1.) Ask: A clear statement of the business task

Cyclistic users fall into two main categories. The first type of user is the annual member while the second type of user is the more casual user who purchases single-ride or full-day passes on an occasional basis. Since annual members are more profitable for Cyclistic, one area of opportunity for Cyclistic to grow its business is to convert casual users into annual members. In order to convert more users to the annual plan, Cyclistic needs to understand the factors driving people to use the bike sharing program in the first place. With this purpose in mind, the primary aim of this analysis report is to identify how annual members and casual riders use Cyclist bikes differently.

2.) Prepare: A description of all the data sources used

The data used for this analysis is from the prior 12 months of Cyclistic trip data which was collected internally. It is a compilation of 12 separate months of data. The data is appropriate for this use case because it is recent data from August 2024 to October 2025. Additionally, the data is reliable because Cyclistic is the collector of it and original since it was generated by Cyclistic users. Finally, the data is comprehensive since it includes information about the types of users using the bikes, the kind of bike used, the bike usage start time, and the bike usage stop time. (Cyclistic is a fictional company. This data is real data licensed by Motivate International Inc, see case study document for the details of this license.)

3.) Process: Document any cleaning or manipulation of data

The original data was imported into RStudio directly from the .csv files without any manipulations. In RStudio, the following fields were removed: start_station_name, start_station_id, end_station_name, end_station_id, start_lat, start_lng, end_lat, end_lng. These are the fields associated with data about the start and stopping stations. Additionally, the latitude and longitude information was also removed.

In RStudio, the date, month, day, year, and day of the week were added as columns from the data about the ride start. Additionally, a column for the ride lengths (in seconds) was added based on the difference between the end of the ride and the start of the ride. Finally, some "bad" data was removed based on one condition. If the elapsed ride time was negative, this row was removed since this data doesn't correspond to anything real.

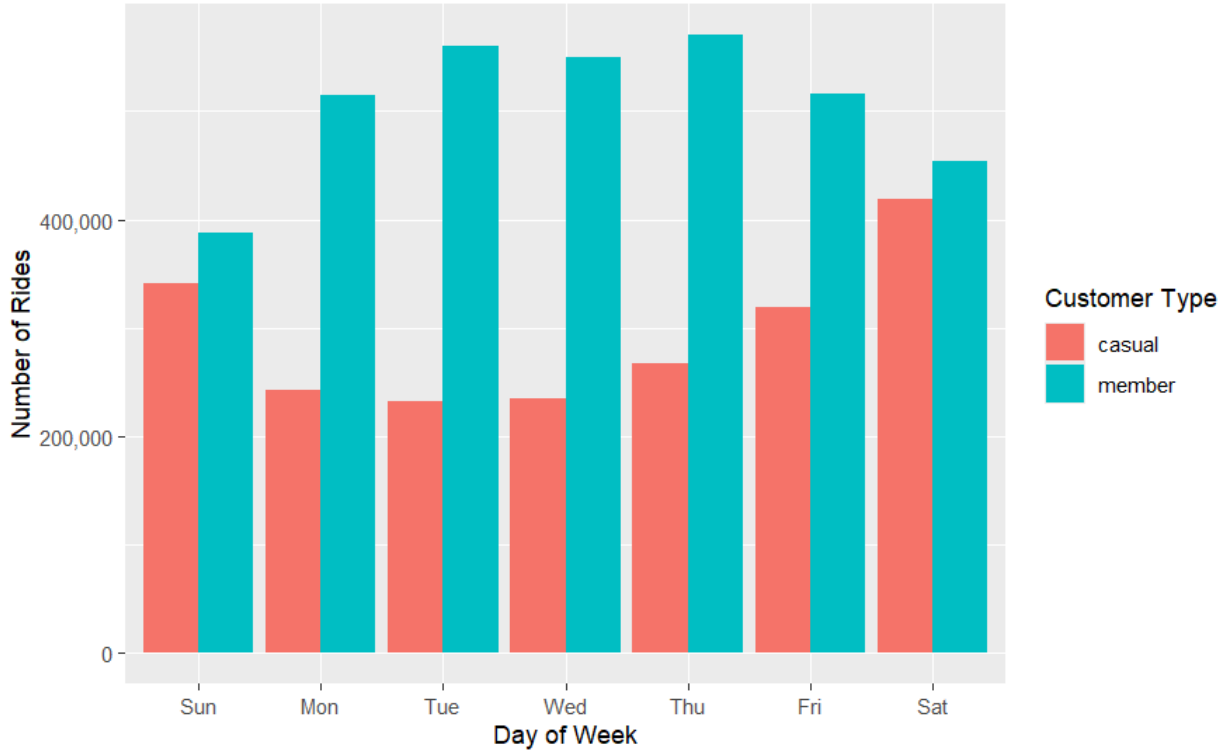
4.) Analyze: A summary of your analysis

All of the analysis took place in R. Key summary statistics like mean, median, and max were taken for the annual data to inspect it. Then the data was divided into groups based on the customer type and compared by two key summary statistics across two separate time frames. The two summary statistics were the average ride length and the total number of rides. The two separate time frames where the data was aggregated were for the day of the week time frame and the month of the year time frame.

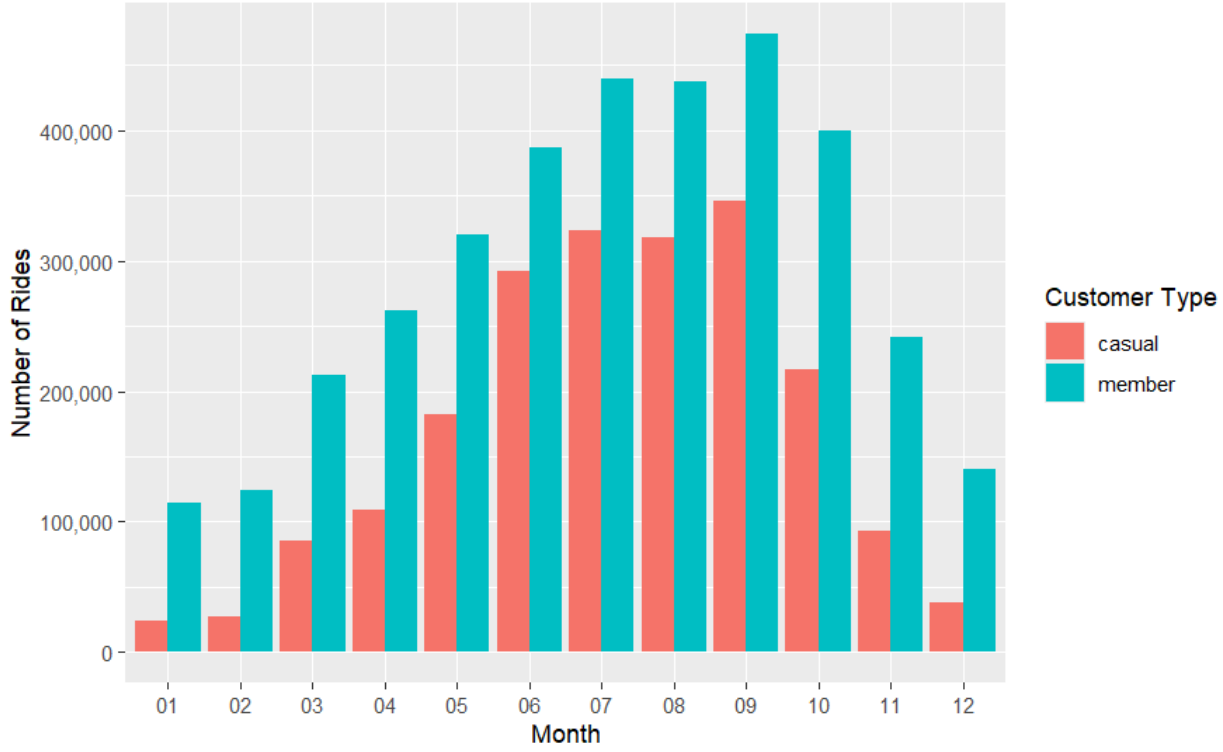
5.) Share: Supporting visualizations and key findings

See after page break

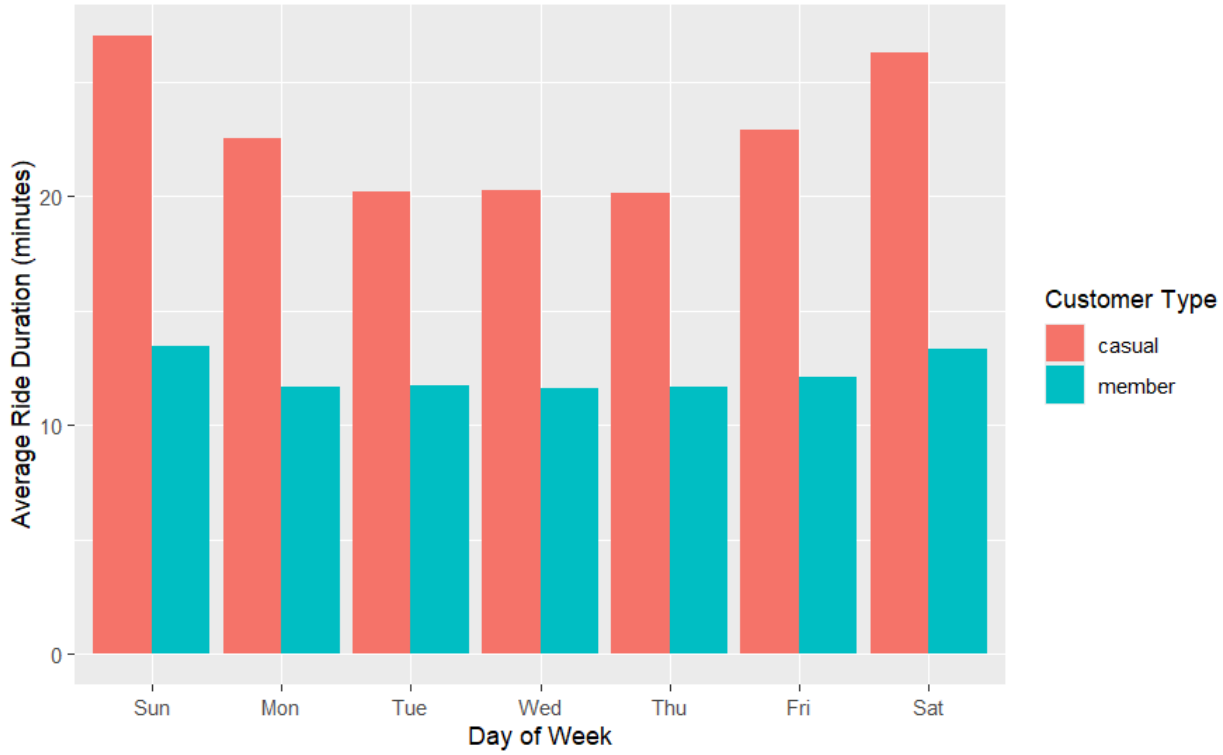
There are a few key findings found in the data. One important finding is that on every month and every day of the week, annual members have more total bike rides than casual users. On weekdays, Monday through Friday, the aggregate of yearly rides for annual members is over 200,000 more rides than for casual users. But on the weekend, Saturday and Sunday, this difference drops to under 50,000 rides because casual bike usage rises on these days while annual member usage drops on these days. One hypothesis to explain this is that casual riders use the bikes more for recreation on the weekends while annual members use the bikes more for everyday usage.



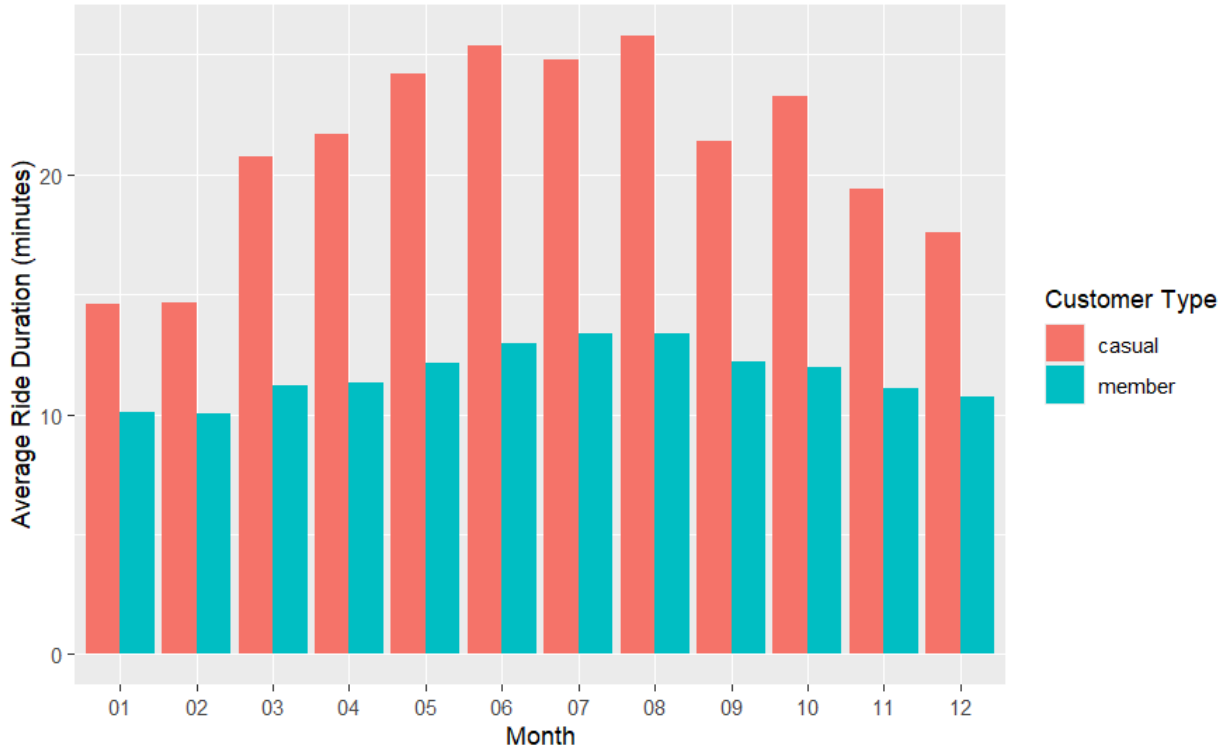
Another important finding is that usage for bikes peaks for both annual members and casual users in the warmer summer months (June through August) and dips during colder months (December through February). However, casual usage particularly drops from December through February with under 50,000 casual users riding the bikes during this period.



Additionally, another important set of findings is that the average ride duration is greater for casual users than for annual members when aggregated both by month and day of the week. Again, on the weekends, Saturday through Sunday, and warmer summer months, June through August, this difference grows largest. When aggregated by day of the week, the average casual ride duration is over 10 minutes longer on the weekends than it is for annual members. The average casual ride on the weekends is over 25 minutes long while for annual members it is under 15 minutes.



When the average ride duration is aggregated by month we see that the average ride length varies by less than 5 minutes throughout the year for annual members while it varies by over 10 minutes for casual members. From June through August the average ride length for casual members is over 25 minutes long while it is under 15 minutes long from January through February. The longer rides on average for casual members suggests that these rides are more for long recreation rides than everyday transportation where a shorter, quicker ride is more likely to take place to be viable transport.



6.) Act: Your top three recommendations based on your analysis
To summarize the key findings:

- Casual users take longer rides than annual members both by month and by day of the week.
- Casual users take less rides than annual members both by month and by day of the week.
- Casual users begin to ride more on weekends while annual members begin to ride less on weekends.
- Casual usage drops more significantly during the winter months although it drops for both types of users.
- Casual ride length varies more throughout the year than for annual members. Ride lengths drop significantly during the winter months.

These findings support the hypothesis that casual riders take longer, more recreational rides on the weekends and warmer months while annual members take rides that are shorter and less varied throughout the months because they are more for everyday transportation.

Given these findings, these are the top three recommendations to stakeholders:

1. Target marketing more heavily for casual members during the summer months (June through August).
2. Target marketing more heavily for casual members during the weekends (Saturday and Sunday).
3. Emphasize the increased recreational opportunities available to annual members during marketing. This means showcasing how one can take more long rides during the summer when buying an annual membership.