

TELECOM CHURN PREDICTION



PREDICTING CUSTOMER CHURN TO RETAIN CUSTOMERS & INCREASE PROFITS

Jessica Forrest-Baldini

23 July 2020

BUSINESS CASE

BUSINESS CASE

- Telecom is losing customers and profit



BUSINESS CASE

- Telecom is losing customers and profit
- Predict if a customer will churn & understand why customers are churning



BUSINESS CASE

- Telecom is losing customers and profit
- Predict if a customer will churn & understand why customers are churning
- Focus targeted marketing efforts to proactively retain customers likely to churn



BUSINESS VALUE

BUSINESS VALUE

- Customer acquisition costs more than customer retention [1]



BUSINESS VALUE

- Customer acquisition costs more than customer retention [1]
- Reducing churn can increase earnings of a typical US wireless carrier by as much as 9.9% [2]



BUSINESS VALUE

- Customer acquisition costs more than customer retention [1]
- Reducing churn can increase earnings of a typical US wireless carrier by as much as 9.9% [2]
- A 1% increase in retention rate has been shown to increase a telecommunication company's value by 5% [3]



METHODS

METHODS

- Analyzed data from over 3,000 customers



METHODS

- Analyzed data from over 3,000 customers
- Trained 3 classification models



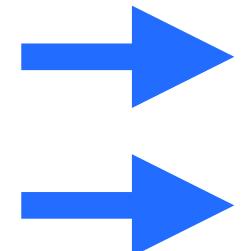
METHODS

- Analyzed data from over 3,000 customers
- Trained 3 classification models
- Explored patterns in the data



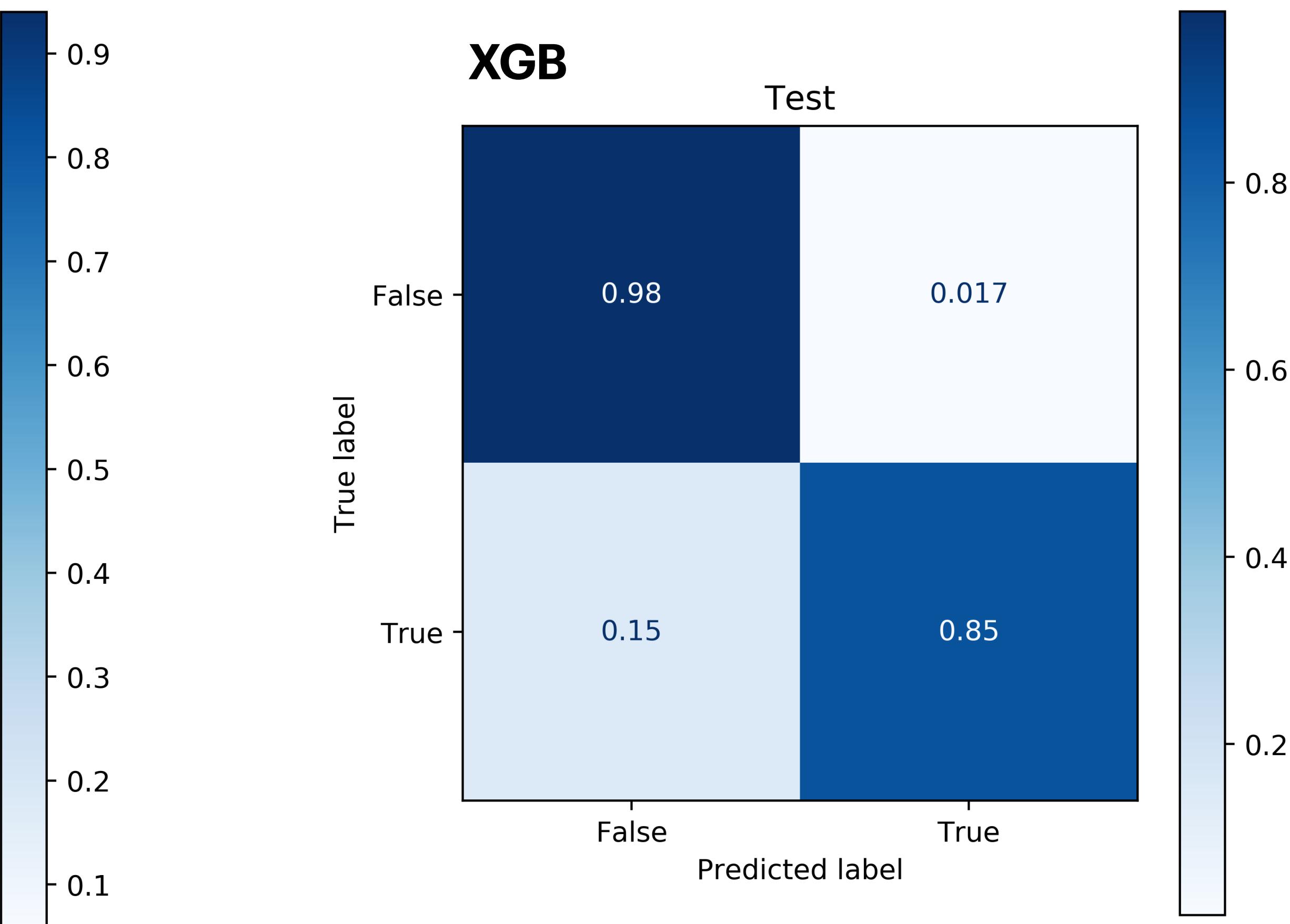
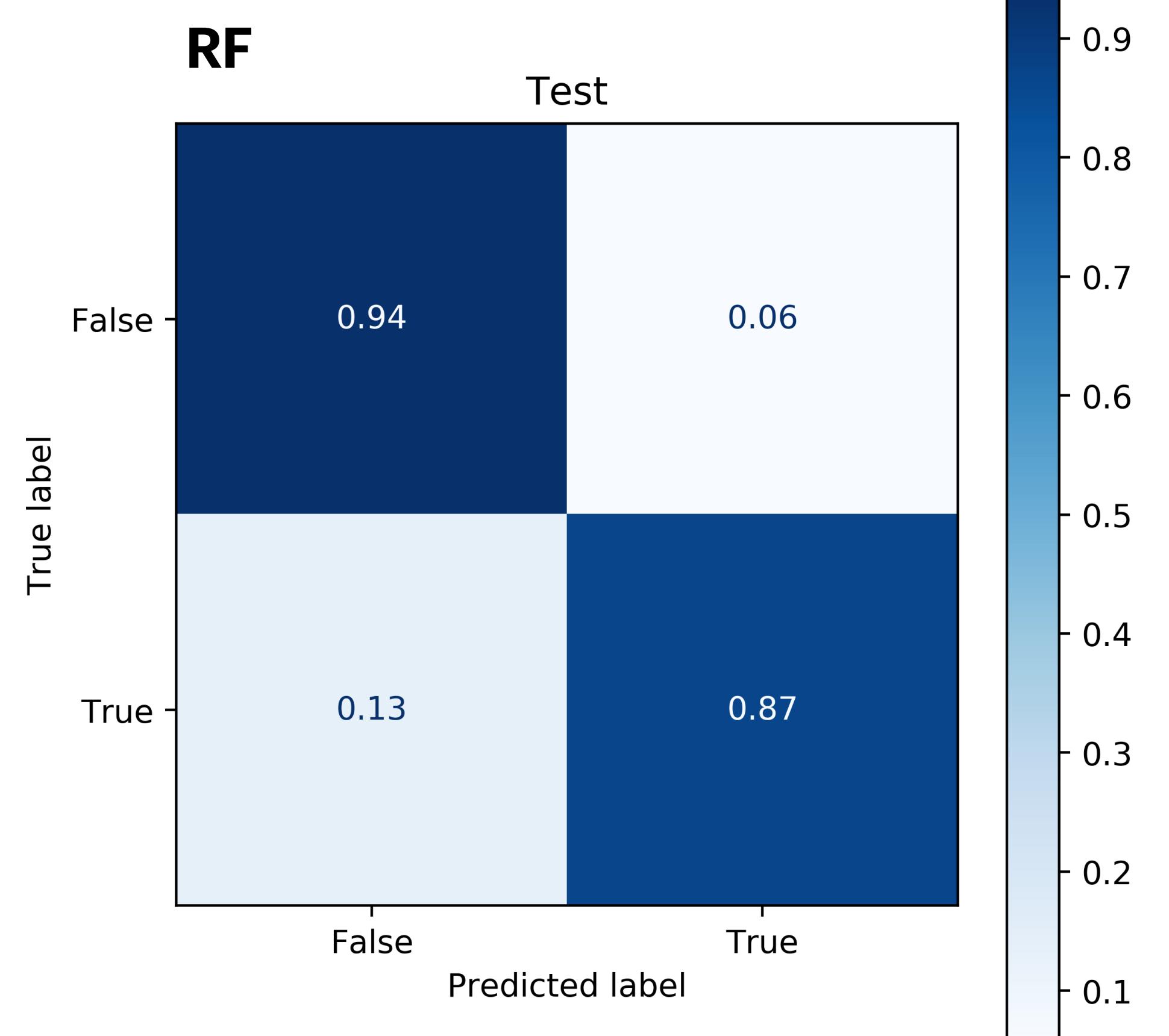
RESULTS

MODELS



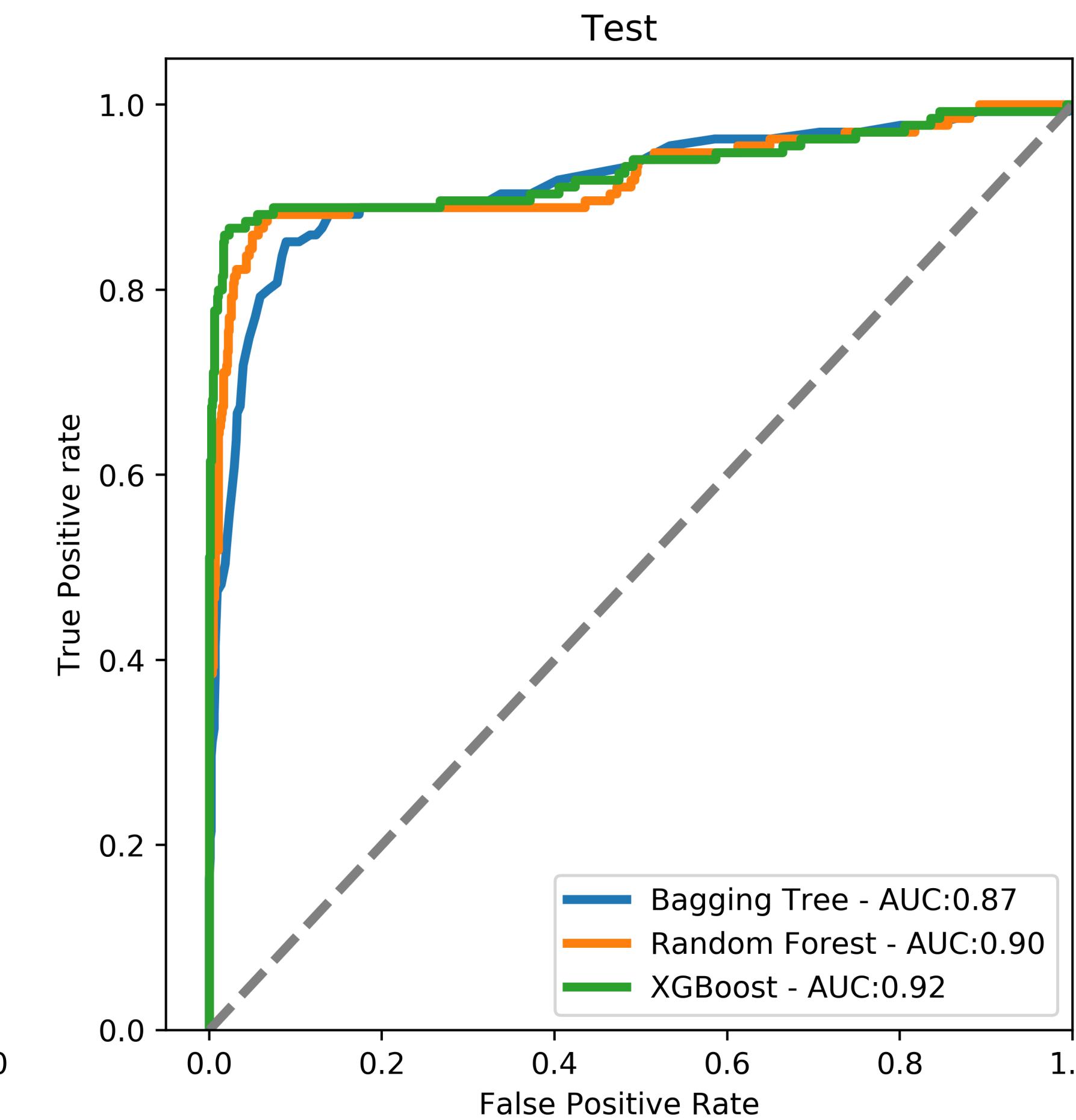
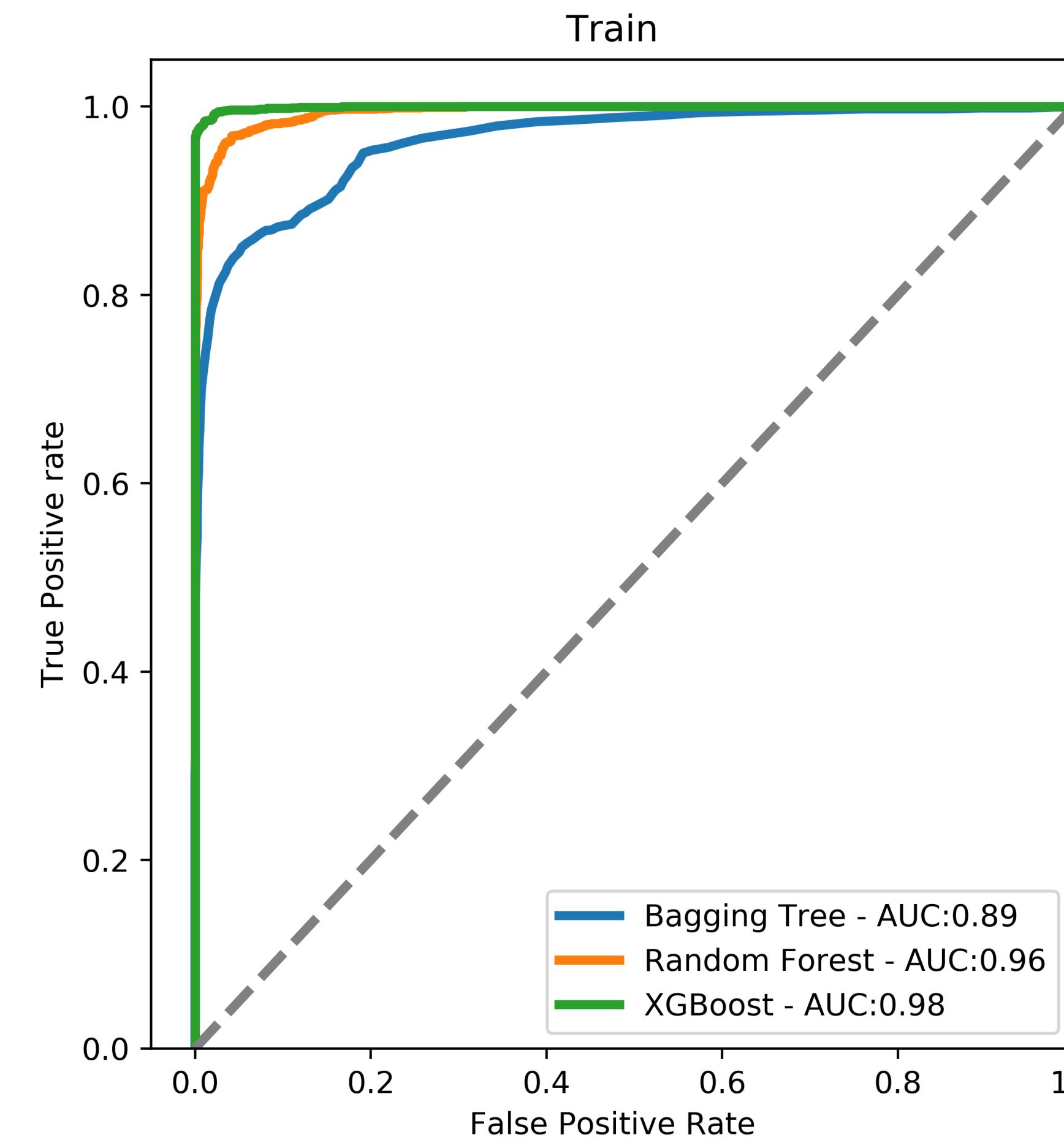
Classifier	Run time	Train Precision	Test Precision	Train Recall	Test Recall	Train F1	Test F1	Train Accuracy	Test Accuracy	Train ROC AUC	Test ROC AUC
Bagging Tree	0.20	0.90	0.52	0.87	0.86	0.89	0.65	0.89	0.87	0.89	0.87
Random Forest	1.92	0.98	0.69	0.93	0.87	0.96	0.77	0.96	0.93	0.96	0.90
XGBoost	0.76	1.00	0.88	0.97	0.85	0.98	0.87	0.98	0.96	0.98	0.92

MODELS

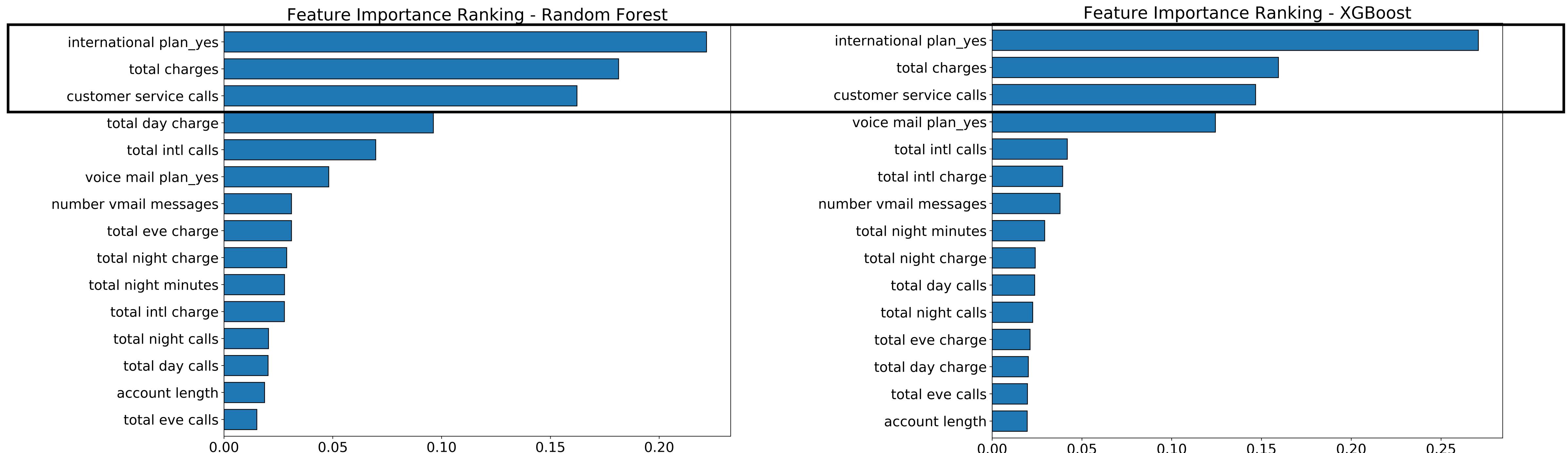


MODELS

ROC Curves



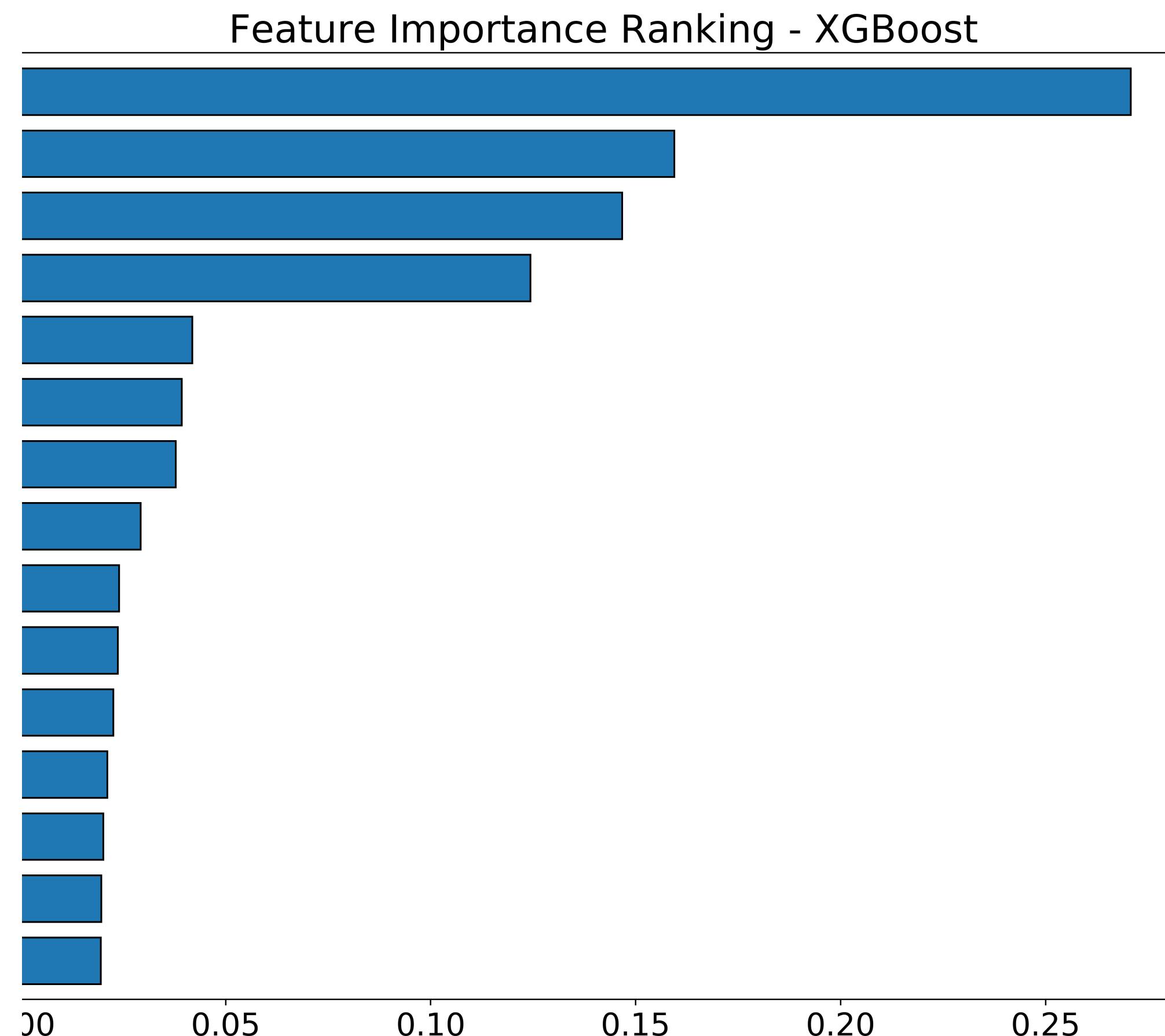
FEATURES



FEATURES

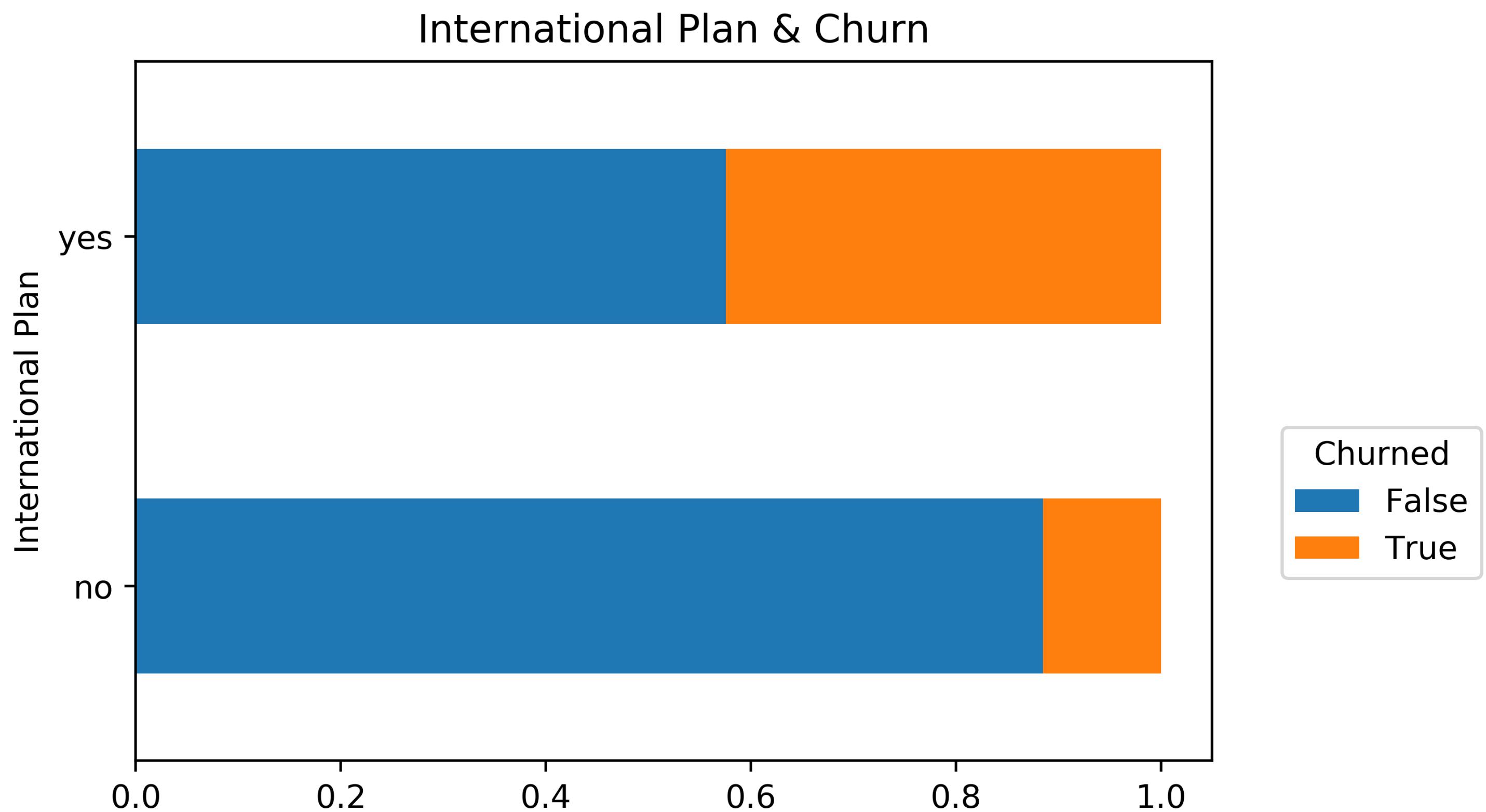
TOP 3 FEATURES:

- Having an international plan
- Total charges
- Total customer service calls



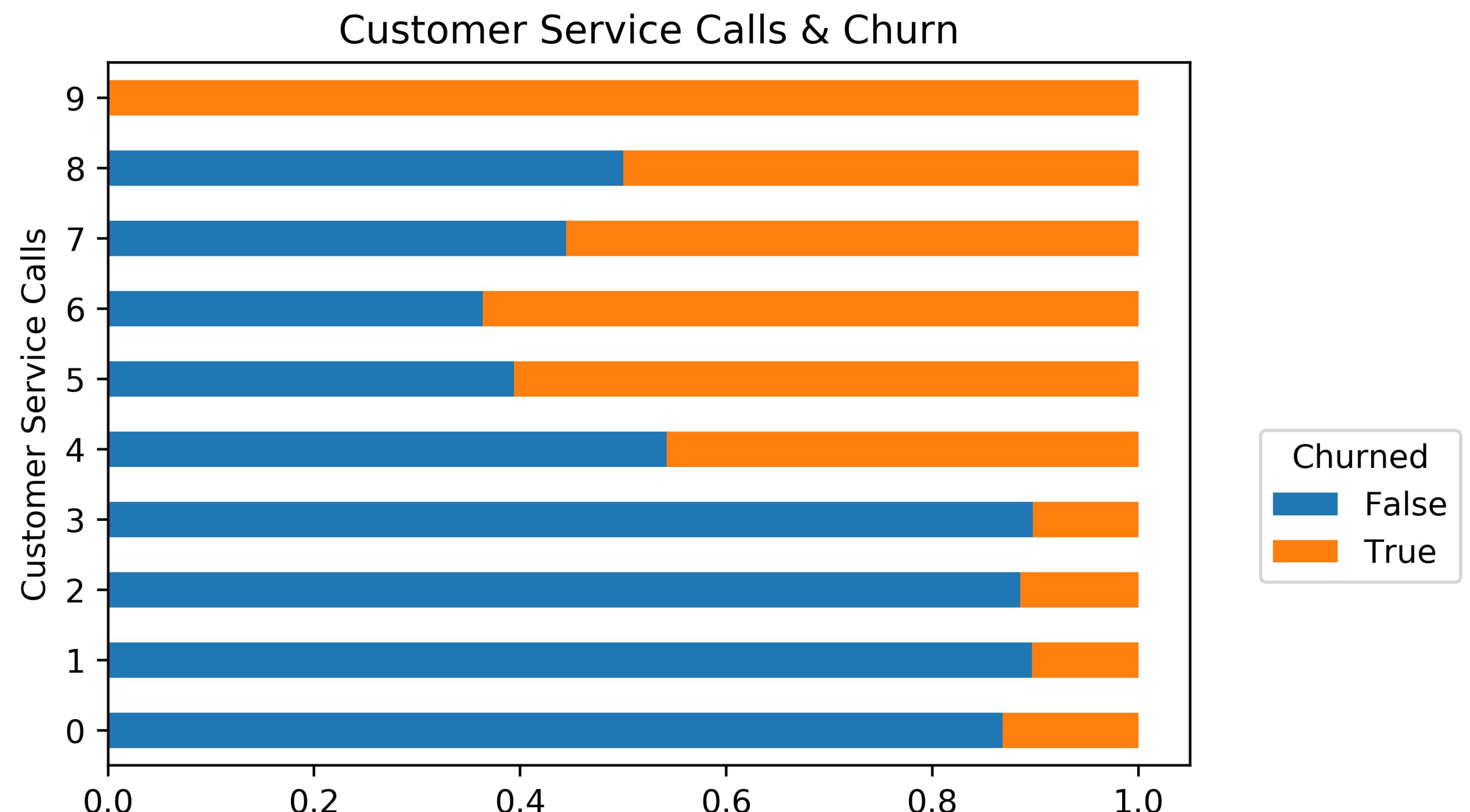
FEATURES

INTERNATIONAL PLAN



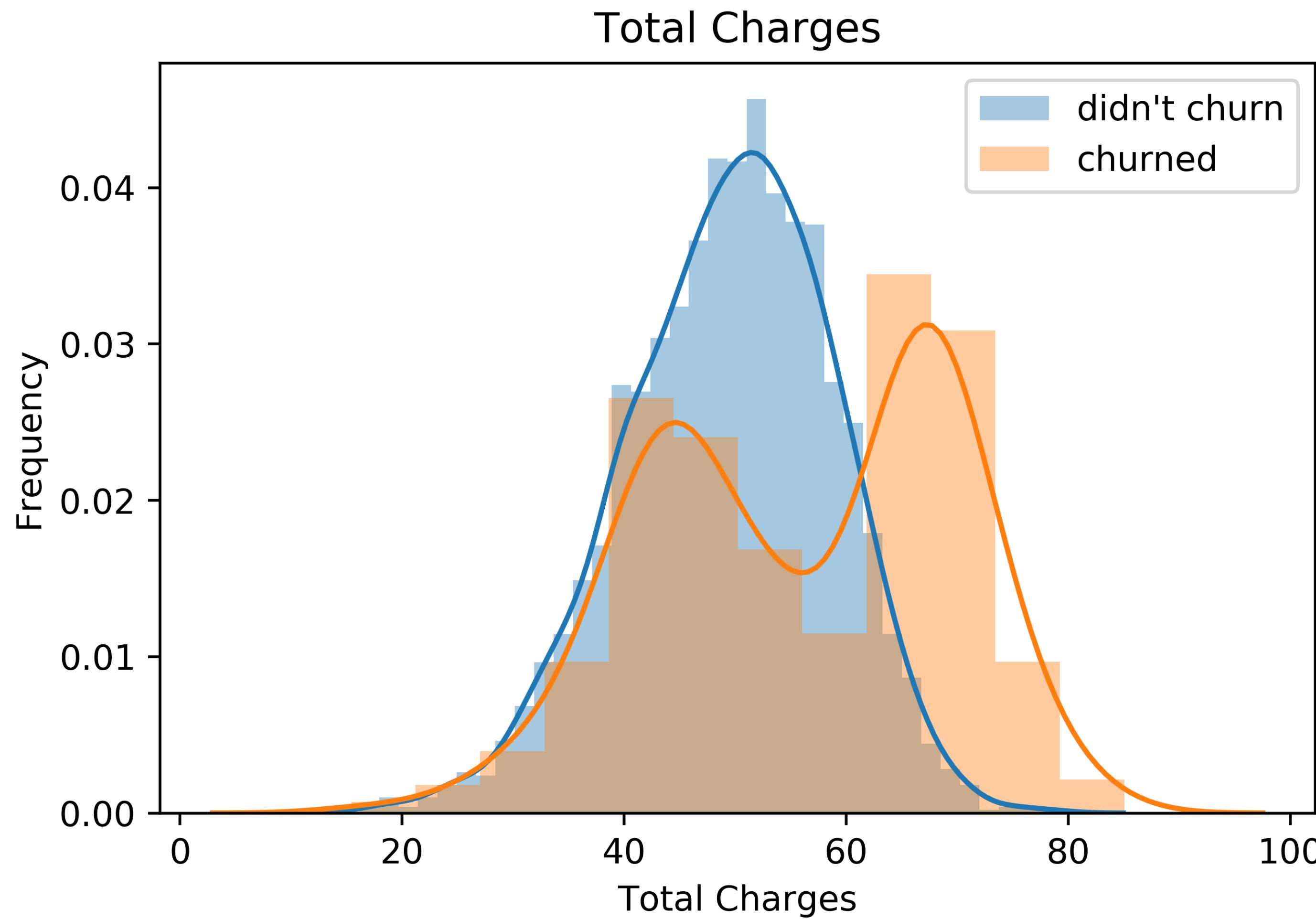
FEATURES

CUSTOMER SERVICE CALLS



FEATURES

TOTAL CHARGES



RECOMMENDATIONS

RECOMMENDATIONS

INTERNATIONAL PLAN

- Related to high charges?



RECOMMENDATIONS

INTERNATIONAL PLAN

- Related to high charges?
 - Competitor plans



RECOMMENDATIONS

INTERNATIONAL PLAN

- Related to high charges?
 - Competitor plans
- Customer type:



RECOMMENDATIONS

INTERNATIONAL PLAN

- Related to high charges?
 - Competitor plans
- Customer type:
 - Business



RECOMMENDATIONS

INTERNATIONAL PLAN

- Related to high charges?
 - Competitor plans
- Customer type:
 - Business
 - Family in other countries



RECOMMENDATIONS

INTERNATIONAL PLAN

- Related to high charges?
 - Competitor plans
- Customer type:
 - Business
 - Family in other countries
 - Here temporarily



RECOMMENDATIONS

CUSTOMER SERVICE CALLS

- Train call centers



RECOMMENDATIONS

CUSTOMER SERVICE CALLS

- Train call centers
- Analyze customer service calls of churners:



RECOMMENDATIONS

CUSTOMER SERVICE CALLS

- Train call centers
- Analyze customer service calls of churners:
 - What is their concern?



RECOMMENDATIONS

CUSTOMER SERVICE CALLS

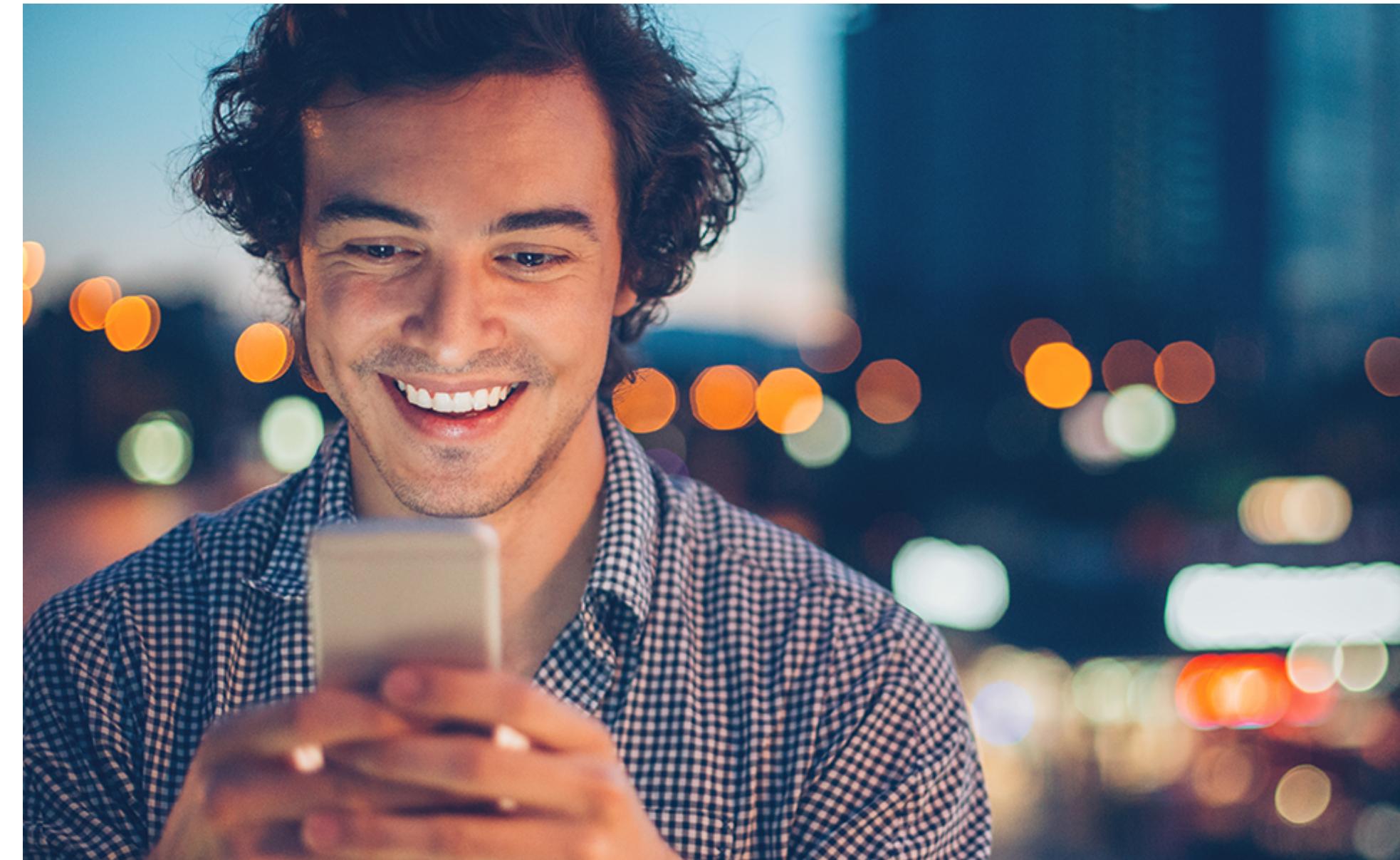
- Train call centers
- Analyze customer service calls of churners:
 - What is their concern?
 - Why are they calling?



RECOMMENDATIONS

TOTAL CHARGES

- Competitive analysis



RECOMMENDATIONS

TOTAL CHARGES

- Competitive analysis
- Prevent overages:



RECOMMENDATIONS

TOTAL CHARGES

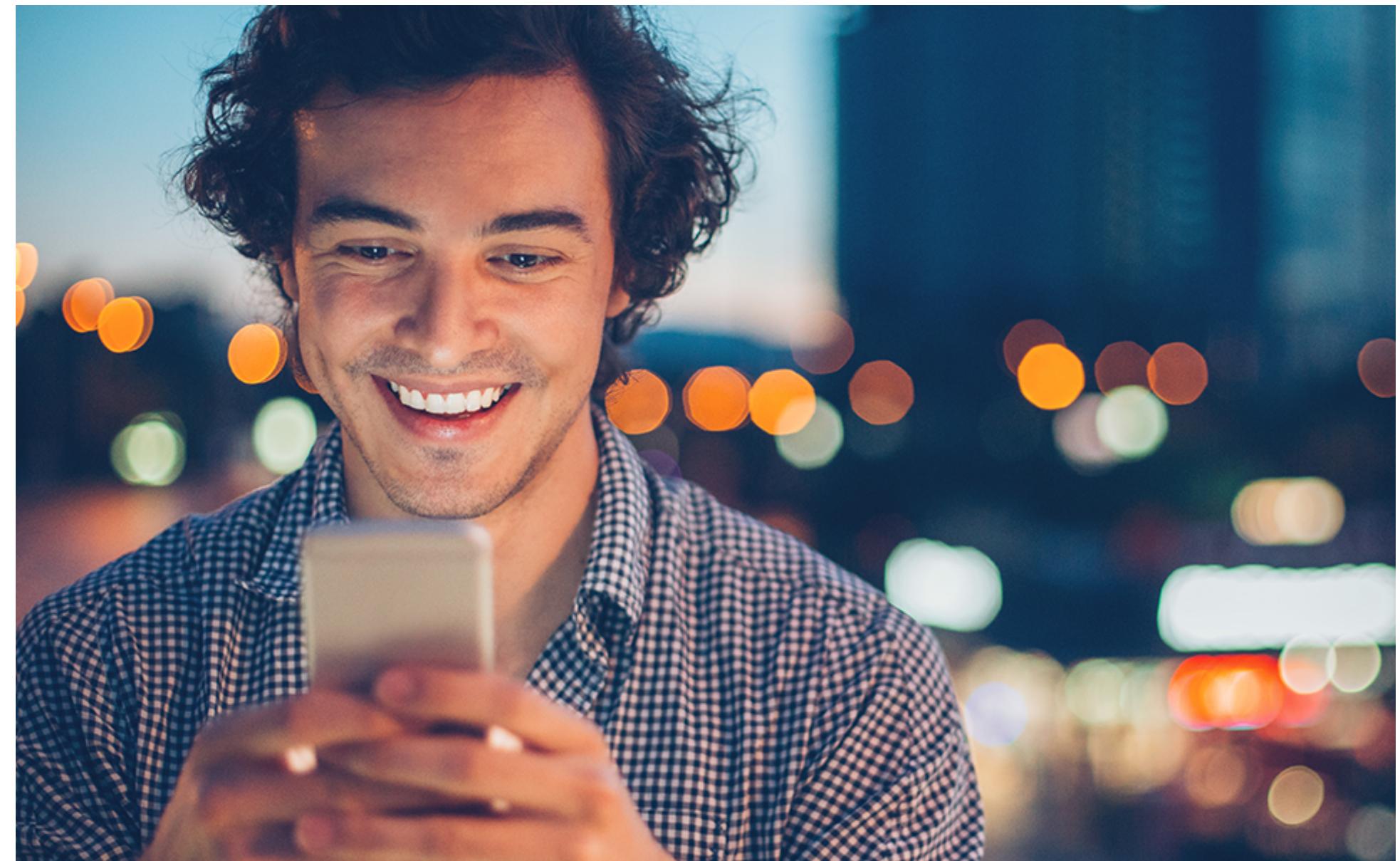
- Competitive analysis
- Prevent overages:
 - Booster packages



RECOMMENDATIONS

TOTAL CHARGES

- Competitive analysis
- Prevent overages:
 - Booster packages
 - Preemptive offer to upgrade



RECOMMENDATIONS

TOTAL CHARGES

- Competitive analysis
- Prevent overages:
 - Booster packages
 - Preemptive offer to upgrade
 - Usage warnings



FUTURE WORK

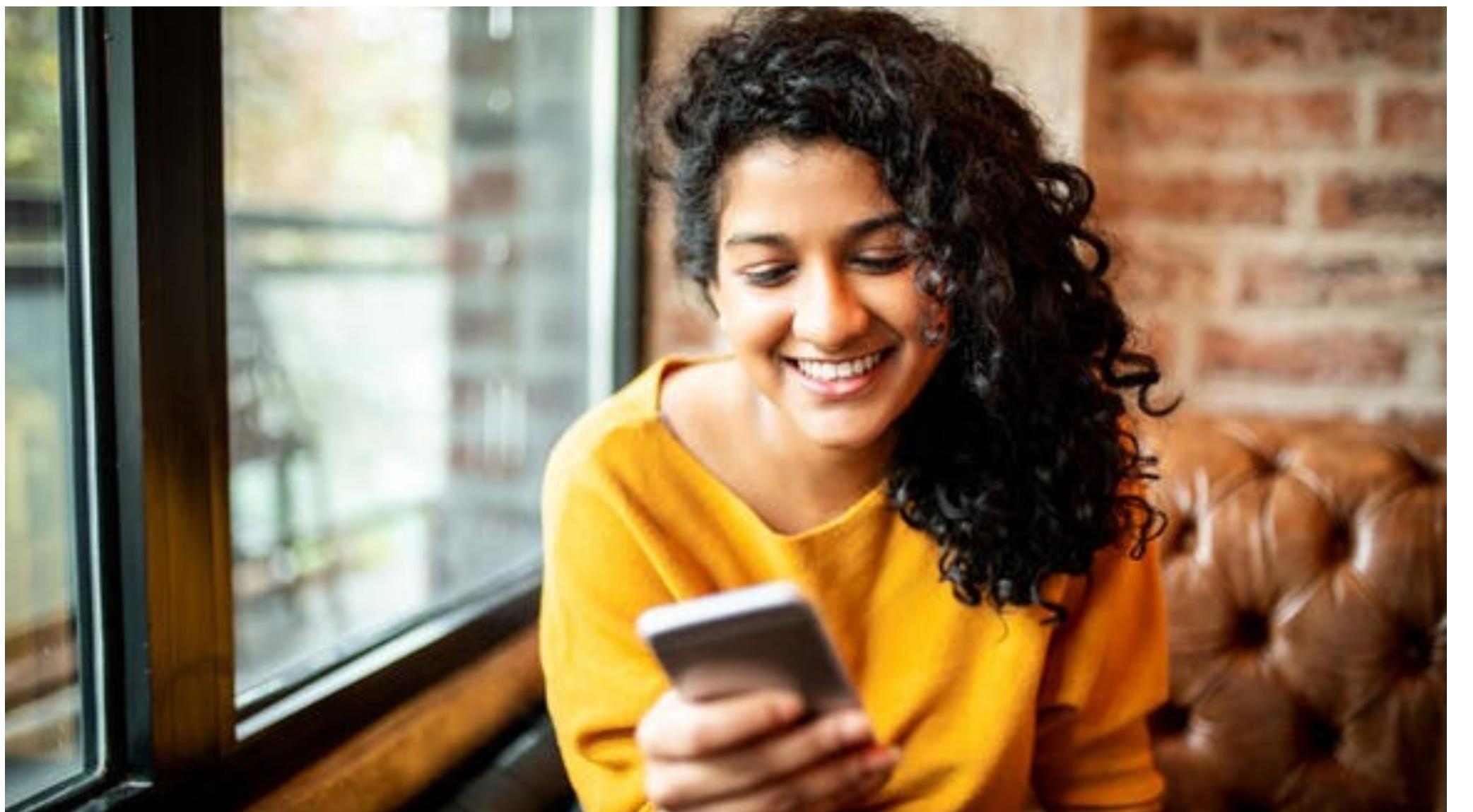
FUTURE WORK

- Analyze customer service calls of churners



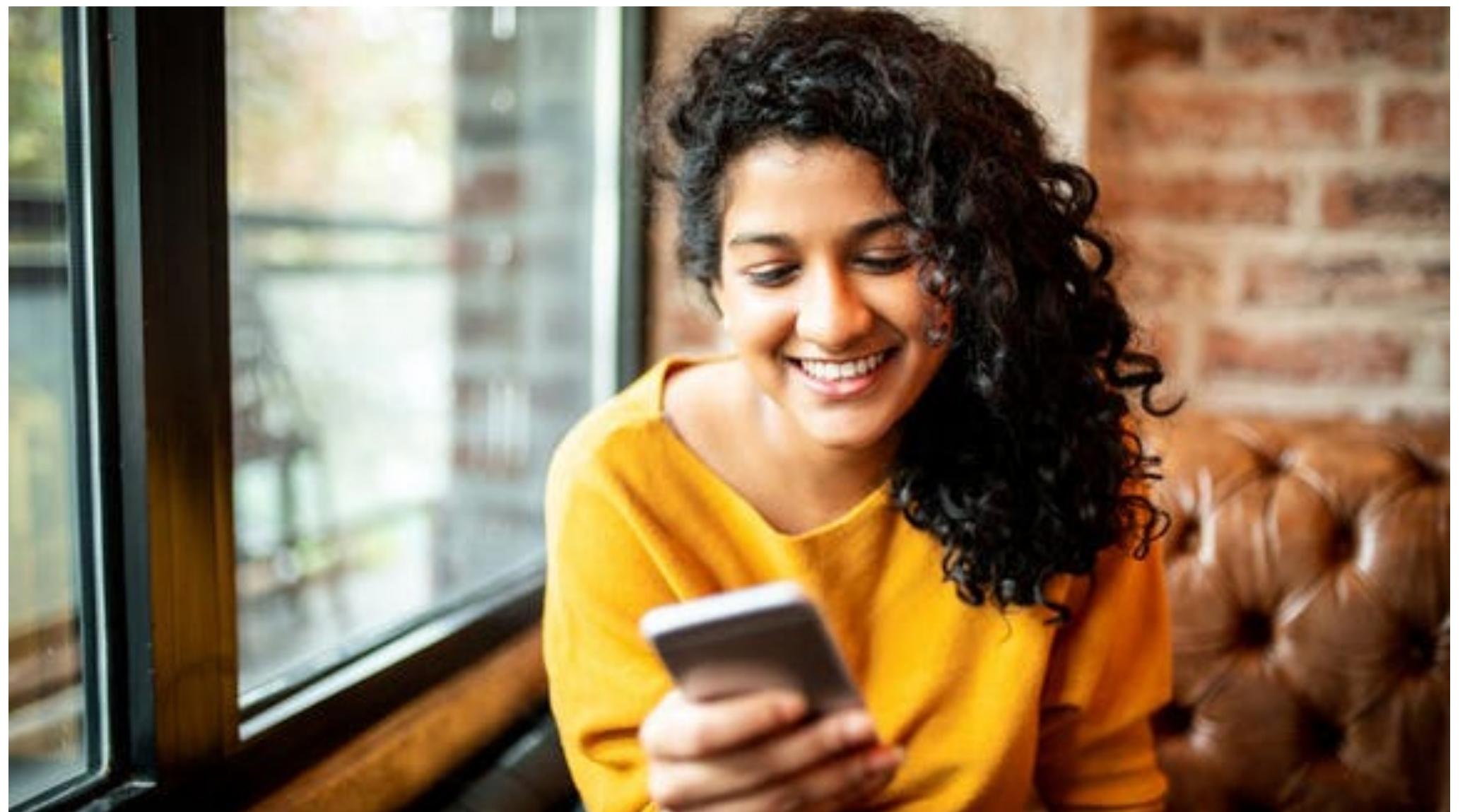
FUTURE WORK

- Analyze customer service calls of churners
- Find out exactly why international plan holders are churning



FUTURE WORK

- Analyze customer service calls of churners
- Find out exactly why international plan holders are churning
- Explore group of lower charge churners



THANK YOU

REFERENCES

- [1] Basiri, Javad & Taghiyareh, Fattaneh & Moshiri, Behzad. (2011). A Hybrid Approach to Predict Churn. Proceedings - 2010 IEEE Asia-Pacific Services Computing Conference, APSCC 2010. 485 - 491. 10.1109/APSCC.2010.87.
- [2] Sithole, Bernard. (2018). Customer experience and customer churn management in Zimbabwe. 10.13140/RG.2.2.20583.75682.
- [3] S. Gupta, D. Hanssens, B. Hardie, W. Kahn, V. Kumar, N. Lin, N. Ravishanker, and S. Sriram (2006), "Modeling customer lifetime value," Journal of Service Research, 9 (2), 139.

IMAGE SOURCES

1. <http://www.automotivesupplynews.com.mx/2017/06/14/the-global-economy-is-rebounding-but-theres-one-big-problem/>
2. <https://www.predicagroup.com/blog/customer-churn-analysis/>
3. <https://www.customerexperienceinsight.com/improve-customer-experience/>
4. <https://fipra.com/update/a-new-public-policy-approach-for-the-european-telecoms-industry/>
5. <https://www.hotelzon.com/2018/04/modern-road-warrior/>
6. <https://techeconomy.ng/2019/02/freshworks-introduces-omniroute-a-first-gen-saas-customer-support-solutions/>
7. https://www.t-mobile.com/news/_admin/uploads/2019/01/NTC-Customers-Happiest-1-17-19.png
8. <https://economictimes.indiatimes.com/magazines/panache/indian-millennials-addicted-to-smartphones-spend-one-third-of-their-waking-hours-on-whatsapp-fb/articleshow/72902910.cms>