

# Data Challenge Report

15.12.2021

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Data Description

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01

## Data Description

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- account
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# Data Description

## account

account\_id: A unique ID used to identify player profile.

created\_time: The time the account was created.

created\_device: The device model the account was created. Most are Samsung, Xiaomi and iOS users.

created\_platform: The platform the account was created. iOS and Android.

country\_code: To identify where a player comes from. IOS 3166, but Kosovo (XK – a user assigned) is not in this list.

created\_app\_store\_id: From which app store, the player downloaded the game and created account.

0	1	2	3	4	6	7	8	9	10	11	14	15	16	19
3	20539	60913	3554	9675	2183	3010	2138	56	2519	295	197	1288	2487	3935



# Data Description

## account\_date\_session

account\_id: A unique ID used to identify player profile.

date: To record when a player log in the game.

session count: Tells how many times a player log in to the game based on date.

session\_duration\_sec: To record how long a player spend in the game.

# Data Description

## lap\_purchase

account\_id: A unique ID used to identify player profile.

created\_time: The time a play purchase paid for the game.

package\_id\_hash: To identify what package(s) a player pay for. 10 different packages.

iap\_price\_usd\_cents: The price of package(s).

package	7fdc	580d	6411	cea9	c6df	91f8	f30e	4634	f7ac	8e0b
price	110	1849	110	184	3699	739	369	110	36	184

app\_store\_id: From which app store a player pay for the package(s).

0	1	2	3	4	6	7	8	10	11	14	15	16	19
4927	1234	1358	286	366	111	488	211	206	9	5	35	310	363

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02

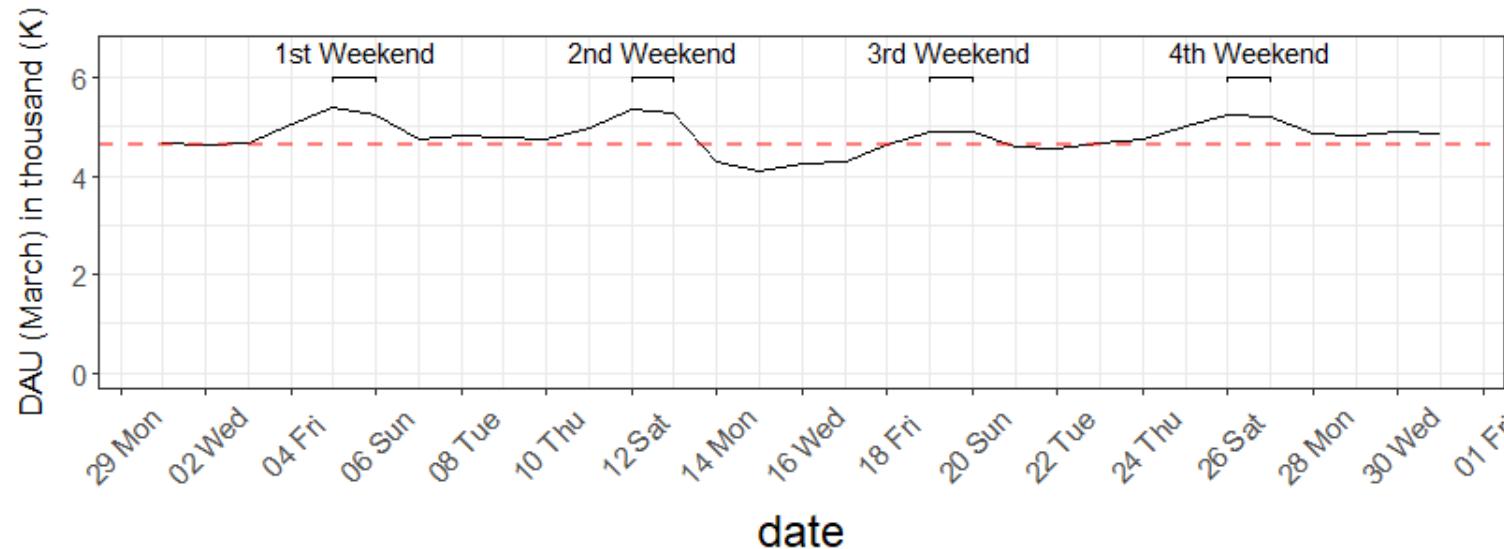
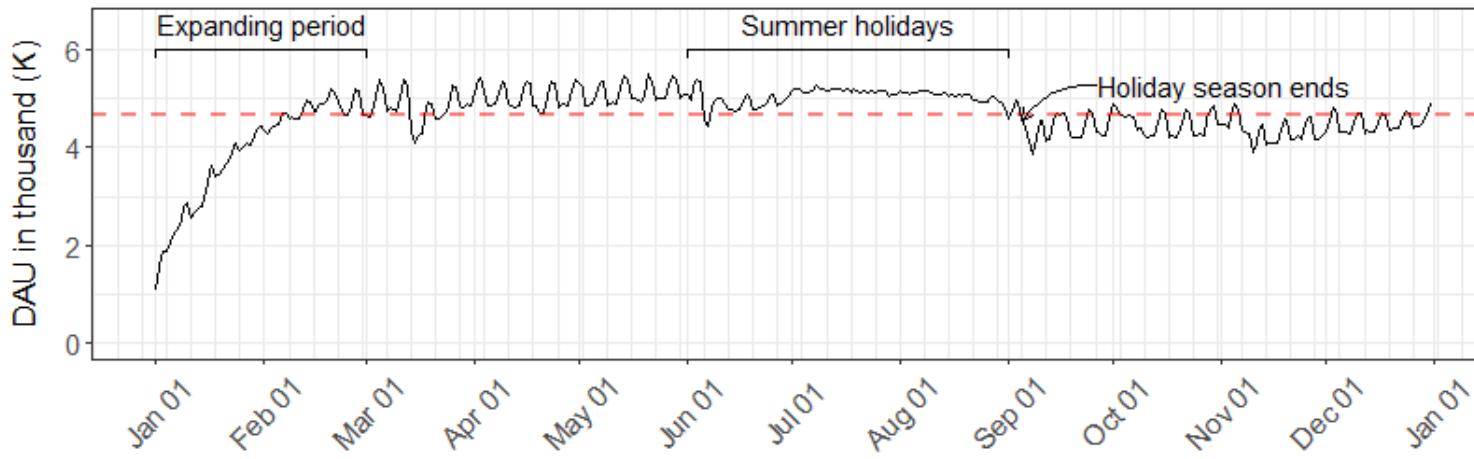
## Task

- 
- Task 1
  - Task 2

# Task 1

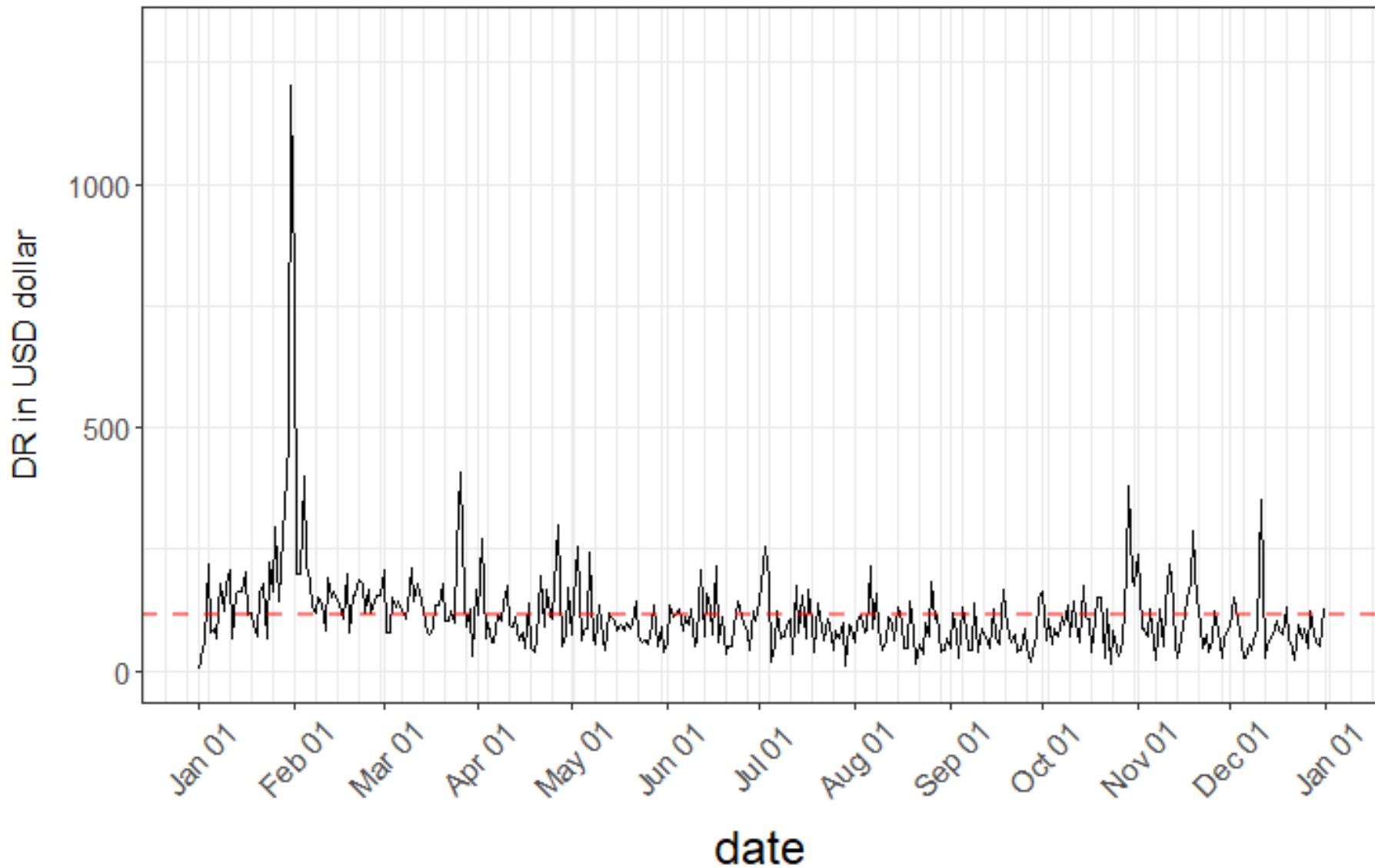
## Task 1.1 Revenue or Daily Active Users

Daily active user, aka DAU, is a metric that measures the total number of users that log in and engage with a product/game on a daily basis.



# Task 1

## Task 1.1 Revenue or Daily Active Users



# Task 1

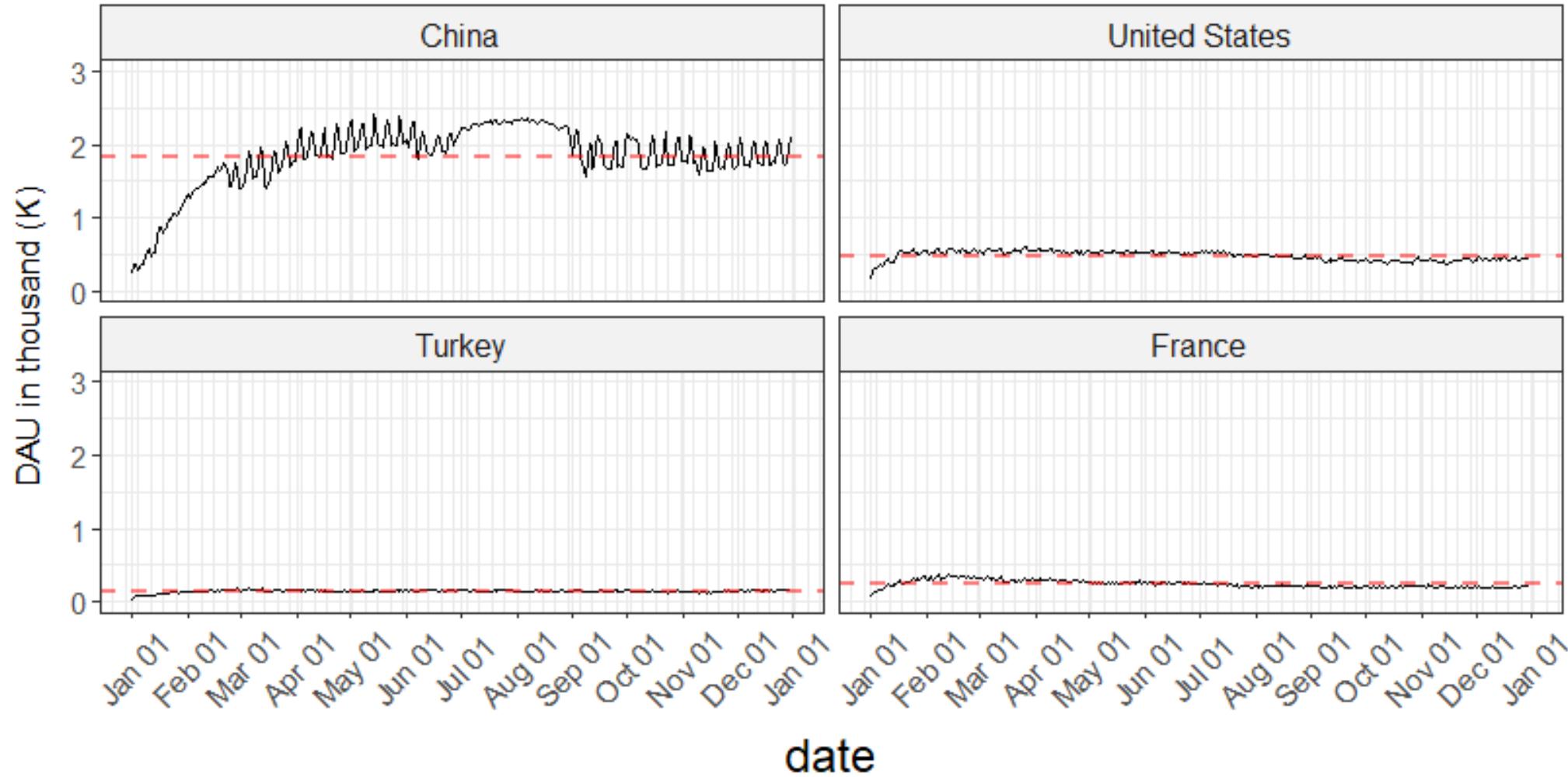
## Task 1.2 Revenue and Daily Active Users (geographic split)



Country	N
China	38044
United States	11553
Turkey	5060
France	4843
Russian Federation	4055
Korea, Republic of	2817

# Task 1

## Task 1.2 Revenue and Daily Active Users (geographic split)



# Task 1

## Task 1.2 Revenue and Daily Active Users (geographic split)

Purchase Frequency



Country	Freq
China	365
United States	359
United Kingdom	216
Korea, Republic of	215
Canada	206
France	188

# Task 1

## Task 1.2 Revenue and Daily Active Users (geographic split)

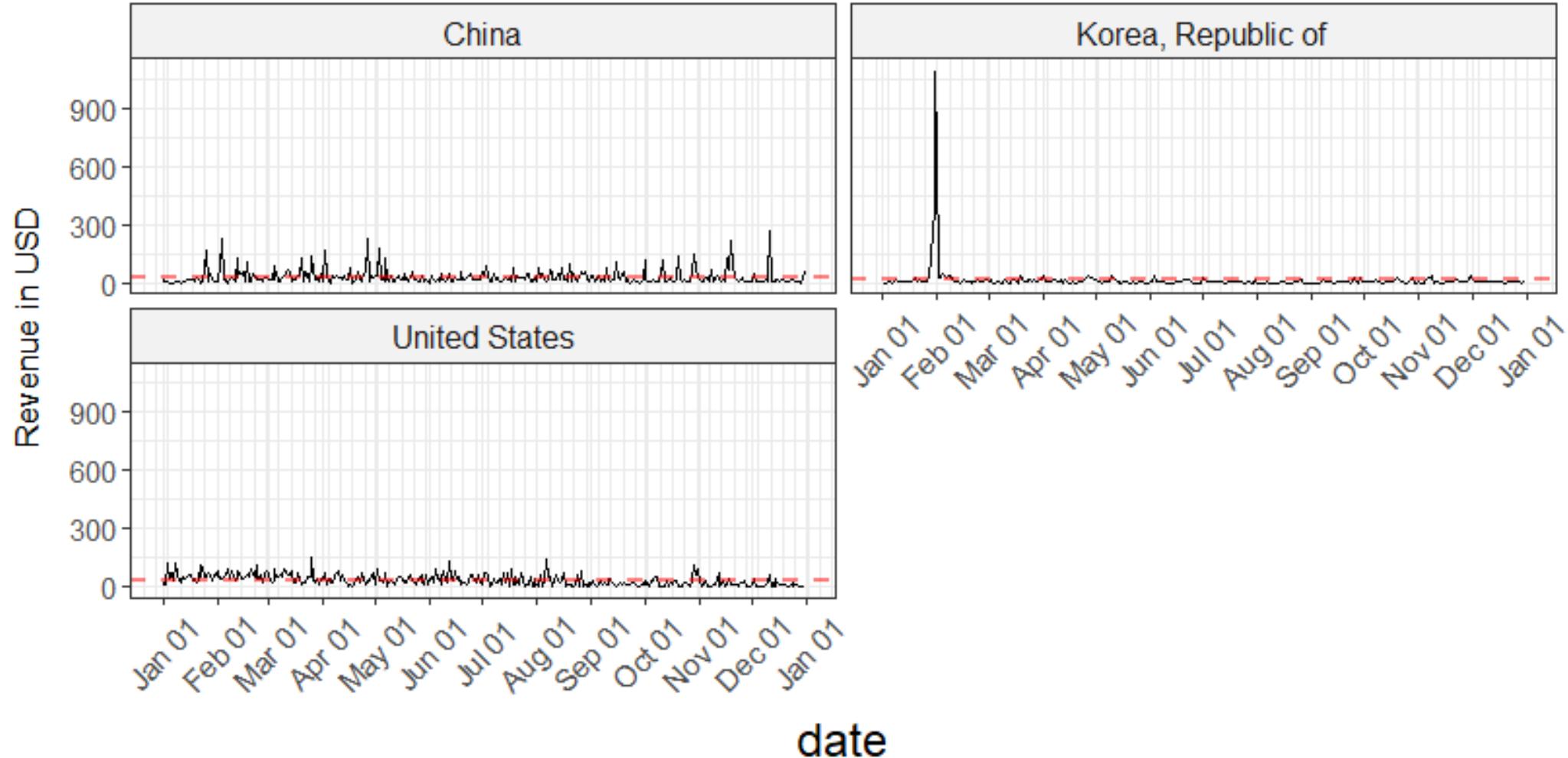
Purchase Frequency



Country	Freq
China	1314818
United States	1136507
Korea, Republic of	463518
Canada	254506
Turkey	193339
Switzerland	182774

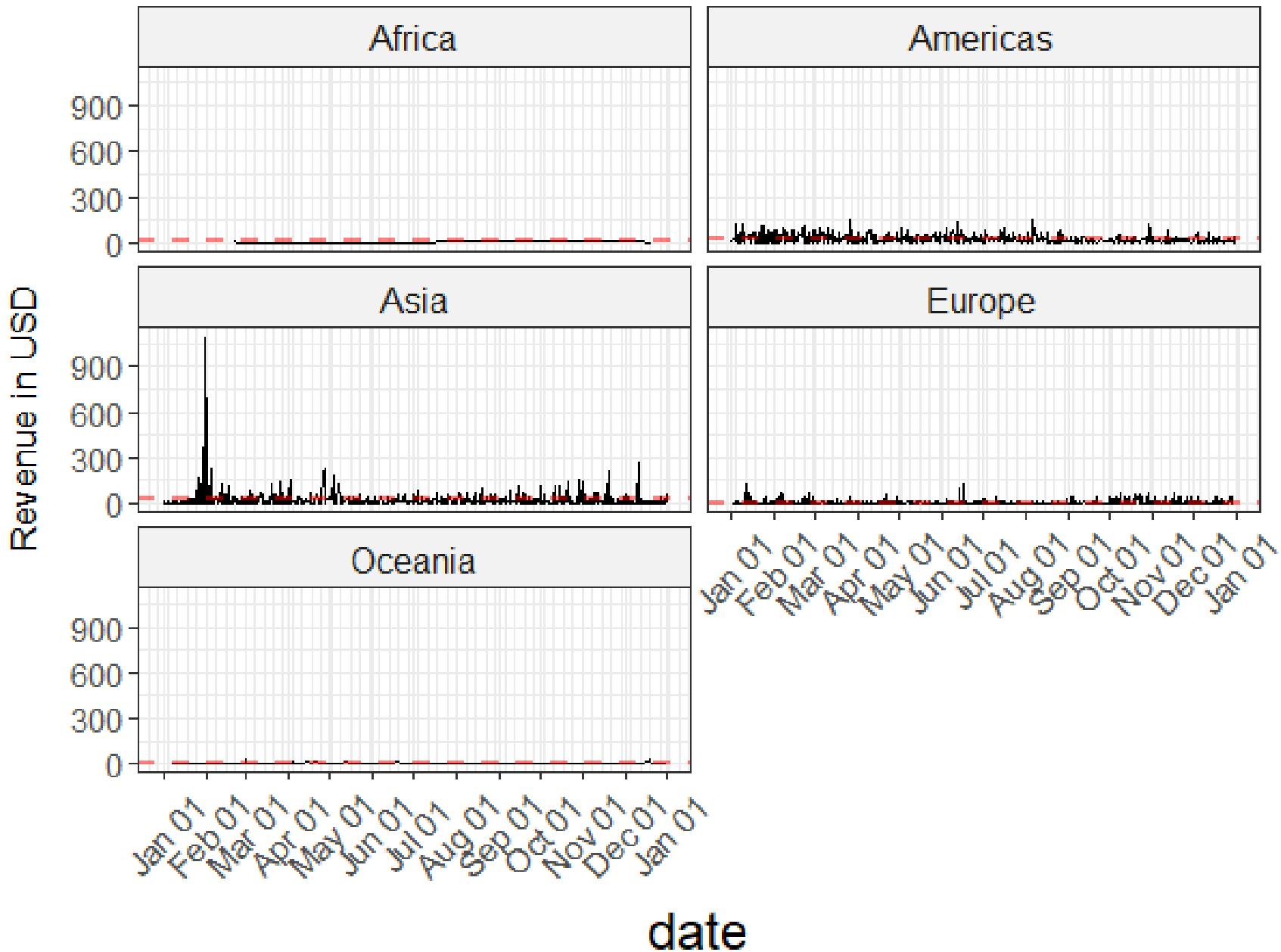
# Task 1

## Task 1.2 Revenue and Daily Active Users (geographic split)



# Task 1

## Task 1.2 Revenue and Daily Active Users (geographic split)



# Task 1

## Task 1.3 LTV and proportion

Lifetime value, also known as LTV, is one of the most important metrics. It is the total amount of money you are likely get from an individual client over their “lifetime”. It can be calculated by:

$$LTV = \sum_1^t R(t) \cdot ARPU(t) = LT \times ARPU$$

In this formula, there are two important metrics that we need to know, Retention and ARPU. Retention is defined as

$$\begin{aligned} & \text{Retention Rate on week } N \\ &= \frac{\# \text{ of users returning to the game in week } N}{\text{Total } \# \text{ of users initially playing the game on the first week}} \end{aligned}$$

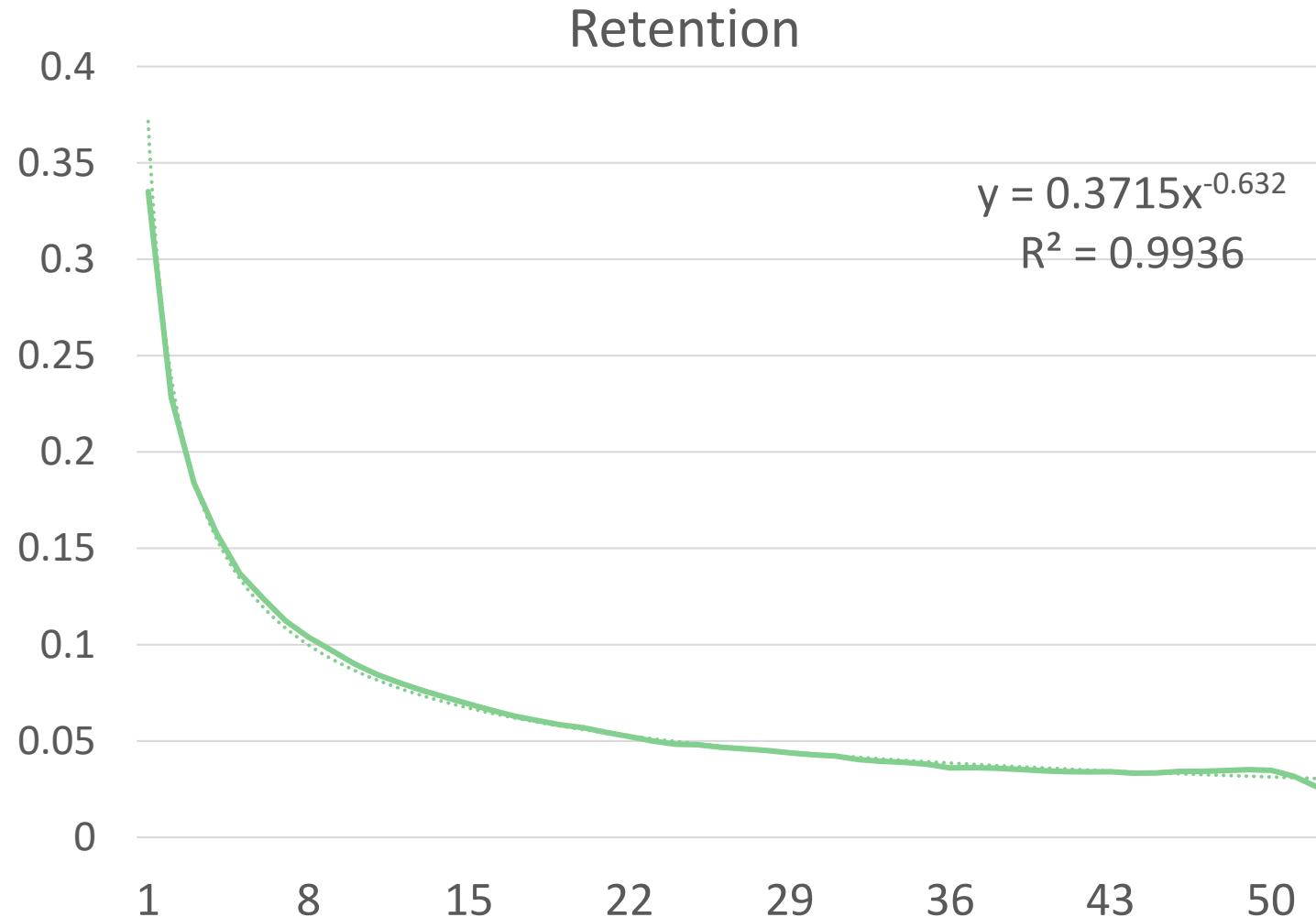
ARPU is defined as:

$$ARPU \text{ (time period)} = \frac{\text{Revenue (time period)}}{\text{Users (time period)}}$$

# Task 1

## Task 1.3 LTV and proportion

Both Retention and ARPU can be modelled. Let us suppose ARPU is constant. Retention can be modelled,



# Task 1

## Task 1.3 LTV and proportion

As we want to see the proportion during the player's first week in game, we compute  $R(1)$  and  $\sum_1^{53} R(53)$  (there are 53 weeks in 2016). The proportion then becomes (setting ARPU is constant):

$$\text{Proportion} = \frac{R(1)}{\sum_1^{53} R(53)} \times 100\% = \frac{0.3715}{3.5614} \times 100\% = 10.41\%$$

In a similar way, we can also modelled ARPU, then the proportion is

$$\text{Proportion} = \frac{R(1) \times \text{ARPU}(1)}{\sum_1^{53} R(53) \times \text{ARPU}(53)}$$

# Task 2

## Task 2.1 Metrics

Definition of free-to-play game: A free-to-play game, that is, people don't spend money when they download the game, they are more willing to try it. After they get addicted, players have two options. They can wait a specific amount of time for resources or they can pay to receive them.

Based on this definition, in fact, most of the metrics for game are also important in Task 2. As I thought free-to-play is a game that making no profits. So I did not consider revenue for this task.

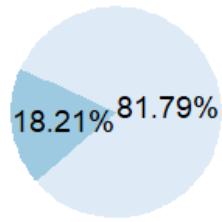
The basic: DAU, MAU, stickiness, session length, session count, retention and churn

Monetization: conversation rate, ARPDAU, ARPU

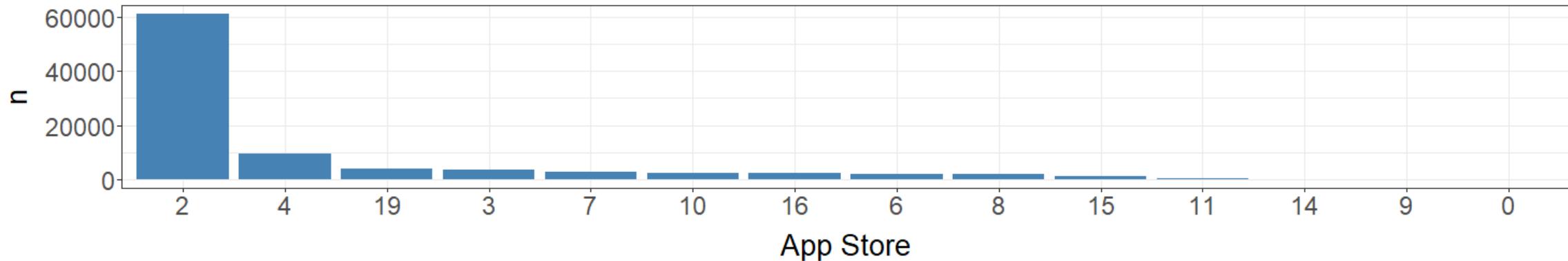
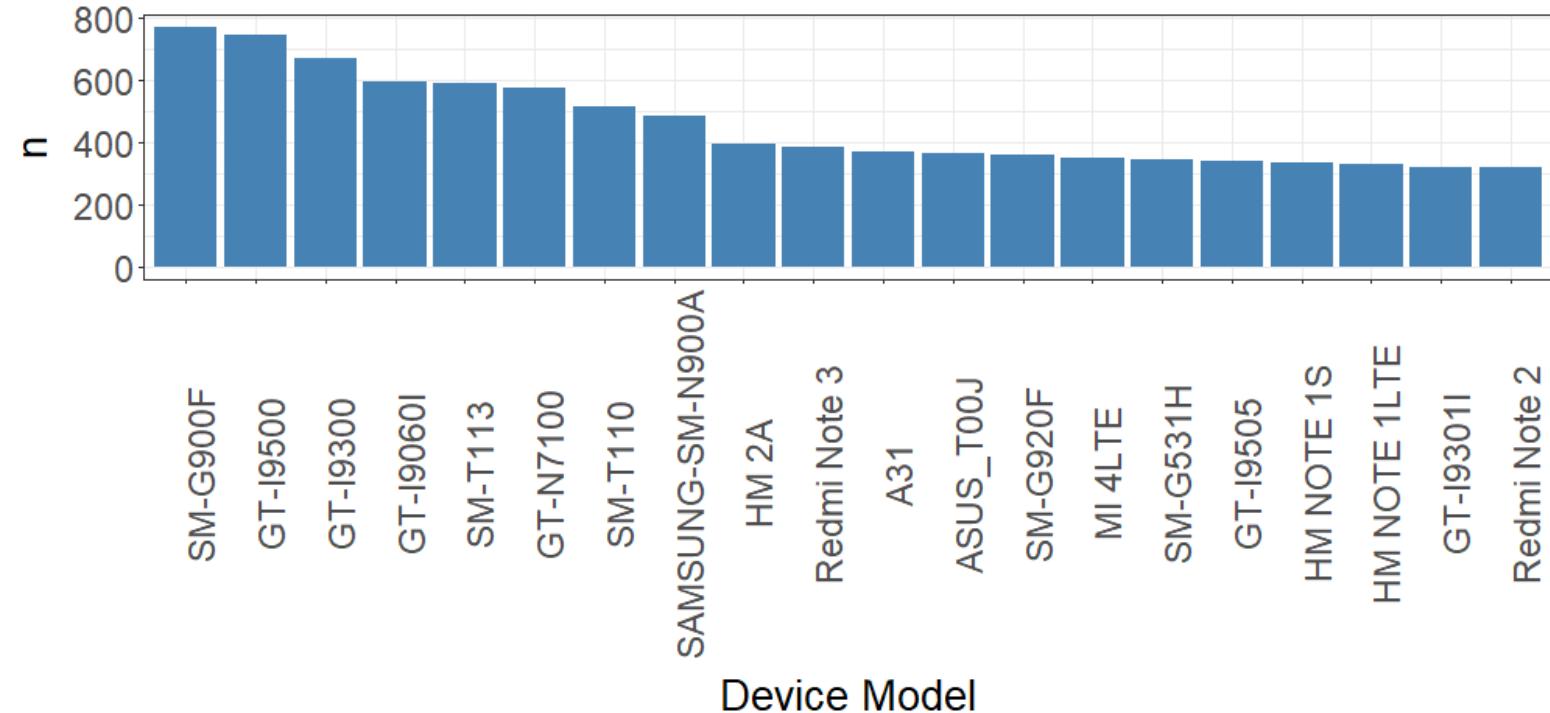
In-game metrics: sources (where users can earn virtual currency), sink (where users spend their precious currency), flow (the total balance of currency that your players have spent and earned)

# Task 2

## Task 2.2 Stickiness and Channels

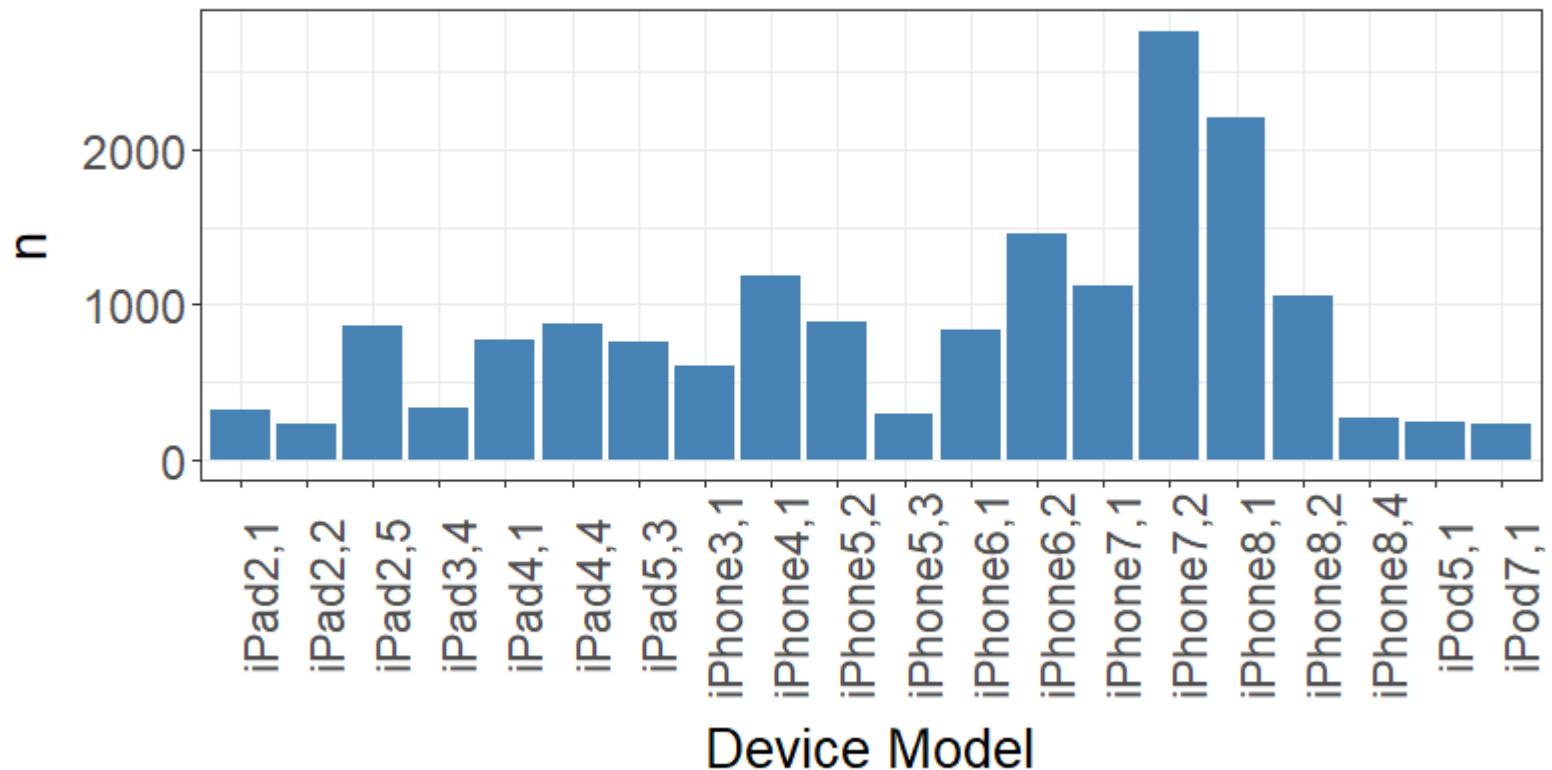


Platform  
Android  
iOS



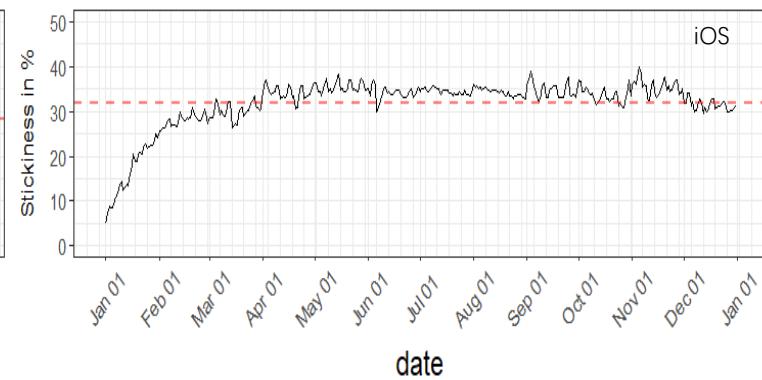
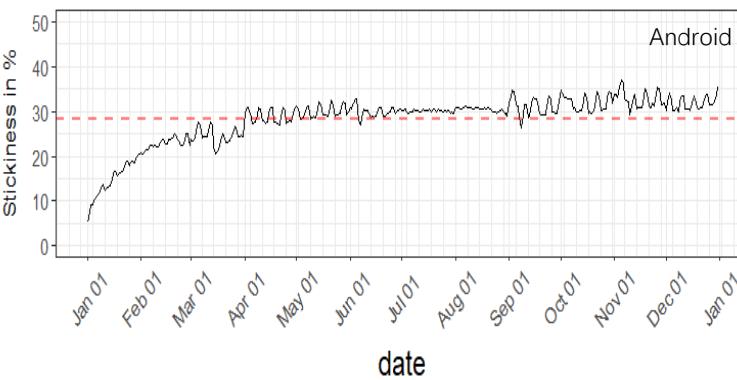
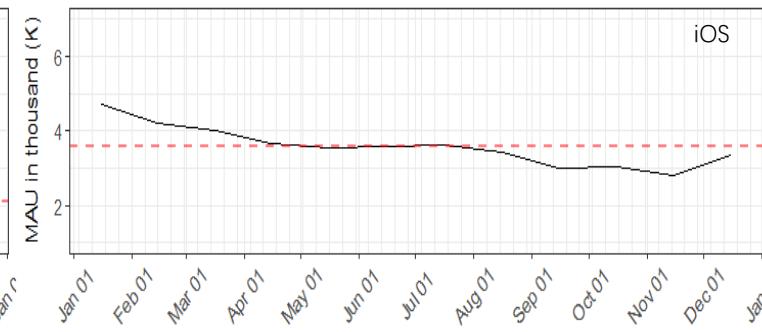
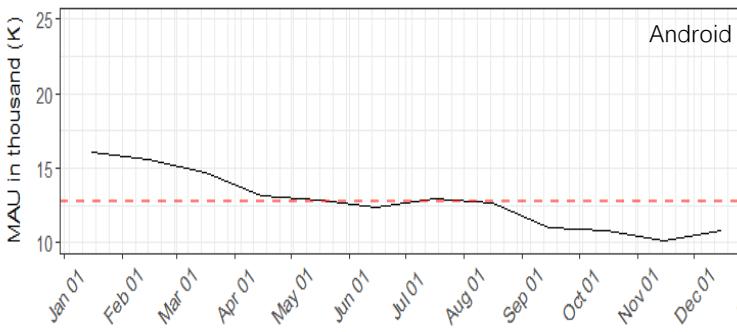
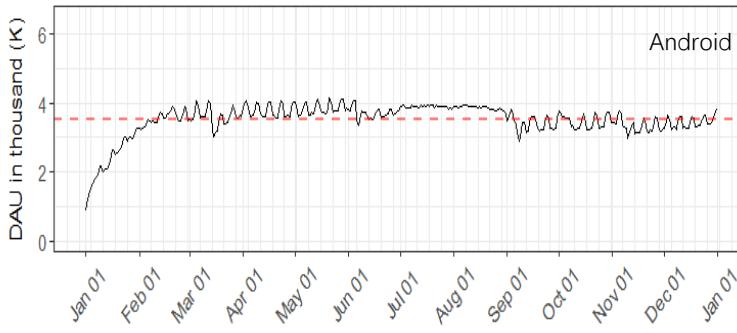
# Task 2

## Task 2.2 Stickiness and Channels



# Task 2

## Task 2.2 Stickiness and Channels

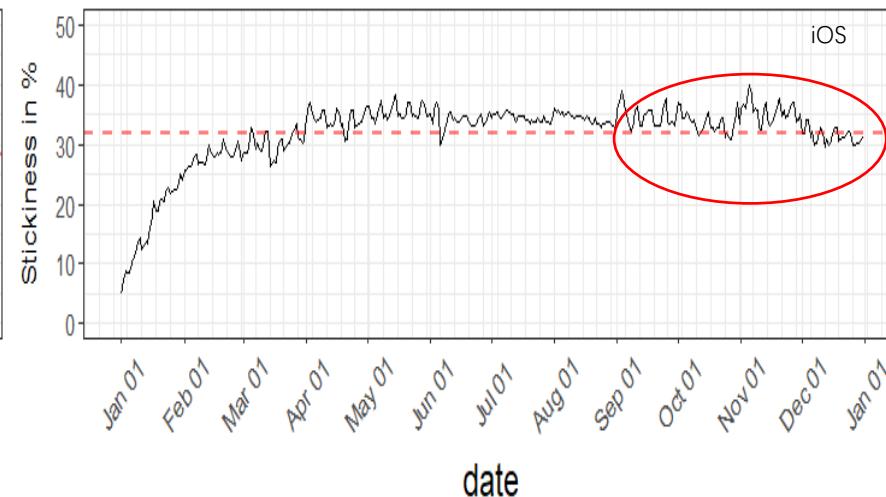
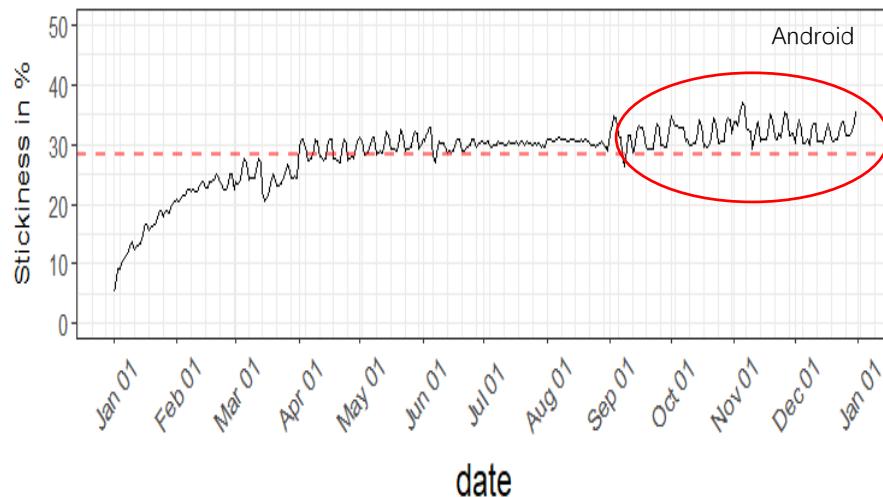


# Task 2

## Task 2.3 Conclusions and Recommendations

Android and iOS, two most often-used platform, there are no obvious difference in DAU, MAU and the stickiness. But there is a slight chance that I have noticed. Started from Sep, the stickiness of Android users experienced a slight increase while this of iOS users decreased.

If we have stickiness of Jan 2017, seeing that stickiness of iOS users still decreased or by modeling, there shows a down warding trend, we have to pay more attention to it.



## Task 2

### Task 2.3 Conclusions and Recommendations

Except for platforms, I noticed that, Android users prefer to use Samsung, xiaomi devices to play our game. And if player are using iOS devices, they prefer to use iPhone series 7 to enjoy our game. And this means these devices probably give them better experiences when playing our game.

Mobile phone price:

HM2A: 599 CNY (83.5 Eur)

Redmi Note 3: 999 CNY (140 Eur)

SM-G900F (Samsung S5) and GT-19500 (Samsung S4): about 700 Eur

iPhone 6: starts from 199\$ (176 Eur)

iPhone 7: starts from 649\$ (575 Eur)

iPhone 8: starts from 699\$ (620 Eur)

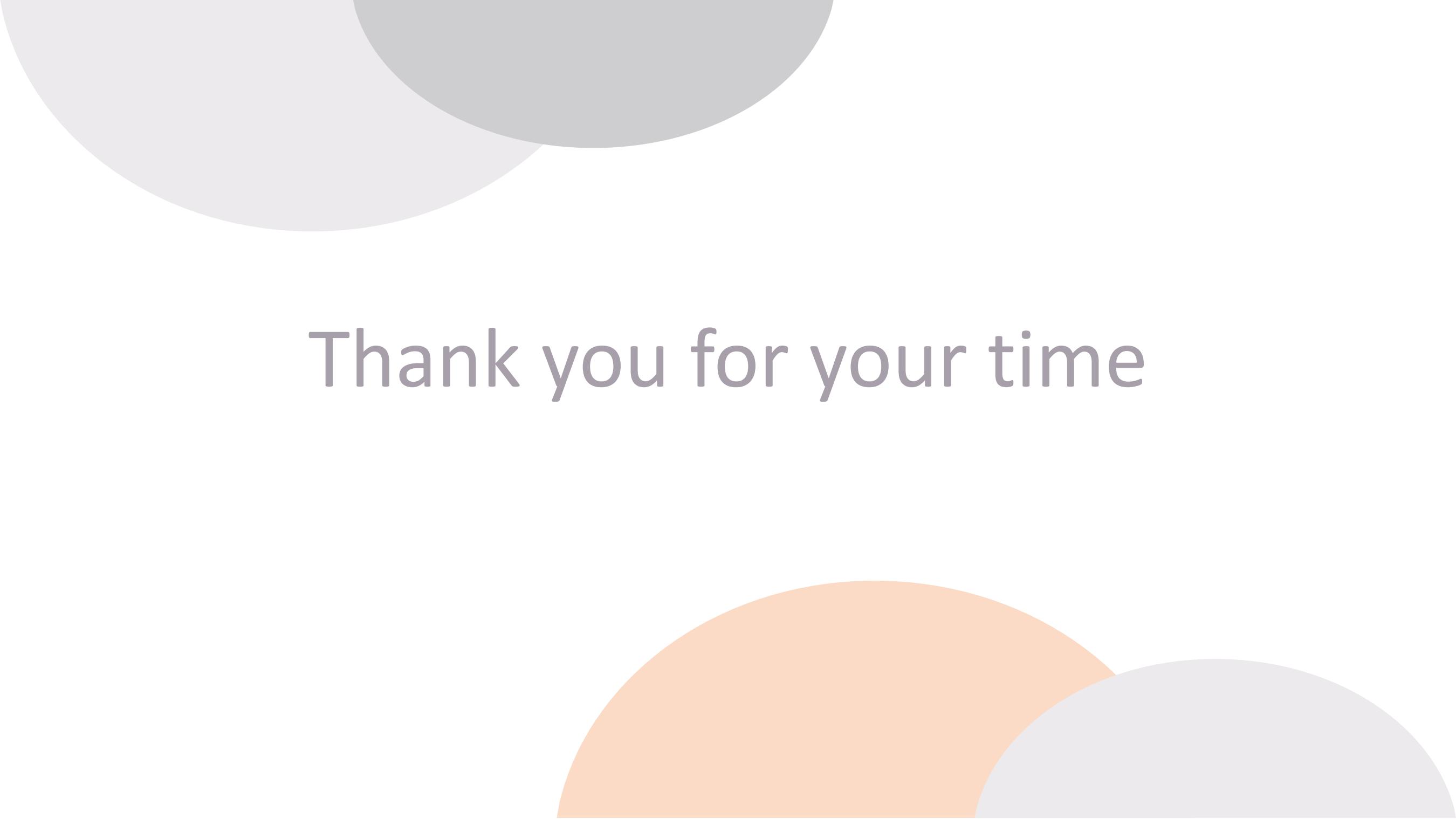
Purchasing powers are different for players. As Korean players paid a lot in Feb, we are kind of believe that, if players can afford an expensive devices, they are able to pay more for the game if the game is attractive enough.

# Task 2

## Task 2.3 Conclusions and Recommendations

Based on information that we have right now, there are some ways of improving the retention rate,

1. Effective pushes.
2. Login rewards.
3. Enrich gameplay, but not add any heavy burden to our players. Like unlock new content and features steadily, add targets and stages – give our player the feeling of progress.
4. Onboarding. Notice the losing stickiness of iOS players in the third quarter, and the losing of daily new users, a smooth starts may help to arouse the interest of our players.

The background features three large, semi-transparent circles. One circle is positioned at the top center in a light gray color. Another circle is located at the bottom right in a light orange color. A third circle is partially visible at the bottom left, also in a light gray color.

Thank you for your time