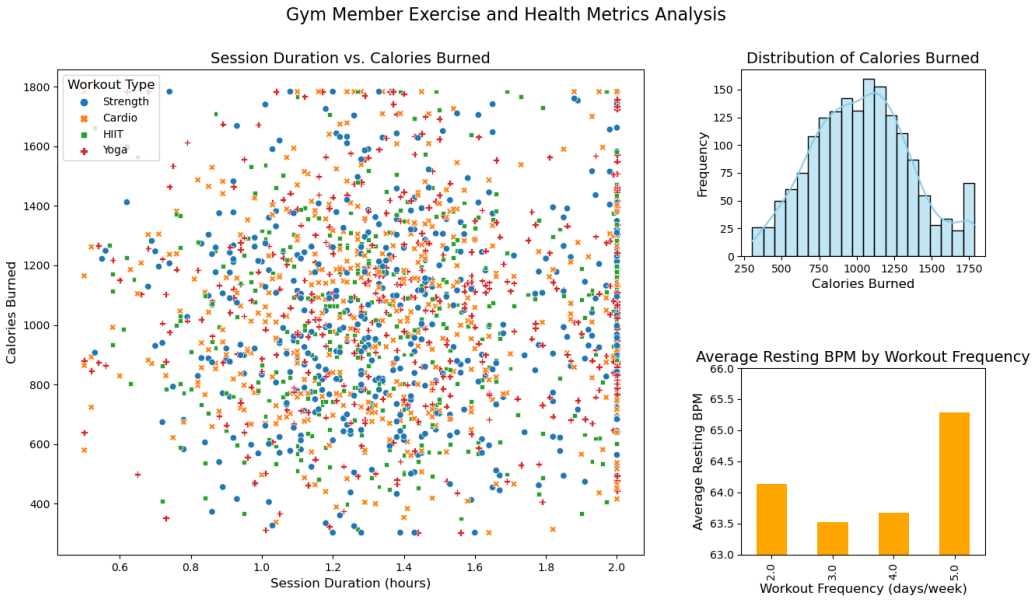
Gym Member Exercise and Health Metrics Analysis



Main Figure

- The figure includes:
  - **Main Panel**: Scatter plot of session duration vs. calories burned, categorized by workout type.
  - **Side Panel 1**: Histogram of calories burned across all members.
  - **Side Panel 2**: Bar chart showing average resting BPM by workout frequency.

Legend

1. **Scatter Plot (Main Panel)**:
   - **X-Axis**: Session Duration (hours) – Represents the time (in hours) gym members spent on their workout sessions.
   - **Y-Axis**: Calories Burned – Represents the total calories burned during the workout sessions.
   - **Meaning**: This plot shows how calories burned vary with session duration. Each point represents a gym member's session. Points are color-coded and styled to indicate workout types (e.g., Strength, Cardio).
2. **Histogram (Side Panel 1)**:
   - **X-Axis**: Calories Burned – Represents the range of calories burned during workout sessions.
   - **Y-Axis**: Frequency – Represents the number of members who burned calories within each range (e.g., 800–1000 calories).
   - **Meaning**: This graph shows the distribution of calories burned across all participants. It highlights where most members fall in terms of calorie expenditure and reveals patterns such as common calorie burn ranges.
3. **Bar Chart (Side Panel 2)**:
   - **X-Axis**: Workout Frequency (days/week) – Represents how many days per week members work out.

    - **Y-Axis**: Average Resting BPM – Represents the average resting heart rate (in beats per minute) of gym members for each frequency group.
    - **Meaning**: This chart demonstrates how workout frequency impacts resting heart rate. A lower resting BPM often indicates improved cardiovascular fitness, which can be associated with regular exercise.

Findings

- Longer session durations tend to correlate with higher calorie burns.
- The majority of members burn between 500 and 1,500 calories per session.
- Members who exercise 3 to 4 days per week tend to have slightly lower average resting BPM.
- Members who exercise 3 days per week tend to have the lowest average resting BPM, indicating a healthier and more efficient heart.

Data and Methods

- **Data**:
    - **Resting_BPM:** Resting heartbeats per minute.
    - **Session_Duration (hours):** Duration of the workout session in hours.
    - **Calories_Burned:** Total calories burned during a workout session.
    - **Workout_Type:** Type of workout performed (e.g., Cardio, Strength, Yoga).
    - **Workout_Frequency (days/week):** Number of days per week the individual exercises.
- **Method:**
    - Scatter plot to explore the relationship between session duration and calorie expenditure.
    - Histogram to show the calorie burn distribution.
    - Aggregation and bar plotting to summarize resting BPM by workout frequency.

Significance Statement

This analysis provides actionable insights for fitness professionals and members, demonstrating the impact of session duration and workout frequency on key health metrics like calorie burn and resting BPM. Understanding these trends helps optimize workout plans for better health outcomes.