



# HOMEWORK A

## Cookie Cats

# GROUP 5\_KMDA8



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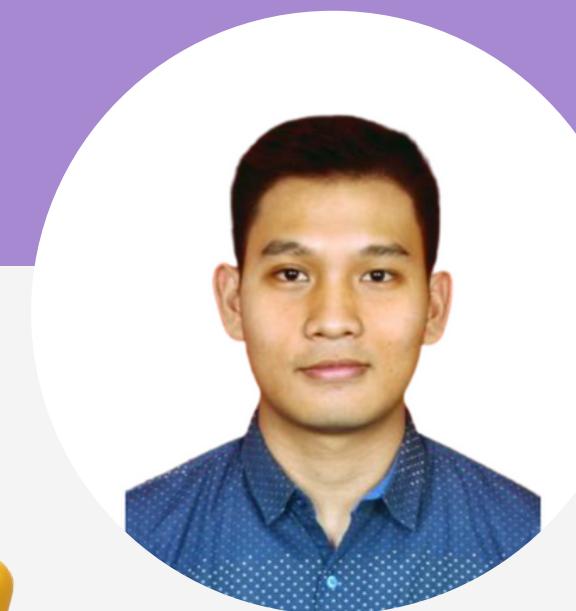


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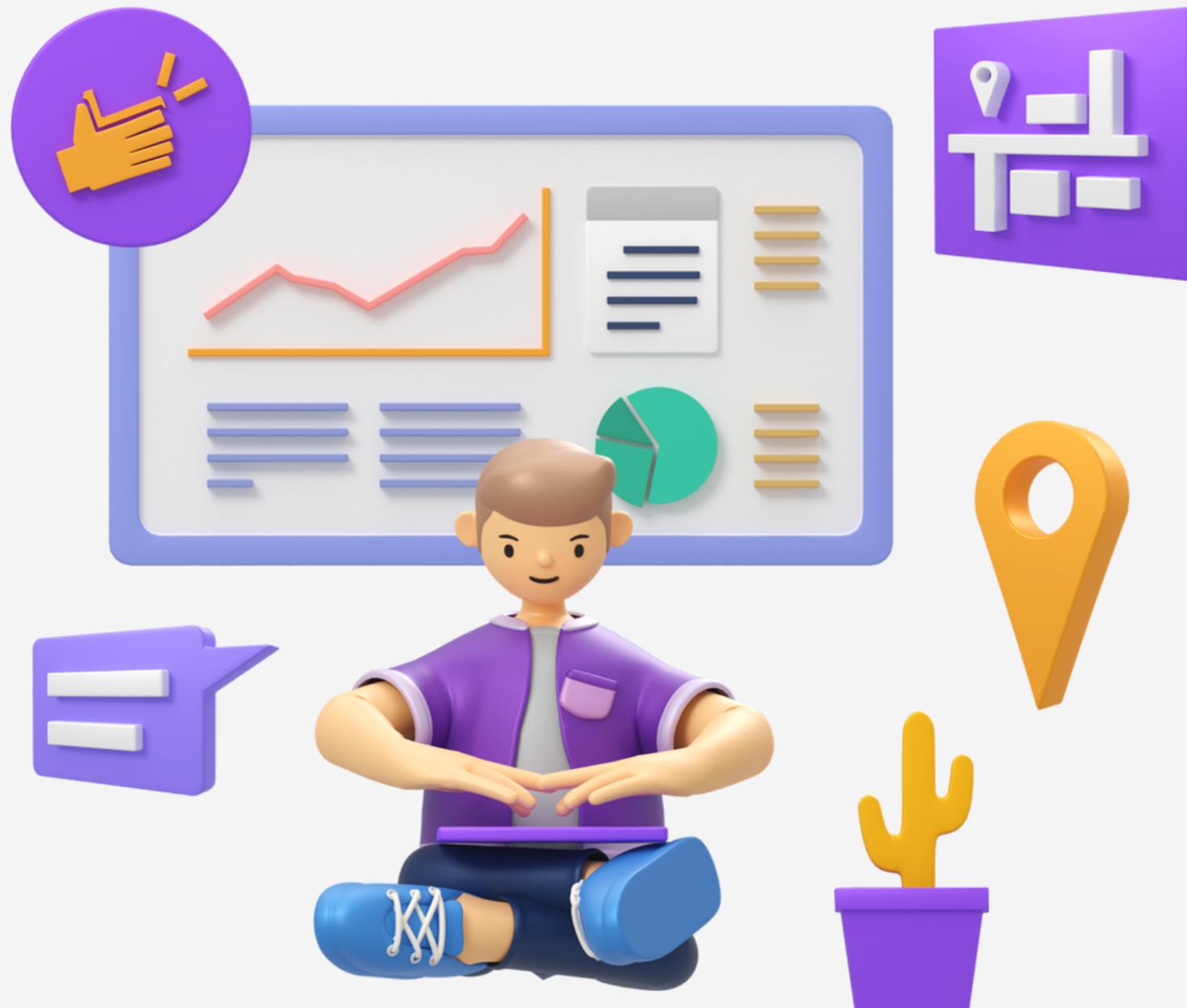


# STUDY CASE

Cookie Cats is a hugely popular mobile puzzle game developed by Tactile Entertainment. It's a classic "connect three" style puzzle game where the player must connect tiles of the same color in order to clear the board and win the level. It also features singing cats.

As players progress through the game they will encounter gates that force them to wait sometime before they can progress or make an in-app purchase. In this project, we will analyze the result of an experiment where the first gate in Cookie Cats was **moved from level 30 to level 40**. In particular, we will analyze the impact on **player retention** and **game rounds**.





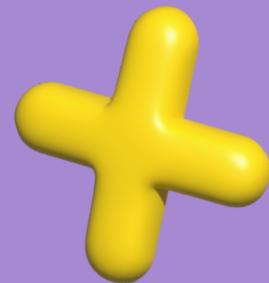
# COOKIE CATS EXPERIMENT

Cookie Cats is a hugely popular mobile puzzle game developed by Tactile Entertainment. will analyze the result of an experiment where the first gate in Cookie Cats was **moved from level 30 to level 40** and analyze **the impact on player retention and game rounds**.

# GOAL/OBJECTIVE

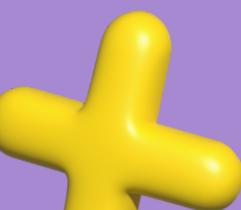
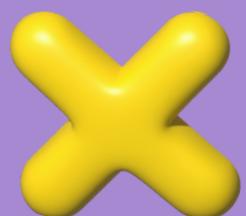
Increased player retention and number of game round users.



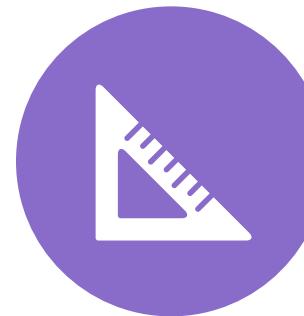


## GENERAL PROBLEM

Many players didn't continue the game on the next day or on the seventh day. Because there is a first gate that requires players to pay/wait at level 30.



# ROOT CAUSE ANALYZE



Unattractive game design



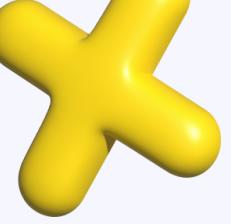
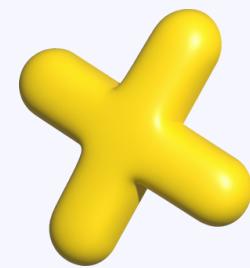
Players are bored with the game



Players don't want to spend money on games

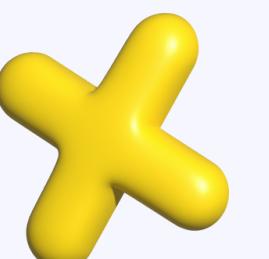


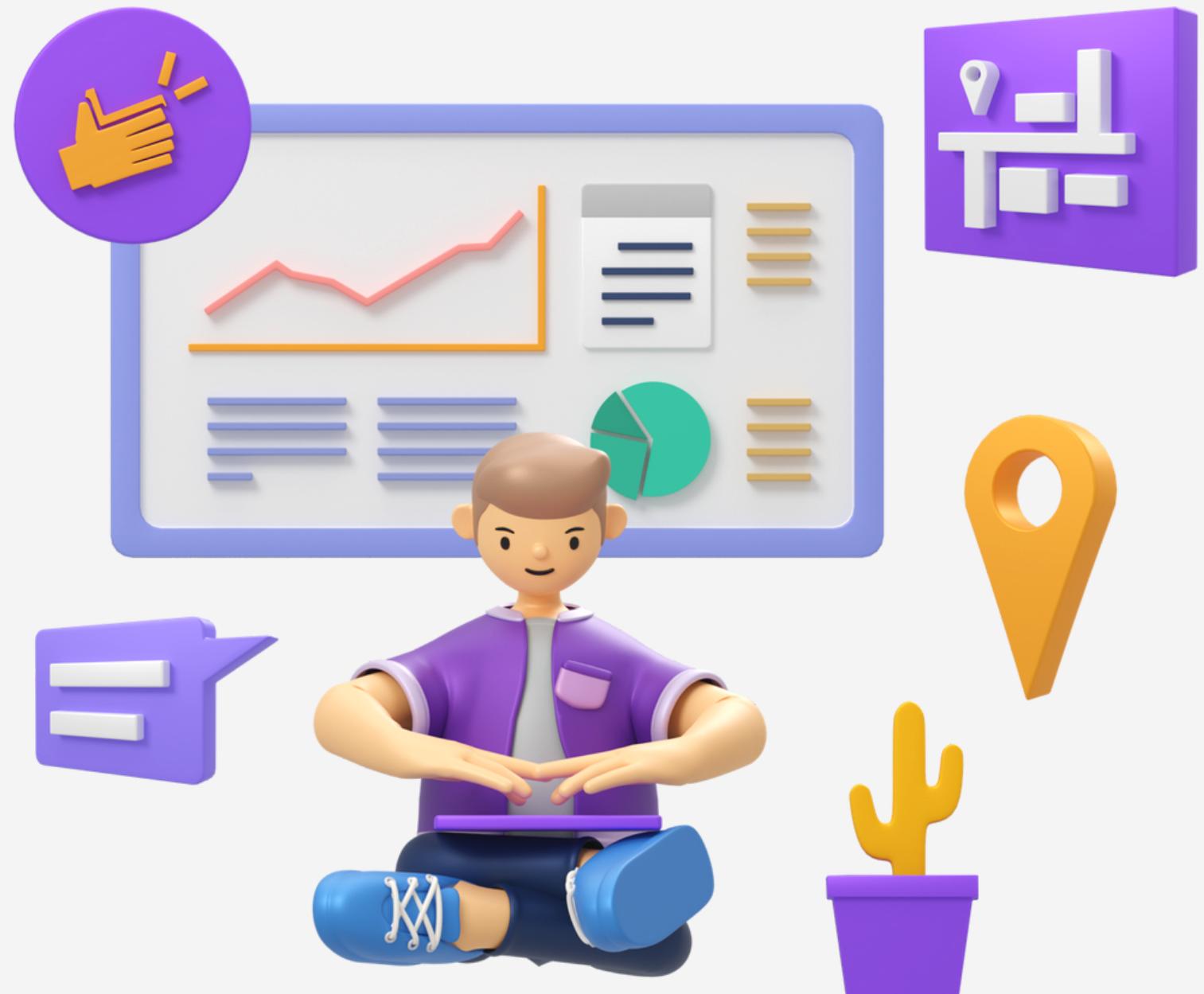
Players don't want to wait for the time specified at the first gate



# PROBLEM STATEMENT

- why Players don't find pleasure in playing the game for a long time
- What causes players to get bored of the game
- How will it affect player retention if the first gate is moved from level 30 to 40
- What is the ratio between players with first gate level 30 and players with first gate level 40





# PROPOSED SOLUTION

- Improve design
- Eliminate in-game purchases
- Moving the first gate level 30 to level 40

# KEY METRICS

Retention rate and sum round games rate



# POPULATION

Cookie cats game players gate 30 version and gate 40 version players



# BUSINESS HYPOTHESIS

Eliminating purchased for players who have reached level 30/40 and above and adding purchasing items/power ups can increase user retention and number of rounds



# HYPOTHESIS



**H 0:**

Upgrading first gate level 30 to first gate level 40 can increase user retention and number of rounds

**H 1:**

Upgrading first gate level 30 to first gate level 40 cannot increase the user's retention and number of rounds



# EXPERIMENT GROUPS AND PERIOD

version first gate level 30 and 40 Users



## Control

Users who use the application version  
first gate level 30



## Experiment

Users who use the application version  
first gate level 40

# EXPERIMENT MONITORING

[bit.ly/DA8-5\\_dashboard](https://bit.ly/DA8-5_dashboard)



Treatment Users

userid  
**45.489**

Number of game rounds treatment user

sum\_gamerounds  
**2.640**

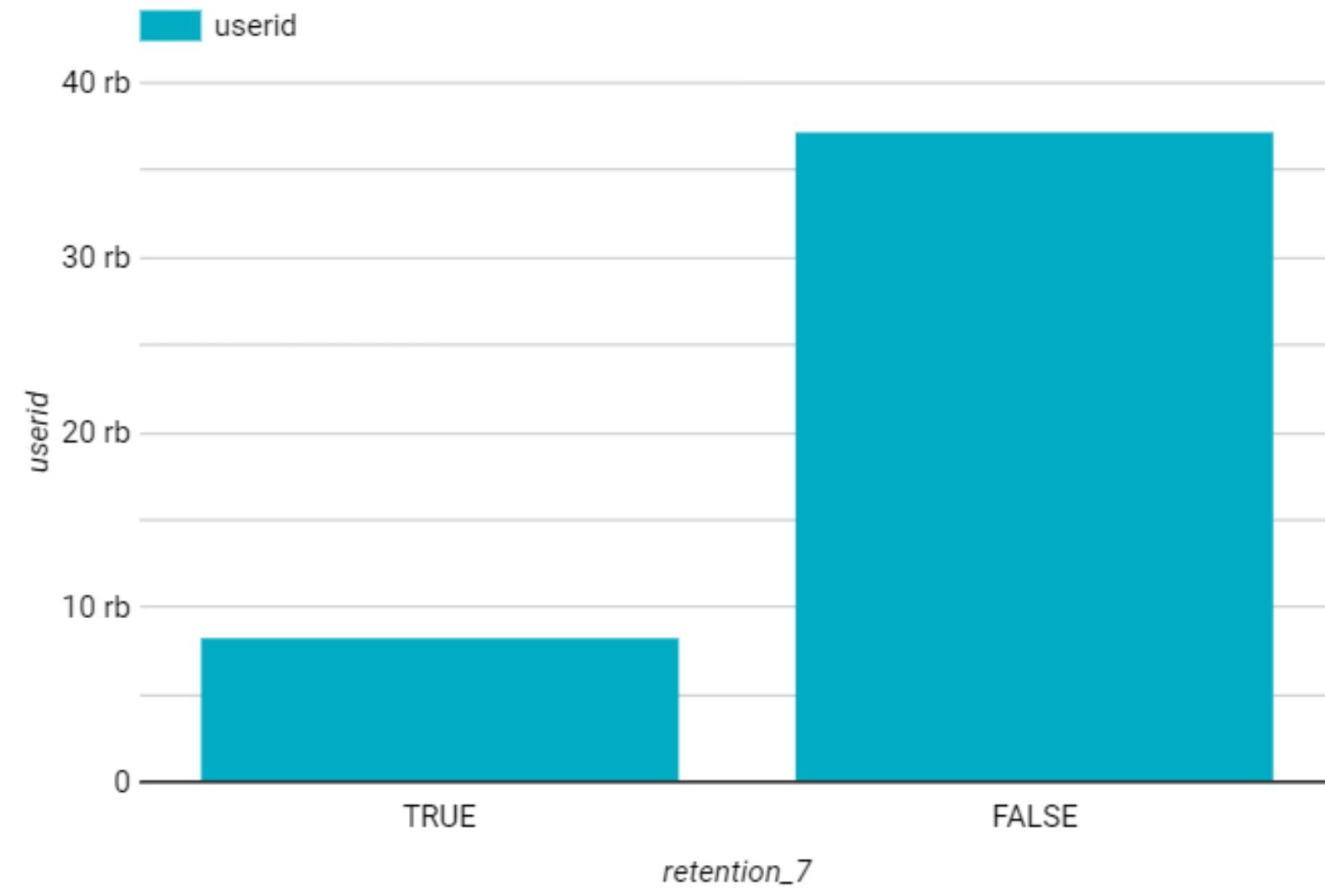
Average game rounds treatment user

sum\_gamerounds  
**51,3**

Number of Retention Players on the first day given treatment



Number of Retention Players on the seventh day who were given treatment



Players Treatment Visualization

All Users

userid  
**90.189**

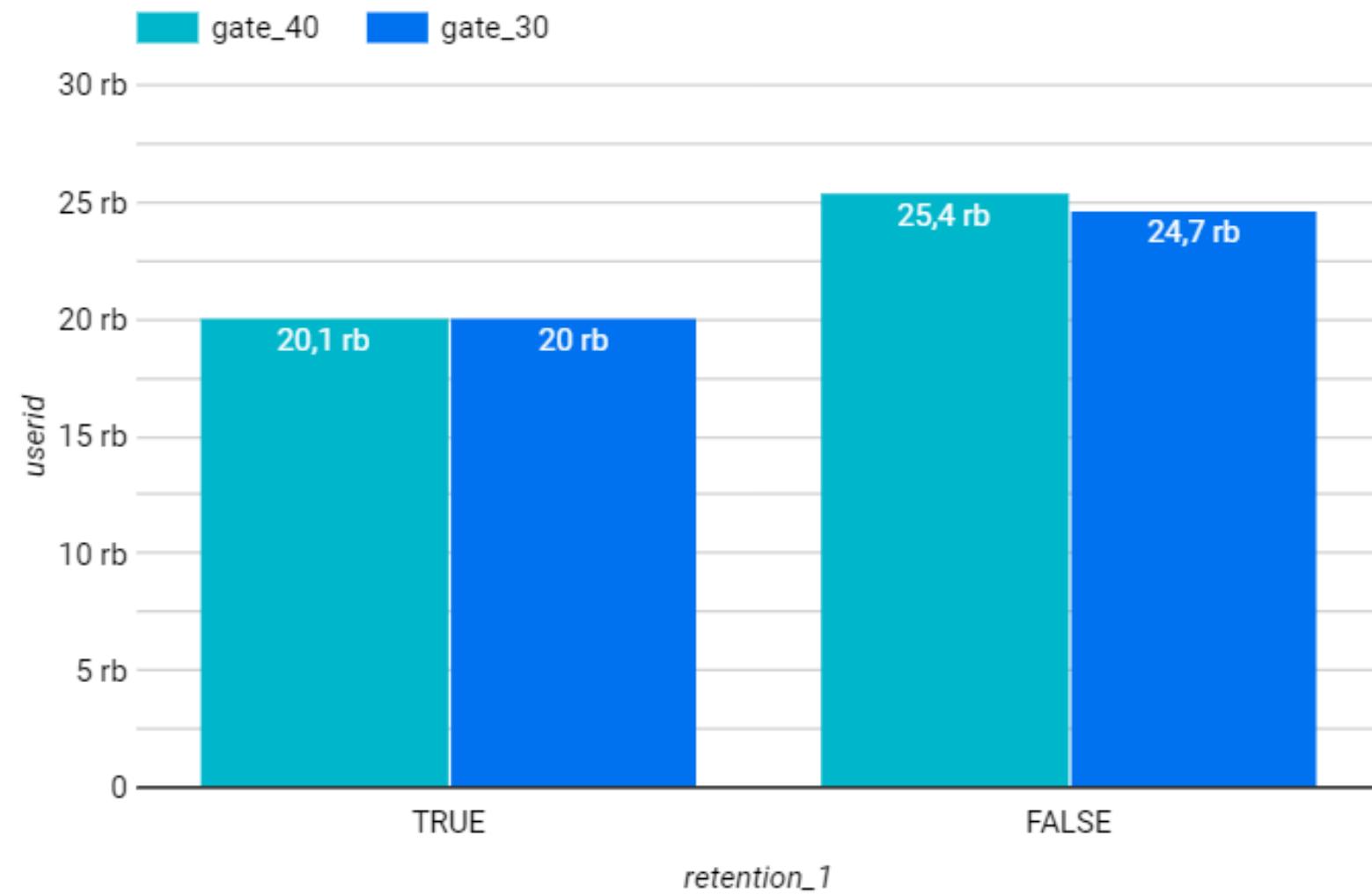
Total number of game rounds

sum\_gamerounds  
**49.854**

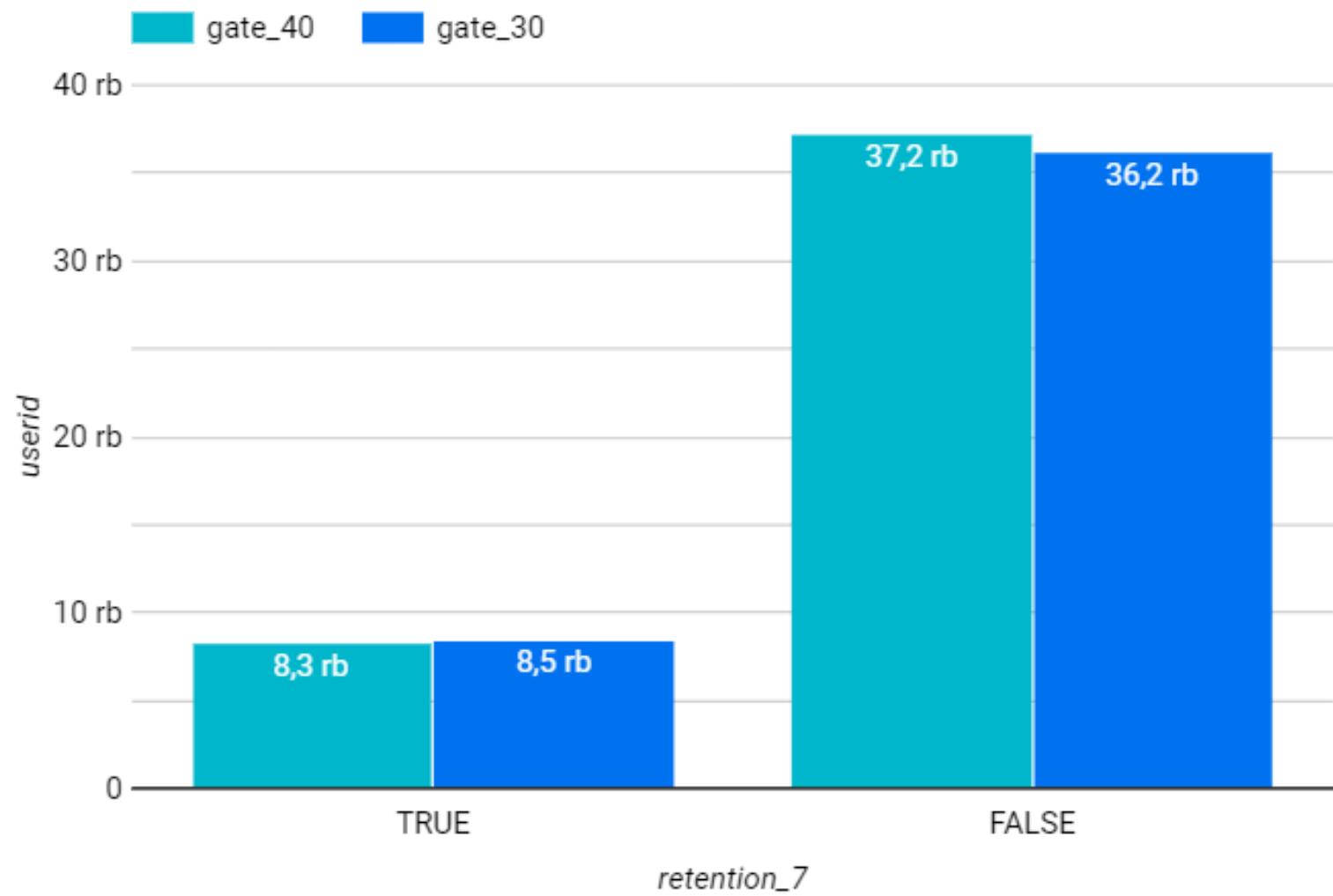
Average of all game rounds

sum\_gamerounds  
**51,9**

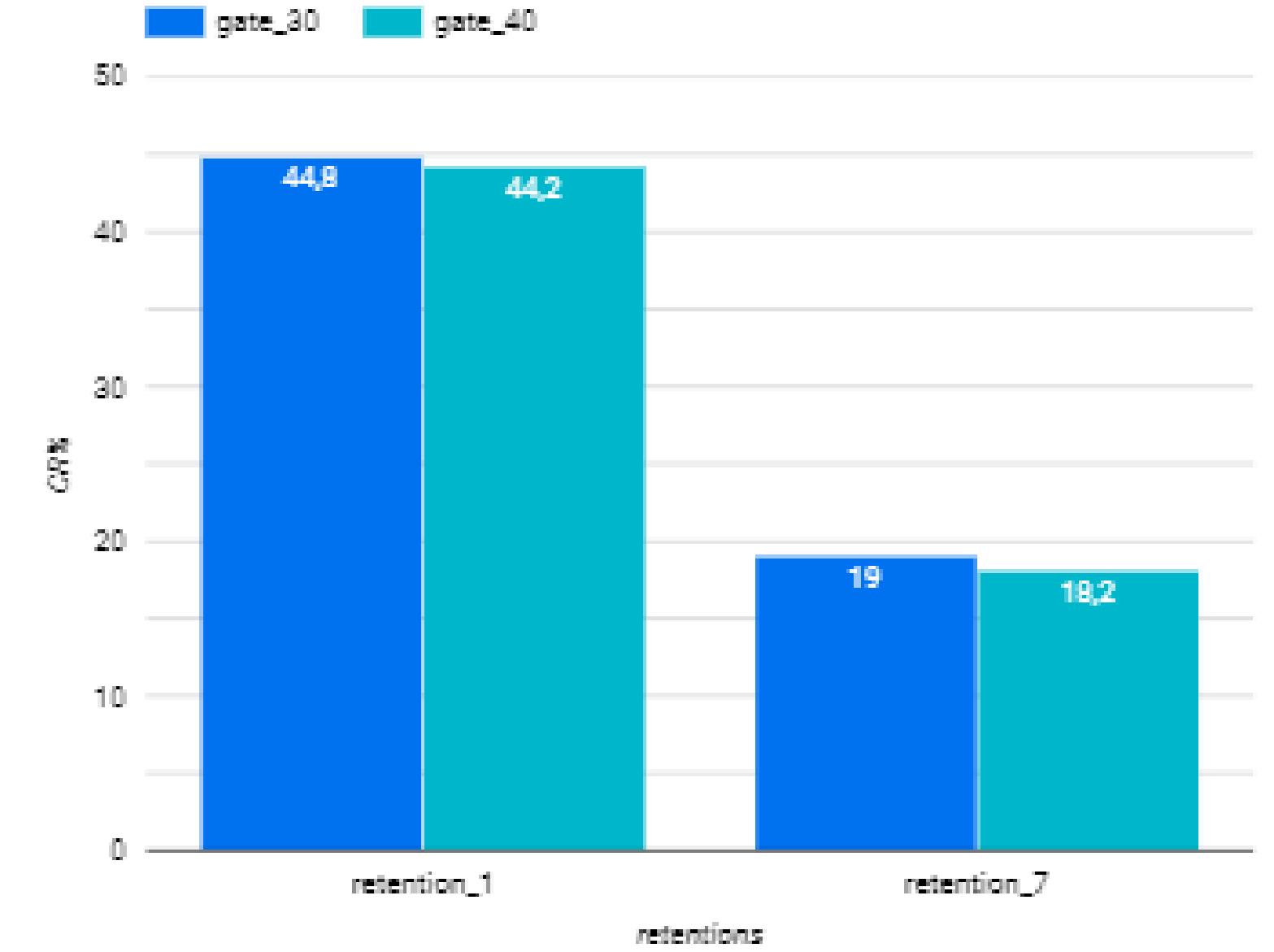
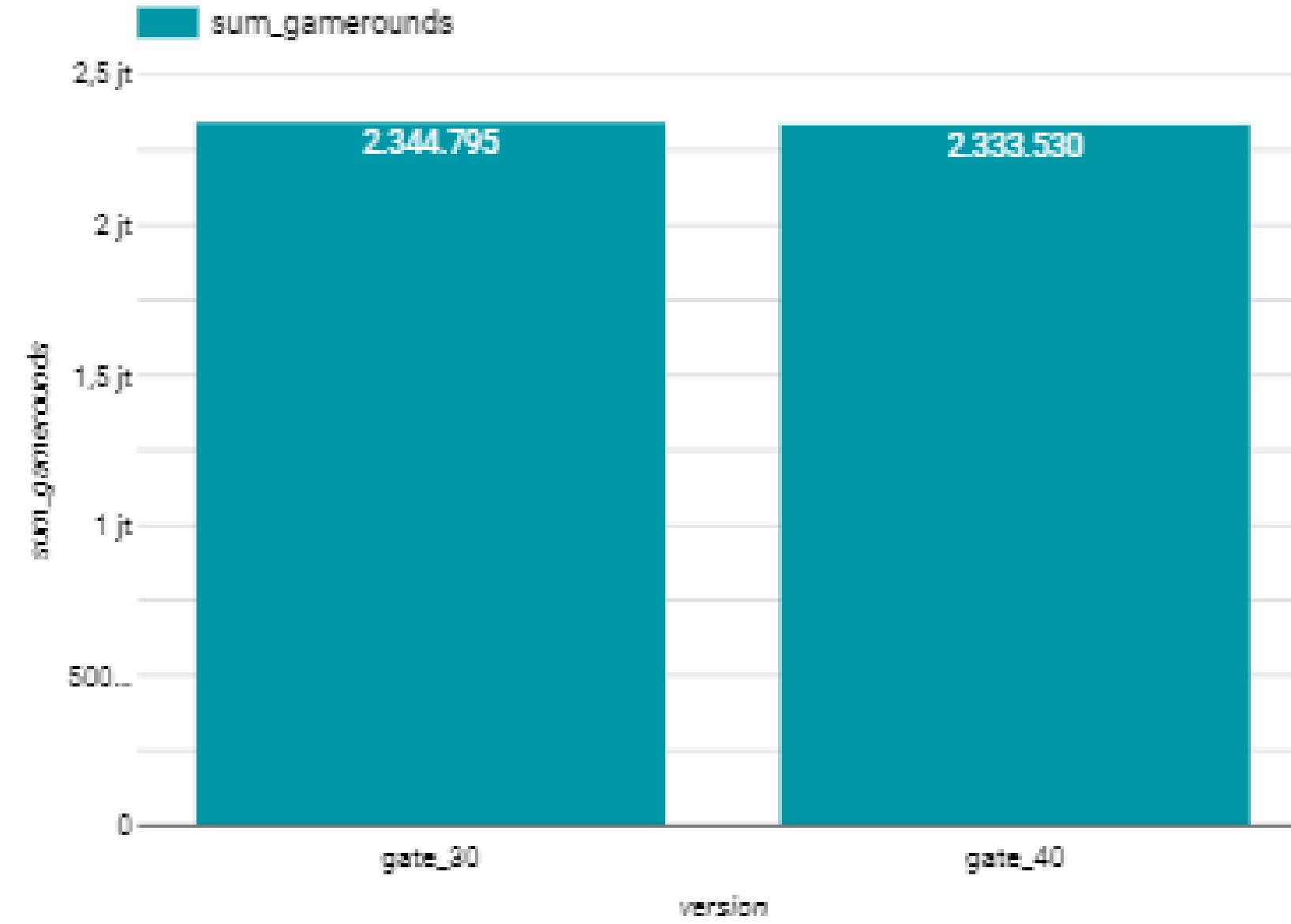
Comparison of player retention on the first day between gate 30 and gate 40



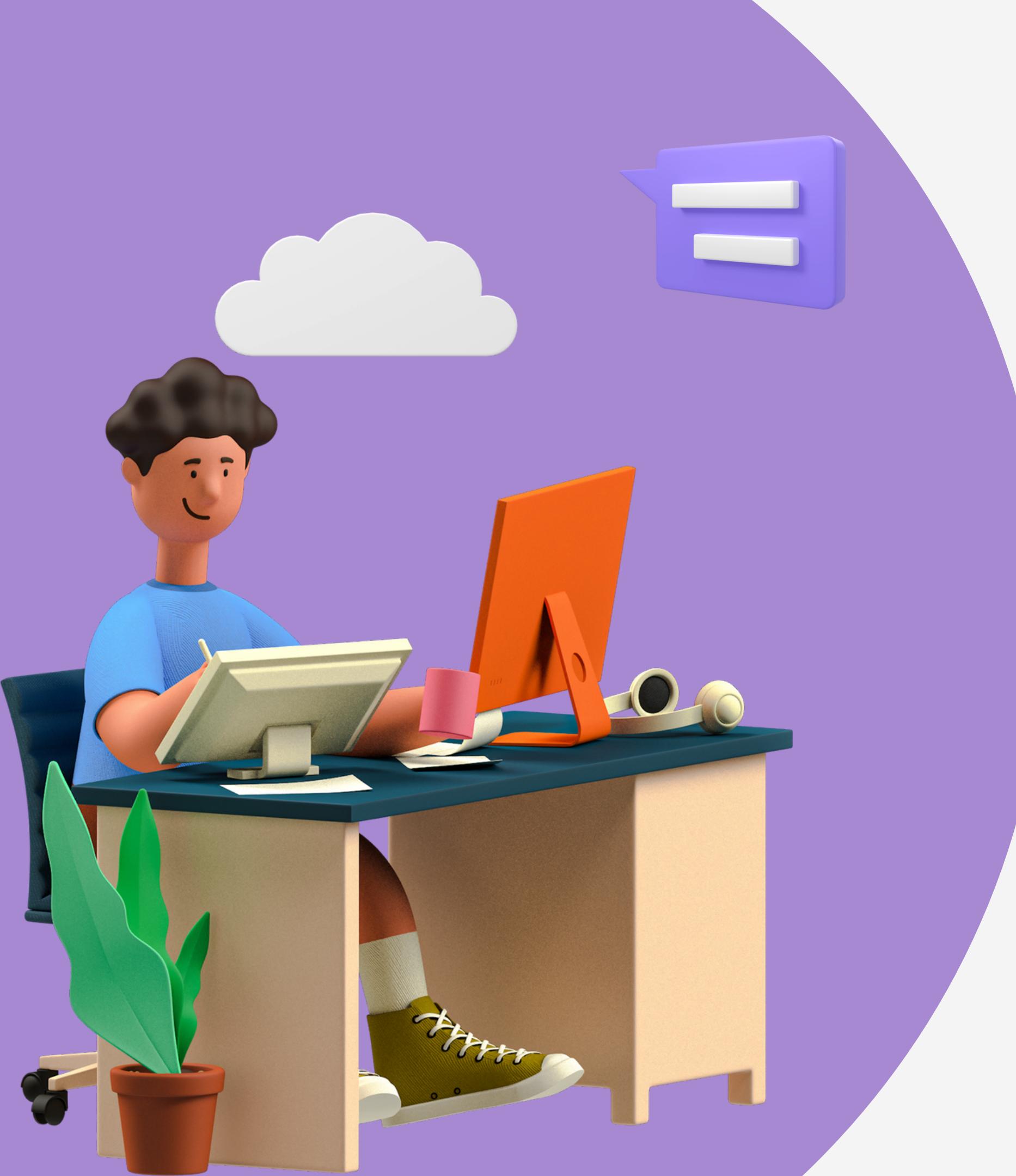
Comparison of player retention on the seventh day between gate 30 and gate 40



Visualization of all Players



Visualization of all Players

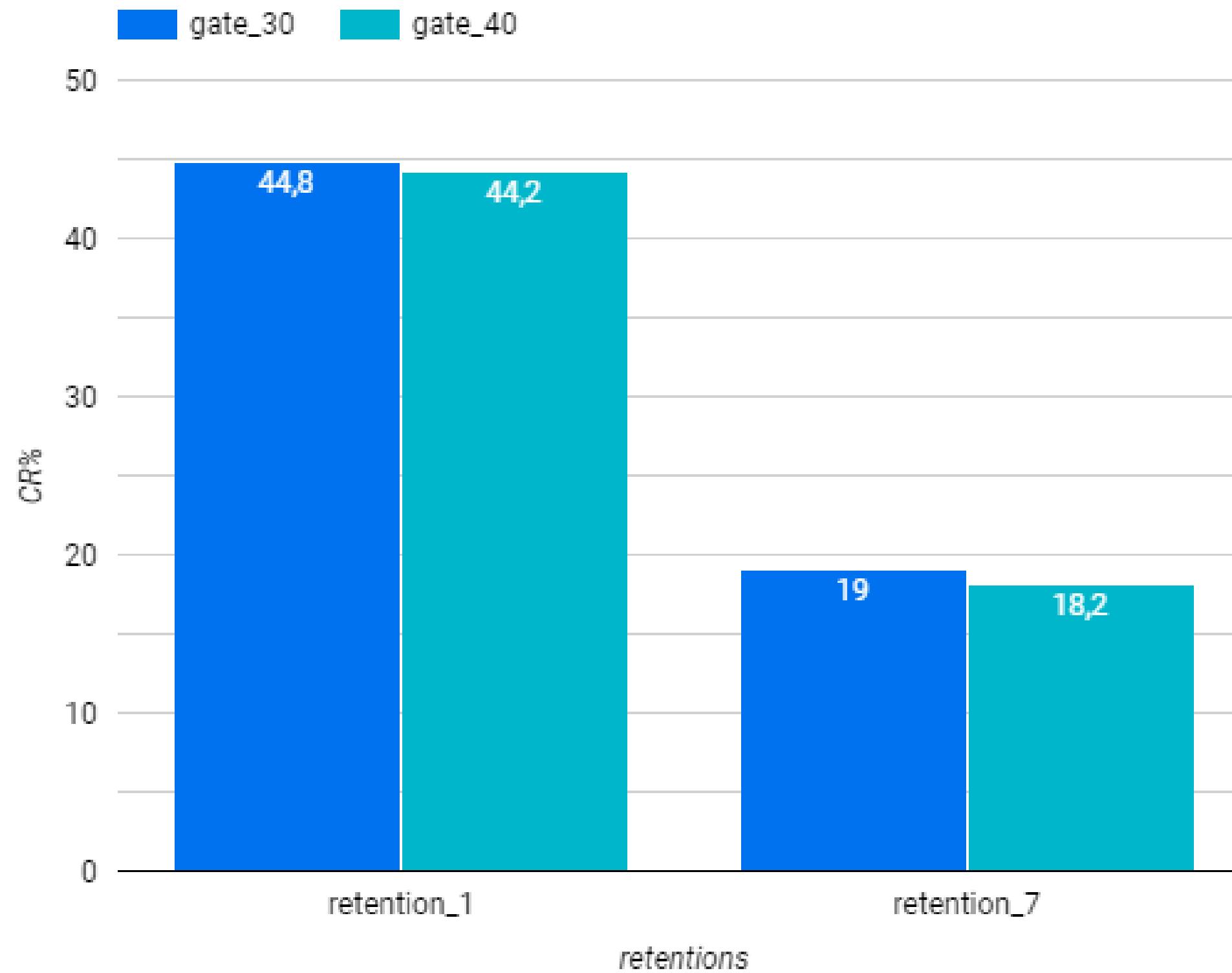


# ANALYSIS

Descriptive and inferential

# DESCRIPTIVE ANALYSIS

1% DECREASE



4% DECREASE

# INFERENTIAL ANALYSIS

Retention 1	Version		Total
	Gate_30	Gate_40	
True	20034	20119	40153
False	24666	25370	50036
<b>Total</b>	<b>44700</b>	<b>45489</b>	<b>90189</b>

Expected Ret 1	Version		Total
	Gate_30	Gate_40	
True	8919	8957	17876
False	13684	14075	27759
<b>Total</b>	<b>22603</b>	<b>23032</b>	<b>45635</b>

Retention 1

# INFERENTIAL ANALYSIS

Retention 7	Version		Total
	Gate_30	Gate_40	
True	8502	8279	16781
False	36198	37210	73408
<b>Total</b>	<b>44700</b>	<b>45489</b>	<b>90189</b>

Expected Ret 7	Version		Total
	Gate_30	Gate_40	
True	1582	1540	3122
False	29463	30286	59749
<b>Total</b>	<b>31045</b>	<b>31826</b>	<b>62871</b>

Retention 7

# STEP - STEP

## Uji Chi-square

### Pearson

X



#### 1. Mencari nilai Fh (Frekuensi Harapan)

$Fh = (\text{Jumlah baris/jumlah total})(\text{Jumlah kolom})$

$Fh \text{ True Gate}_40 (\text{retention}_1) = 8.957$

$Fh \text{ True Gate}_40 (\text{retention}_7) = 1.540$

#### 2. Mencari nilai statistik chi-square pearson

$\chi^2 = \sum (F_0 - F_h) / F_h$

$\text{Chi-square Retention}_1 = 13.910$

$\text{Chi-square Retention}_7 = 29.489$

# STEP - STEP

## Uji Chi-square Pearson

X



### 3. Mencari nilai kritis chi-square pearson

Derajat bebas (df) = (jumlah baris-1)(jumlah kolom-1)

$$Df = (2-1)(2-1)$$

$$Df = 1$$

$$\text{Signifikansi } 5\% = 0,05$$

Maka nilai kritis chi-square = 3.84 (Tabel distribusi chi-square)

### 4. Penentuan hipotesis

- Jika nilai statistik chi-square < nilai kritis chi-square, maka H<sub>0</sub> diterima, dan H<sub>1</sub> ditolak
- Jika nilai statistik chi-square > nilai kritis chi-square, maka H<sub>0</sub> ditolak, dan H<sub>1</sub> diterima

Chi-square Retention<sub>1</sub> = 13.910 > 3.84

Chi-square Retention<sub>7</sub> = 29.489 > 3.84

Maka, maka H<sub>0</sub> ditolak, dan H<sub>1</sub> diterima.

We will carry out further experiments on this system of gates by eliminating the previous system gates in the Cookie Cats game.

Conduct surveys to users regarding UI appearance, game service, game design, and others

View player reviews on third-party applications such as play store (Android), and app store (IOS)

**01.**

**02.**

**03.**

## **ACTION PLAN**

Action	Responsible	Priority	Status	Start	End	Notes
Solution #1: Meningkatkan jumlah pemain aktif pada retensi 1 dan retensi 7						
<i>Eksperimen lanjut terhadap system gates ini dengan menghilangkan system gates</i>	Analyst	High	In Progress	22/04	22/06	
<i>Melakukan eksperimen lain terkait tampilan UI, desain game, game service, dan lain-lain</i>	Developer	High	In Progress	22/04	22/06	
<i>Observasi review pemain pada aplikasi pihak ketiga seperti play store(Android), dan app store (IOS)</i>	Customer Service	High	In Progress	22/04	22/06	Progress akan dipantau setiap seminggu sekali

## Table Action Plan

# Thank You

Group 5 Present

