Bike-Sharing Capstone Project

By Nigel

Summary of Scenario

You are a junior data analyst working in the marketing analyst team at Cyclistic, a bike-share company in Chicago. The director of marketing believes the company's future success depends on maximizing the number of annual memberships. Therefore, your team wants to understand how casual riders and annual members use Cyclistic bikes differently.

From these insights, your team will design a new marketing strategy to convert casual riders into annual members. But first, Cyclistic executives must approve your recommendations, so they must be backed up with compelling data insights and professional data visualizations.

The Data Analysis Process

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Problem statement

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Prepare & Process Data

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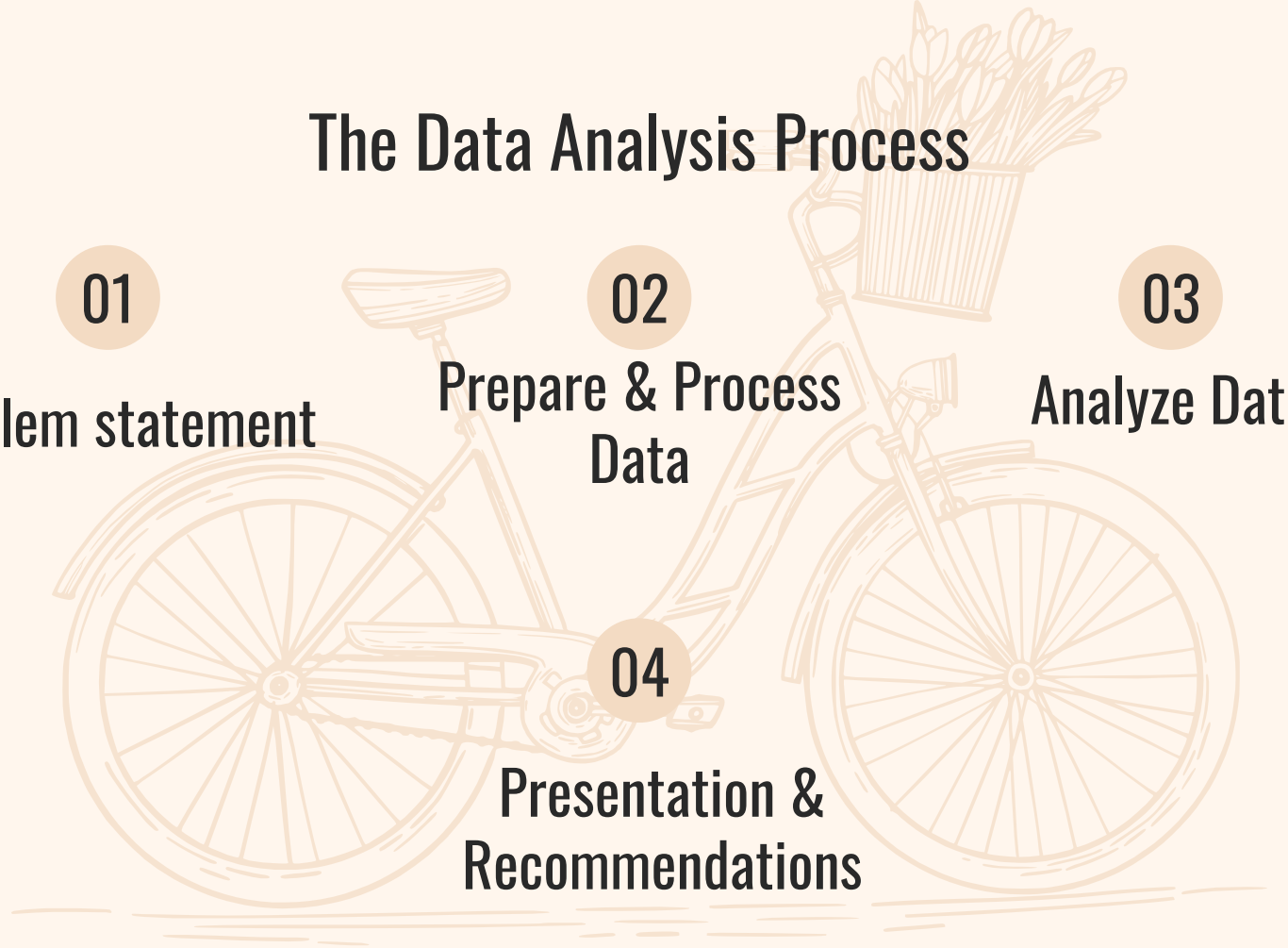
Presentation & Recommendations



01

Problem Statement

Ask (Problem Statement)

- **What is the main business task?**

➢ What is the most effective market strategies to convert casual riders into annual members?

- **Assigned Task:**

➢ How do annual and casual riders use Cyclistic bike differently?

02

Prepare & Process Data

Prepare

- **Preparation of Data – Downloading previous 12 months of cyclistic data:**

https://divvy-tripdata.s3.amazonaws.com/index.html

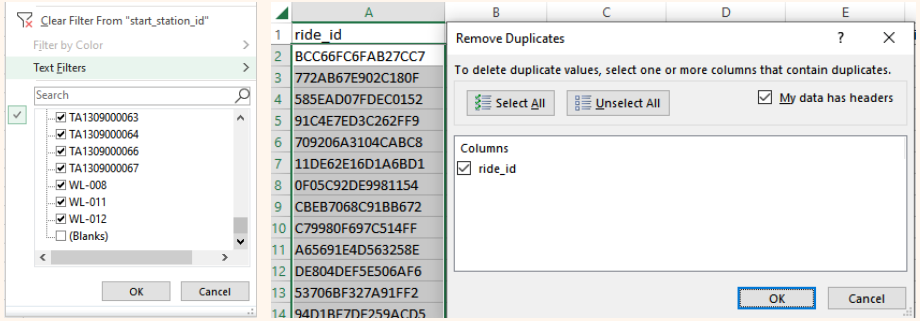
202112-divvy-tripdata.zip	Jan 7th 2022, 12:18:45 am	9.33 MB	ZIP file
202201-divvy-tripdata.zip	Feb 3rd 2022, 12:55:22 am	3.84 MB	ZIP file
202202-divvy-tripdata.zip	Mar 3rd 2022, 04:22:47 am	4.30 MB	ZIP file
202203-divvy-tripdata.zip	Apr 7th 2022, 01:07:41 am	10.39 MB	ZIP file
202204-divvy-tripdata.zip	May 4th 2022, 12:33:19 am	13.36 MB	ZIP file
202205-divvy-tripdata.zip	Jun 4th 2022, 10:08:02 am	22.68 MB	ZIP file
202206-divvy-tripdata.zip	Jul 15th 2022, 11:27:59 pm	26.90 MB	ZIP file
202207-divvy-tripdata.zip	Aug 6th 2022, 06:27:33 am	29.51 MB	ZIP file
202208-divvy-tripdata.zip	Sep 9th 2022, 06:20:19 am	27.13 MB	ZIP file
202209-divvy-tripdata.zip	Oct 11th 2022, 11:59:39 pm	25.31 MB	ZIP file
202210-divvy-tripdata.zip	Nov 9th 2022, 06:47:10 am	20.08 MB	ZIP file
202211-divvy-tripdata.zip	Dec 6th 2022, 02:17:32 am	12.36 MB	ZIP file

Data made available by Motivate International Inc.: Data License Agreement | Divvy Bikes

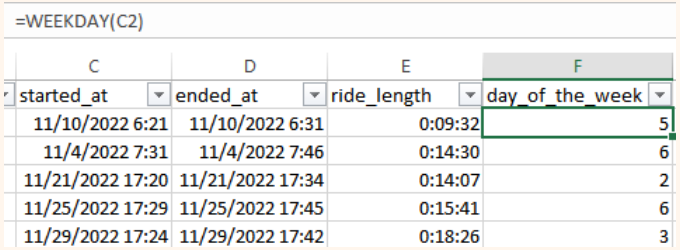
Process

- Filter all the columns to remove blanks,

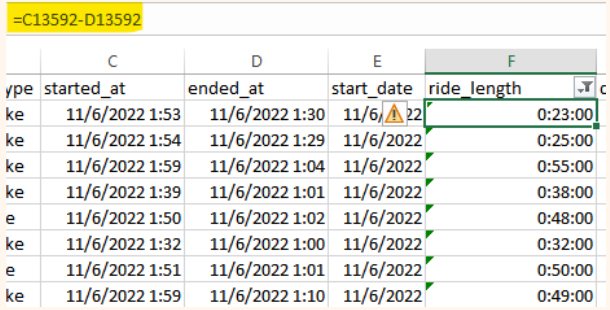
as well as removing duplicates if any.



- Insert columns; trip duration as "ride_length", and "day_of_the_week", where 1 = Sunday, 7 = Saturday respectively.



- For overnight trips, subtract "end_date" from "start_date" instead of the other way round for "ride_length".



03

Analyze Data

Analyze (Excel)

- Analyzing data by calculating the following values:

➢ *AVERAGE(ride_length)* -> The average length of a trip is 36min50s.

➢ *MAX(ride_length)* -> The max. length of a trip is 57min59seconds

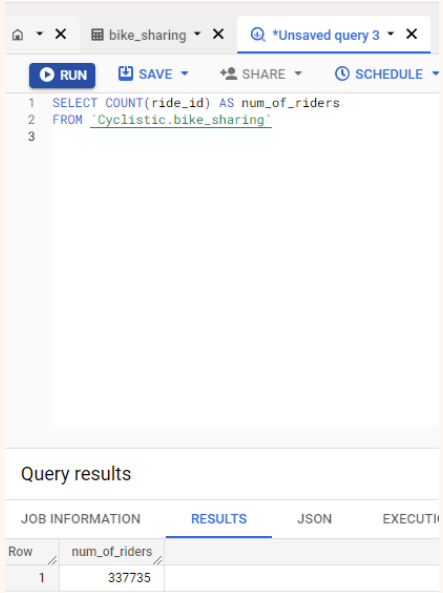
➢ *MODE.SNGL(day_of_the_week)* -> The day with highest frequency of bike renting is Wednesday.

G	H	I
mean_ride_length	max_ride_length	mode_day of week
0:36:50	0:57:59	4

Analyze (SQL)

- Using SQL (BigQuery), we can find out the following by entering the queries as shown:

```
SELECT COUNT(ride_id) AS num_of_riders
FROM `Cyclistic.bike_sharing`
```

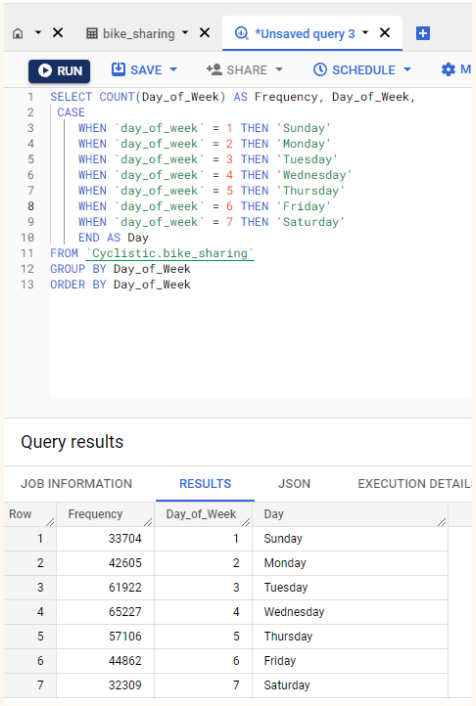


No. of Riders = 337735

Analyze (SQL)

- Using SQL (BigQuery), we can find out the following by entering the queries as shown:

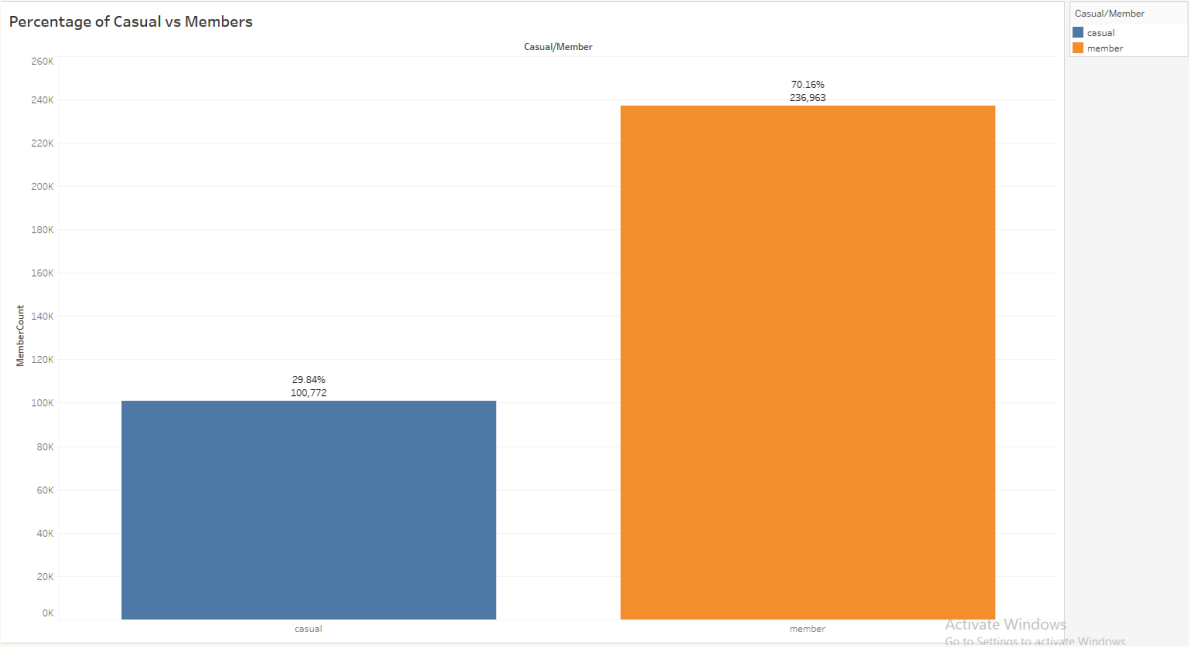
```
SELECT COUNT(Day_of_Week) AS Frequency, Day_of_Week,
 CASE
    WHEN `day_of_week` = 1 THEN 'Sunday'
    WHEN `day_of_week` = 2 THEN 'Monday'
    WHEN `day_of_week` = 3 THEN 'Tuesday'
    WHEN `day_of_week` = 4 THEN 'Wednesday'
    WHEN `day_of_week` = 5 THEN 'Thursday'
    WHEN `day_of_week` = 6 THEN 'Friday'
    WHEN `day_of_week` = 7 THEN 'Saturday'
    END AS Day
FROM `Cyclistic.bike_sharing`
GROUP BY Day_of_Week
ORDER BY Day_of_Week
```



From this query, we can tell that the there is an upward trend of bike utilization from Monday towards Wednesday, and a downward trend from Thursday to Sunday.

Analyze (Tableau)

- From the bar graph, we can see the percentage of casual vs members that used the bike.
- There is a huge number of members – about 70%, as compared to casual members of 29%.



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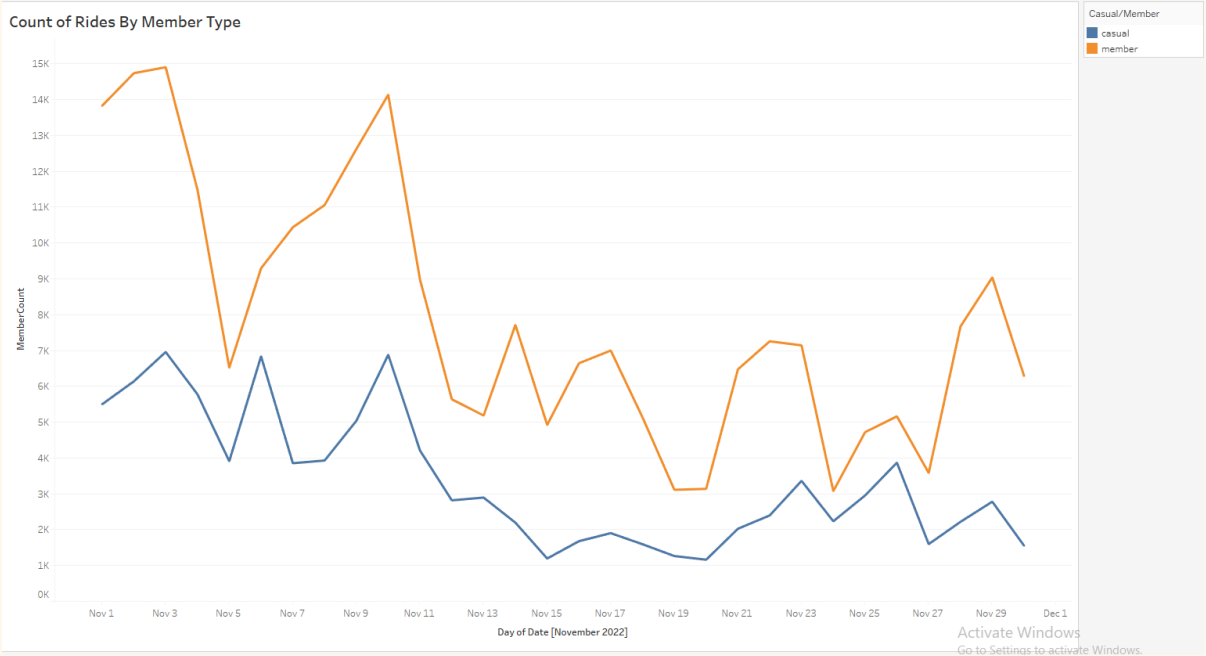
Analyze (Tableau)

- From the line graph, we can see that the number of rides by members are at a consistently higher rate as compared to casual members.



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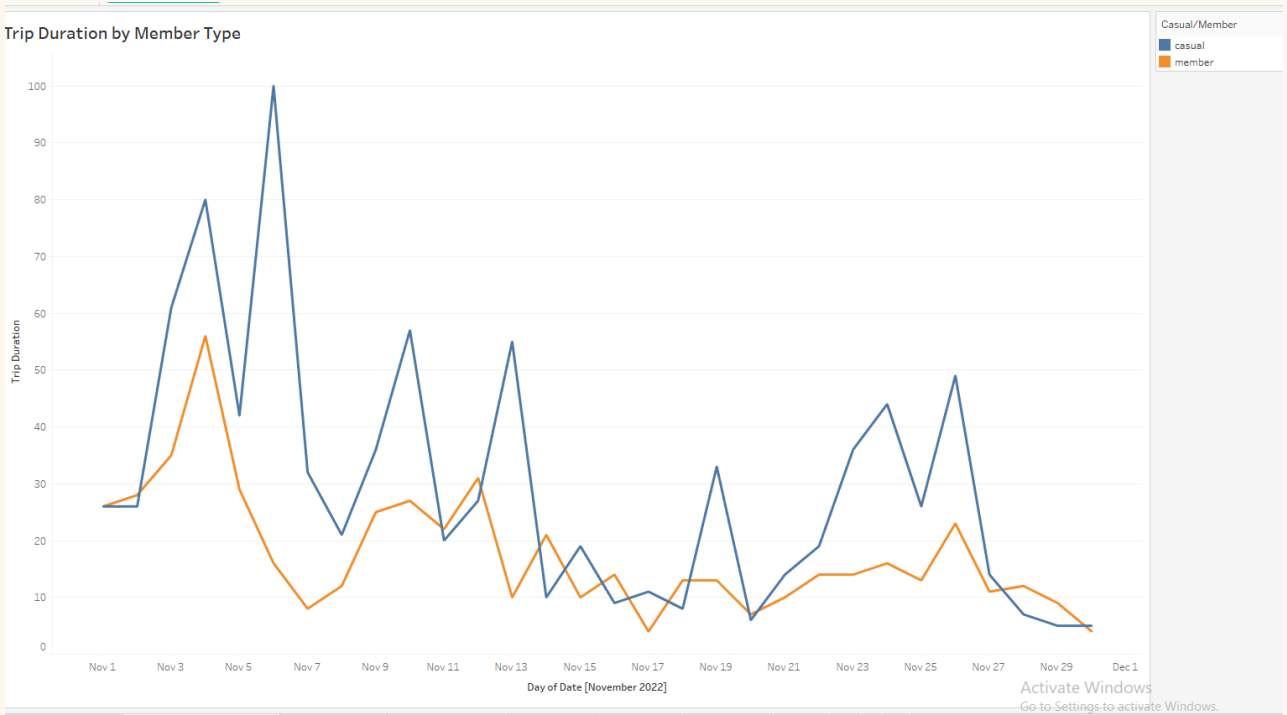
Analyze (Tableau)

- From this graph however, we can spot a trend where casual members typically use the bike services for a longer duration compared to members.



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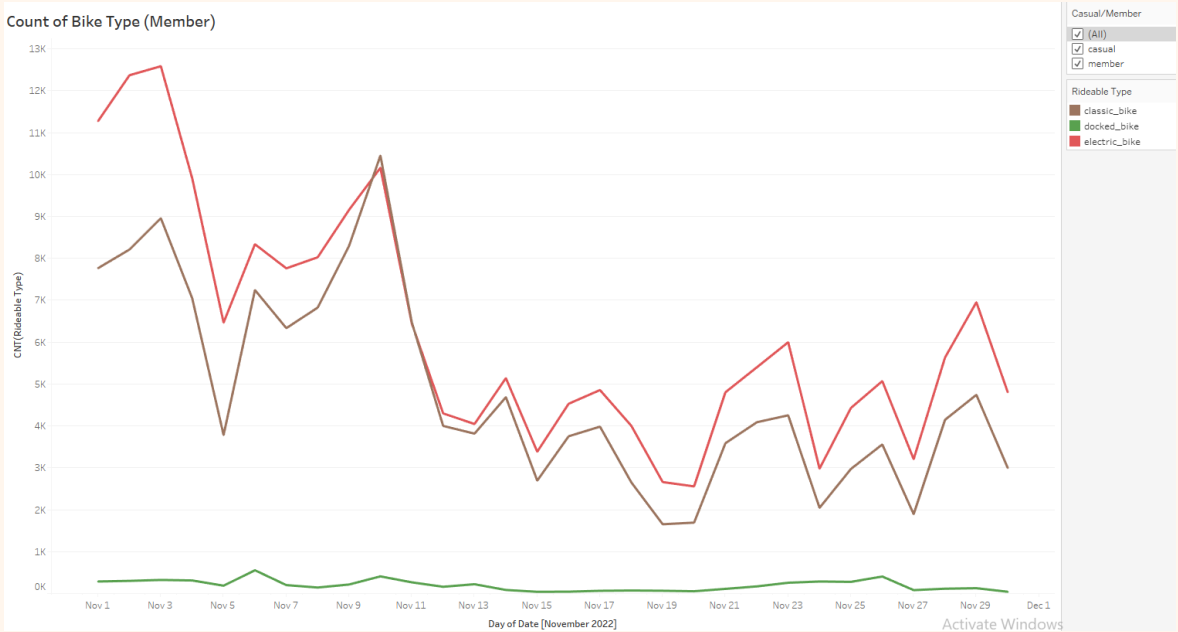
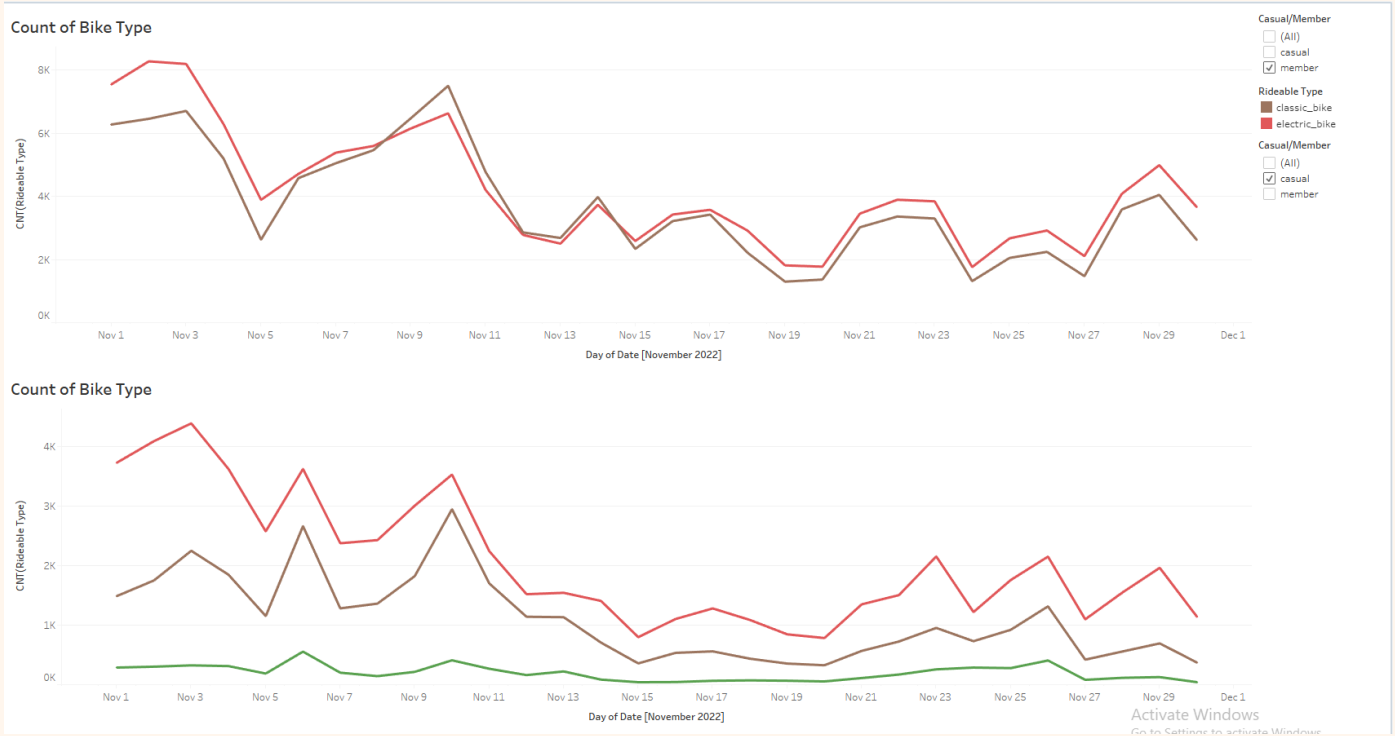
Analyze (Tableau)

- Here, we can see the types of bike used – class, docked, and electric.
- The classic and docked bike is used more commonly as compared to the dock bike.



Analyze (Tableau)

- However, by adjusting the member/casual filter, we can see that members do not use the docked bike at all. The docked bike uses comes from the casual members.



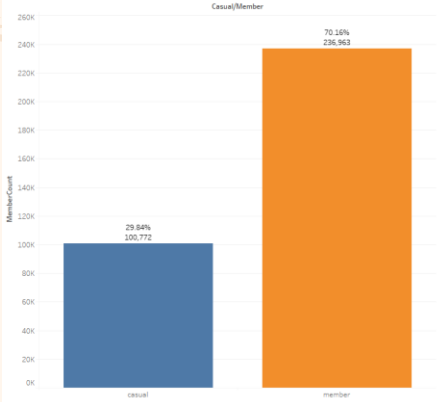
04

Presentation & Recommendations

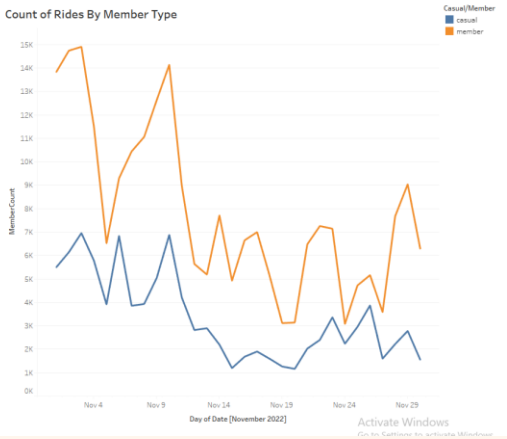
Tableau – Link to Live Version

- https://public.tableau.com/views/Cyclistic_CapstoneProject/Story1?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

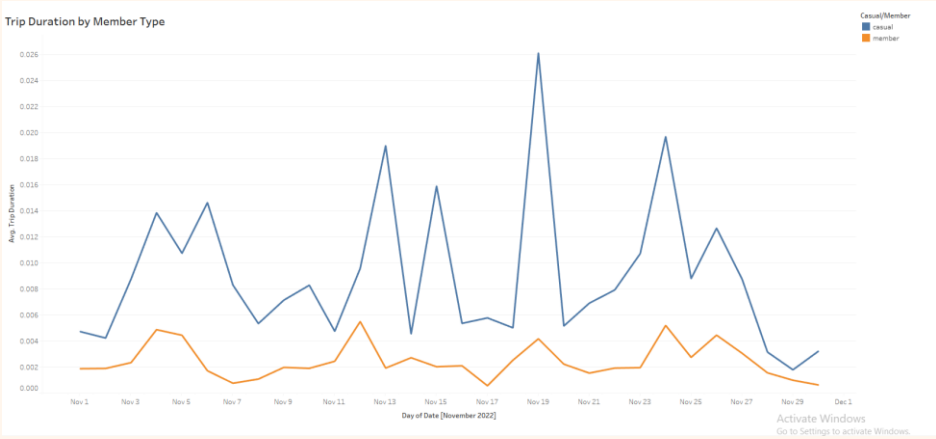
Percentage of Casual vs Members



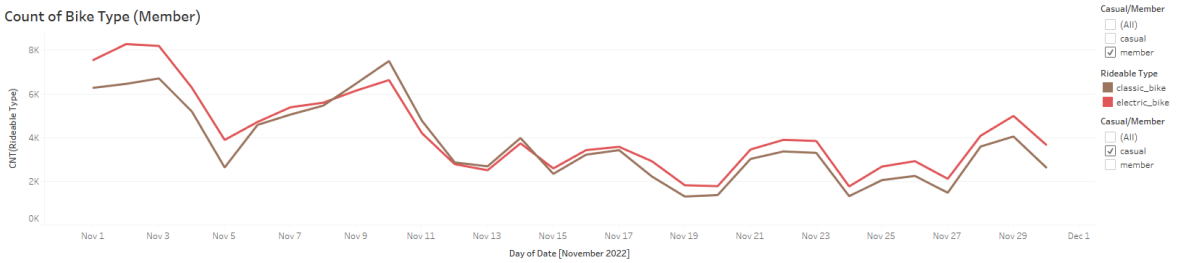
Count of Rides By Member Type



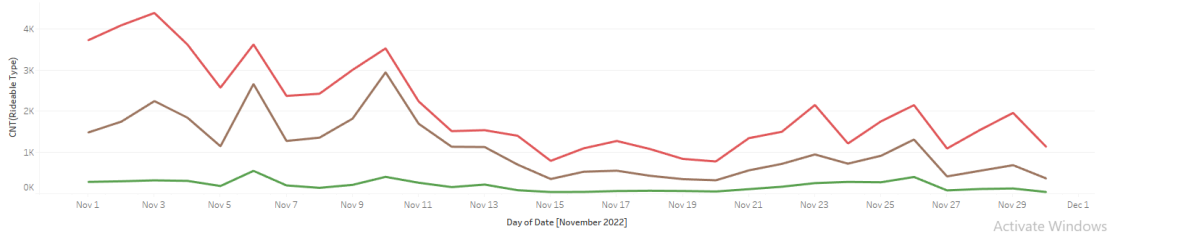
Trip Duration by Member Type



Count of Bike Type (Member)



Count of Bike Type (Casual)



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Recommendation

- From the visualized data, we understand that casual members sometimes use the bike services for a longer period, although the frequency of uses is significantly lower than the members.
- This could be due to the fact that the casual members will want to maximize a longer trip for a “one-time-use” rather than having the need to use the services on multiple occasions.

RECOMMENDATION 1:

Marketing strategies could revolve around this concept, for example, the company could implement **a cost-by-mileage system** for trips which exceed a certain mileage. Meaning it will be more advisable to apply for a membership, especially for customers who often ride for a long distance.

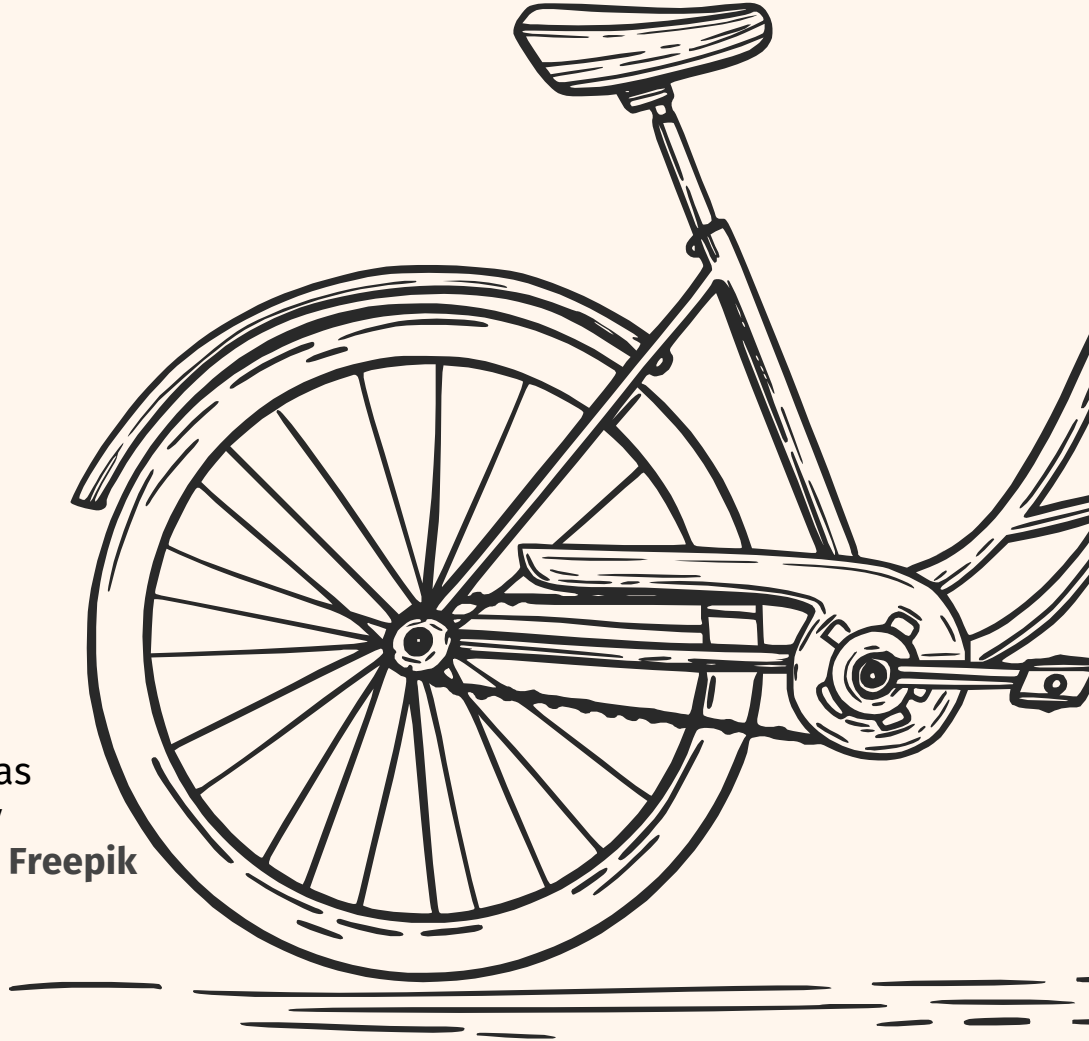
Recommendation

- Another significant trend is when the docked bike are being used by the casual members rather than members themselves.
- This could be due to reasons such as the functionality of the electric/classic bikes being much better than the docked bikes. Or because it is more convenient in the sense that customers will not have to spend too much time undocking the bike.

RECOMMENDATION 2:

A marketing strategy could be to promote these unique features where the electric and classic bike has, which the docked bikes do not have. For example, allowing unlimited access to the electric/classic bikes for members, while limiting the access of these bikes to casual members to a twice-per-month usage, etc.

Thank You



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