

**DATA SCIENCE AND BUSINESS**

# Predicting & Understanding Customer Churn

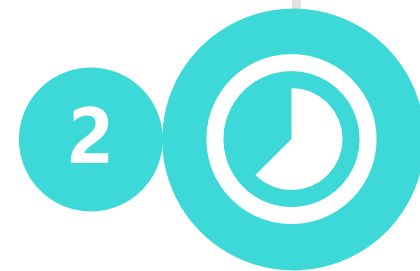
SyriaTel Communications

# Outline



## *Customer Service Calls*

Is this a sign of unhappiness or potential churn?



## *Plan Usage*

How much are people using their plan?



## *Churn Across Different Locations*

How does churn differ across the states?

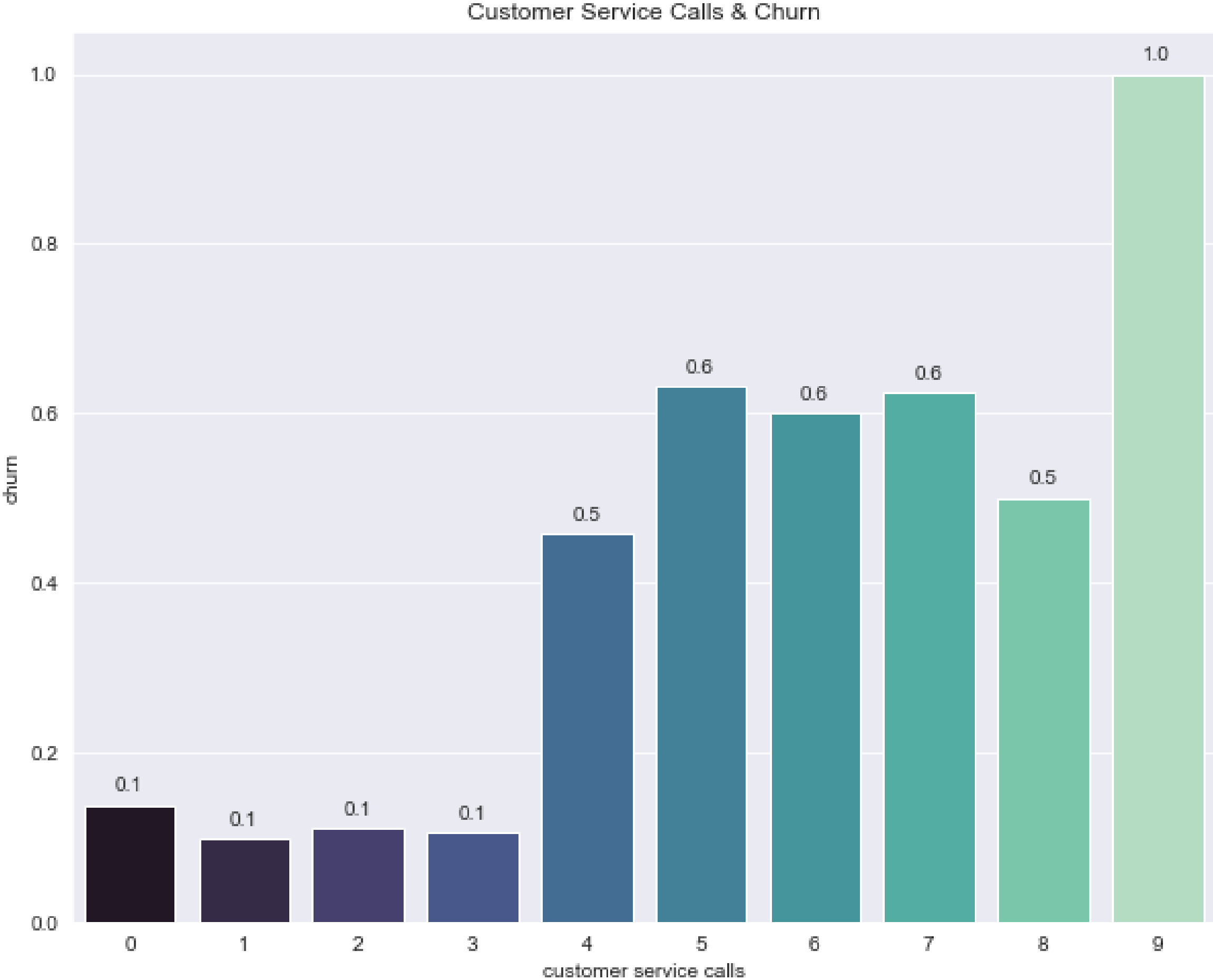


## *Predicting & Preventing Churn*

Confusion Matrix and Cost Benefit Analysis

# Calls to Customer Service

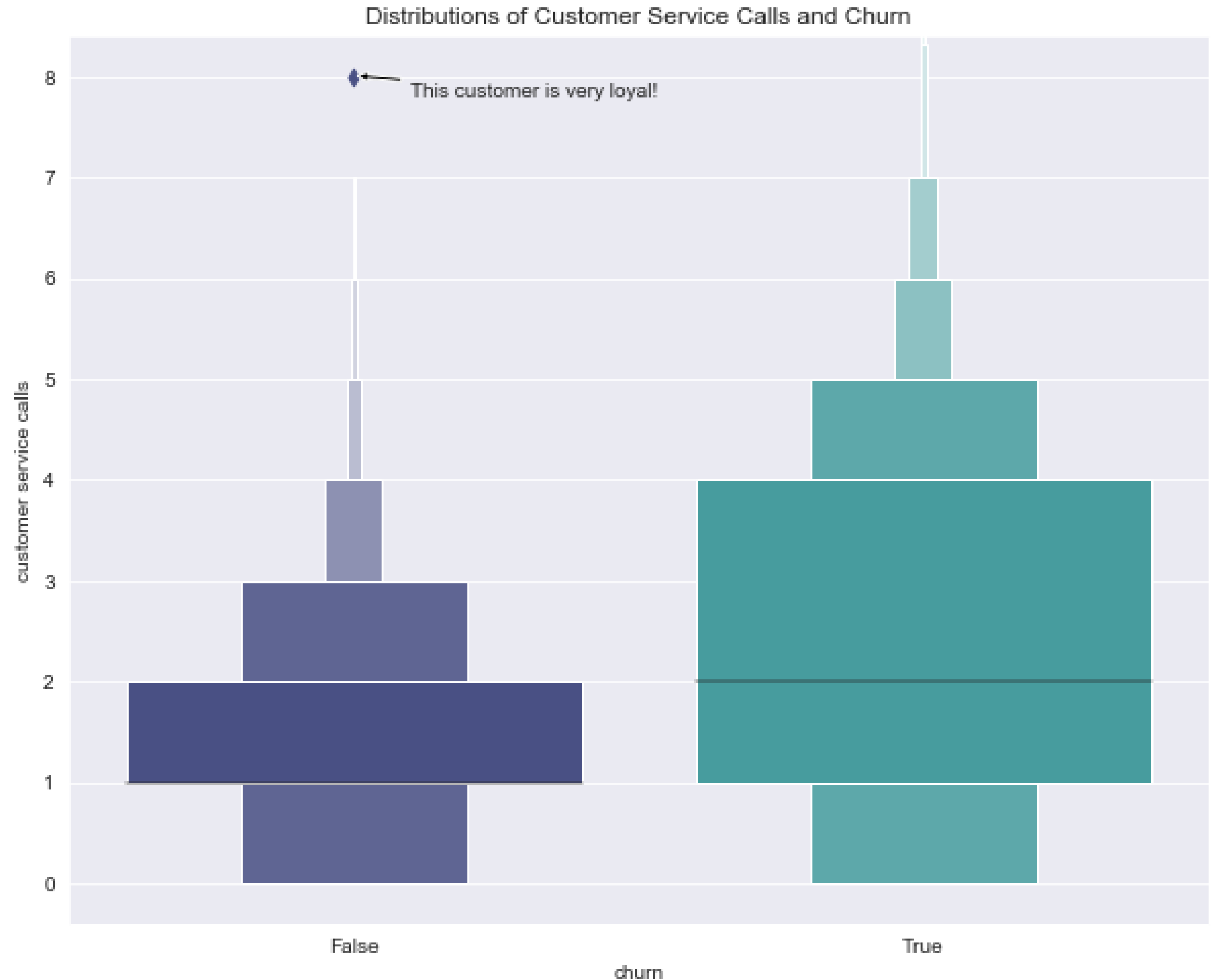
Big increase in churn after 3 calls to customer service



## Calls to Customer Service

- The majority of customers who did not churn placed 1-2 calls

- The majority of customers who DID churn placed 1-4 calls





# RECOMMENDATIONS

- Revisit customer service protocol
- Offer a larger incentive/discount to customers making more than 3 calls to customer service



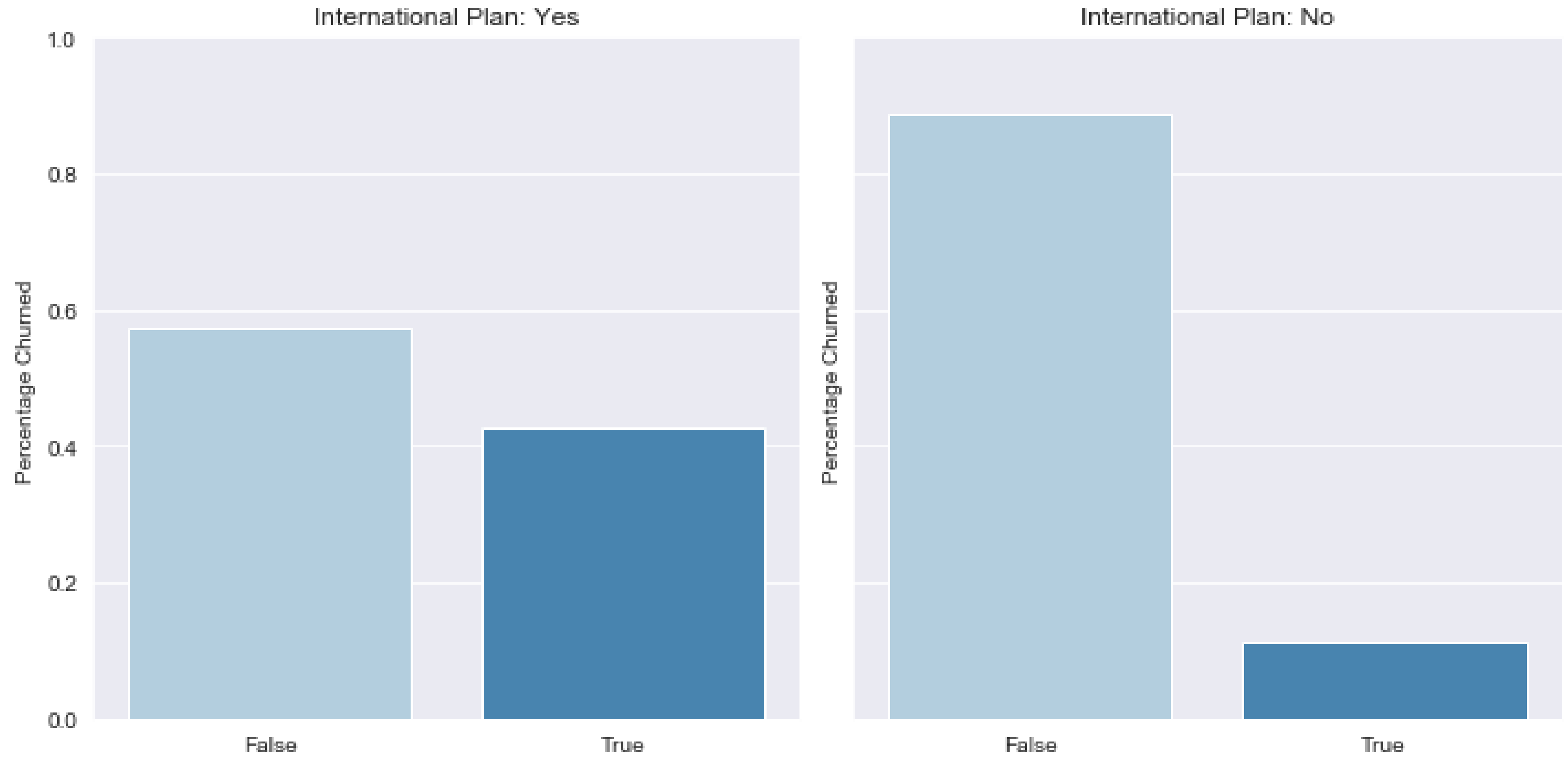
# Plan Usage

Notice the international rate is the same with/without an international plan



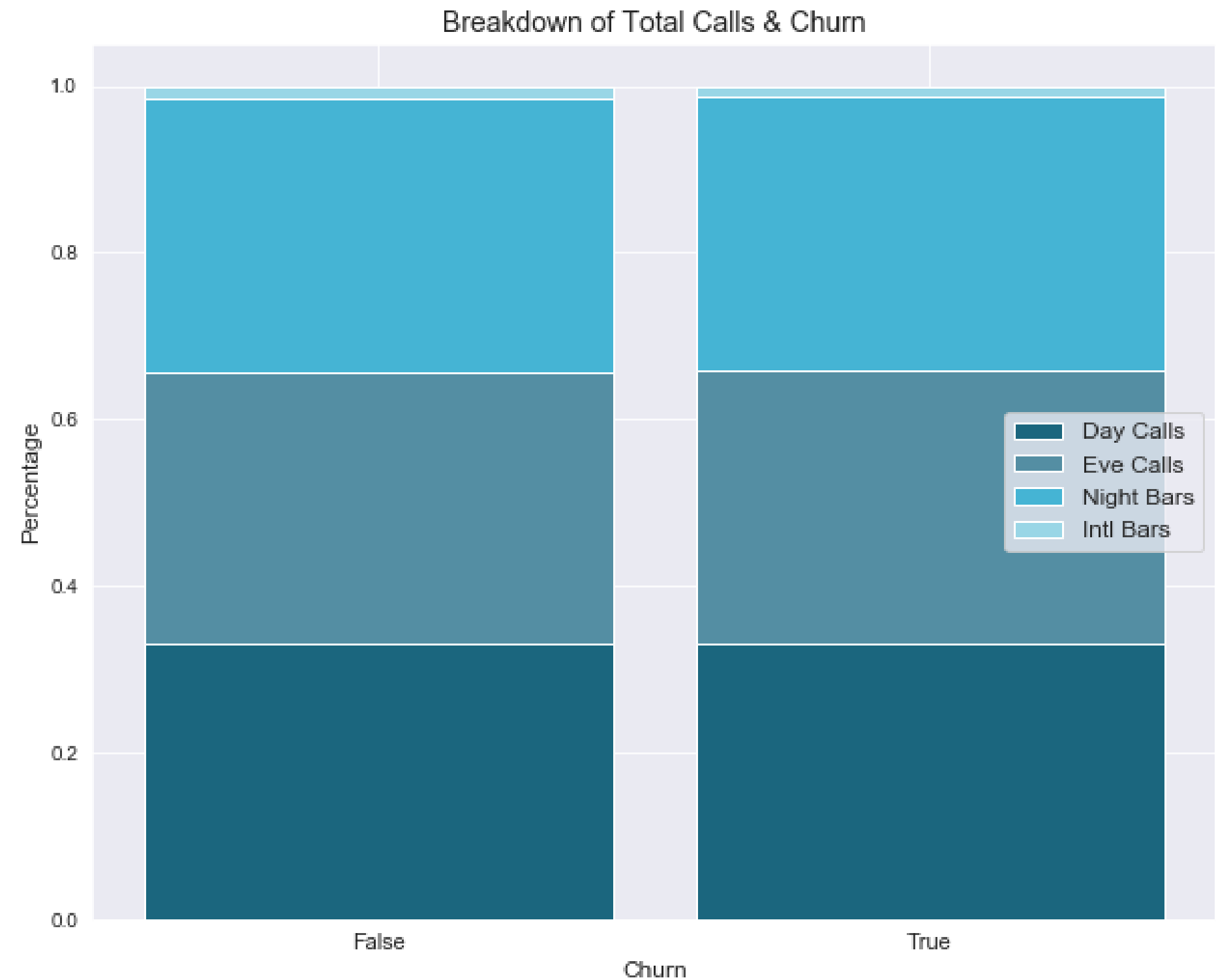
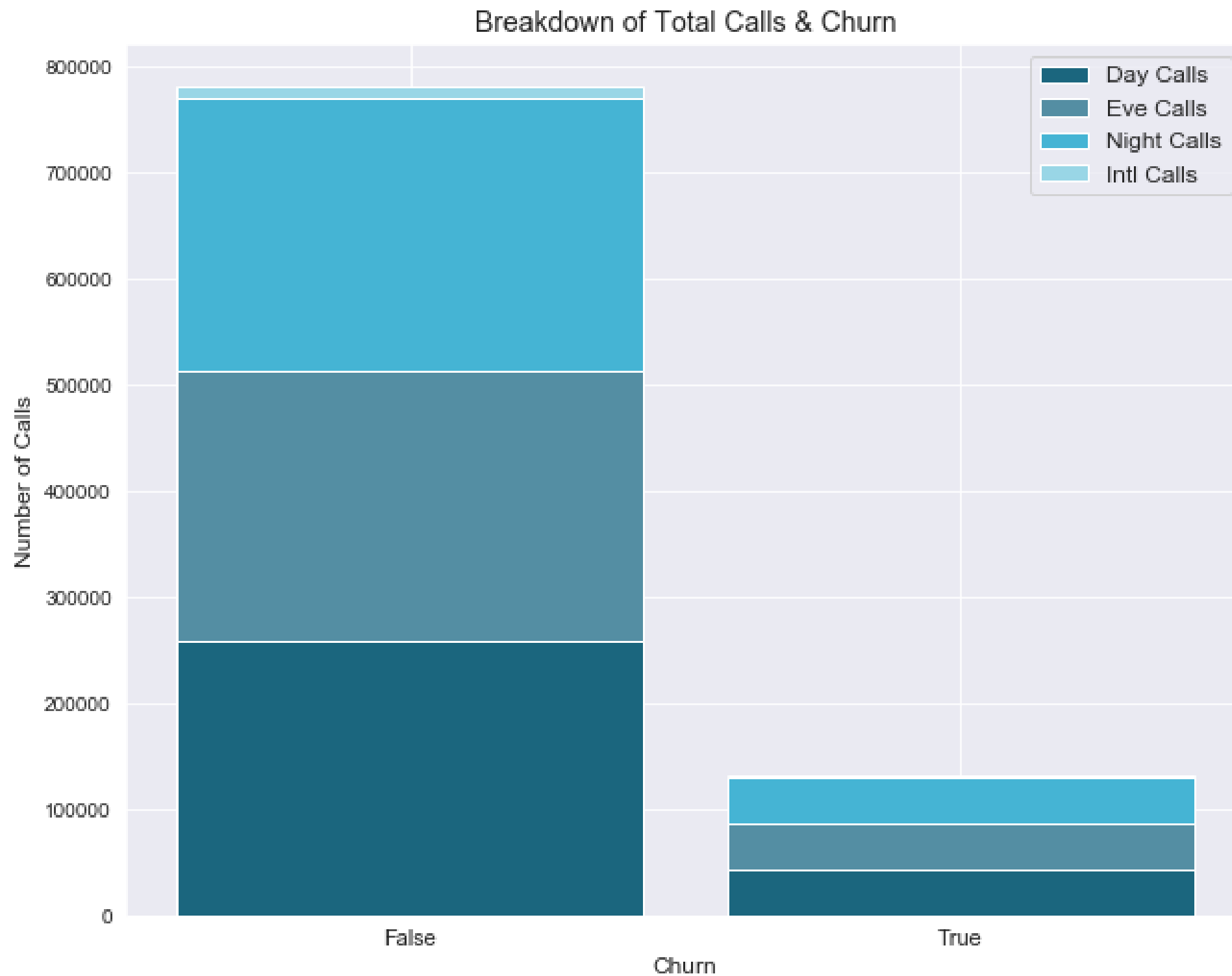
# International Plan

Higher percentage of churn with international plan customers



# What kinds of calls are the churning customers making?

There is virtually no difference between churn and the percentage of day/eve/night/intl calls





# RECOMMENDATIONS

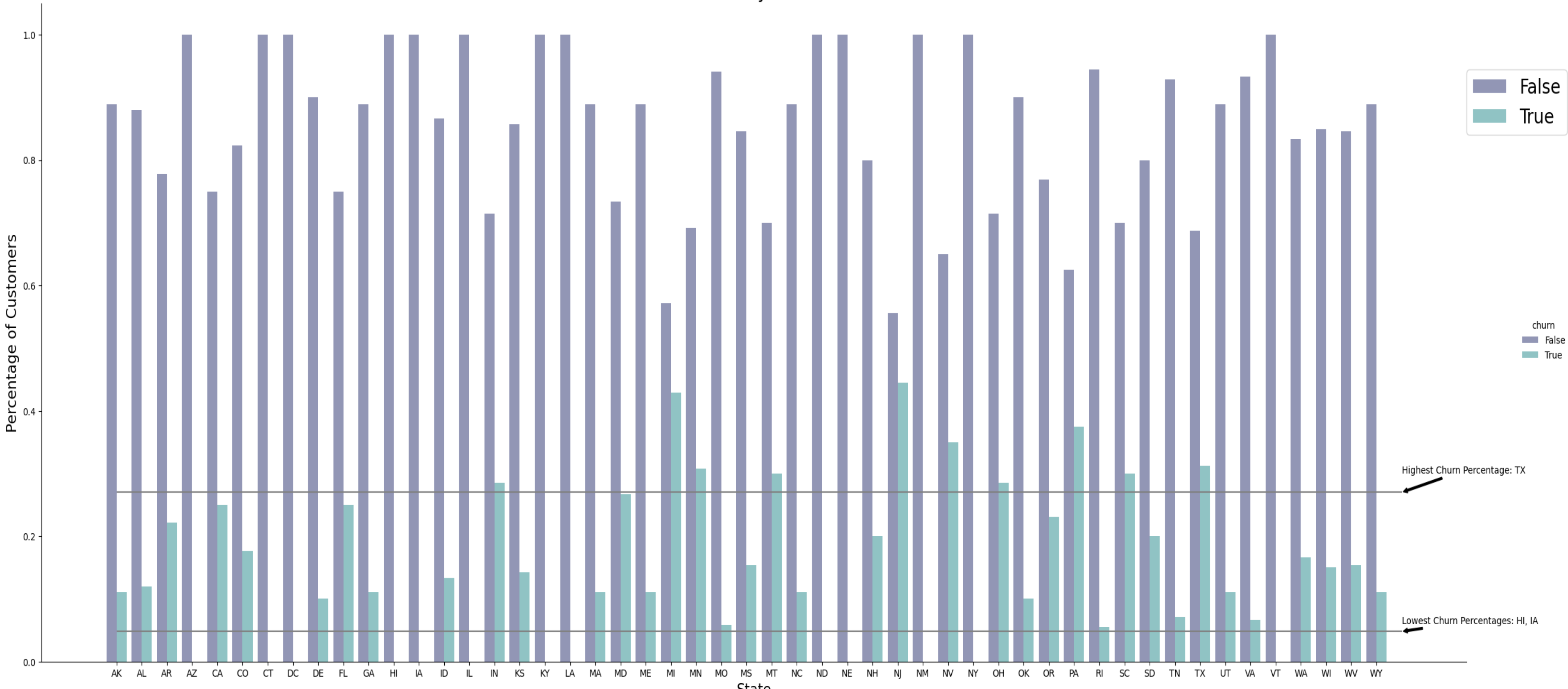
- Change the rates for international minutes.
  - Consider adjusting the rates for international calls to provide better value to customers with a global plan, potentially reducing their likelihood of churning.



# Churn & Customer Location

Highest churn in Texas | Lowest churn in Hawaii and Iowa

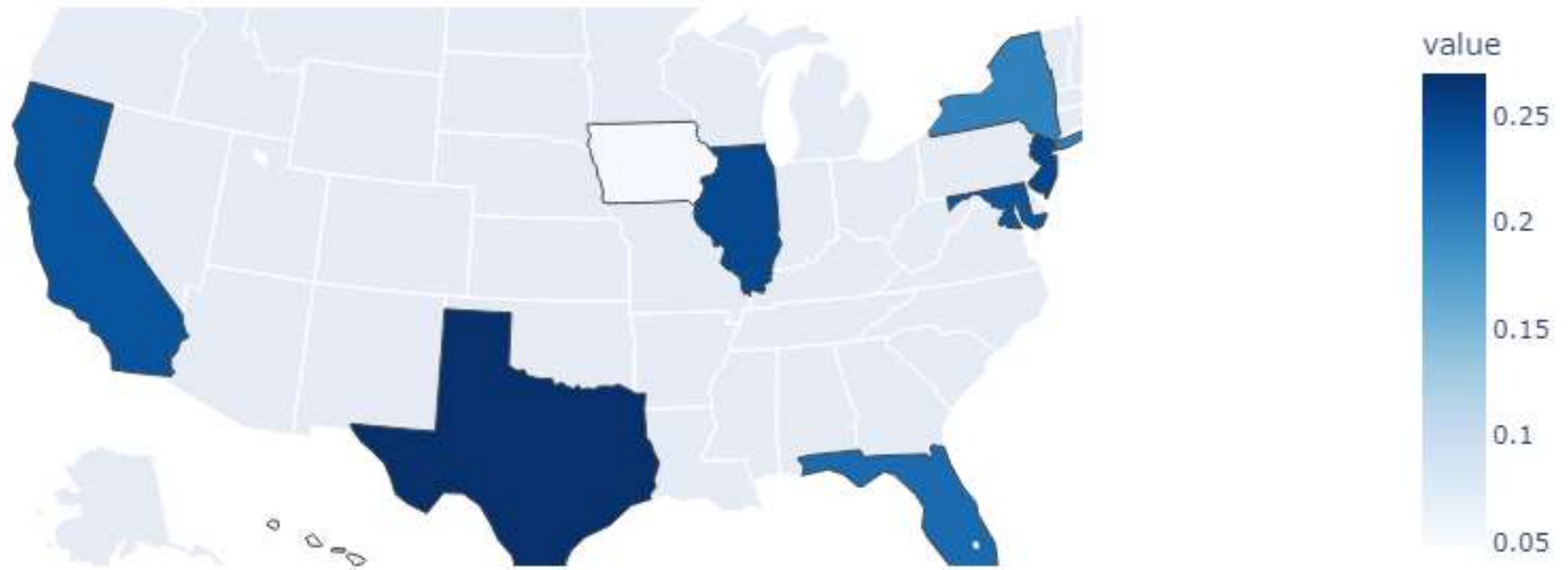
Churn By State



# Churn & Customer Location

Highest churn in these states could indicate more competition

States with Highest Churn Percentage





# RECOMMENDATIONS

- Look into competitors in states with high churn to see if they are offering introductory offers
- Look into the cell signal in these states to see if there are any dead zones contributing to the higher churn



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# CONFUSION MATRIX ANALYSIS

## FALSE NEGATIVE

We labeled them as 'not going to churn' when they actually churned.

FN

## TRUE POSITIVE

We labeled them as 'going to churn' and they did churn.

T

## TRUE NEGATIVE

We labeled them as 'not going to churn' and they did not churn.

P

## FALSE POSITIVE

We labeled them as 'going to churn' but they actually stayed.

TN



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## COST OF A FALSE POSITIVE VS FALSE NEGATIVE

### ***FALSE POSITIVE***

Offer a discount  
of 50% off  
monthly bill of  
\$50 to existing  
customer

.....•

$$-\$25 * FP$$

$$-\$100 * FN$$

.....•

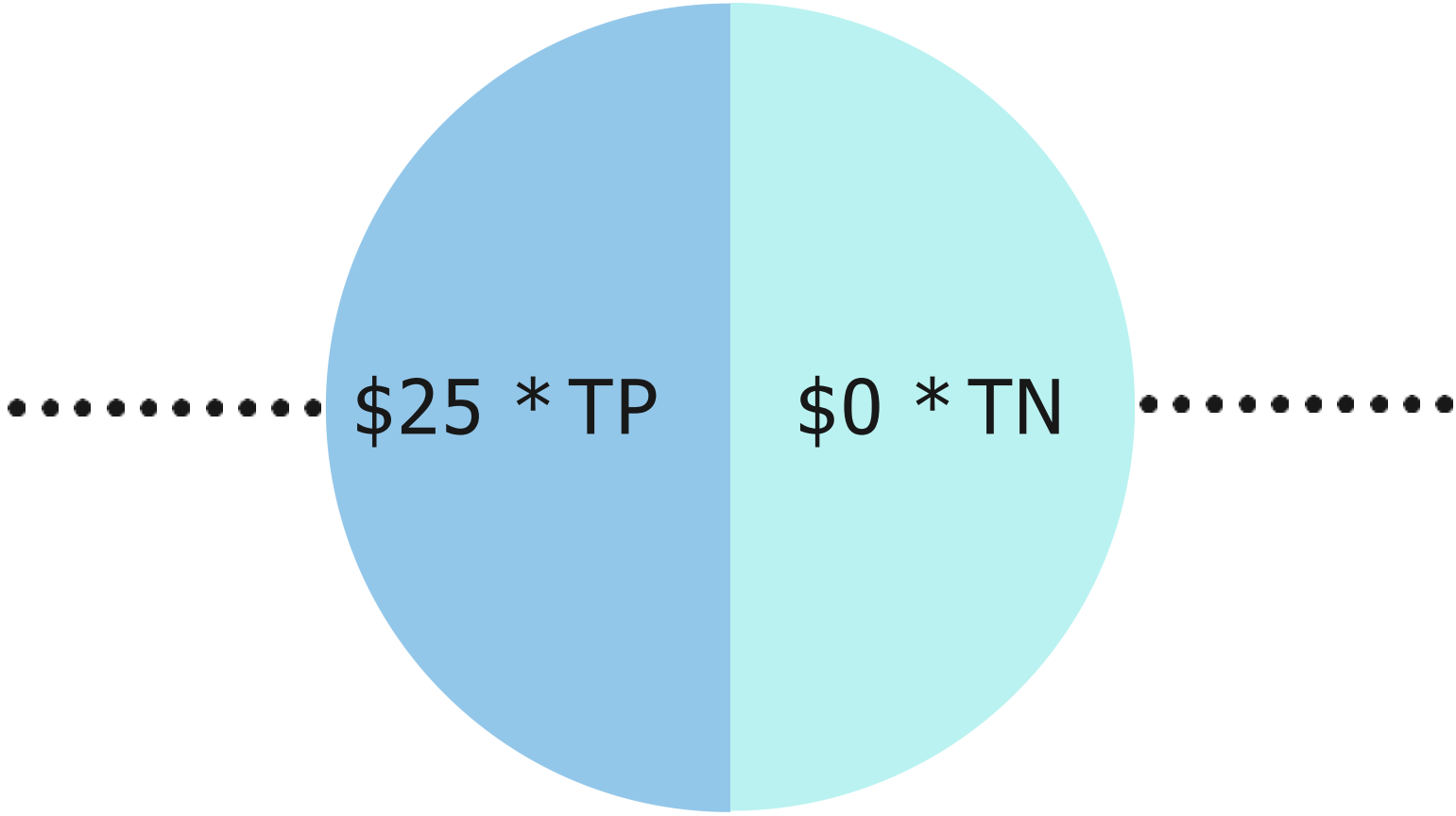
### ***FALSE NEGATIVE***

Pay a customer  
acquisition cost of  
\$50 AND lose  
their \$50.month  
payment

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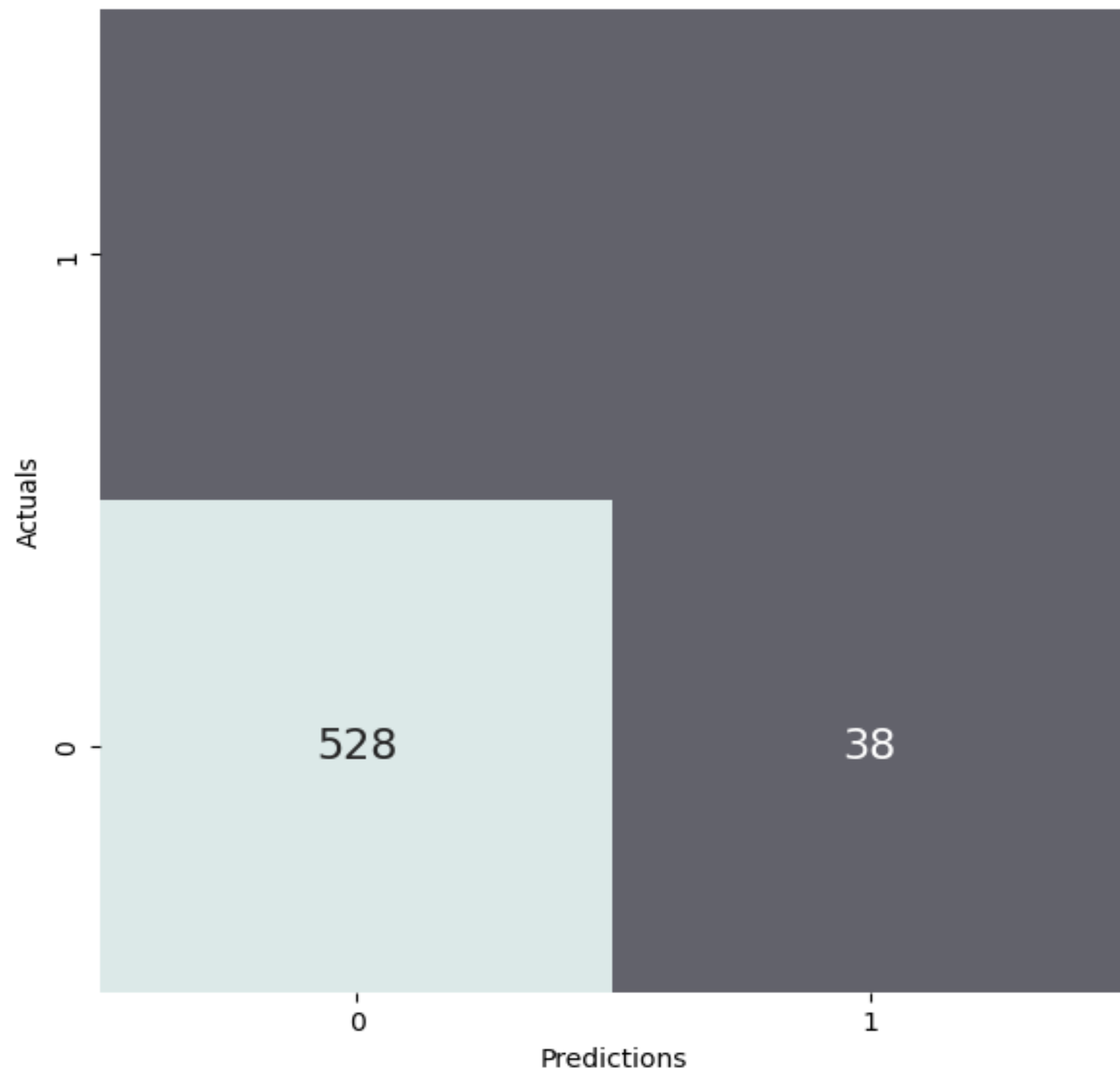
# BENEFIT OF A TRUE POSITIVE VS TRUE NEGATIVE

***TRUE POSITIVE***  
Offer a discount of 50%  
off monthly bill of \$50  
to existing customer

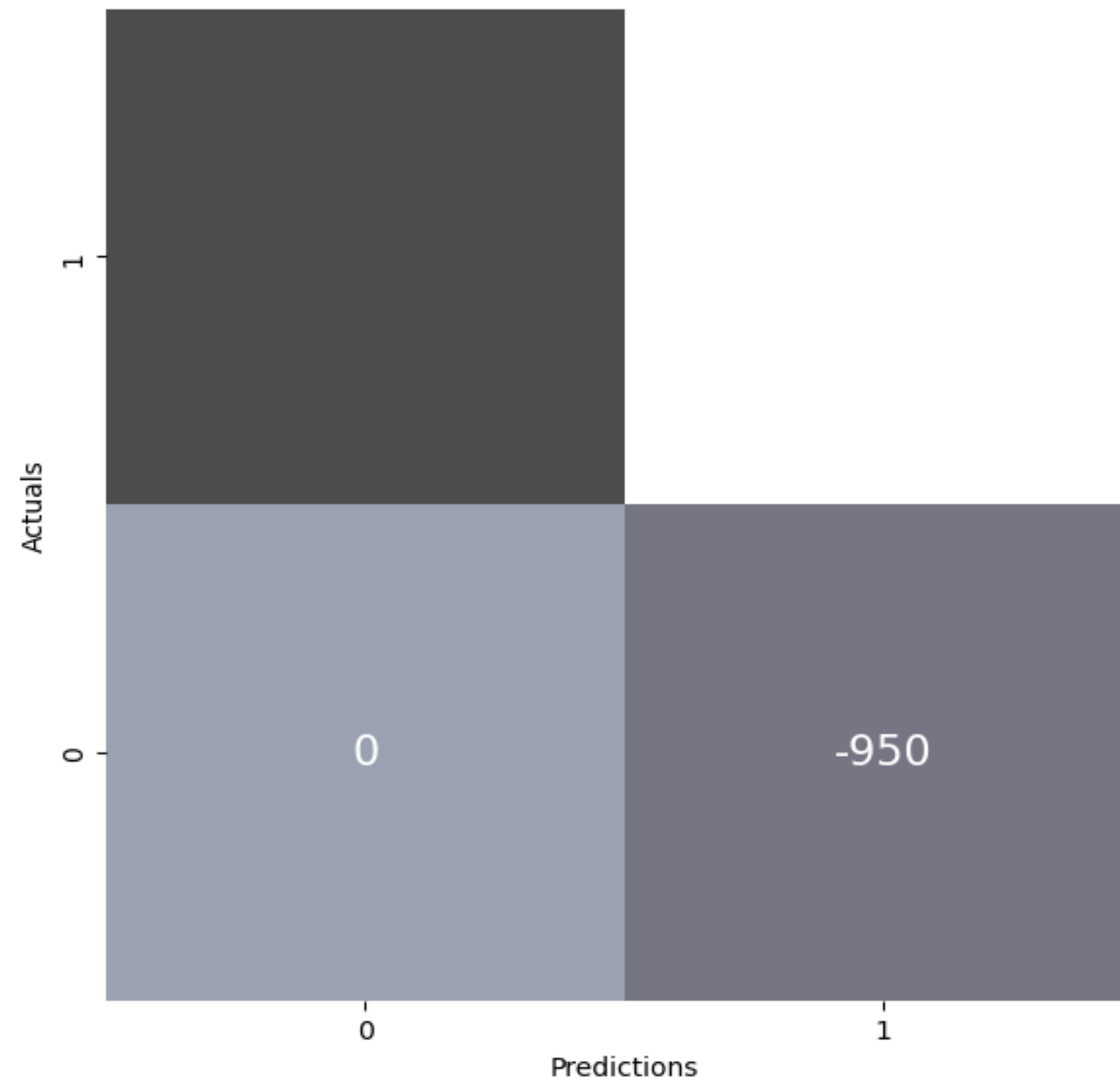


***TRUE NEGATIVE***  
\$0 because we will not  
have to offer these  
customers any discount

Validation Set Confusion Matrix

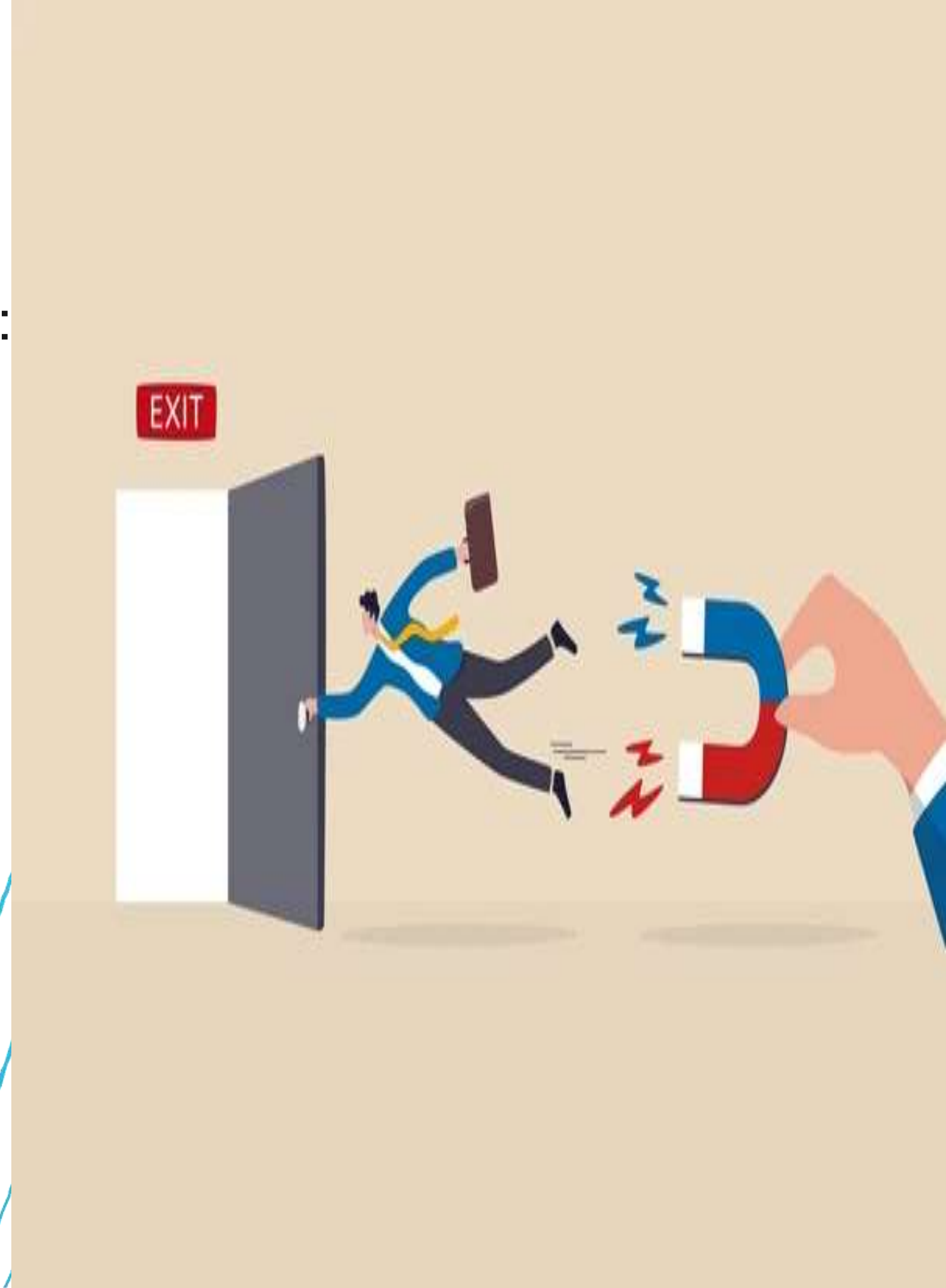


Validation Set Cost Benefit Analysis (\$)  
Expected Value: \$-1.39 per customer per month



## CONCLUSION & FUTURE WORK

- In conclusion, we need to focus on 3 main areas:
  - Customer service
  - International
  - Plan competition
- Future Work
  - 1. Competitor Analysis
  - 2. Signal Strength Analysis in US
  - 3. Look into voicemail data
  - 4. Model Enhancement
  - 5. Automated Expected Value Integration





# THANK YOU!

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# The End