



# INTERVIEW TEST

## CASE STUDY: UPDATE THE NEW VERSION GAME

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# I. INTRODUCTION

## Case study: Analyzing the Impact on Game Update New Version

### Situations:

- Version 1.5.2: It was discovered that the instructional section does not align with the user experience.
- Version 1.6.0: The in-game instructions have been improved with the goal of enhancing the user experience.
- Trial release date: 28-10-2023 to 10-11-2023
- User allocation: 50% of new users continue to play version 1.5.2, and the remaining 50% play version 1.6.0.

### Aims:

- How can we know if the improvement of Tutorial in-game version 1.6.0 has impacted the User Experience better than in-game version 1.5.2?
- Can we roll out 100% game version 1.6.0 to all users or not?
- Based on the data and your experience with the game, do you have any ideas to improve our User Experience?

# Data Description

- Drop unnecessary columns: day0 and “Unnamed: 0”.
- $\text{Day\_diff} = \text{Day\_diff} + 1$ : Calculate from the start date to the present and count the first day as 1 day.
- Filter outliers of columns such as: quantity and level.
- Data size: 584,634 rows and 10 columns.

<b>Event_name:</b> records user activities in the game	<b>day_time:</b> records the time when the <b>event_name</b> was recorded
<b>version:</b> represents the version of the app that the user is using	<b>User:</b> identifies each user
<b>mode_game:</b> Describes the mode of the game (e.g., session start or user engagement)	<b>day_diff:</b> users' playing time ( $\text{day\_time} - \text{day0} + 1 \text{ day}$ )
<b>win:</b> Records whether the user won (1) or lost (0) in the <b>game_end</b> event	<b>level:</b> Indicates the level of <b>event_name</b> in the game
<b>reason_to_die:</b> records the reason why the user lost in the <b>game_end</b> event	<b>quantity:</b> records properties of <b>event_names</b> (e.g., time duration in seconds, steps completed in the tutorial)

## II. USER EXPERIENCE IN EACH VERSION

# 1. METRICS TO MEASURE USER EXPERIENCE

## Metrics:

- **User Retention Rate:** Percentage of users returning to play the game after a certain period of time.
- **Tutorial Completion Rate:** Percentage of users who complete the tutorial.
- **Average Time Spent on Game:** Average time users spend engaging in-game.

## Expected results:

- **User retention rate:** Expected **increase** in version 1.6.0 if tutorials improve user experience.
- **Tutorial completion rate:** Expected to be **higher** in version 1.6.0 if tutorials are easier to understand and more engaging.
- **Average time spent on Game:** Expected to **increase** if new tutorials are clearer and more effective.

## 2. USER RETENTION RATE

$$\text{Retention rate version} - \text{Day } n = \frac{\text{Number of returning after } n \text{ days}}{\text{Total users}}$$

Day_diff		1	2	3	4	5	6	7	8
1.5.2	Users	6663	1780	888	511	379	265	193	174
1.6.0	Users	6901	1980	1031	707	511	412	319	271

Retention rate 1.5.2 – T2 = 27%

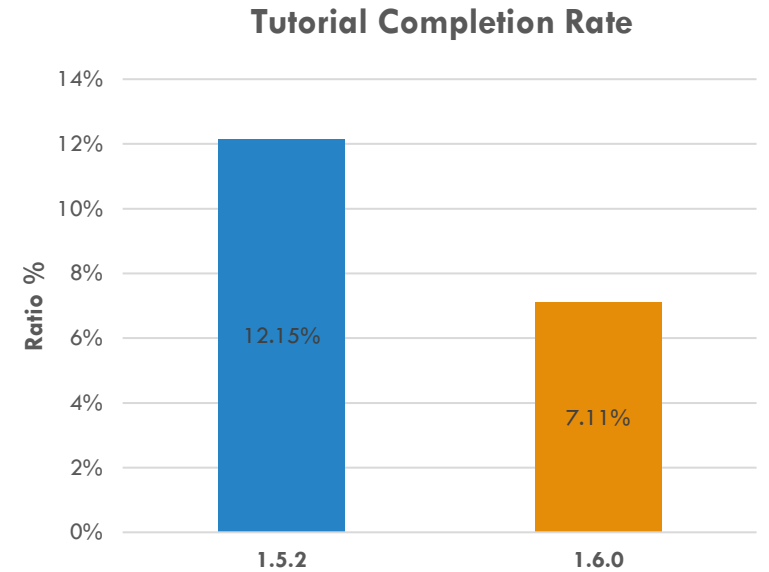
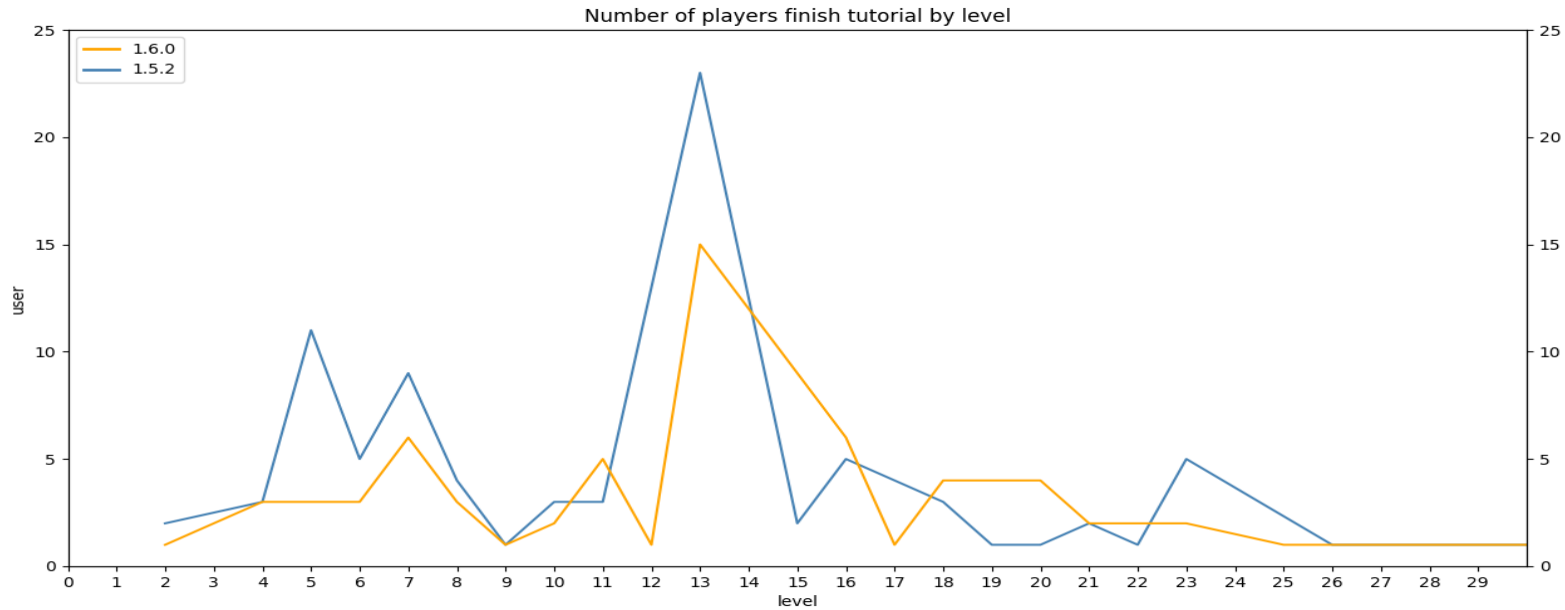
Retention rate 1.6.0 – T2 = 29%

Retention rate 1.5.2 – T8 = 2.61%

Retention rate 1.6.0 – T8 = 3.93%

- Retention rate of version **1.6.0** was **higher** than version **1.5.2** day by day namely:
- After **2 days** of participating, the retention player rate of **new version** is about **29%** while the **old version** is only about **27%**.
- On **day 8**, the retention rate in the **new** and **old** versions is **3.93%** and **2.61%** respectively.

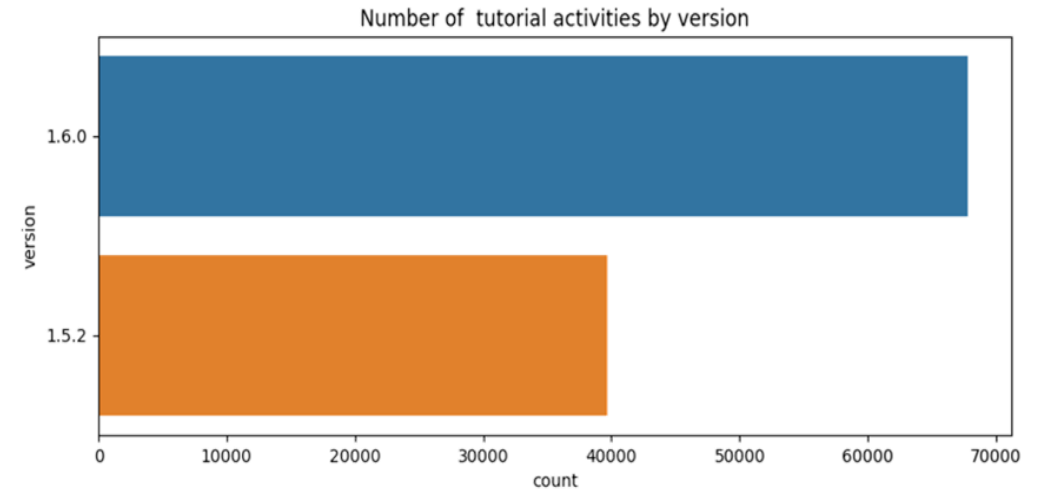
### 3. TUTORIAL COMPLETION RATE



- We will **skip Level 1** to maintain **objectivity** and will focus on subsequent levels to analyze, using unique visitors to measure the number of players completing each level.
- Across levels, the number of **unique** players **completing tutorials** in version **1.5.2** is **higher** than in version **1.6.0** at early levels such as levels 5, 7, 13, and 23.
- Especially, the players in the new version **1.6.0 (7.11%)** had a percentage of tutorial finish lower than the old version **1.5.2 (12.15%)**.

# Tutorial Activities

- The total number of tutorial activities in version **1.6.0** is **double times** higher than in version **1.5.2**.
- The number of people **completing** the steps has **increased** in the **later version** and the number of people finishing the tutorial is also higher than the former version.
- The number of people **skipping** the tutorial **increased** in **later versions 1.6.0**. The reason is that the number of tutorial steps has doubled, causing players to want to skip through instructions. As a result, the **completion tutorial rate decreases** in version **1.6.0**.

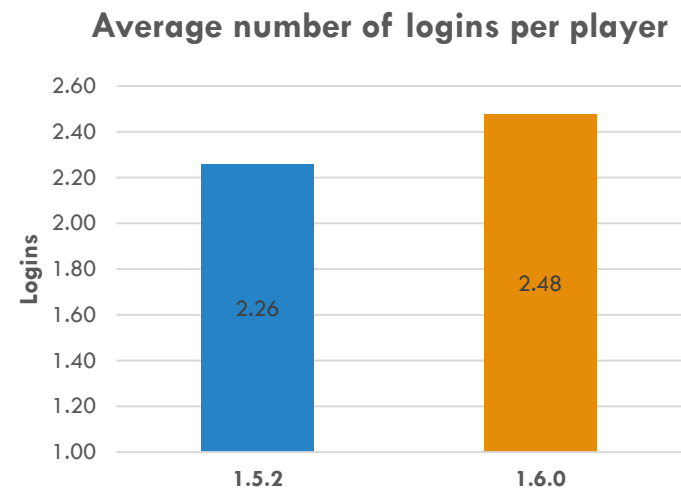


Quantity	Number of Steps	
	1.5.2	1.6.0
-2	6453	6663
-1	6853	7081
0	353	370
1	6593	6806
2	6516	6740
3	6486	6717
4	6462	6701
5		6693
6		6683
7		6675
8		6665

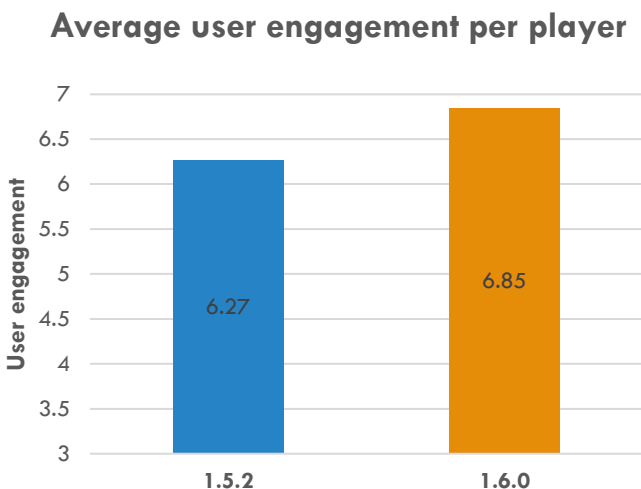


# 4. Average Time Spent on Game

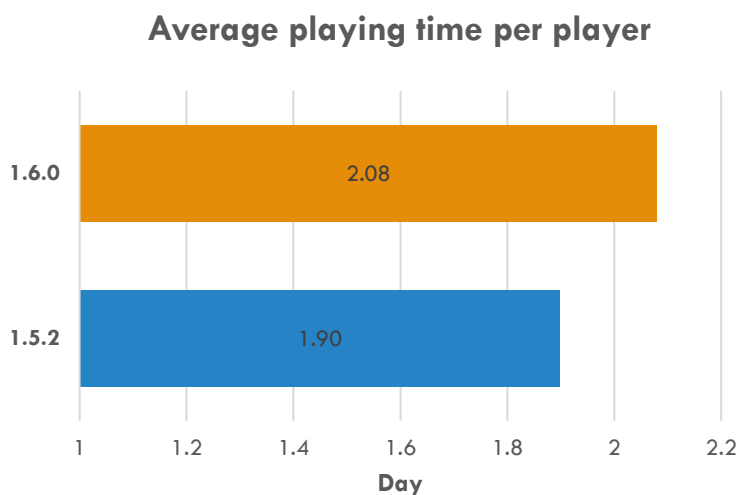
Roll-out Period: 28-10-2023 to 10-11-2023



The average number of logins per player during the upgrade period in version **1.6.0** is **2.48** times **higher** than **2.26** times in version **1.5.2**

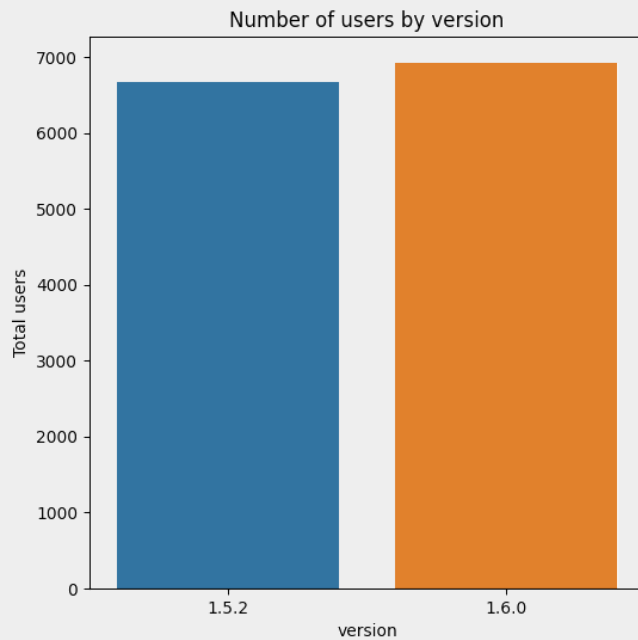


The average number of user engagement per player during the upgrade period in version **1.6.0** is **6.85** times **higher** than **6.27** times in version **1.5.2**.

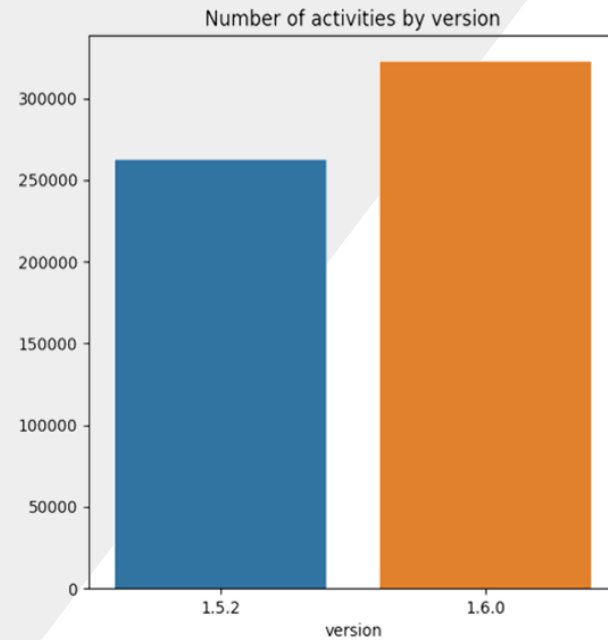


The average playing time per player during the upgrade period in version **1.6.0** is **2.08 days** higher than **1.90 days** in version **1.5.2**.

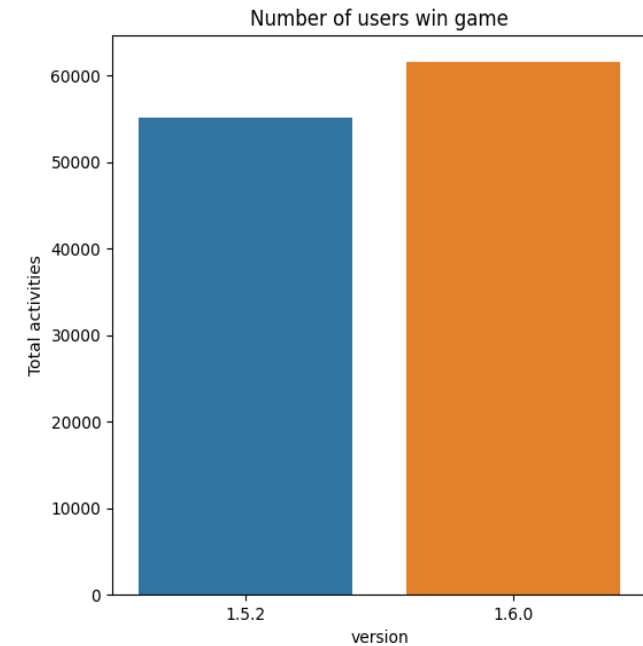
## 5. ACTIVITIES OF PLAYERS



The number of players participating in each version is quite balanced



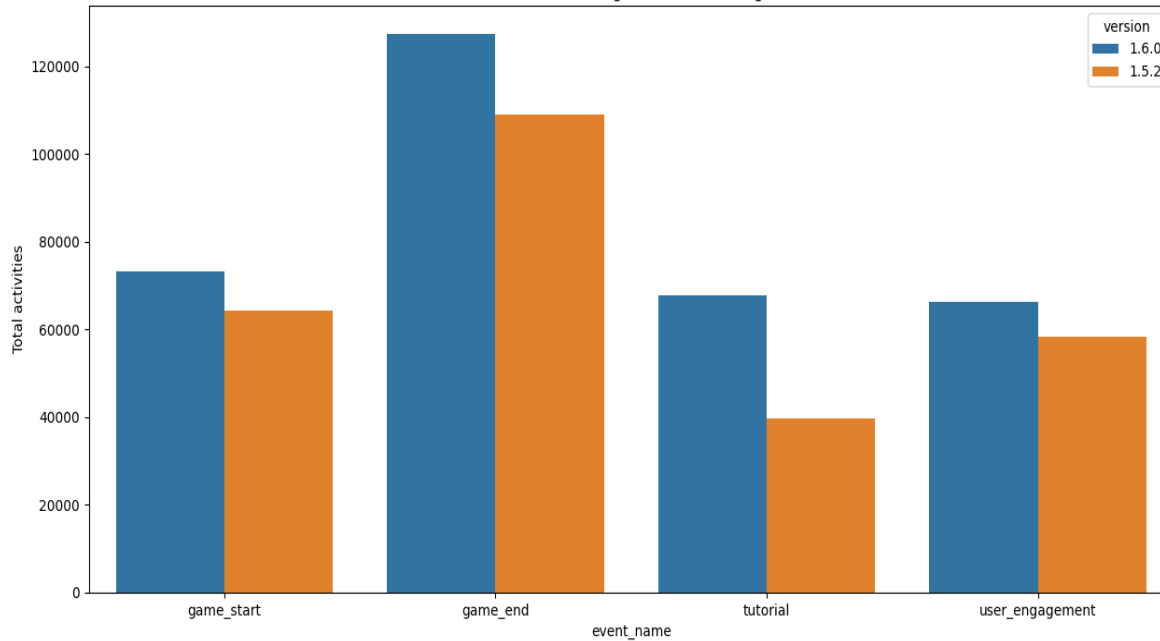
The number of activities on version **1.6.0** is **more positive** than **1.5.2**



The number of **winners** in the **new** version is **more than** the **old** version

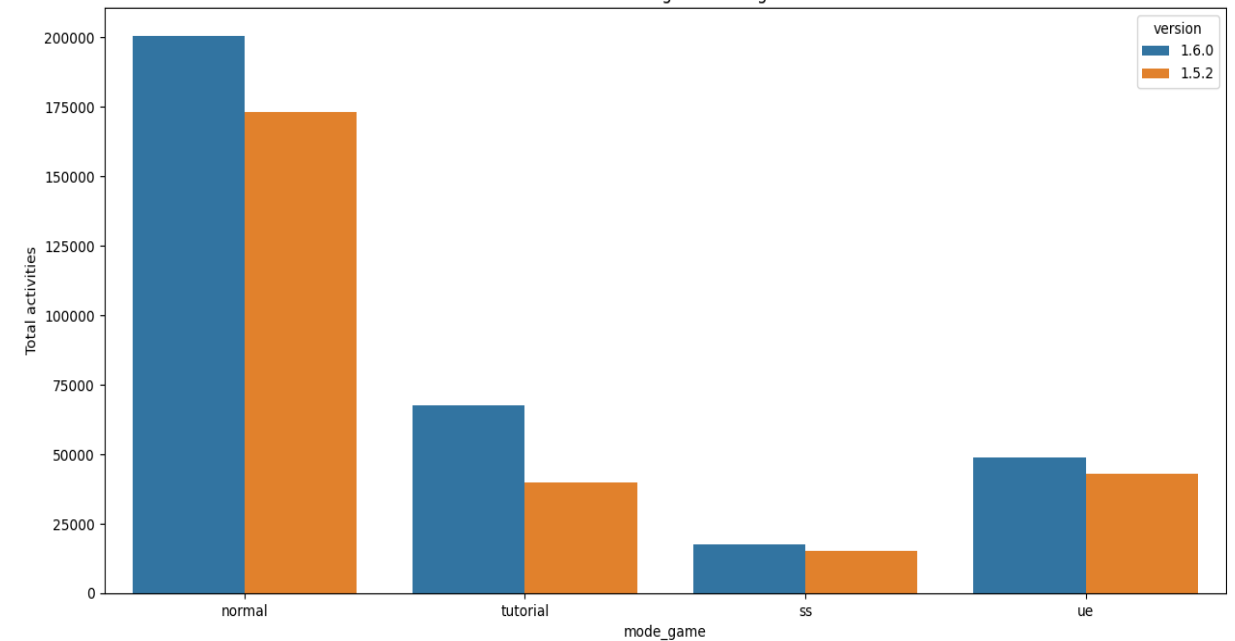
## 6. EVENT AND MODE GAME

Activities of user logs in under event game



- During **game events**, version **1.6.0** had **more active** users than version **1.5.2**.
- Especially, the end-of-game and tutorial events show that the number of people interacting with version 1.6.0 is significantly higher than other events.

Activities of the user logs in under game mode



- During **game mode**, version **1.6.0** had **more active** users than version **1.5.2**.
- Additionally, the normal and tutorial mode illustrates that the number of people interacting with the new version is higher than other events.

## 7. CONCLUSION

The improvement of tutorial in-game version **1.6.0** has impacted the **User Experience better than** in-game version **1.5.2** though metrics:

- **User retention rate:** the ratio **increases** in version **1.6.0**.
- **Tutorial completion rate:** In version **1.6.0**, the completion rate is **lower than** in version **1.5.2** because the tutorials are twice as long. (I will propose solutions in the next chapter)
- **Average time spent on Game:** During the upgrade period in version **1.6.0**, there is an **increase** in the average number of **logins** per player, the average level of **user engagement** per player, and the average **playing time** per player compared to version **1.5.2**.
- **Activities of players:** The number of **activities** event and mode game on the **new** version is **more than old** version.

Under the current circumstances, where features remain unchanged except for the upgraded tutorial. We should upgrade 100% version 1.6.0 to all users.

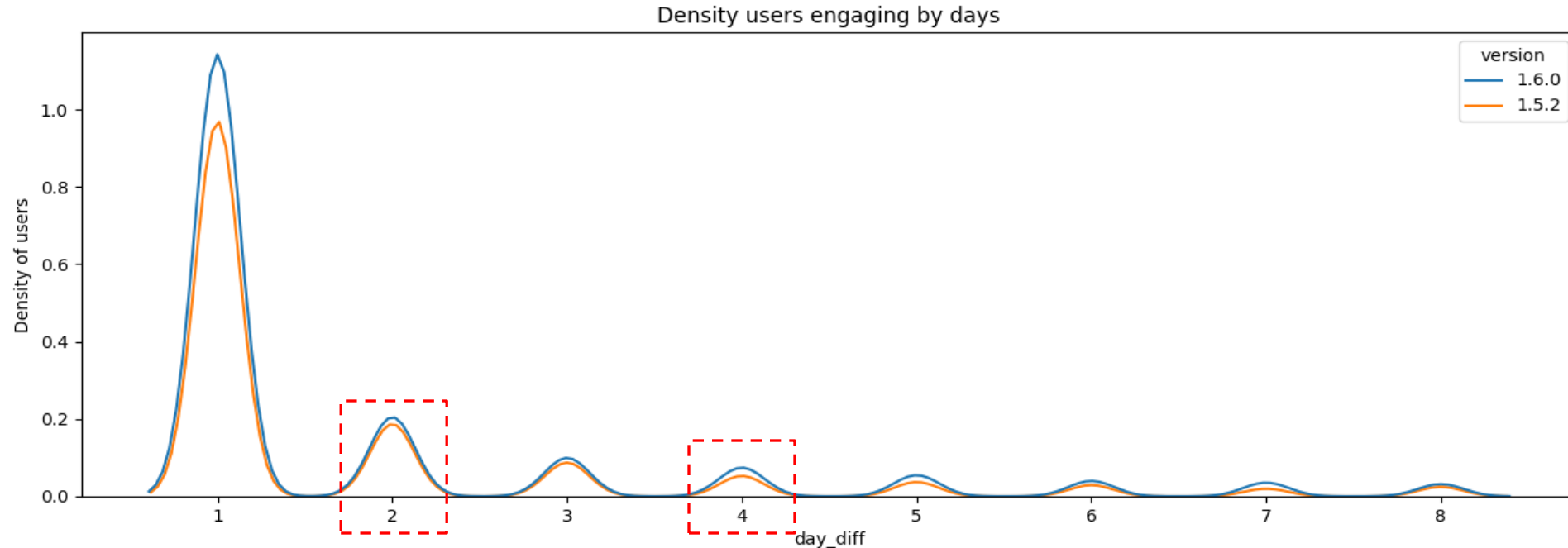
**WE SHOULD ROLL OUT 100% GAME VERSION 1.6.0**



### III. IMPROVE USER EXPERIENCE

Now, based on experience, knowledge of games and insight data. I will suggest some solutions to improve user experience!

# 1. CHURN RATE

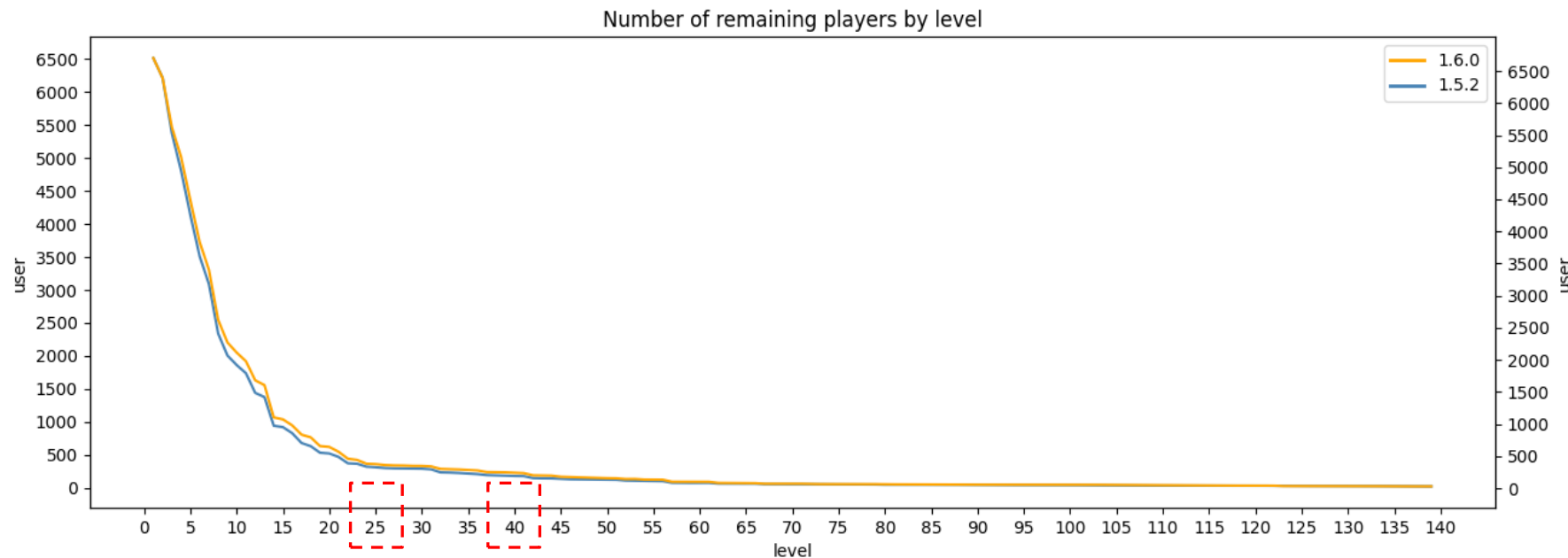
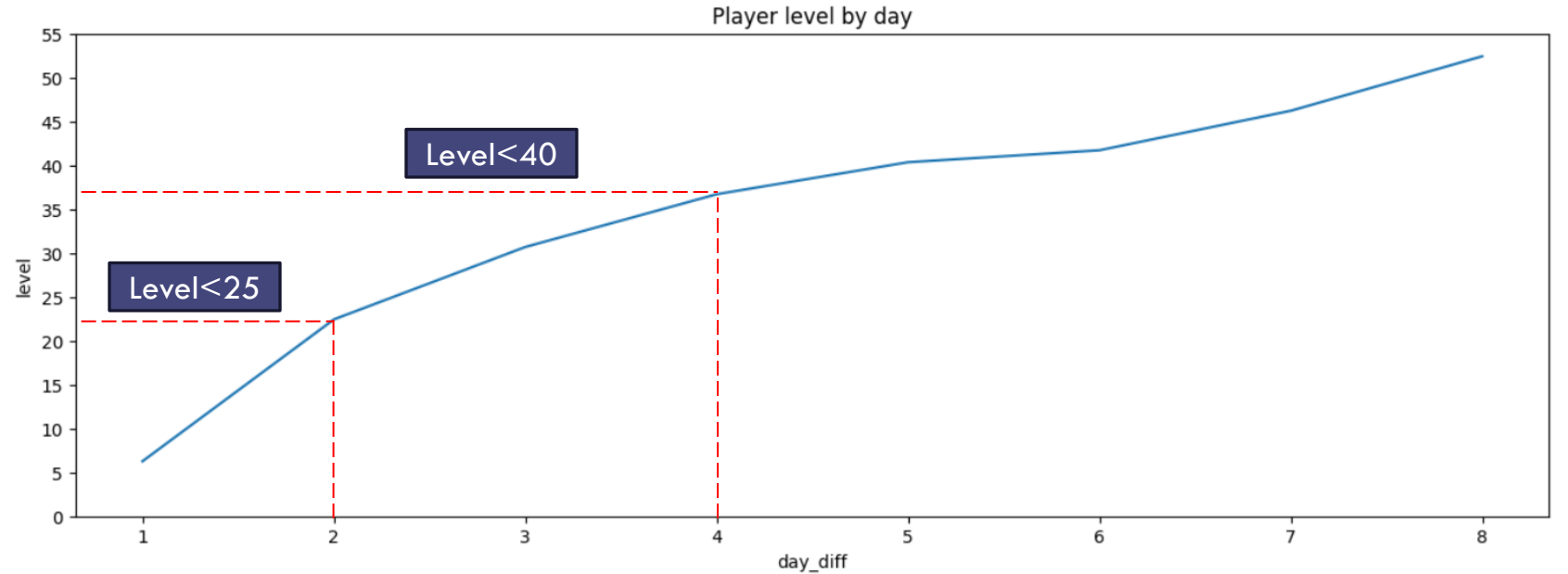


Pay attention: the day 2 and day 4 which is a sensitive period.

- From day 1 to day 2, this chart illustrated quite a large number of players leaving. However, the number of players leaving starts to decrease on day 4.
- In general, each version has a large number of users leaving, especially in the first 4 days. As a result, there needs to be attractive gifts to retain players and easy-to-understand tutorials for them to form a gaming habit.

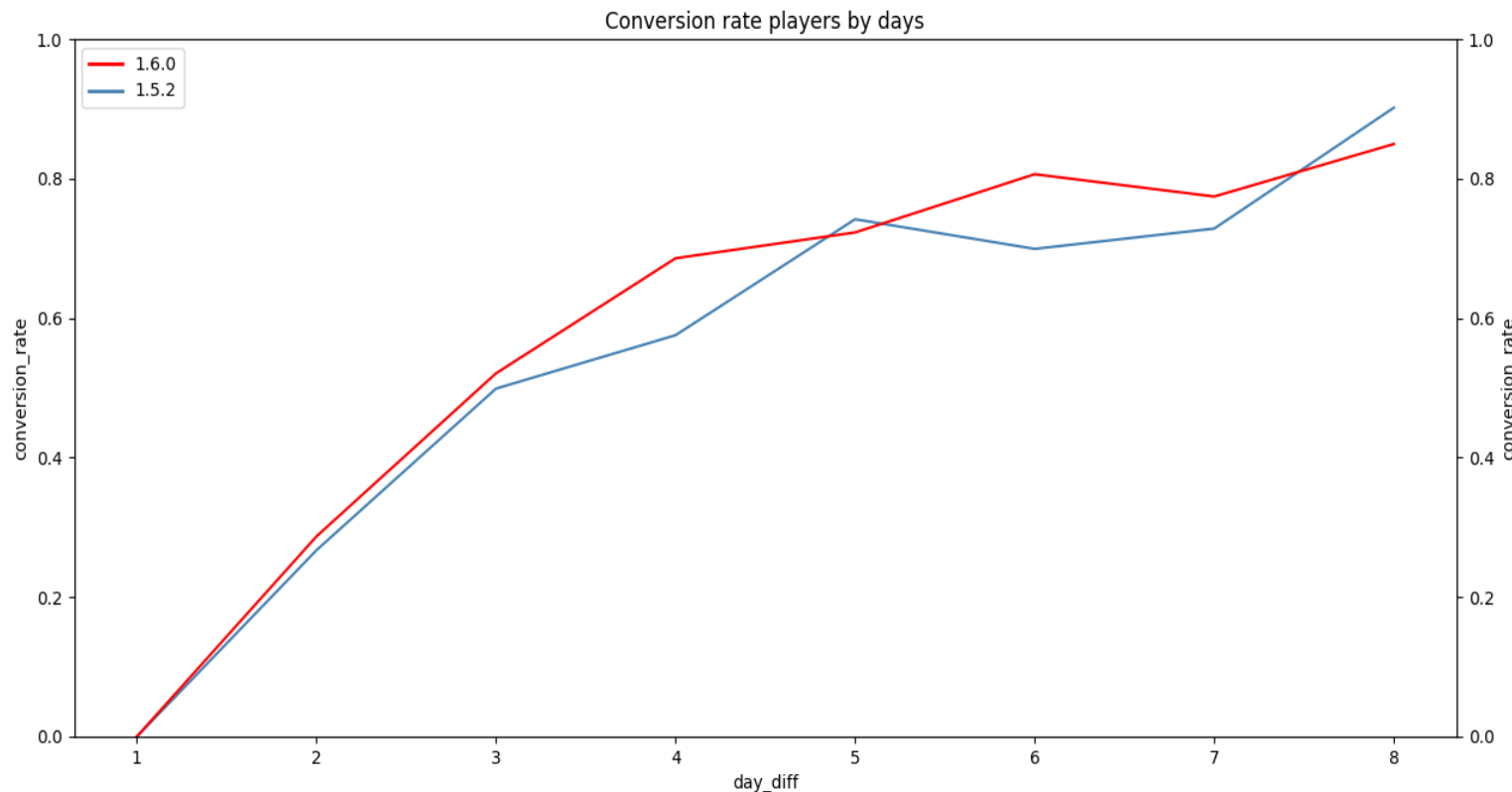
# SOLUTIONS

- We will concentrate on players' days 2 and 4 based on the **Density Users** chart on page 15, levels 25 and 40 respectively.
- The charts remaining players expose that the number of users leaving starts to decrease at level **25** and **stable users** at level **40**.
- On day 1, from levels 1 to 25, introduce side quests and mini-challenges to enhance enjoyment and rewards.
- Additionally, development engaging stories and characters will motivate players to explore further.
- We need to **convert new players** in day 1 into **loyal players**.





$$\text{Conversion rate on day } n = \frac{\text{Number of remaining users on day } n}{\text{Number of remaining users on day } (n-1)}$$

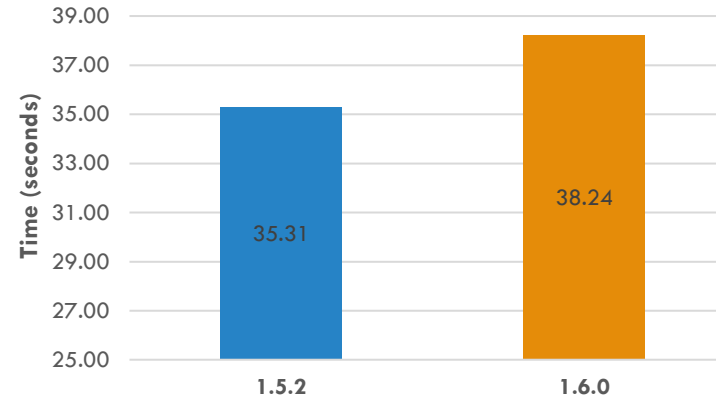


- In general, the longer a player stays, the higher the conversion rate.
- The chart illustrates that the conversion rate skyrocketed from day 1 to day 4.
- On day 4, we will focus on providing **special gifts** to **loyal players** to encourage them to reach level 40, which can help increase the conversion rate of loyal players from the previous page.

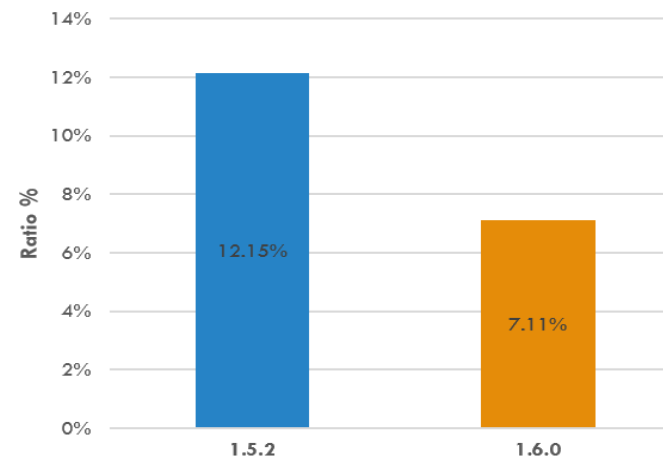
## 2. WIN RATE

- The average time to complete each level in version **1.6.0** is **38.24** seconds, **longer** than the **35.21** seconds in version **1.5.2**.
- The win ratio of **old version** at **53.51%** is **higher** than **new version** at **51.52%**. This mean loss rate in new version high, leading to players need to spend more time to pass assignments.
- Insight data from the tutorial event shows that players in version **1.6.0** had a lower **completion rate** (**7.11%**) compared to version **1.5.2** (**12.15%**). This has resulted in a lower win ratio and increased average time to complete assignments in the **new version**.

Average Time to overcome a level  
(Seconds)

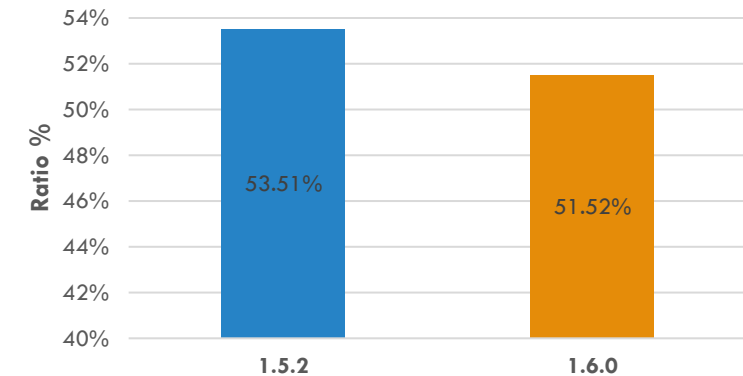


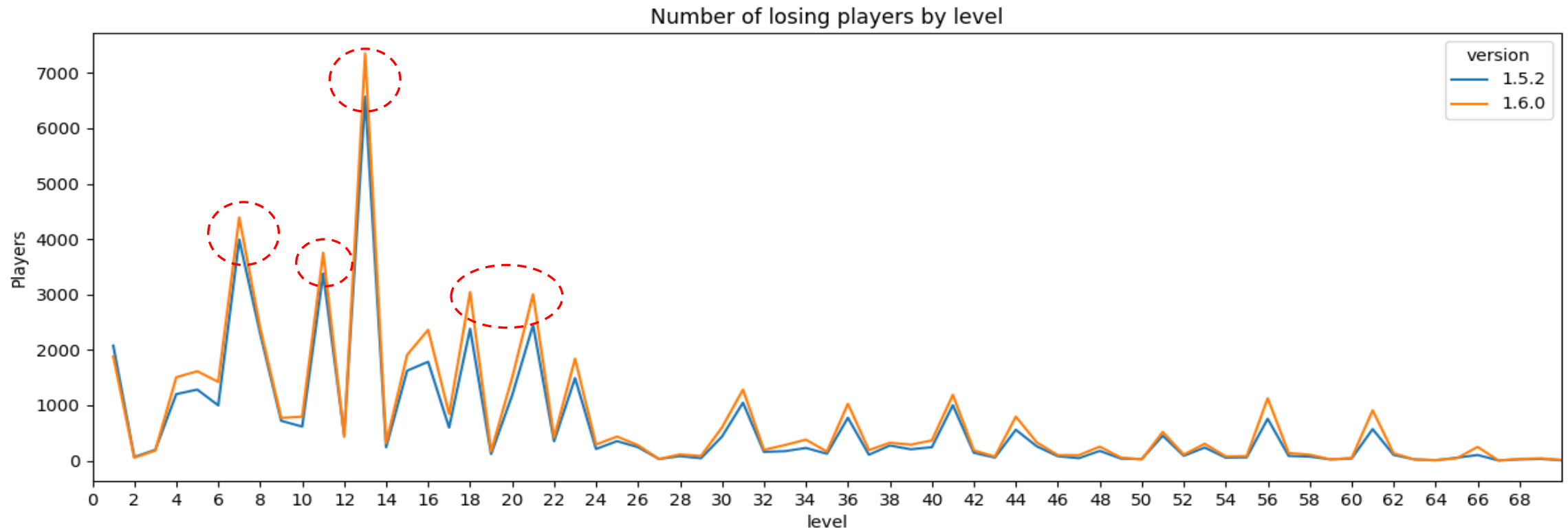
Tutorial Completion Rate



Average time overcome each level		
Level	1.5.2	1.6.0
1	21.31098	22.73934
2	14.46766	14.53366
3	12.40173	12.18363
4	16.62484	16.8247
....	....	....
9	18.5233	19.40836
10	23.31515	24.39942
11	46.96337	48.29484
12	46.13084	48.04991
13	89.15191	92.40699
14	26.29167	28.12247
15	60.25504	61.75915

The win ratio of each version





## SOLUTIONS

- Instead of upgrading the tutorial for all levels, we should focus on specific levels where the number of losing players is high, such as 1, 7, 11, 13, 18, 21, and 23. In contrast, the remaining levels should have simplified tutorials to enhance the player experience and encourage more interaction with the game.
- By optimizing the tutorials at appropriate levels, we can boost the tutorial completion rate and help players increase their win rates. This solution addresses the weaknesses in version 1.6.0 while ensuring enhanced user engagement with the game.



# CONCLUSION

With the 50% rollout of version 1.6.0, we have observed positive indicators in user engagement, such as increased user retention rates and longer average time spent in the game.

Although the new version 1.6.0 still exhibits weaknesses in tutorials, implemented solutions aid in reducing churn rate, increasing conversion rate, and enhancing players' win rates. Thanks to these methods, I aim assisting and enhancing user experience in the upcoming version.

Based on insight data, my experience, and knowledge in the gaming sector, I believe that:  
**We should roll out 100% version 1.6.0 to all users in next update.**