

# Strategizing Cyclistic's Campaign to Convert Casual Riders to Valuable Member Riders

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## Purpose

The goal of this project is to uncover descriptive distinctions in rider behavior between casual riders and annual members for Cyclistic Bike Share based in Chicago, Illinois. The outcomes from this study will allow the Company to implement data-informed marketing strategies to convert casual riders to annual members. This conversion from casual to annual riders has been designated by the financial analyst team as the key to spearhead growth for the company, given that it now that it has a large customer base owed to the Company's flexible pricing advertising campaigns.

Below are three questions central to the Campaign, the first of which will be answered in this report (we will refer to it as the Business Question).

1. **How do annual members and casual riders use Cyclistic bikes differently?**
2. Why would casual riders buy Cyclistic annual memberships?
3. How can Cyclistic use digital media to influence casual riders to become members?

## Preparing the Dataset

**Data Location & Organization.** Our Cyclistic trip dataset is located hosted in an AWS (Amazon Web Services) server, in the form of .csv files. The data spans 2014 to July 2023 with monthly and/or quarterly breakdowns. We choose to work with data from the entire 2022 year as they are more current. Each row belongs to one ride and contains its bike type, start and end time, start and end location, and member type.

### Checking ROCCC Requirements.

**Reliability/Integrity:** The data has been checked for typos, missing values, and duplicates. We find no typos or duplicates. About 22% of the rows were missing either the start or end location, but these are non-critical. The numeric values (dates, duration) were numerically validated, with some rows removed where they weren't, namely rides lasting 0 or negative seconds. There is no sampling bias as these datasets are collected from the entire population of Cyclistic users. Given all this, we conclude the dataset integrity is high. The cleaning process was done and documented in a Jupyter Notebook; see Appendix.

**Original:** The data is first-party data directly from the Company.

**Comprehensive/Completeness:** The attributes are sufficient for gaining useful insights to the two biker populations and hence the Business Question. And the size and timespan of the data

will allow any seasonal and monthly trends to be identified, potentially informing marketing decisions.

**Current:** We analyze the full 2022 dataset and make comparisons to the current trends in 2023.

**Cited/Vetted:** The parts of the dataset from previous years have been vetted and used to guide past business decisions, such as the previous advertising campaign to generate broad appeal.

**Security, Privacy, & Accessibility.** The data was provided by Motivate International Inc. under this [license](#). The datasets contain no personal identifiable information, including credit card numbers or addresses. The data is representative of the entire Cyclistic user population since this data logs all rides taken by users.

## Descriptive Analysis

Our analysis is done in a Jupyter Notebook and is summarized in this section. To focus our analysis to answer the Business Question, we computed statistics for each casual and member riders for comparison.

### Preliminaries

Number of Rides by Casuals = 2.32 million

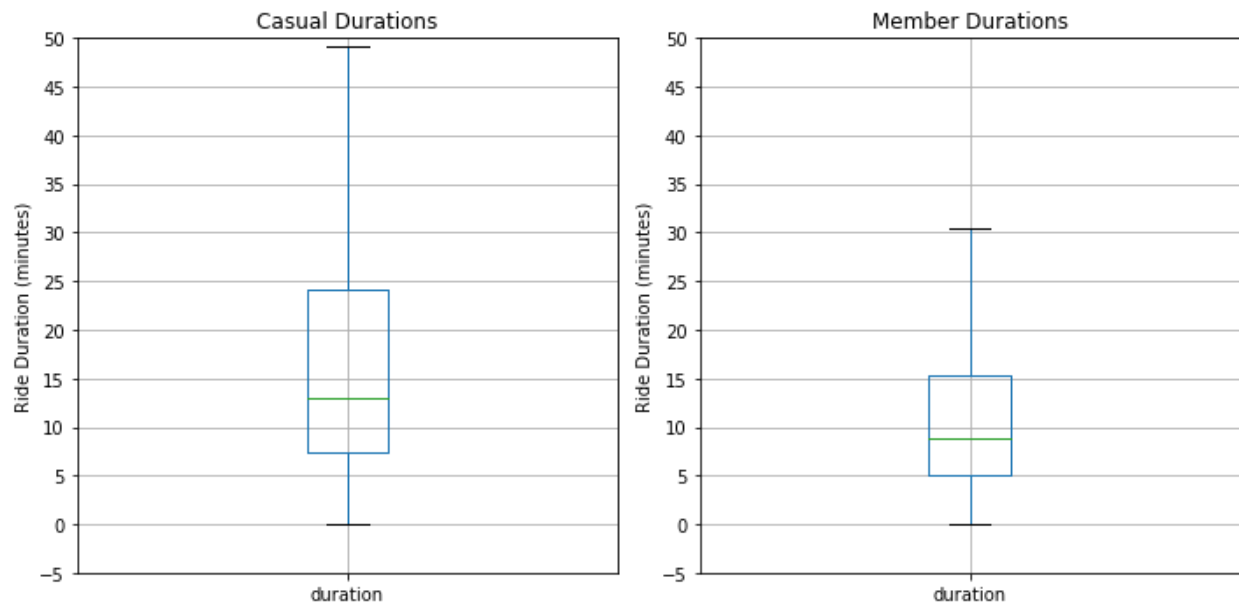
Number of Rides Members = 3.34 million

Time Span: January 1, 2022 – Dec 31, 2022

#### 1. Average and Median of Duration ([hh:]mm:ss)

The table below details the [mean & standard division] and [percentiles including the median], and the following boxplots depict the latter.

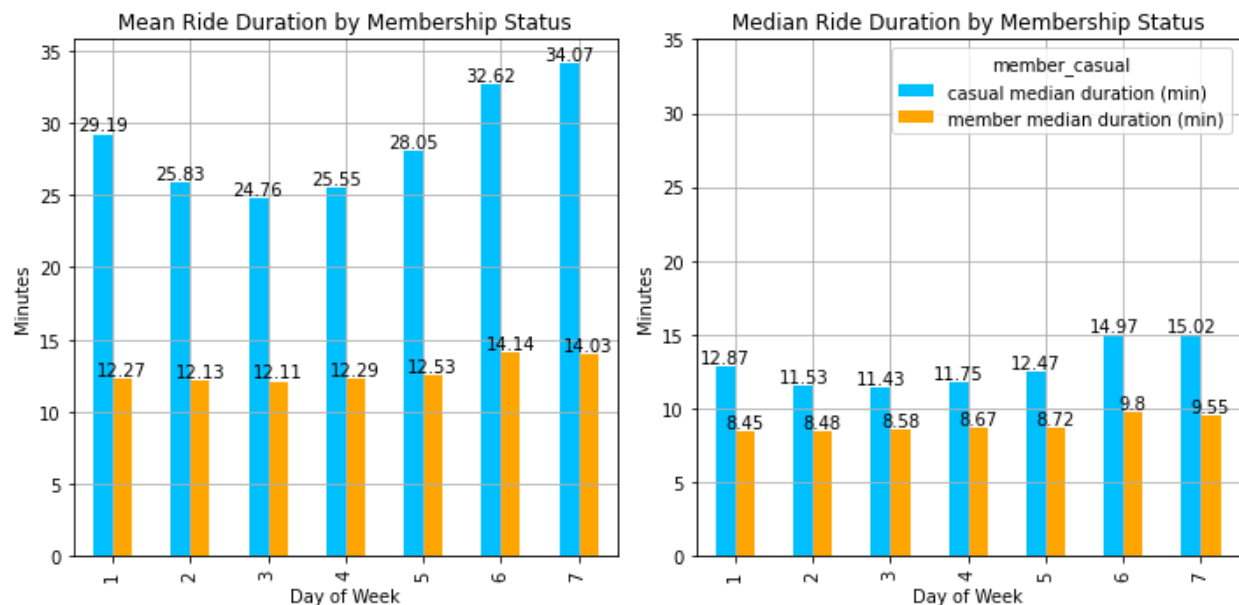
	mean	std	min	25%	50%	75%	max
Casual	29:09	04:32:42	00:01	07:20	13:00	24:06	29 days
Member	12:43	28:48	00:01	05:07	08:50	15:16	25:59:54



It is evident from the values and sample size that casual riders are significantly more likely to have longer rides than member riders. However, there is still significant overlap between the two rider types.

## 2. Ride Duration by Day of Week

Duration by Day of Week



(1=Monday, ..., 7=Sunday)

The trend from Section 1 is apparent across all weekdays.

More interestingly, however:

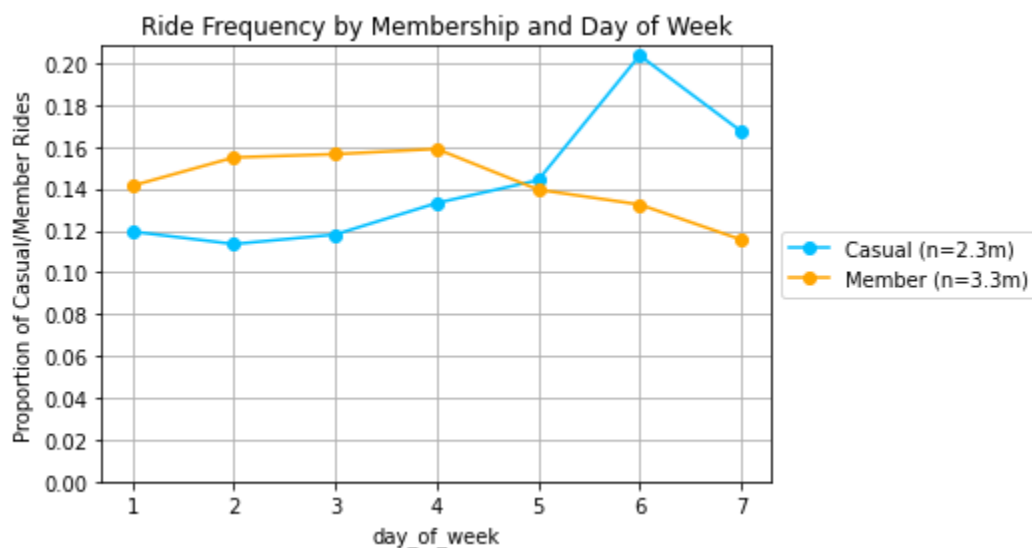
- Both types of riders tend to have longer rides on the weekends and Friday than on the weekdays Monday through Thursday.

- The durations for members on the weekdays are very consistent, while those of casuals are comparatively more variable.

These trends could be because casual riders ride mainly for recreation or getting to faraway places on Fridays and the weekends, and member riders use the bikes mainly to commute to work or school on the weekdays. These hypotheses are further bolstered by the findings in the following Sections 3 – 5.

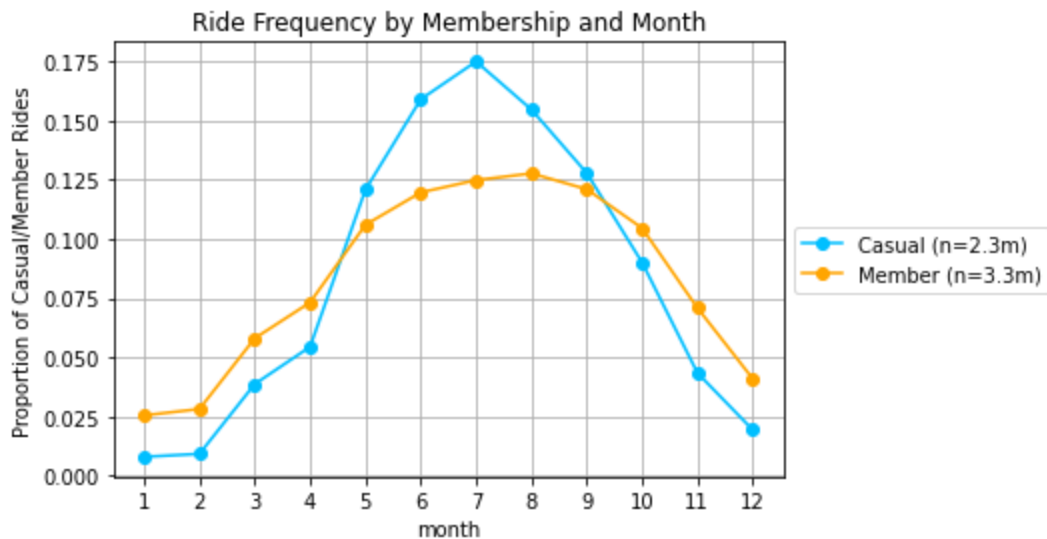
Administering a survey to both groups for their reasons for using the bikes would help clarify the exact reasons for the trends, but we believe it is safe to assume casual riders are more likely to ride for occasional recreation than a consistent means of transportation as members do.

### 3. Bike Usage Frequency by Day of the Week



Casual riders are more likely to ride as the weekend approaches, and member riders are more likely to ride on weekdays than on weekends.

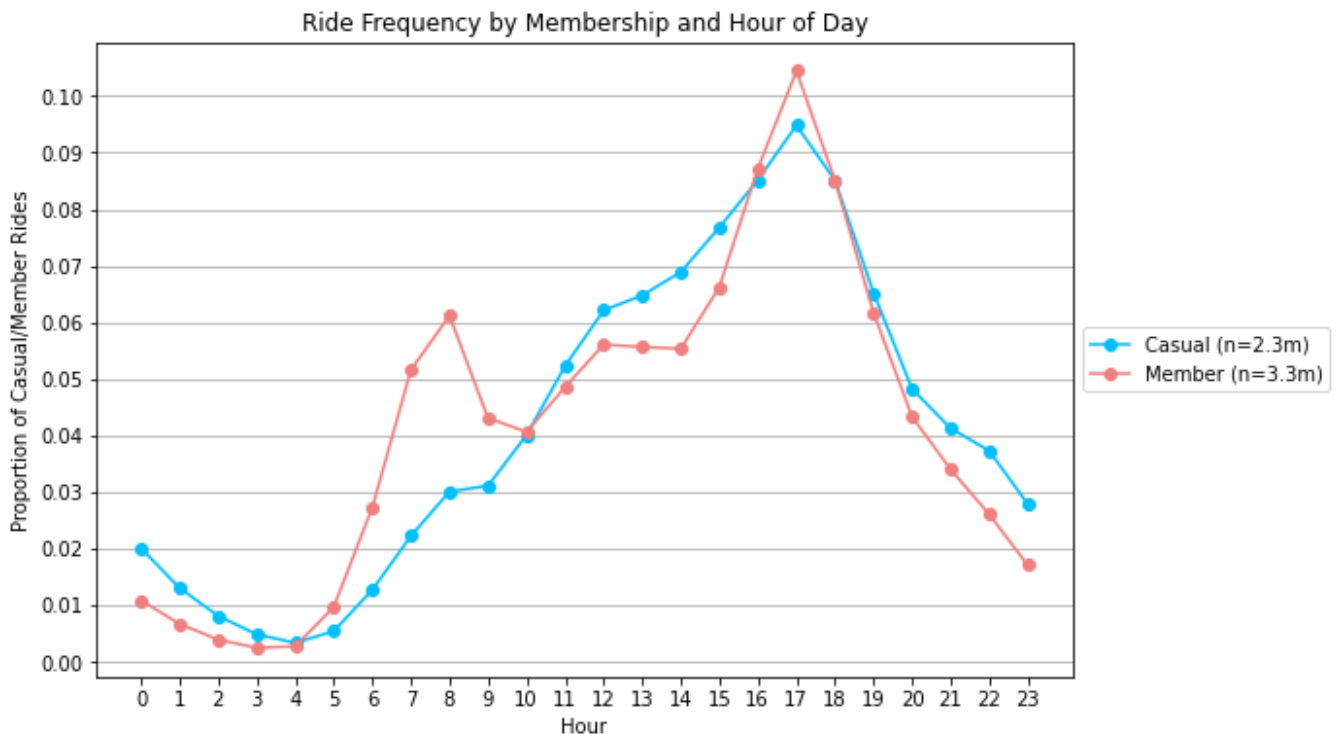
### 4. Bike Usage Frequency by Month



Casual riders are more likely to ride during late spring, summer, and autumn. There is a spike of usage in May, peaking in July, and dropping back to pre-May levels by November.

Member riders follow a similar trend, though their usage during the winter months are substantially higher than that of casual riders.

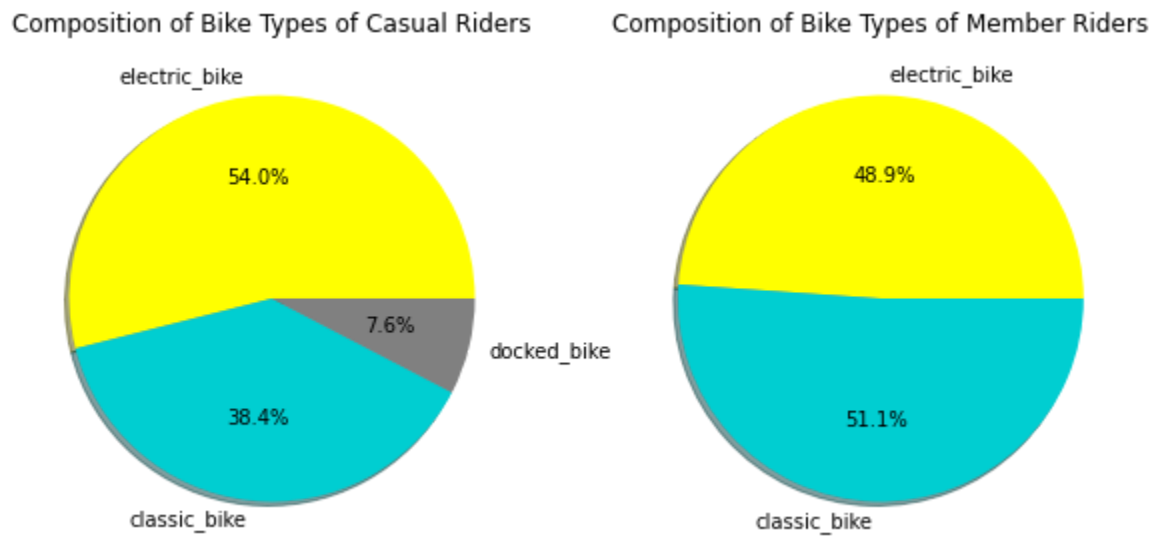
## 5. Bike Usage Frequency by Membership and Time of Day



We notice that the ride frequency for member riders significantly surpass that of casual riders from 5am to 9am, and similarly during 4pm to 5pm. These are the usual times when people get off work, further validating the hypothesis that members are more likely to ride to commute to and from work.

What is also interesting is that the casual line does not differ much from the member line -- having a steady rise from the morning, peaking at 5pm, and dropping off. We are unsure of why this trend is as such, but this similarity indicates our casual audience might be more primed than previously inferred to purchase a membership to commute to and from work.

6. Ride Type Composition by membership status



(We note that docked bikes are only available to casual riders.)

The compositions are roughly the same, with casual members having a slight preference for electric bikes.

Insights Summary

We extrapolate from the analyses the following distinctions between casual and member riders. Note that these are generalizations and are not applicable to every rider.

Casual Riders	Member Riders
Ride for leisure on weekends and Fridays	Ride to work/school on weekdays
Enjoy riding in and around the summer	Have a more level usage throughout the year, with a less dramatic peak in and around summer
Do longer rides than members by 3-5 minutes	Do shorter rides than casual riders by 3-5 minutes
Follow steady rise and drop in usage throughout any given day	Follows steady rise and drop in usage throughout any given day, but notably with peaks during the

	morning and evening hours.
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## Recommendations

Given these insights, we curate the following recommendations for the financial analyst team's marketing campaign to convert casual riders to purchase memberships:

Advertise the following to casual riders:

- The opportunity to use Cyclistic as an economical, efficient, and healthy option to commute to work or school.
- The opportunity to routinely ride during the weekend for either exercise or relaxation.

Distribute free, discounted, or refundable trials for the perks of an annual pass to casual riders. For budget considerations, these trials could be limited to casual riders who have already purchased full-day passes in the past.

As briefly mentioned in the analysis, administer surveys to collect more data on casual and member riders to deliver more personalized advertisement. We suggest towards casual riders a survey to collect their interests and needs, and towards annual members a survey to collect positive testimonials of their membership.

## Possible Further Study

For further study, we can consider the geographical data for the rides, which is readily available. This could entail uncovering possible hot or cold spots for ridership, informing potential spots to advertise or spots to install new docks, respectively.

The type of bike could be more thoroughly investigated to uncover trends between it and the other attributes: time of ride, duration, and location.

For a more advanced task, a cluster analysis might be useful to further uncover trends and groups among the riderbase.

## Appendix

Data Cleaning & Analysis Log (Jupyter Notebook) <[link](#)>

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