Completed On: 12th of May 2024

Cyclistic User Analysis

Identifying Non-Member vs Member Behavioural Differences

OVERVIEW

Cyclistic is a bike-sharing company based out of Chicago. The company has two types of users:

- Casual Users
- Paying Members

Cyclistic is attempting to discern how to convert more casual users into paying members, as the company believes this will align with their long-term strategy for success.

The analyst's responsibility for this case study is to investigate company data, providing insights and recommendations on how casual users and paying members differ, and how we can create more paying customers of **Cyclistic's** service.

DATA & METHODS

Cyclistic is a fictional company made for the purposes of this case study.

Data for this case study was collected from this link (made available by Motivate International Inc. under this license, as Cyclistic is a fictional company). To make this information easier to work with, the 12 datasets from 2021 were imported into R and combined into a single dataset comprising over 5 million records.

All cleaning and analysis was conducted via R and visualisations were made using a combination of R and Tableau.

Prior to combining all datasets, their compatibility had to be confirmed. This involved comparing variable names and data types in each month's dataset, ensuring they were all consistent.

Once the datasets were combined, cleaning could begin. For cleaning the data, variable names were again checked and corrected to ensure formatting/spacing uniformity, and empty rows were deleted to avoid skewed analysis and results.

Two variables which represented start and end times for bike trips had their formats corrected from 'Character' format to 'Calendar Time' format.

Modifications made to assist analysis were based on extracting more 'user level' insights:

- Added a *Start Hour* column. This could inform us of the trends associated with non-paying vs paying users' routines/habits.

- Added a *Day* Column. This can reveal the most/the least popular days for **Cyclistic** use.
- Added a *Month* Column. This can reveal the most/the least popular months for **Cyclistic** use.
- Added a *Trip Duration* Column. This enables the extraction of insights about how long non-paying and paying users are taking on their trips.
    - We will also ensure that all trips with a duration of less than 0 seconds are removed to keep erroneous data out of the analysis.
- Added a *Trip Distance* Column. This enables the extraction of insights about how far non-paying and paying users are going on their trips.

RESULTS

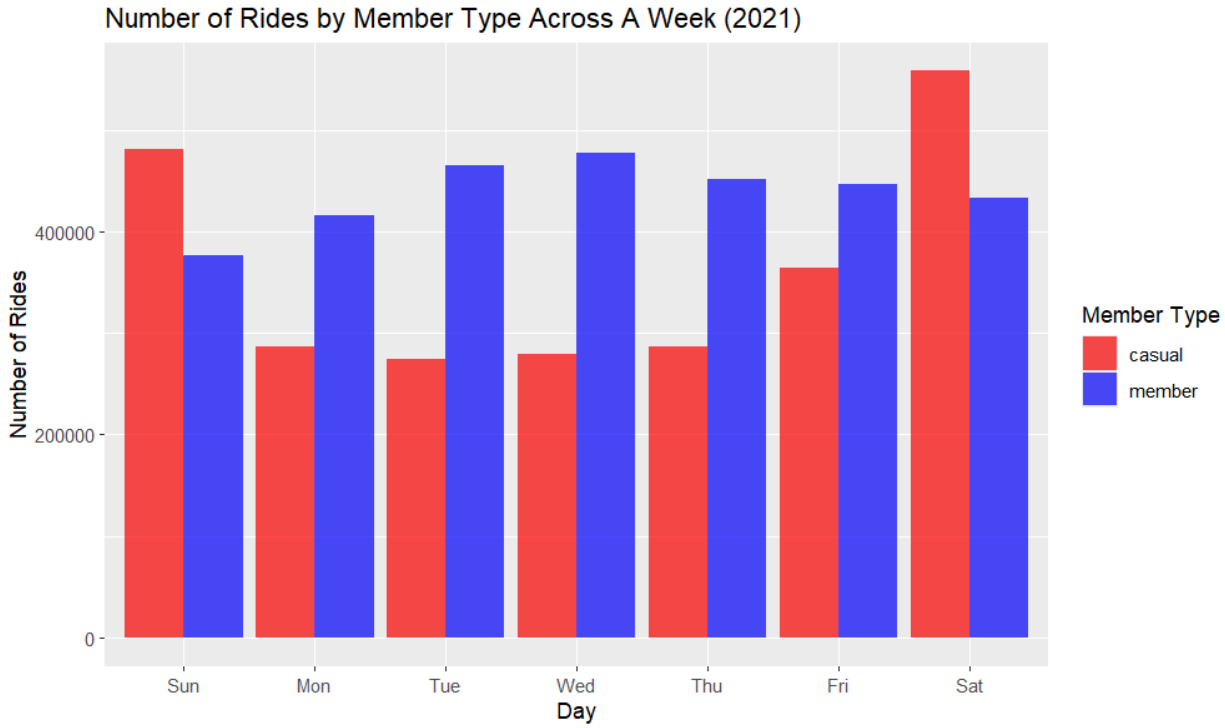

Figure 1 - Number of Rides by Cyclistic Member Type Charted Over A Week

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We find that members account for more rides on weekdays, whereas, on weekends, we see an uptick in casual user rides.

This might be due to members using Cyclistic as a primary method of transportation between residences and workplaces/schools, whereas casual users are more likely to engage with Cyclistic for entertainment/recreational use.

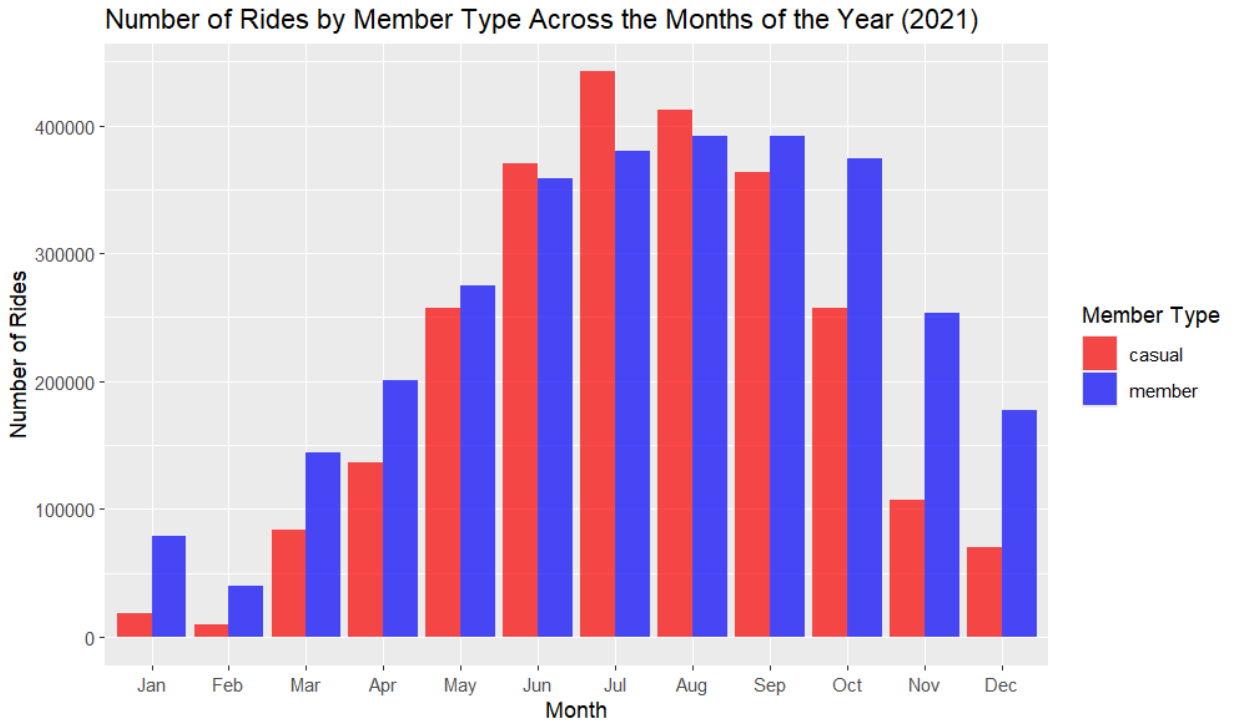

Figure 2 - Number of Rides by Cyclistic Member Type Charted Across the Months of the Year

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It appears as though members account for more trips in all months bar the summer ones of June, July and August, when casual users overtake them.

Following the theory of entertainment and recreational use, casual users seem more inclined to engage with Cyclistic when they have holidays. It's worth noting that June, July and August coincide with summer vacation time for many schools, and families may take holidays to enjoy the good weather and to cycle around the city.

We also see that more trips are taken in the summer months than in the winter ones. Given that Cyclistic is based in Chicago, this is likely explained by temperature differences, where summer months are milder and winter ones more extreme.

Figure 3 - Hourly Use of Bikes by Member Type Across A Week

A breakdown of use by hour across a week shows that, on weekdays, members account for more trips, whereas on weekends, casual users once again climb higher. On Saturday and Sunday, when most people have days off, casual use of Cyclistic's bikes increases.
On weekdays, members make up for the majority, with spikes in trips between 7-9AM (morning commute to work/school hours) and 3-7PM (afternoon/evening commute to home hours).

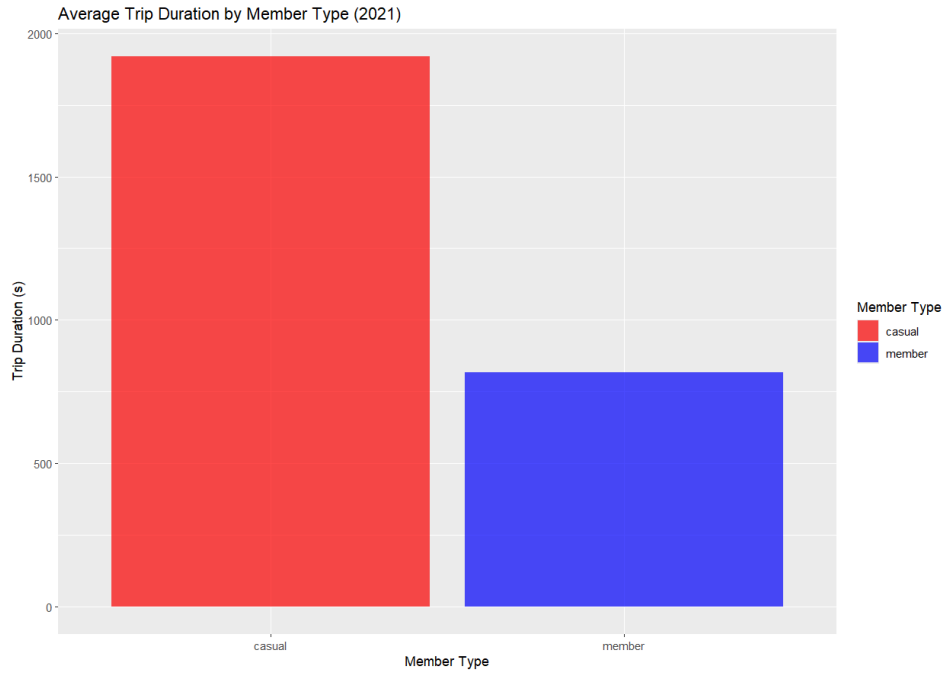

Figure 4 - Average Trip Duration Between Casual and Annual Membership Users

Casual users take trips almost double the length of members. When we align this with our prevailing hypothesis, it appears to lend it credence. Casual users likely take lengthy bike rides as part of their entertainment, meaning they, on average, would spend longer on their trips than paying members, who have dedicated routes they take with their Cyclistic bikes.

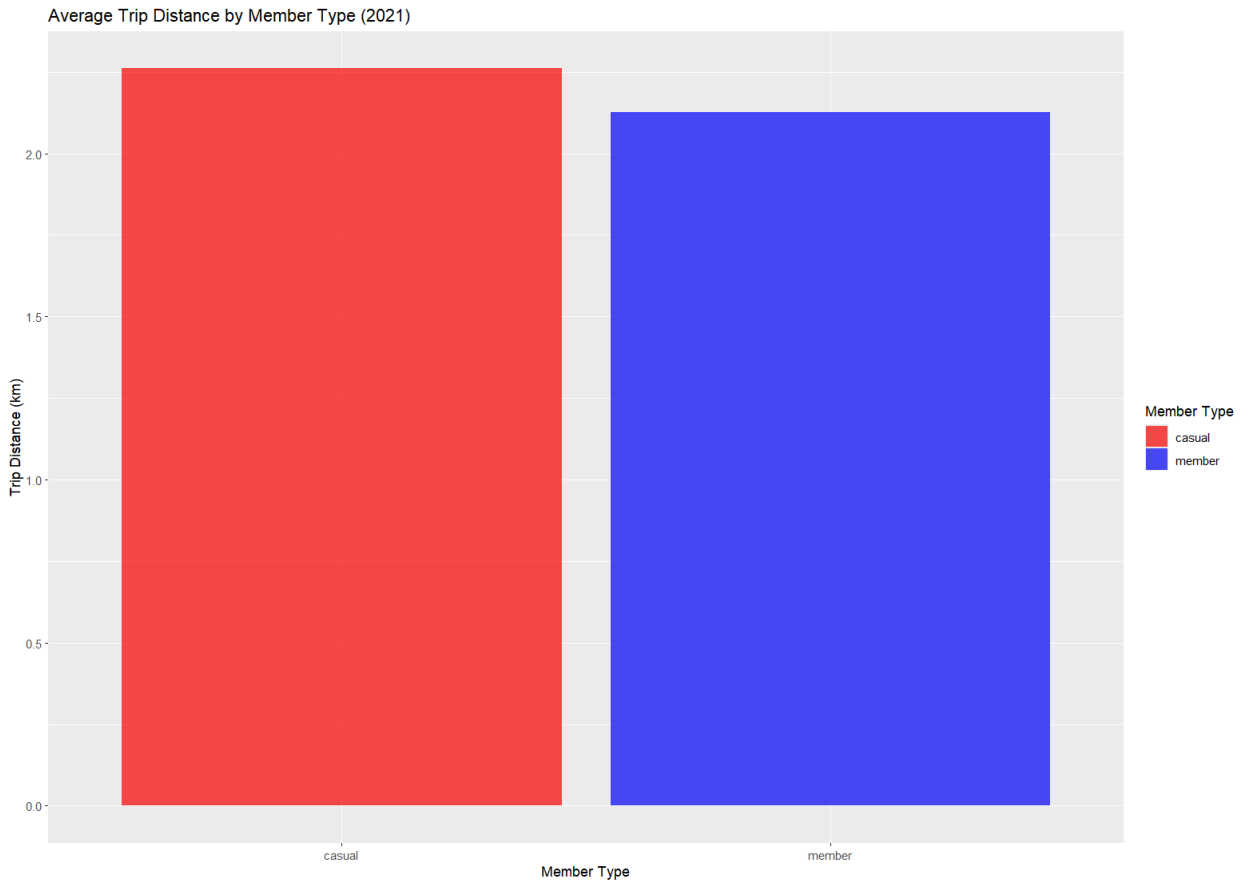

Figure 5 - Average Trip Distance Between Casual and Annual Membership Users

Casual users appear to generally take slightly longer trips than members. From our previous findings, we can assume that members complete journeys of a similar length to casual users in less time because they aim to reach a destination by a deadline.

Casual users, perhaps using Cyclistic bikes in their free time, are in no particular hurry to meet or follow a schedule. Hence, they complete their trips at a leisurely pace.

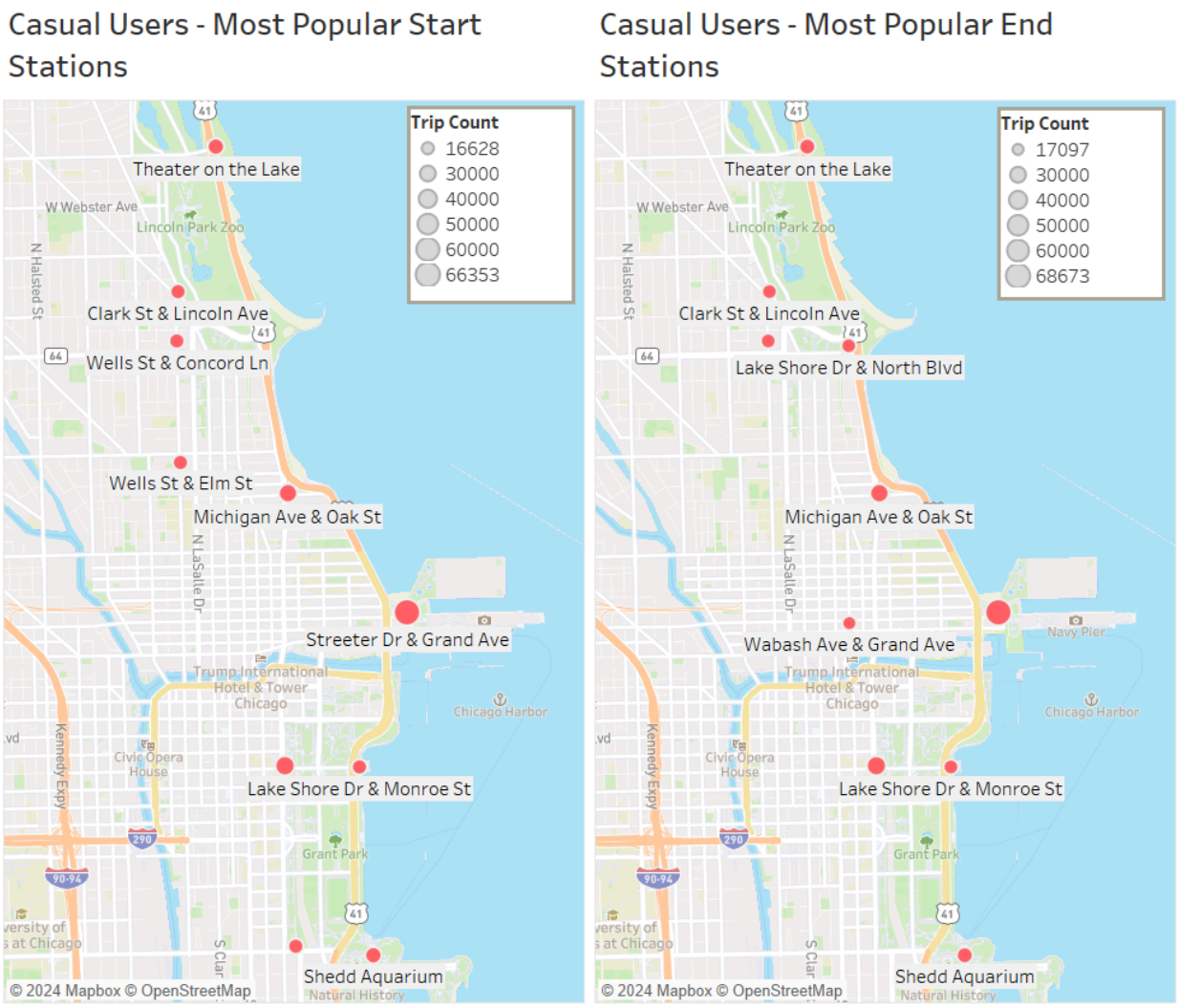

Figure 6 - Casual Users - Most Popular Stations

Casual users most commonly make use of Cyclistic's services in prominent tourist/leisure areas within Chicago. Looking at the map, we see trips starting across the shorefront, and between destinations such as 'Shedd Aquarium', 'Theater on the Lake', and around 'Lincoln Park Zoo'. We see a reasonable variety between start and stop stations, indicating that users aren't bound to a particular path/destination in their trips.

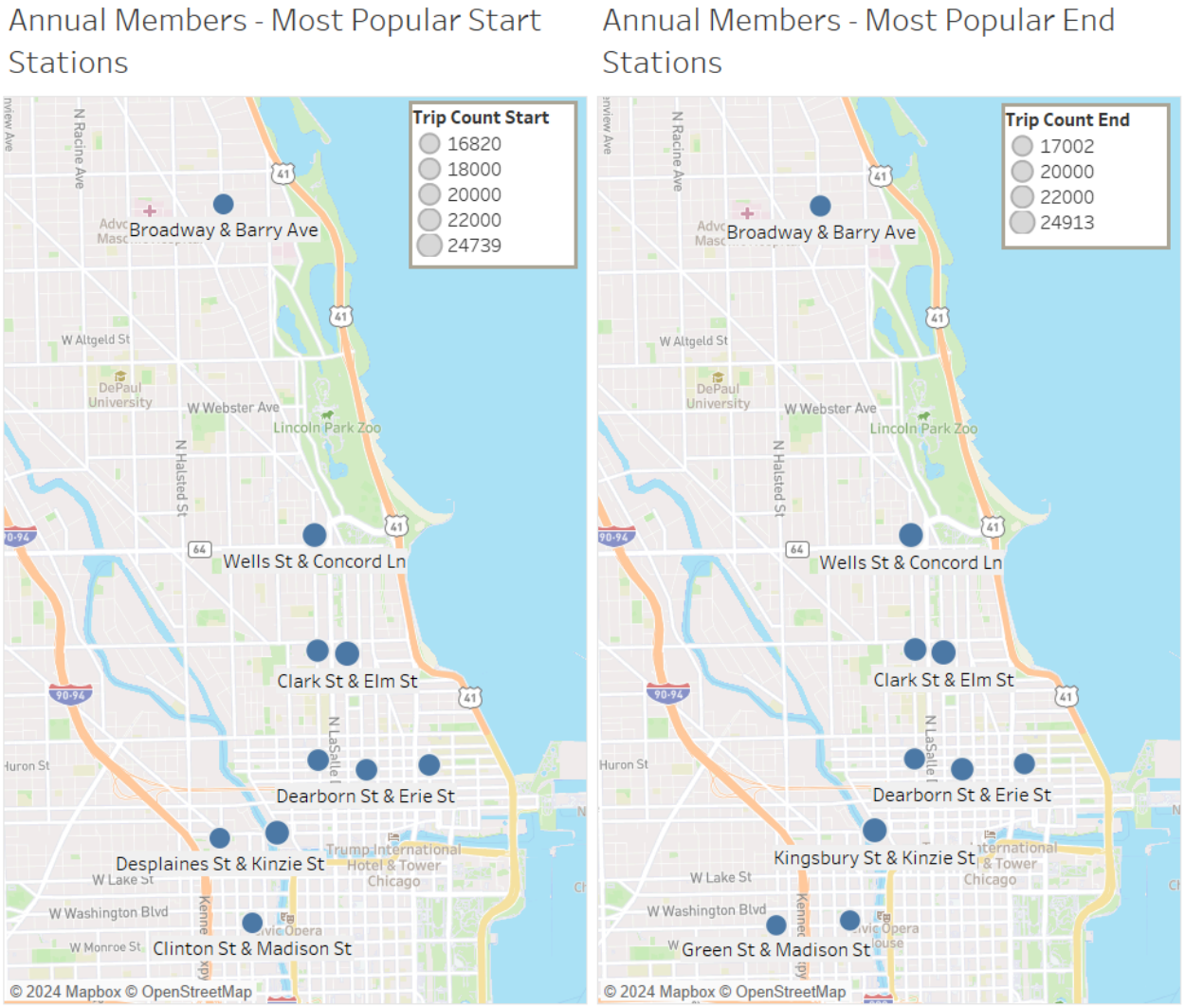

Figure 7 - Annual Members - Most Popular Stations

Member trips seem to start and stop at almost the exact same stations. As a matter of fact, only one of the 10 most popular stations to start from varies from the 10 most popular stations to stop at. We also see that many stops occur in the downtown region, where businesses, schools, and universities likely operate.

None of the prominent member stops exist in leisure areas either. All of this suggests that members follow defined, pre-considered paths from what are likely areas of residence/metro stations to areas of work/study.

FINDINGS & RECOMMENDATIONS

All in all, we've uncovered a great deal of insight with regard to the differences in casual and paying-member-use of **Cyclistic** bikes. The overview of these findings is as follows:

- **Casual users are more likely to make use of Cyclistic bikes on weekends and during holiday periods**.
- **Members are more likely to make use of Cyclistic bikes on weekdays and have fairly stable engagement with the service throughout the year**.
- **Casual users spend double the amount of time members do on trips**, despite casual user trips distance being only marginally lengthier than member trip distance, suggesting casual users are in less of a hurry and using Cyclistic bikes for recreational purposes.
- **Members on the other hand complete their trips with duration in mind**, likely commuting between home and a study or workplace.
- **Casual users start and stop their trips from popular leisure areas**. Their start and stop stations aren't entirely aligned and are in close proximity to the shore-front/areas of activity such as parks or recreational facilities.
- **Members start and stop their trips from almost entirely the same set of stations**. Their favourite stations are more concentrated in business areas, away from leisure hot-spots.

The following recommendations are given based on the assessed visualisations:

1. **Increase advertisements shown around the most popular start/end stations for casual users.**
2. **Provide more membership options.** For example, with an uptick in members over the summer months, a seasonal membership might be of interest to casual users during this time. This can also be offered over spring/autumn months to increase engagement with Cyclistic over these time periods.
3. **Offer discounts for membership over the winter months to encourage more casual users to convert.** This may also encourage more use of Cyclistic bikes in the winter months.
4. **Introduce a 'Recommend A Friend' programme,** wherein a paying member can recommend a casual-user friend, who may receive a discount when they register for Cyclistic's membership. The paying member may also be offered a discount if they recommend a friend, should they want to renew their membership.
5. **Provide more value with the membership.** For example, if the Cyclistic app were to integrate a feature showing members the best route to take between stations, it might encourage more users to invest.