



**Cyclistic Bike Share**  
**Google Data Analytics Capstone**  
**Project**  
**By Clyde Mukanzi.**  
**November 2023**

### **Background.**

- "As part of the comprehensive requirements for my Google Data Analytics certification, I have elected to pursue the Track 1 capstone project, which centers on the Cyclistic Bike Share analysis. This decision was driven by my relevant and enriching experience with BikeShare, a pioneering bike-sharing service based in Toronto. In my previous role as a community manager at BikeShare, I played a key role in enhancing public awareness and engagement with our service, a critical factor in our success. My responsibilities extended to the strategic distribution of our dockless bike fleet, ensuring maximum accessibility and convenience for our clients. This role was particularly challenging yet rewarding, as it required a keen understanding of urban mobility patterns and customer preferences, and the ability to adapt quickly to changing demands.
- My tenure at BikeShare was marked by significant learning and professional growth, providing me with a solid foundation in the dynamics of bike-sharing systems, customer engagement strategies, and the logistical intricacies of managing a dockless bike network. This background has not only given me a deep appreciation for the complexities of such services but also a unique perspective on how data analytics can be leveraged to improve operational efficiency and customer satisfaction.
- As I embark on this project with Cyclistic Bike Share, I am excited to apply my domain expertise and insights gained from my time at BikeShare. I believe that my hands-on experience in the field will add a valuable dimension to my analytical approach, allowing me to interpret the data not just as numbers, but as indicators of real-world behaviors and trends. My aim is to blend my practical experience with the analytical skills developed through this certification, to provide a comprehensive and insightful analysis that can contribute significantly to the success and growth of Cyclistic Bike Share."

## Introduction.

- The director of marketing wants to maximize the number of annual memberships.
- To achieve this, the team wants **to understand how casual riders and annual members use Cyclistic bikes differently** (consumer behaviour) with the goal of designing a new marketing strategy to convert casual riders to annual members.
- As an **analyst**, my role is to come up with **compelling data insights and visuals**.

## Cyclistic.

- A bike share program that includes more than 5,824 bicycles that are geotracked and locked into a network and 692 docking stations.
- They offer:
  - Traditional bikes
  - Reclining bikes
  - Hand tricycles
  - Cargo bikes
- Users are more leisure riders but about 30% use the bikes for commute to work daily.
- Company has flexible pricing plans:
  - Single-ride passes (casual)
  - Full-day passes (casua)
  - Annual memberships (Cyclistic members)
- Annual members are more profitable.
- Management wants to design a new marketing strategy. In order to do that, the marketing team needs to better understand **how annual members and casual members differ, why casual members would buy a membership** and **how digital media could affect their marketing tactics**.
- The team wants to analyze the Cyclistic historical bike trip data to identify trends.

## **Ask**

**How do annual members and casual riders use Cyclistic bikes differently?**

### **Deliverables:**

- ☐ A clear statement of the business task.
  - ☐ A description of all data sources used.
  - ☐ Documentation of any cleaning or manipulation of data.
  - ☐ A summary of your analysis.
  - ☐ Supporting visualization and key findings.
  - ☐ Top three recommendations based on your analysis.
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- The goal of my analysis is to establish how different types of users use the Cyclistic bikes.

### **Data sources.**

- The data used is for Cyclistic a fictional company. The data was made available by Motivate International Inc and I got a link to the datasets as part of the Google data analysis program.
- The data is cloud-based, stored in a long format, and consists of first-party, current data from the past 12 months. It's licensed and contains no Personally Identifiable Information (PII).

### **Preparing the data.**

- Picked the 2022 dataset as it has a whole year of complete data sets.
- The tools I will use will be Python (for EDA) and PowerBI (to develop visualizations).

## Business Task

- To analyze user behaviours on how annual members and casual riders use Cyclistic bikes differently to make recommendations on how to convert casual riders into annual members.

### Metrics

*After comparing column names, we can infer that there are 13 variables/columns available, below is the metadata:*

**ride\_id** : Unique id of each ride trip

**rideable\_type** : type of bicycle ridden, split between 3 categories - classic, docked and electric

**started\_at** : date and time of the start of the trip

**ended\_at** : date and time of the end of the trip

**start\_station\_name** : Start station name

**start\_station\_id** : Start station id

**end\_station\_name** : End station name

**end\_station\_id** : End station id

**start\_lat** : latitude of the start location

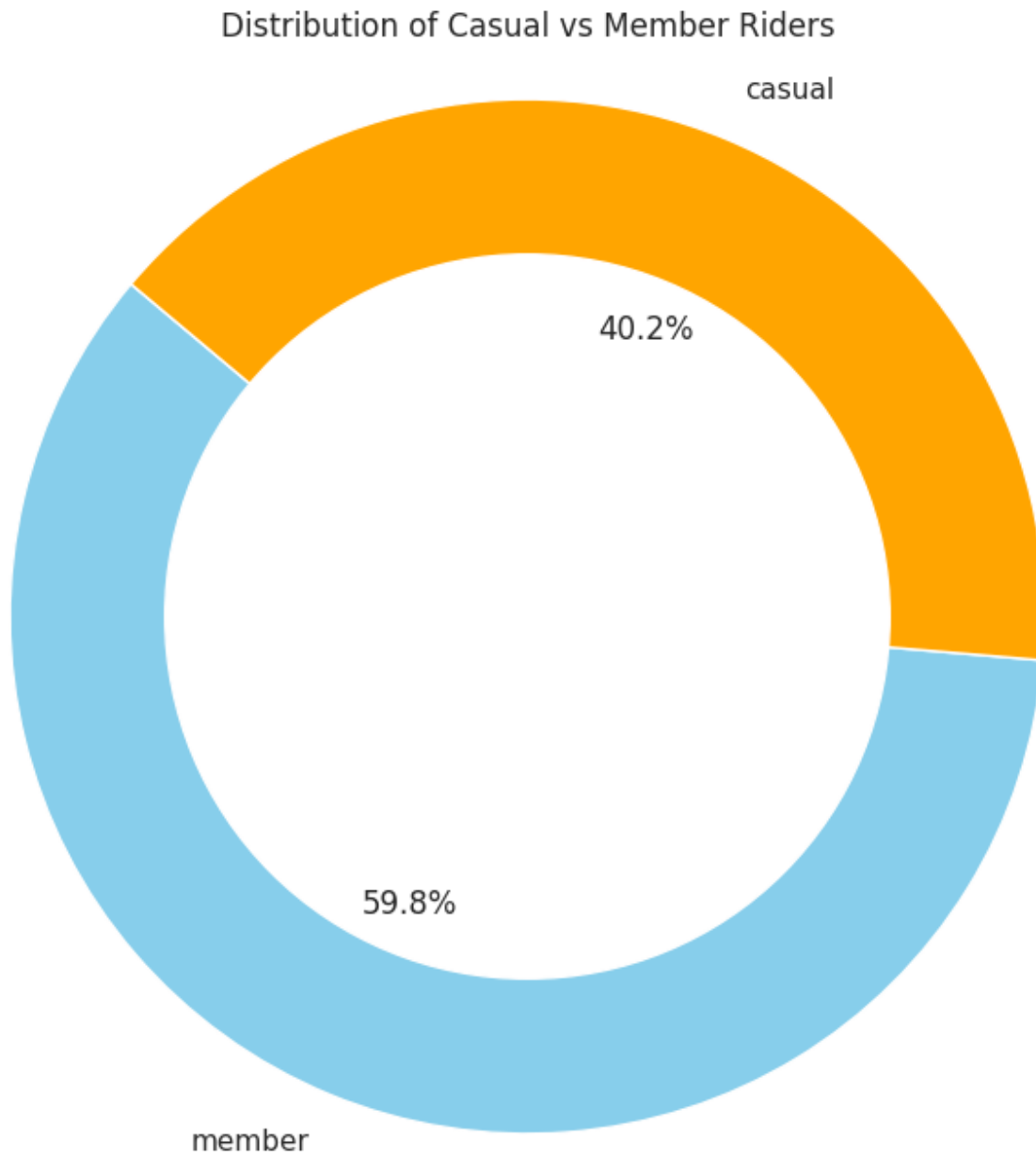
**start\_lng** : longitude of the start location

**end\_lat** : latitude of the end location

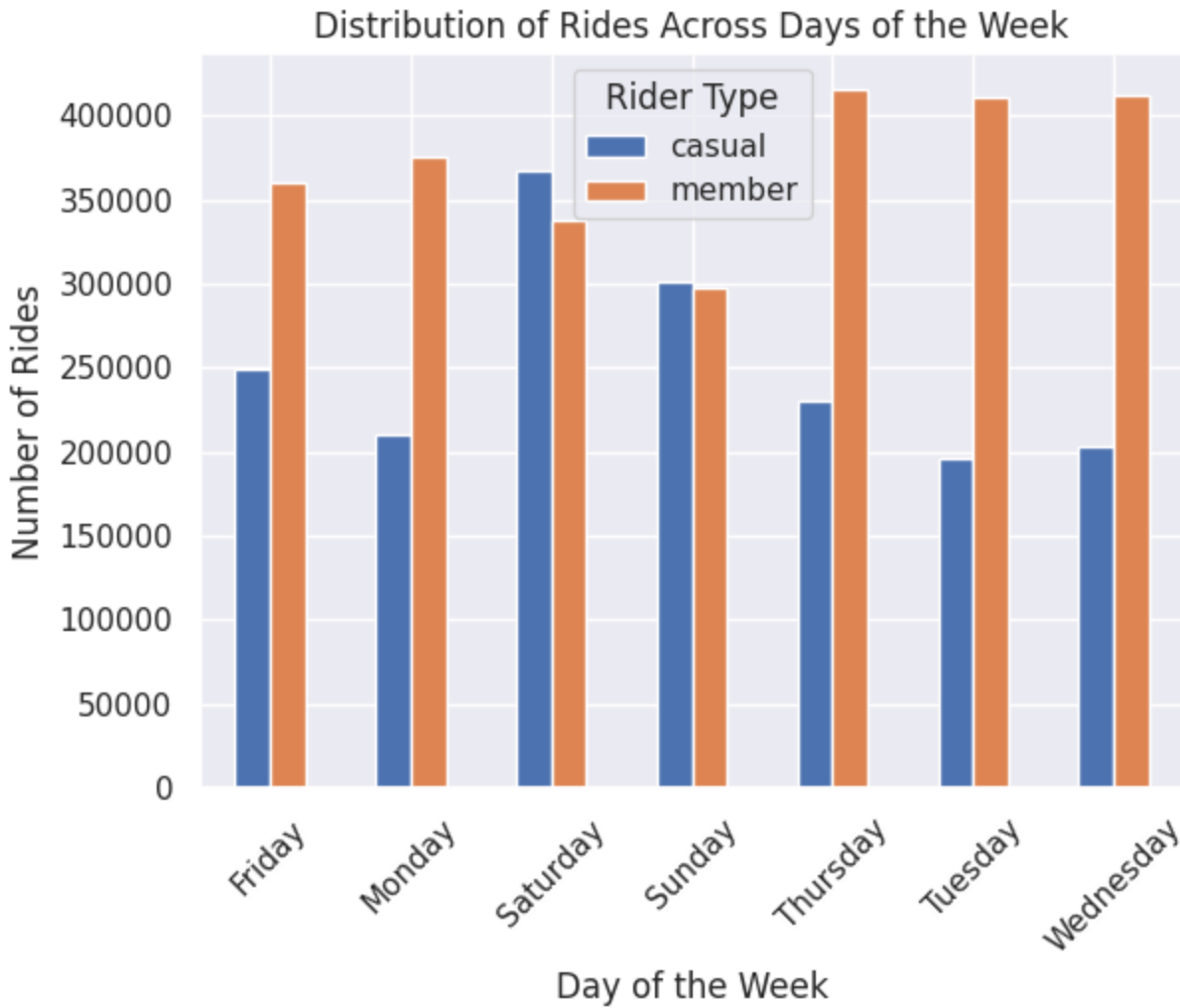
**end\_lng** : longitude of the end location

**member\_casual** : type of membership, either casual or member

## Data Visualizations.



- Majority of the riders in the 2022 dataset are predominantly members already.



- From the visualization above, it is clear that casual riders use the bikes more on the weekend than weekdays as compared to members.

Rank	Casual Top Start Stations	Casual Start Counts
1	Streeter Dr & Grand Ave	55k
2	DuSable Lake Shore Dr & Monroe St	38k
3	Millennium Park	24k
4	Michigan Ave & Oak St	24k
5	DuSable Lake Shore Dr & North Blvd	22k
6	Shedd Aquarium	19k
7	Theater on the Lake	17k
8	Wells St & Concord Ln	15k
9	Dusable Harbor	13k
10	Clark St & Armitage Ave	13k

Majority of the casual riders start from Streeter Dr and Grand Ave.



Rank	Casual Top End Stations	Casual End Counts
1	Streeter Dr & Grand Ave	58k
2	DuSable Lake Shore Dr & Monroe St	29k
3	Millennium Park	26k
4	Michigan Ave & Oak St	25k
5	DuSable Lake Shore Dr & North Blvd	25k
6	Theater on the Lake	19k
7	Shedd Aquarium	18k
8	Wells St & Concord Ln	14k
9	Clark St & Armitage Ave	13k
10	Clark St & Lincoln Ave	13k

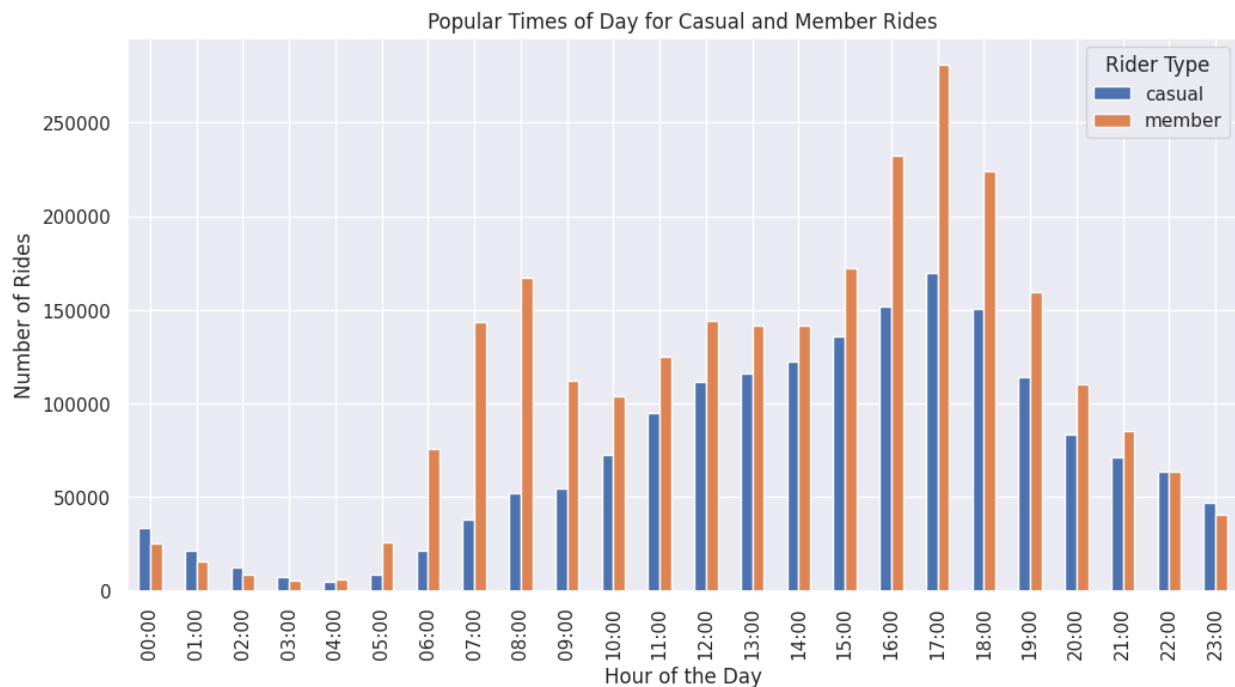
Majority of the riders also tend to end their rides at Streeter & Grand Avenue.

Rank	Top 10 Routes	Count
1	Streeter Dr & Grand Ave to Streeter Dr & Grand Ave	11k
2	DuSable Lake Shore Dr & Monroe St to DuSable Lake Shore Dr & Monroe St	7k
3	DuSable Lake Shore Dr & Monroe St to Streeter Dr & Grand Ave	5k
4	Michigan Ave & Oak St to Michigan Ave & Oak St	5k
5	Millennium Park to Millennium Park	4k
6	Montrose Harbor to Montrose Harbor	3k

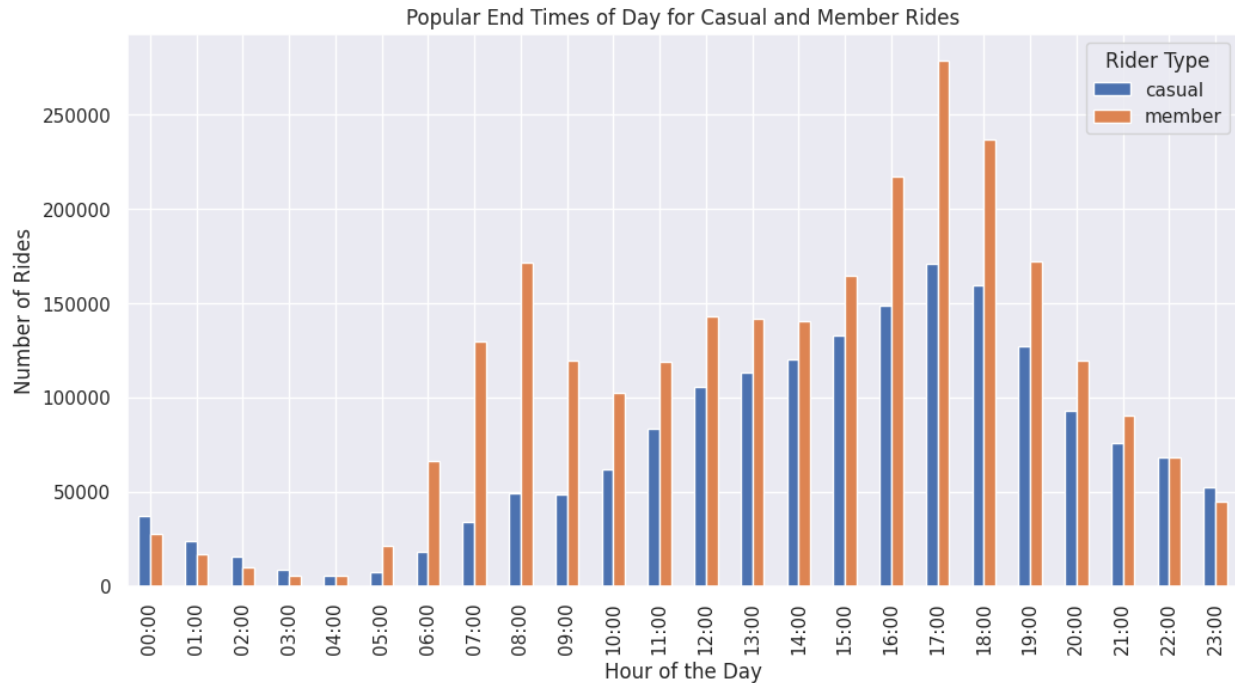
7	Streeter Dr & Grand Ave to DuSable Lake Shore Dr & Monroe St	3k
8	Streeter Dr & Grand Ave to Millennium Park	3k
9	Shedd Aquarium to Shedd Aquarium	2k
10	DuSable Lake Shore Dr & North Blvd to DuSable Lake Shore Dr & North Blvd	2k

The Streeter Dr and Grand Ave is a popular area route.

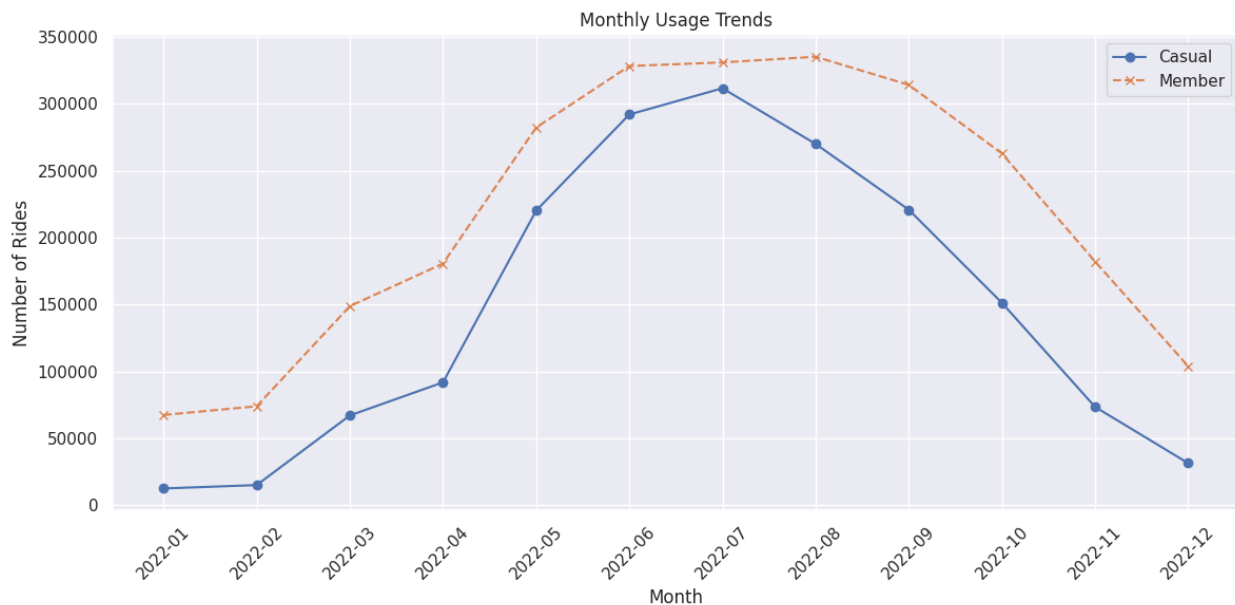
The visualization below highlights the popular start times for our riders.



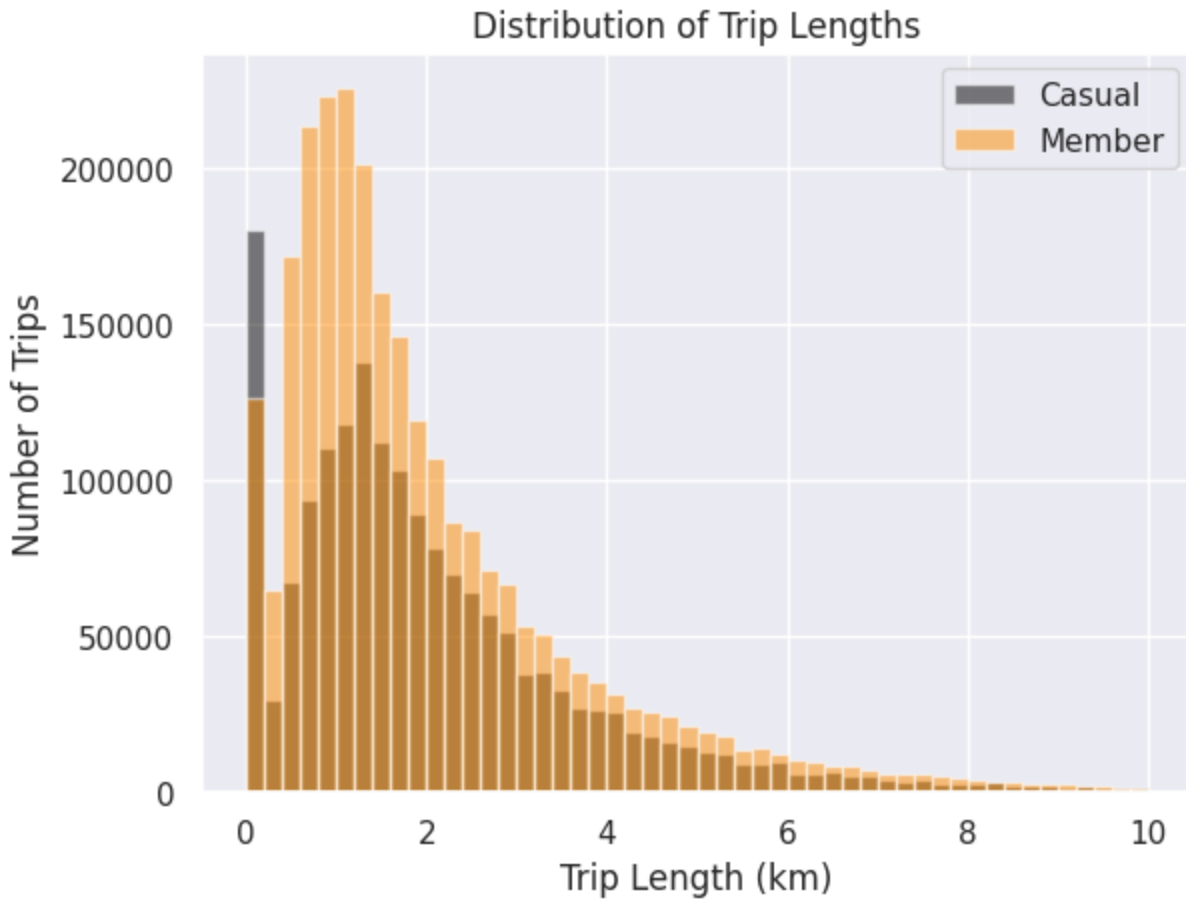
Most of the rides tend to happen around 1300hrs -1700 hrs for both our casual and member riders. This may be because they are used for commute from work.



The above visualization indicates the popular end times for our riders. Most of the rides tend to end at around 1500 -1900 hours. Again this may hint at the fact that these are premodinantly commute from work.



Naturally our bike sharing service is popular around the summer due to permitting environmental factors mainly the weather.



Casual members are generally taking shorter trips compared to members.

Casual Rides - Average Trip Distance: 2.16 km, Total Distance: 3799115.55 km

Member Rides - Average Trip Distance: 2.07 km, Total Distance: 5401618.45 km

## Recommendations.

- Offer weekend discounts for casual users who choose an annual membership.
- Introduce weekend passes to attract local users towards annual memberships.
- Provide larger discounts for longer ride durations.
- Implement seasonal passes, especially discounted winter season passes, to encourage casual users to try before committing to a year-long subscription.
- There are popular areas that have a high casual member consumptions, campaigns can be targeted to these routes and areas as there is a higher chance of conversion from casual to members.
- It would seem that most riders use the bikes for commute from work, incentives can be made here to the value of commute on our bikes and maybe offer discounts for commute clients.
- The utilization of our bikes on average is more or less the same between the casuals and members. This would mean that casuals stand to benefit more by getting the membership.