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1. Business Task

Scenario

You are a junior data analyst working on 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.

Business Goal

Understand how casual riders and annual members differ in their usage patterns of Cyclistic bikes, to design data-backed marketing strategies that convert casual riders into annual members.

2. Data Description

O1 The dataset was collected in 2024 and consists of 12 CSV files, each corresponding to a month from January to December.

O2 The CSV files contain the following attributes:
- ride_id
- rideable_type
- started_at
- ended_at
- start_station_name
- start_station_id
- end_station_name
- end_station_id
- start_lat
- start_lng
- end_lat
- end_lng
- member_casual

ride_id	rideable_type	started_at	ended_at	start_station_name
C1D650626C8C899A	electric_bike	2024-01-12 15:30:27.0000000	2024-01-12 15:37:59.0000000	Wells St & Elm St
EECD38BDB25BFCB0	electric_bike	2024-01-08 15:45:46.0000000	2024-01-08 15:52:59.0000000	Wells St & Elm St
F4A9CE78061F17F7	electric_bike	2024-01-27 12:27:19.0000000	2024-01-27 12:35:19.0000000	Wells St & Elm St
0A0D9E15EE50B171	classic_bike	2024-01-29 16:26:17.0000000	2024-01-29 16:56:06.0000000	Wells St & Randolph St
33FFC9805E3EFF9A	classic_bike	2024-01-31 05:43:23.0000000	2024-01-31 06:09:35.0000000	Lincoln Ave & Waveland Ave
C96080812CD285C5	classic_bike	2024-01-07 11:21:24.0000000	2024-01-07 11:30:03.0000000	Wells St & Elm St
0EA7CB313D4F456A	classic_bike	2024-01-05 14:44:12.0000000	2024-01-05 14:53:06.0000000	Wells St & Elm St
EE11F3A3B39CFBD8	electric_bike	2024-01-04 18:19:53.0000000	2024-01-04 18:28:04.0000000	Wells St & Elm St
63E83DE8E3279F15	classic_bike	2024-01-01 14:46:53.0000000	2024-01-01 14:57:02.0000000	Wells St & Elm St
8005682869122D93	electric_bike	2024-01-03 19:31:08.0000000	2024-01-03 19:40:05.0000000	Clark St & Ida B Wells Dr
22B85E685AE0D490	electric_bike	2024-01-03 07:39:20.0000000	2024-01-03 07:47:12.0000000	Wells St & Elm St
133CDC03CA430172	classic_bike	2024-01-03 17:03:11.0000000	2024-01-03 17:13:15.0000000	Wells St & Elm St
32D57BF92858025D	electric_bike	2024-01-10 17:04:09.0000000	2024-01-10 17:11:40.0000000	Wells St & Elm St
B110B5685C38D69B	electric_bike	2024-01-12 12:35:14.0000000	2024-01-12 12:43:34.0000000	Clark St & Ida B Wells Dr
B6608710B5FA0938	electric_bike	2024-01-07 08:00:19.0000000	2024-01-07 08:06:46.0000000	Clark St & Ida B Wells Dr

O3 The data is stored in a SQL Server database, comprising over 5.8 million records aggregated from all files.d

**O4** Data source: https://divvy–tripdata.s3.amazonaws.com/index.html

3. Data Processing

- Create a table named trip_data by combining the monthly tables from January to December.

- Remove any duplicate entries to ensure data integrity.

- Missing values were handled by imputing 'None' for categorical (string) attributes and 'O' for numerical attributes.

- Store the cleaned data in a new table called tripdata_cleaned.
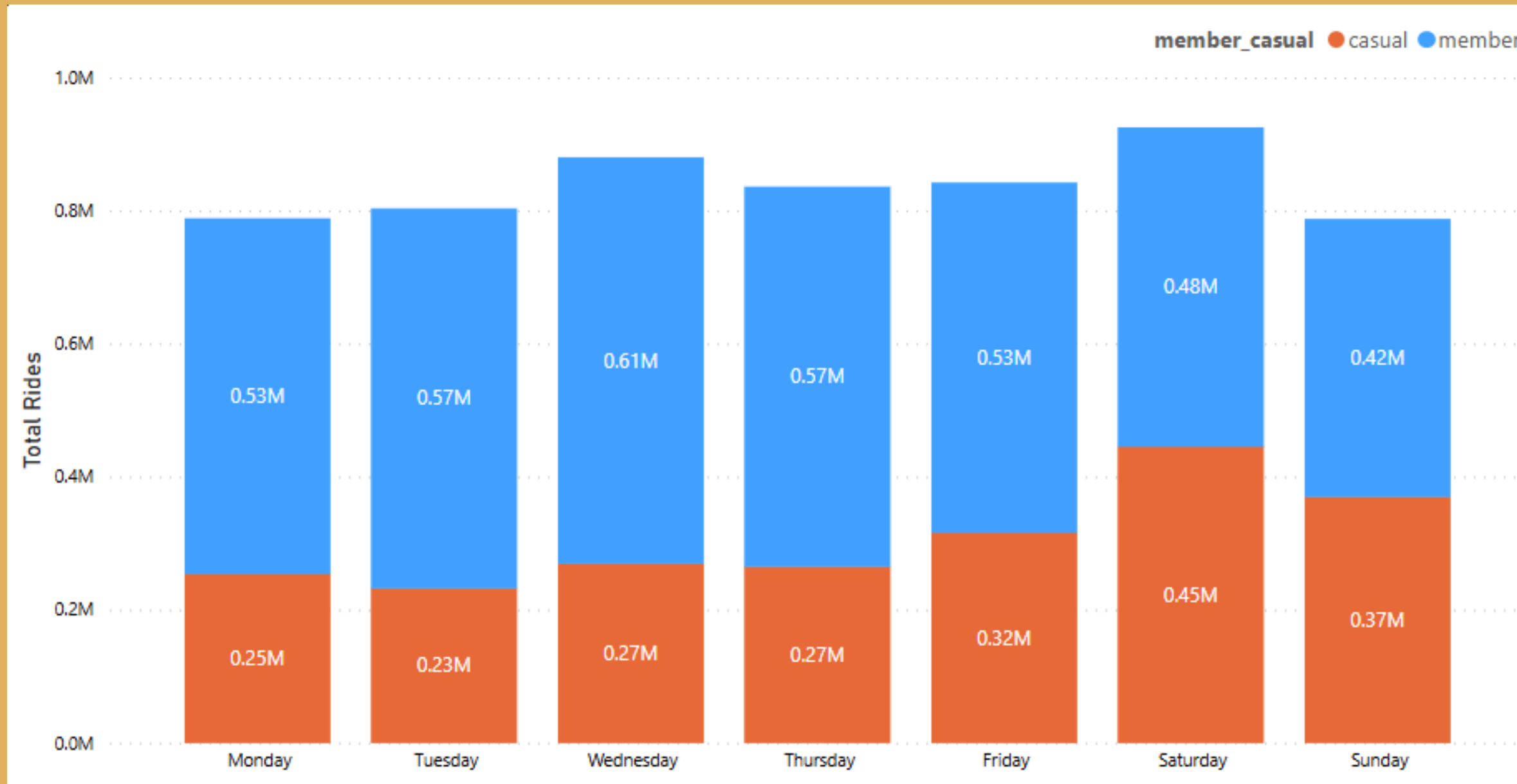
4. Analyze Data

%Casual and Member riders
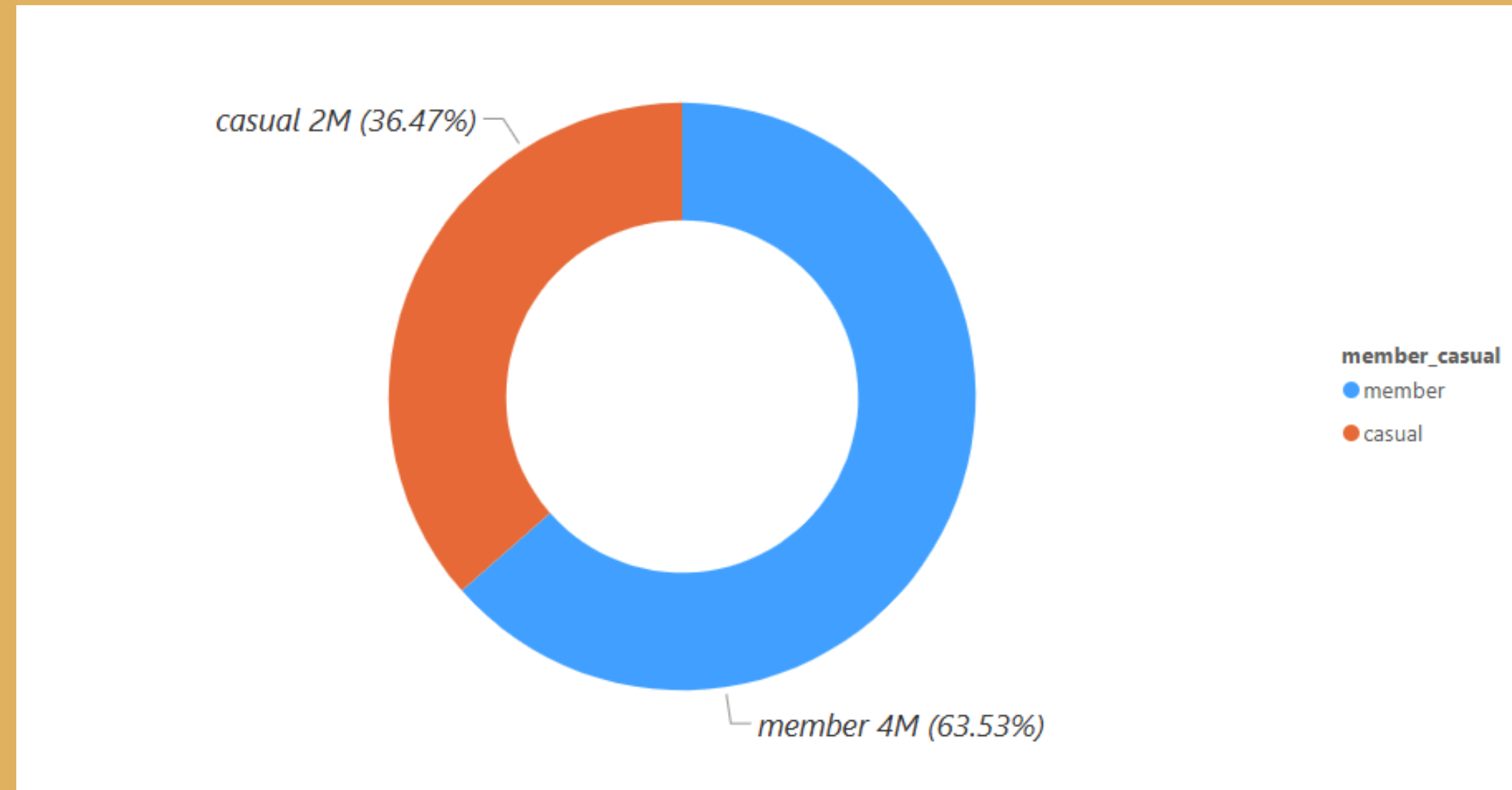
In 2024, Cyclistic members made up the majority of riders, accounting for 64% of total rides, nearly double the number of casual riders. This indicates that membership is the dominant usage model and highlights strong user commitment among members.

Rides by Day of Week

Member riders consistently outnumber casual riders on weekdays, with a peak on Wednesday, suggesting a strong commuter base. In contrast, casual riders peak on Saturday, indicating leisure or recreational use. On weekends, the gap between member and casual riders narrows significantly, showing that casual usage is more event- or experience-driven.

Rides by Time of Day
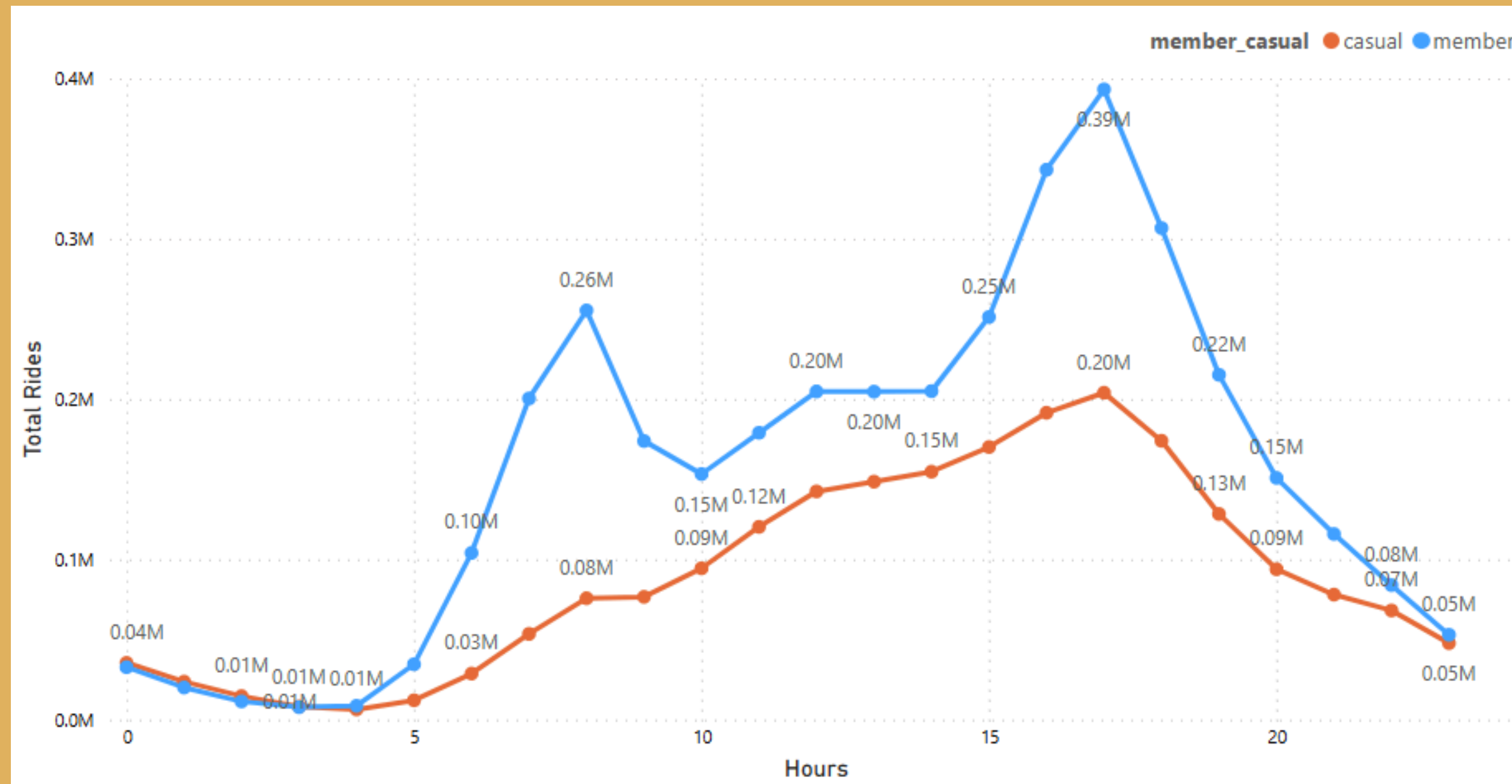
Both member and casual riders are most active between 2:00 PM and 5:00 PM, likely reflecting afternoon leisure or errands. However, members also show a distinct morning peak between 4:00 AM and 8:00 AM, indicating usage during early commuting hours, a behavior not mirrored by casual riders.

Rideable Type Preference
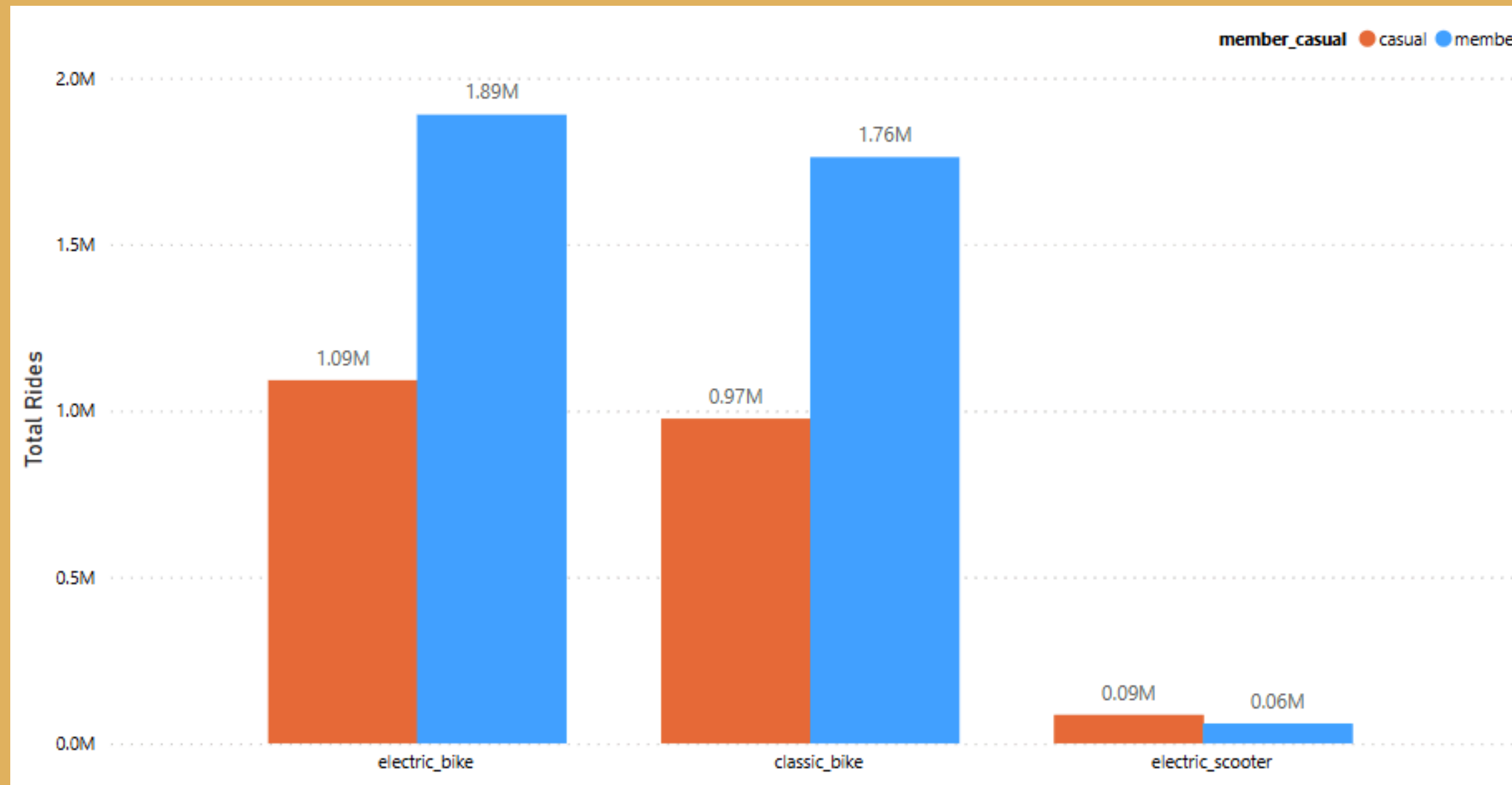
Electric bikes are the most preferred rideable type for both member and casual riders, while electric scooters are the least used, particularly by members. Classic bikes also see strong usage across both groups, indicating a balanced demand for both traditional and electric options.

Popular Start Stations
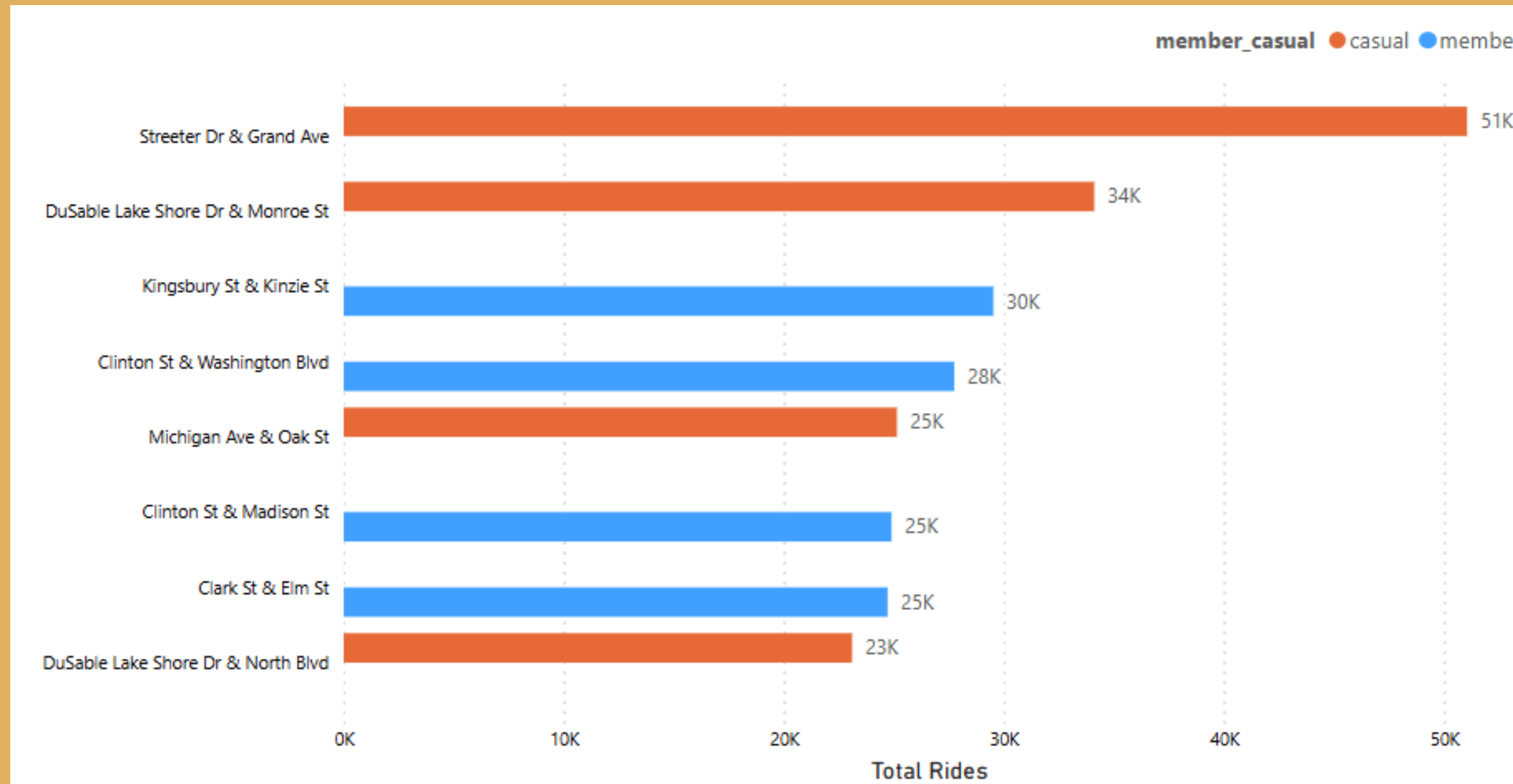
Member riders tend to start rides from a broad range of stations with relatively even distribution, while casual riders concentrate heavily at a few high-traffic tourist locations. For example, Streeter Dr & Grand Ave stands out with over 51,000 casual rides, nearly double the top member station, Kingsbury St & Kinzie St, which has around 30,000.

5. Recommendation

Target Weekend Casual Riders with On-Site Membership Promos

- Deploy physical signage, QR codes, or mobile push notifications at high-casual stations.
- Offer limited-time weekend membership discounts (e.g., "Ride more, save more — join today for unlimited weekend rides").
- Use geotargeted ads around tourist-heavy areas on weekends.

Promote Membership as a Weekday Commuting Solution

- Run digital ads and email campaigns that position membership as the smarter choice for daily commuting.
- Highlight time-saving benefits: "Always a bike near you. No checkout lines. Save every ride."
- Partner with local employers or transit agencies for corporate membership bundles.

Highlight the Value of Electric Bikes in Membership

- Emphasize in marketing that membership gives unlimited access to electric bikes — faster, easier, and great for both commutes and leisure.
- Promote a cost-comparison between casual pay-per-ride electric bike use vs. unlimited rides with membership.
- Offer first-month electric upgrade bonuses or free trials of member-exclusive perks.

6. Dashboard

https://github.com/huutai-le/Cyclistic-bike-share.git