Cyclistic Bike-Share Report

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1. Background

Cyclistic, a Chicago-based bike-share program launched in 2016, has grown to include 5,824 geotracked bicycles across 692 stations. With flexible pricing plans such as single-ride, full-day passes, and annual memberships, the program caters to both casual riders and annual members, the latter being more profitable. Cyclistic's finance analysts and Moreno, the marketing lead, believe the key to future growth lies in converting casual riders into members, as they are already familiar with the program. To achieve this, Moreno has tasked the marketing team with designing targeted strategies by analyzing historical bike trip data to understand rider differences, motivations for membership, and the potential impact of digital media.

2. Ask

As the company have difficulty in converting casual members into annual members, it begs the question "**How do annual members and casual riders use Cyclistic bikes differently?".**

3. Prepare

I will be using Cyclistic's historical trip data from here to analyze and identify trends. The data has been made available by Motivate International Inc. under this license. I will be downloading and analysing the most recent data for one year that is from **January 2023** to **December 2023**.

There is one csv file for each month and it contains information about the ride id, rideable type, start and end time, start and end station name, start and end station id, latitude and longitude of the start and end stations and types of users.

4. Process

As each table were in a csv. file, I combined Jan2023 to Dec2023 using SQL functions. My SQL codes can be found on GitHub here.

First, I checked if there were duplicate records present and the results were 5,719,877, which means that there were no duplicates present. Next, I went to check if there were null values in the started at and ended at columns and noted that there were no null values present. I also went to check for null values in started and ended station names column and noticed that there were null values and hence, I deleted these records. There were also null values in start and end station id and latitude and longitude of the end station, which I have deleted these records.

After ensuring that there were no null values, I created new columns for further analysis. I created a weekday and month column to analyze how member and casual riders use the service differently on weekdays and months. I also created a

trip duration column that excludes values less than 1 minute and greater than 1440 minutes.

5. Analyze

Once the data were cleaned, I can now analyze the data and answer the question “How do annual members and casual riders use Cyclistic bikes differently?”. To find out, SQL queries were written for analysis:

- Distribution of customers by membership type
- Type of bikes used by members and casual riders
- Average trip duration by weekday and month
- Top 10 start and end stations

6. Share

After writing the queries, I imported the data to Tableau for visualization.

6.1 Visualization 1

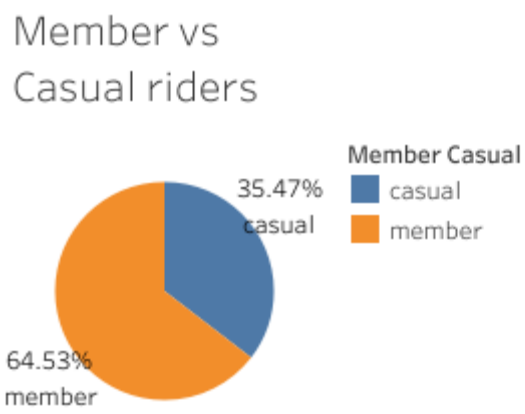

Figure 1

Cyclistic bike share has 2 types of riders: casual riders and annual member riders. From Figure 1, we can see that there are more riders who are membership subscribers than casual riders.

6.2 Visualization 2

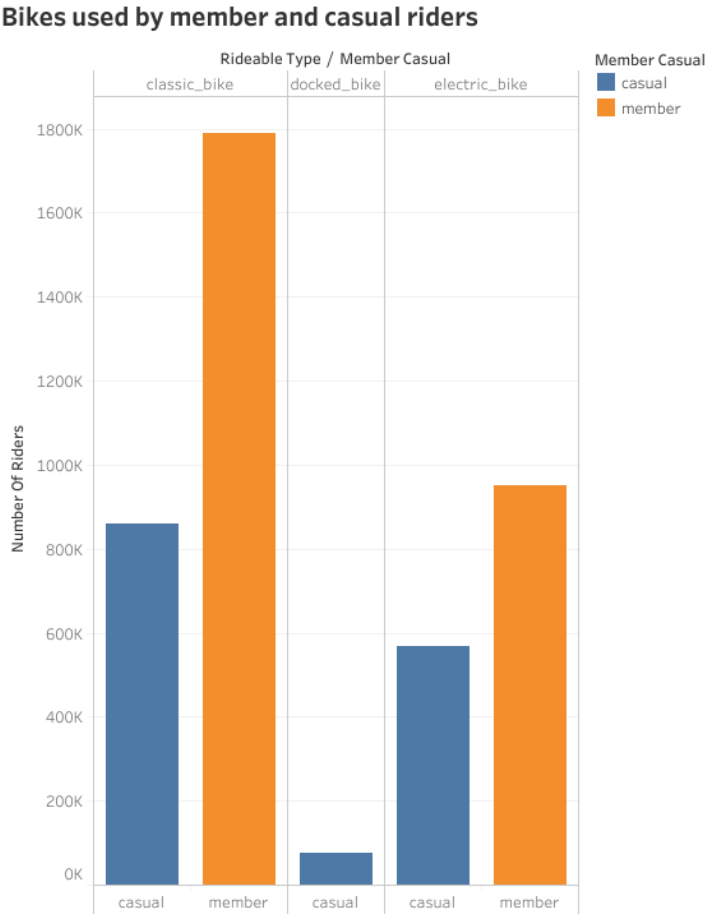

Figure 2

From figure 2, the classic bike is the most popular choice among both casual and member riders, followed by electric bike and lastly, the docked bike being the least popular bike.

6.3 Visualization 3

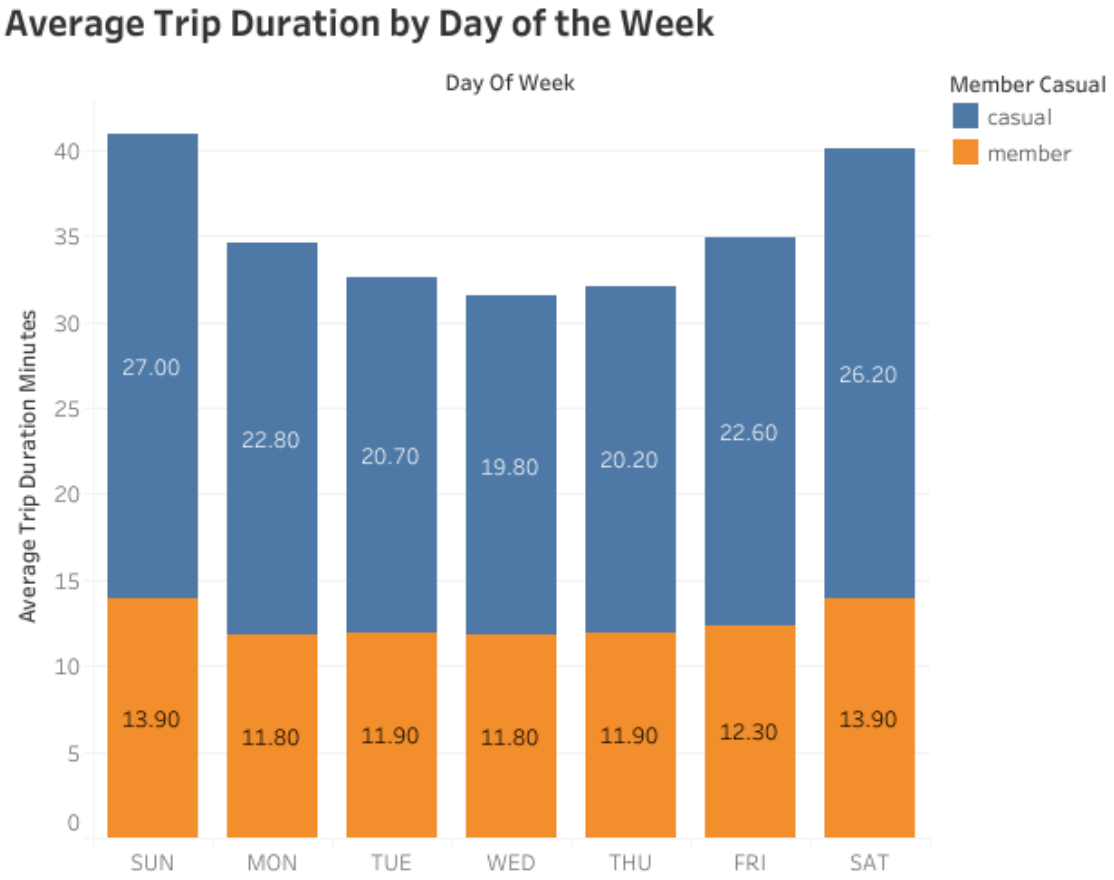

Figure 3

The average trip duration is higher during the weekends for both casual and member riders. Casual riders use the bikes more than member riders during the weekends, which could indicate that casual riders use the bikes for leisure activities on weekends as people could have more free time for recreational outings. On the other hand, the average trip duration is steadier during weekday for member riders. This suggests that member riders could use the bike for regular commutes.

6.4 Visualization 4

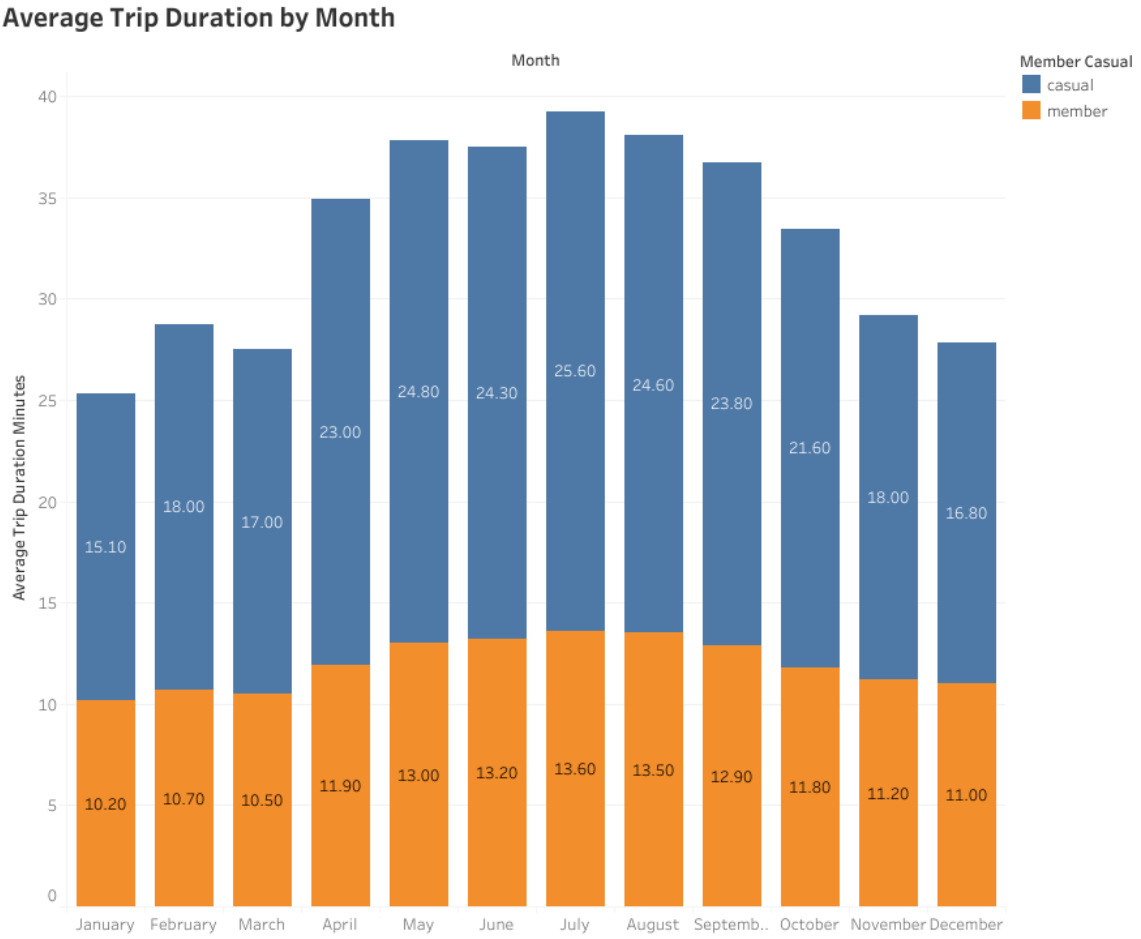

Figure 4

Casual riders consistently have longer trip duration than member riders during summer months, which is from May to August with trip averaging around 24 to 26 minutes. In contrast, member riders maintain relatively stable trip durations throughout the year, averaging between 10 and 13.6 minutes. This indicates that member likely use the bikes for regular and shorter commutes. Both groups saw a decline in average duration during October to December. During this period, Chicago may be experiencing winter, which contribute to the decline in average trip duration for both casual and member riders.

6.5 Visualization 5

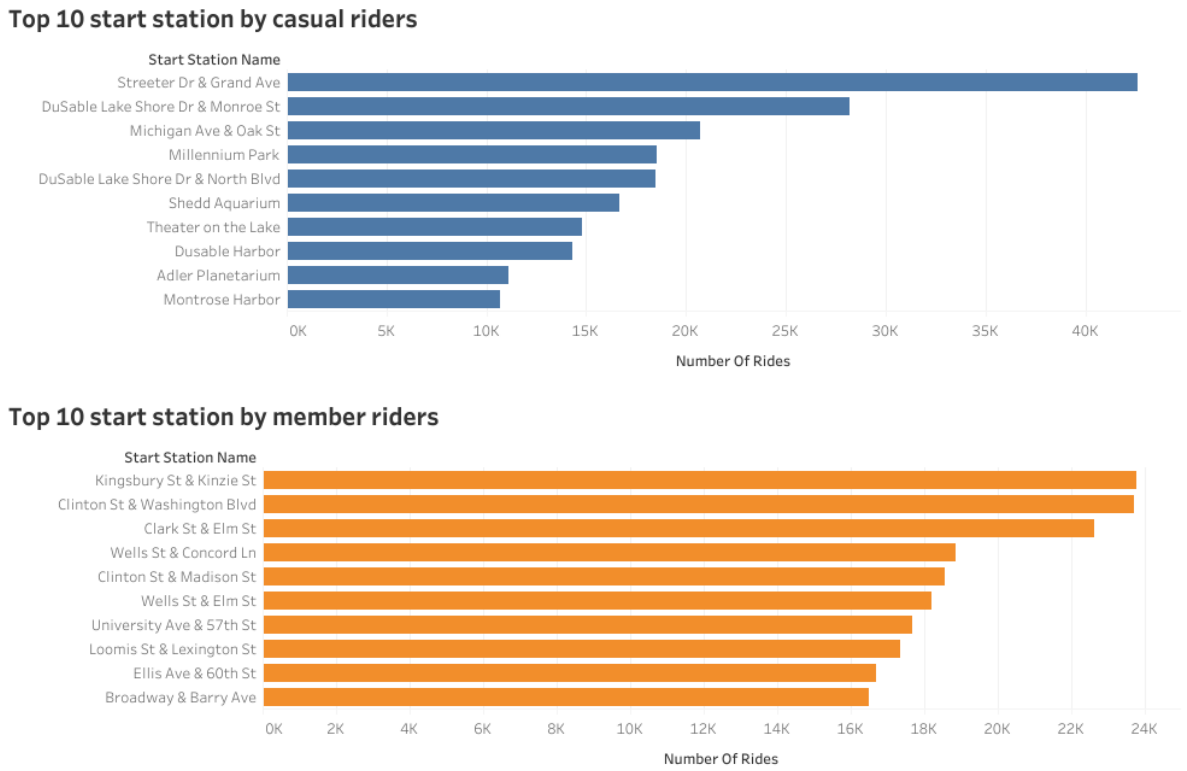

Figure 5

The most popular station by casual riders is “Streeter Dr & Grand Ave”. This station likely serves as a major hub for riders, possibly due to its proximity to key attractions such as the Navy Pier, which is a popular tourist destination in Chicago. The other stations such as “Millennium Park”, “Shedd Aquarium” and “Adler Planetarium” are some of popular destinations that casual riders visit. Given that these stations are linked to popular landmarks in Chicago, this suggests that casual riders could be tourists or leisure users who are using the service for sightseeing or leisure trips.

On the other hand, the most popular station by member riders is “Kingsbury St & Kinzie St”, followed by “Clinton St & Washington Blvd”. These stations are located near the business district area. This suggests that member riders primarily use bikes for commuting or daily errands rather than recreational purposes.

6.6 Visualization 6

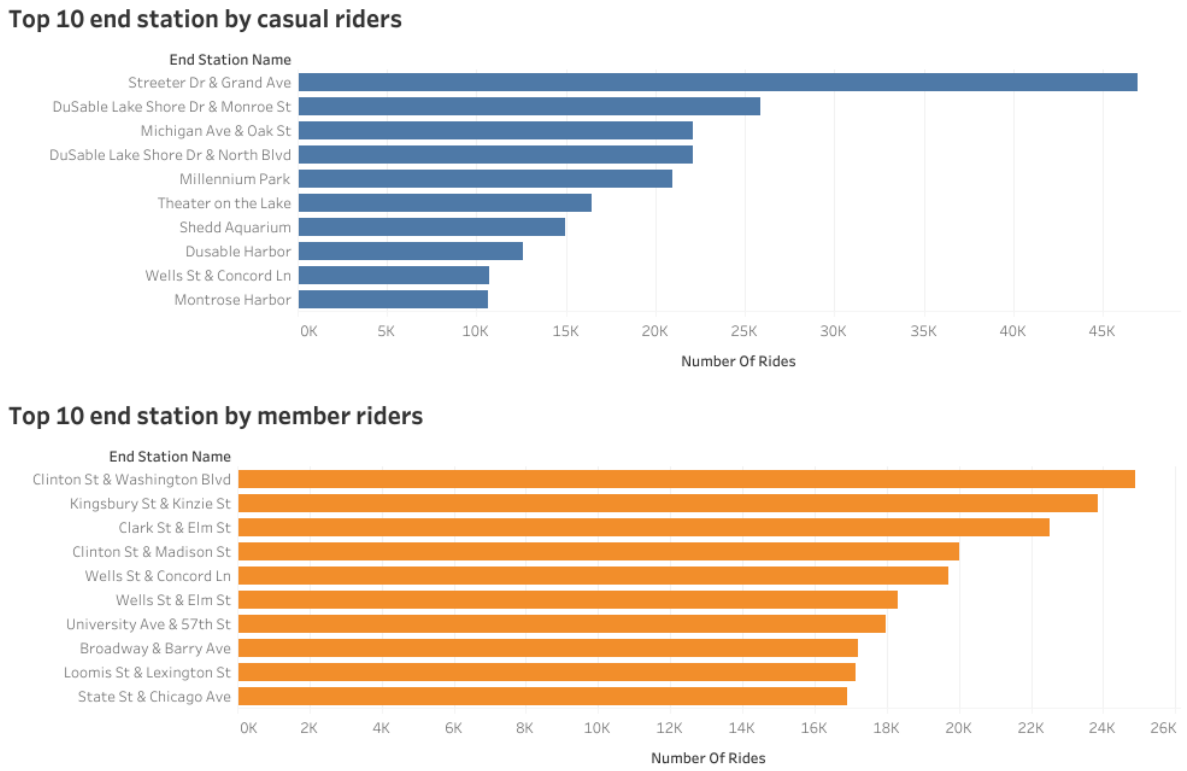

Figure 6

The most popular ending station among casual riders is “Streeter Dr & Grand Ave”. Comparing to the starting station in Figure 5, there are some stations that overlap with each other. Popular start stations such as "Streeter Dr & Grand Ave", "DuSable Lake Shore Dr & Monroe St", and "Michigan Ave & Oak St" often overlap with the most common end stations, including "Streeter Dr & Grand Ave" and other scenic or tourist-heavy locations like "Millennium Park" and "Shedd Aquarium." This suggests that casual riders typically take short, recreational trips between key landmarks or waterfront areas. They use bikes as a convenient way to explore the city.

The most popular ending station among member riders is “Clinton St & Washington Blvd”. Most of the ending station also overlaps with most of the start stations for member riders such as “Kingsbury St & Kinzie St” and “Clark St & Elm St”, which were in the top 3 for both start and end station among member riders.

7. Act

The purpose of our findings is to analyse and identify how riders use the bike-sharing service and convert casual riders to member riders. With that, we have found out that annual member riders primarily use the bike-sharing service for commuting purposes while casual riders tend to use it for leisure activities, especially during the weekends. Both casual and member riders prefer classic bikes compared to the

other two types of bikes. Both casual and member riders show lower usage of the service during winter months.

7.1 Recommendations

1. Offer seasonal promotion like “Summer pass” or incentives for upgrading to a membership during the summer months as most casual riders use the bike-sharing service during this period.
2. Appeal to recreational riders by promoting membership as a flexible and cost-effective way to explore the city, with perks like guided tours or discounts at local attractions.
3. Increase the number of classic bikes at popular destinations and ensure that bikes are in good condition.
4. Create loyalty programs where members can earn points for every ride, which can be redeemed for free rides or merchandise.
5. Design campaigns to promote its services by highlighting the benefits during winter months.