

CYCLISTIC BIKE-SHARE ANALYSIS

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01 INTRODUCTION

Cyclistic, a bike-share company in Chicago, launched a successful bike-share program in 2016, growing to over 5,800 bicycles and 600 docking stations throughout the city. The program offers flexible pricing plans, including single-ride passes, full-day passes, and annual memberships.

Finance analysts determined that annual members are more profitable than casual riders. To drive future growth, Cyclistic aims to maximize annual memberships by converting casual riders into members, leveraging their existing awareness and preference for the program.

02 PRIMARY GOALS

- Conducting an analysis of the **distinct usage patterns** of Cyclistic bike-share between **annual members and casual riders**
- Developing **effective marketing strategies** for converting casual bike riders into annual members



03 DATA OVERVIEW

- Data period: June 2022 to May 2023
- Primary key: ride_id
- Number of records before cleaning: 5 829 030
- Number of records after cleaning: 5 671 267
- **Data limitation:**

Data-privacy considerations prohibit the correlation of pass purchases with personal information, thereby limiting the analysis of riders' demographics and service area residency.

03 DATA OVERVIEW

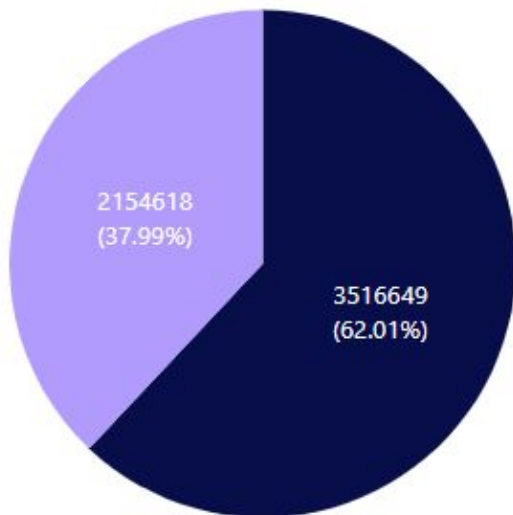
- Each dataset is a CSV file containing details of every ride logged by Cyclistic customers. There are total 13 columns in each:

<i>ride_id</i>	: Unique Ride ID
<i>rideable_type</i>	: Bike type
<i>started_at</i>	: Trip start day and time
<i>ended_at</i>	: Trip end day and time
<i>start_station_name</i>	: Trip start station name
<i>start_station_id</i>	: Trip start station ID
<i>end_station_name</i>	: Trip end station name
<i>end_station_id</i>	: Trip end station ID
<i>start_lat</i>	: Trip start latitude
<i>start_lng</i>	: Trip start longitude
<i>end_lat</i>	: Trip end latitude
<i>end_lng</i>	: Trip end longitude
<i>member_casual</i>	: Rider type (Member or Casual)



04 DATA ANALYSIS

Total rides of members and casual users



In a year, members account for ~62% of the total trips, while casual riders make up the remaining ~38% of the total trips, resulting in a difference of ~24% between the two groups.

member_casual ● member ● casual



04 DATA ANALYSIS

Maximum, Minimum, Mean, Median of ride length

max_ride_length_minute	min_ride_length_minute	mean_ride_length_minute	median_ride_length_minute
1559.93	0.02	15.51	9.65

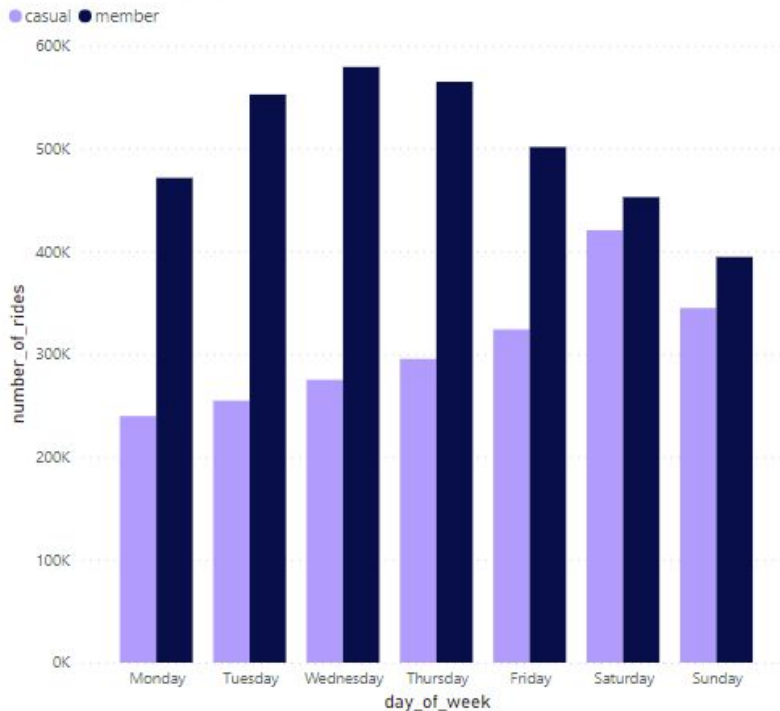
Maximum ride length (max_ride_length) and Minimum ride length (min_ride_length) contain unusual values, which cannot be explained due to the limited scope of analysis. However, further investigation is necessary to understand the underlying issue.

member_casual	max_ride_length_minute	min_ride_length_minute	mean_ride_length_minute	median_ride_length_minute
casual	1559.93	0.02	20.47	11.55
member	1559.67	0.02	12.47	8.53

Members typically have shorter average trip durations (about 12.5 minutes per ride) compared to casual riders (about 20.5 minutes per ride), indicating that casual riders take longer rides on average.

04 DATA ANALYSIS

Total rides for both member and casual users on a daily basis



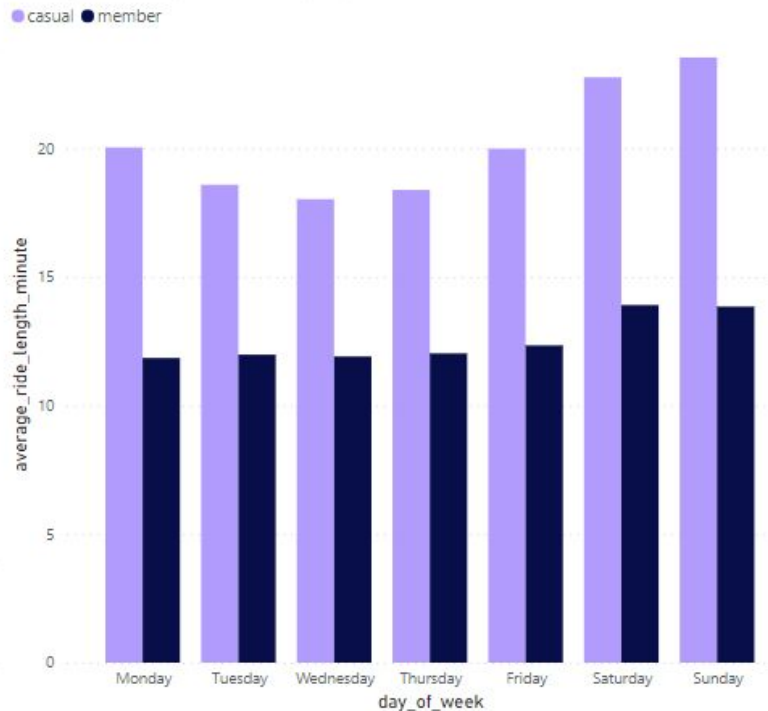
Members mainly take rides on Tuesday, Wednesday, and Thursday, accounting for 48% roundly of the total rides. There is a steady decline in ride numbers from Wednesday to Sunday.

Casual riders have the highest number of rides occurring during weekends, peaking on Saturday and Sunday, constituting about 36% of the total rides.



04 DATA ANALYSIS

Average ride length for both member and casual users on a daily basis

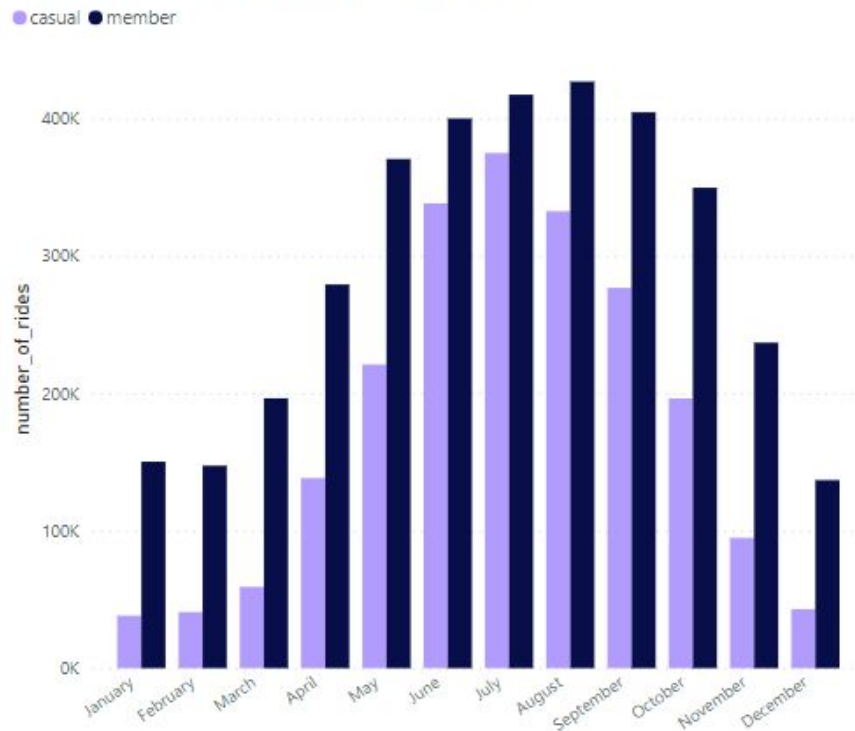


The average ride length for members (~12 minutes) is significantly lower than that of casual riders (~20 minutes). However, members show relatively consistent average ride lengths throughout the week.

Casual riders show a substantial increase in the average ride length during weekends.

04 DATA ANALYSIS

Total rides for both member and casual users on a monthly basis



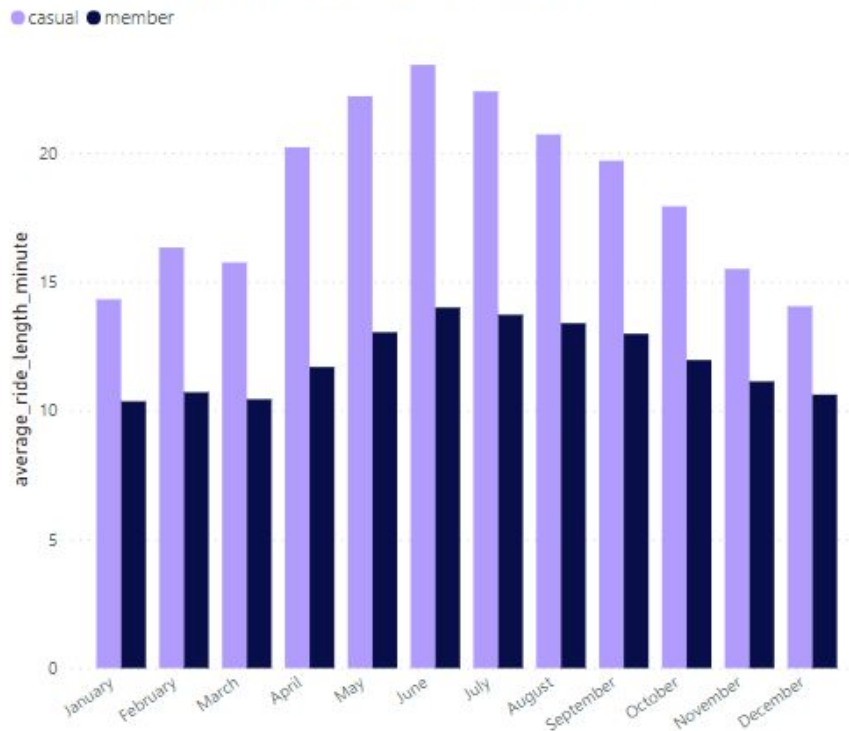
June, July, August, and September emerge as the peak months for both members and casual users: members averaging 412 000 rides per month, accounting for ~29% of all rides and ~47% of the member rides; casual riders averaging 330 000 rides per month, representing ~ 23% of the total rides and ~ 61% of the casual rides.

Total rides experience a significant drop during the winter months of November, December, January, and February for both types of users.

Observations suggest that seasonal factors influence how members and casual riders use bikes to travel.

04 DATA ANALYSIS

Average ride length for both member and casual users on a monthly basis

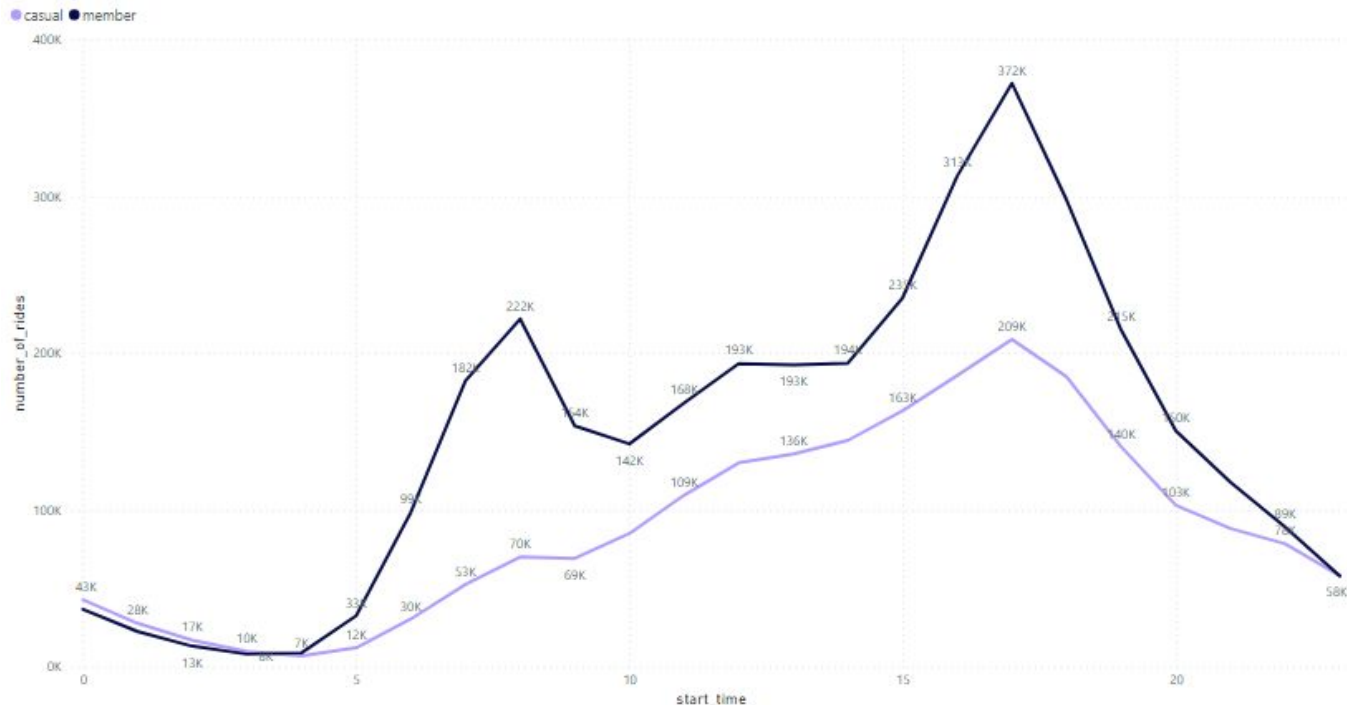


Members' average ride length remains consistently from 10 to 14 minutes throughout the year.

For casual riders, the average ride length ranges from 14 to 24 minutes year-round, peaking in June.

04 DATA ANALYSIS

Total rides by start time for both member and casual users throughout the day

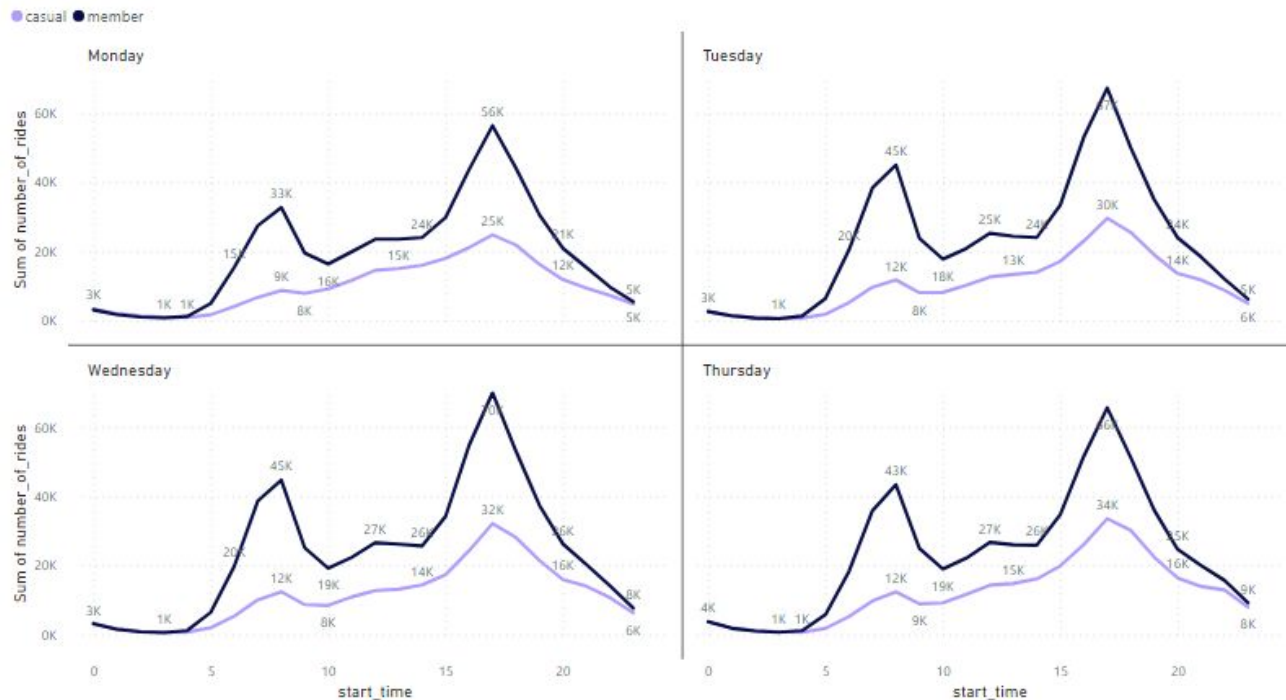


Members have peak ride activity at 8:00 and 17:00, whereas casual users tend to ride more frequently in the afternoon.

For both types of users, the top ride hours are from 14:00 to 19:00, accounting for almost half of all rides.

04 DATA ANALYSIS

Total rides by start time for both member and casual users by day of the week

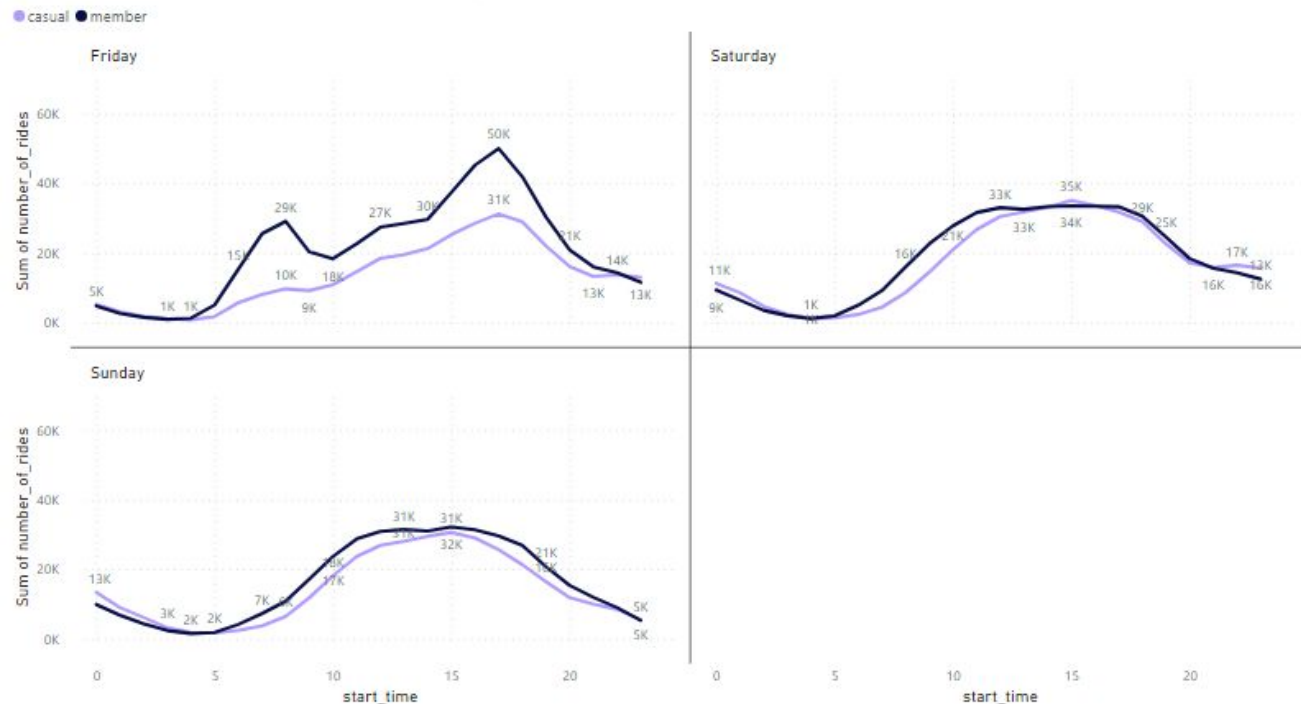


Members consistently show the same trend patterns on weekdays, with ride peaks at 8:00 and 17:00, suggesting regular commuting to and from work.

Casual riders exhibit a steady trend from Monday to Friday, peaking at 17:00, indicating possible after-work or evening leisure rides.

04 DATA ANALYSIS

Total rides by start time for both member and casual users by day of the week



On weekends (Saturday and Sunday), both member and casual users display similar riding activity, with the highest usage between 10:00 and 19:00.

This indicates that both groups use bike-share for leisure activities during the weekends.

04 DATA ANALYSIS

Total rides by rideable type for both member and casual users



Members favor electric bikes and classic bikes almost equally with percentages of ~51% (1786K rides) and ~49% (1731K rides), respectively. The relatively even split in usage percentages suggests that members find both types of bikes offer viable options for their commuting requirements.

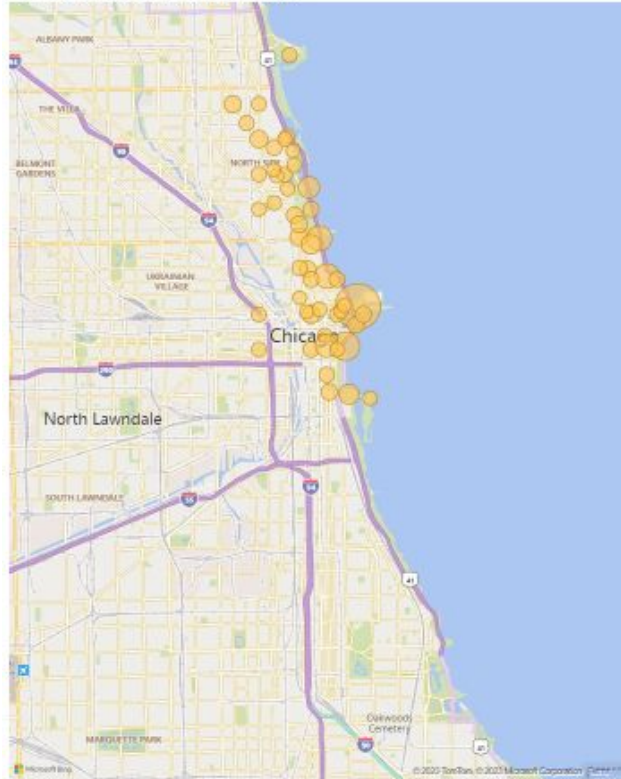
Casual riders incline towards electric bikes (~60%, 1297K rides) over classic bikes (~40%, 858K rides). The data suggests that casual users prefer the convenience, enjoyment, added assistance, and ease of electric bikes for their rides. Also, the relatively lower percentage choosing classic bikes indicates that casual riders find electric bikes more appealing for their recreational rides.

04 DATA ANALYSIS

Top start stations for members



Top start stations for casual users



Members demonstrate a higher preference for riding in urban center and areas outside the city center, possibly due to commuting for work purposes. Along the coast, they have lighter dense points of start stations, suggesting that members also utilize bikes for leisure activities after work and on weekends.

Casual users lean towards coastal areas, indicating their tendency to use sharing bikes mainly for recreational activities.

05 A SUMMARY OF FINDINGS



Members

Hypothesis: using bikes more for daily commuting.

Casual riders

Hypothesis: using bikes more for leisure and recreation.

Average Ride Length

Shorter average ride duration

Longer average ride duration

Seasonal Trends

Peak months are June to September, while winter months (November to February) experience a significant drop in rides

Weekend Leisure

Having lower ride numbers during weekends, compared to weekdays. Showing relatively consistent average ride lengths throughout the week.

Having higher ride numbers during weekends, compared to weekdays. Showing constantly increase in the average ride length during weekends.

Urban & Coastal Preferences

Favoring riding in urban centers and areas outside the city center

Preferring riding in coastal areas

Electric Bike Appeal

Showing an almost equal preference for both electric bikes and classic bikes

Demonstrating a stronger inclination towards electric bikes

06 RECOMMENDATIONS

Cyclistic can implement the following ideas to effectively target and convert casual riders into annual members, driving growth and loyalty:

- Introducing **flexible membership options**, such as monthly or seasonal memberships, to cater to casual riders who may not want a full-year commitment initially. Also, offering **seasonal promotions during peak months** to attract casual riders to opt for annual memberships and encourage usage during high-riding periods.
- Designing **weekend-specific membership offers** (such as discounts, extended ride times, priority access during busy hours, membership packages that offer guided coastal biking tours, and exclusive access to popular recreational routes) to encourage casual riders to become annual members and enjoy leisurely rides during weekends.
- By using **eye-catching marketing tactics**, Cyclistic can strategically place QR codes on bikes and banners at top popular stations for casual riders so they can scan to receive limited-time discounts or trial offers for annual memberships.

06 RECOMMENDATIONS

- Promoting the benefits of electric bikes to casual riders through, for example, **targeted social media ads** or **electric bike demo events for casual riders** to experience the convenience and thrill of electric bikes then offering special discounts for upgrading to an annual membership after trying electric bikes.
- **Partnering with local businesses and offering joint promotions**, encouraging their customers to try annual memberships. For instance, offering discounts or incentives at local cafes, gyms, or tourist attractions for Cyclistic members.
- **Targeting commuters** by tailoring marketing messages to highlight the **convenience** of annual memberships for daily commuting needs, emphasizing the **cost-saving benefits** compared to casual rides, while also emphasizing the **enjoyment of leisure rides** with friends and family. Also, form **partnerships with local companies to offer employee benefits or corporate-sponsored annual memberships**, encouraging casual riders to adopt bike commuting as a sustainable transportation option.