

# Predicting Customer

**Churn for SyriaTel  
Telecommunications**



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# Project Overview



The project aims to develop a reliable binary classification model for predicting customer churn in SyriaTel, enhancing the telecom company's ability to preemptively address issues and minimize revenue loss through pattern recognition.



# Business Understanding

SyriaTel's success hinges on understanding its business landscape to combat customer churn and boost revenue.

This understanding is crucial for strategic decisions, fostering sustainable growth in a competitive telecom industry

Identifying patterns of customer disengagement contributes to resource optimization, allowing SyriaTel to allocate efforts and resources effectively.



## Problem statement

The problem at hand is to develop a robust binary classification model to predict customer churn accurately in SyriaTel, enhancing the telecom company's ability to preemptively address issues and minimize revenue loss through pattern recognition.



# Data Understanding



Data source:

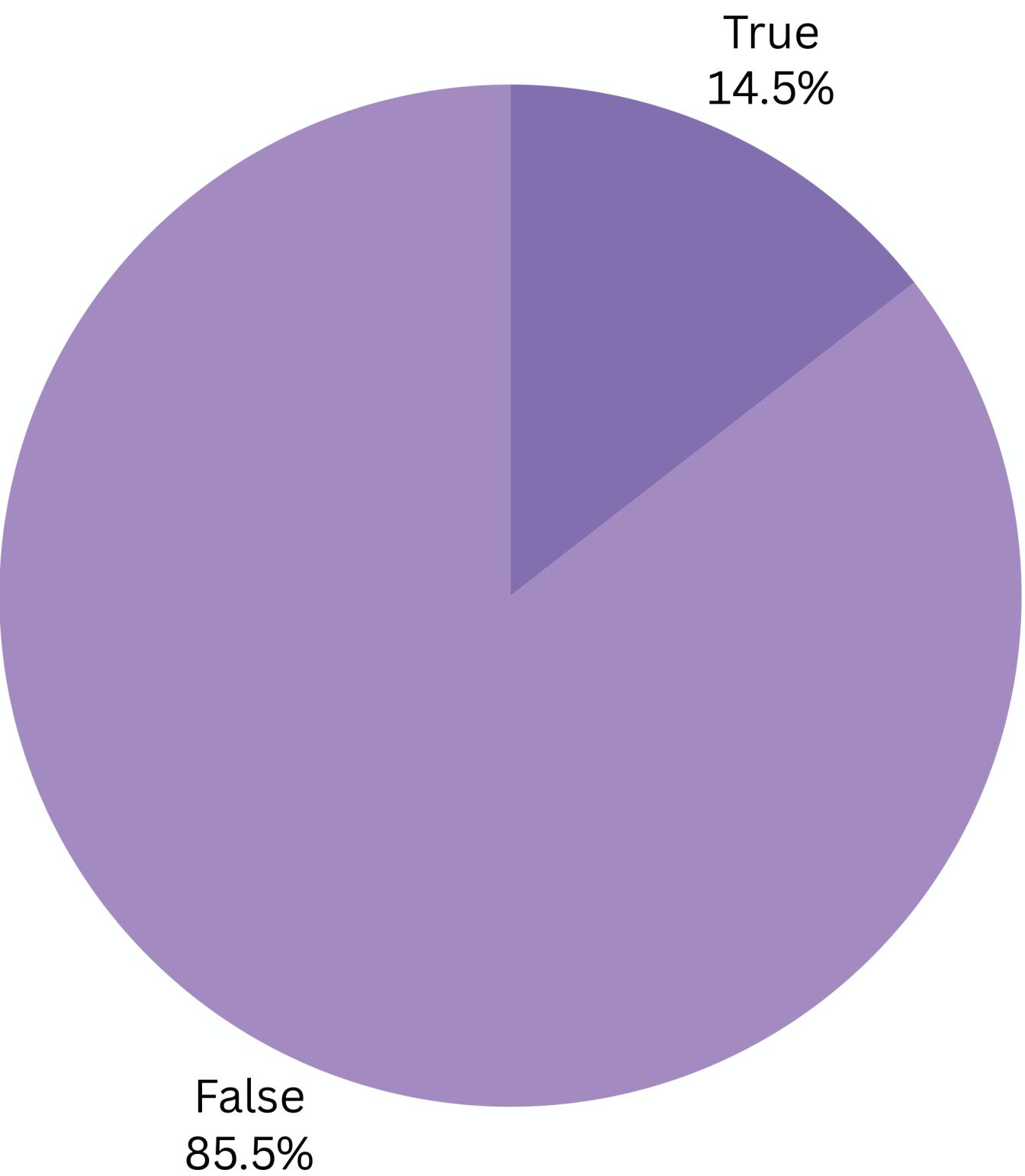
<https://www.kaggle.com/datasets/becksddf/churn-in-telecoms-dataset>

The data set includes a record of:

'state', 'account length', 'area code', 'phone number',  
'international plan', 'voice mail plan', 'number vmail  
messages', 'total day minutes', 'total day calls', 'total  
day charge', 'total eve minutes', 'total eve calls',  
'total eve charge', 'total night minutes', 'total night  
calls', 'total night charge', 'total intl minutes', 'total  
intl calls', 'total intl charge', 'customer service calls',  
'churn'

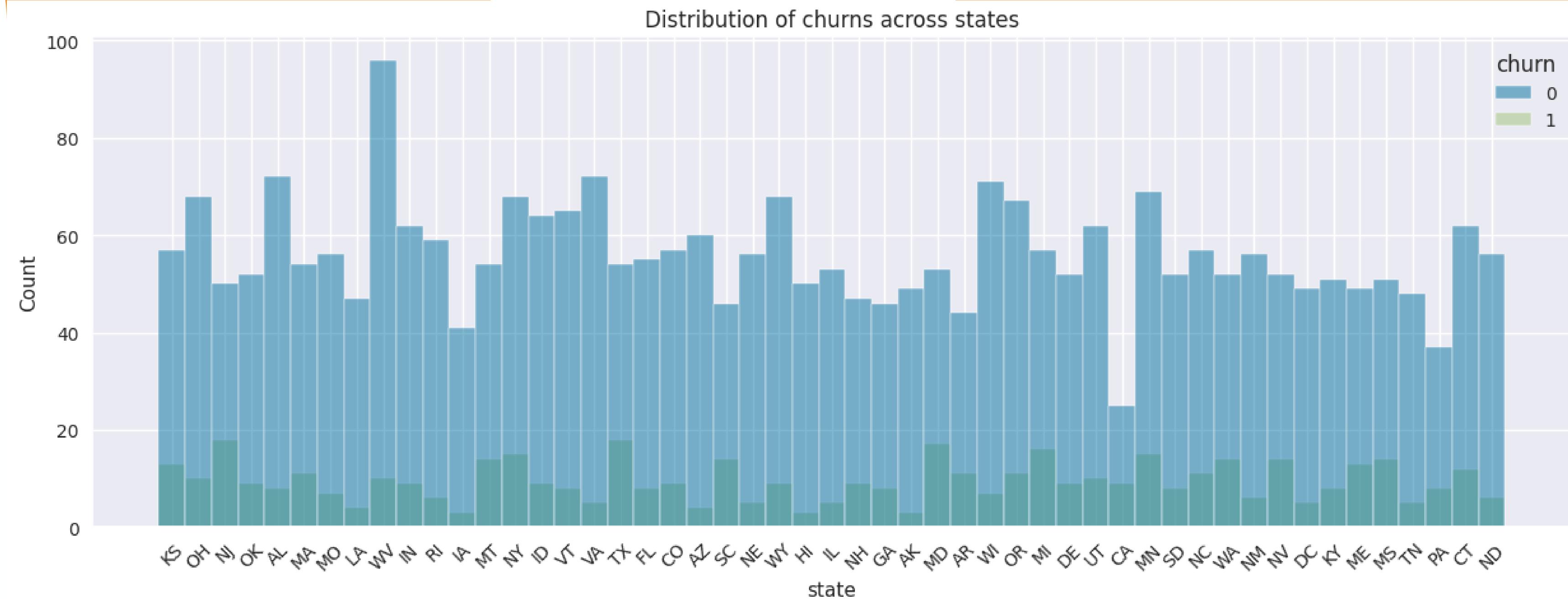
# Count of churns

**Many customers stay, suggesting a low churn rate, while the overall count of churns seems relatively minimal in comparison.**



# Visualization : State vs churn

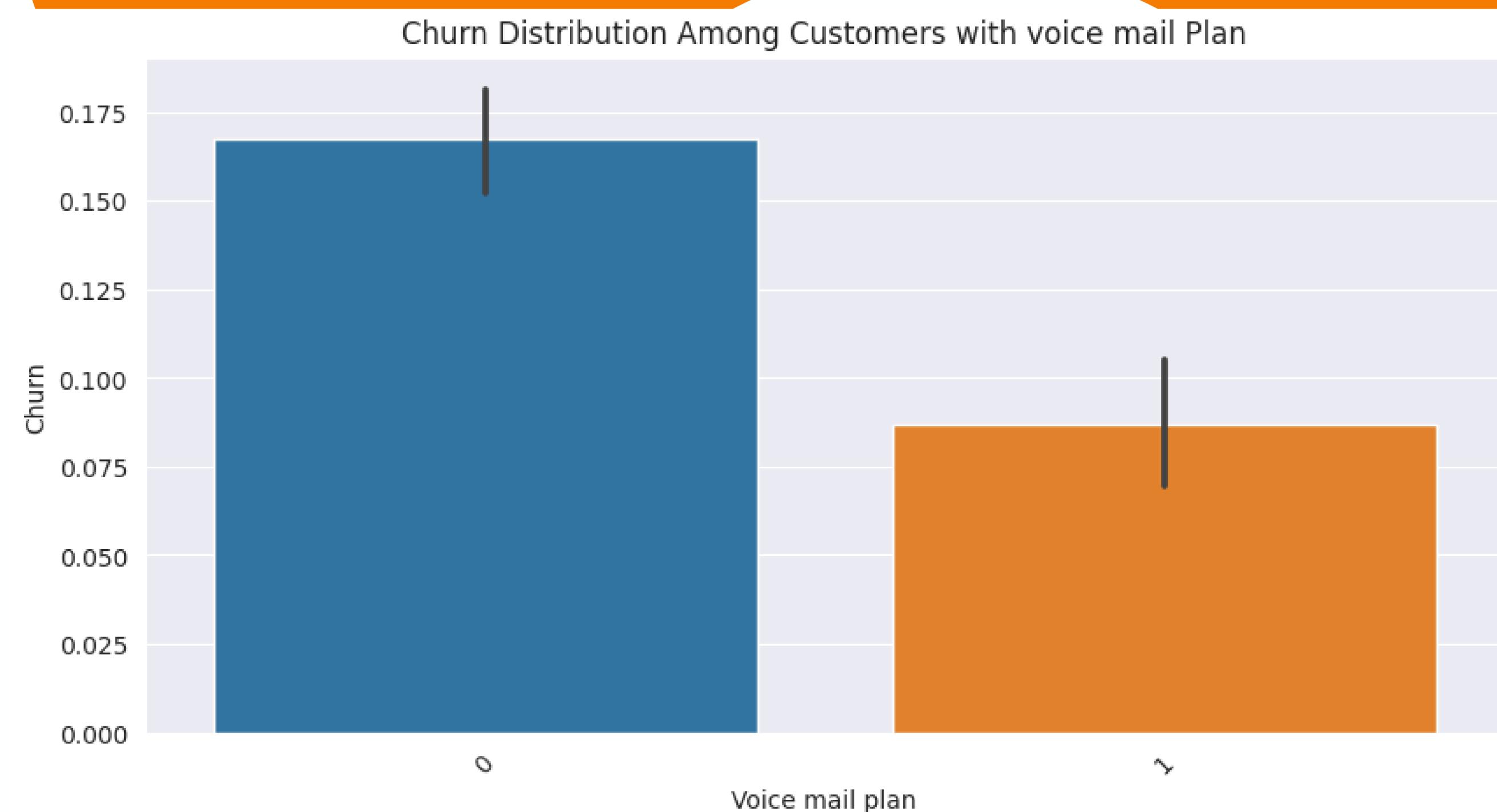
Most customers from various states have not churned, indicating a prevailing trend of retention and satisfaction across different regions



# Visualization :

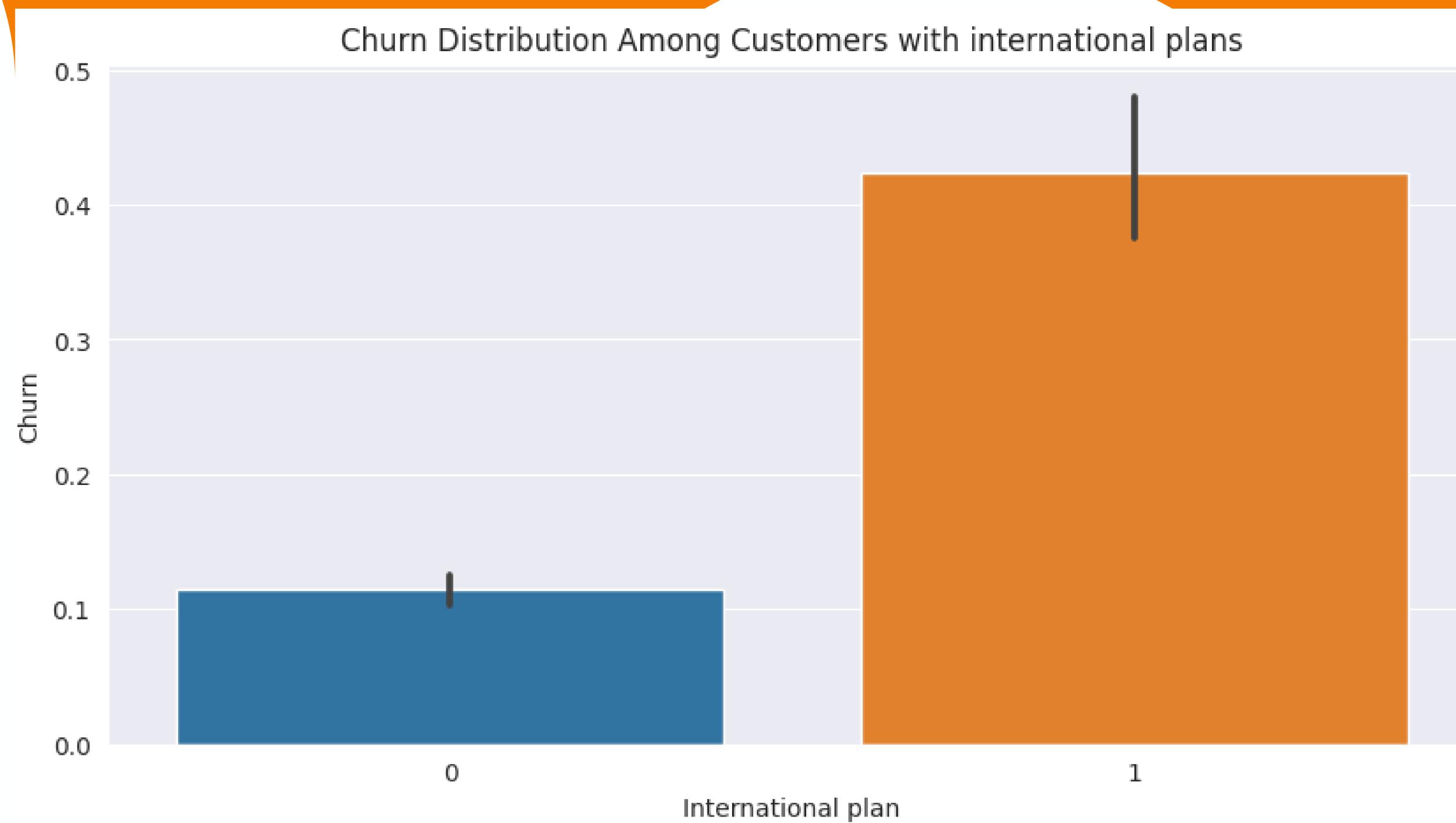
## Voice mail vs churn

Customers without voice mail plans often experience higher churn rates compared to those with voice mail plans



# Visualization : International plan vs churn

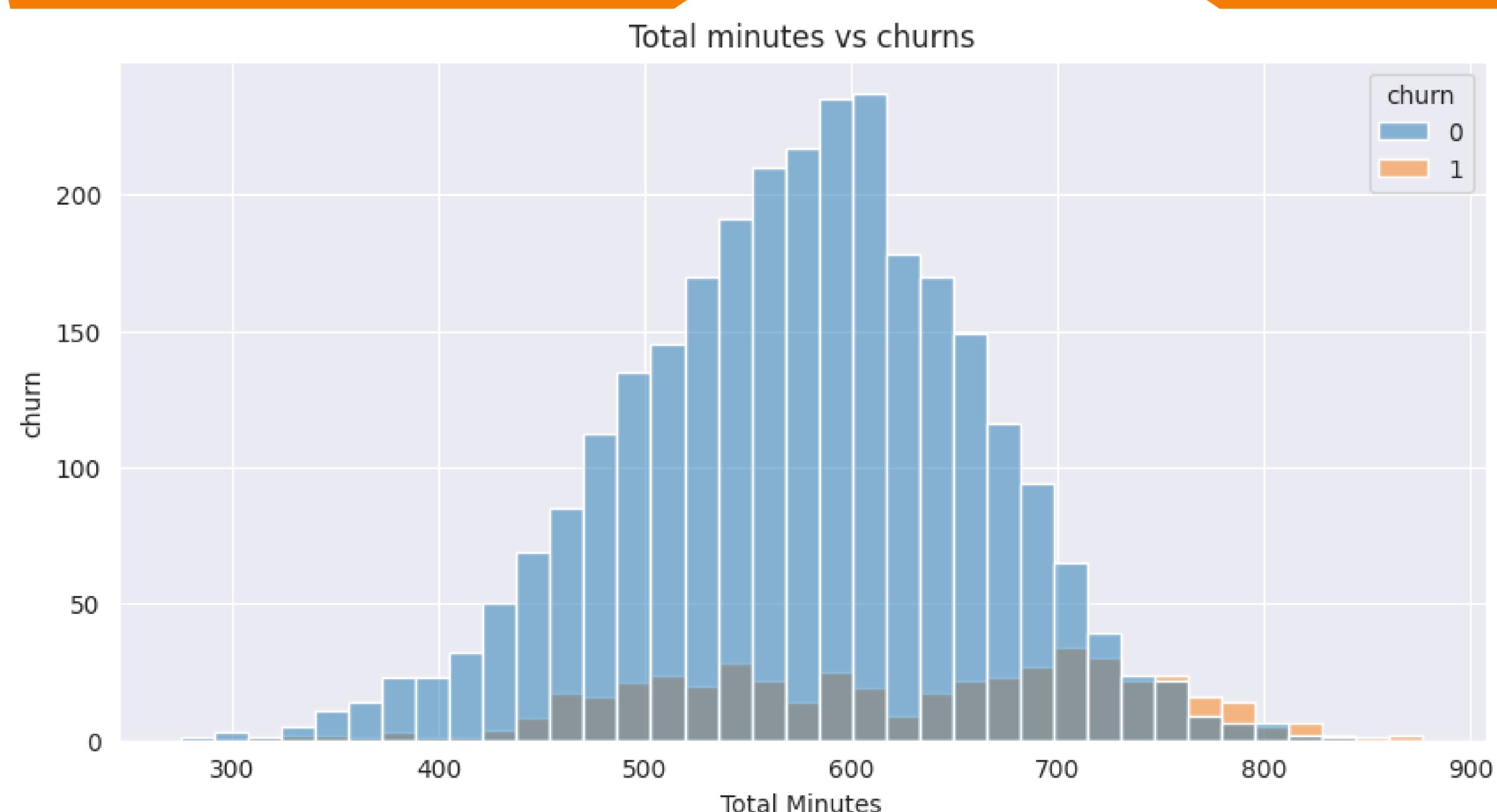
Customers with international plans often experience low churning rates compared to those without international plans



# Visualization :

## Total minutes vs churn

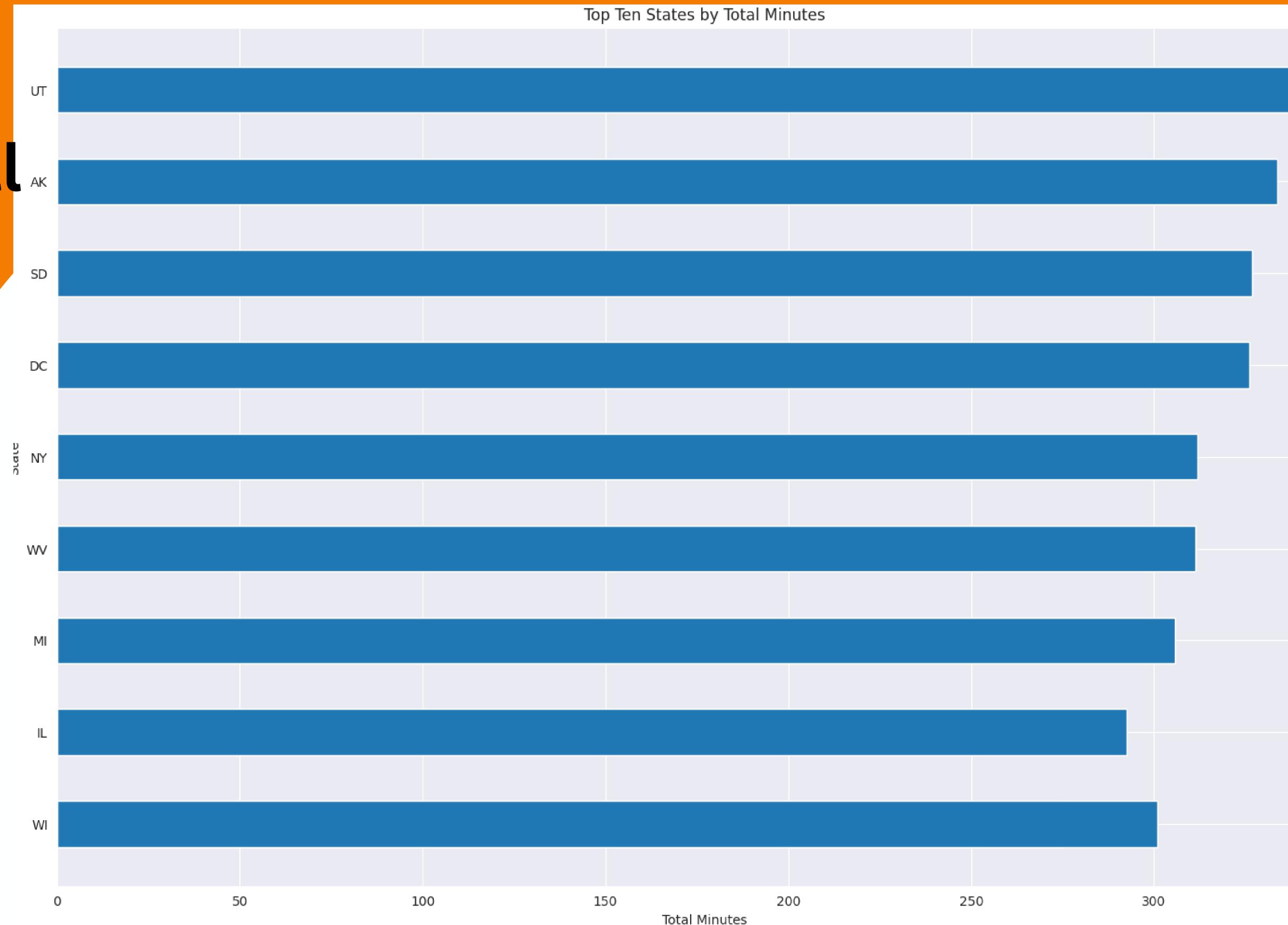
As the total number of minutes increases the number of customers churning also decreases meaning that customers with large amounts of minutes tend not to churn



# Visualization :

## Top 10 states by total minutes

Utah customers lead in total minutes spent, surpassing all states, closely followed by Alaska

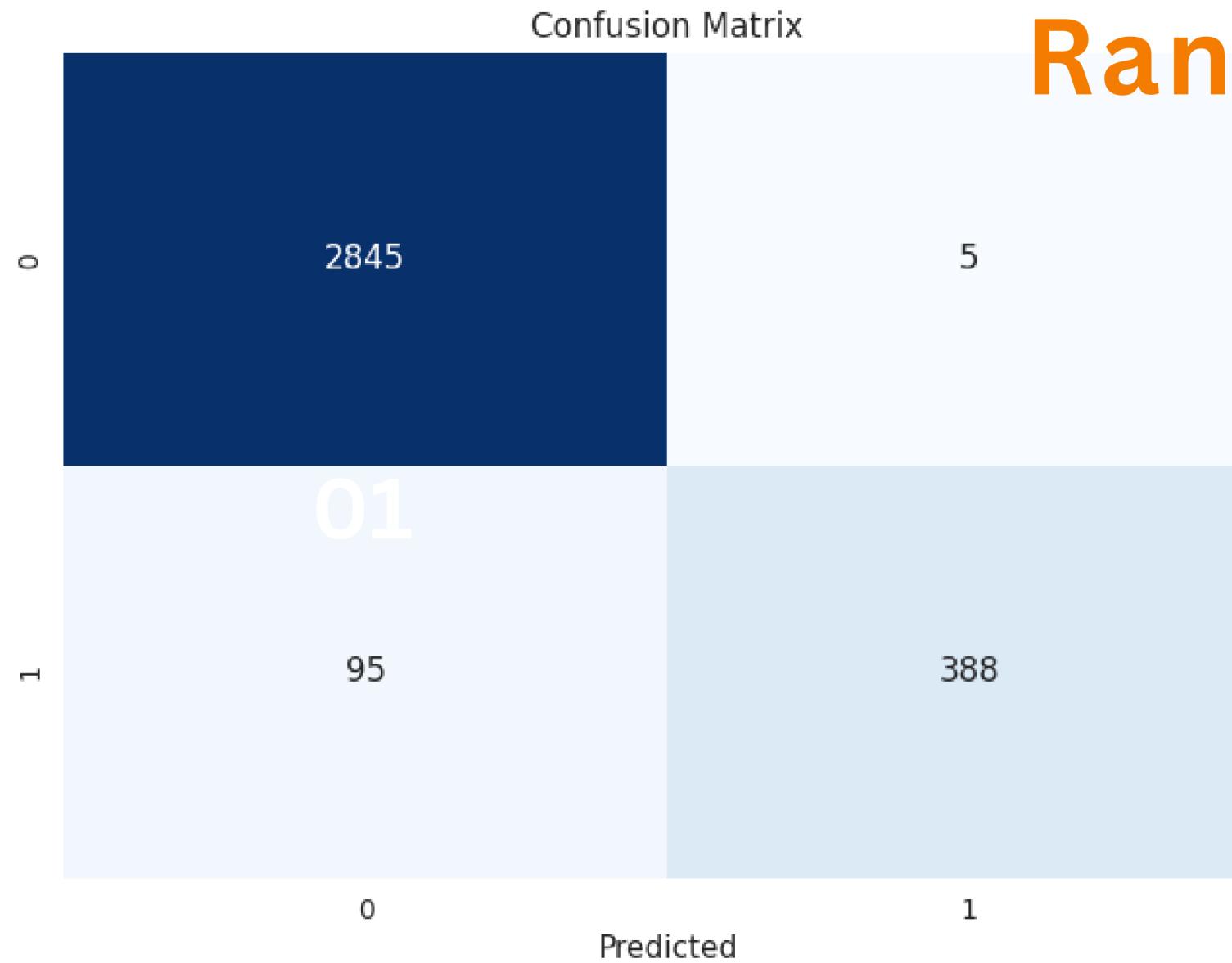


# **Models used**

## **Decision Tree**

**The model achieved a classification accuracy of 93.31%, accurately predicting customer churn in 93.13% of cases**

# Random Forest



The Random forest Classifier, integrated into a pipeline with standard scaling, demonstrates promising performance in predicting customer churn for SyriaTel, a telecommunications company. The model achieved a mean accuracy of approximately 96.89%, indicating its ability to generalize well to diverse subsets of the dataset.



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# EVALUATION



## Conclusion:

SyriaTel can strengthen customer retention using the Decision Tree Classifier for real-time churn predictions. Regular monitoring ensures model effectiveness, adapting to evolving behaviors and guiding targeted service improvements.



## Recommendation:

Leverage feature importance insights to inform personalized retention efforts. Collaborate with retention teams for seamless integration, combining quantitative predictions and qualitative feedback. Iterate on model improvements and invest in customer experience initiatives for sustained success in telecommunications



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THANK  
YOU

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