



Cyclistic Case Study: Understanding the Difference In Rider Usage

1. Business Task

The business task is to analyze and compare the usage patterns of Cyclistics's casual riders and annual members to identify key differences. The analysis will help to develop data-driven marketing strategies aimed at converting casual riders into annual members.

2. Data Sources

- Primary Dataset: Divvy bike-share trip datasets (Divvy_2019_Q1 and Divvy_2020_Q1) cover the riders activities in the first quarter of the years, 2019 and 2020. It includes details such as trip duration, start and end times. Start and end locations, bike IDs, and user types (member_casual), etc. The datasets are used to analyze historical usage patterns of Cyclistic's bike-share service, identify trends, and changes in behavior from 2019 to 2020, providing insights into how usage patterns have evolved.
- Source: The data is provided by a reputable source, Motivate International Inc., under a specific license for educational and analytical purposes, which adds to its credibility.

3. Data Cleaning & Manipulation

To prepare the Cyclistic bike-share data for analysis, I performed the following cleaning and transformation steps using Google Sheets and BigQuery.

Performed in Spreadsheet:

- Checked for duplicates.
- Removed columns that were not relevant to this case study, examples; birth year and gender.
- Created ride_length and day_of_week columns
- Basic Calculation:
 - Mean of ride_length: Provided a general sense of average trip duration.
 - Maximum ride_length: Helped identify potential outliers or unusually long rides.
 - Mode of day_of_week: Revealed the most common day for rides, offering insight into peak usage patterns.
- Pivot Table Analysis

To uncover behavioral patterns by rider type and day of the week, I created several pivot tables:

1. Average Ride Length by Rider Type

- Rows: member_casual
- Values: Average of ride_length

→ Showed that casual riders tend to take longer trips than members.

2. Average Ride Length by Day of Week and Rider Type

- Rows: member_casual
- Columns: day_of_week
- Values: Average of ride_length

→ Helped identify which days casual riders take longer rides (typically weekends). And Members take shorter rides, often on weekdays.

3. Ride Count by Day of Week and Rider Type

- Rows: member_casual
- Columns: day_of_week
- Values: Count of trip_id

→ Revealed ride volume trends across the week, highlighting peak days for each rider type.

Performed in BigQuery:

- Removed nulls and rides with negative or zero duration.
- Standardized column names across monthly files.
- Calculated new fields:
Ride duration and Average Ride duration
- Merged Dataset: Combined monthly CSV files into a single dataset using BigQuery.
- Aggregated summary statistics: (total rides and average duration by rider type) and trends (rider type, ride count, average ride duration, and day of week). These statistics were exported to Google Sheets for visualization.

4. Summary of Statistics

- **Cyclistic's Summary Statistics of total rides and average ride duration.**

Rider Type	Total_Rides	Avg_Duration (min)
Member	716592	12.83
Casual	67692	89.3

Key Insights:

The data above reveals a clear behavioral contrast between Cyclistic's two rider types:

- Members took 716592 rides with an average duration of 12.83 minutes, indicating frequent, short trips—likely for commuting or utility.
- Casual riders completed 67692 rides with a longer average duration of 89.3 minutes, suggesting leisure-oriented usage and less frequent engagement.

- **Cyclistic's Trends by ride counts and day of week**

day_of_week	casual	member
1	18586	59716
2	5580	109873
3	7289	127391
4	7658	121325
5	7127	124598
6	7996	114624
7	13456	59065

The trend was investigated to add more details to the summary analysis. It highlights which rider type prefers longer or shorter rides on specific days, whether weekends show different patterns than weekdays, or how ride duration varies by user type and time.

Key Insights:

- Members show consistently high ride counts on weekdays (Monday to Friday), indicating a strong pattern of commuting or routine travel.
- Casual riders peak on weekends, especially Saturday and Sunday, suggesting leisure-oriented usage.

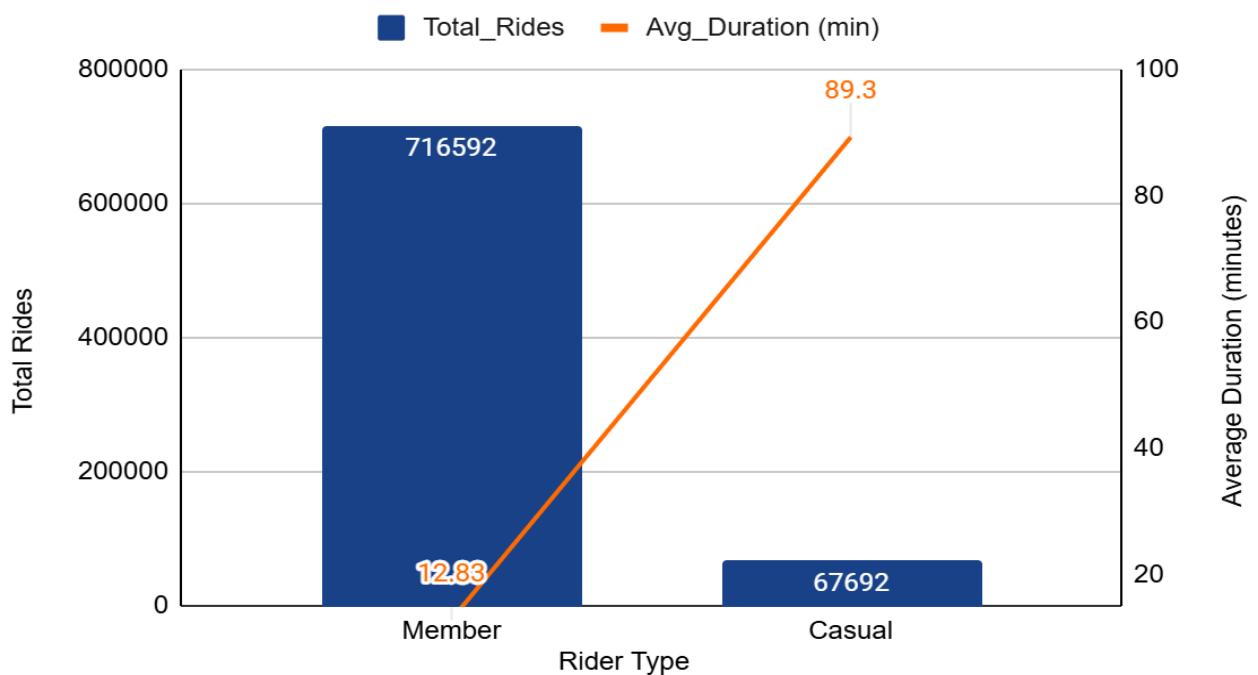
5. Visualizations:

Google sheet was the visualization tool used to create the charts.

- The first chart (Combo Chart), illustrates the usage behavior of Members and Casual riders by total rides and average ride duration in minutes.
 - Bar charts (blue bars) represent total rides
 - Line chart (orange line) shows average ride duration in minutes.
- The second chart (Column Chart) illustrates the Ride Count of Members and Casual riders by day.
 - Bar charts: Blue bars represent members and Orange bars represent casual riders

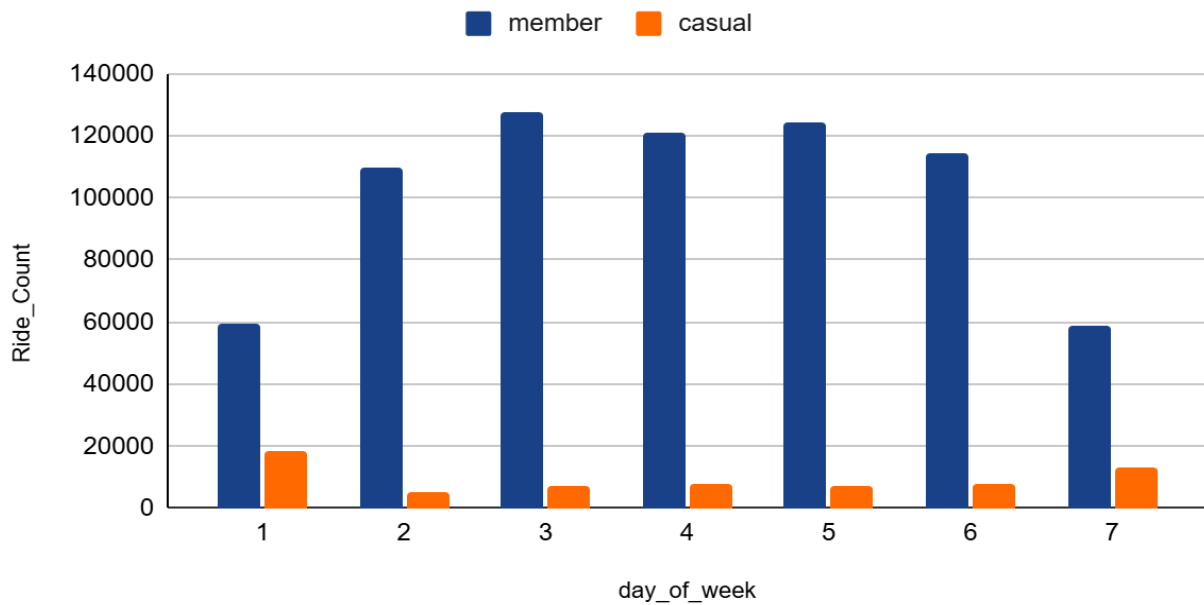
Cyclistic Member vs Casual Usage: Total Rides and Average Duration

Comparing Ride Volume and Duration Across Rider Types



Cyclistic Member vs Casual Usage: Ride Count and Day

Comparing Member and Casual Rider Activity Across the Week



6. Recommendations:

- Target Casual Riders with Time-Based Promotions
 - Offer weekend packages or incentives to convert leisure users into members.
 - Highlight Member Benefits for Frequent Riders.
- Emphasize cost savings and convenience for short, frequent trips.
 - Promote weekday convenience and cost savings to casual riders.
- Leverage Leisure Patterns in Marketing
 - Promote scenic routes and social riding experiences to convert casuals into members.