

Game User Churn Analysis Report

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About the dataset

This report provides an analysis of user churn in a gaming environment, based on a dataset containing 10,000 entries and 20 columns. Key columns include user demographics (age, gender, country), gaming behavior (total play time, average session time, games played), and engagement metrics (in-game purchases, last login, friend count, social interactions, achievement points). The dataset also includes categorical data such as game genre, subscription status, device type, and favorite game mode.

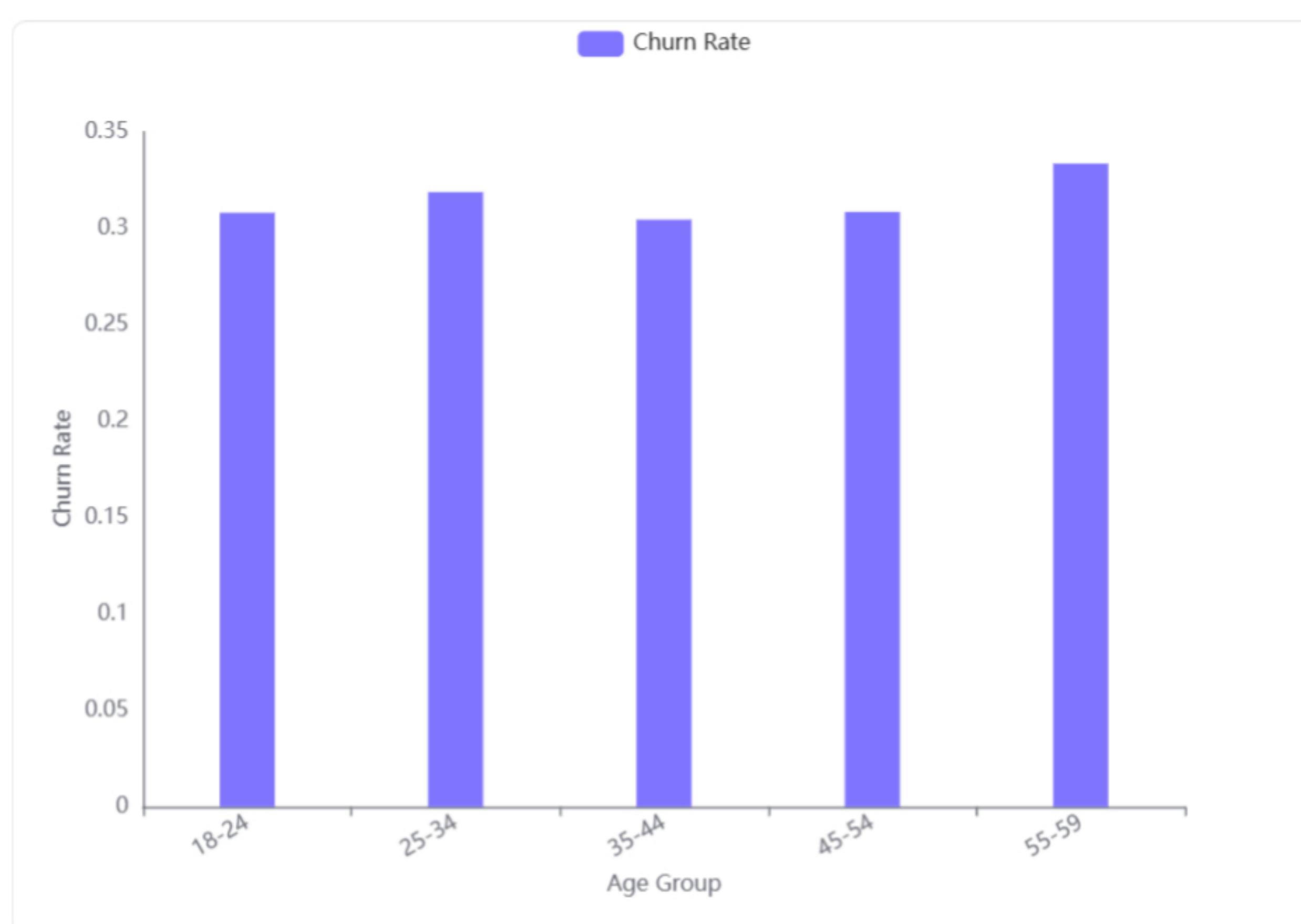
From the sample data, we observe a diverse user base with varying levels of engagement and activity. For instance, userID 0, aged 56, from the UK, has a low total play time of 90 minutes but high in-game purchases (258) and achievement points (9768). In contrast, userID 2, aged 32, from Brazil, has a high total play time of 888 minutes but lower in-game purchases (255) and achievement points (6697). The churn rate, represented by the 'churn' column, shows a mean value of 0.31, indicating that approximately 31% of users have churned.

The data reveals interesting patterns, such as the correlation between high social interactions and lower churn rates, and the impact of subscription status on user retention. Users with higher friend counts and social interactions tend to have lower churn rates, suggesting that social engagement is a key factor in retaining users. Additionally, subscription status appears to influence churn, with subscribed users showing higher retention rates.

Overall, this dataset provides valuable insights into user behavior and churn, highlighting the importance of social interactions and subscription models in maintaining user engagement.

Relevant Inquiries

Q1. What is the distribution of churn rates across different age groups?



Churn Rate Analysis by Age Group

- **Age Groups:** The data includes five age groups: '18-24', '25-34', '35-44', '45-54', and '55-59'.
- **Churn Rate Statistics:** The churn rates for these age groups are as follows:
 - **18-24:** 0.3081
 - **25-34:** 0.3188
 - **35-44:** 0.3045
 - **45-54:** 0.3086
 - **55-59:** 0.3336
- **Mean Churn Rate:** The average churn rate across all age groups is 0.31.
- **Standard Deviation:** The standard deviation of the churn rates is 0.01, indicating low variability.

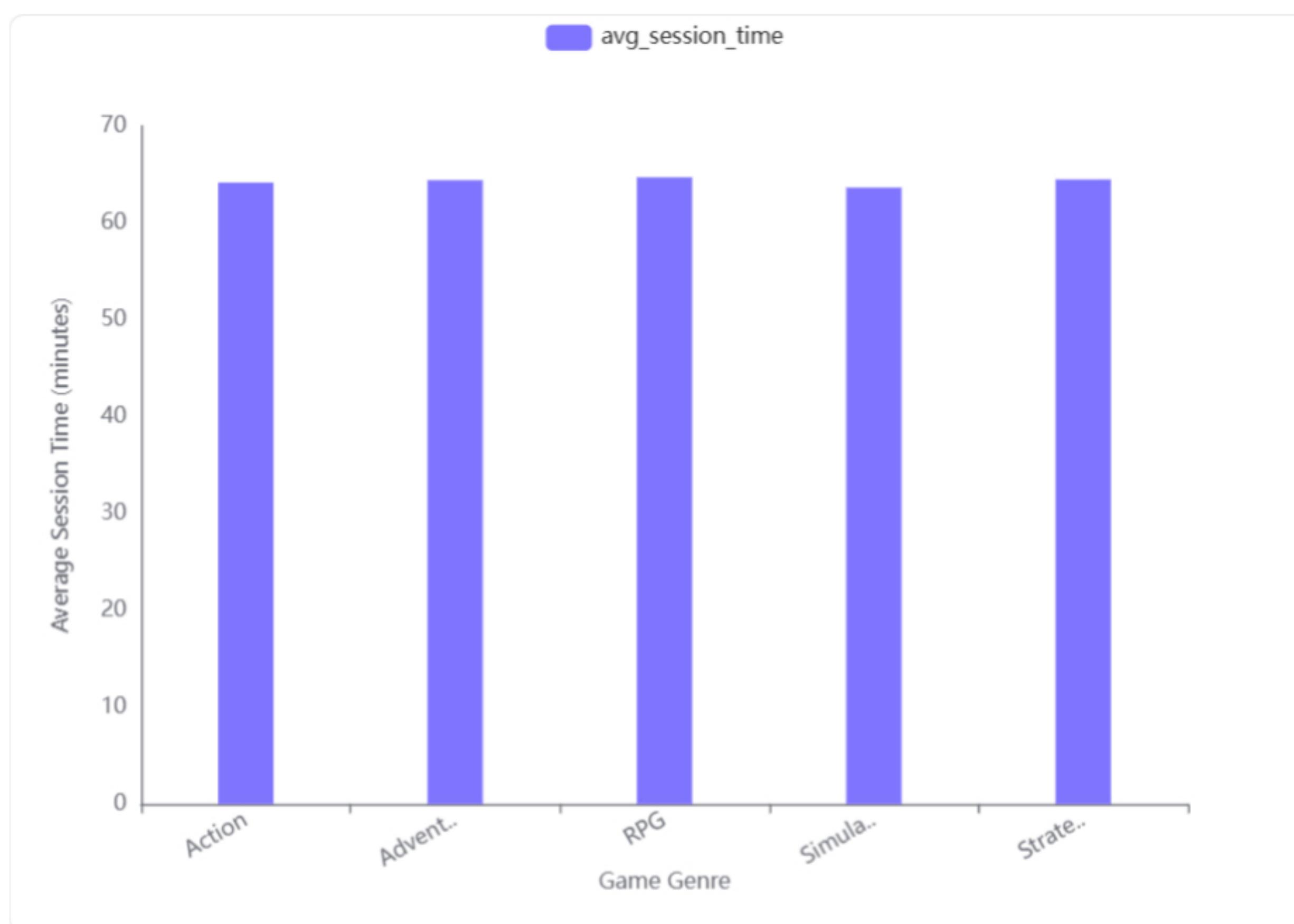
Visualization of Churn Rates

- **Bar Chart Representation:** The bar chart visualizes the churn rates for each age group.
 - **Highest Churn Rate:** The age group '55-59' has the highest churn rate at 0.3336.
 - **Lowest Churn Rate:** The age group '35-44' has the lowest churn rate at 0.3045.
 - **Other Age Groups:** The churn rates for the other age groups ('18-24', '25-34', '45-54') are relatively close to the mean churn rate of 0.31.

Conclusion and Insights

- **Age Group Impact:** The churn rate varies slightly across different age groups, with the '55-59' age group showing a notably higher churn rate.
- **Low Variability:** The low standard deviation indicates that the churn rates are fairly consistent across the age groups, with only minor differences.

Q2. How does the average session time vary between different game genres?



Average Session Time Calculation

- **Action:** The average session time is **64.17 minutes**.
- **Adventure:** The average session time is **64.42 minutes**.
- **RPG:** The average session time is **64.71 minutes**.
- **Simulation:** The average session time is **63.65 minutes**.
- **Strategy:** The average session time is **64.50 minutes**.

Visualization of Average Session Time

- The bar chart illustrates the average session time for each game genre.
- **RPG** has the highest average session time, followed by **Strategy** and **Adventure**.
- **Simulation** has the lowest average session time among the genres.

Conclusion and Insights

- **RPG games** have the highest average session time, indicating that players tend to spend more time per session in this genre.
- **Simulation games** have the lowest average session time, suggesting shorter play sessions compared to other genres.
- The differences in average session times across genres are relatively small, with all genres having average session times around 64 minutes.

Q3. Analyze the correlation between the number of games played and the churn rate. Does playing more games reduce the likelihood of churn?

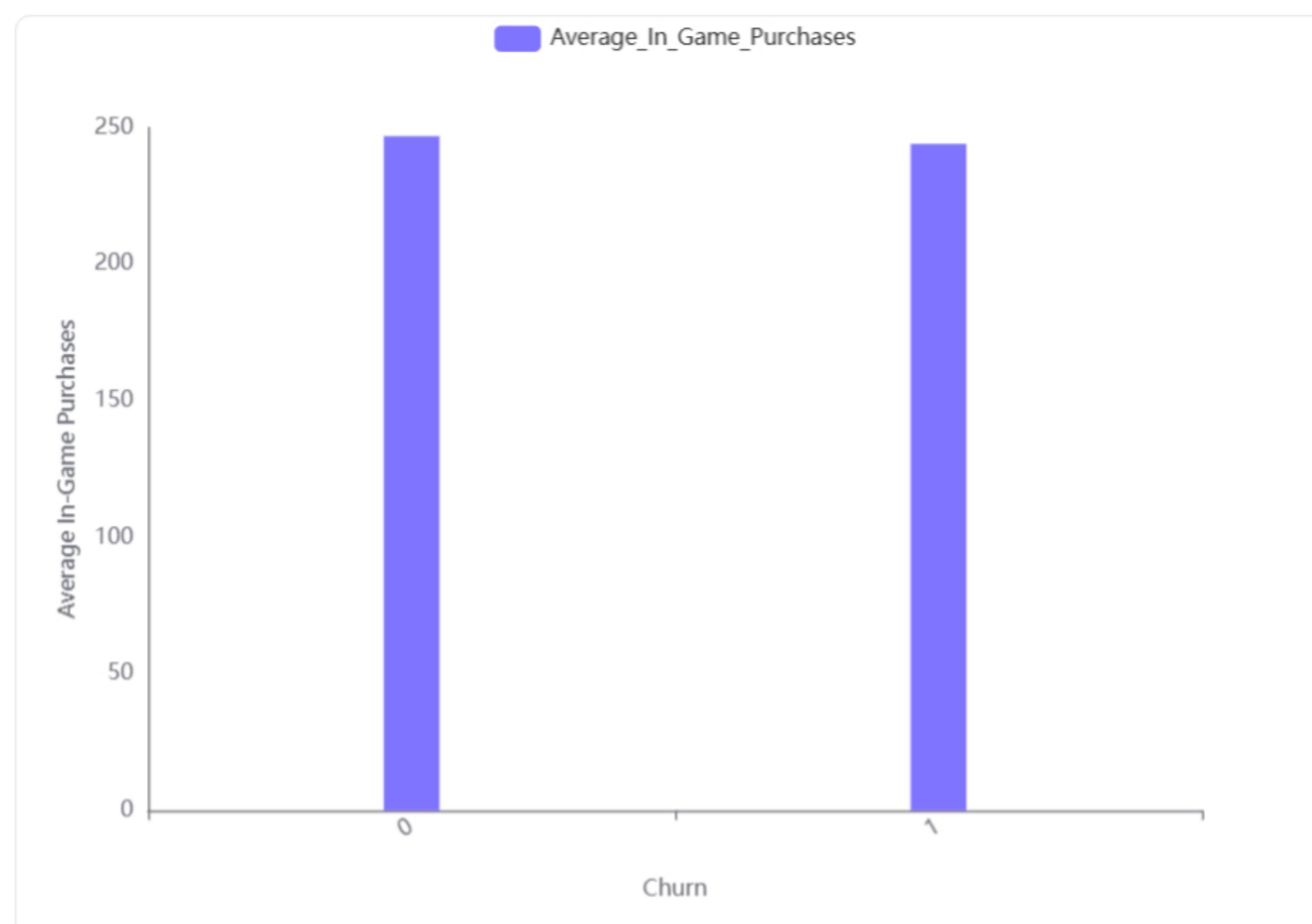
Correlation Results

- **Correlation Value:** The correlation between the number of games played and the churn rate is **-0.0018**.
- **Interpretation:** This value is very close to zero, indicating an extremely weak negative correlation.

Conclusion and Insights

- **Negligible Impact:** The correlation value of -0.0018 suggests that the number of games played has a negligible impact on the likelihood of churn.
- **No Significant Relationship:** Playing more games does not significantly reduce the likelihood of churn based on the provided data.

Q4. What is the relationship between in-game purchases and churn rates?



Average In-Game Purchases for Churned vs. Non-Churned Users

- **Churned Users:** The average in-game purchases for users who have churned is approximately **244.13**.
- **Non-Churned Users:** The average in-game purchases for users who have not churned is approximately **246.96**.

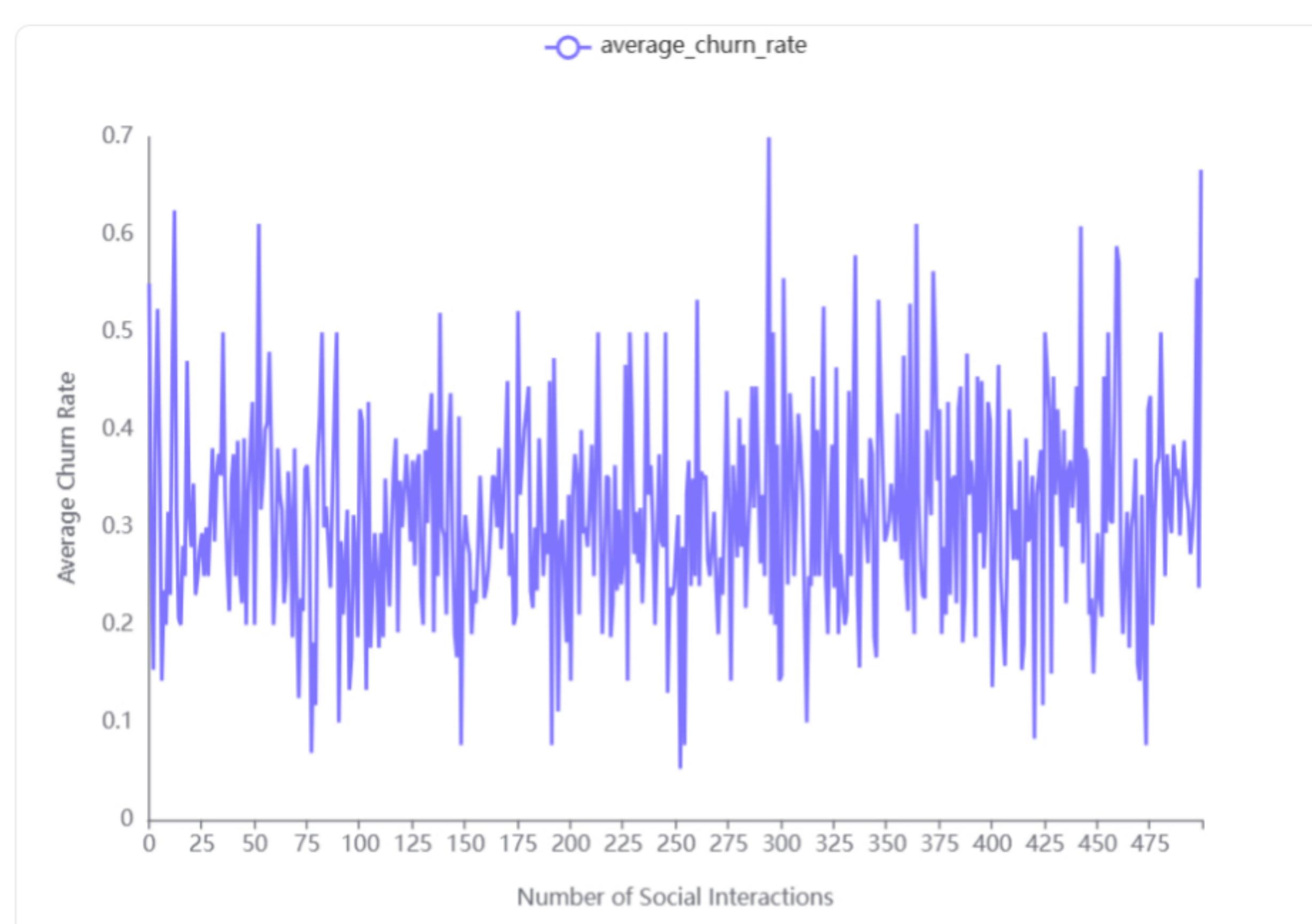
Visualization of In-Game Purchases vs. Churn Rates

- **Bar Chart Analysis:** The bar chart illustrates the average in-game purchases for churned and non-churned users. It shows that non-churned users have a slightly higher average in-game purchase amount compared to churned users.

Conclusion and Insights

- **Slight Difference in Purchases:** There is a slight difference in the average in-game purchases between churned and non-churned users, with non-churned users spending marginally more.
- **Potential Indicator:** While the difference is not substantial, it suggests that higher in-game purchases might be associated with lower churn rates, indicating that users who spend more are slightly less likely to churn.

Q5. How does the number of social interactions impact the churn rate?



Data Analysis

- **Data Overview:** The dataset contains 500 records with two columns: `social_interactions` and `average_churn_rate`.
- **Statistics:**
 - **Social Interactions:** Mean = 249.50, Std = 144.48, Min = 0, Max = 499
 - **Average Churn Rate:** Mean = 0.31, Std = 0.10, Min = 0.05, Max = 0.70
- **Sample Data:**
 - For 0 social interactions, the churn rate is 0.55.
 - For 1 social interaction, the churn rate is 0.2857.
 - For 2 social interactions, the churn rate is 0.1538.
 - For 3 social interactions, the churn rate is 0.4118.
 - For 4 social interactions, the churn rate is 0.5238.

Visualization

- **Line Chart:** The line chart visualizes the relationship between the number of social interactions and the average churn rate.
- **Observations:**
 - The churn rate fluctuates significantly across different numbers of social interactions.
 - There is no clear linear relationship between the number of social interactions and the churn rate.
 - The churn rate varies between approximately 0.1 and 0.7 across the range of social interactions.

Conclusion and Insights

- **Fluctuating Churn Rate:** The churn rate does not show a consistent trend with the number of social interactions. It fluctuates significantly, indicating that other factors might also be influencing the churn rate.
- **No Clear Pattern:** There is no clear pattern or linear relationship between social interactions and churn rate, suggesting that simply increasing social interactions may not directly reduce churn rate. Further analysis considering additional variables might be necessary to understand the underlying factors affecting churn.

Q6. Analyze the correlation between subscription status and churn rate. Are subscribed users less likely to churn compared to non-subscribed users?

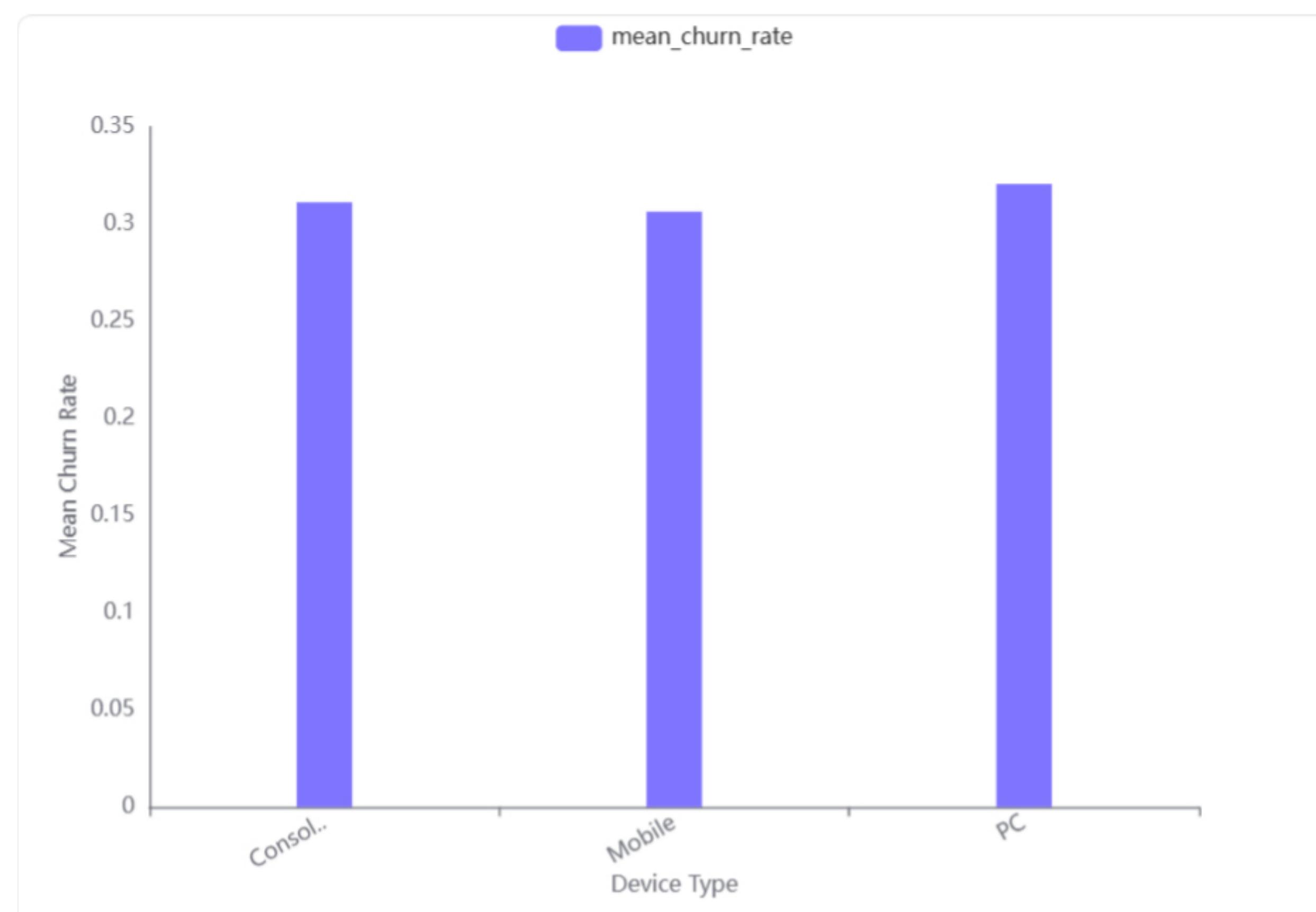
Churn Rate Analysis

- **Non-subscribed users:** The churn rate for non-subscribed users is approximately **31.17%**.
- **Subscribed users:** The churn rate for subscribed users is approximately **31.41%**.

Conclusion and Insights

- **Churn Rate Comparison:** Subscribed users have a slightly higher churn rate (31.41%) compared to non-subscribed users (31.17%).
- **Implication:** Contrary to common assumptions, subscribed users are not less likely to churn compared to non-subscribed users. The data suggests that subscription status does not significantly impact the likelihood of churn.

Q7. Is there a significant difference in churn rates between different device types?



Churn Rates Data

- **Device Types:** The data includes three device types: Console, Mobile, and PC.

- **Mean Churn Rates:** The mean churn rates for each device type are as follows:

- Console: 0.3113
- Mobile: 0.3064
- PC: 0.3207

Visualization of Churn Rates

- **Bar Chart:** The bar chart visualizes the mean churn rates for each device type.

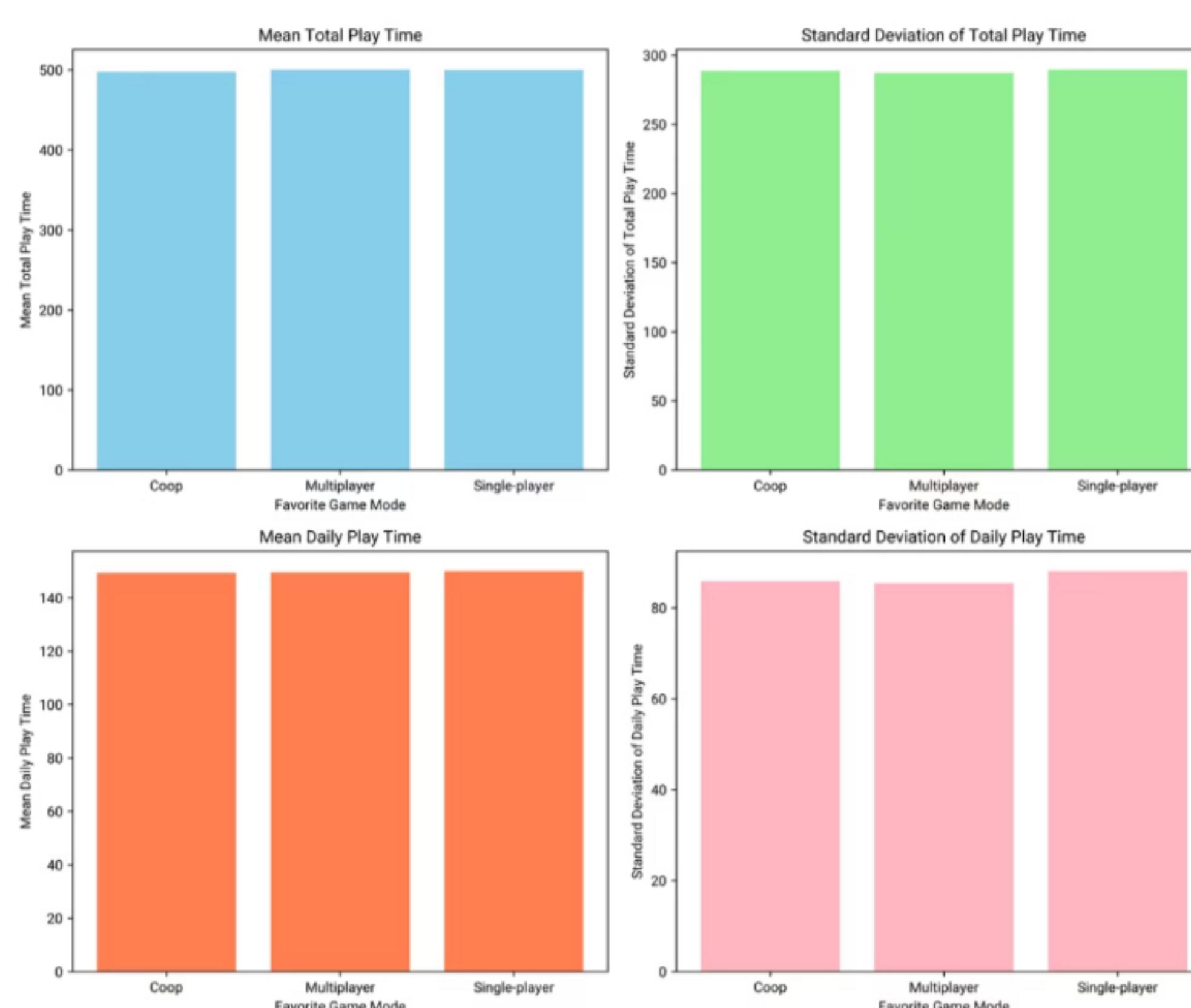
- **Console:** Approximately 0.31
- **Mobile:** Slightly lower than Console, around 0.306
- **PC:** Slightly higher than both Console and Mobile, around 0.321

Conclusion and Insights

- **Significant Difference:** There is a slight variation in churn rates among the different device types. The PC has the highest churn rate, while Mobile has the lowest.

- **Implications:** The differences, although present, are relatively small. This suggests that while device type may have some impact on churn rates, other factors might also play a significant role in influencing churn. Further analysis could be beneficial to understand the underlying reasons for these differences.

Q8. How does the favorite game mode influence the total play time and daily play time?



Influence on Total Play Time

- **Mean Total Play Time:** The mean total play time varies slightly across different favorite game modes. Specifically, Multiplayer has the highest mean total play time at approximately 500.60 hours, followed by Single-player at around 500.01 hours, and Coop at about 497.82 hours.
- **Standard Deviation of Total Play Time:** The standard deviation of total play time is relatively consistent across the game modes, with Coop having the highest standard deviation at approximately 288.71 hours, followed by Single-player at around 289.65 hours, and Multiplayer at about 287.17 hours.

Influence on Daily Play Time

- **Mean Daily Play Time:** The mean daily play time is also quite similar across different game modes. Single-player has the highest mean daily play time at approximately 149.99 hours, followed by Multiplayer at around 149.57 hours, and Coop at about 149.42 hours.
- **Standard Deviation of Daily Play Time:** The standard deviation of daily play time shows some variation, with Single-player having the highest standard deviation at approximately 88.08 hours, followed by Coop at around 85.85 hours, and Multiplayer at about 85.48 hours.

Visual Comparison

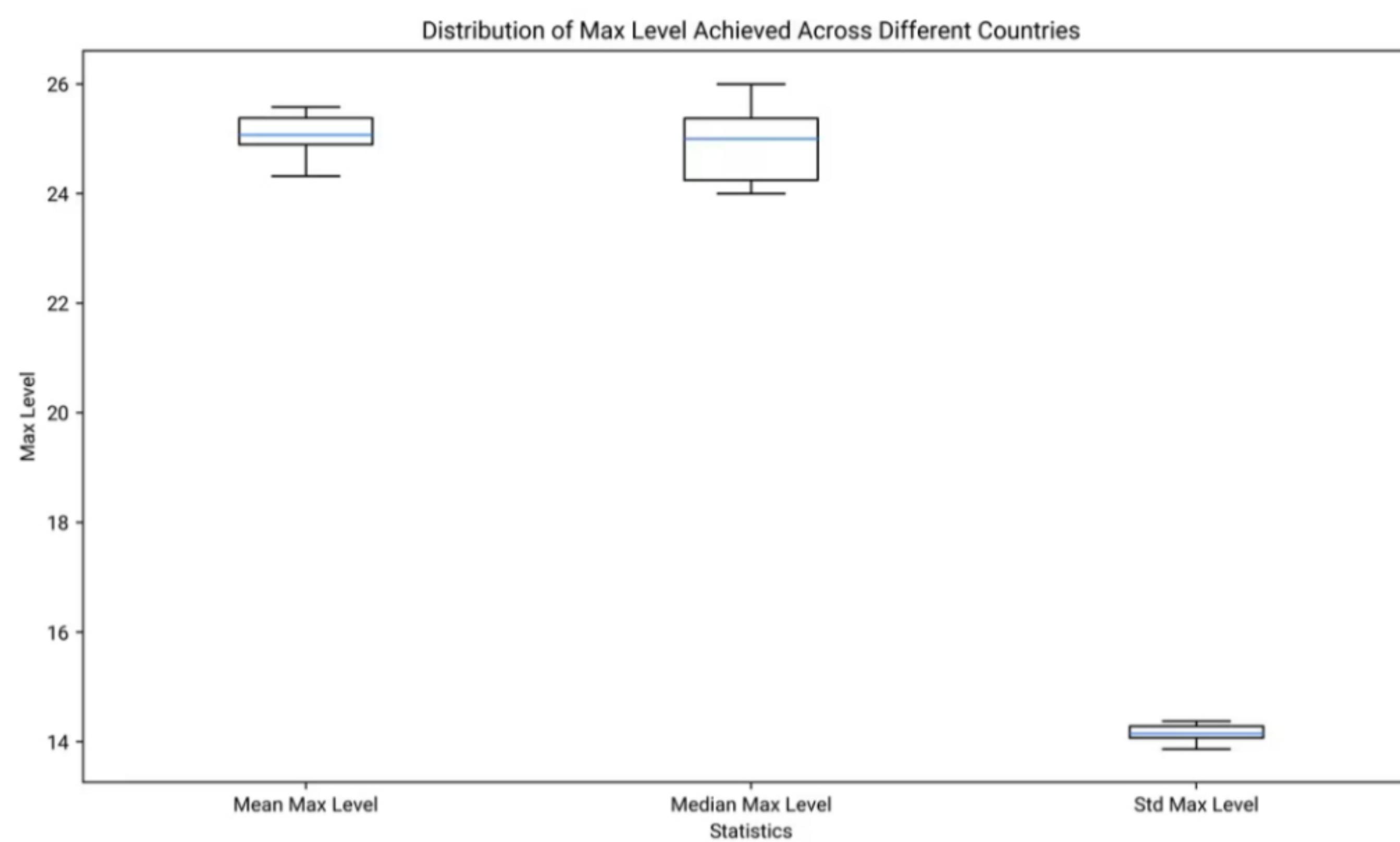
- **Bar Charts:** The bar charts visually confirm the numerical analysis. The mean total play time and mean daily play time are highest for Multiplayer and Single-player modes, respectively. The standard deviations are relatively close across all game modes, indicating consistent variability in play times.

Conclusion and Insights

- **Total Play Time:** Multiplayer mode tends to have the highest mean total play time, suggesting that players who prefer this mode spend more time playing overall. However, the variability in total play time is quite similar across all game modes.
- **Daily Play Time:** Single-player mode has the highest mean daily play time, indicating that players who prefer this mode tend to play more each day. The variability in daily play time is slightly higher for Single-player mode compared to Coop and Multiplayer modes.

Overall, while there are slight differences in mean play times across different game modes, the standard deviations indicate that the variability in play times is relatively consistent. This suggests that while preferences for game modes might influence play time to some extent, the overall patterns of play time are quite similar across different game modes.

Q9.What is the distribution of max level achieved across different countries?



Mean Max Level

- **Australia:** 24.88
- **Brazil:** 25.42
- **Canada:** 25.48
- **France:** 24.65
- **Germany:** 25.08
- **India:** 25.58
- **Japan:** 25.06
- **South Korea:** 25.28
- **UK:** 24.32
- **USA:** 24.93

Median Max Level

- **Australia:** 26.0
- **Brazil:** 26.0
- **Canada:** 25.5
- **France:** 24.0
- **Germany:** 25.0
- **India:** 25.0
- **Japan:** 25.0
- **South Korea:** 25.0
- **UK:** 24.0
- **USA:** 24.0

Standard Deviation of Max Level

- **Australia:** 14.38
- **Brazil:** 13.87
- **Canada:** 14.14
- **France:** 14.37
- **Germany:** 13.92
- **India:** 14.16
- **Japan:** 14.06
- **South Korea:** 14.12
- **UK:** 14.19
- **USA:** 14.31

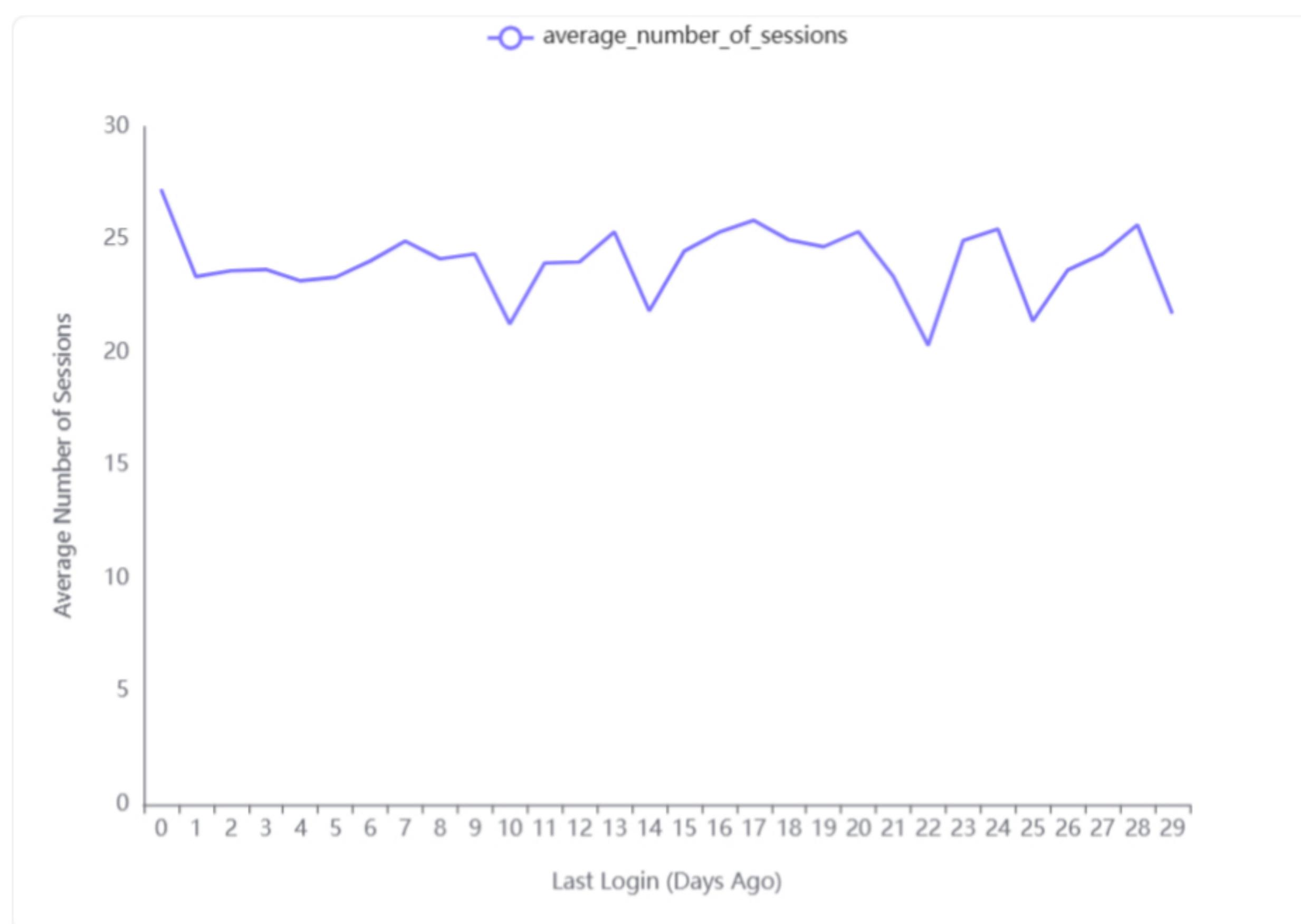
Box Plot Visualization

- **Mean Max Level:** The box plot shows a relatively narrow range of mean max levels, with most countries having a mean max level between 24 and 26.
- **Median Max Level:** The median max levels are clustered around 24 to 26, indicating a central tendency in this range.
- **Standard Deviation:** The standard deviation values are tightly grouped around 14, indicating a consistent spread of max levels within each country.

Conclusion and Insights

- **Consistent Mean and Median:** Most countries have a mean and median max level in the range of 24 to 26, suggesting a similar level of achievement across different countries.
- **Low Variability:** The standard deviation values are close to 14 for all countries, indicating low variability in the max levels achieved within each country.

Q10. Are there any noticeable trends in the number of sessions over time for users who have churned?



Analysis of 'number_of_sessions' Column

- **Mean number of sessions:** The average number of sessions for churned users is approximately 24.01.
- **Standard deviation:** The standard deviation is 1.53, indicating some variability in the number of sessions.
- **Range:** The number of sessions ranges from a minimum of 20.34 to a maximum of 27.24.

Visualization of Trends

- **Initial high sessions:** The number of sessions starts high at around 27 sessions.
- **Fluctuations:** There are noticeable fluctuations in the number of sessions over time, with several peaks and troughs.
- **Decline and variability:** The number of sessions generally shows a declining trend with significant variability, especially around the 10th, 16th, and 22nd days.

Conclusion and Insights

- **Declining trend:** There is a general declining trend in the number of sessions over time for users who have churned.
- **High variability:** The number of sessions is highly variable, indicating inconsistent user engagement before churning.