ONLINE GAMING BEHAVIOUR DATASET EDA

Objective

The purpose of this analysis is to understand user behavior in online gaming. The dataset includes various attributes that represent player demographics, in-game behavior, and engagement levels. By analyzing this data, we can derive insights into how different factors influence player engagement and identify patterns that can help in personalizing player experiences, improving game design, and optimizing marketing strategies.

Technologies Used:

Numpy

Pandas

Matplotlib

Seaborn

Jupyter Notebook

Dataset Overview

The dataset includes the following columns:

Player ID: Unique identifier for each player.

Age: Age of the player.

Gender: Gender of the player (Male/Female).

Location: Country or region of the player.

Game Genre: Genre of the game played (e.g., Action, Strategy).

Play Time in Hrs/Wk: Average weekly playtime in hours.

In-Game Purchases: Whether the player makes in-game purchases.

Game Difficulty: The difficulty level of the game.

Sessions per Week: Number of gaming sessions per week.

Avg Session Minutes: Average duration of a gaming session.

Player Level: Current level of the player in the game.

Achievements Unlocked: Number of achievements unlocked by the player.

Engagement Level: Qualitative measure of player engagement (e.g., High, Medium, Low).

Data Cleaning and Preparation

Checking for Null Values

The dataset was checked for missing values using the isnull().sum() method. No null values were found, indicating that the dataset is complete and ready for further analysis.

Checking for Duplicates

Duplicate entries can skew analysis results. The duplicated().sum() function was used to check for duplicate records, and no duplicates were found.

Renaming Columns

Column names were renamed to be more readable and consistent using the rename() function. This step enhances clarity and makes it easier to reference columns in the analysis.

Data Type Conversion

The Play Time in Hrs/Wk column initially contained floating-point values. This column was rounded to two decimal points to simplify the analysis. The conversion was done using the round() function, which ensures the data is uniform and easier to interpret.

Age Distribution

Data Presented:

Histogram showing the age distribution of players.

Numbers Presented:

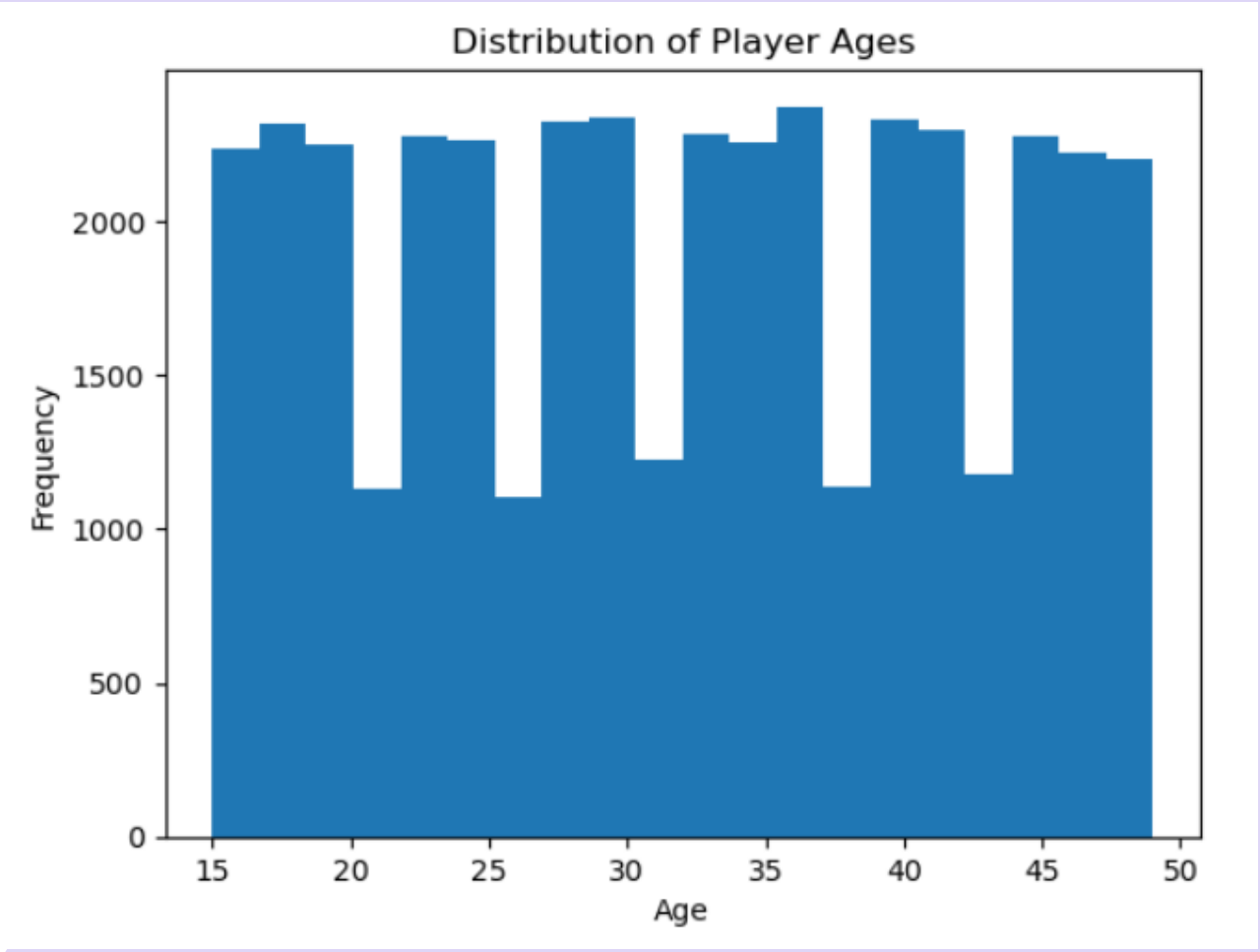
Age range: 15 to 50, with a balanced distribution.

Conclusion:

The game is popular across various age groups, with no significant age-related spikes or dips.

Business Insights:

Continue targeting a broad age demographic while developing age-specific content to enhance engagement.



Gender Distribution

Data Presented:

Bar chart illustrating the gender distribution of players.

Numbers Presented:

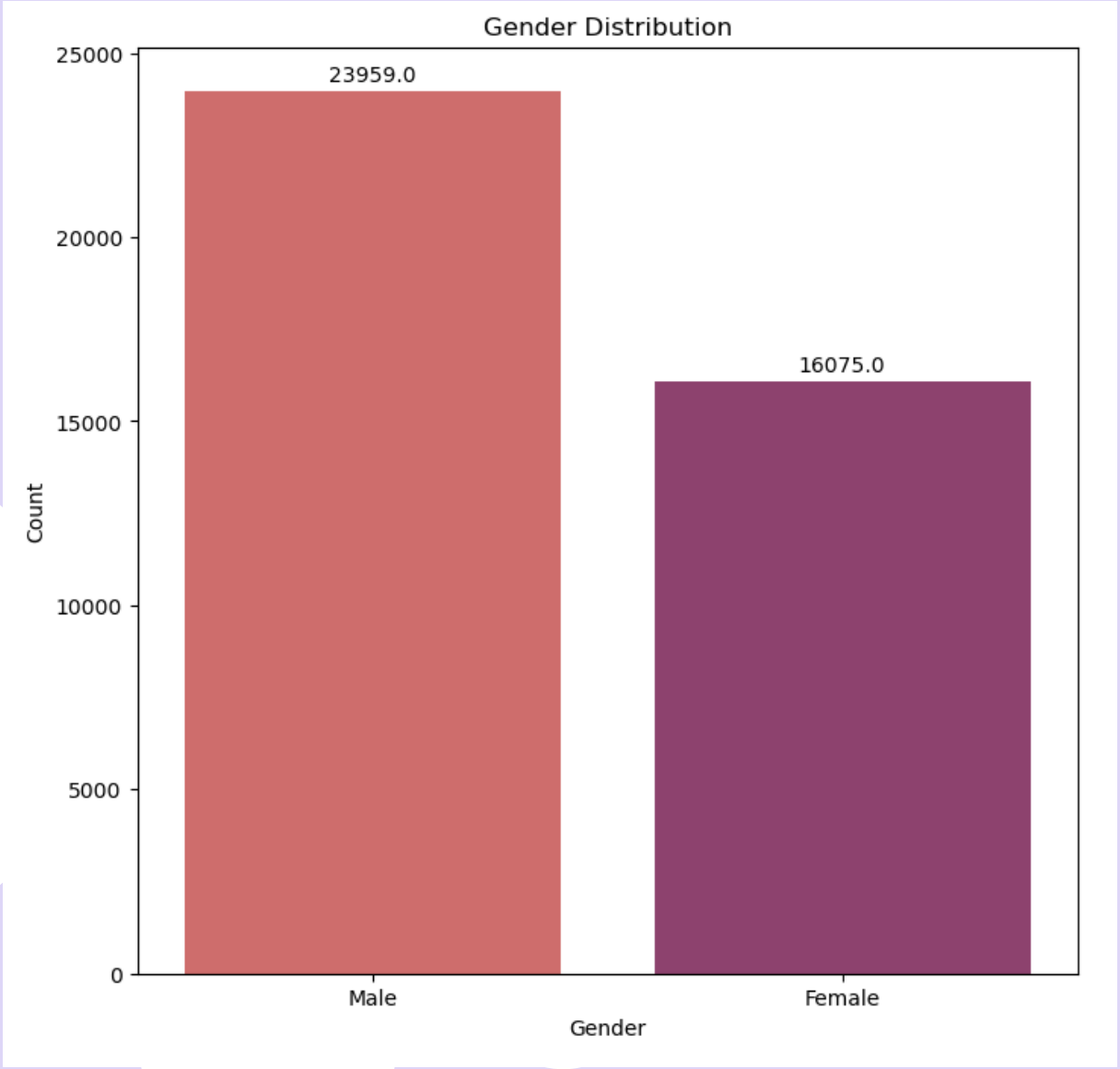
Males: 23,959, Females: 16,075.

Conclusion:

There is a significant gender gap, with males nearly double the number of females.

Business Insights:

Implement strategies to address the gender gap by creating content that appeals to female players and fostering inclusive communities.



Play Time by Respective Genders

Data Presented:

Bar chart showing the distribution of playtime hours by gender.

Numbers Presented:

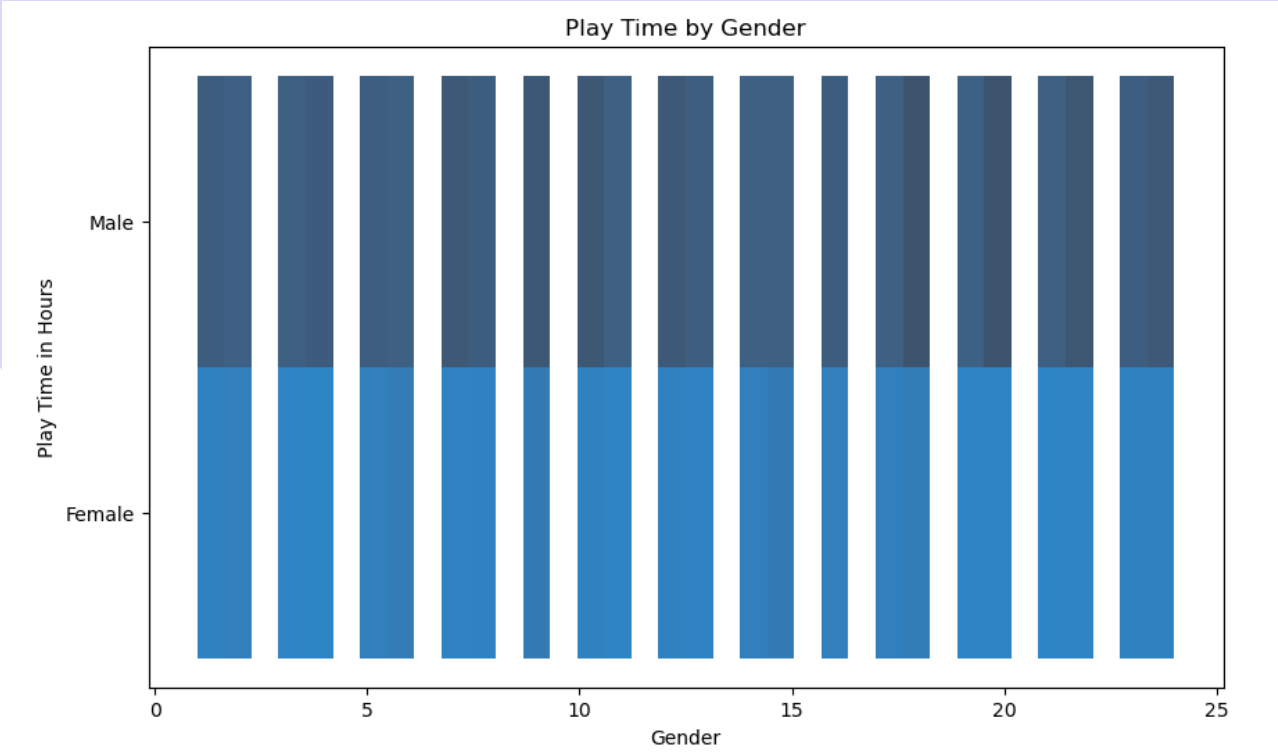
Males generally play more hours, with a notable concentration in higher playtime ranges.

Conclusion:

Male players are more likely to engage in longer gaming sessions.

Business Insights:

Develop strategies to enhance female engagement by promoting shorter, high-impact gaming sessions.



Play Time by Game Genre

Data Presented:

Bar chart showing playtime distribution across different game genres.

Numbers Presented:

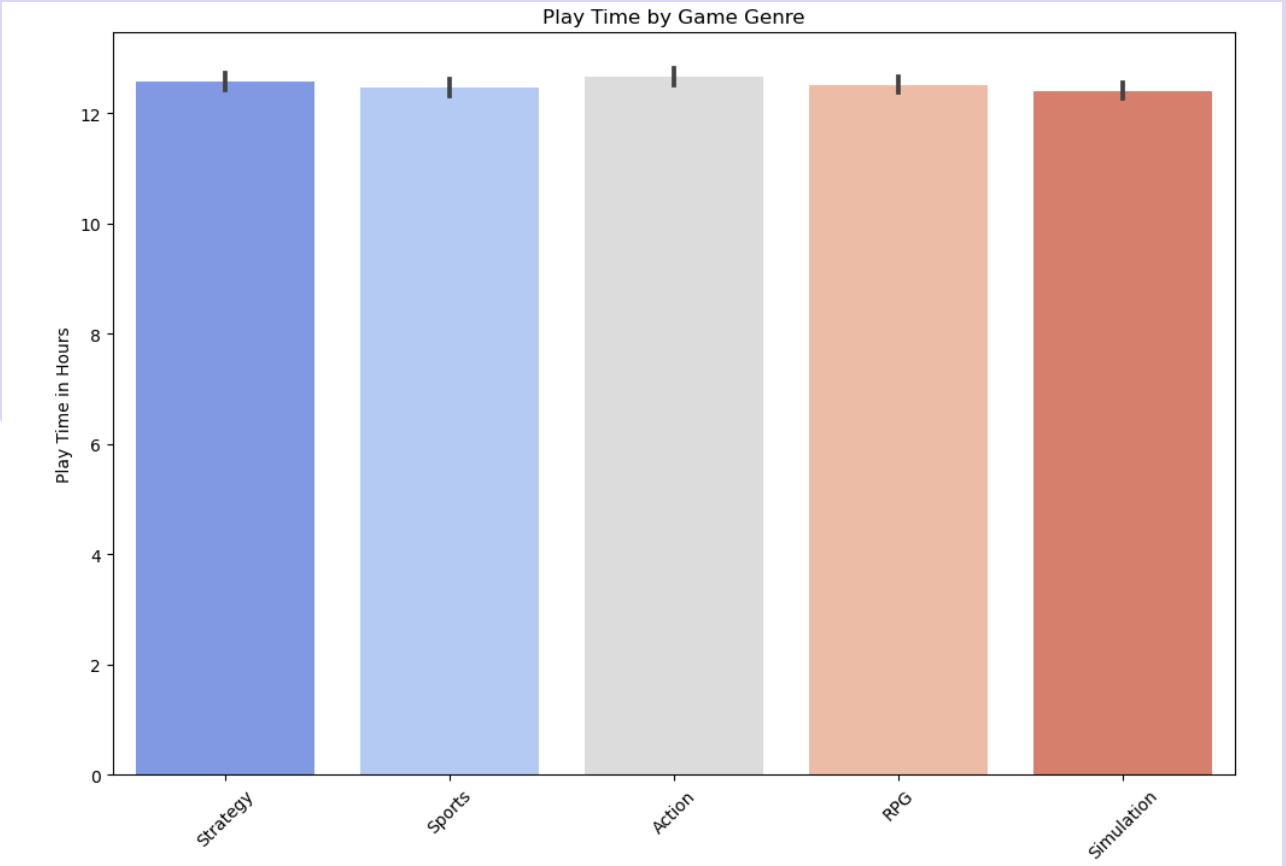
Action and RPG games have the highest playtime, particularly among male players.

Conclusion:

Different genres appeal differently based on gender, with males favoring Action and RPG genres.

Business Insights:

Focus on expanding content for popular genres among males, while diversifying genres to attract more female players.



Heatmap of Gender and Game Genre Correlation

Data Presented:

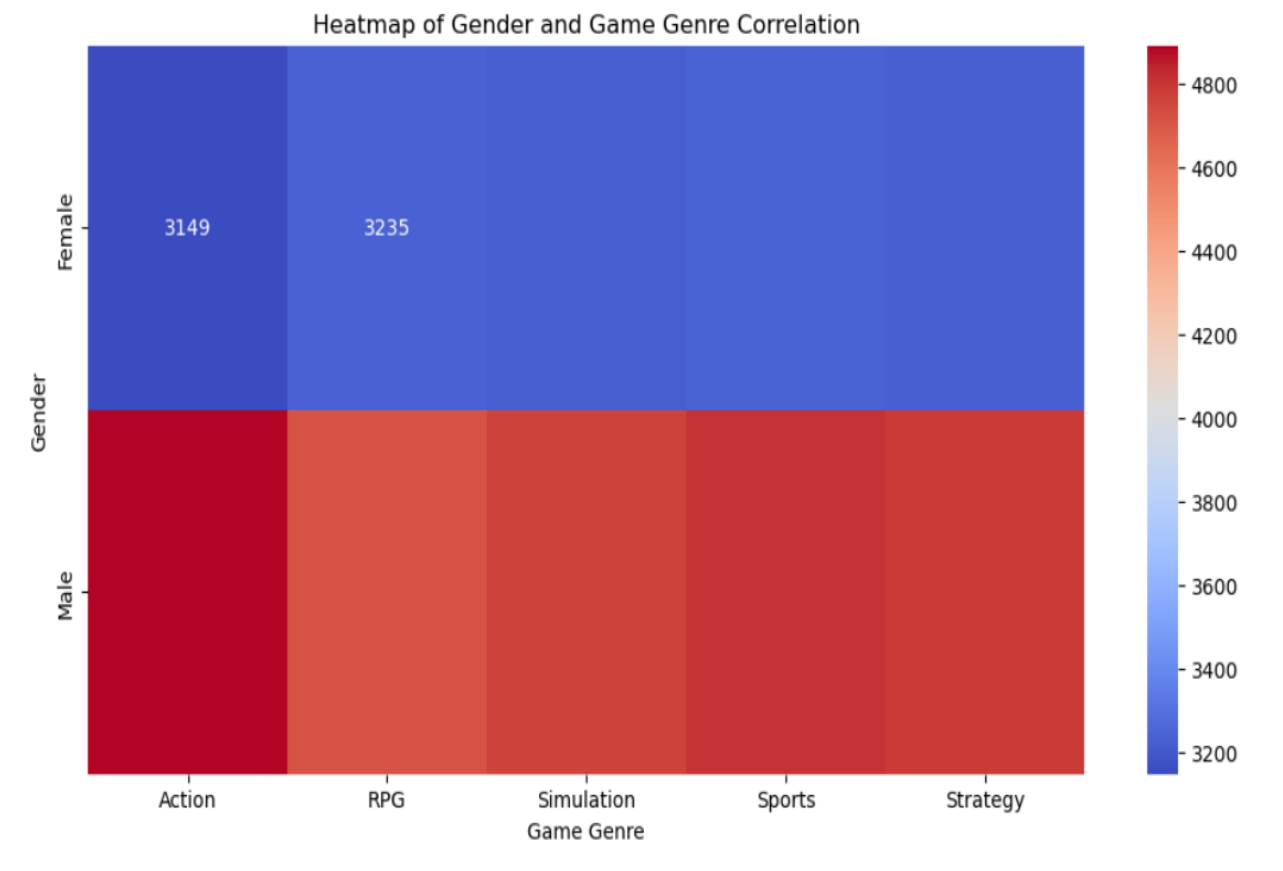
Heatmap showing the correlation between gender and game genre preferences.

Conclusion:

Male players prefer Action and Stratergy genres, while female players prefer Action and Sports genres.

Business Insights:

Focus on expanding content in popular male-dominated genres and explore inclusive game designs to appeal to female players.



Avg Session Duration vs. Engagement Level

Data Presented:

Bar chart comparing session durations across engagement levels and gender.

Numbers Presented:

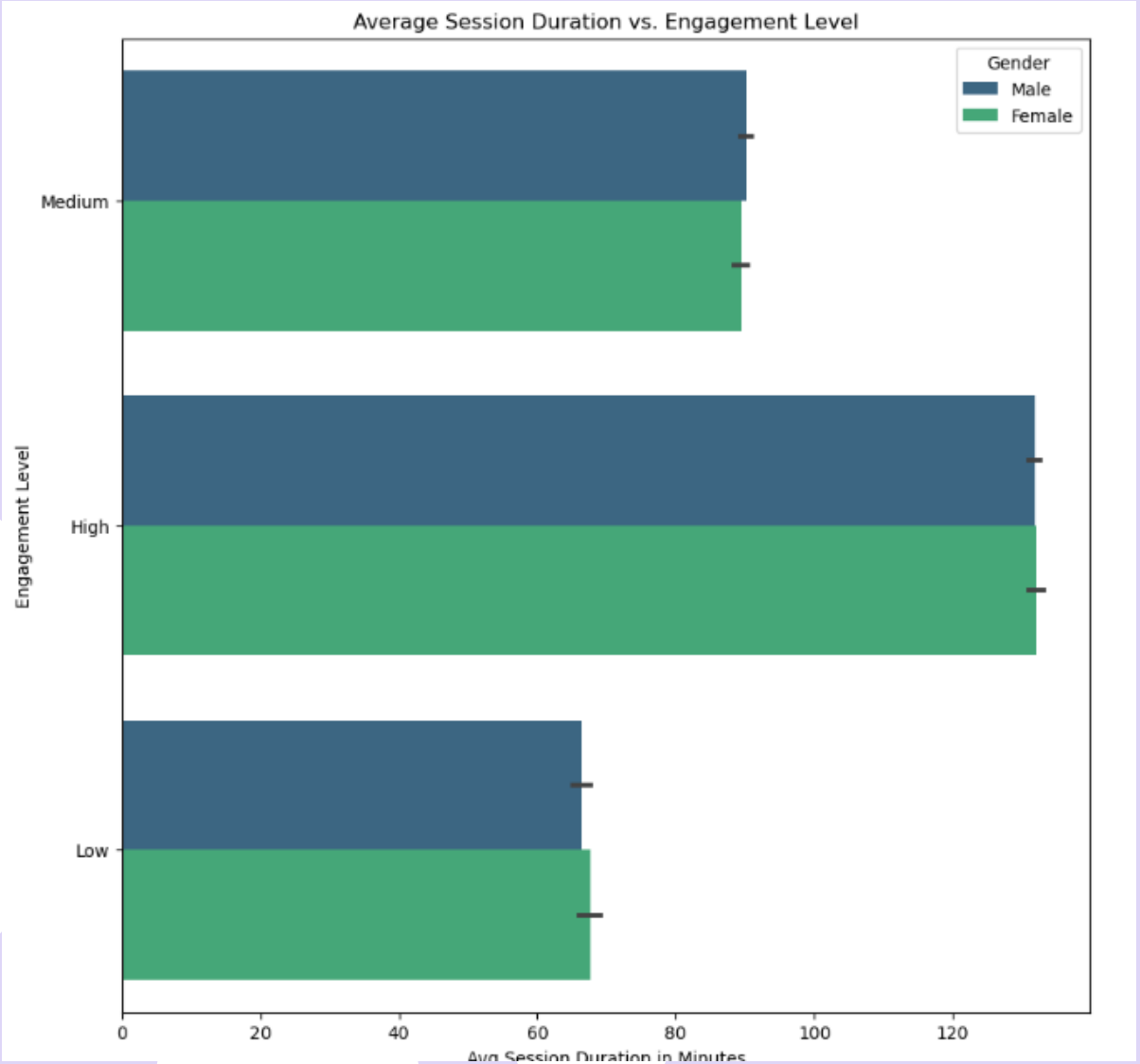
Engagement peaks with longer sessions for both genders.

Conclusion:

Engagement drops as session duration reduces.

Business Insights:

Design engaging content to maintain player engagement, especially targeting male players during longer sessions.



Strip Plot of Avg Session Duration

Data Presented:

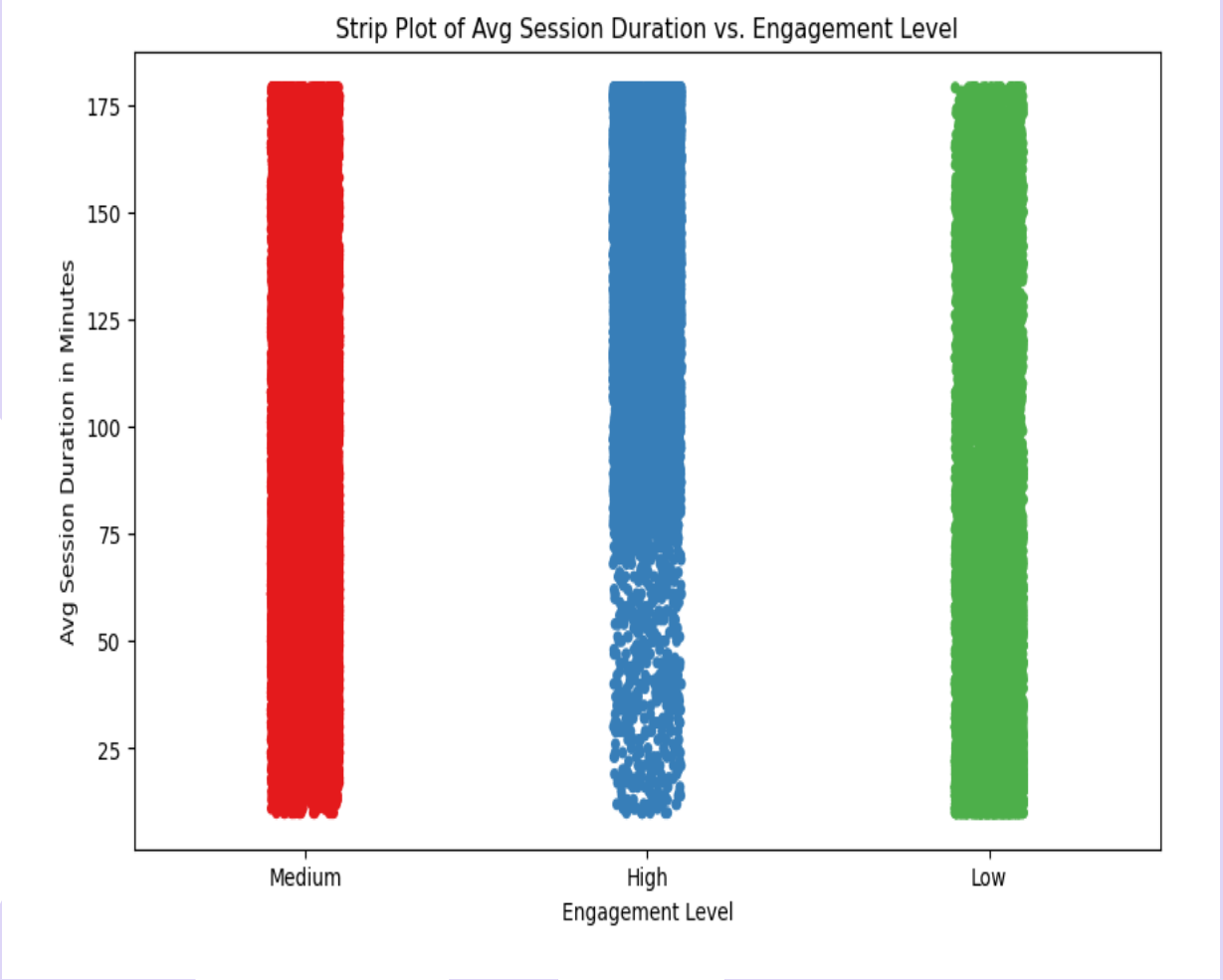
Strip plot showing the distribution of session durations across engagement levels by gender.

Conclusion:

High engagement players exhibit diverse gaming behaviors with a spread in session durations.

Business Insights:

Tailor content for high engagement players, offering customizable experiences to cater to their diverse preferences.



Correlation Heatmap: Engagement Level vs. Avg Session Duration

Data Presented:

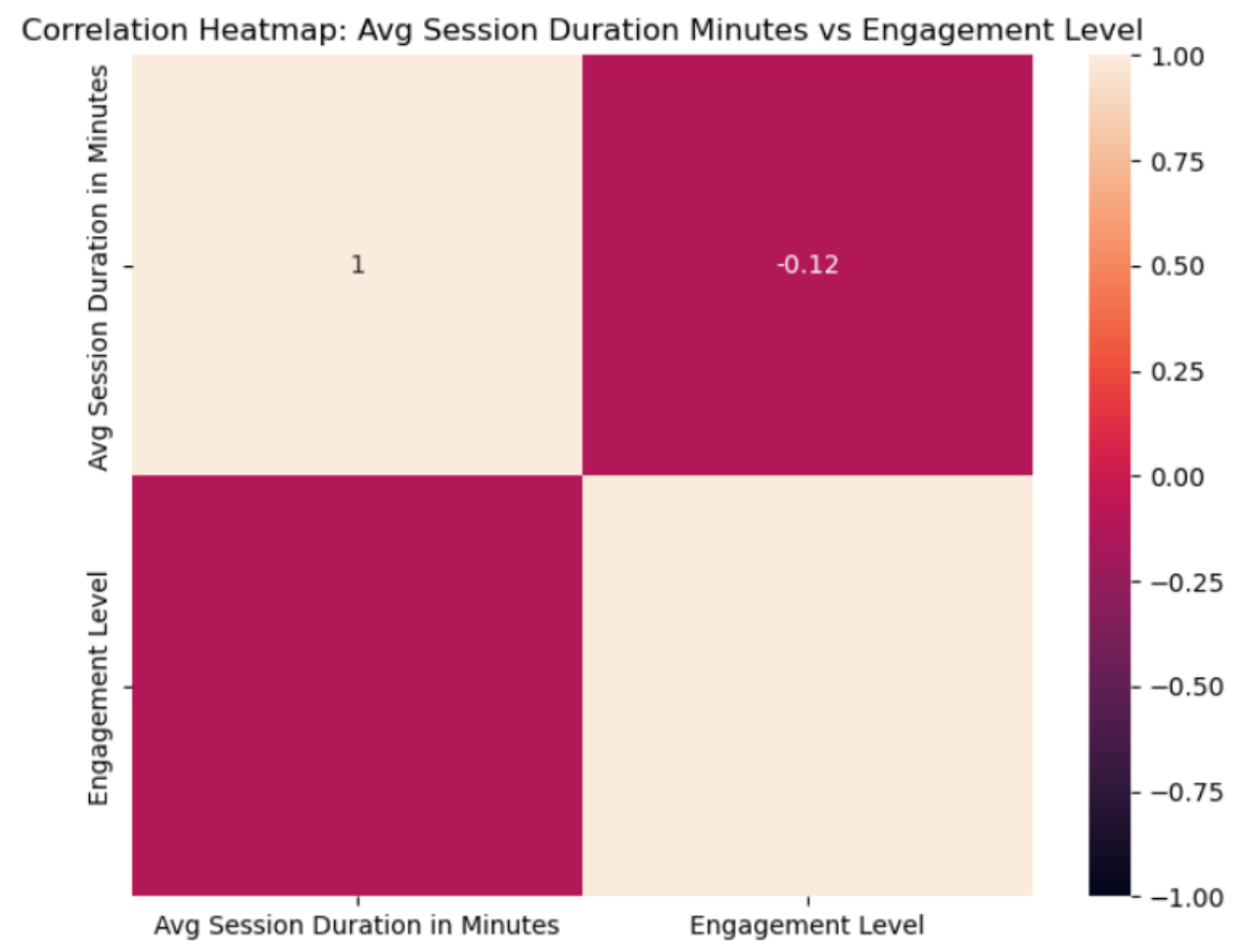
Strong positive correlation between engagement level and session duration.

Conclusion:

High engagement correlates with longer sessions, indicating deeper gameplay investment.

Business Insight:

Tailor rewards for high engagement levels to increase retention.



Player Level Distribution by Gender

Data Presented:

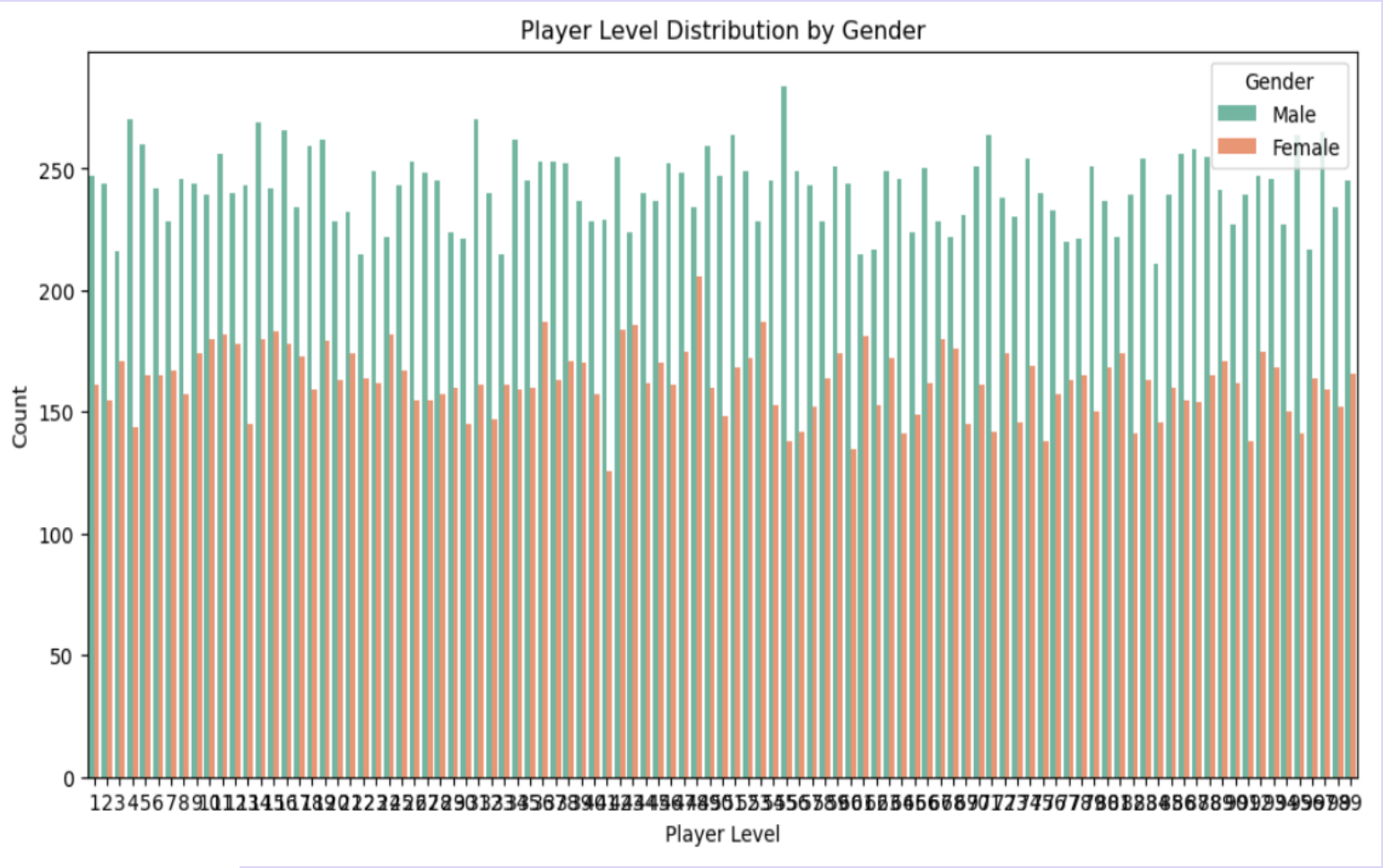
Gender distribution is relatively even across player levels, with males slightly more concentrated at higher levels.

Conclusion:

Both genders show balanced engagement across levels, with males edging higher in upper levels.

Business Insight:

Target higher-level male players with advanced gaming products and services.



Player Level Distribution by Gender (Grouped by 5 Levels)

Questions Answered:

How do player levels vary by gender when grouped by increments of 5?

Observations:

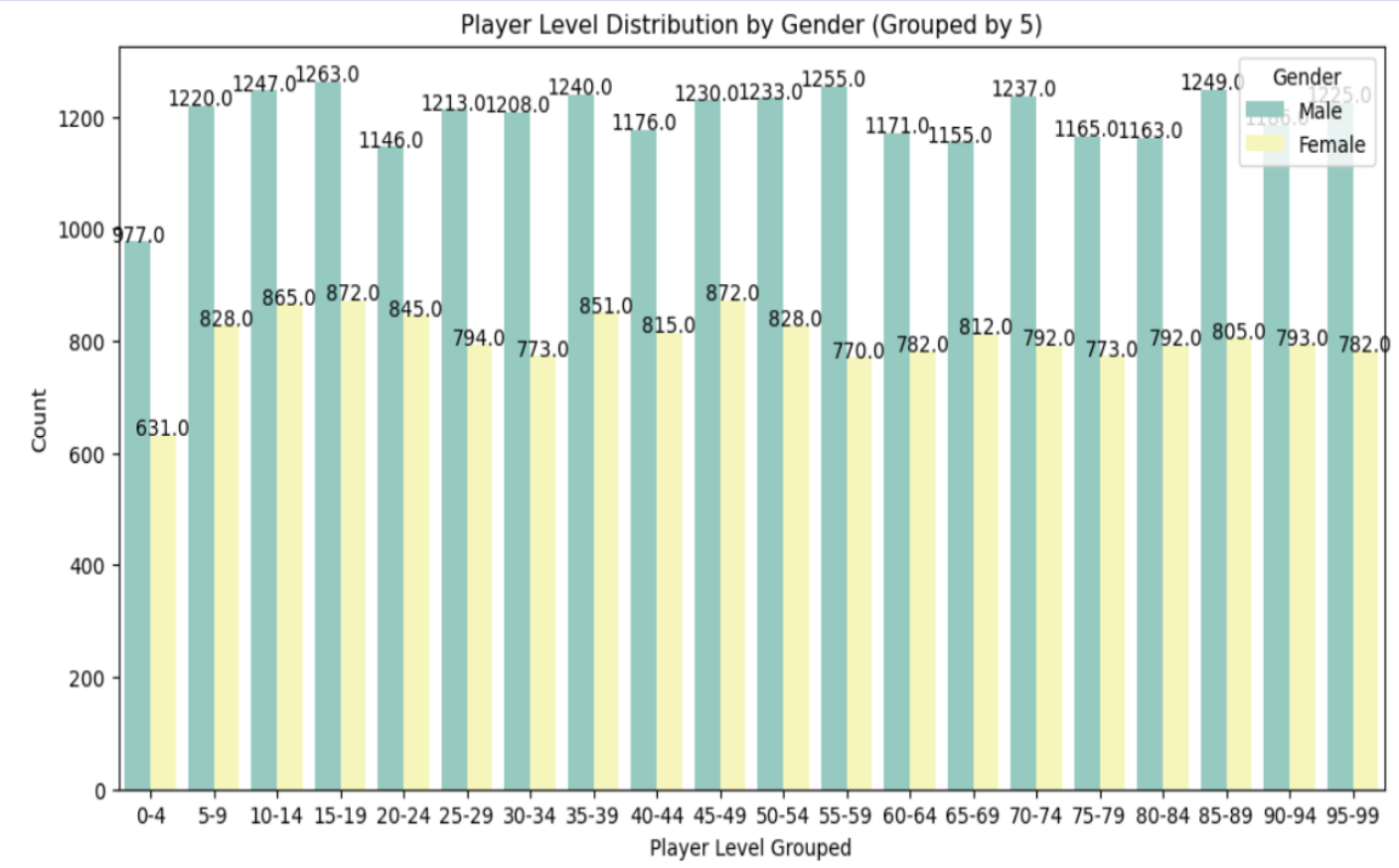
Males are more evenly spread across higher levels, peaking at 1263 players in the 15-19 range.

Conclusion:

Male players show consistent progression across levels.

Business Insights:

Encourage female players to progress beyond mid-levels.



Sessions Per Week By Difficulty Level

Observations:

Median sessions per week are consistent across all levels.

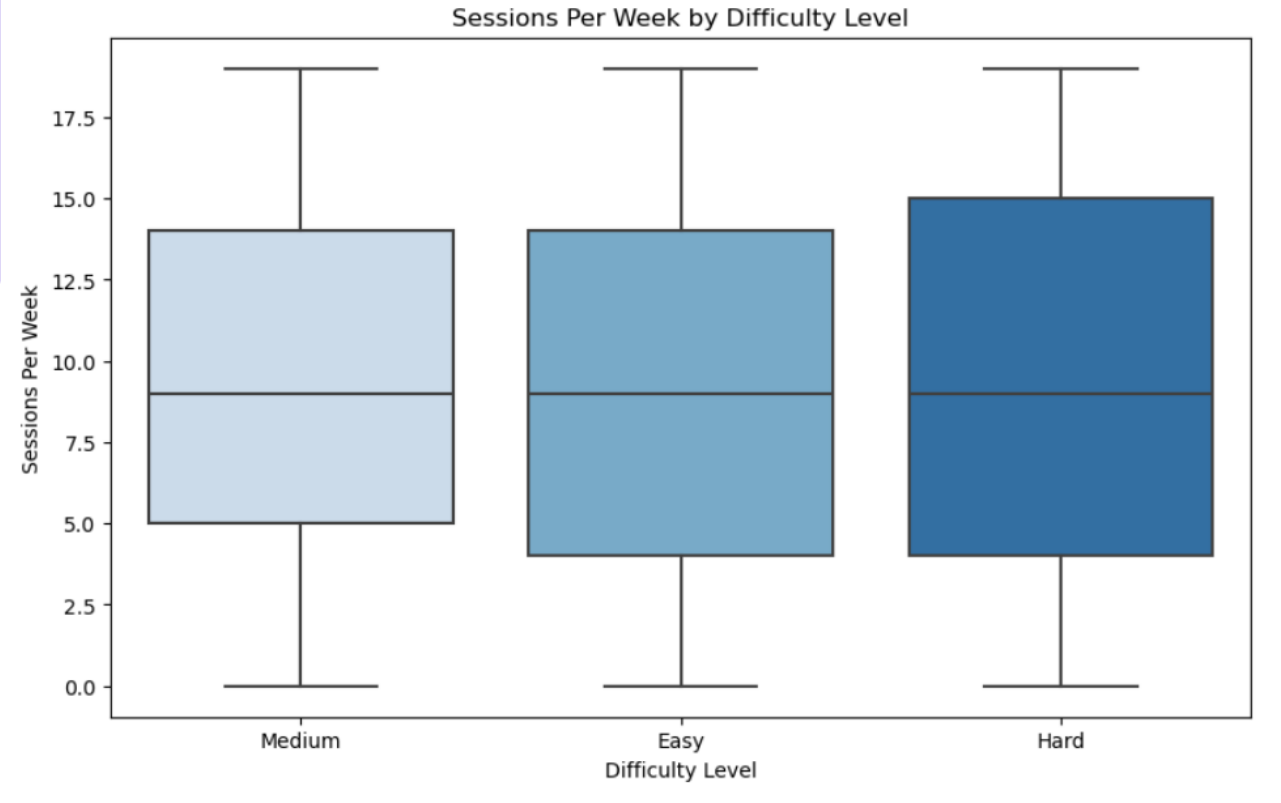
Hard difficulty shows slightly higher engagement.

Conclusion:

Players in Hard difficulty levels tend to engage more frequently, suggesting higher commitment.

Business Insight:

Introduce more challenging content at higher difficulty levels to boost engagement.



Gender Distribution Within Each Game Genre

Observations:

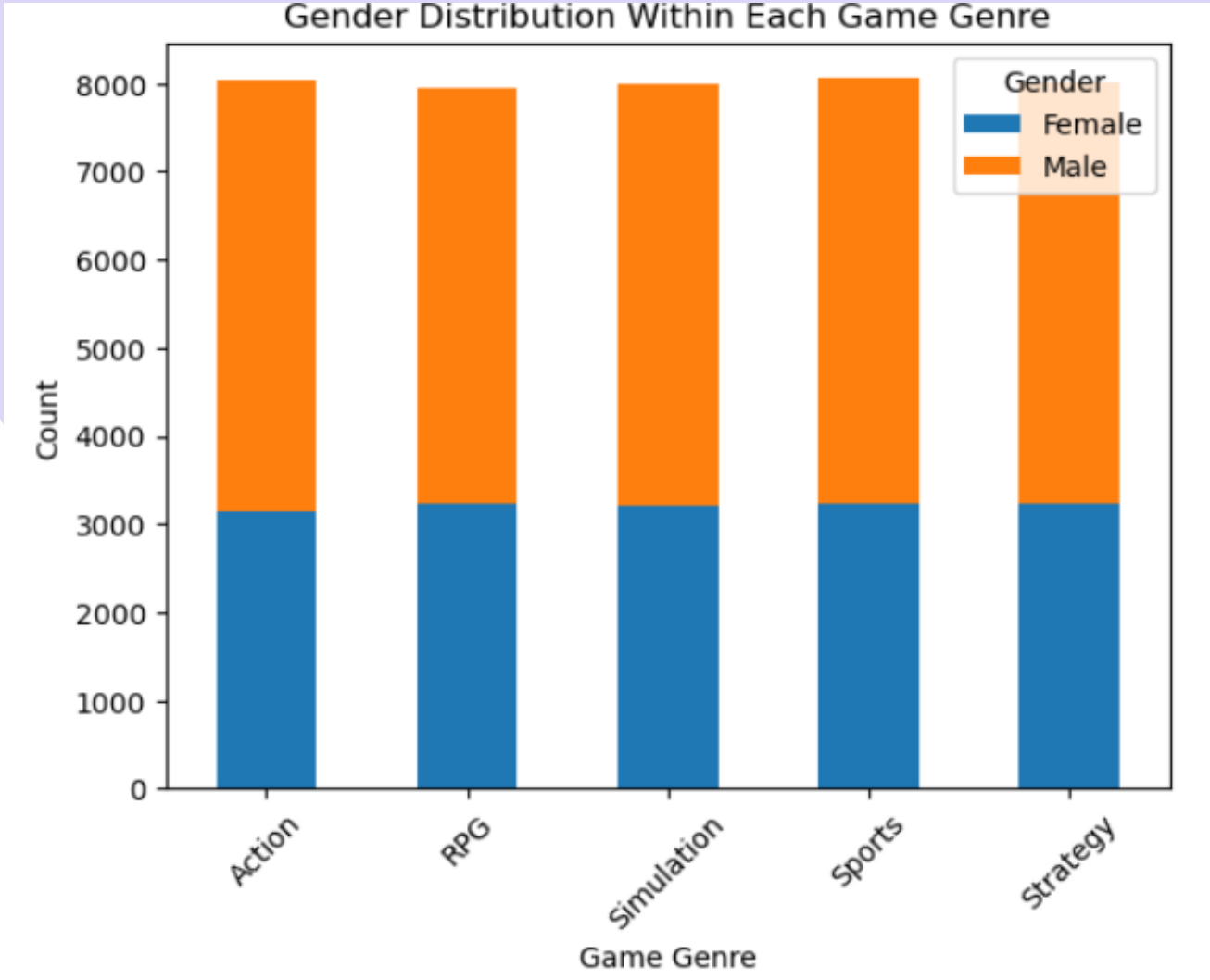
Strategy and Action genres have a male dominance.

Conclusion:

Male players dominate across all game genres but prefer the Action and Strategy genre.

Business Insight:

Focus on genres like Simulation for universal appeal, and develop gender-specific marketing for others.



Possible Business Decisions

1. Targeted Content Development

Focus: Develop more content for the 18-25 age group, who are the most engaged demographic.

Action: Introduce fast-paced, competitive elements and social features to maintain engagement.

2. Gender-Specific Strategies

Focus: Address the gender gap by creating content and marketing campaigns that appeal to female players.

Action: Implement diversity initiatives, inclusive game design, and community-building efforts.

3. Genre-Specific Marketing

Focus: Leverage the popularity of Strategy and RPG genres among male players.

Action: Market these genres heavily to male players, while exploring strategies to attract more female players to these genres.

4. Engagement and Session Duration

Focus: Increase engagement by enhancing content for longer gaming sessions.

Action: Introduce rewards, challenges, and events that encourage sustained play, especially for highly engaged players.

Final Conclusion and Overall Insights

1. Key Findings:

Player Demographics: The majority of players are young adults aged 18-25, with a male-dominated player base.

Genre Preferences: Strategy and Action genres see the highest engagement, particularly among male players.

Session Patterns: Engagement decreases as session duration increases, highlighting the need for engaging content that sustains interest.

2. Business Insights:

Player Retention: Focus on deepening content and offering long-term incentives in popular genres to retain players.

Inclusivity: Enhance gaming experiences for female players by addressing gender disparities through inclusive content and community building.

Marketing Strategy: Tailor marketing efforts to target specific demographics and genre preferences, with a focus on sustaining long-term engagement.

3. Final Thought:

Optimizing Engagement: By understanding player behavior and preferences, businesses can make informed decisions to personalize player experiences, improve game design, and optimize marketing strategies, ultimately leading to increased player retention and revenue growth.