REPORT ON GYM MEMBERSHIP DATA ANALYSIS PROJECT

Introduction

This report details the data analysis conducted on a Gym Membership Dataset, encompassing data cleaning, exploration, calculation of key metrics, and data visualization using Microsoft Excel.

The dataset contains crucial member details such as membership types, personal training status, gym attendance, and gym time.

The objective of this analysis was to extract meaningful insights regarding gym usage patterns, demographics, and member behaviour, which will assist in decision-making and enhancing gym services.

Data Cleaning and Preparation

- The first step in the project involved thoroughly cleaning and preparing the dataset to ensure the integrity and quality of the analysis. Key data cleaning tasks included:

1. ***Duplicate Handling***: No duplicate entries were found in the dataset, ensuring the uniqueness of each member's data.

2. ***Missing Data/Blanks***: There were no unnecessary missing values or blank entries, further reinforcing the dataset's reliability.

3. ***Column Formatting***: The following columns were appropriately formatted to match their data types:

- Birthday was formatted into a date format to accurately reflect members' birthdates.

- Avg_time_check_in and Avg_time_check_out were formatted into time formats to properly display gym check-in and check-out times.

- Age, visit_per_week, and avg_time_in_gym were formatted into number formats with zero decimal places for clarity in analysis.

4. ***Conditional Formatting***: Applied to highlight:

- Members with premium memberships.

- Members with personal trainers.

5. ***Age Groups Creation***: An additional column was created to classify members into age groups, with the following categories:

Below 18

18-25

26-35

36-45

Above 45

Key Metrics and Calculations

Using various Excel formulas, key metrics were calculated to gain insights into gym usage and member behaviour.

The following outlines each metric, explaining the specific Excel formulas used to derive the results:

1. Number of Members with Personal Trainers:

- To calculate the total number of members who have personal trainers, the Excel formula COUNTIF was used:

    =COUNTIF (personal_training, TRUE)

This formula counts the number of cells in the "personal_training" column where the value is "Yes," resulting in 518 members who have opted for personal trainers.

2. Total Gym Time for Premium and Standard Members:

- To find the total gym time for both membership types, a SUMIF formula was applied:

    =SUMIF (abonoment_type, "Premium", avg_time_in_gym)

    =SUMIF (abonoment_type, "Standard", avg_time_in_gym)

The formulas sum the values in the "avg_time_in_gym" column, based on whether the member has a "Premium" or "Standard" membership.

Premium members have a total gym time of 49,589 hours, and standard members have 52,011 hours.

3. Average Attendance per Week for Premium and Standard Members:

- To determine the average number of visits per week for both premium and standard members, the following formula was used:

=AVERAGEIF (abonoment_type, "Premium", visit_per_week)

=AVERAGEIF (abonoment_type, "Standard", visit_per_week)

These formulas calculate the average number of visits in the "visit_per_week" column, for each membership type.

Both premium and standard members average 2.68 visits per week, showing no significant difference in attendance between membership types.

4. Correlation between Visit Frequency and Time Spent in the Gym:

- The correlation between visit frequency (visits per week) and the average time spent in the gym was calculated using the CORREL function:

=CORREL (visit_per_week, avg_time_in_gym)

This returns a correlation coefficient of 0.0659, indicating a weak positive relationship between the two variables. Members who visit more often do not necessarily spend more time in the gym.

5. Percentage of Members Attending Group Lessons:

- The percentage of members attending group lessons was calculated using the COUNTIF and COUNTA functions:

=COUNTIF(attend_group_lesson, TRUE) / COUNTA(attend_group_lesson)*100

This divides the number of members who attend group lessons by the total number of members, resulting in 50.25% of members attending group fitness classes.

6. Median Age of Gym Members:

- The median age of gym members was found using the MEDIAN function:

=MEDIAN(Age)

This returns a median age of 30 years, suggesting a relatively young membership base.

7. Standard Deviation of Gym Attendance per Week:

- To calculate the standard deviation of weekly gym attendance, the STDEV.S function was used:

=STDEV.S(visit_per_week)

This formula calculates a standard deviation of 1.24, indicating moderate variability in how often members visit the gym.

8. Members Attending the Gym More than Thrice per Week:

- To determine how many members visit the gym more than three times per week, the COUNTIF formula was applied:

    =COUNTIF (visit_per_week, ">3")

This formula counts the number of members who visit the gym more than three times weekly, resulting in 220 members who visit frequently.

9. Members Under 18 Years Old:

- The number of members under the age of 18 was calculated using:

    =COUNTIF (Age, "<18")

This formula counts members whose age is below 18, resulting in 145 members under 18, indicating that the gym appeals to a younger demographic.

10. Average Number of Visits per Week for Member 'JAMEY':

- To find the average weekly visits for a specific member like 'JAMEY,' the AVERAGEIF function was used:

    =AVERAGEIF (first_name, "JAMEY", visit_per_week)

This formula averages the number of weekly visits for the member 'JAMEY,' revealing that they visit the gym 3 times per week.

Pivot Table Analysis

- Pivot tables were employed to summarize key metrics and analyze important trends:

1. Gym Attendance by Age Group:

A pivot table was created to group members by age and analyze gym attendance, revealing that the 26-35 age group had the highest attendance, followed by 36-45 age groups.

2. Total Gym Time by Membership Type:

Another pivot table was used to compare total gym time between premium and standard members, confirming that both groups have almost similar gym usage.

3. Visits per Week by Personal Training Status:

Another pivot table compared gym visits for members with and without personal trainers, showing that members with personal trainers tend to visit the gym more frequently, highlighting the positive impact of personal training on gym attendance.

Visualizations

The following visualizations were created to further communicate the insights:

1. Bar Chart: Distribution of Gym Membership by Gender

This chart illustrated that gym membership is relatively balanced between genders, with a slightly higher representation of male members.

2. Bar Chart: Distribution by Membership Type (Premium vs. Standard)

A bar chart showing the breakdown of members by subscription type highlighted that the majority of members have standard memberships, with premium members representing a smaller portion.

3. Doughnut Chart: Distribution by Age Group

This chart revealed that the most common age groups are 18-25 and 26-35, indicating that the gym appeals largely to young adults.

4. Line Graph: Gym Member Count by Hour of the Day

This line graph showed the busiest times of the day for the gym, with peaks during the early morning and evening hours, reflecting typical workday schedules.

Insights

1. Number of Members with Personal Trainers:

There are 518 members using personal trainers, indicating a strong demand for personalized fitness services.

2. Total Gym Time for Members:

Premium Members: 49,589 hours of total gym time.

Standard Members: 52,011 hours of total gym time.

Despite the premium benefits, both membership types show similar total gym usage.

3. Average Attendance per Week:

Premium Members: 2.68 visits per week.

Standard Members: 2.68 visits per week.

This suggests no significant difference in gym attendance based on membership type.

4. Correlation between Visits and Time Spent in Gym:

The correlation coefficient is 0.0659, showing a weak relationship between how often members visit and how long they spend at the gym.

5. Percentage of Members Attending Group Lessons:

50.25% of members participate in group lessons, highlighting the popularity of these sessions.

6. Median Age of Gym Members:

The median age is 30 years, suggesting the gym primarily attracts young adults.

7. Standard Deviation of Gym Attendance per Week:

The standard deviation is 1.24 visits per week, indicating some variation in how often members visit the gym.

8. Members Attending the Gym More than Thrice per Week:

220 members visit more than three times a week, representing highly engaged individuals.

9. Members Under 18 Years Old:

There are 145 members under the age of 18, showing that the gym caters to a younger demographic.

10. Average Weekly Visits for Member 'Jamey':

Member Jamey attends the gym 3 times per week, slightly above the overall average.

Recommendations

1. Premium vs. Standard Membership:

Despite the higher cost associated with premium memberships, the total gym time and attendance frequency between premium and standard members are almost identical. This suggests that members may not be fully utilizing the benefits of premium membership. The gym could enhance the value of premium memberships by offering more exclusive perks or incentivizing more frequent visits through loyalty programs or personalized experiences.

2. Group Lessons Popularity:

With over half of the members participating in group lessons, this service is a key driver of gym engagement. The gym should consider expanding the variety and schedule of group lessons to accommodate demand and attract more members to participate.

3. Personal Trainers' Impact:

Members with personal trainers tend to visit the gym more frequently. Promoting personal training services or offering discounted packages for new members could increase overall gym attendance and boost engagement.

4. Young Demographic:

The gym's membership base skews young, with a median age of 30 and a significant portion of members under 35. The gym should continue tailoring its marketing strategies and services to appeal to this demographic, possibly incorporating more high-intensity workouts and fitness challenges that resonate with younger adults.

Conclusion

The analysis of the Gym Membership Dataset provided key insights into member demographics, gym usage patterns, and the overall impact of membership and personal training services. The gym is attracting a young and engaged audience, with half of the members participating in group lessons and a large portion visiting regularly. Moving forward, the gym can enhance its offerings by leveraging the popularity of group lessons and personal training, while also focusing on optimizing premium memberships to increase perceived value.