Customer Churn Analysis

Fitbod

By Cora

01

Problem Overview

Why Customer Retention?

Why Customer Attrition is Important?

- Average 80% customer attrition rate within 90 days of installation for app companies

- It costs 5 TIMES MORE to acquire new customers than it does to keep an existing one.

How to keep current customers?

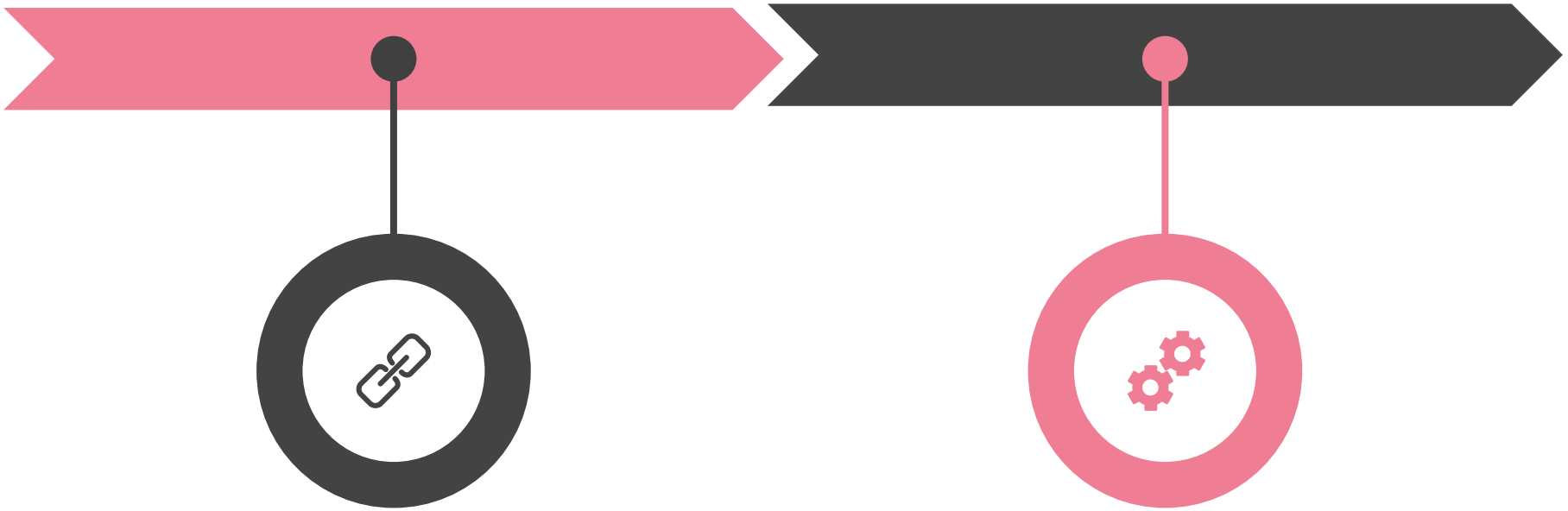
Churn Prediction Model

Reduce Customer Attrition

- Identify at-risk customers and take marketing strategies towards them

- My churn prediction model can find out **96%** of actual churned customers.

Process of Analysis



Exploratory Data Analysis

Features that are informative in determining which customers are going to churn

Churn Prediction Model Building Process

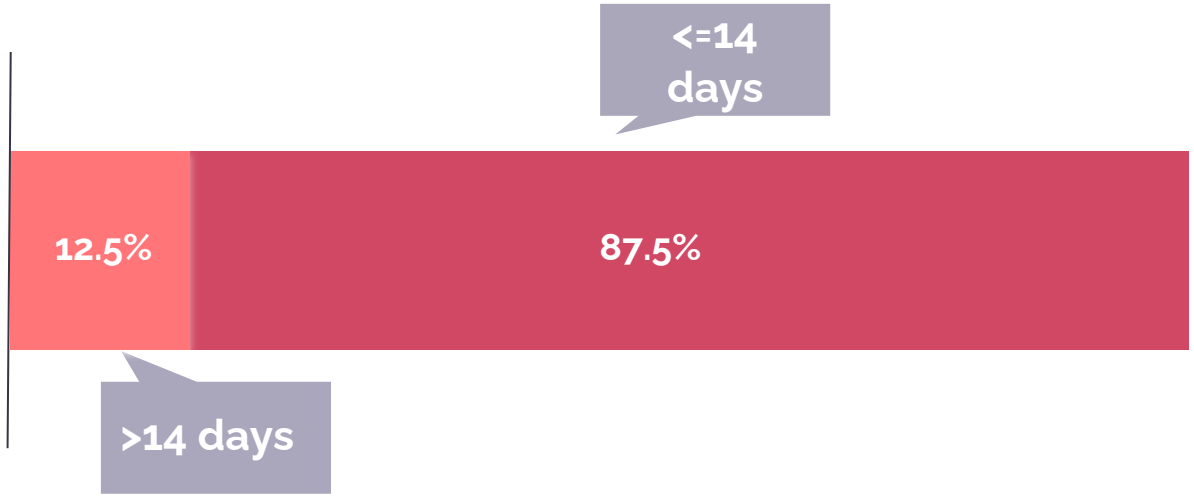
Inputting data, Selecting model, Training model, Gauging performance

*Only customers that had more than 3 workouts are considered.

02

Exploratory Data Analysis

Definition of Churned Customers



Average Time Interval of Two Consecutive Workouts of Customers

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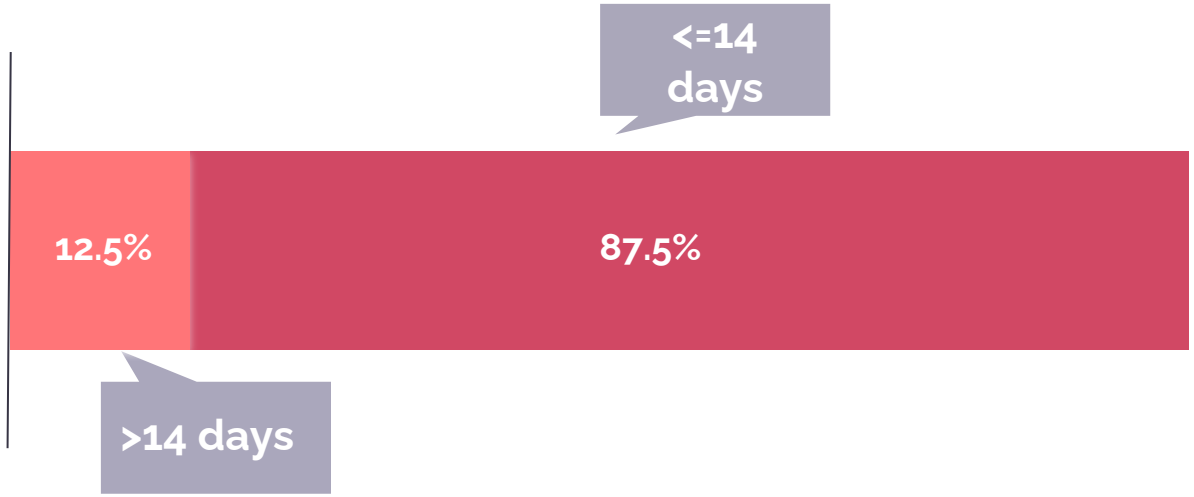
- Definition of churned customers:

Customers who didn't have any workout for more than 14 days.



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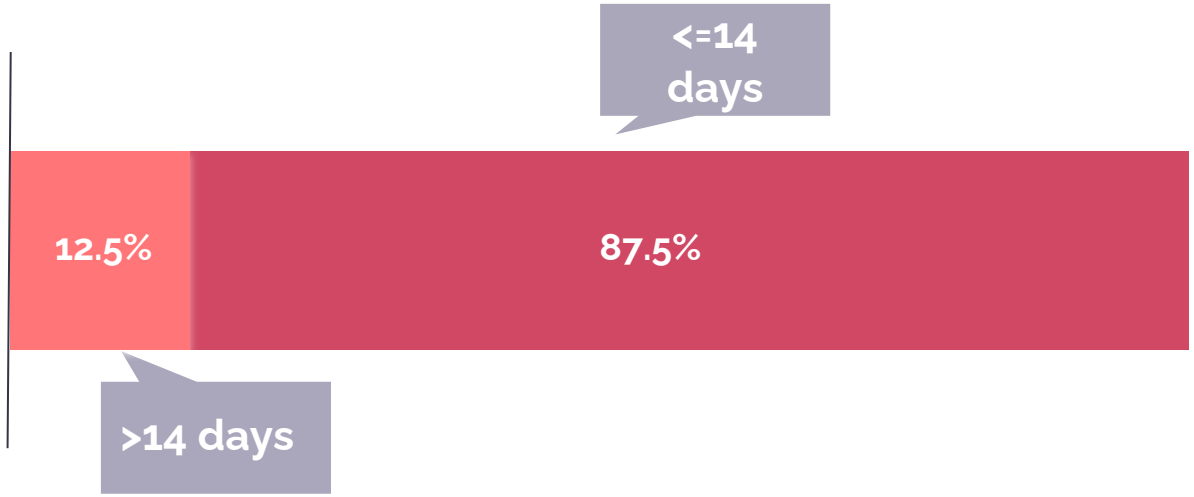

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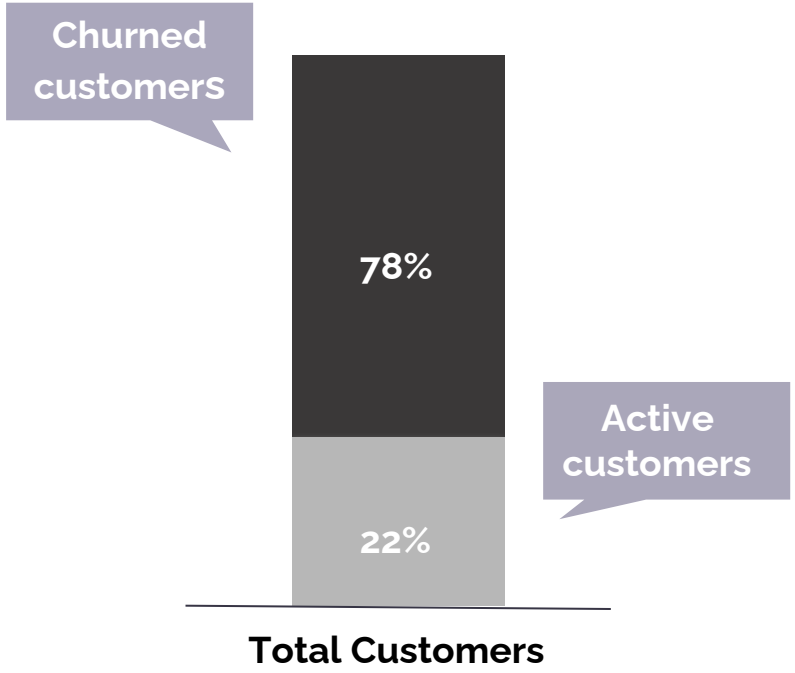

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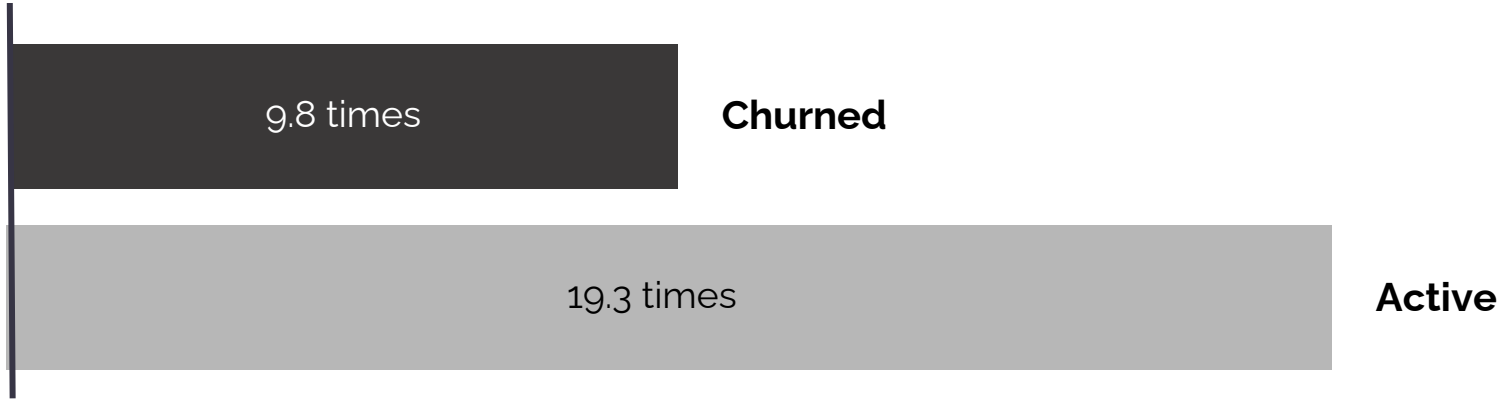

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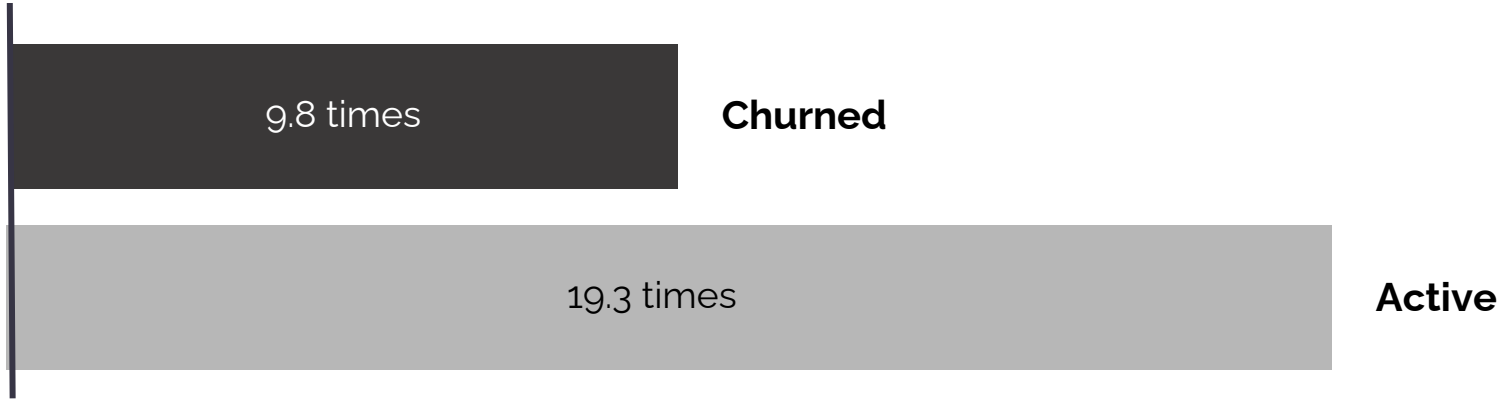
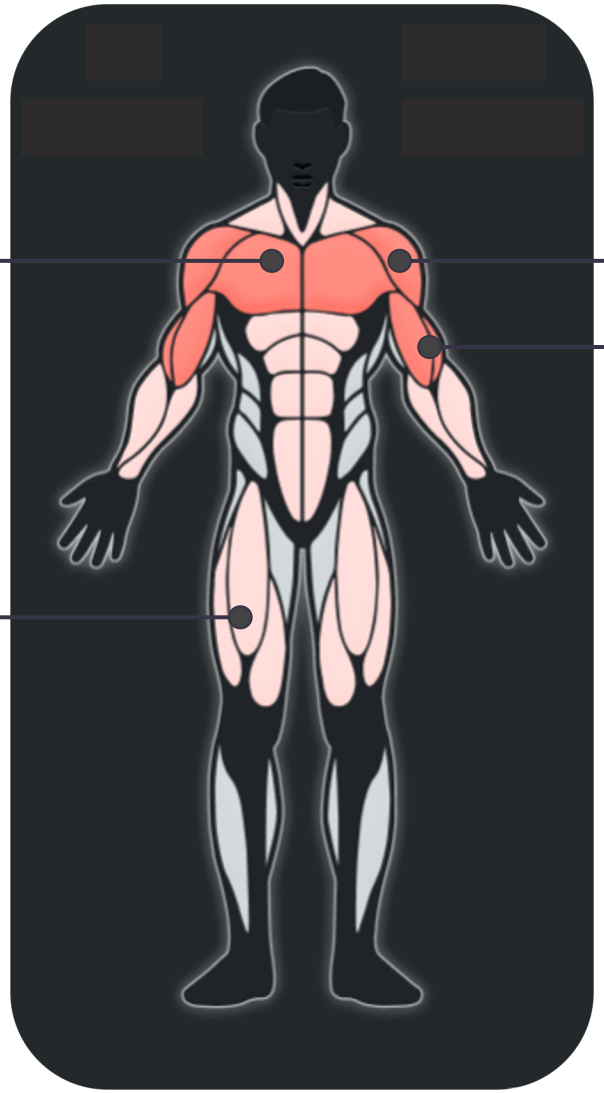
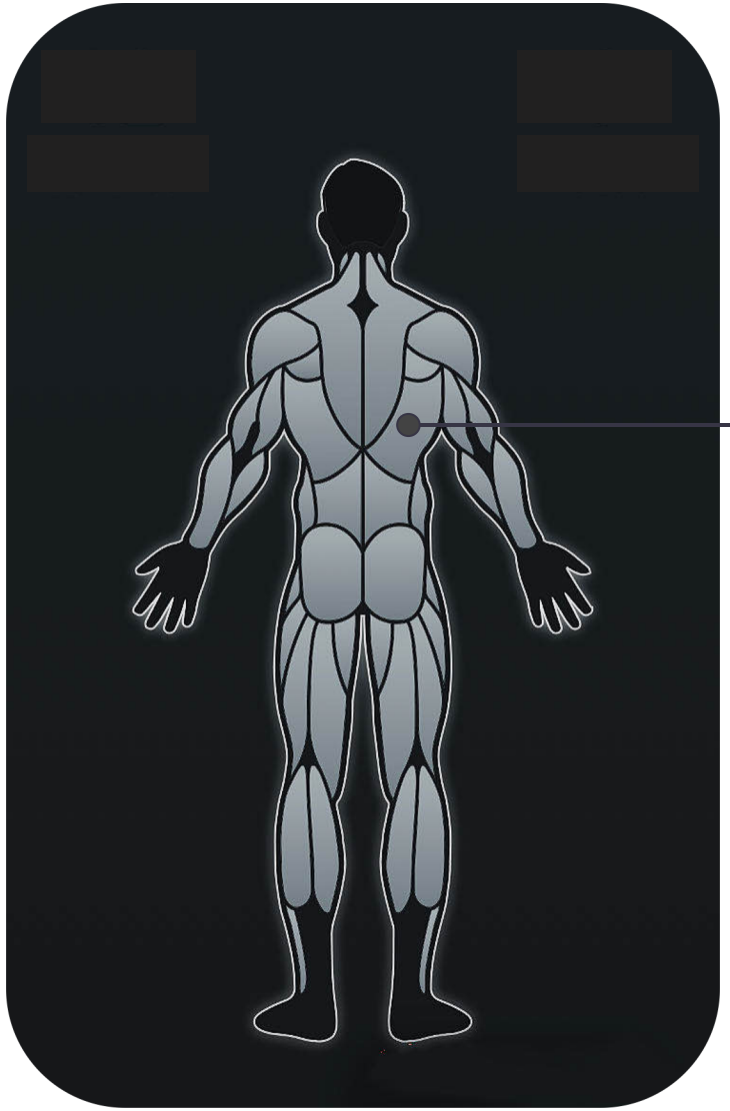


❖ Takeaway

- Churned customers demonstrate much lower usage even before they churned
- Usage in the previous 14 days is a strong indicator of churn

Churned customers differed from active customers in the muscle groups





Churned customers differed from active customers in the muscle groups

- 9 types of exercises for 5 muscles Groups:

Quadricep, Chest, Back, Shoulders, Tricep

The Average Number of Exercises Done for Each Muscle Group

	Back	Quadricep	Shoulders	Chest	Tricep
Active	**5.45**	**7.30**	2.45	4.45	0.65
Churned	1.45	3.02	1.42	2.96	0.88

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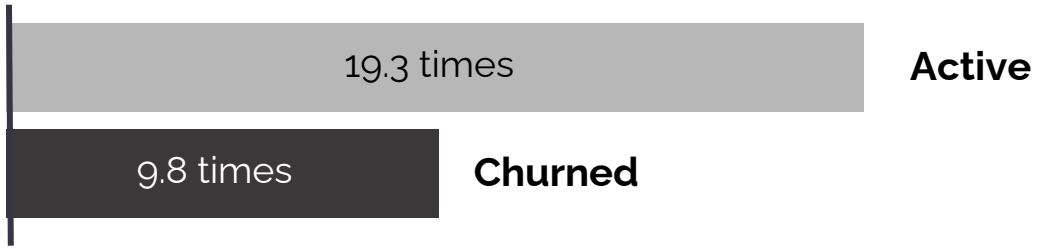

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❖ **Takeaway**

- The differences between the average number of exercises for active customers vs churned customers for back and quadricep are much larger than other ones
- Usage of the different muscle groups in previous 14 days is a strong indicator of churn

03

Churn Prediction Model

Data Used

Data used

Using previous 14 days usage information to predict

Day 15

Customer_id	Back_Usage	Quadricep_Usage	...	Day1_Usage	...	Day14_Usage	Churn_Status
351	10	2		3		5	0

Model Performance

Predicted

Actual

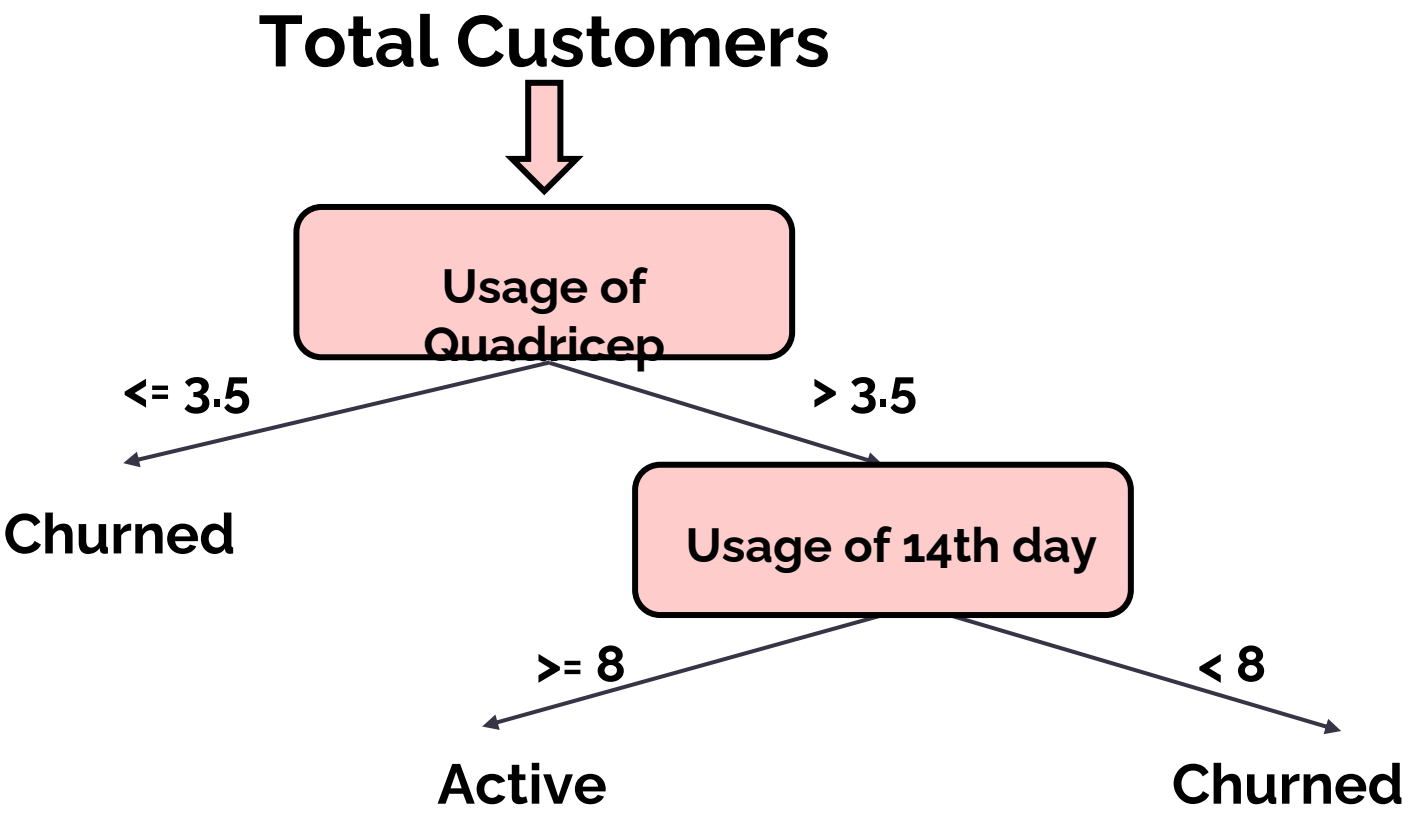
	Active	Churned
Active	**2**	**6**
Churned	**1**	**30**

$$\text{Recall} = \frac{\text{Churned customers that have been predicted}}{\text{Total customers who have actually churned}}$$

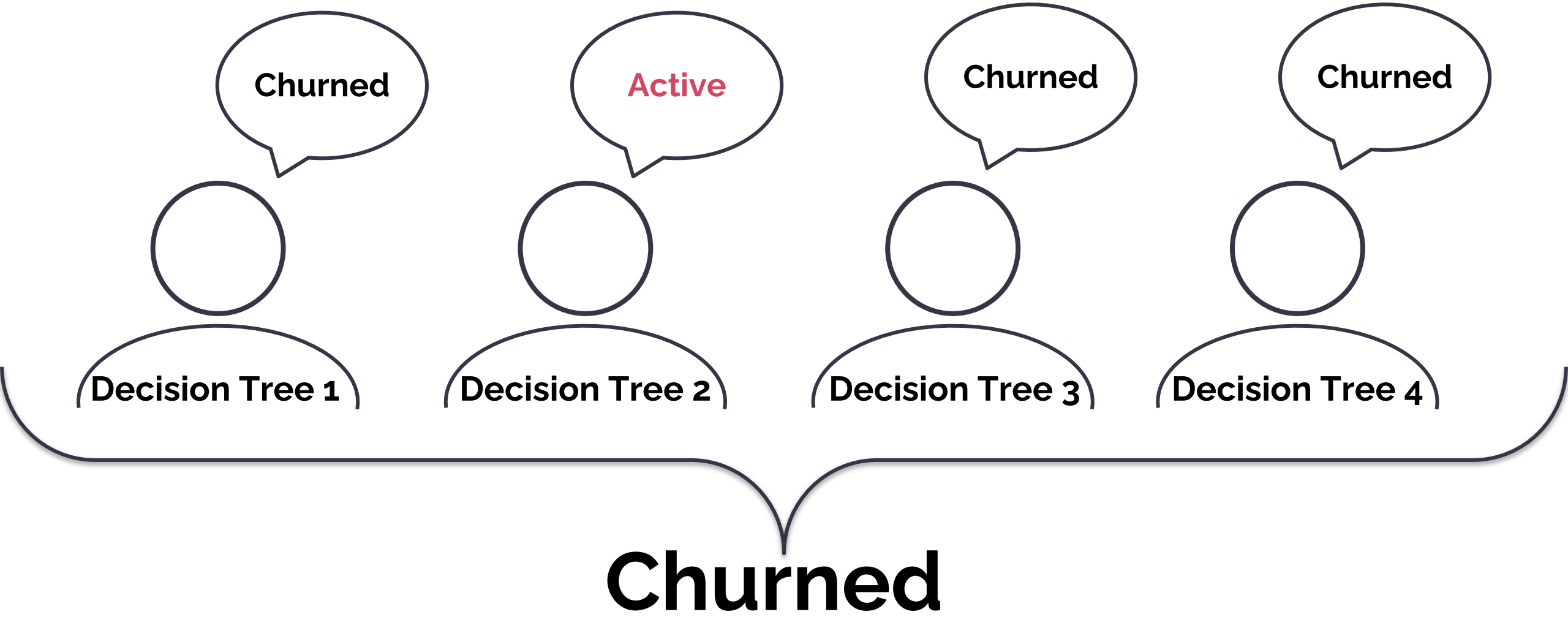
$$= 96\%$$

Random Forest

- Random Forest Algorithm: An algorithm made up of Decision Trees
- How does Decision Tree work?



Random Forest



Random Forest Algorithm

Random Forest Algorithm: An algorithm made up of decision trees

Why Random Forest?

- Outperforms other algorithms
- Features inputted have great distinction. Easy to Split
  Provides feature importance

Top Three Important Features: **Quadricep Usage, 14th day Usage, Back Usage**

	Quadricep_Usage	Day 14_Usage	Back_Usage
Importance	0.22	0.18	0.13

04

Next Steps

Next Steps

❖ If a larger dataset has been provided

- Redefine customer churn

  Investigate whether other features are also informative in determining churn

❖ What other analyses can be done

- Association Rules Analysis; Recommend exercises
- Clustering Analysis; Develop personalized marketing strategies

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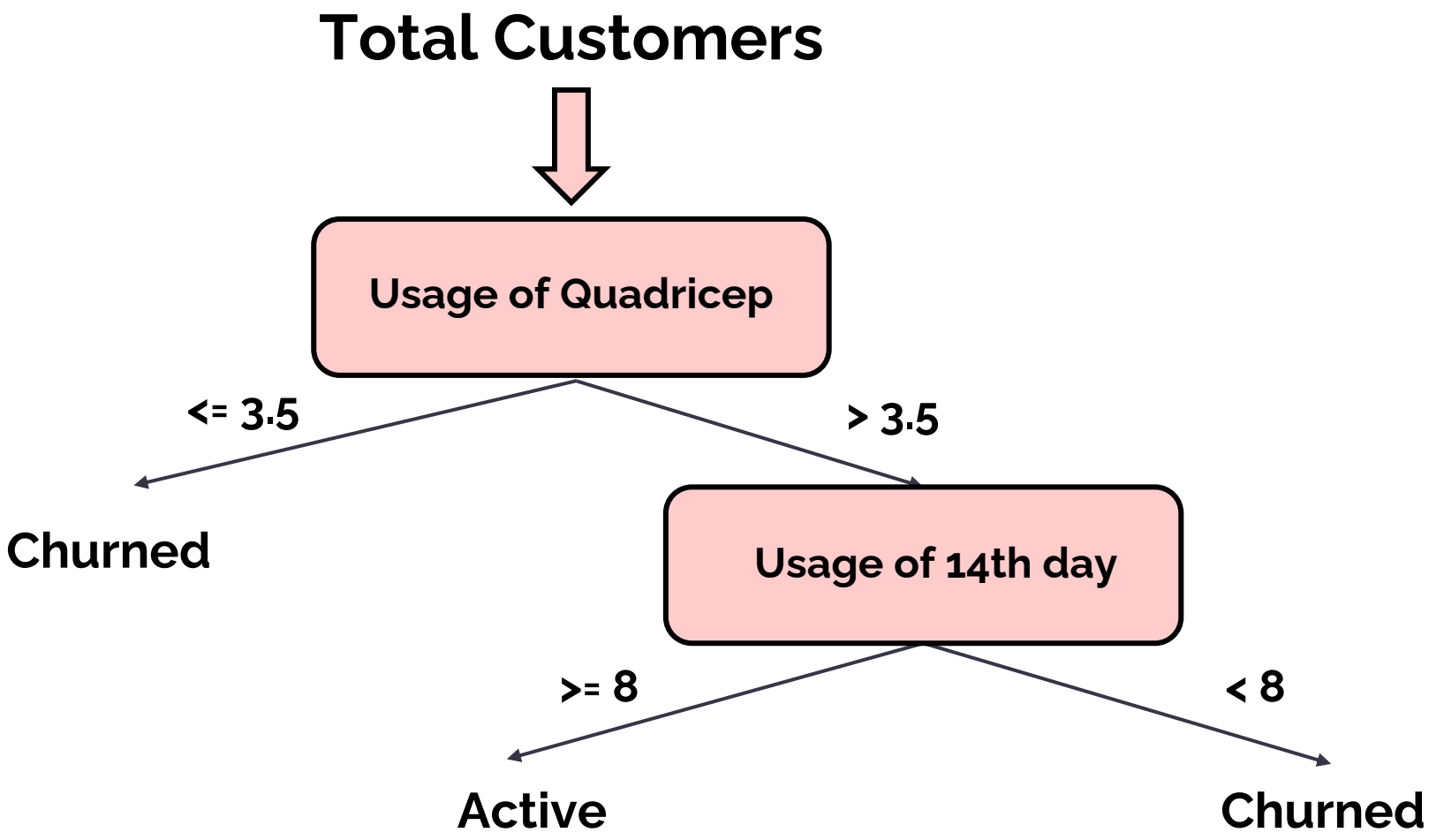
Thank you!
Any Questions?

How does Decision Tree within Random Forest Work

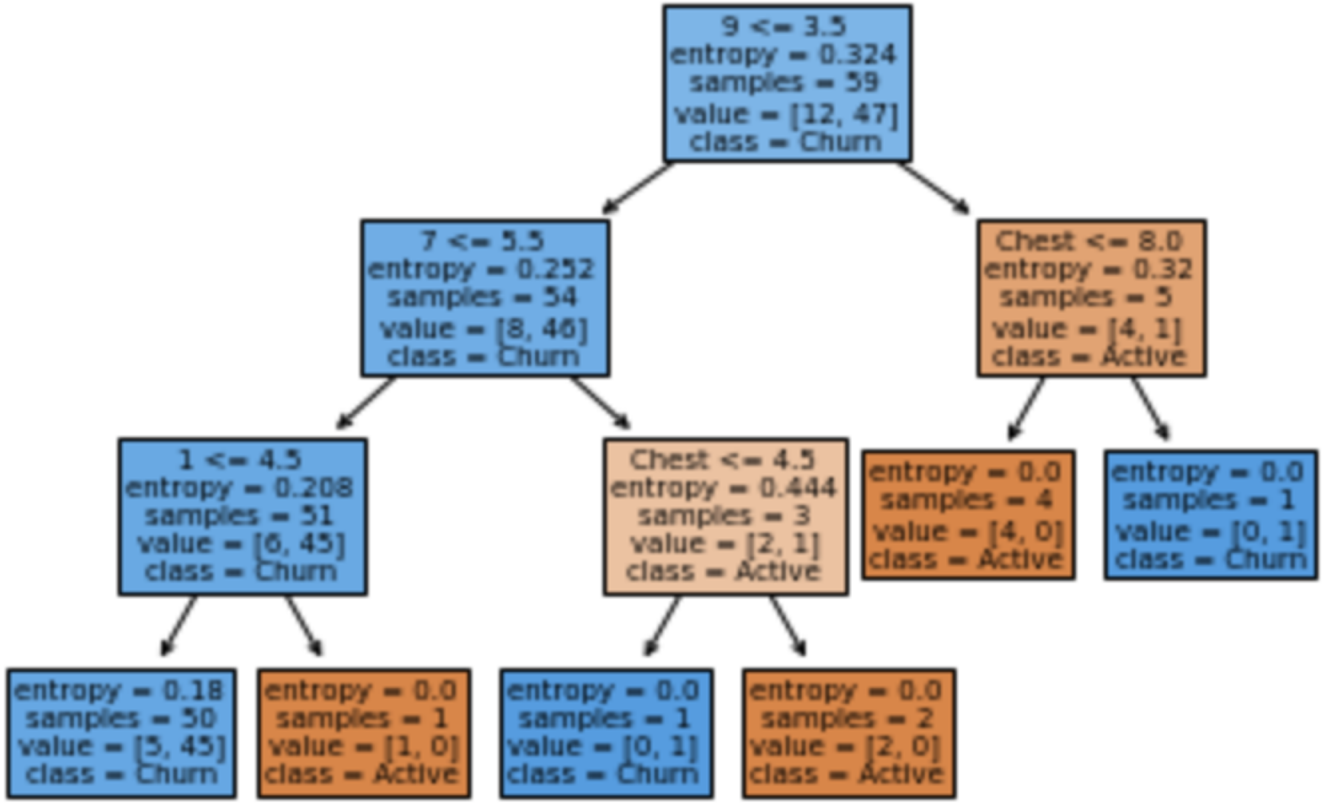


Model Selection

Models Used

- Logistic Regression
- K-Nearest Neighbors
- Decision Tree
- Random Forest
- Support Vector Machines

Random Forest

A model made up of Decision Trees

Why Decision Tree