

TELEPHONE CUSTOMER CHURN ANALYSIS

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EXECUTIVE SUMMARY

- Identifying customers at-risk of changing services vital to business success. More funds expended attracting new customers than retaining old customers.
- Development of classification model will assist with business retention efforts.
- The goal of this analysis is to highlight the handful of customer characteristics that best portend future customer behaviors.



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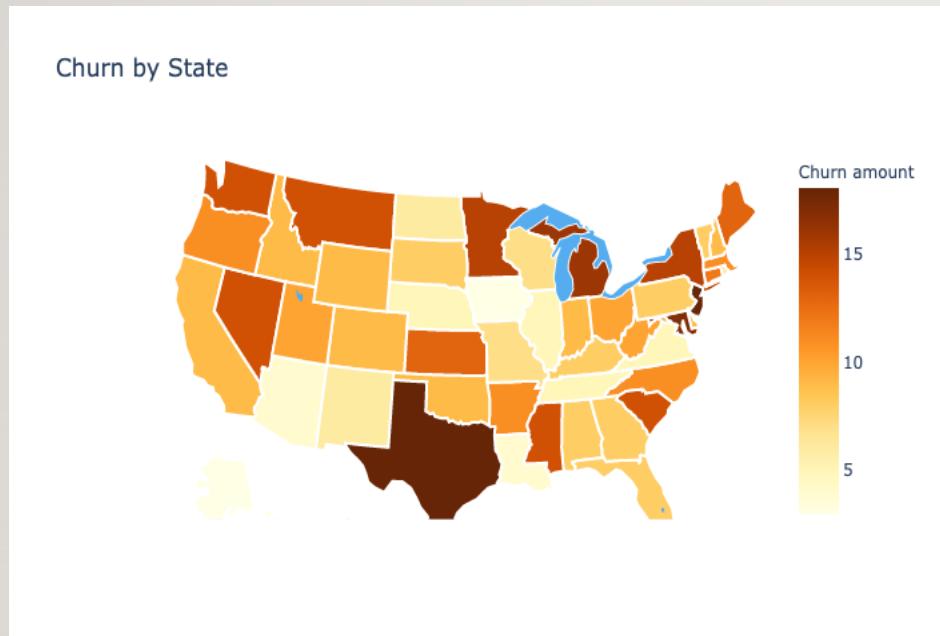
INITIAL IMPRESSIONS OF DATA SET

% Churn	% Remain
14.5	85.5

- Is the dataset robust or small?
- What are the feature variables that are worth keeping for analysis versus those that are futile?
- Are there any columns that we can dismiss at this moment?



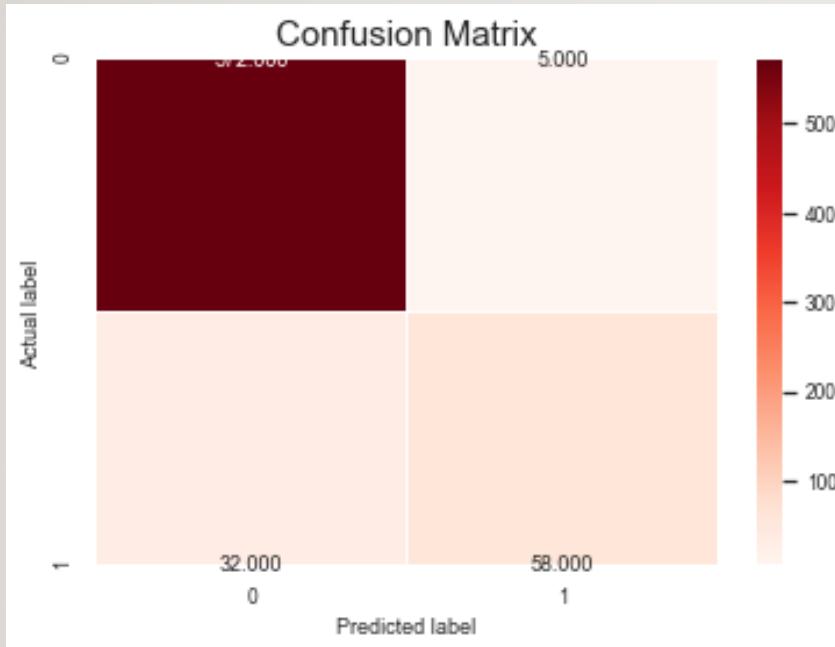
CHURN BY STATE – IS CHURN A GEOGRAPHICAL PHENOMENA AS WELL?



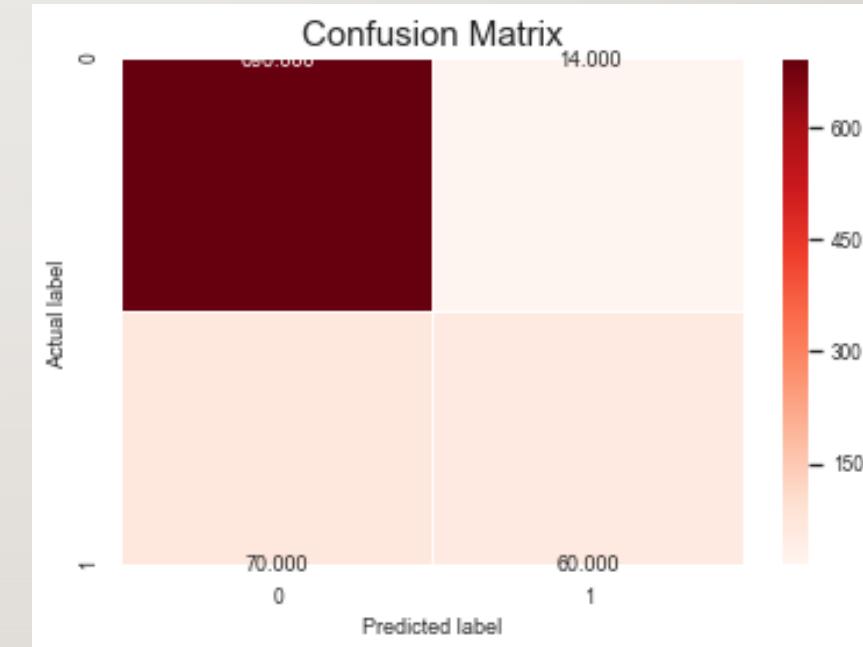
- For states such as Texas, New Jersey and Michigan; could churn be caused by something specific to these localities?
- Identifying exact cause of higher churn in these specific states can be valuable after-work opportunity.



XGBOOST MODEL PERFORMANCE – ALL VARIABLES VERSUS FEATURE SELECTION

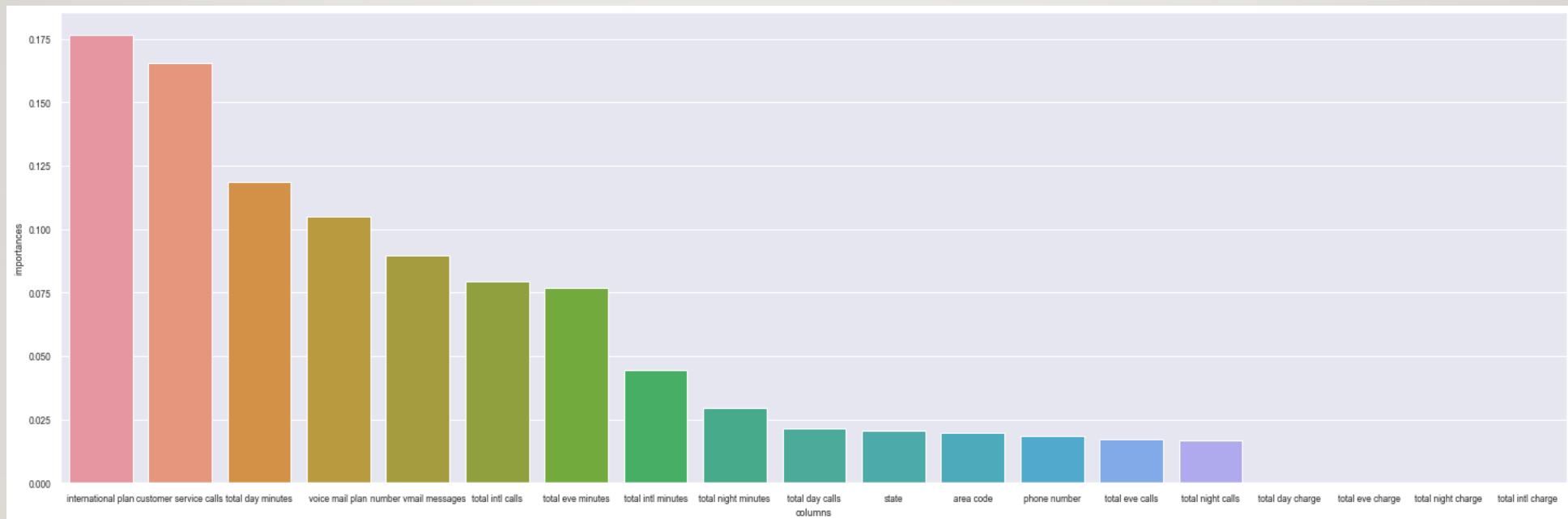


Accuracy = 94.5% (all variables)



Accuracy = 90.0% (top 4)

CLASSIFIER MODEL: XGBOOST (ALL VARIABLES)



Across three measures of feature importance, the number of customer service calls, possession of international plan and total day minutes are toward the top of the list of feature values of import.



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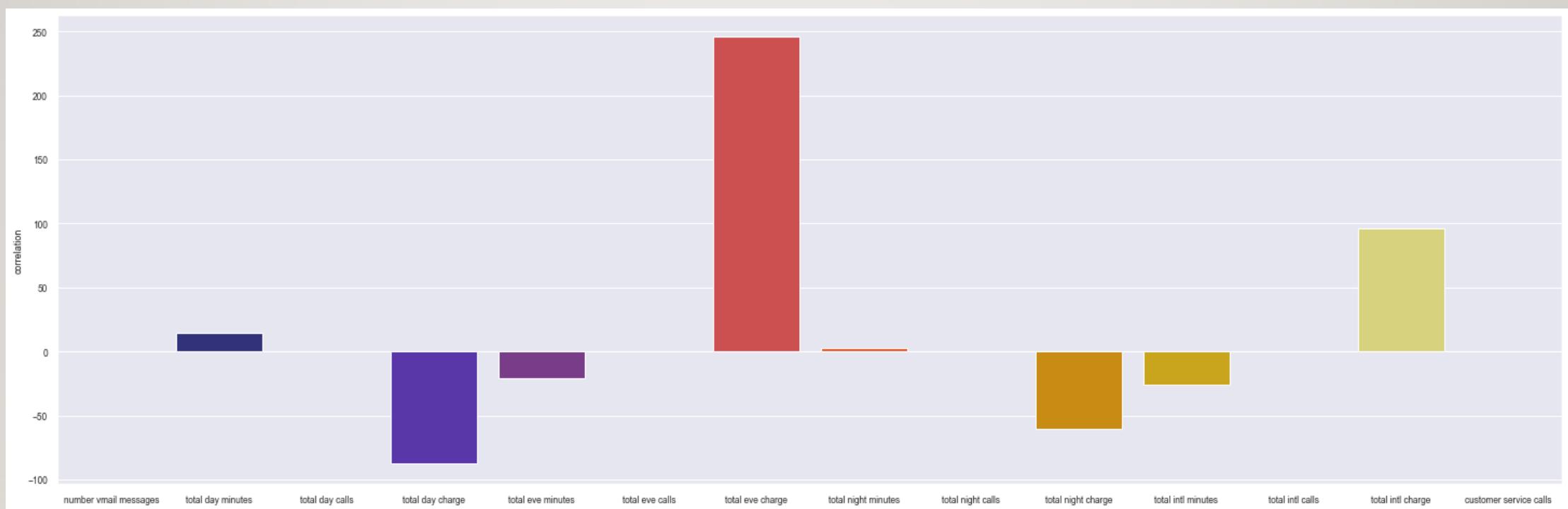
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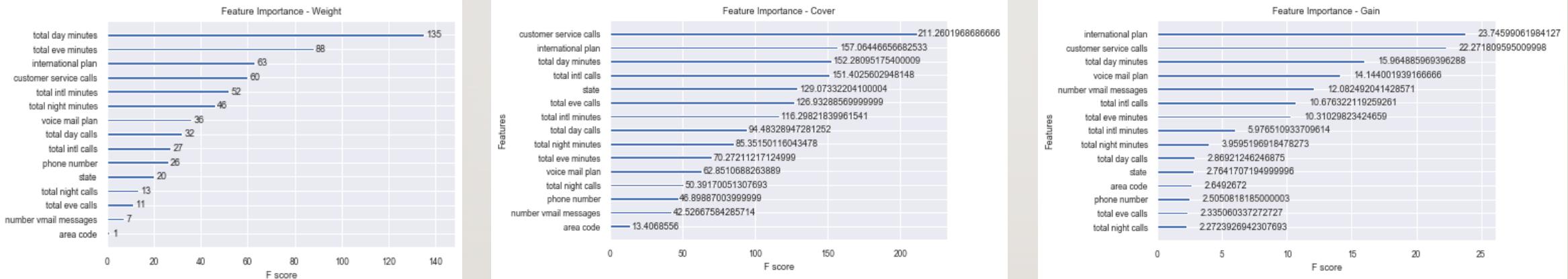
THANK YOU FOR YOUR TIME – FOLLOW-UP WORK PROPOSALS

- It was a pleasure performing this analysis to assist with keeping your brand a leader in the marketplace.
- As follow-up, we would be glad to:
 - Perform analysis on the top 4 feature variables to provide the leadership team with a decision tree that can establish important milestones that will enable your team to take proactive measures to prevent churn.
 - Feed new datapoints into the model so that your leadership team to ensure that the model is adaptable to new datapoints and simply doesn't replicate the training data.
 - Examine the cause of higher churn in certain states. Is this a phenomena that is due to infrastructure in that locality or other market forces that we might have been unaware of during this analysis.

CORRELATION BETWEEN FEATURES AND ACCOUNT LENGTH



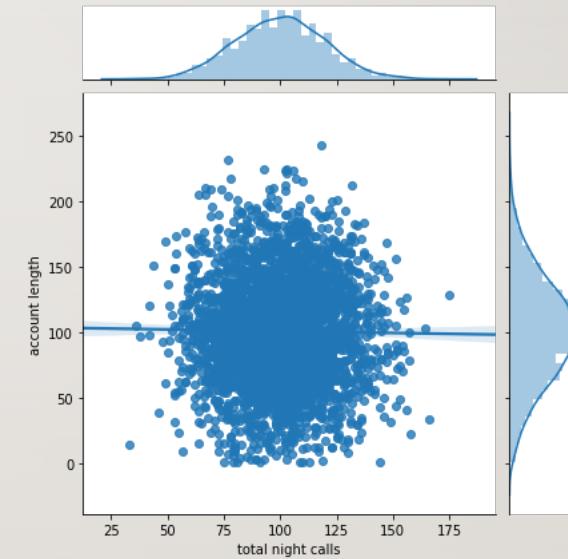
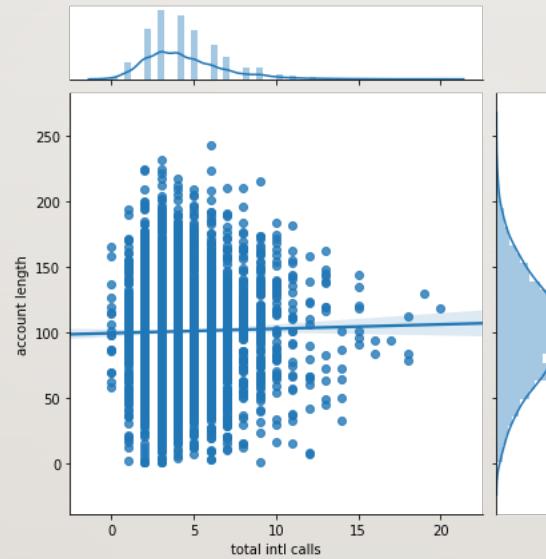
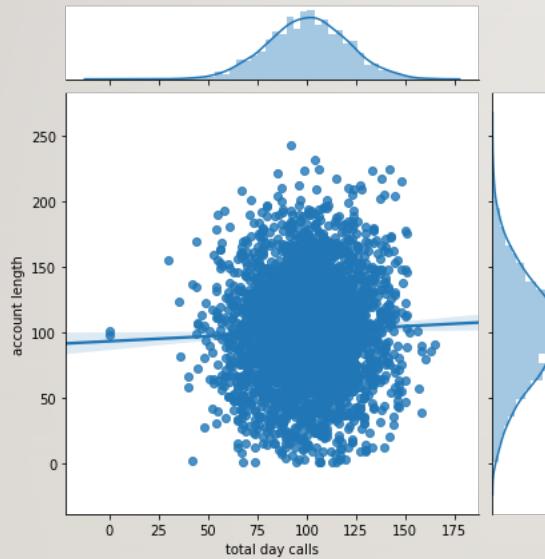
CLASSIFIER MODEL: XGBOOST (FEATURE SELECTION)



Across three measures of feature importance, the number of customer service calls, possession of international plan and total day minutes are toward the top of the list of feature values of import.

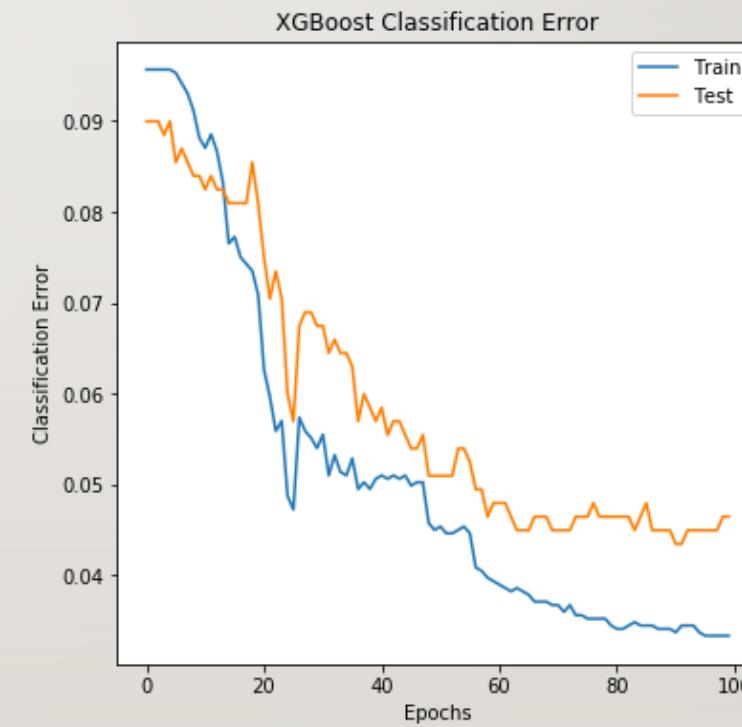
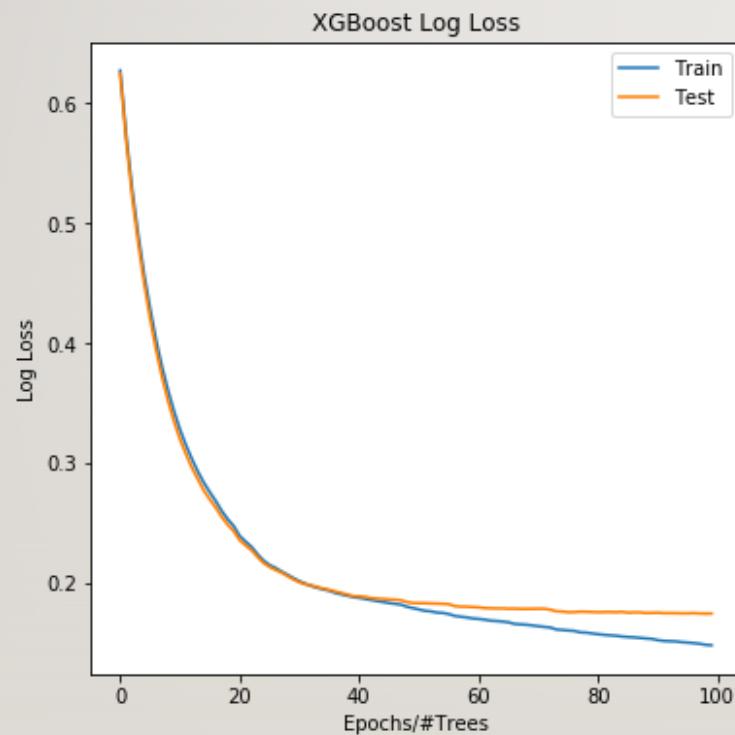


FEATURE VARIABLES THAT SPEAK TO HEIGHTENED ACCOUNT LENGTH

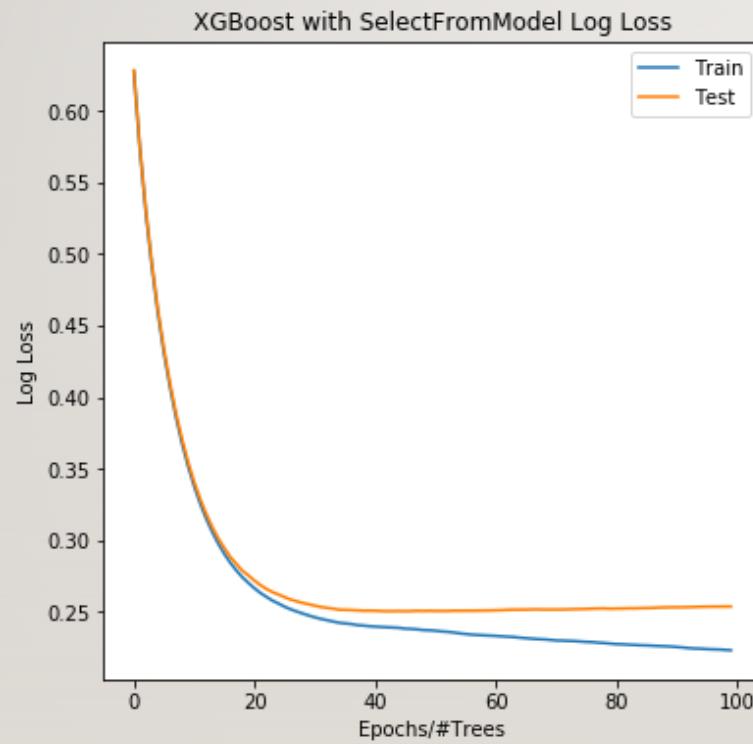


- Using account length as a proxy for churn, preliminary analysis of the data speaks to those that might make more day and international calls having higher account lengths and those that make night calls having a slightly less account length

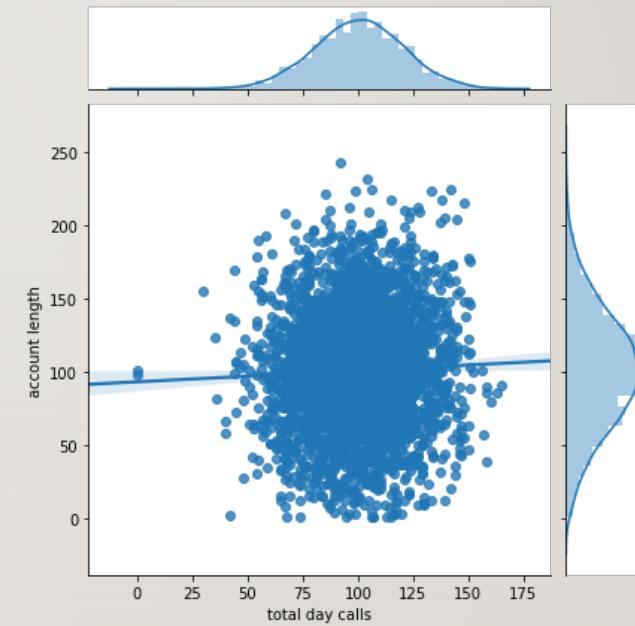
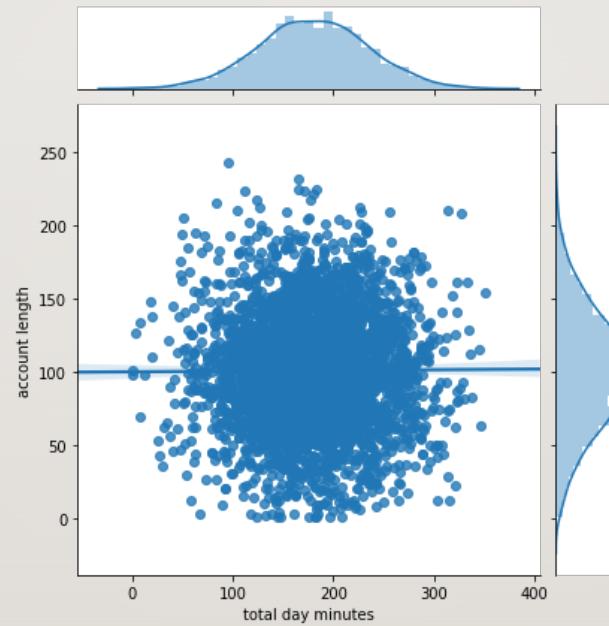
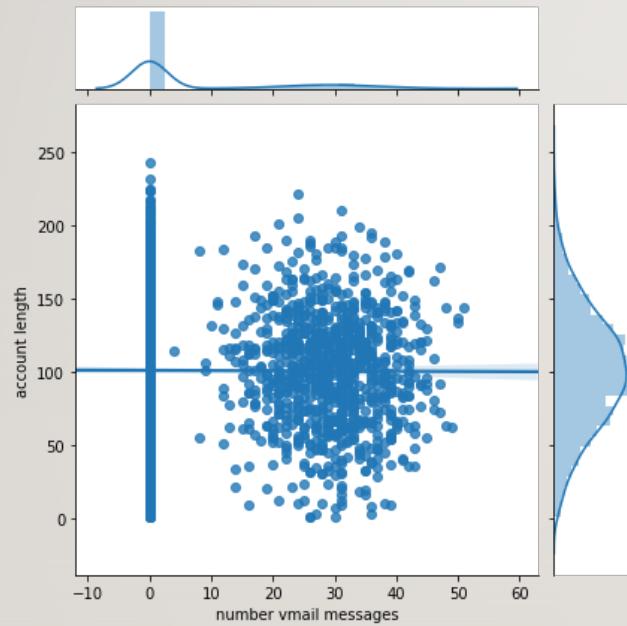
XGBOOST MODEL PERFORMANCE (ALL FEATURES)



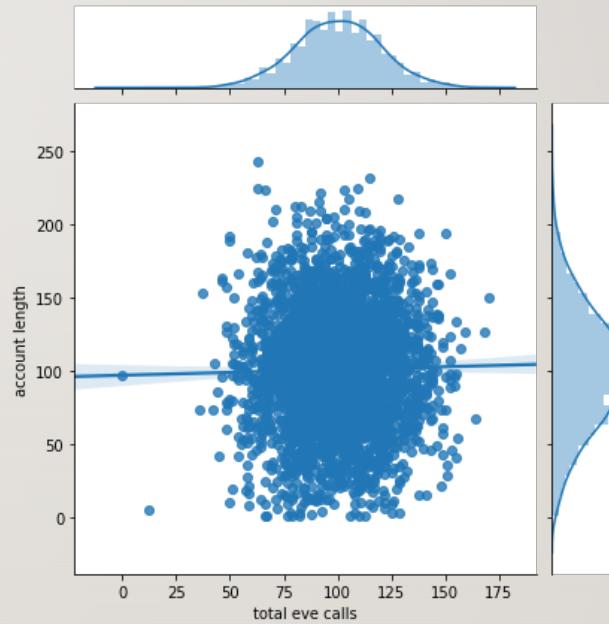
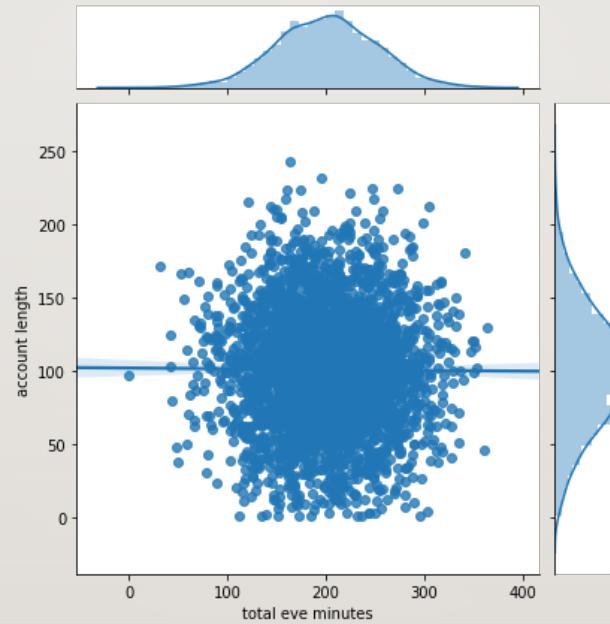
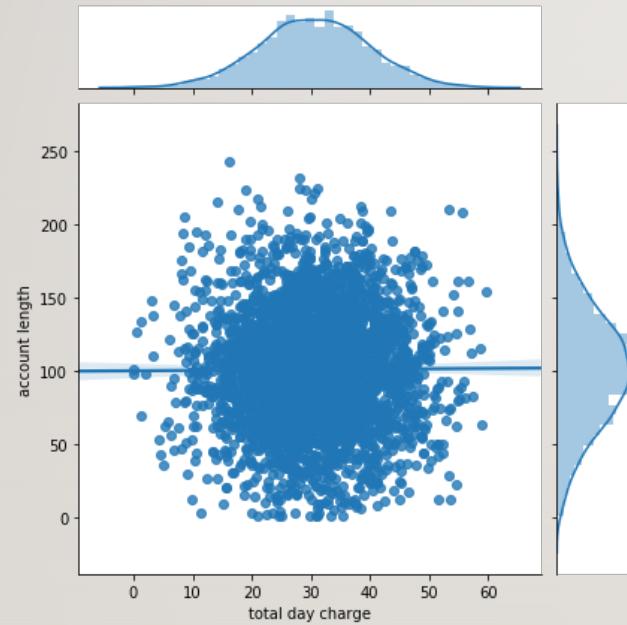
XGBOOST MODEL PERFORMANCE (TOP 4)



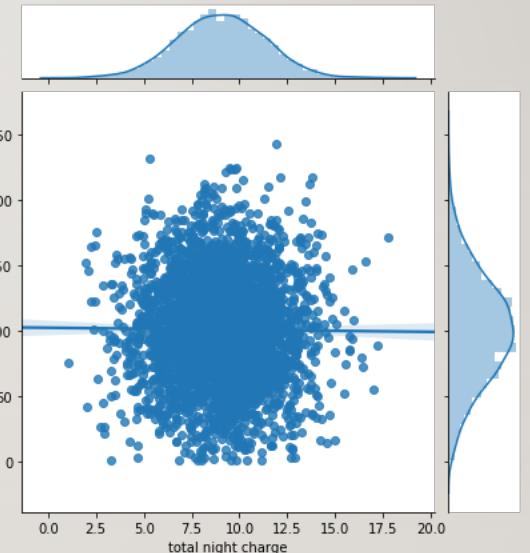
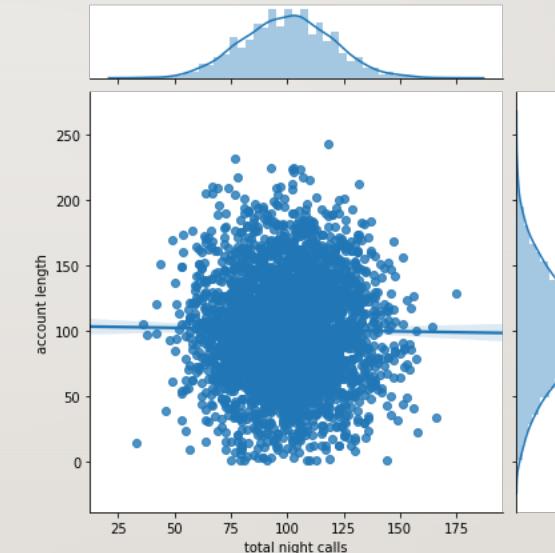
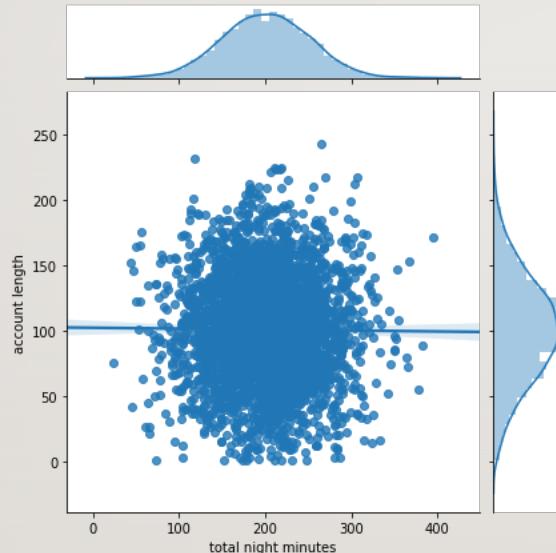
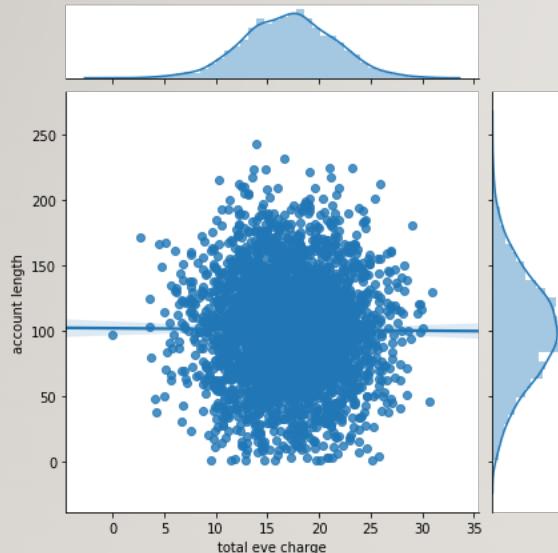
VISUAL ANALYSIS OF FEATURE VARIABLE CORRELATION WITH ACCOUNT LENGTH



VISUAL ANALYSIS OF FEATURE VARIABLE CORRELATION WITH ACCOUNT LENGTH (CONTD)



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