

# INTERNET SERVICE PROVIDER CUSTOMER CHURN

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FSDA SECTION SEOUL  
CLASS OF AUGUST 22

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# OVERVIEW



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There's enormous competition among internet providers company. To keep the revenue increasing, the company should maintain customer satisfaction. However, the company wants to know what kind of customer should be managed and the factors they did not subscribe to in the next quarter.

# SCOPE OF THE PROBLEM

Analyzing internet service provider  
customer churn in last 3 months

GOALS

To decrease internet service customer  
churn rate by 5% in the next quarter

# PROBLEM STATEMENT

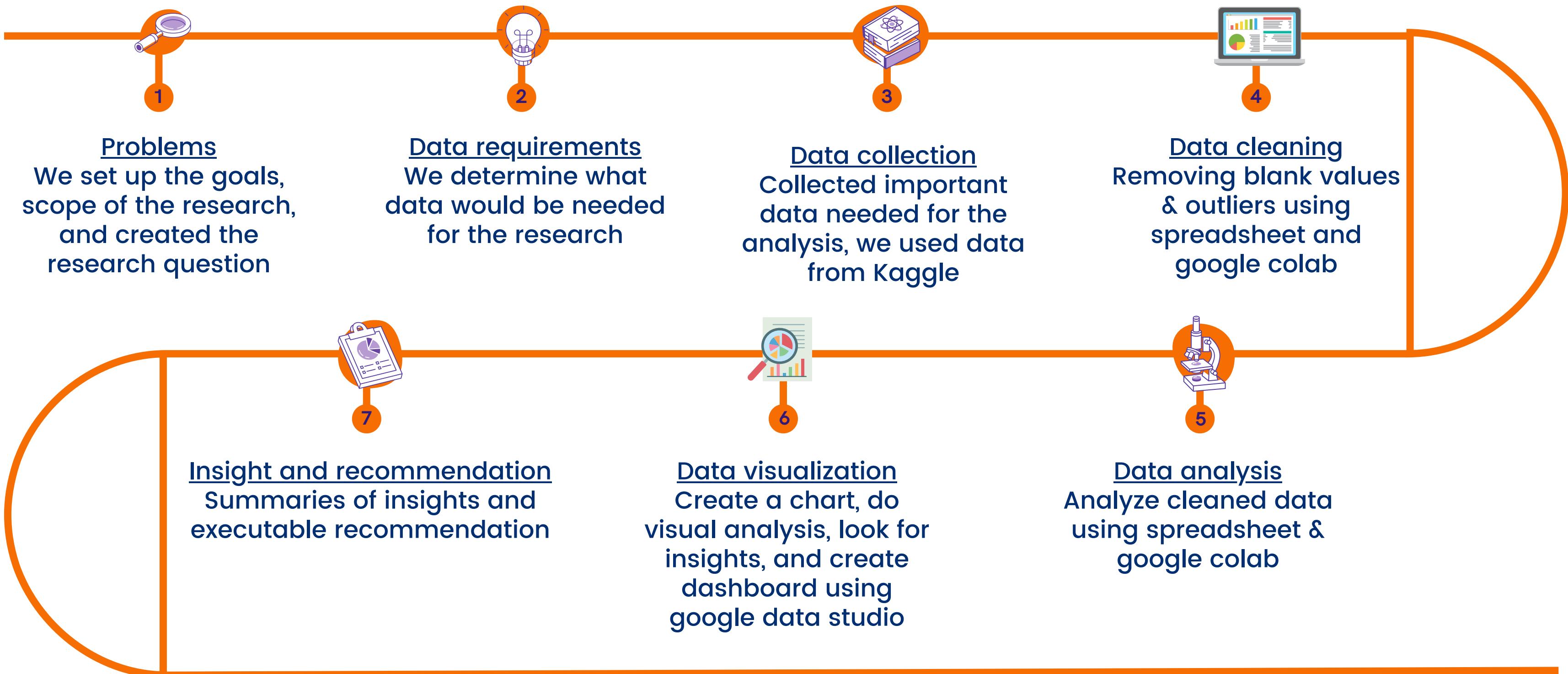
How customer's  
suscribers compare to  
customer churn rate

How to decrease  
internet service provider  
customer churn by 5% in  
the next quarter

Which of those variable  
shows the strongest  
correlation to churn rate

Highlighted Problem

# METHODOLOGY



A photograph of a person's hands typing on a laptop keyboard. The laptop screen displays a web browser with several tabs open, showing various icons and text. The background is blurred, focusing on the hands and the laptop.

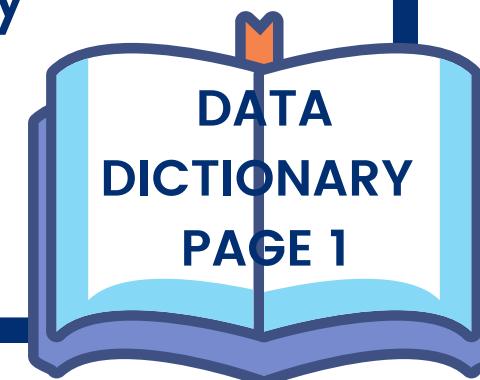
# DATA CLEANING

Some of the data cleaning process are:

- Remove rows with 0 bill average and 0 churn
- Fill blank values in download and upload with 0
- Remove minus value in subscription age
- Rename column reamining\_contract into remaining contract
- Fill blank values in remaining\_contract with 0

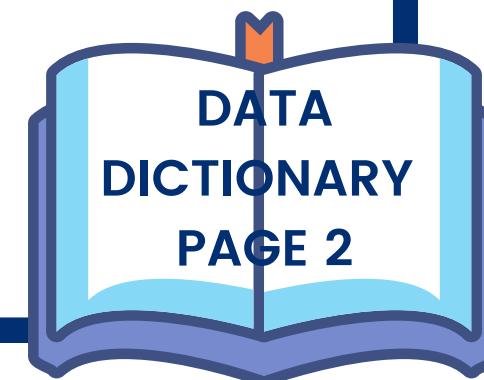
# DATA DICTIONARY

- id : unique subscriber id
- is\_tv\_subscriber: customer has a tv subscription?
- is\_movie\_package\_subscriber: customer has a cinema movie package subscription?
- subscription\_age: how many years has the customer use our service
- bill\_avg: last 3 months bill average (in USD)
- remaining\_contract: how many years remaining for customer contract. The customer who has a contract time have to use their service until contract end, if they canceled their service before contract time end, they have to pay a penalty fare

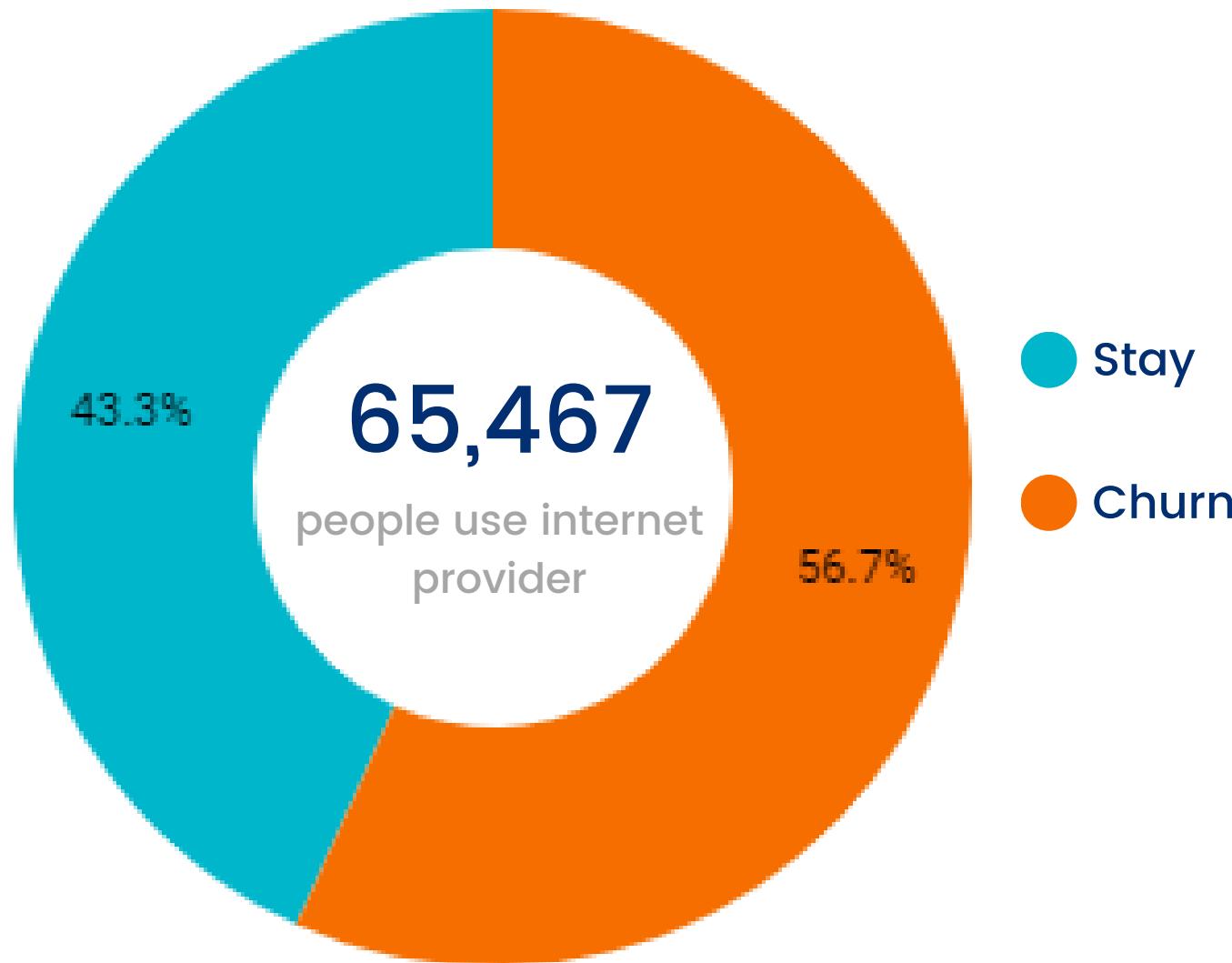


# DATA DICTIONARY

- **service\_failure\_count:** customer call count to call center for service failure for last 3 months
- **download\_avg:** last 3 months download avg (GB)
- **upload\_avg:** last 3 months upload avg (GB)
- **download\_over\_limit:** customer download limit for last 9 months, if they reach this limit they have to pay an extra charge
- **churn:** whether the customer cancelled their service or not



# PERCENTAGE OF CUSTOMER CHURN



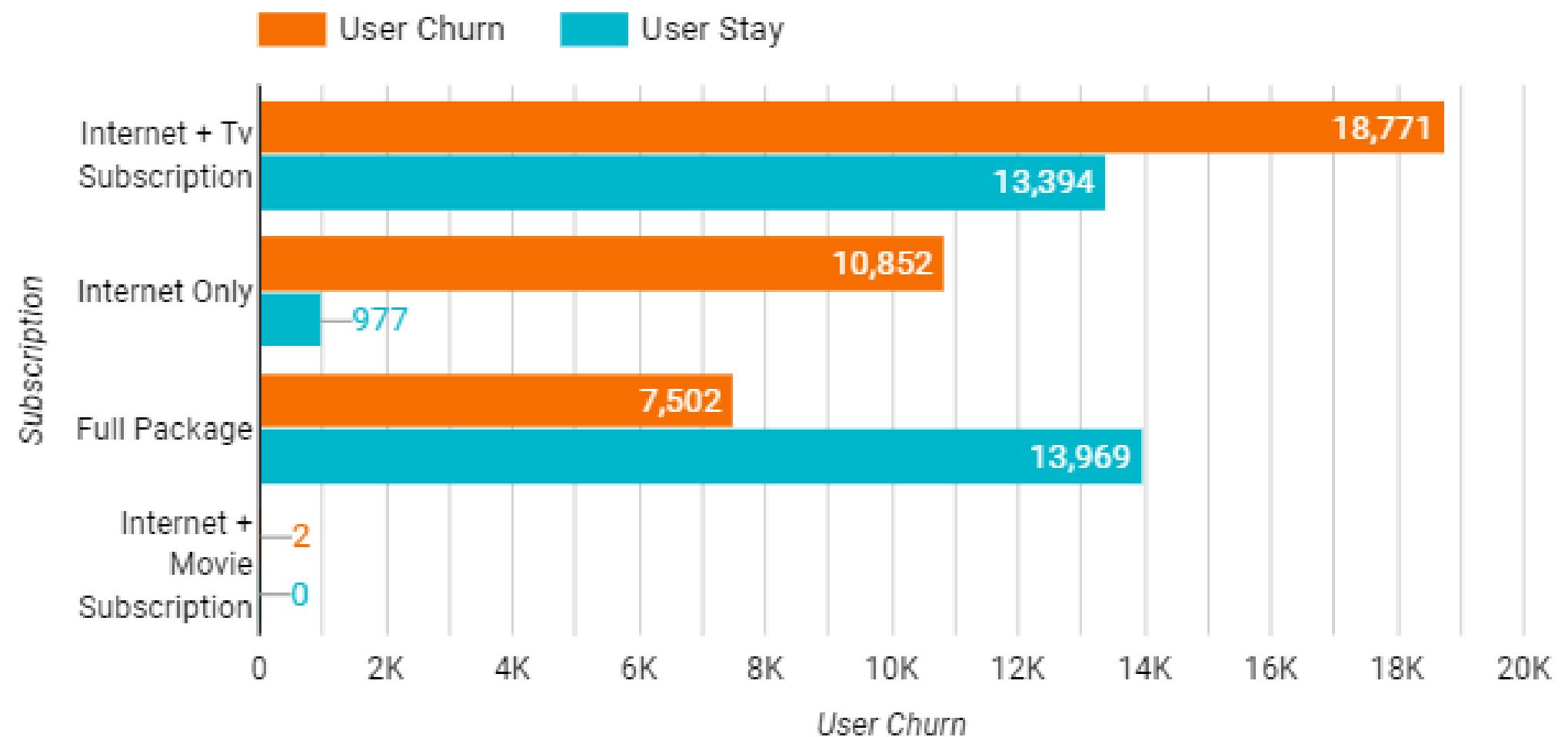
**37,127 Customer churn**

There are **56.7%** customer who stopped using our internet service

**28,340 Customer stay**

There are **43.4%** customer who stay using our internet service

# CUSTOMER CHURN PER SUBSCRIPTION



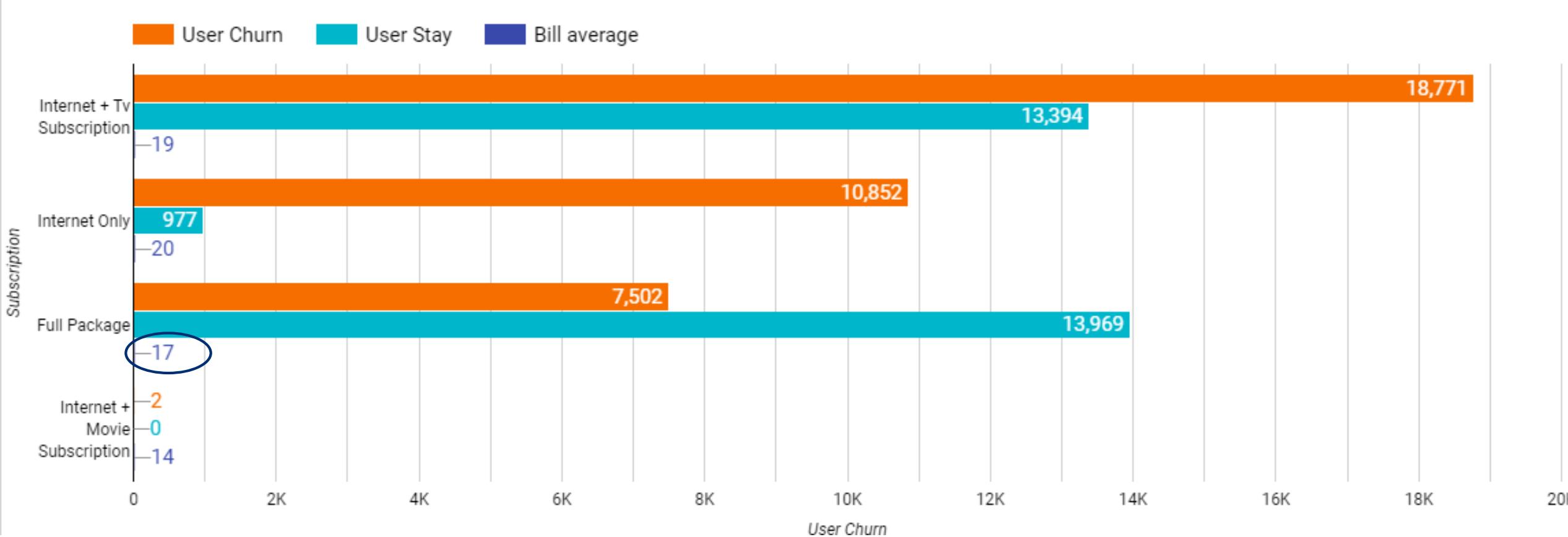
1

Customers tend to **stay** using their internet service if they take a full package subscription (internet, TV, movie)

2

Customers tend to **churn** more if they only subscribe on the internet + tv

# CUSTOMER CHURN PER BILL AVERAGE



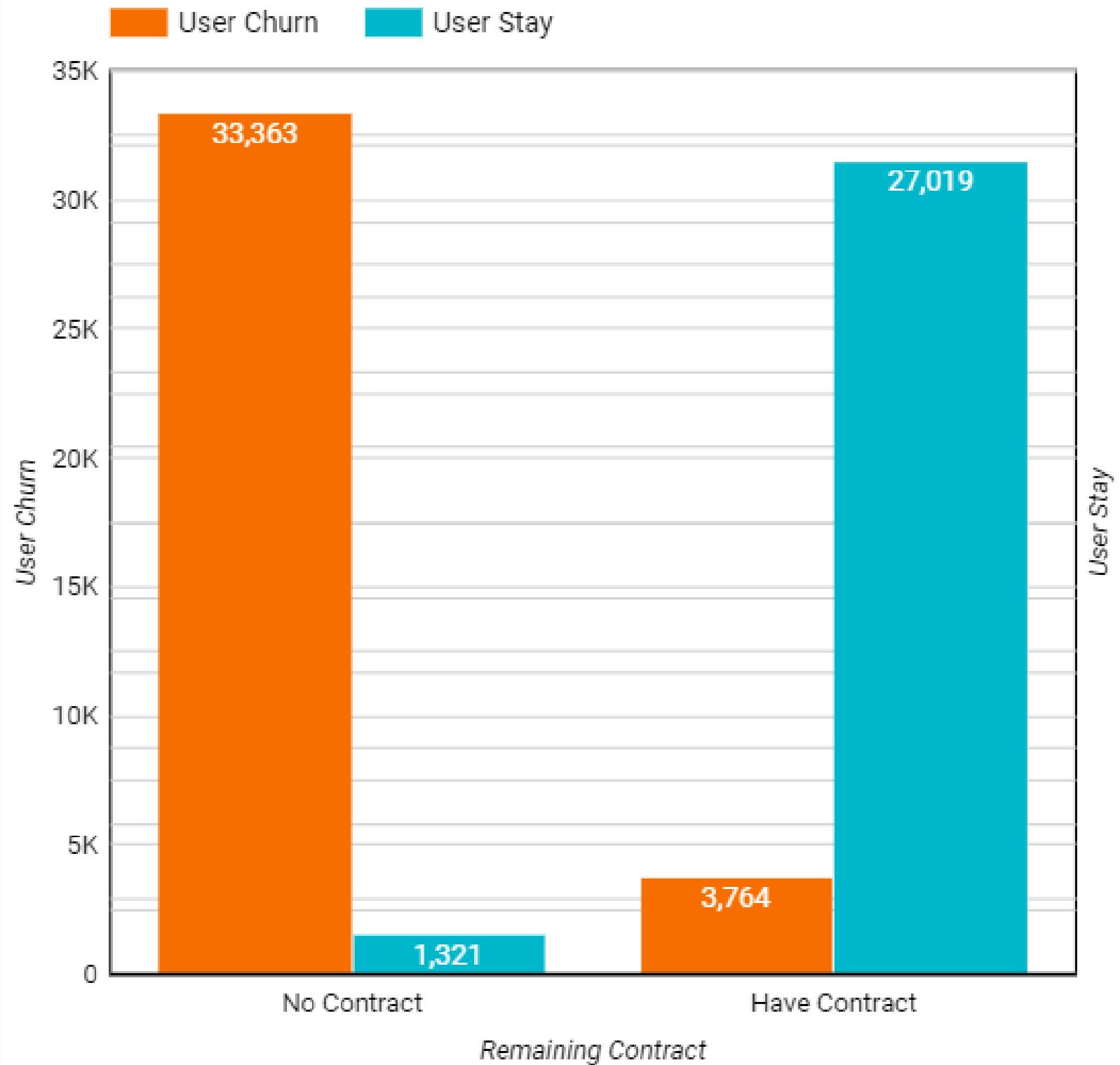
1

Bill average (median) is \$17 for full package

2

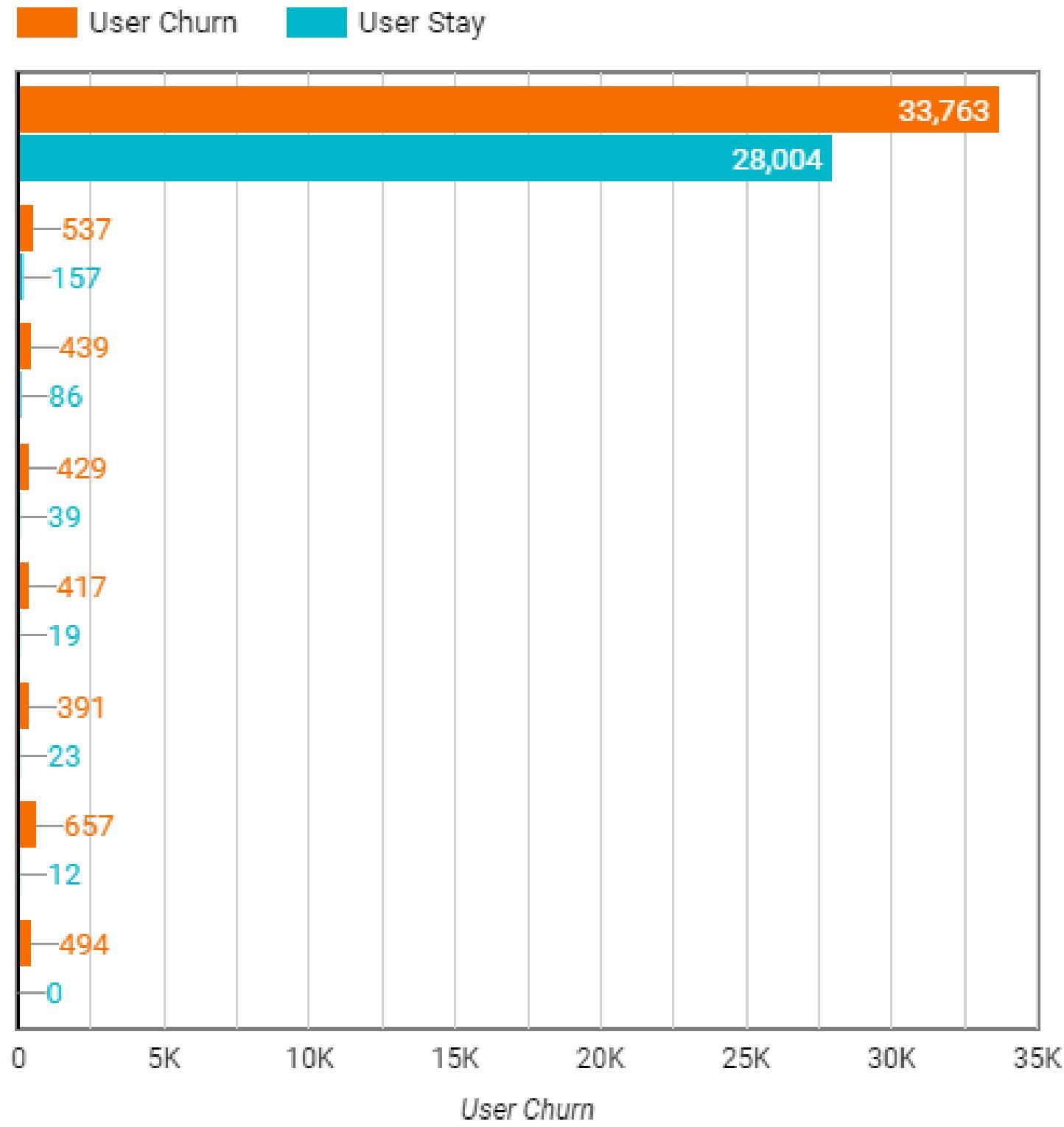
Due to the least of churn user for Full Package Subscription, therefore the price should be no more than \$17

# CUSTOMER CHURN PER REMAINING CONTRACT



Customer **churn** is high if they don't have a contract. If they have a contract, they tend to **stay** with the internet provider

# CUSTOMER CHURN PER DOWNLOAD OVER LIMIT



1

Customers who do not exceed the "download over limit" are likely to **churn**

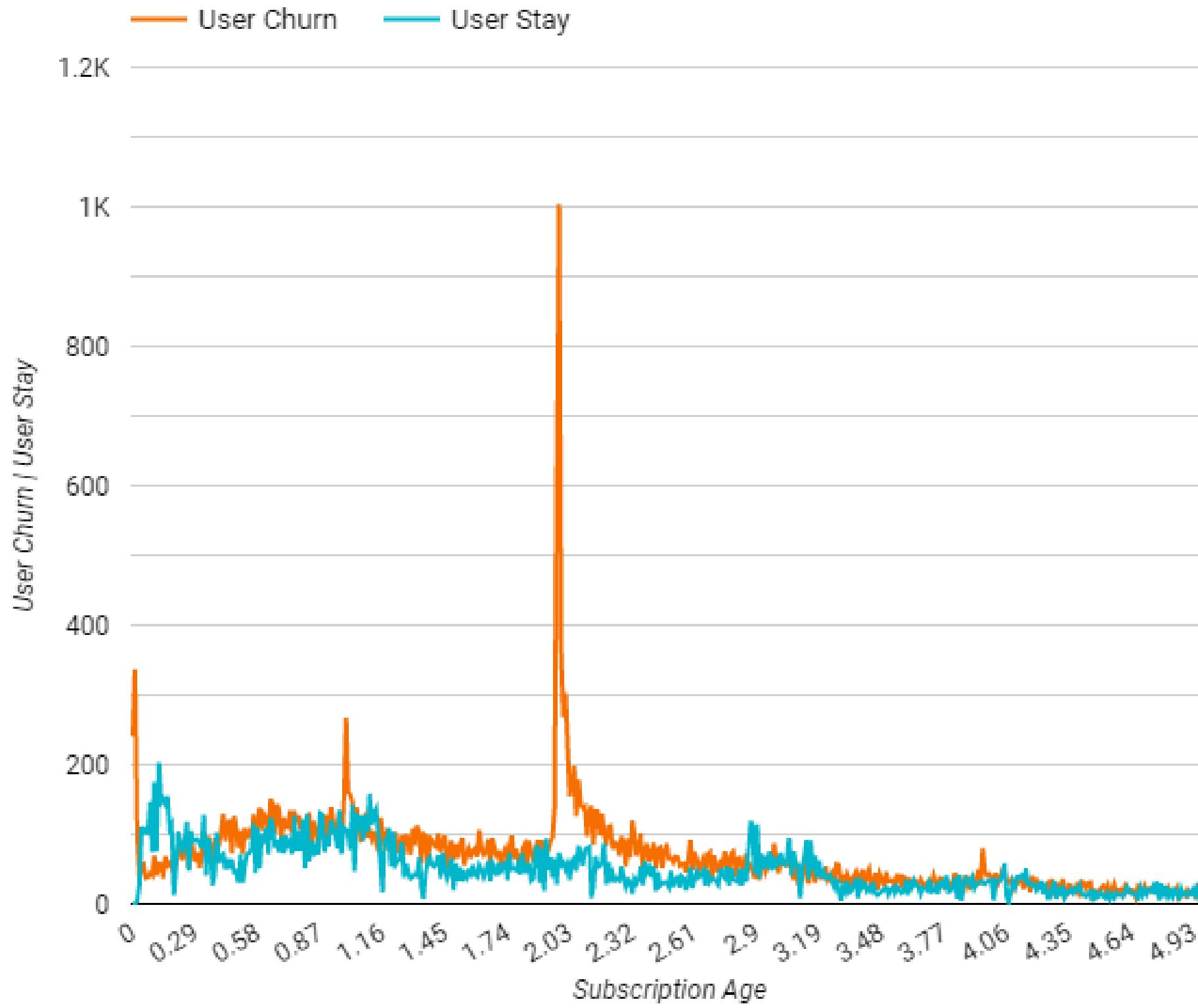
2

Customers who exceed the "download over limit" are also likely to **churn**

This condition is different from the general condition. It can likely be caused by other variables that are more influencing than the "download over limit" variable



# CUSTOMER CHURN PER SUBSCRIPTION AGE



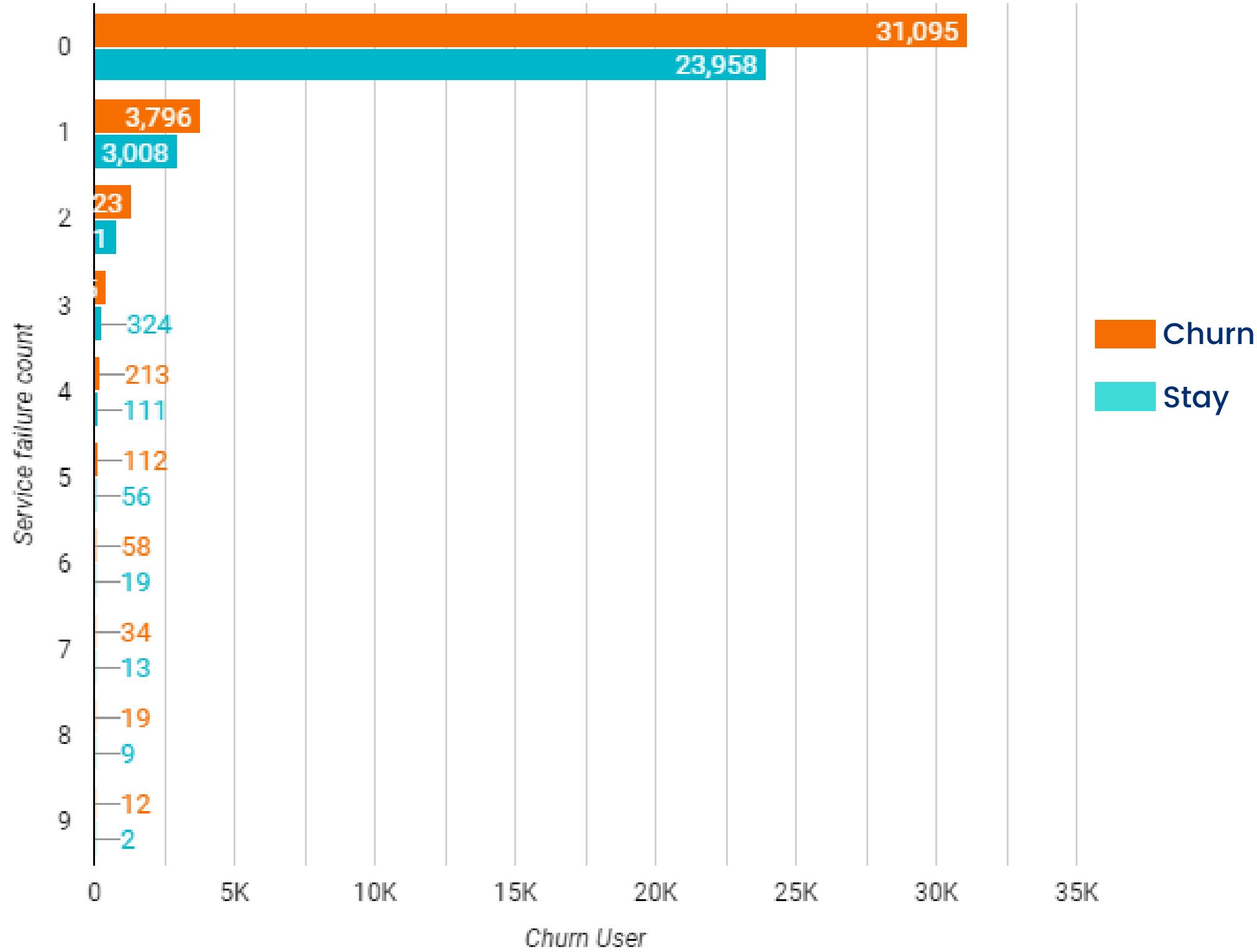
1

Many newly subscribed customers **churn** as well

2

Customers who **churn** the most are customers who subscribe for 2 years

# CUSTOMER CHURN PER SERVICE FAILURE COUNT

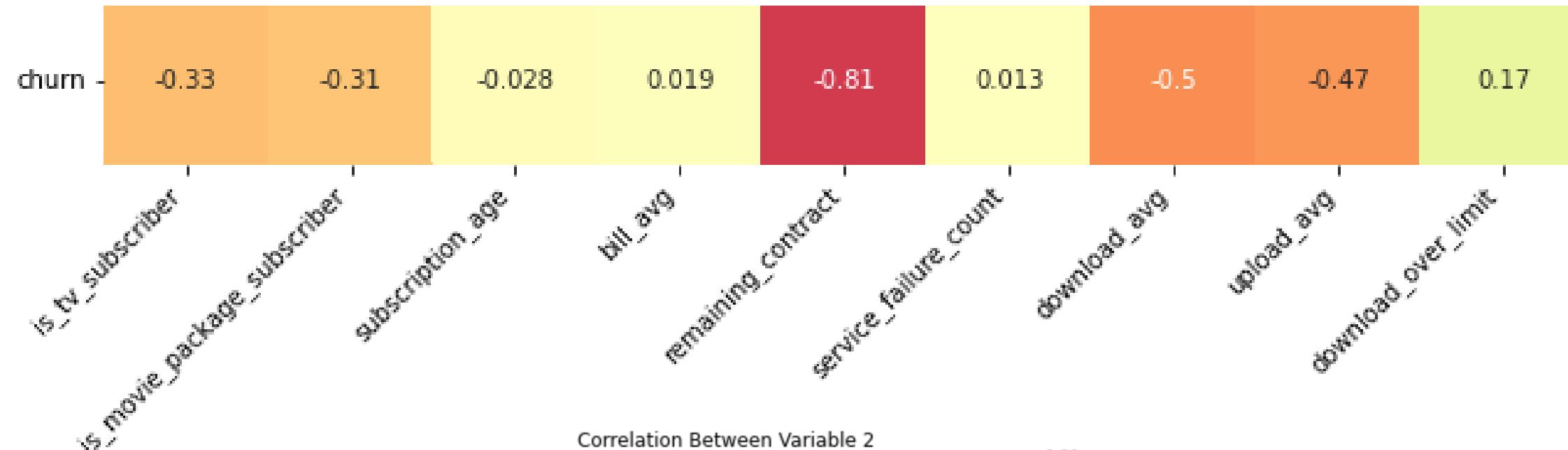


The more often customers do not call CS due to experiencing service failure, they still tend to **churn**

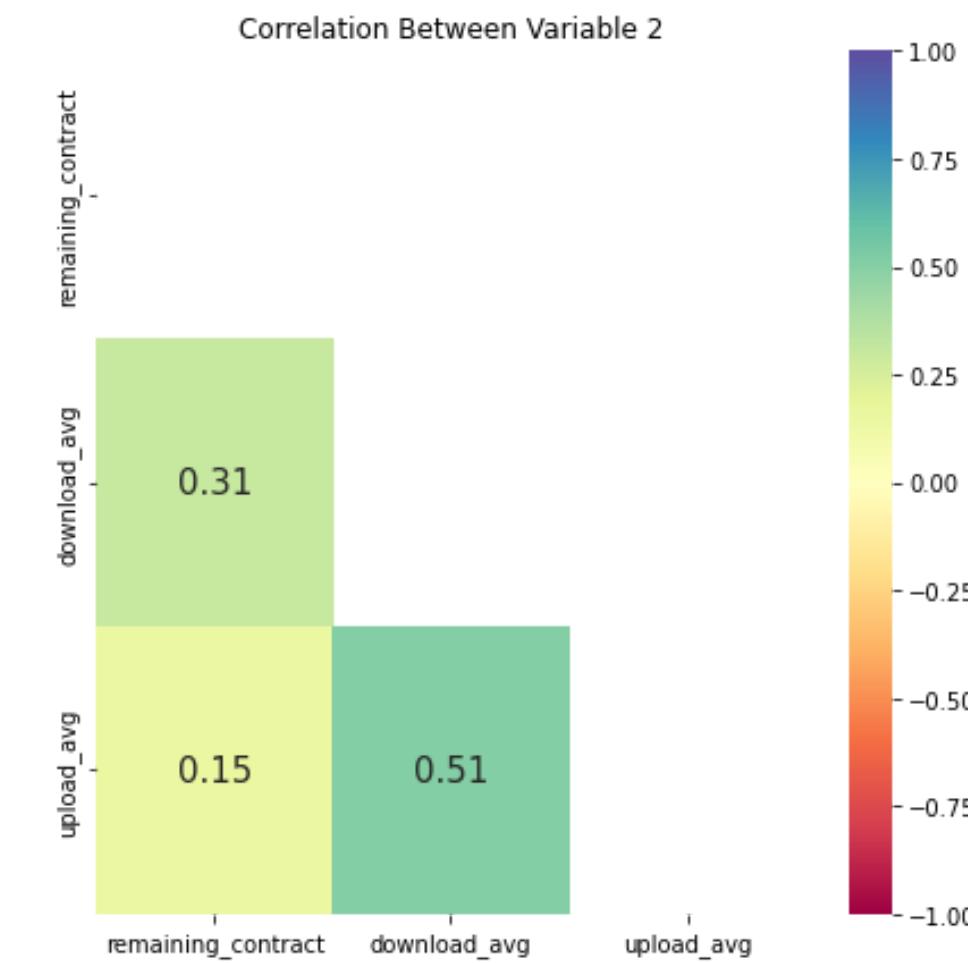
This condition is different from the general condition. It can likely be caused by other variables that are more influencing than the "service failure count" variable



# CORRELATION & MODELLING

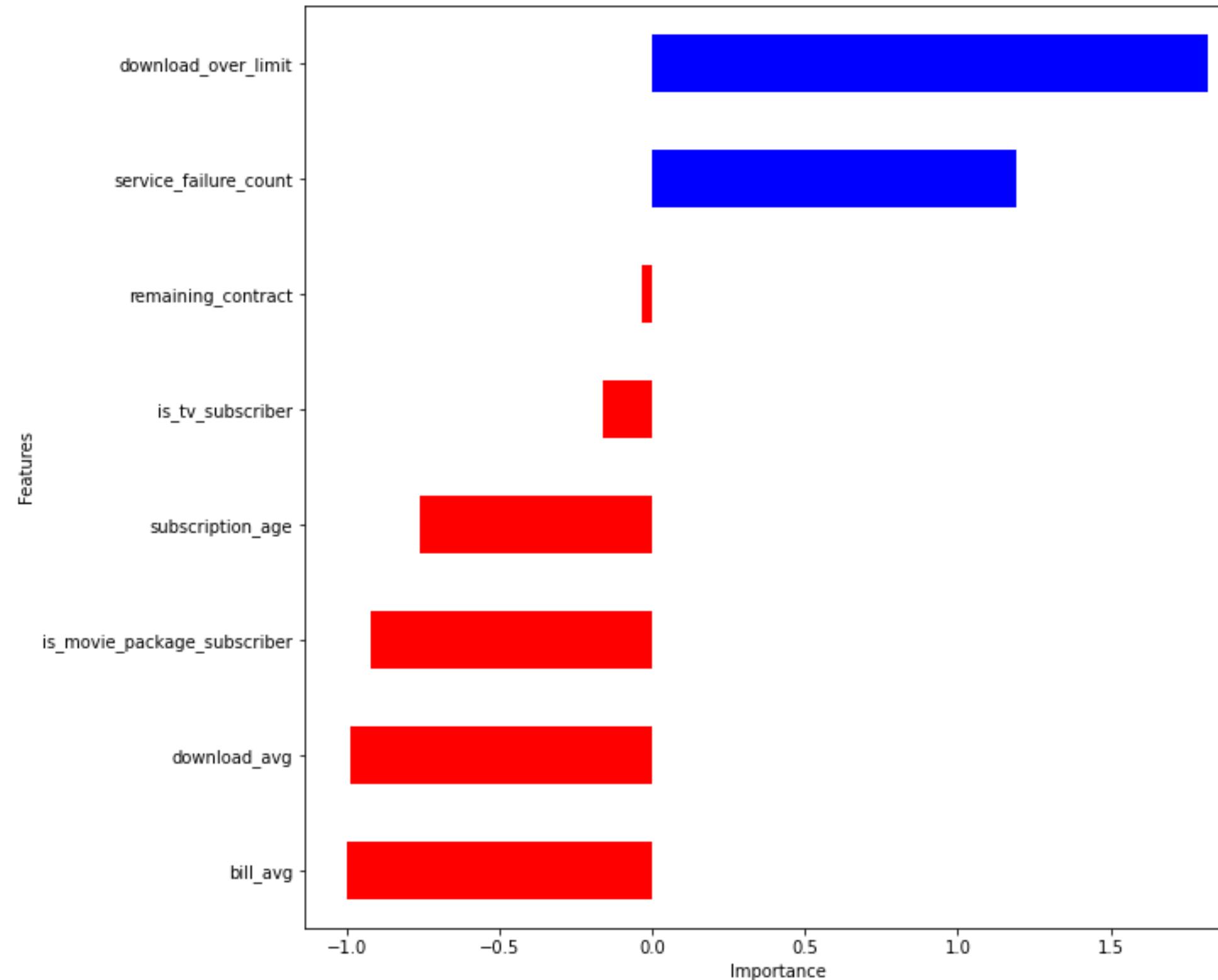


Upload average has high correlation with download average, so we **exclude** upload average for modelling



We use logistic regression for the model with the accuracy : **88,33%**

# FEATURE IMPORTANCE



1

Download over limit & service failure count have **positive impact**

2

Remaining contract have **low negative impact**

3

bill average TV subscriber, movie package subscriber, subscription age, download average, and also have **negative impact**

# SIMULATION MODEL



Condition Proposed



Churn Rate

10% of Total User with 0 download average become 30GB download average	54,74% (drop 1,96%)
10% Internet Only user become full package subscription (Internet+Movie+Tv)	54,55% (drop 2,15%)
10% of Total User with 0 remaining contract become user with 1 year contract	49,11% (drop 7,59%)
Focused on 5% user with no subscription: subscription change to Full Package, 0 remaining contract to 1 year, download average below 30GB to 30GB	49,99% (drop 6,71%)

A close-up photograph of a person's hands typing on a laptop keyboard. The laptop screen is visible in the background, showing a blurred interface with various icons and text. The lighting is warm and focused on the hands and the keyboard.

# INSIGHT

- There is a 56.7% churn rate in 3 months
- The highest churn rate on a 2-year subscription
- Whether the customer has a product contract or not, they still willing to churn
- Internet TV subscription, movie package, billing average and download average doesn't affect the churn rate
- There are 6,71% decreasing of churn rate when the campaign focused on 5% which subscription changed from internet only to full package with 1 year contract (Based on Simulation Model)

# RECOMMENDATION



## Reason



## Strategy

Due to the high number of customers who churn using the internet provider on 2 years subscription age

Give discount vouchers for customers who have subscribed before 2 years (preferably 1 year contract)

Due to customers who choose full packages tend to stay; and high churn rate on other package

Give discounts for every user who chooses a full package subscription; or offering price max \$17; suggest re-evaluation for other subscription price

Due to counter-intuitive findings (download over limit & service failure count), there may be other variables that affect customer churn but are not listed in this survey

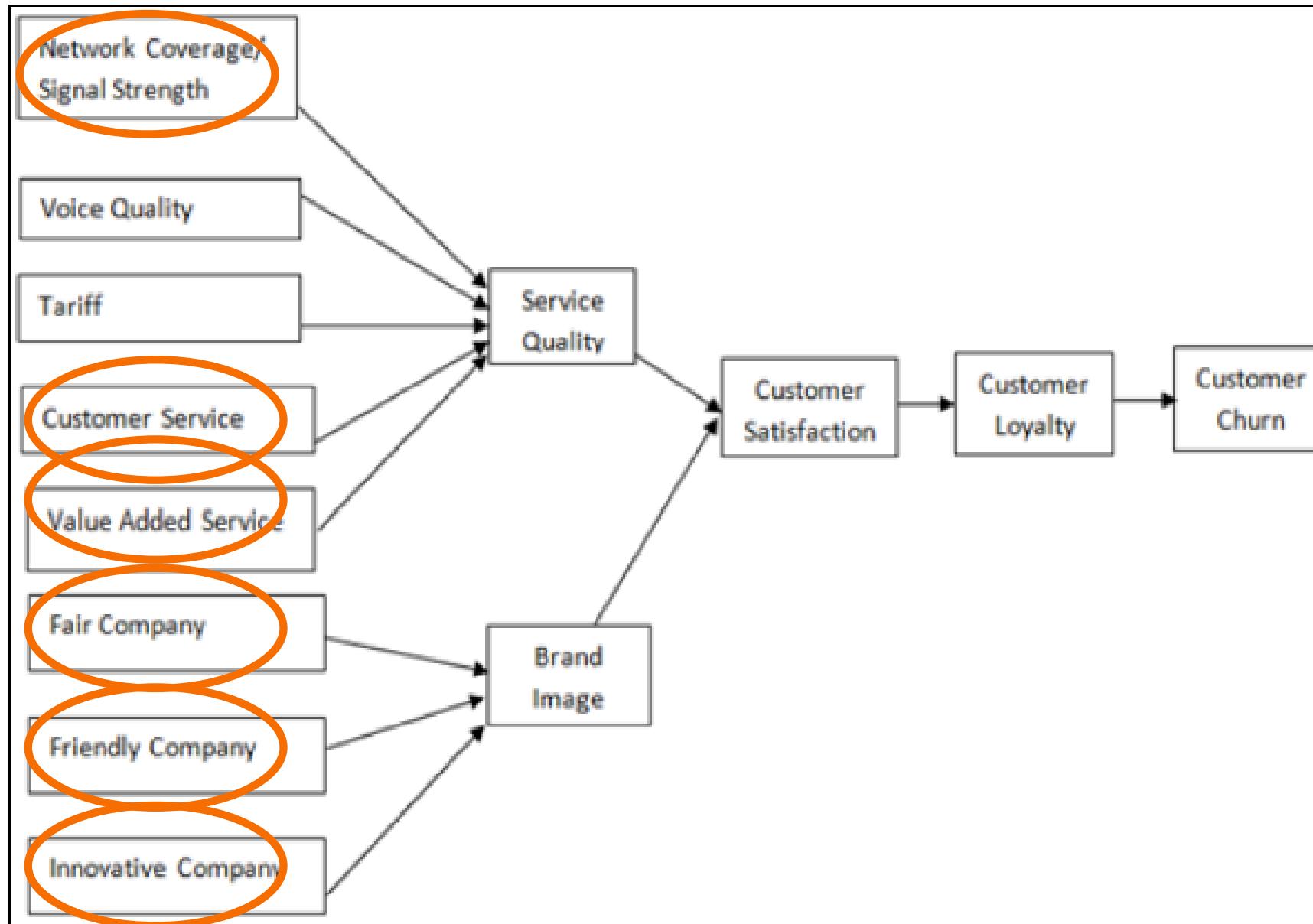
Conduct qualitative surveys

Based on model simulation which able to decrease churn rate until 6.71%

Focus on creating promotion for full package and 1 year contract to 5% users that subscribe internet only with 0 contract

# OTHER RELATED RESEARCH

Figure 1 A framework on the antecedents of churn



[Link Article](#)

# APPENDICES



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