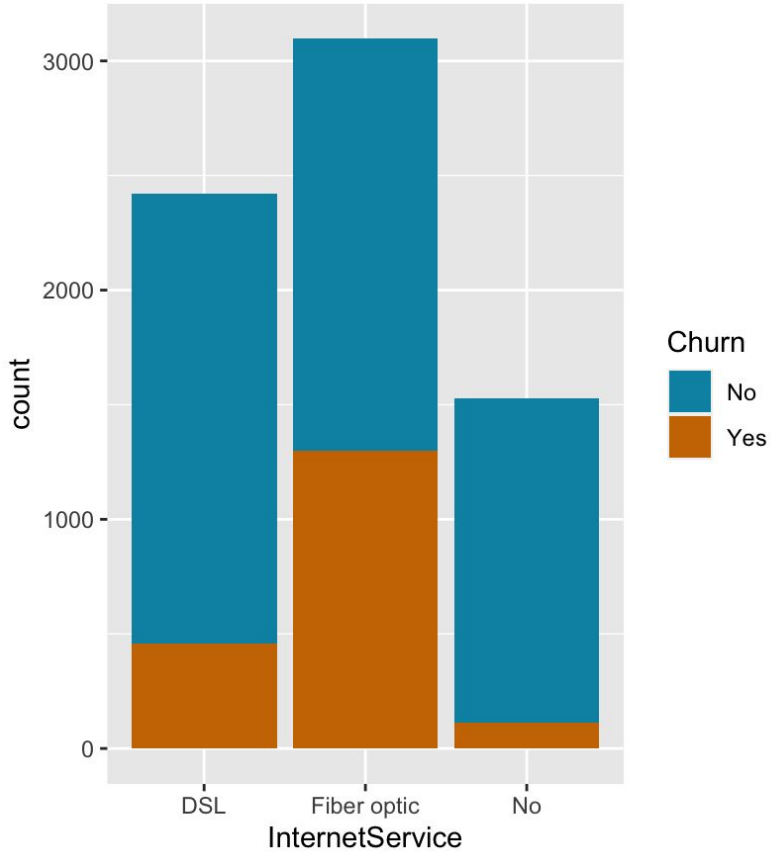


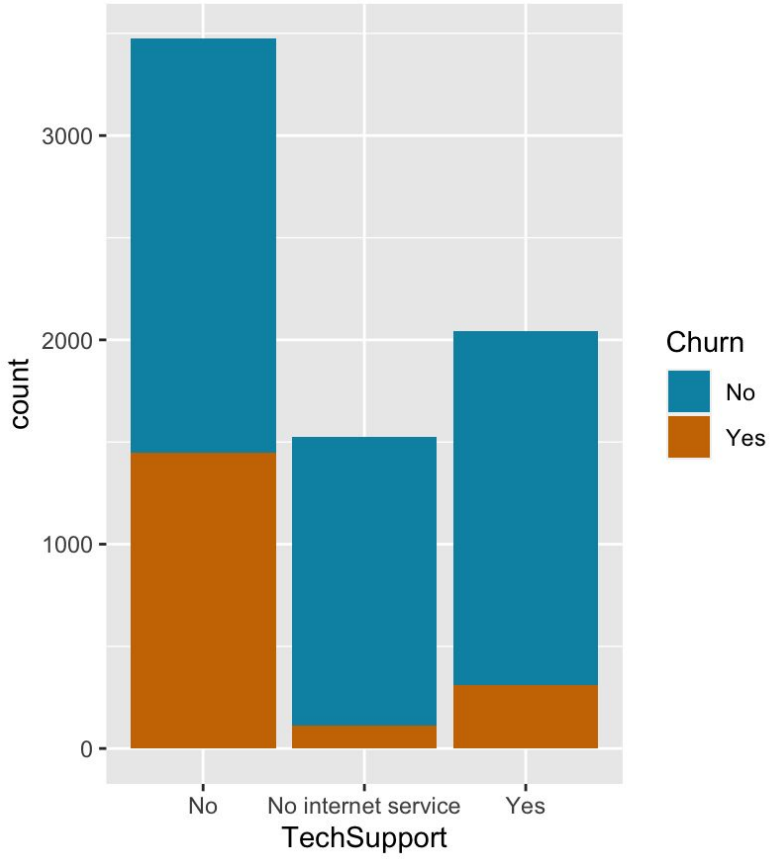
CHURN PERCENT



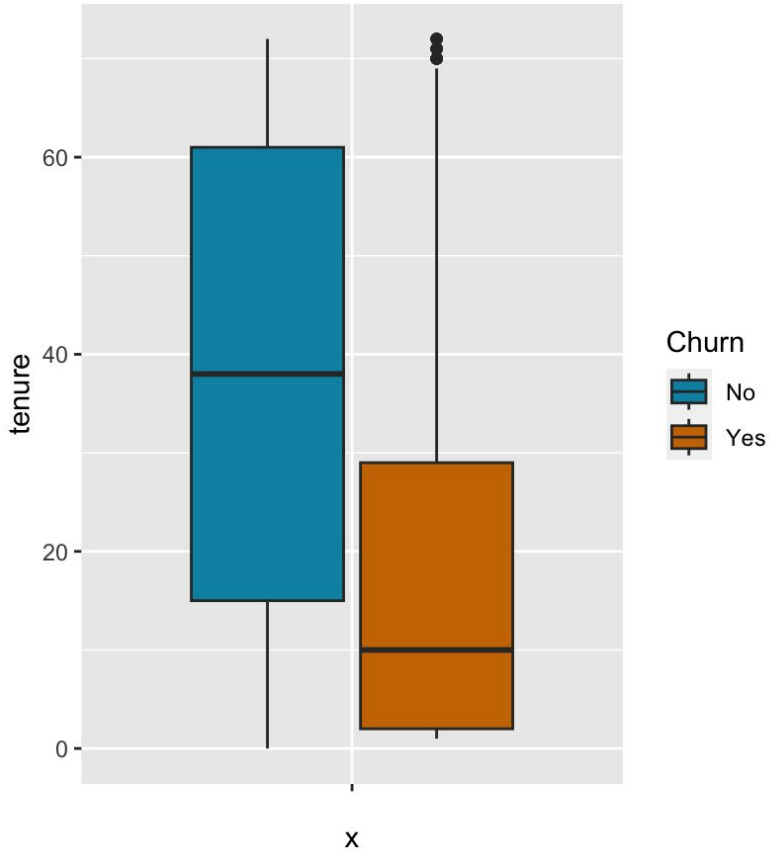
VARIABLES IN THE DATASET

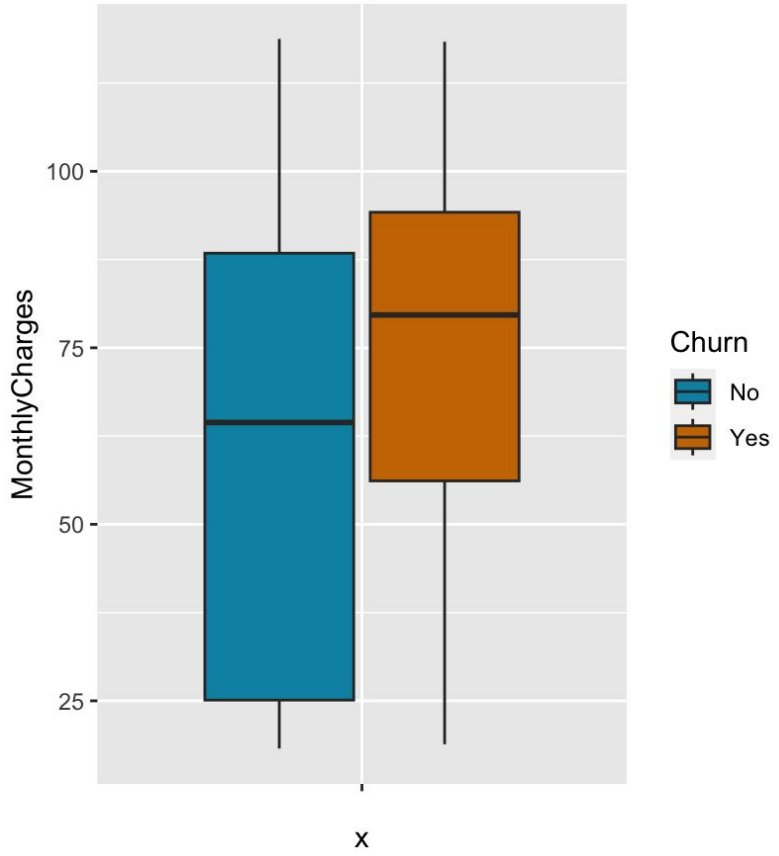


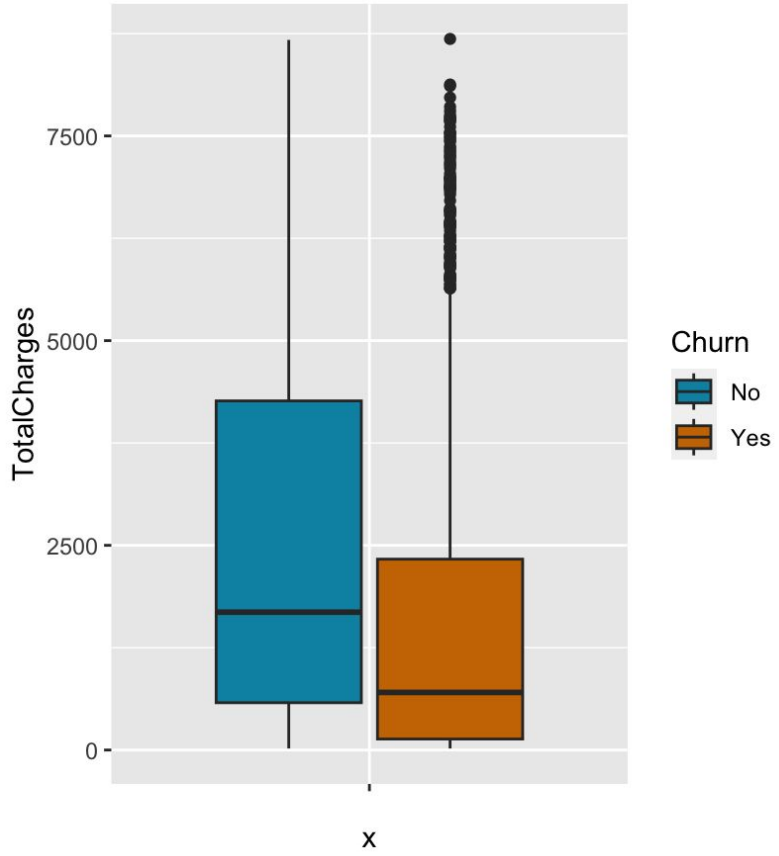




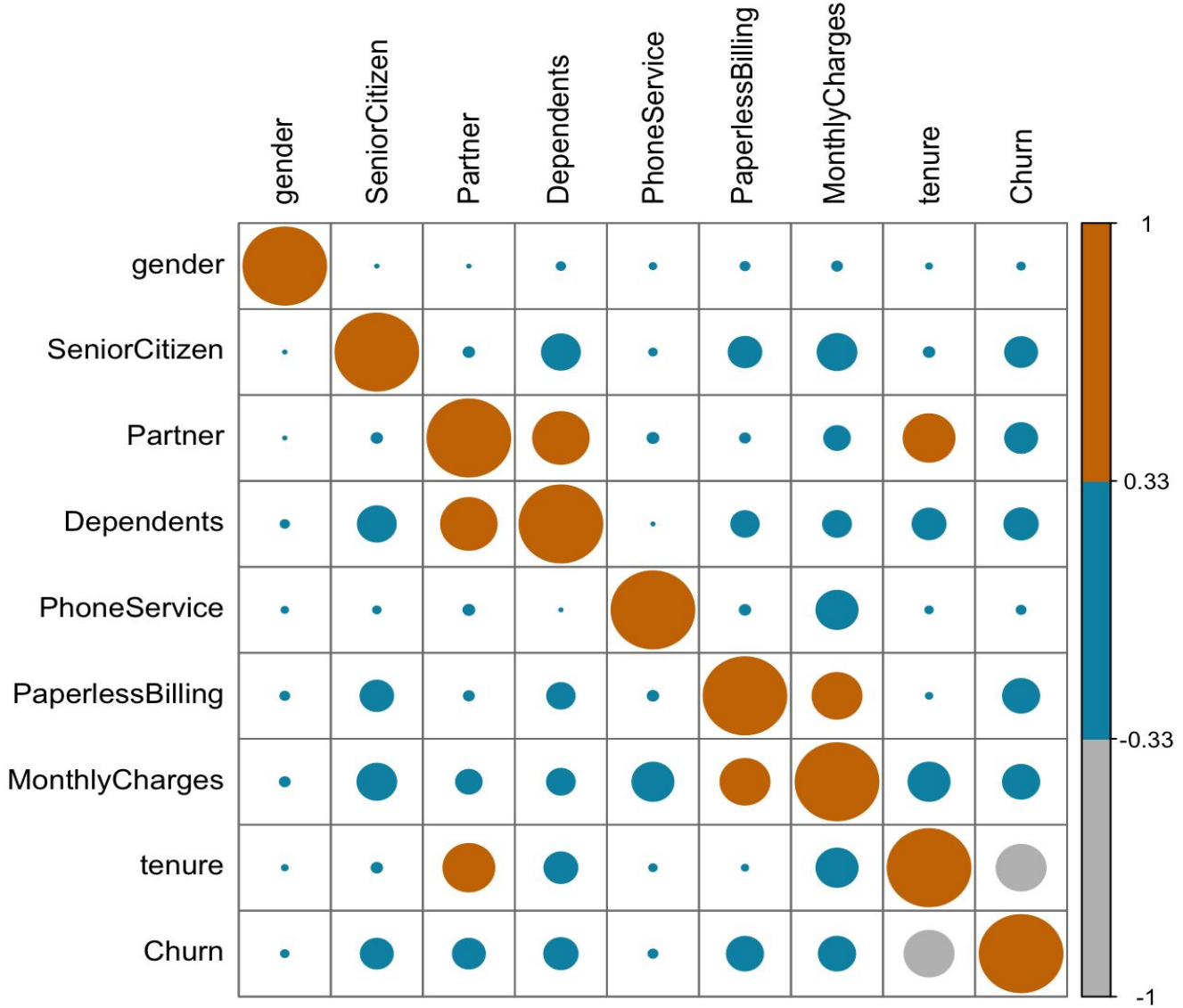
FEATURES - Ctnd



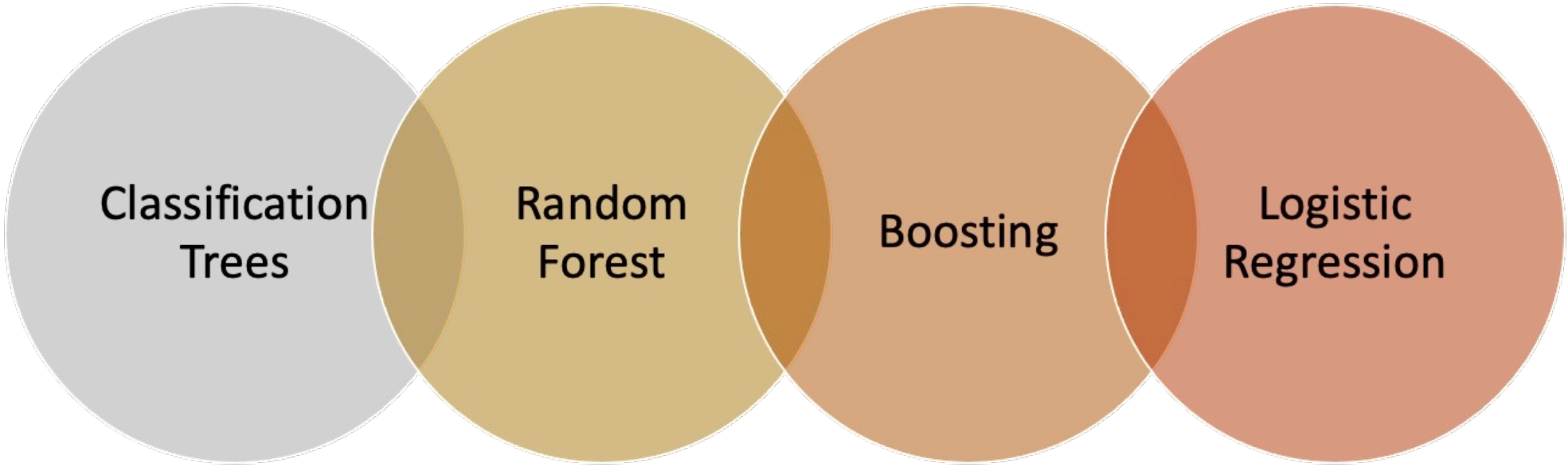




CORRELATION HEATMAP

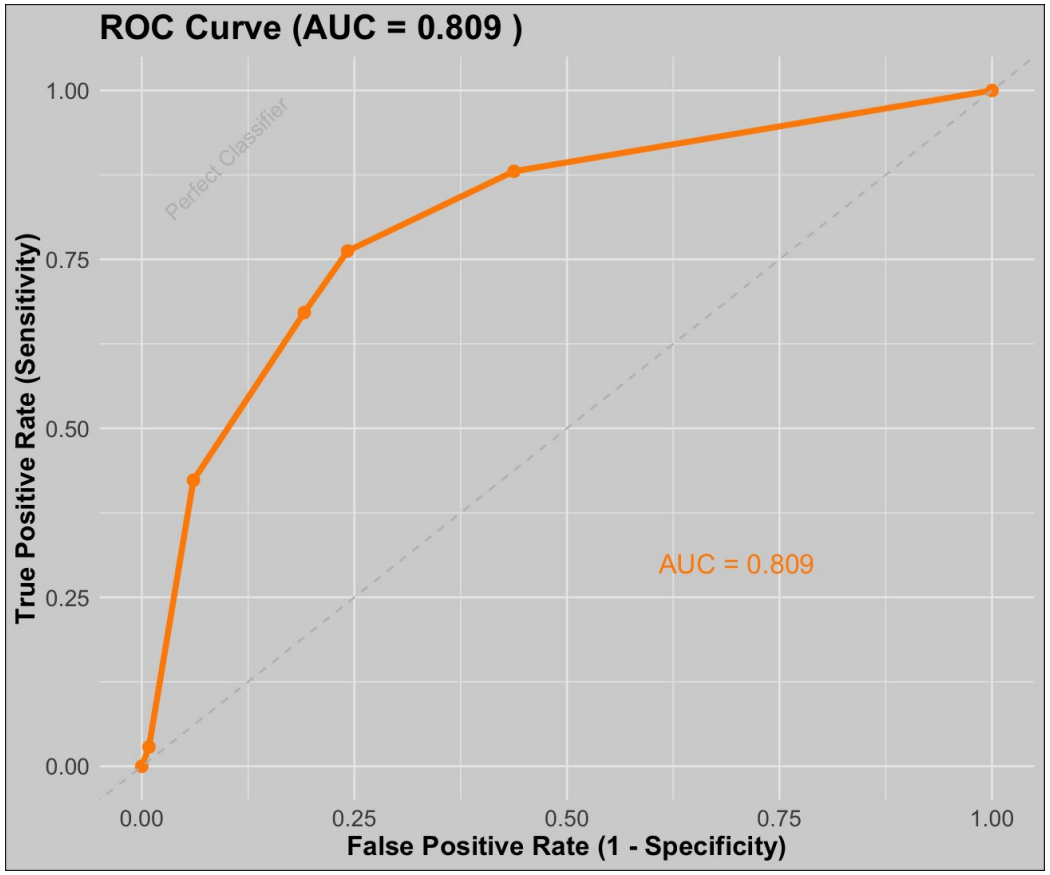


MODELS TESTED

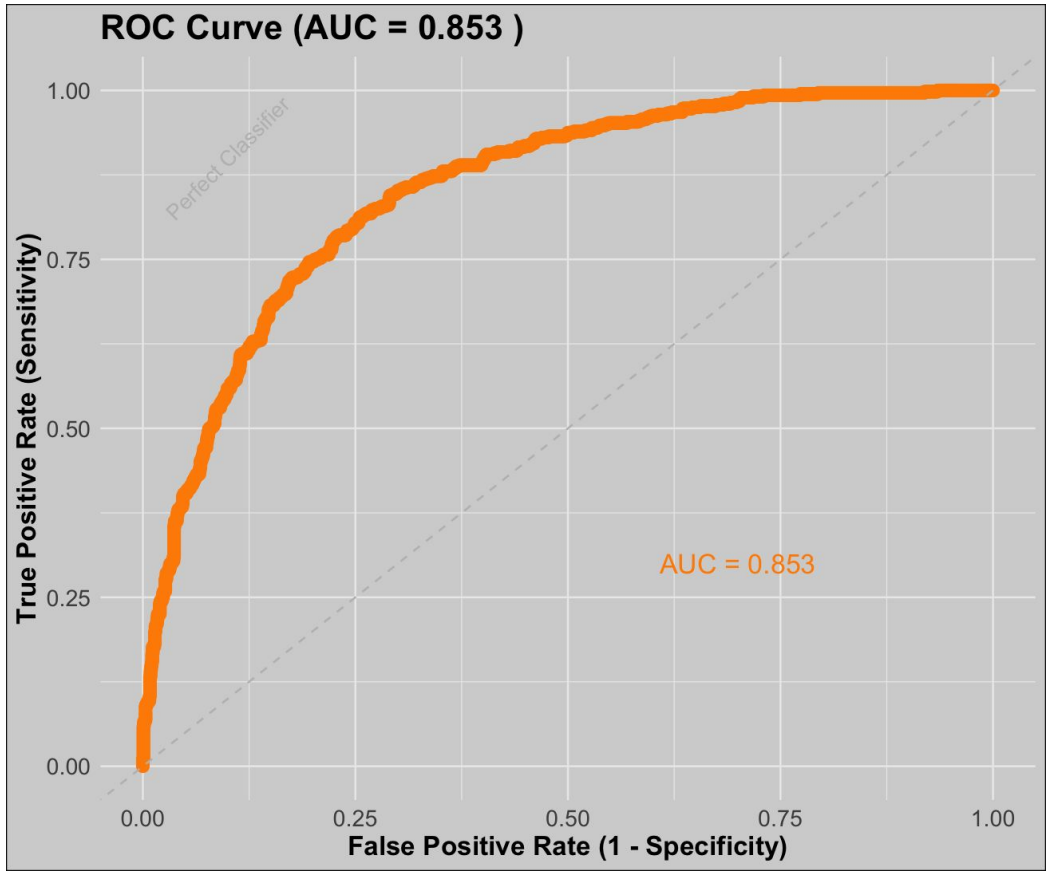


ROC/AUC CURVE

Classification Trees

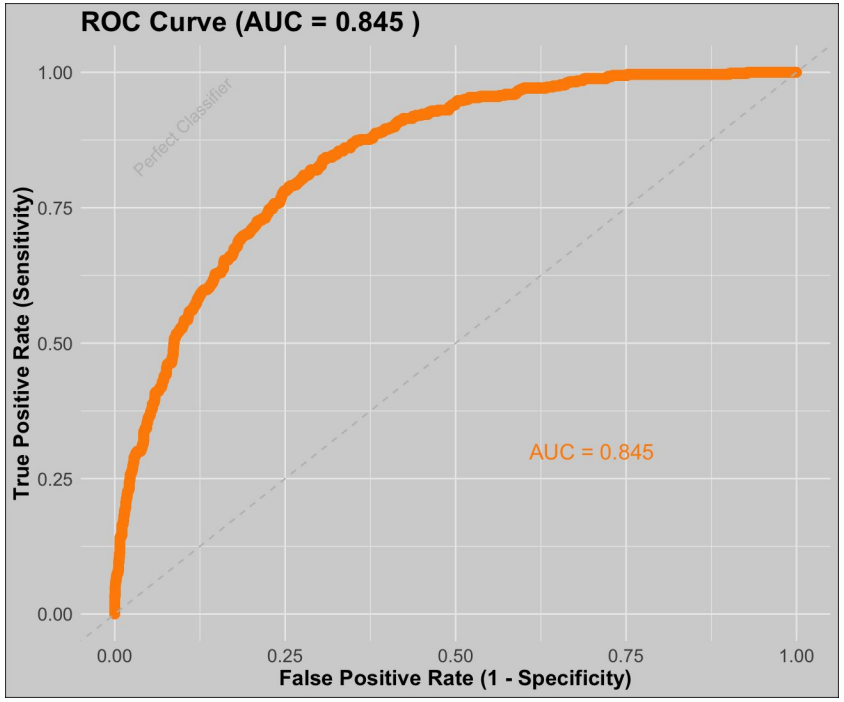


Random Forest

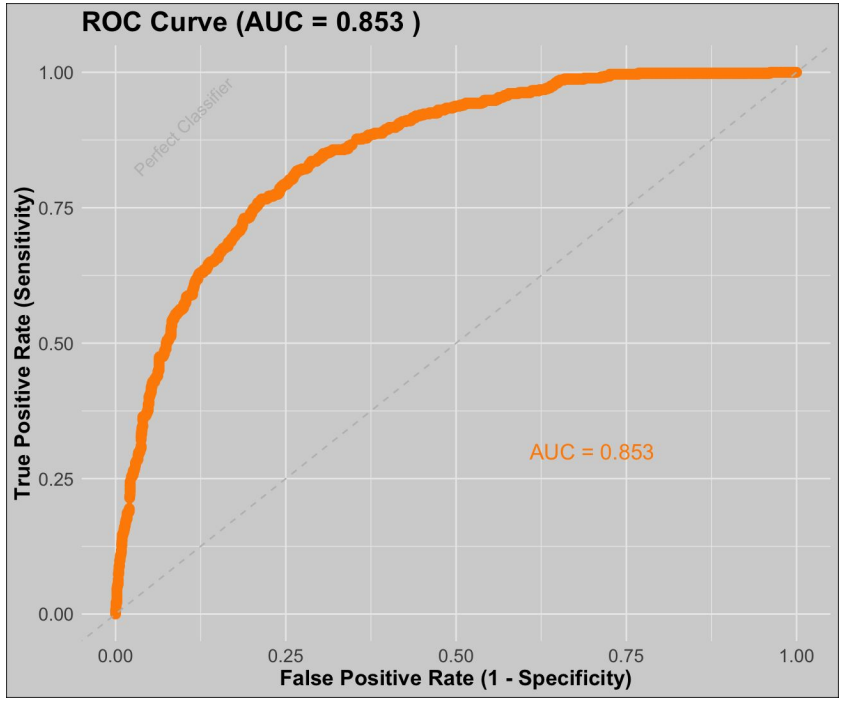


ROC/AUC CURVE

Boosting



Logistic Regression



BOOSTING MODEL

Converting weak learners into strong one's

Accuracy: 80.8%

HYPERPARAMETER TUNING

TRAINING THE FINAL MODEL

BEST HYPERPARAMETERS

interaction.depth = 20,

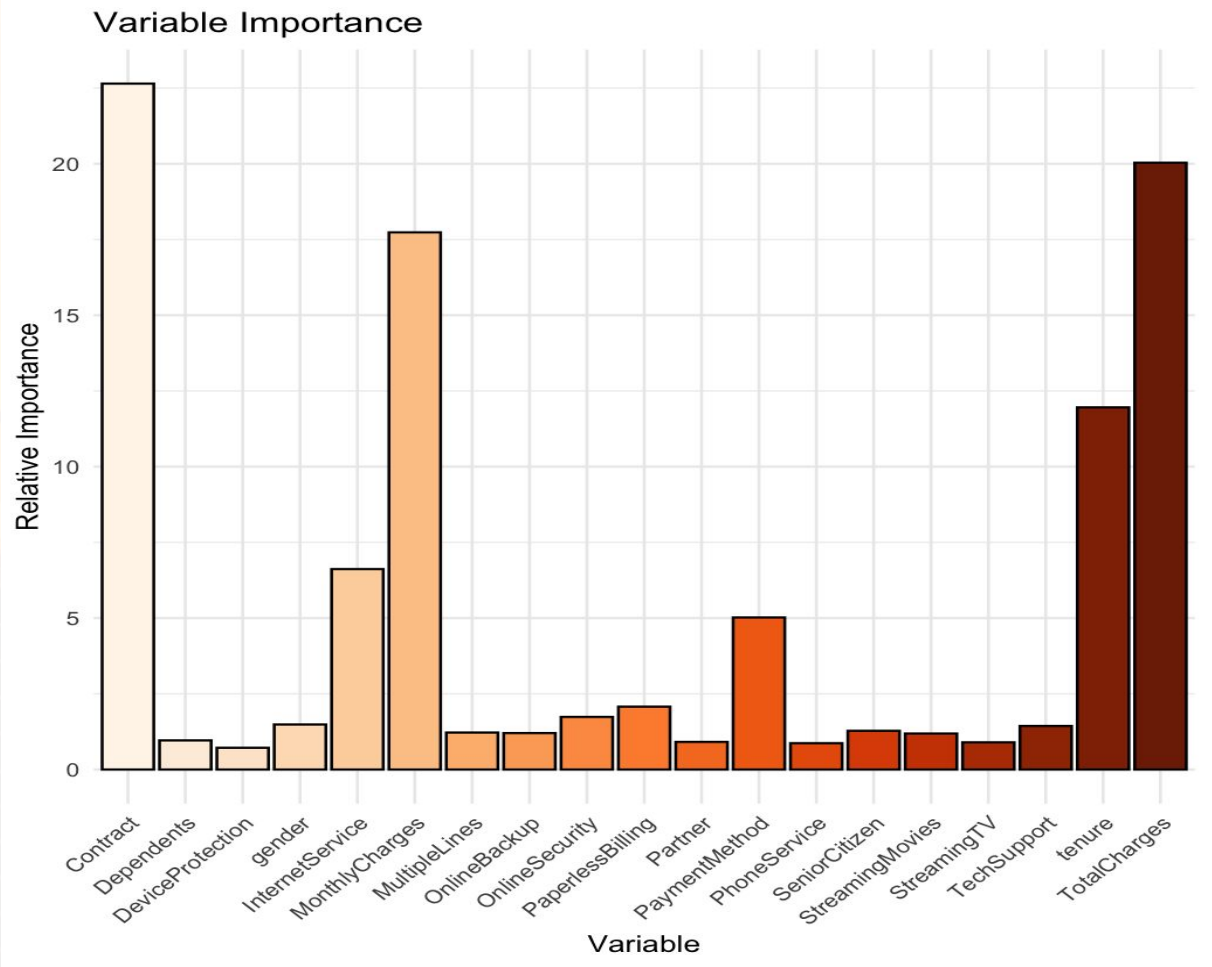
n.trees = 7000,

shrinkage = 0.001

RELATIVE IMPORTANCE

BOOSTING MODEL

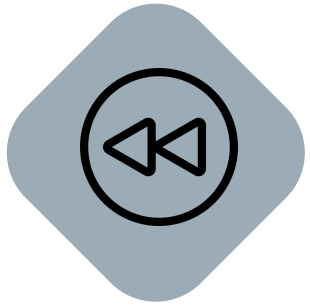
Converting weak learners into strong one's



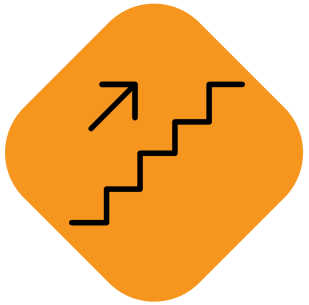
LOGISTIC REGRESSION

FORWARD SELECTION

BACKWARD SELECTION



STEPWISE SELECTION



LOGISTIC REGRESSION

TENURE

3.31%

DECREASE
in likelihood to churn per month of tenure

STREAMING MOVIES

33.94%

INCREASE
in likelihood to churn

PHONE SERVICE

41.41%

DECREASE
in likelihood to churn

IMPLEMENT

APPLIED CONFUSION MATRIX

	Predicted Churn	Predicted No Churn
Actual Churn	**Expected Loss**	**Unexpected Loss**
Actual No Churn	**Unexpected Retention**	**Expected Retention**

APPLIED CONFUSION MATRIX

	Predicted Churn	Predicted No Churn
Actual Churn	**Intervene on outgoing customer**	**No intervention, lose customer**
Actual No Churn	**Will intervene, keep customer**	**No intervention, keep customer**

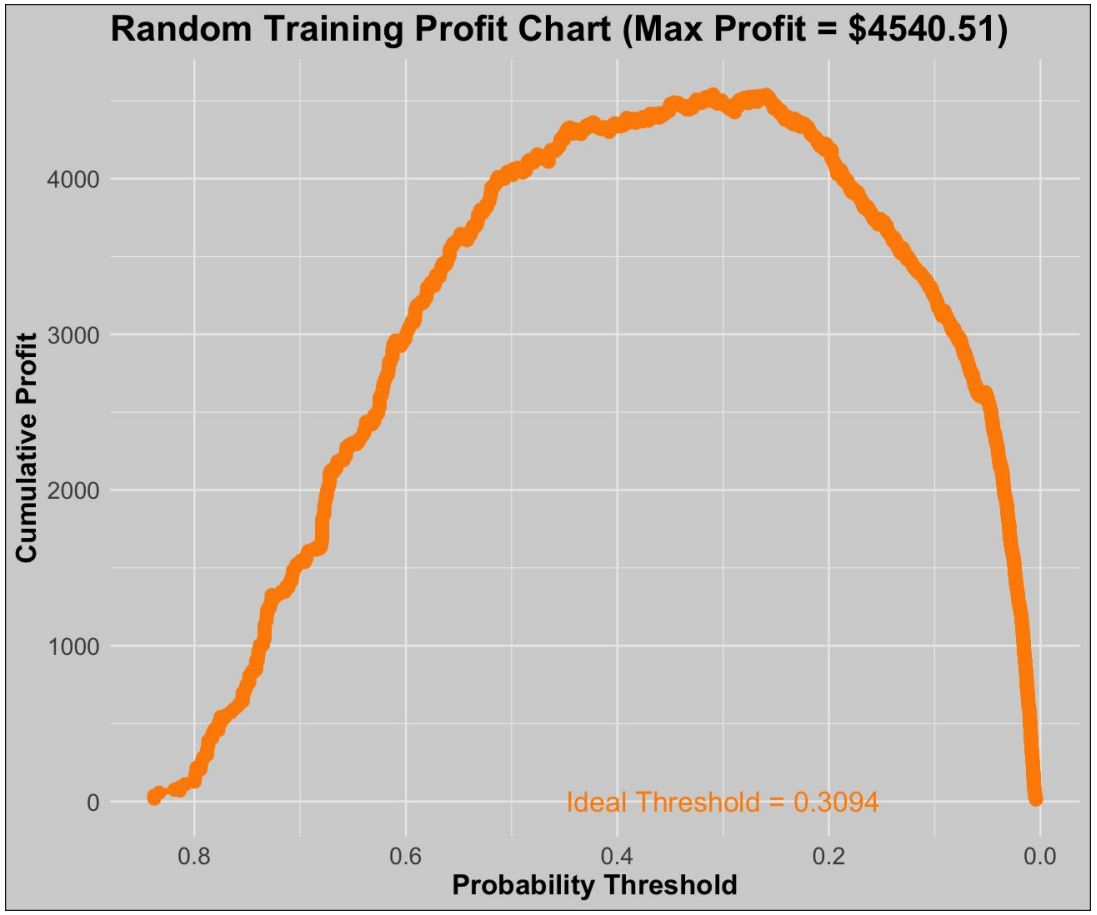
APPLIED CONFUSION MATRIX

	Predicted Churn	Predicted No Churn
Actual Churn	**Change in Profit = Regained Revenue - Intervention Expenses**	**Change in Profit = -Revenue**
Actual No Churn	**Change in Profit = -Intervention Expenses**	**Change in Profit = 0**

OPTIMAL THRESHOLD

	Predicted Churn	Predicted No Churn
Actual Churn	429	131
Actual No Churn	334	1215

Measure	Value
Sensitivity (TPR)	0.7661
Specificity (TNR)	0.7844
Ideal Threshold	0.3092 (train)
Savings	$4540.51




THANK YOU