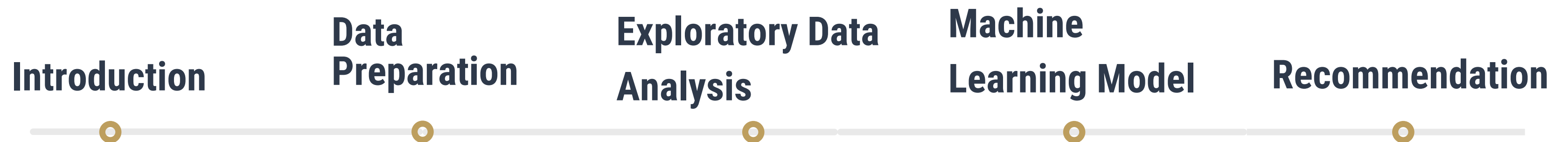




TELCO CUSTOMER CHURN

Adristi Shafiya

Outline



Introduction

Customer churn is total of customers that stopped using the product or service during a certain time frame. We have to decrease customer churn because we can lost our customer and it can cause disadvantage for telecommunication companies

Goals

- Determine what factors that might be affect churn level
 - Predict the customer churn
 - Giving recommendations to decrease the churn of the customer
-

About Feature

Geographic

- State
- Area Code

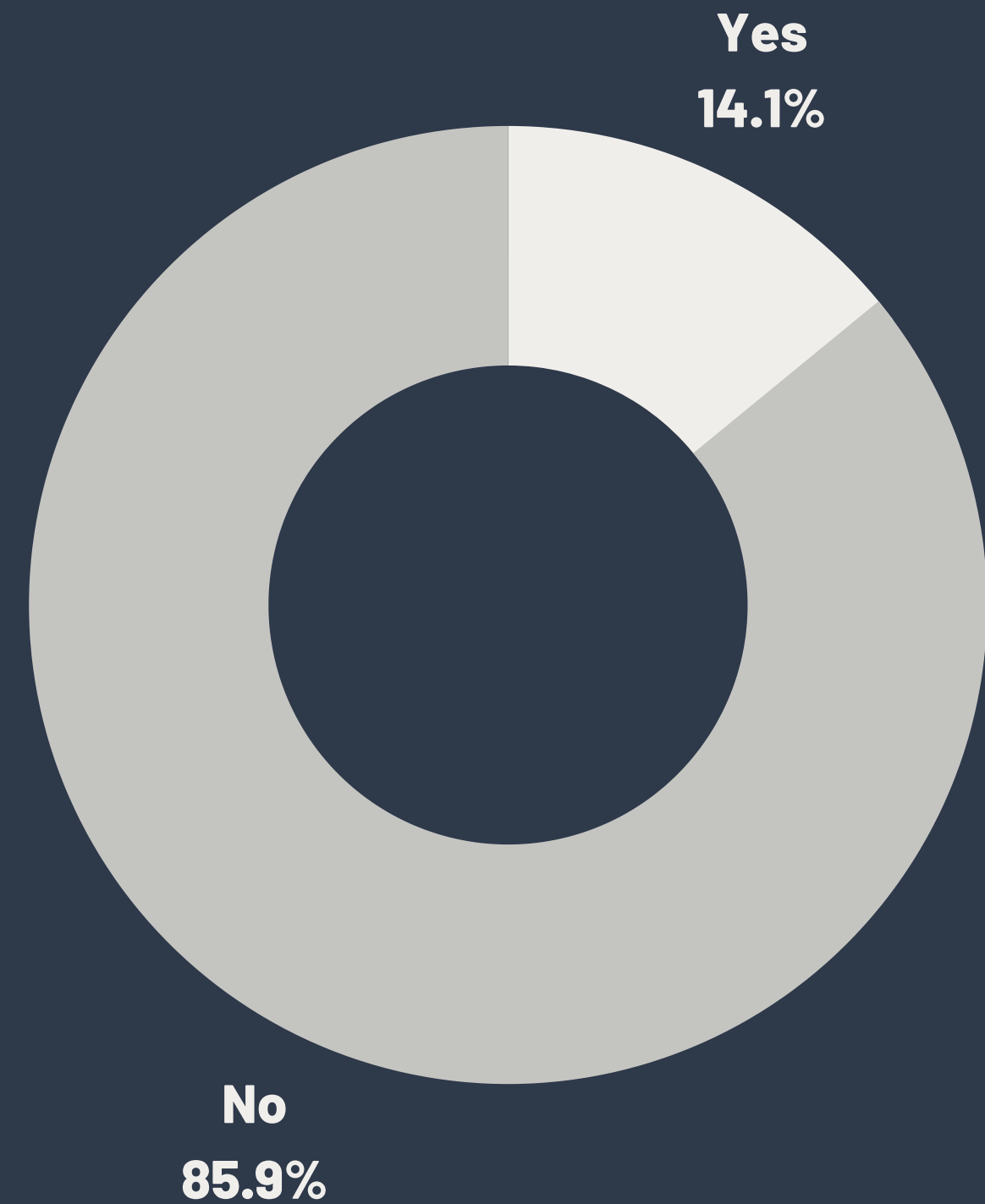
Customer's Activity

- Total Day Minutes
- Total Night Charges
- Total Intl Calls
- Total Eve Minutes
- etc

Exploratory Data Analysis

💡 Churn of The Customers

There are 3652 customer choose to not churn and 598 customer choose to churn



Business Question

1

What is the relation between account length and total minutes, total charge?

2

What is the relation between number customer service calls which customer made and tendency of customer to churn?

3

What is code area which made a biggest number customer service call?

4

How is the relation between customer's activity and tendency of customers to churn?

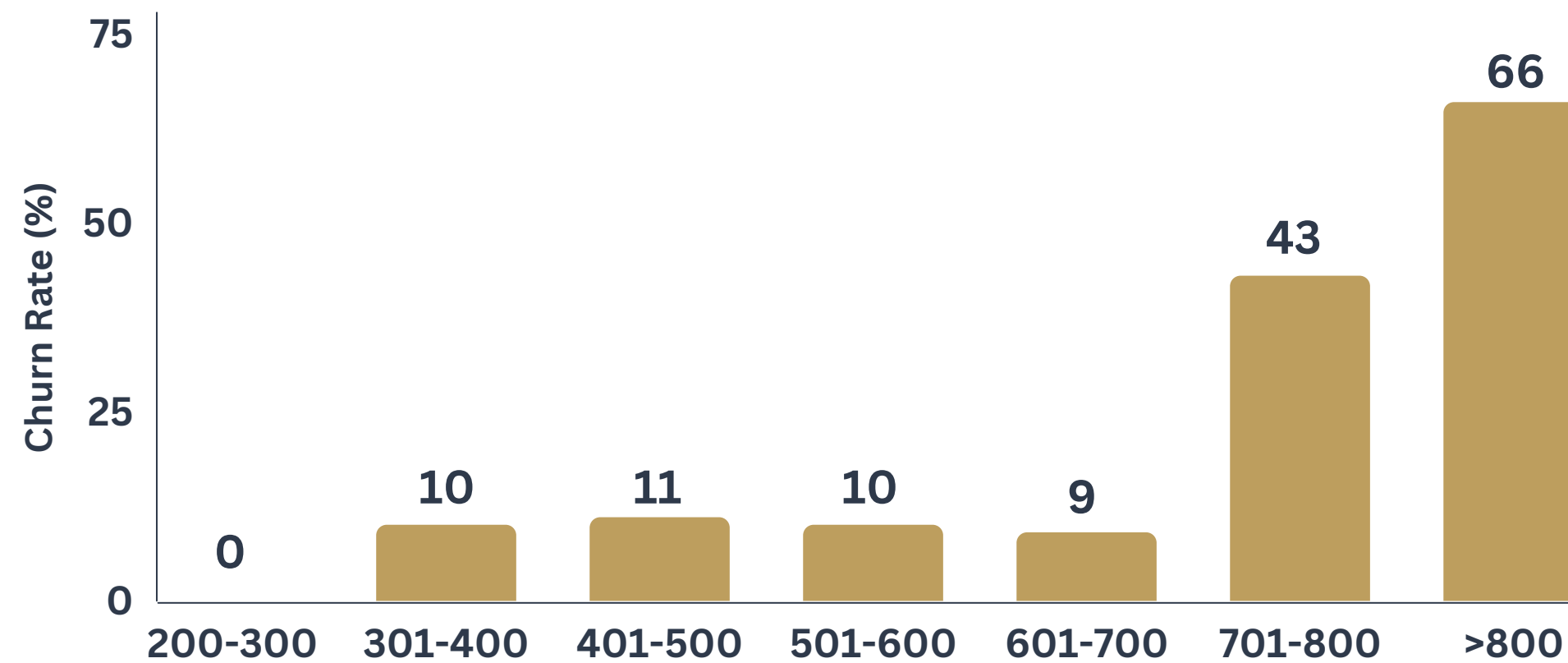
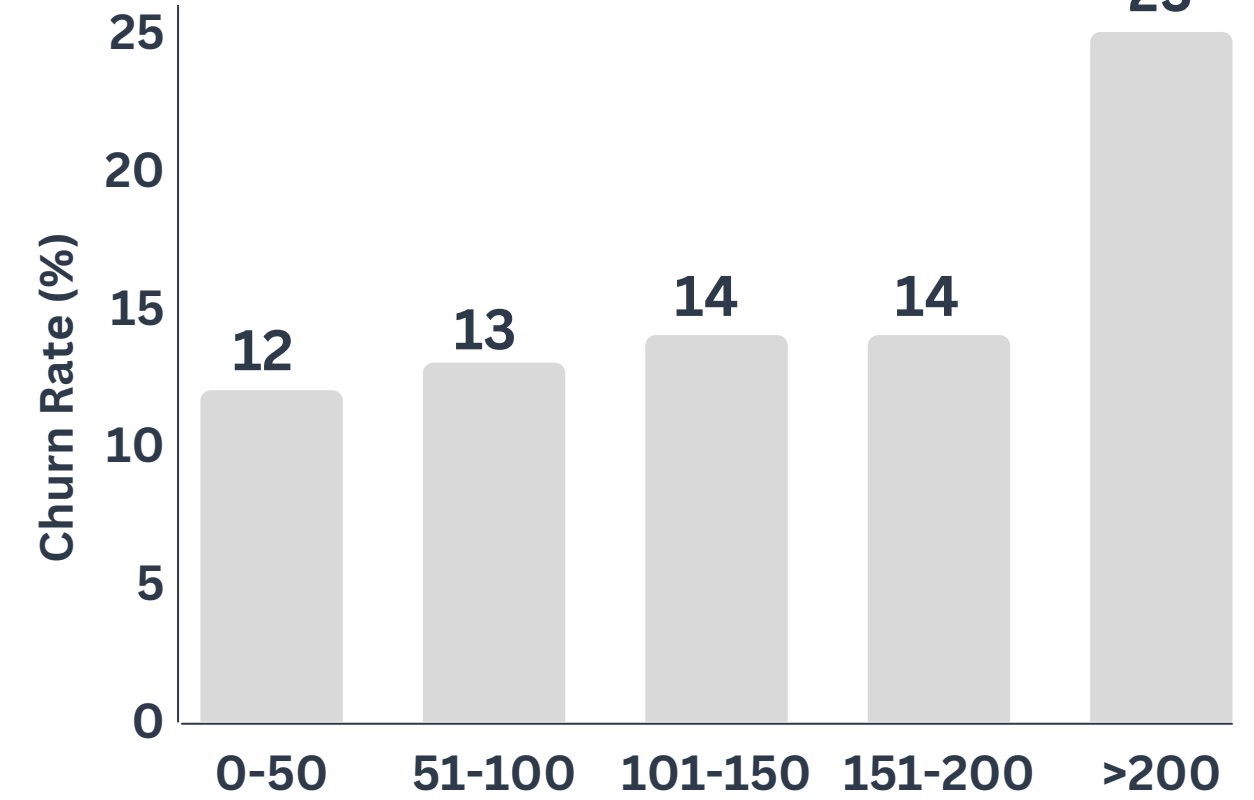
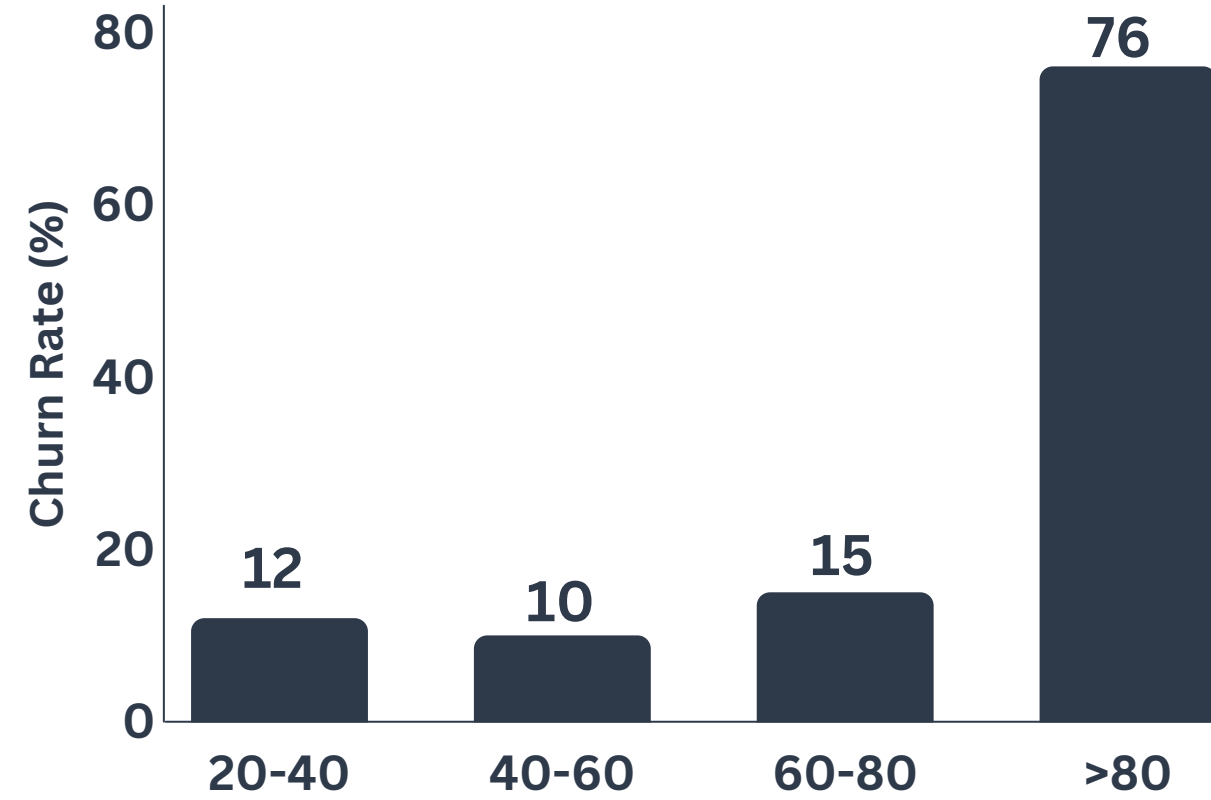
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Top 5 State with the biggest total charge

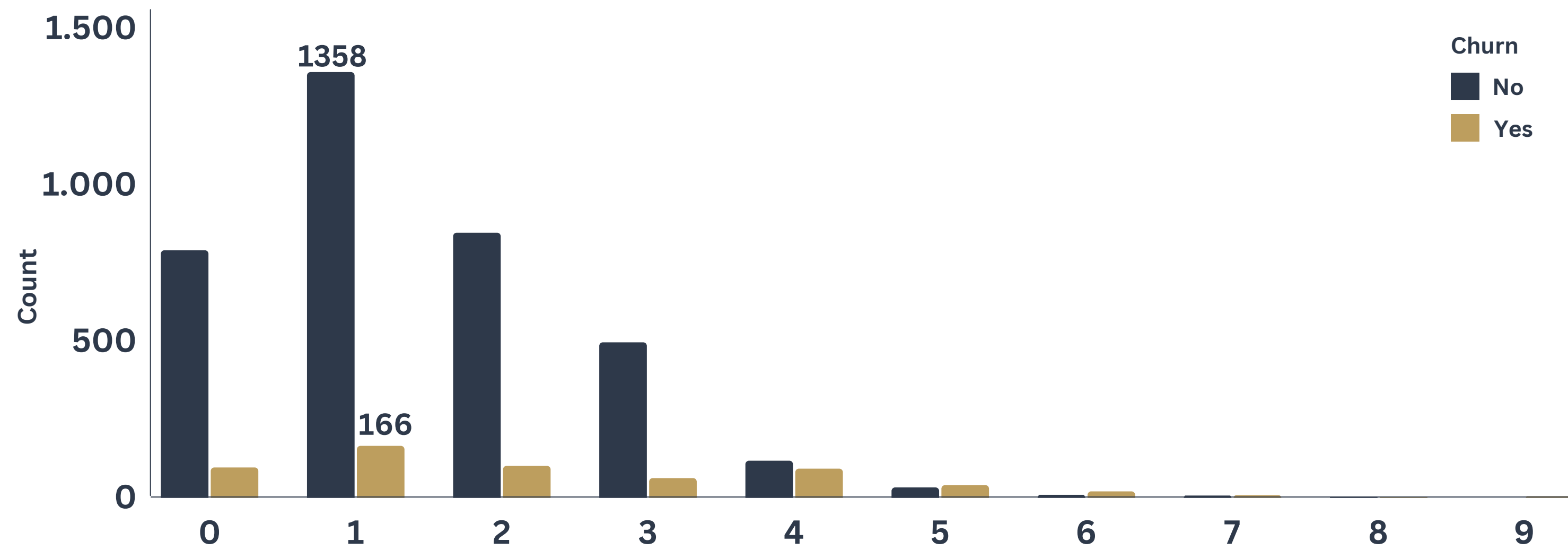
What is the relation between account length and total minutes, total charge?

■ ■ ■ Fauget

2022 ■



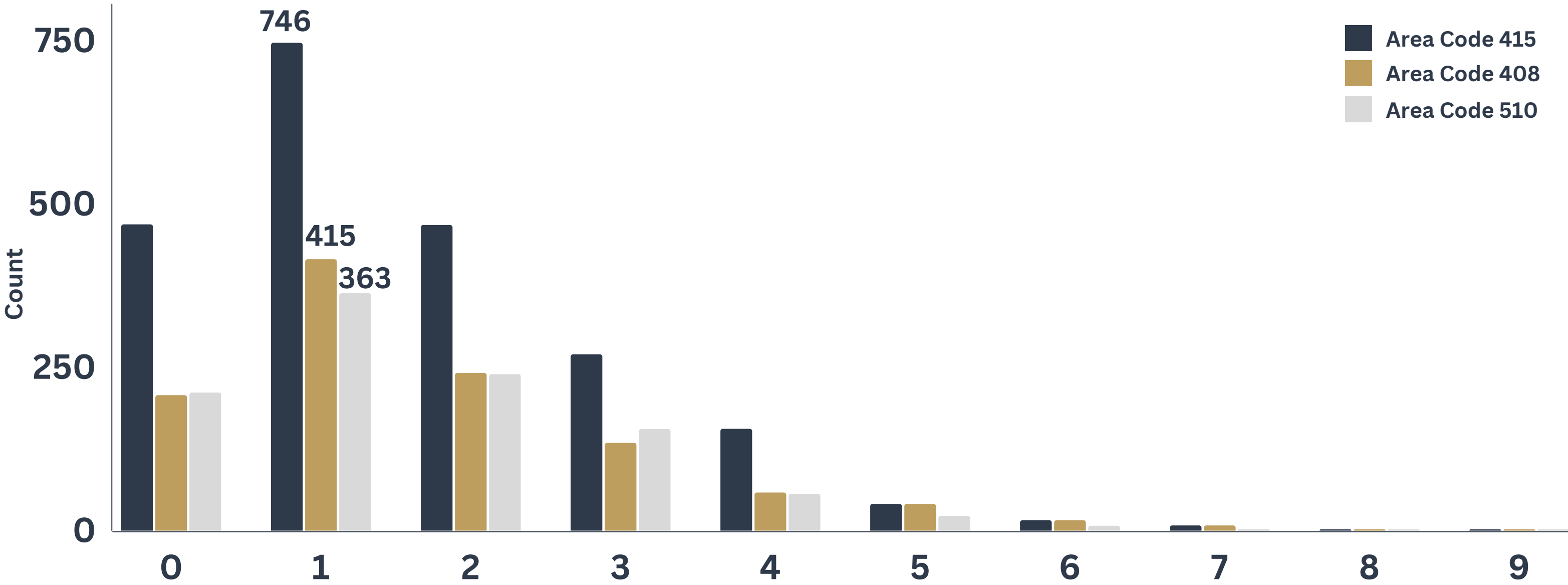
What is the relation between number customer service calls which customer made and tencency of customer to churn?



We can say that most of the customer rarely contact customer service call. And most of the customer who are not going to churn call customer service in 1 times

What is code area which made a biggest number customer service call?

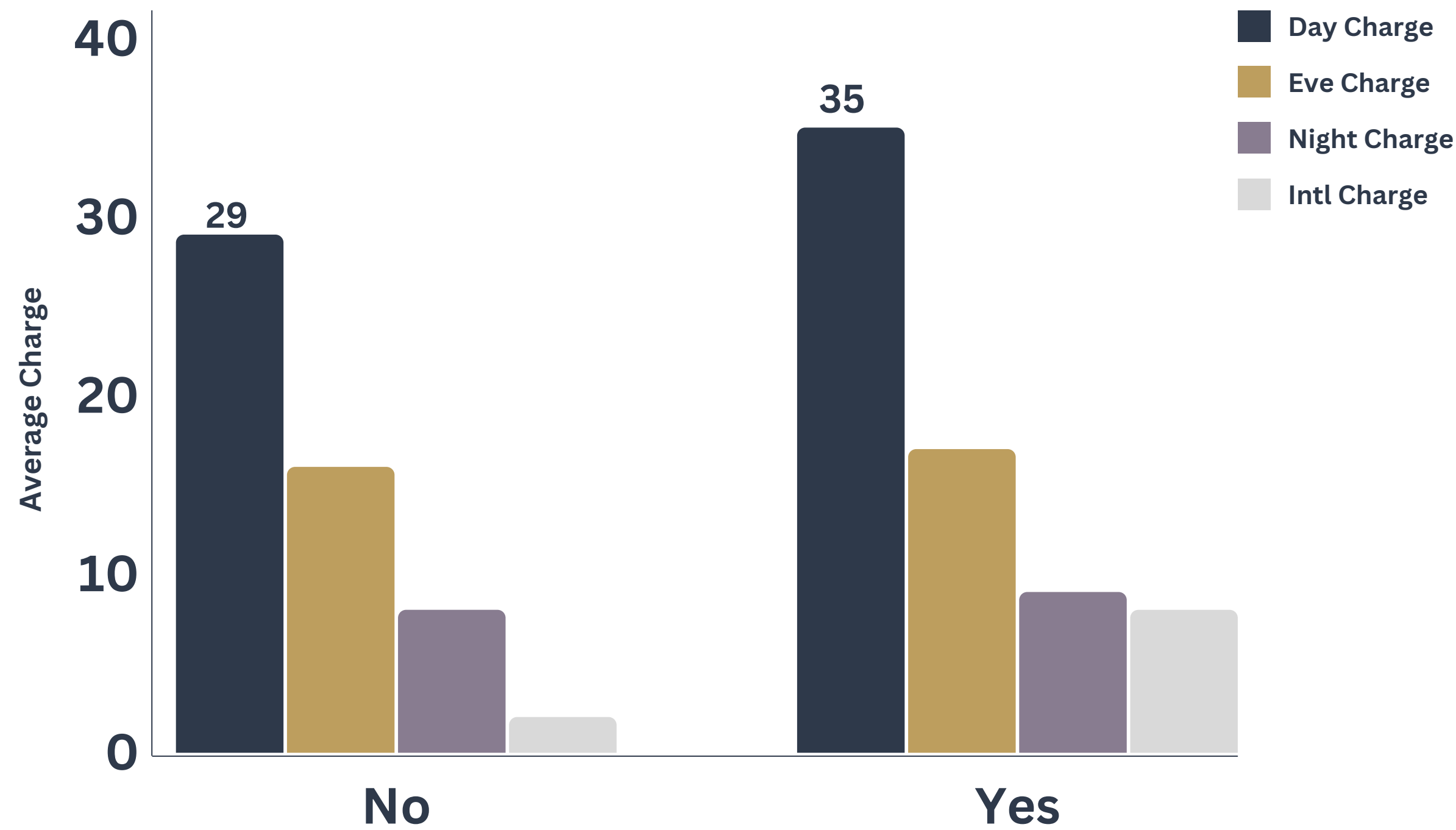
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Most of the customer stay in area code 415 and most of them contacted customer service calls 1 times

How is the relation between customer's activity and tendency of customers to churn?

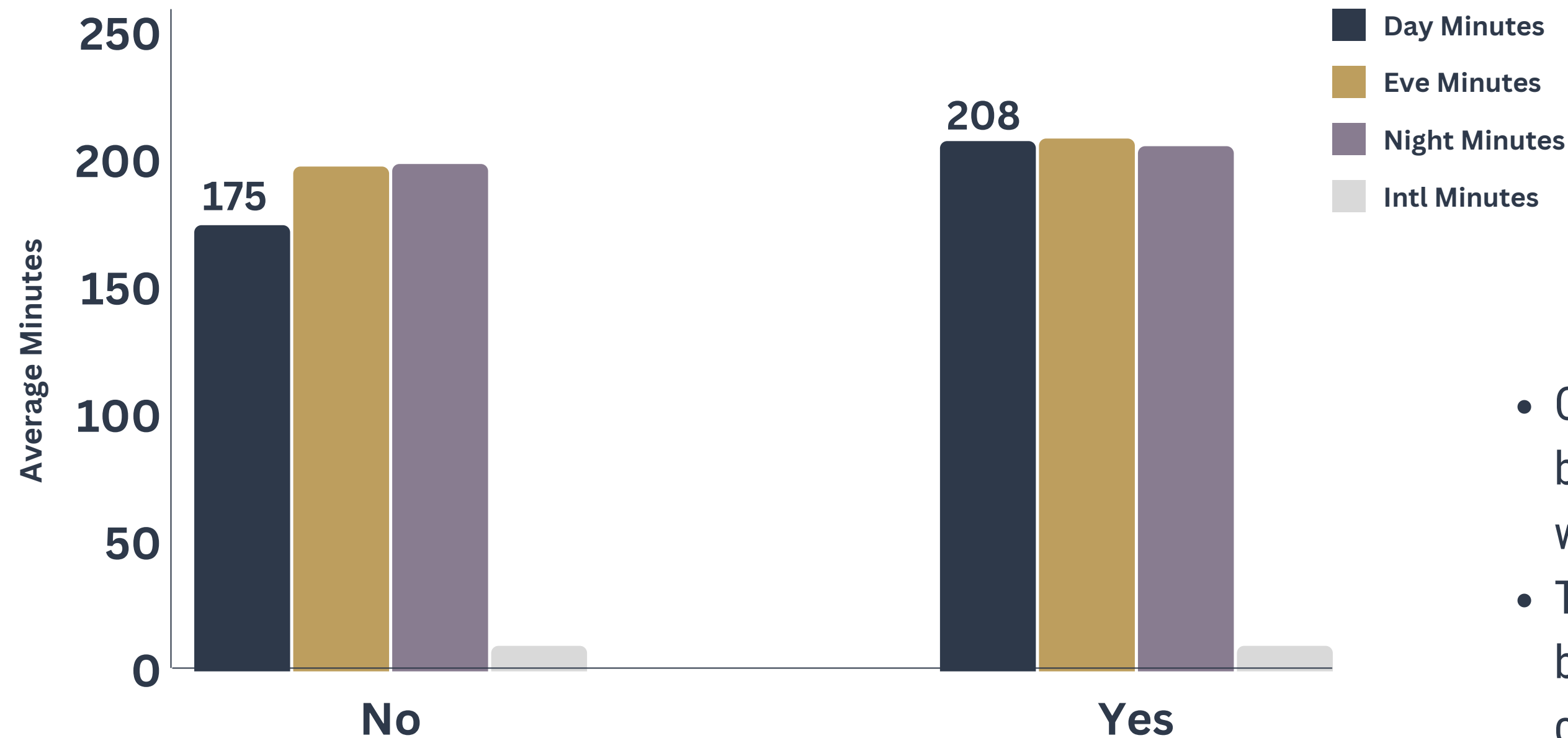
2022 



- Customers who are going to churn has big charge in the morning
- Customer charge in evening, night and international has similar values

How is the relation between customer's activity and tendency of customers to churn?

2022 

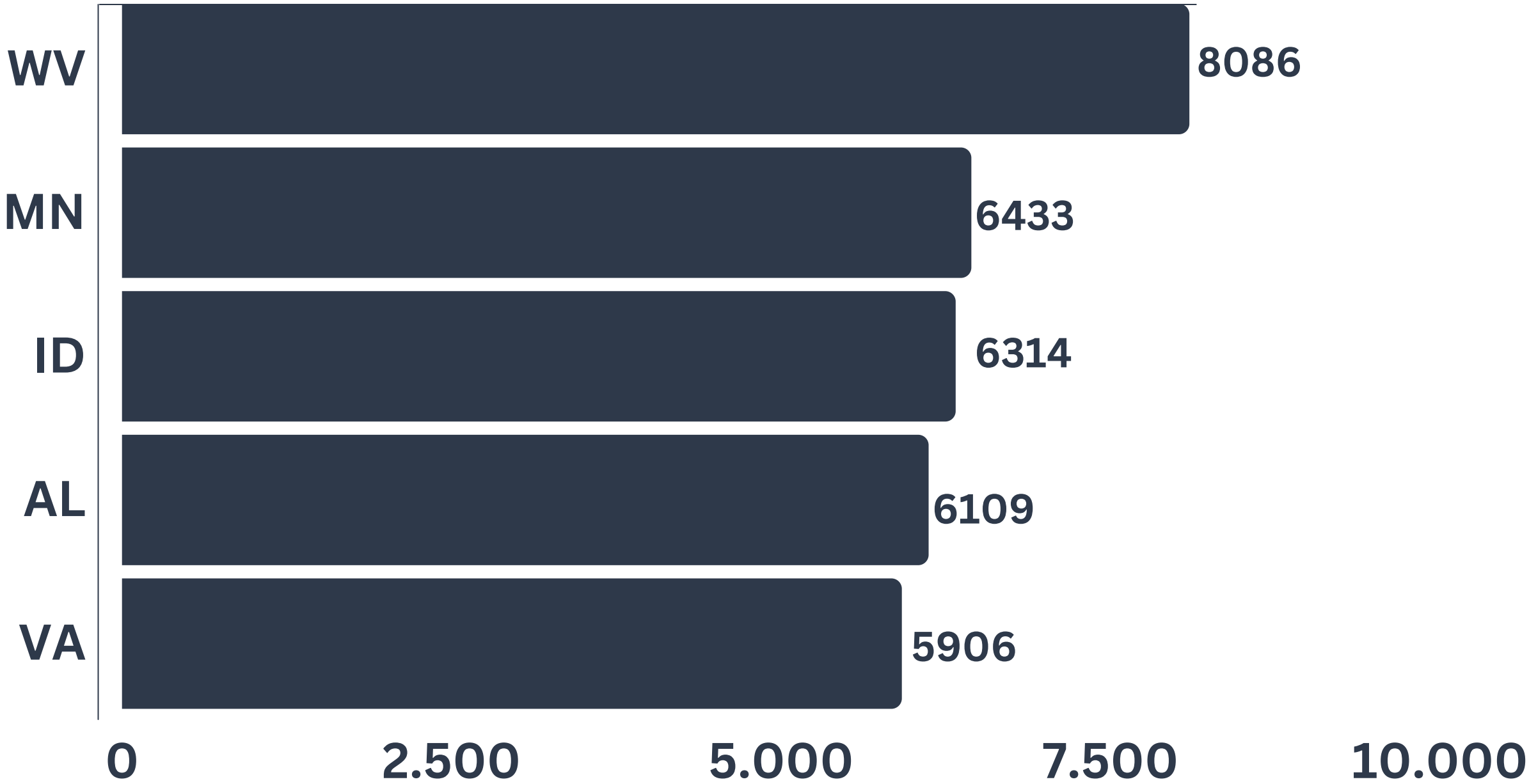


- Customers who will churn has bigger total minutes than customers who will not churn
- Total minutes in the morning between customers wo will not churn and customers who will churn has difference significantly

Top 5 State with the biggest total charge

2022 

- WV is the state which has biggest charge.





What are we going to do?

Target
Minimize False
Negative

Our focus is to minimize false negative because if the actual customer is churn but the model predicts it will not be churn, We can't give a better service or compensation, or treatment to the customer who are going to churn. And it will make company lost many customer.

Machine Learning Model

**LOGISTIC
REGRESSION**

**DECISION
TREE**

**RANDOM
FOREST**

**K-NEAREST
NEIGHBOR**

Analysis Score

Logistic Regression

- Akurasi = 92,6%
- Recall = 42,86%

Decision Tree

- Akurasi = 94,7%
- Recall = 58,6%

K-Nearest Neighbor

- Akurasi = 91.32%
- Recall = 17,2%

Random Forest

- Akurasi = 96,02%
- Recall = 61,43%

Random Forest Undersampling

- Akurasi = 84.06%
- Recall = 78,57%

Random Forest Oversampling

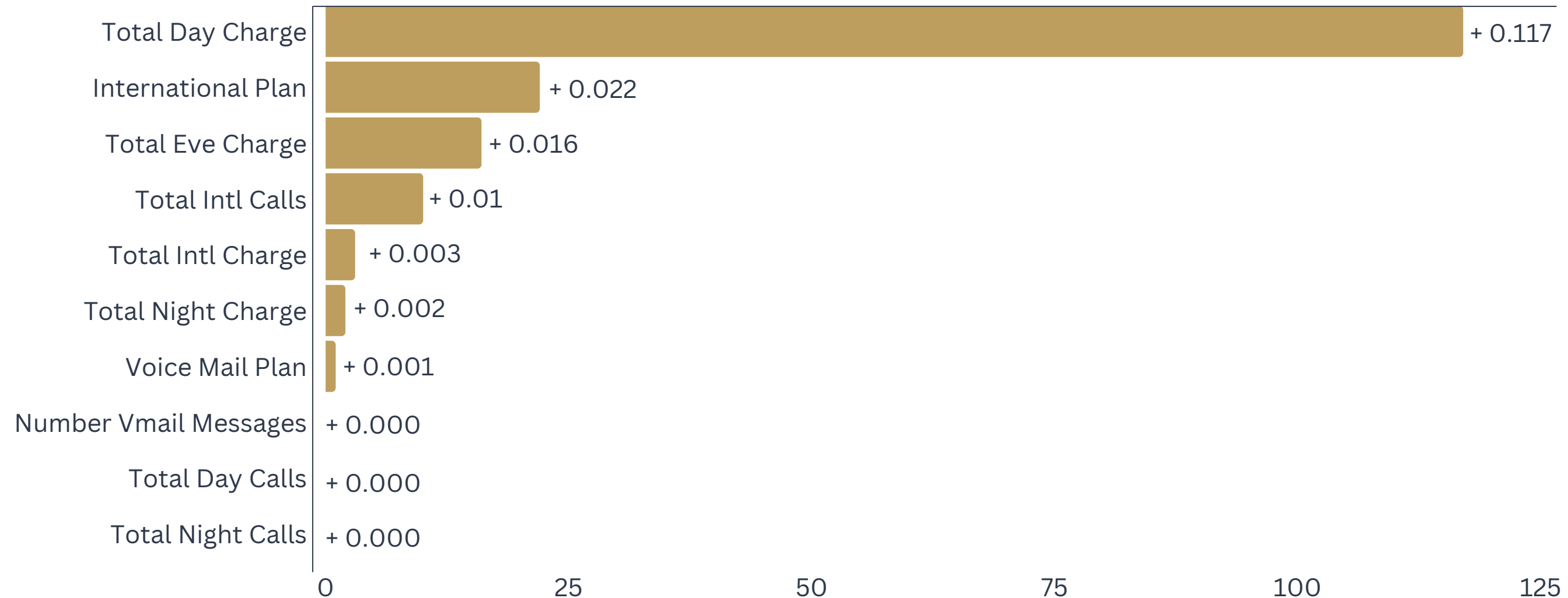
- Akurasi = 95,16%
- Recall = 71,43%

Random Forest Combining

- Akurasi = 94.59%
- Recall = 71.43%

Feature Importance

2022



- From the feature importance above, we can conclude that there are 10 features that affect the churn of the customer. There are total day charge, international plan and total evening call.
- It can be seen based on the deep dive question that has been done. The higher total day charge, the churn of the customer is high too. In addition, Because if the total charge is going higer, the length the customer uses the phone (total minutes) is also highand it can affected the charge



Recommendation

- Number of call and the lenght of call which customers do will affect total charge.
Because if that 2 aspect is going higher, total charge is going higher too. This situation will affected the churn rate and many customer choose to churn. the higher the total charge, the higher the customer's tendency to churn. We have to solve this problem by decrease the charge and evaluate the use of phone in the morning. We can also give promos or discount to evening, night, and international times to decrease the use of phone in the morning especially for state WV which has the biggest charge
- Improving services on voice mail plans and international plans
- Improve service in area code 415 because most of the customers stay in that area
- We can conclude that telco providers have good service because many customer choose not to churn and they used to call customer service only about 0-3 times