

Cyclistic Data Case Study

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Covertng Casual Bikers into Memberships

Cyclistics finance team has determined that annual members are much more profitable than casual riders. We believe that maximizing the number of memberships will be the key to future growth. To this end we will be analyzing data that Cyclistic has collected about rides taken in the past year. Using this data we will identify use case differences between members and casual users to identify casual users that are likely to be converted to member users.

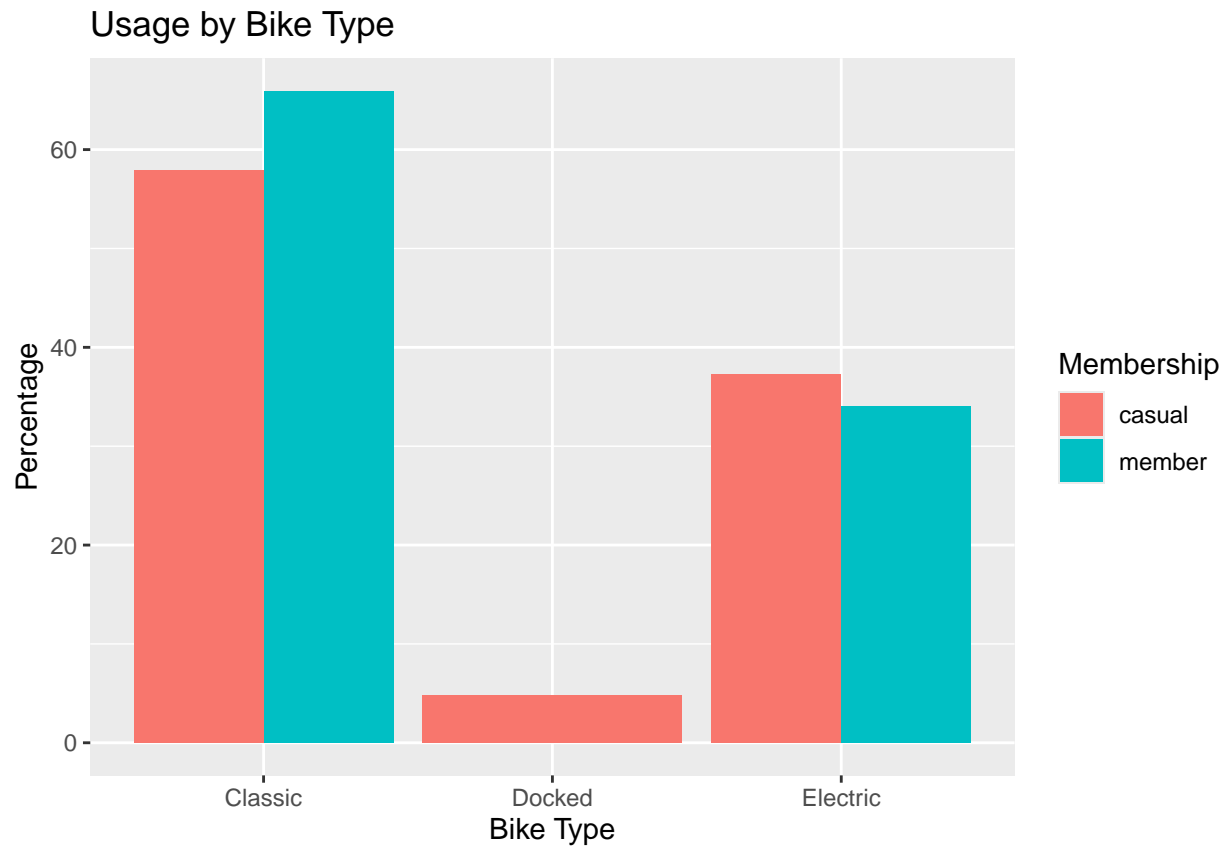
Checking the data

The data in question was collected by Cyclistic from March 2023 through February 2024. Through our cleaning and verification process we removed several types of outliers: We removed entries for rides that lasted under thirty seconds. We did this because there were some rows that contained anomalous negative durations that were greatly affecting calculations. We also removed rows that contained no data for the starting or ending stations. Many of these rows also seemed to be carrying anomalous data that had bikes on trips for durations of weeks at a time. The running hypothesis is that these were created when bikes were not returned properly. We also extracted some new columns to work with. A column that stores the length of each ride, and one that stores the day of the week that the rides took place.

How do Casuals and Members differ?

We explored many ways in how members and casuals utilize Cyclistics services differently. One basic difference is in what type of rideable the users choose:

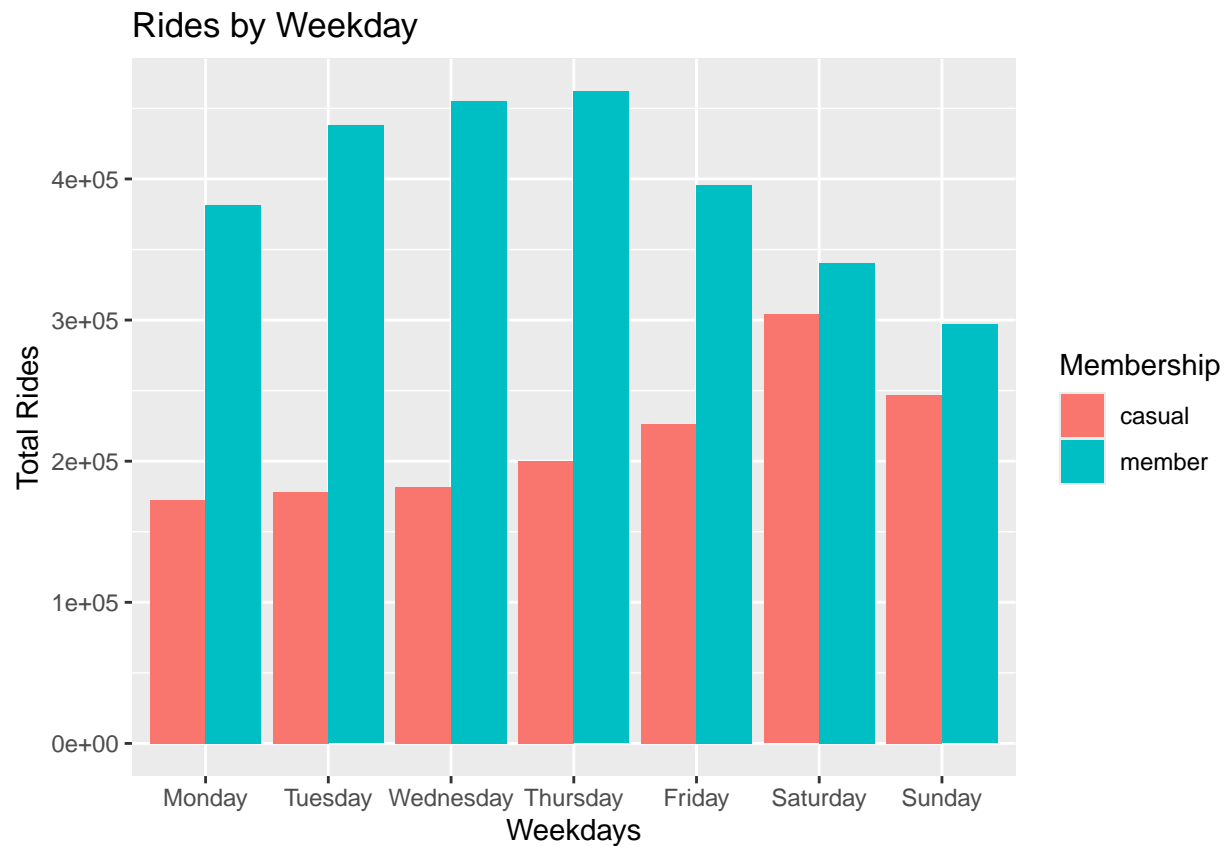
Rideable Types



We can immediately observe that both user types prefer classic bikes to any other kind of bike. Though we also notice that a larger percentage of casual users make use of the electric bikes than member users. further we observe that members do not make use of the “docked” bicycle type. Using these observations we can start to profile how users generally use the services.

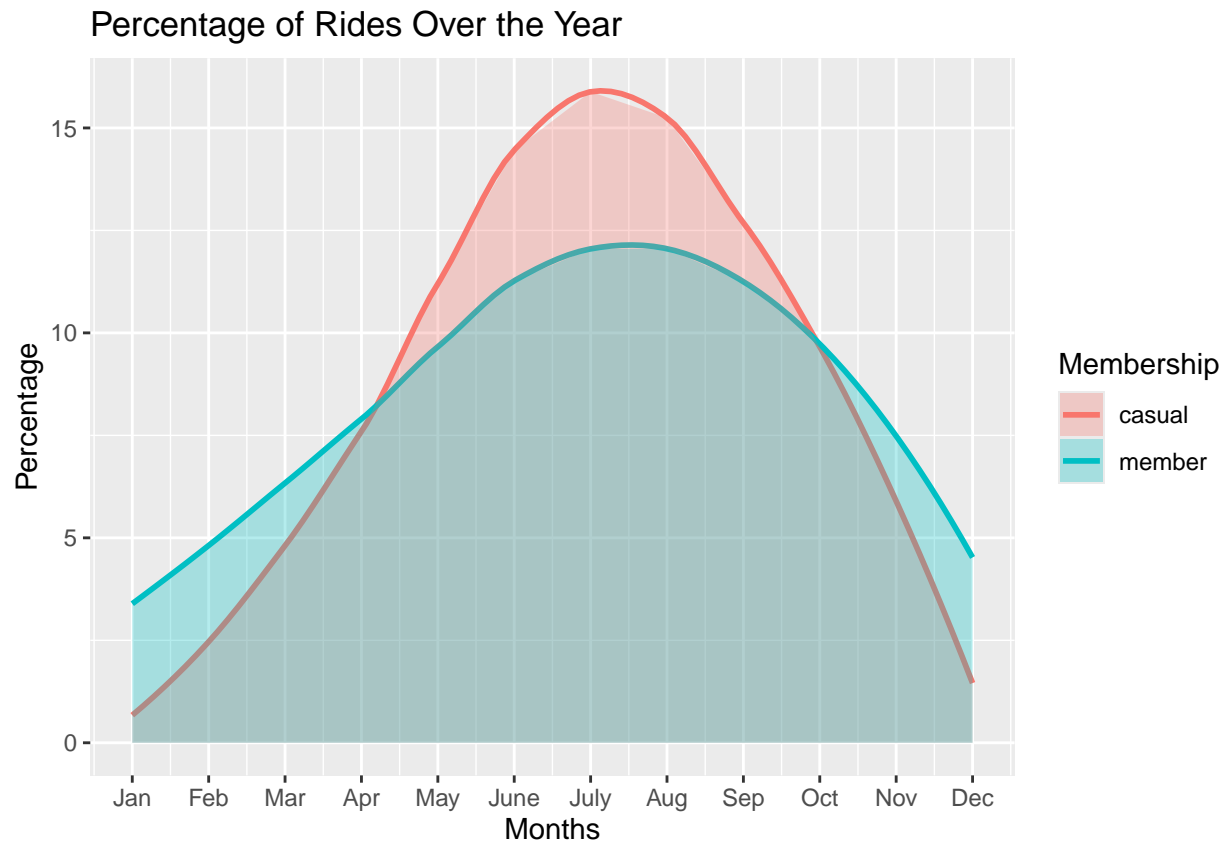
Through the Week

Further when we observe ‘when’ users make use of services:



We can see that member rides peak during the week, and fall on weekends, while casual rides do the opposite and peak on weekends. We also observe that while member users make far more rides in general, weekend usage is very close in total rides. Member riders are making use of services on weekdays, and fall on weekends. This lines up with a traditional work week, and may be that members are utilizing services for uses such as commuting to work. Many casual users are making use on the weekends, which may line up more with recreation/vacation/tourist uses.

Through the Year



Similarly when we look at rides throughout the year, we observe that while both groups peak in the Summer months. However the member peak is far less as a percentage of their rides, and maintains those riders into the Fall and winter months much more than casual riders. These observations also trend to a work-life use case for members. Cold month use is more resilient for member users as it may be being used for commuting purposes. Casual users see much more use in warmer months when outdoor recreation is more common.

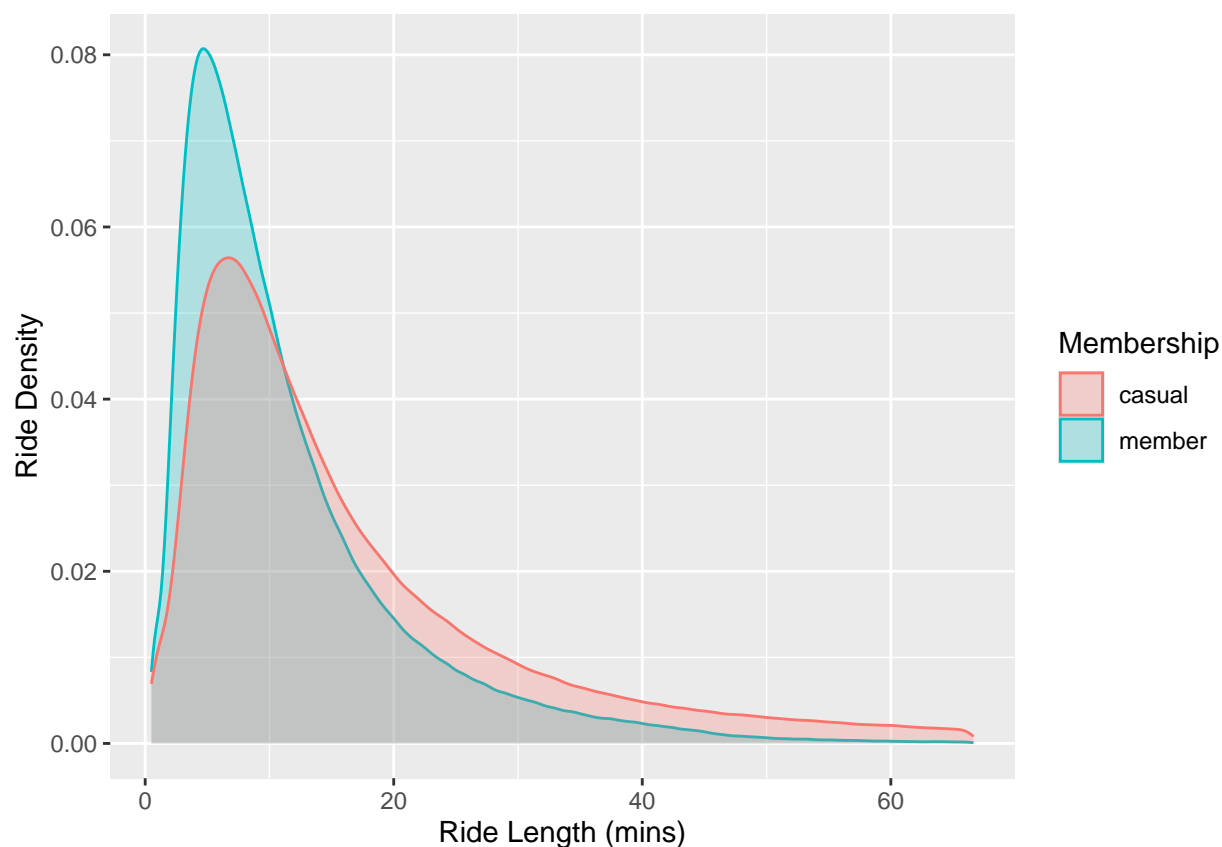
How long do users ride?

One of the most prevalent differences between member and casual users are the lengths of rides they go on. If we observe this data directly we notice several distinct characteristics.

Table 1: Average Rides Lengths

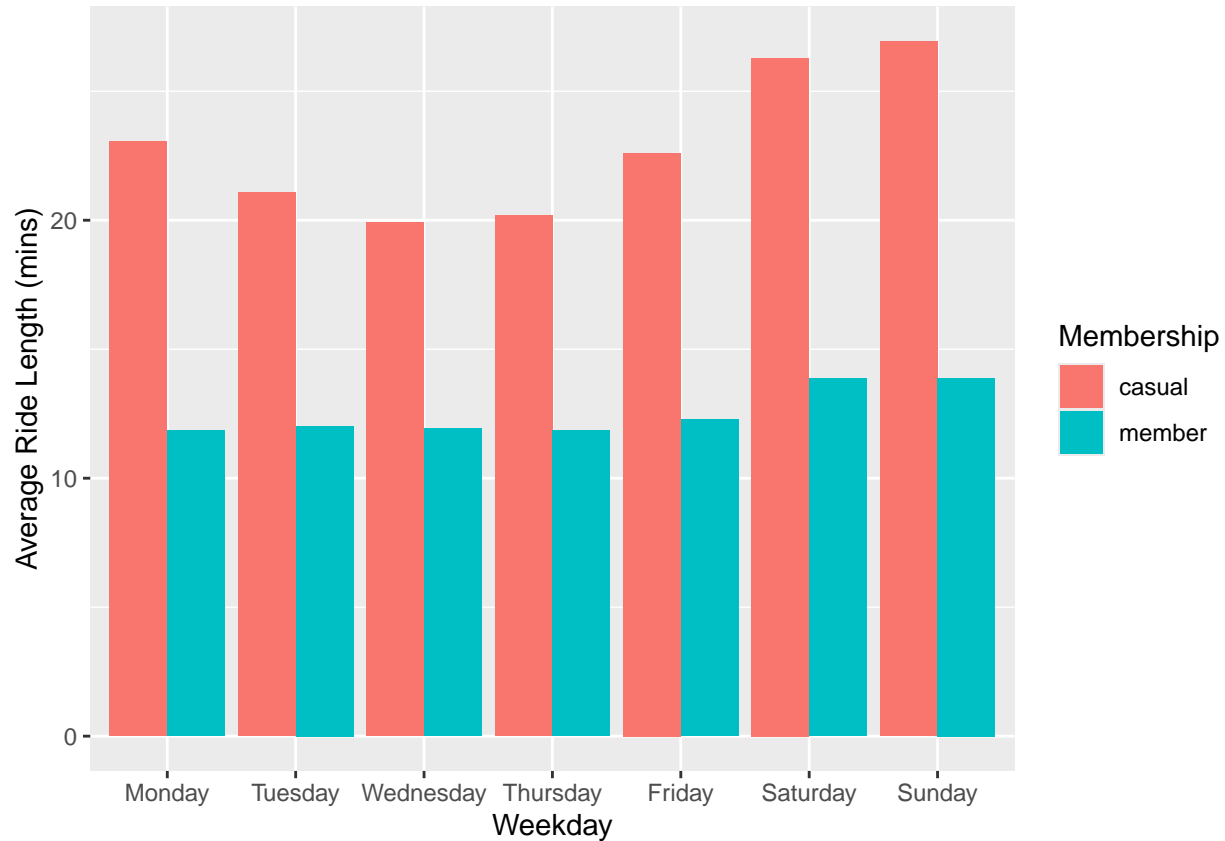
Membership	Average Ride	Median Ride
casual	23.27788	12.933333
member	12.41387	8.783333

We can see here that casuals take longer bike rides than members on average. However we can dig into this data more thoroughly. If we look at the density of ride lengths, that is how many rides are taken of any given length. We can clearly observe the differences.



Members have a much higher concentration of their rides that are less than ten minutes, with a very sharp falloff into longer rides. Where the casual riders have a much more significant tail of riders taking long rides.

When we look at rides throughout the week we will find that while members take similar length rides throughout the week. While Casuals take longer rides on the weekends.



We theorize that member users tend to use Cyclistic services for everyday tasks such as commuting and running errands. They have consistent use throughout the week, for shorter rides, using classic style bicycles, and continue usage in the colder months. Casual users take longer rides, concentrated on the weekends and in the summer. This is likely usage by tourists/visitors, or other recreation activities.

Recommendations:

To target casual users who are prime for conversion to member users, we recommend targeting users during the transition from Winter to Spring. We also recommend targeting riders who are making weekday rides, especially rides of shorter length. These users most align with the current use cases of member riders and would most benefit from membership subscription. Ways to accomplish this could be options such as a “commuter’s special” on membership for people who have taken multiple short rides. A “membership sample” on weekdays for people who are trying out the service. A “cool weather special” to start a membership for a reduced cost if they start in the colder months.

Appendix:

- Data collected from nearly 6 million rides in the Chicago area from March 2023 to February 2024
- Density of rides: The portion of rides that went for any given length.
- Percentages are representative within the grouping in question. As there are far more member rides than casual rides, using percent of total rides skews towards members greatly.