PLAYER BEHAVIOUR AND RETENTION ANALYSIS FOR AN ONLINE CASINO PLATFORM

Introduction

The gambling industry continually seeks ways to improve player engagement, retention, and profitability. Understanding **player behaviour** and the factors that drive **player retention** is essential for developing targeted marketing strategies, optimising user experience, and increasing long-term player value. This report presents an analysis of **player behaviour**, **game participation trends**, and **player retention** with data extracted from the **Bustabit** platform.

Objective

The primary goal of this analysis was to gain insights into **player behaviour** with data extracted from the Bustabit platform and to understand how different factors affect **player retention**. Specifically, we sought to answer the following key questions:

1. **How do players behave on the platform?** What are the patterns of player engagement, and what influences their activity?

2. **What is the retention rate of players?** How often do players return after their first bet, and how does their activity correlate with retention?

3. **What insights can we derive from game participation trends to enhance player retention strategies?**

Hypothesis

Based on our understanding of the gambling industry and prior knowledge of player behaviour, we hypothesise:

- Players who engage more frequently with the platform (i.e., those who bet more often) will be more likely to be retained.
- Players with higher profits and larger bets will show higher retention rates, indicating that profitability and activity correlate with long-term engagement.
- There are patterns in player activity that can be identified through game participation trends, helping to optimise promotional strategies and increase player retention.

Methodology

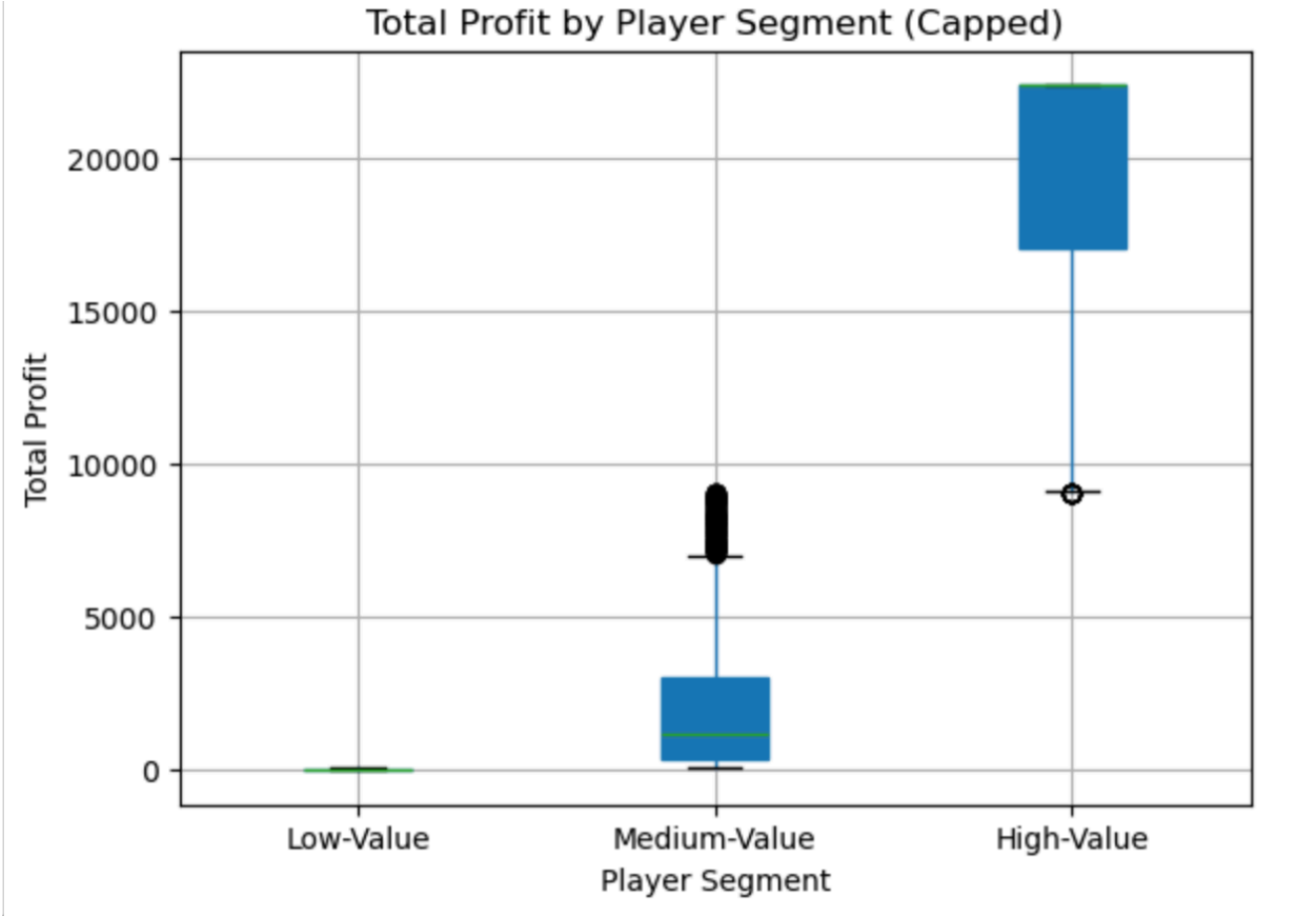
We conducted a detailed **data analysis** using the following steps:

1. **Data Cleaning and Preprocessing**: The dataset was cleaned by handling missing values and imputing missing data for key columns (e.g., **CashedOut**, **Bonus**, and **Profit**).
2. **Feature Engineering**: We created new features such as **Net Profit** (based on bets, multipliers, and bonuses) and **Time Between Bets** to better understand player engagement.
3. **Exploratory Data Analysis (EDA)**: We examined patterns in **player behaviour**, such as time between consecutive bets, game participation trends, and the relationship between betting behaviour and profitability.
4. **Retention Analysis**: We calculated **30-day retention rates** and explored whether players continued to return after their first bet. Additionally, we analysed the correlation between **player activity** (total bets, total profit) and retention.

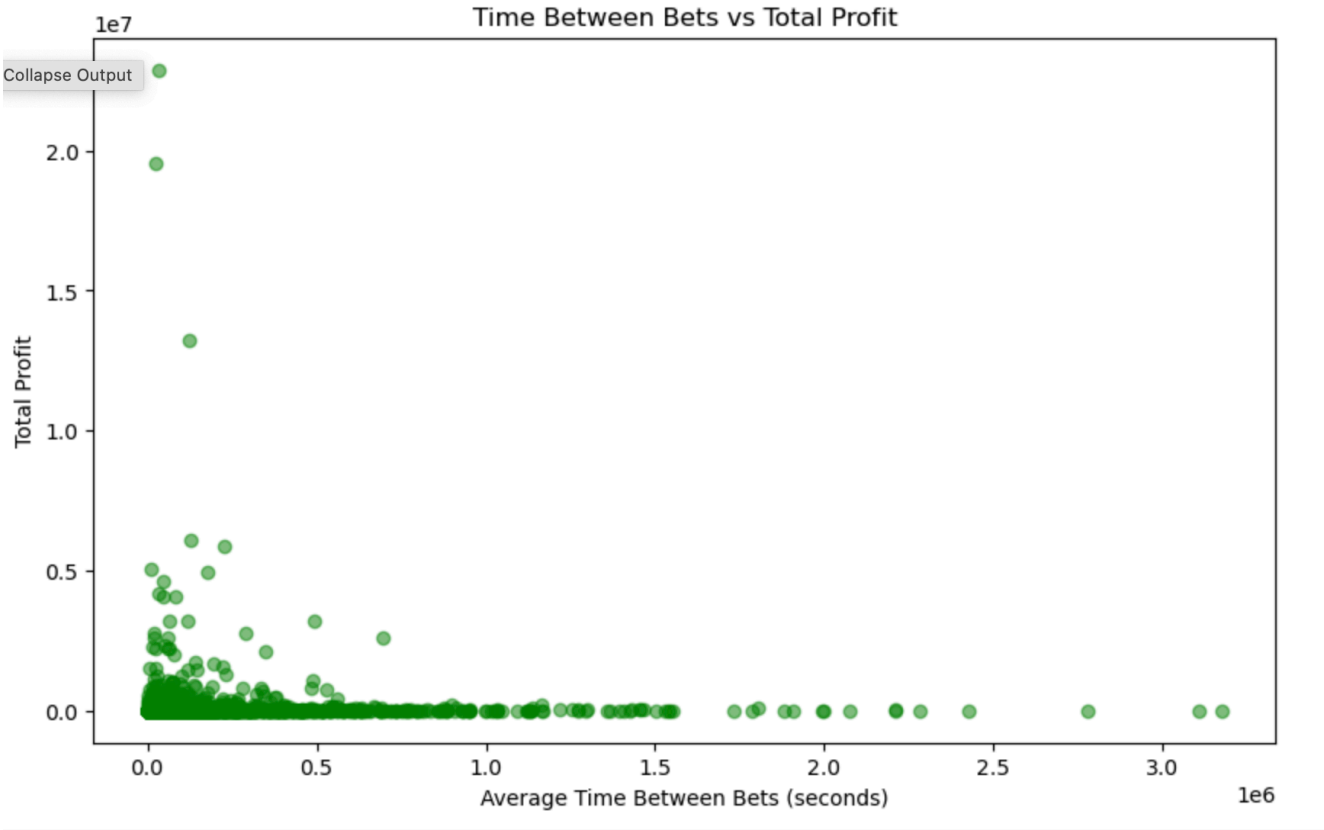
Findings

1. **Player Behaviour Insights**:

    - **Time Between Bets**: Players who made frequent bets (with smaller time gaps between bets) were generally more active and had higher total profits. However, we found that **all players in the dataset** returned within 30 days, resulting in a **100% retention rate**.



- **Activity Segmentation**: By segmenting players into high-value, medium-value, and low-value categories based on their total bets and total profits, we observed that **high-value players** (those with larger bets and higher profits) were the most engaged and profitable.



- The scatter plot between **Time Between Bets** and **Total Profit** showed that more frequent bettors tend to have higher total profits, indicating a positive relationship between engagement and profitability.

2. **Game Participation Trends**:

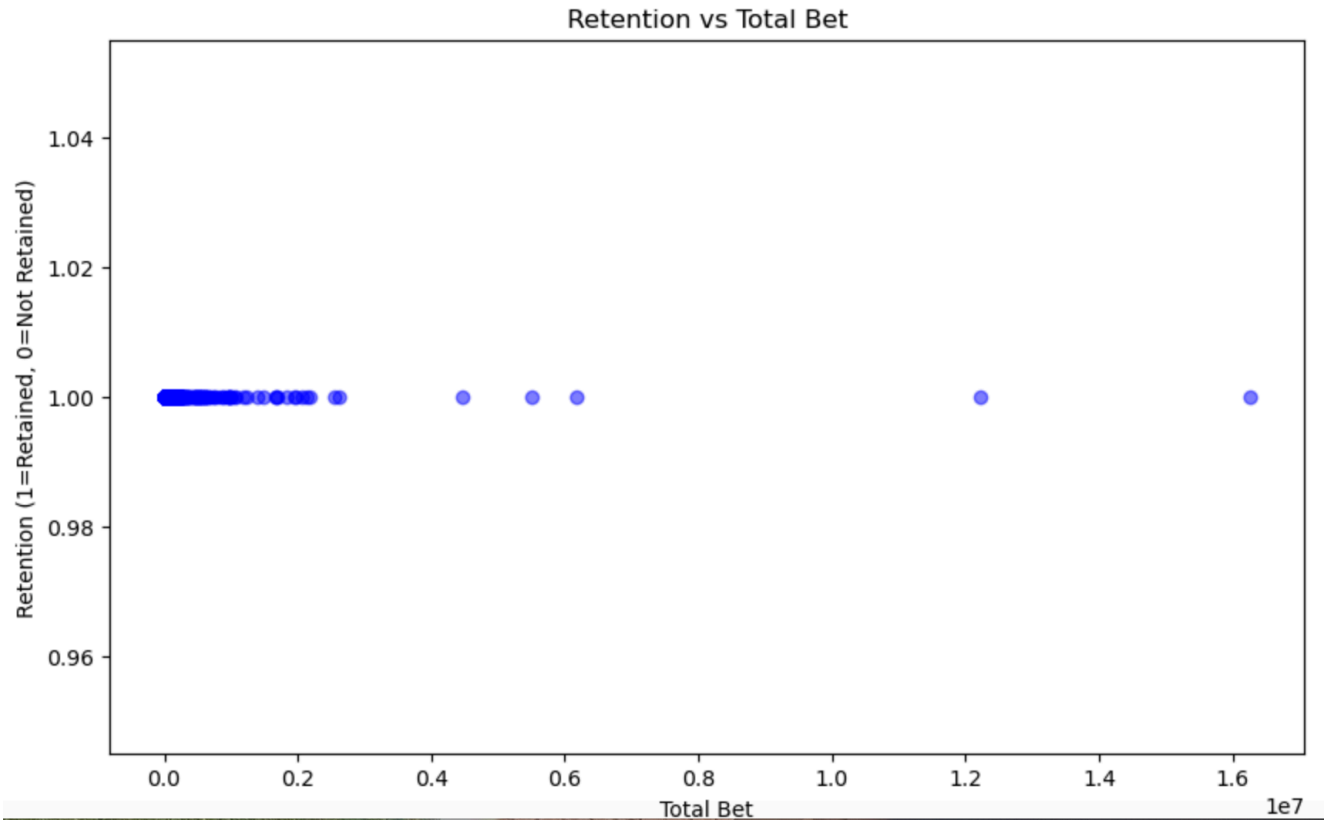
   - We tracked **game participation over time** and found noticeable fluctuations in activity. There were **peaks in game participation**, which likely corresponded to **promotions or external events**. Players tended to participate more in certain periods (weekly and monthly), aligning with industry trends in player behaviour.

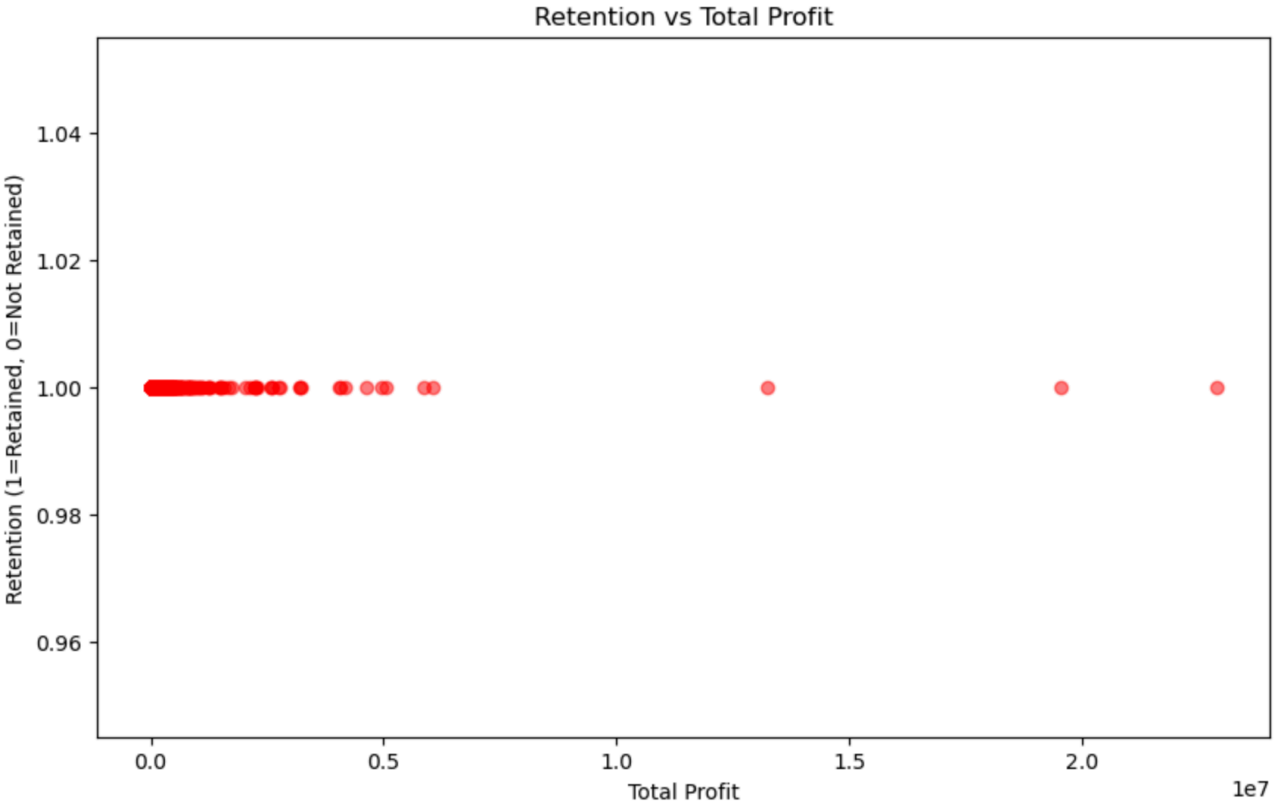
   - **Games Played Per Day**: A time series plot revealed the daily fluctuations in player activity, while the **weekly and monthly trends** highlighted the more significant periods of engagement.

3. **Retention Analysis**:

   - **30-Day Retention Rate**: We calculated that the **30-day retention rate** was **100%**, meaning every player in the dataset returned within 30 days. This could be attributed to the nature of the dataset, where players may have only been observed during a short period.

   - **One-Bet Players**: We identified players who made only a single bet and labeled them as retained due to the 30-day window, but further analysis is needed to identify those who are likely to drop off.



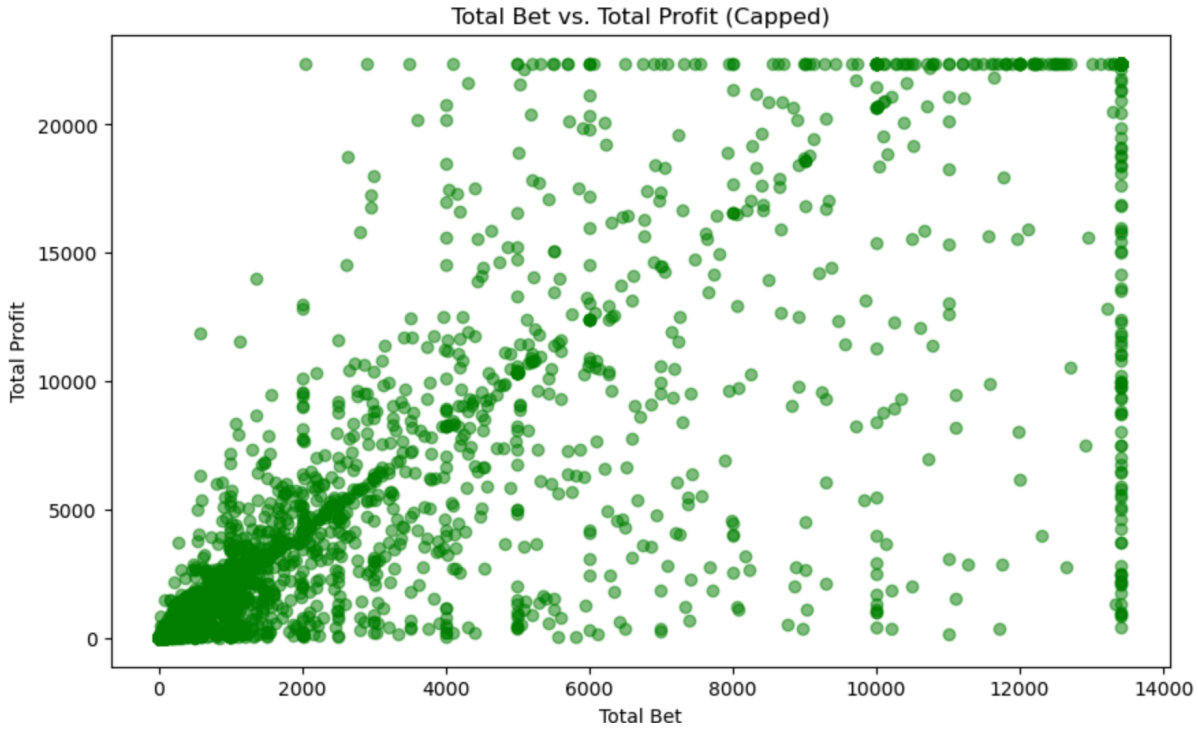


- The scatter plots showing **Retention vs Total Bet** and **Retention vs Total Profit** indicated that players who made larger bets or earned more profits were more likely to be retained. However, the lack of variation in the **retention column** (due to high retention across players) limited the correlation's effectiveness.

4. **Insights from Retention vs Player Activity**:

- The analysis showed a weak relationship between **total bet** and **retention** due to the uniform high retention rate. Similarly, **total profit** correlated positively with **retention**, but the correlation was not as strong because of the high retention across the dataset.

- Scatter plots illustrated the relationships between **total bet/total profit** and **retention**, confirming that more active players are more likely to be retained, but further work is needed to better segment and predict long-term retention.



Discussion and Conclusion

The analysis yielded several key insights into **player behaviour** and **retention** patterns on the Bustabit platform:

1. **High Retention Within 30 Days**: The dataset showed that all players returned within 30 days, which suggests strong short-term engagement. However, the **retention rate** may need further refinement (e.g., using **60-day or 90-day** windows) to better capture long-term player retention.

2. **Frequent Players Are More Profitable**: Players who made more bets or had higher total profits were more likely to be retained. **High-value players** are the most profitable and should be prioritised for **VIP promotions** and personalised rewards.

3. **Engagement and Activity Trends**: By analysing **game participation trends**, we were able to identify periods of higher activity and potential correlations with **promotions or external events**. This highlights the importance of understanding **seasonality** and **external influences** on player behaviour.

Recommendations for the Gambling Industry:

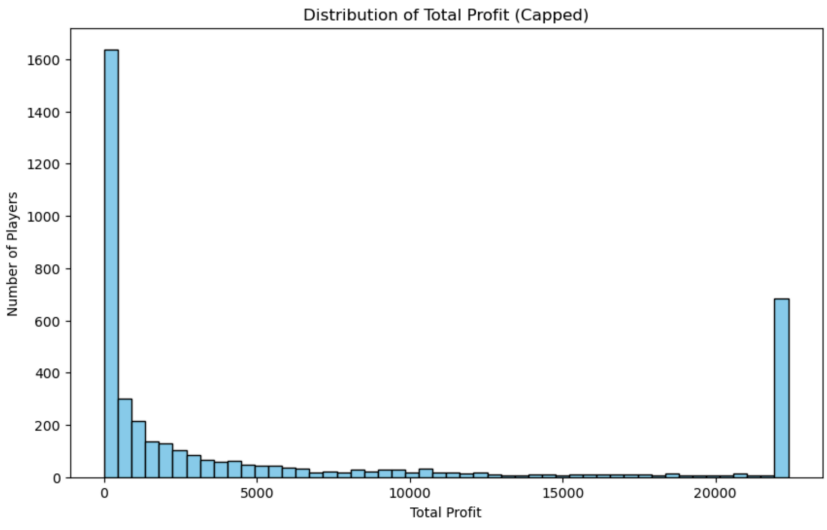
1. **Target High-Value Players**: Focus retention efforts on **high-value players**, offering personalised rewards and VIP status to maintain engagement and increase their lifetime value.

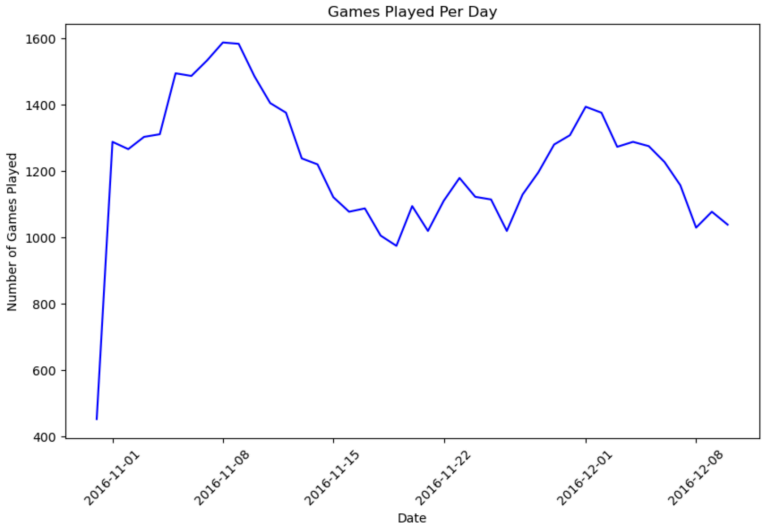
2. **Re-Engage Low-Value Players**: Players who show lower activity (e.g., **one-bet players**) should be targeted with **promotions**, such as free bets or bonus offers, to encourage them to return.

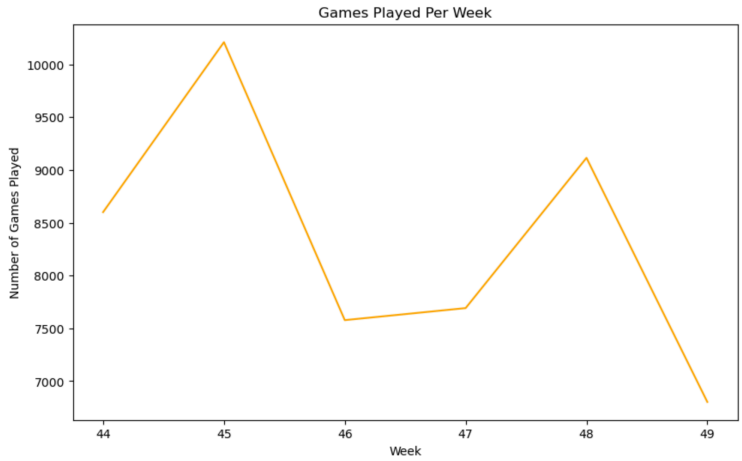
3. **Long-Term Retention**: Consider adjusting the **retention window** to capture longer-term engagement and better understand factors that lead to **player churn**.

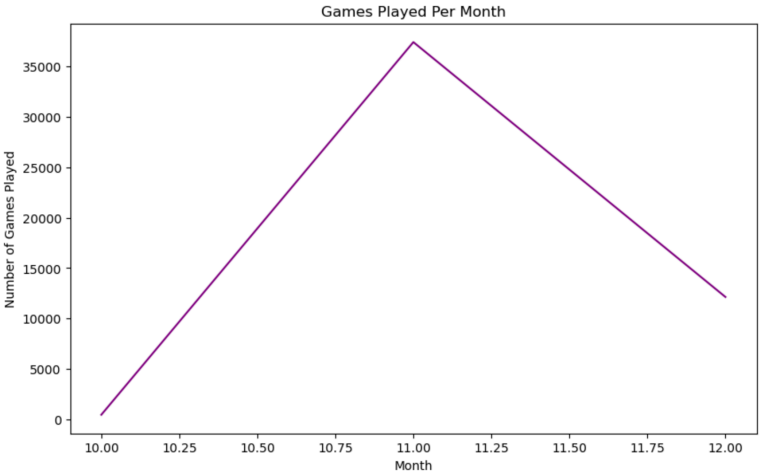
4. **Understand Seasonal Trends**: Use **game participation trends** to inform marketing campaigns and promotions, targeting players during peak periods of activity.

Additional Visuals:




Games Played Per Day
Number of Games Played
1600
1400
1200
1000
800
600
400
2016-11-01
2016-11-08
2016-11-15
2016-11-22
2016-12-01
2016-12-08
Date


Games Played Per Week
Number of Games Played
10000
9500
9000
8500
8000
7500
7000
44
45
46
47
48
49
Week


Games Played Per Month
Number of Games Played
35000
30000
25000
20000
15000
10000
5000
0
10.00
10.25
10.50
10.75
11.00
11.25
11.50
11.75
12.00
Month