



Cyclistic Bike-Share Marketing Strategy Analysis



Presented by Azka Ihsan Nurrahman July 2, 2025

Presentation Outline



- Executive Summary
- Introduction
- Methodology
- Results
- Conclusion
- Appendix

Executive Summary



Project Goal

- Analyze historical ride data to understand how casual riders and annual members use Cyclistic bikes differently.
- Support the marketing team's objective to increase annual memberships by identifying high-potential conversion strategies.

Data & Methodology

- Used 12 months of ride data (June 2024 May 2025) from Divvy.
- Processed over 5 million ride records, segmented by user type.
- Conducted data cleaning, feature engineering, and visual exploration.
- Generated summary tables, behavioral segmentations, and visualizations.

Executive Summary



Key Insights

- Casual riders ride longer and prefer weekends, suggesting leisure-focused usage.
- Members ride more frequently, on weekdays, and during commute hours, indicating routine commuting.
- Electric bikes are more popular among casuals, while members more often use classic bikes.
- Top casual rider stations are located in tourist-heavy areas (e.g., Millennium Park, Navy Pier).
- Casual ride activity is highly seasonal, peaking in summer and declining sharply in winter.

Executive Summary



Recommendations

- Convert weekend casuals with weekday access trials and summer-only membership promos.
- Leverage electric bike interest by offering e-bike credits in annual membership perks.
- Geo-target promotions at high-volume casual start stations using QR codes, app push notifications, or on-site signage.

Introduction



Background, Context, and Problems

Background & Context



- Cyclistic is a bike-share company based in Chicago, launched in 2016. It operates over 5,800 bicycles and 600+ docking stations, including specialized bikes (e.g., reclining, hand tricycles, cargo bikes) for inclusivity.
- Casual riders use single-ride or full-day passes, while annual members subscribe to a membership plan. About 30% of users commute to work, but most use the service for leisure.
- Cyclistic's financial team has identified that annual members are more profitable than casual riders.
- Past marketing strategies focused on broad awareness and pricing flexibility, not targeted conversion.

Background & Context



- The marketing director, Lily Moreno, sees an opportunity to convert casual riders into annual members—they're already aware of the service and willing to pay.
- To support this goal, the company wants to analyze historical trip data to understand behavioral differences between the two rider types.
- The insight will inform a targeted marketing campaign aimed at growing the annual membership base.

Problem Statement



How do annual members and casual riders use Cyclistic bikes differently?

Business Task Statement



Analyze how annual members and casual riders use Cyclistic bikes differently to support the goal of increasing annual memberships.

Data Sources



- The data used in this analysis comes from publicly available historical trip data provided by Divvy Bikes and hosted by Motivate International Inc., under a data license agreement.
- Previous 12 months of Cyclistic trip data (<u>https://divvy-tripdata.s3.amazonaws.com/index.html</u>)
- Data timeframe to use: June 2024 to May 2025
- Each monthly dataset is in .csv format and contains detailed records of individual bike-share trips

Data Sources



- The data is anonymized and does not include personally identifiable information to maintain user privacy. However, it contains sufficient fields for behavioral analysis between rider types.
- This data is reliable, credible, and appropriate for analysis, as it comes directly from the official data-sharing platform of Divvy/Motivate. It enables accurate insights into rider behavior and supports the marketing team's goal of converting casual riders into annual members.

Methodology

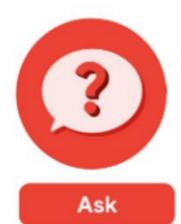


Ask, Prepare, Process, Analyze, Share, Act

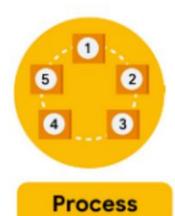
Methodology

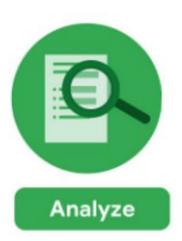




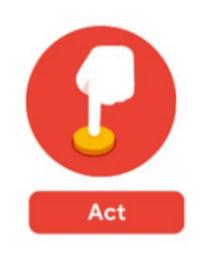












Ask questions and define the problem.

Prepare data by collecting and storing the information. **Process** data by cleaning and checking the information.

Analyze data to find patterns, relationships, and trends.

Share data with your audience.

Act on the data and use the analysis results.

Ask



Key Tasks

- Identify the business task.
- Consider key stakeholders.

Deliverables

A clear statement of the business task

Prepare



Key Tasks

- Download data and store it appropriately.
- Identify how it's organized.
- Sort and filter the data.
- Determine the credibility of the data.

Deliverables

A description of all data sources used

Process



Key Tasks

- Check the data for errors.
- Choose tools for process the data.
- Transform the data.
- Document the cleaning process.

Deliverables

Documentation of any cleaning or manipulation of data

Analyze



Key Tasks

- Aggregate data.
- Organize and format data.
- Perform calculations.
- Identify trends and relationships.

Deliverables

A summary of analysis

Share



Key Tasks

- Determine the best way to share findings.
- Create effective data visualizations.
- Present findings.
- Ensure work is accessible.

Deliverables

Supporting visualizations and key findings

Act



Key Tasks

- Create recommendations based on analysis
- Document the case study
- Present the case study

Deliverables

Top three recommendations based on analysis

Results



Ask, Prepare, Process, Analyze, Share, Act

Dataset Field



- ride_id: Unique identifier for each bike trip.
- rideable_type: Type of bike used, such as: classic_bike, electric_bike, docked_bike
- started_at: Date and time when the trip started (format: YYYY-MM-DD HH:MM:SS).
- ended_at: Date and time when the trip ended.
- start_station_name: Name of the station where the ride began.
- start_station_id: Unique identifier for the start station.
- end_station_name: Name of the station where the ride ended.
- end_station_id: Unique identifier for the end station.

Dataset Field



- start_lat: Latitude of the trip's starting location.
- start_lng: Longitude of the trip's starting location.
- end_lat: Latitude of the trip's ending location.
- end_lng: Longitude of the trip's ending location.
- member_casual: Type of user: member = annual subscriber, casual = single-ride or day-pass user

Data Cleaning



- Filter out outliers in ride length:
 - Rides < 1 minute (likely errors or station undocking issues)
 - Rides > 24 hours (potential anomalies)
- Null or missing values analysis. Understand and document if some rides have missing station names or IDs.

Data Manipulation



- Loaded all monthly CSV files from the current working directory using Python and Pandas.
- Parsed datetime columns started_at and ended_at to proper datetime format for accurate time calculations.
- Created a new column ride_length by subtracting started_at from ended_at to calculate the duration of each ride.
- Formatted ride_length values to HH:MM:SS format using timedelta for readability.
- Created a new column day_of_week by extracting the day of the week from the started_at column

Data Manipulation



- Saved the updated dataset as a new file with _processed.csv suffix for each original file.
- Repeated the above steps for each .csv file (representing each month's data).

Data Cleaning Summary





Time Frame	Missing Start Station Name	Missing Start Station ID	Missing End Station Name	Missing End Station ID	Missing End Lat	Missing End Lng	Outlier Rides	Cleaned Ride Count
June 2024	144025	144025	148027	148027	1124	1124	18777	691944
July 2024	136965	136965	139224	139224	1091	1091	17582	731380
August 2024	140591	140591	142225	142225	1027	1027	17989	737650
September 2024	189150	189150	192950	192950	753	753	21083	800193
October 2024	107147	107147	109517	109517	568	568	11392	604889
November 2024	56203	56203	57644	57644	273	273	5688	329387
December 2024	29191	29191	30776	30776	131	131	3487	174885
January 2025	22852	22852	24073	24073	61	61	2915	135774
February 2025	25928	25928	27249	27249	57	57	2792	149088
March 2025	55337	55337	57984	57984	241	241	6817	291338
April 2025	71196	71196	73635	73635	289	289	8186	363155
May 2025	103360	103360	107436	107436	551	551	12925	489531

Data Analysis - Descriptive Statistics



- Calculated mean ride duration using ride_length_sec and converted it back to HH:MM:SS format.
- Calculated maximum ride duration (longest single ride).
- Found the mode (most frequent) day of the week that rides started (day_of_week where 1 = Sunday, ..., 7 = Saturday).

Data Analysis - Grouped Analysis



- Computed the average ride length for each user type:
 - Separated by member and casual
 - Results shown in HH:MM:SS format
- Computed average ride length by day of week for each user type: Grouped by both member_casual and day_of_week
- Counted the number of rides by day of week for each user type: Reveals peak days for each group

Data Analysis - Behavior Patterns



- Ride Behavior Patterns:
 - Ride counts by hour of day
 - Ride counts and average ride length by bike type
 - Monthly ride counts per user type

Data Analysis - Comparison



- Comparison of weekend vs. weekday usage
- Comparison of average ride length

Data Analysis - Summary





Time Frame	User_Type	Ride_Count	Mean_Ride_Length _sec	Max_Ride_Length _sec	Mode_Day_of _Week	Weekend_Rides	Weekday_Rides	Avg_Weekend_Ride _Length_sec	Avg_Weekday_Ride _Length_sec
June 2024	casual	289907	1407.86	86145	1	120690	169217	1553.46	1304.02
June 2024	member	402037	808.19	85593	4	115999	286038	890.41	774.85
July 2024	casual	309499	1436.33	86321	7	105560	203939	1595.98	1353.7
July 2024	member	421881	803.21	85371	4	95792	326089	892.32	777.03
August 2024	member	430242	786.72	86218	5	115304	314938	883.89	751.14
August 2024	casual	307408	1353.98	86319	7	124872	182536	1506.1	1249.92
September 2024	member	465709	727.28	85492	2	112606	353103	801.26	703.68
September 2024	casual	334484	1159.37	86363	1	121598	212886	1346.2	1052.66
October 2024	member	394664	708.68	80046	4	87294	307370	789.34	685.77
October 2024	casual	210225	1214.85	86337	7	79323	130902	1451.32	1071.56
November 2024	member	238788	655.49	86395	6	60471	178317	704.64	638.82
November 2024	casual	90599	980.55	86396	7	35325	55274	1183.43	850.88
December 2024	member	137559	636.03	85129	2	30962	106597	687.5	621.08
December 2024	casual	37326	829.15	83414	2	12080	25246	974.84	759.44
January 2025	member	112340	598.43	83668	5	21092	91248	628.77	591.42
January 2025	casual	23434	724.3	84599	5	5719	17715	766.95	710.53
February 2025	member	122084	596.94	76627	3	24627	97457	623.94	590.12
February 2025	casual	27004	740.18	86024	6	7411	19593	893.78	682.08
March 2025	member	208471	667.25	84847	2	51090	157381	719.54	650.28
March 2025	casual	82867	1073.47	86112	7	29763	53104	1194.91	1005.4
April 2025	member	257910	675.92	79451	3	54741	203169	736.86	659.5
April 2025	casual	105245	1115.62	86096	7	35354	69891	1283.86	1030.52
May 2025	member	313973	713.23	83969	5	74085	239888	783.27	691.6
May 2025	casual	175558	1245.26	85270	7	64629	110929	1419.71	1143.62

Data Analysis - Full Year Summary



User_Type	casual	member
Total_Rides	1993556	3505658
Mean_Ride_Length_sec	1250.95	725.15
Max_Ride_Length_sec	86396	86395
Mode_Day_of_Week	7	4
Total_Weekend_Rides	742324	844063
Total_Weekday_Rides	1251232	2661595
Avg_Weekend_Ride_Length_sec	1428.14	802.62
Avg_Weekday_Ride_Length_sec	1145.82	700.58

Key Findings



- Casual riders ride longer on average (especially on weekends) than members.
- Members ride more frequently, especially on weekdays, likely for commuting.
- Casual rides peak on Saturdays, members on Wednesdays.
- Casual riders are leisure-focused, and members are commute-focused.

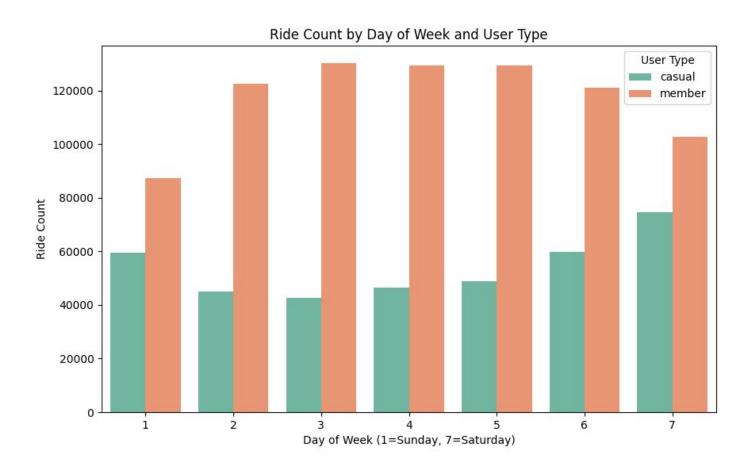
Data Visualization



- Bar Chart Ride count by day of week by user type
- Line Chart Monthly ride count trends by user type
- Box Plot / Histogram Ride duration distribution
- Heatmap Ride frequency by hour of day vs day of week
- Bar Chart Top Start Stations by User Type
- Stacked Bar Chart Bike Type Preference by User Type
- Grouped Bar Chart Weekend vs. Weekday Ride Count by User Type
- Line Chart Average Ride Duration Over Time (by Month)
- Bubble Chart Hourly Ride Duration vs Frequency

Ride Count by Day of Week by User Type





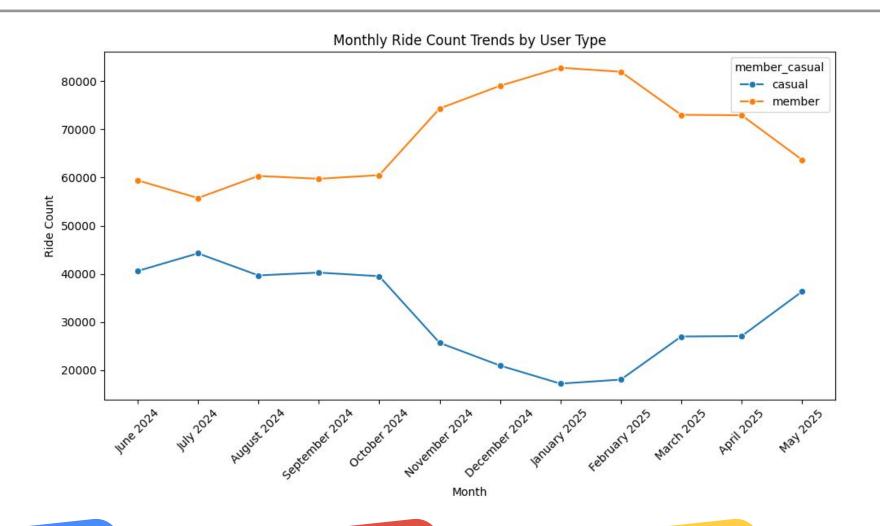


- Casual rides peak on weekends (especially Saturday)
- Members ride evenly during weekdays (Monday to Friday), suggesting commuting behavior.

Monthly Ride Count Trends by User Type





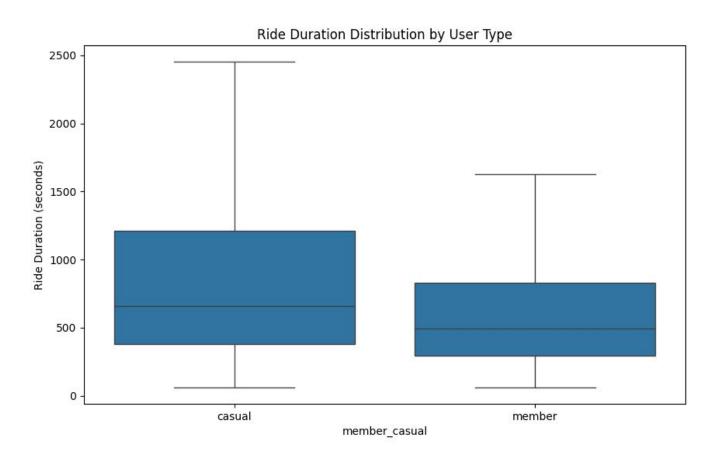




- Member rides are more stable across months, peaking in January–February.
- Casual rides drop sharply during winter, confirming strong seasonal dependency.

Ride Duration Distribution







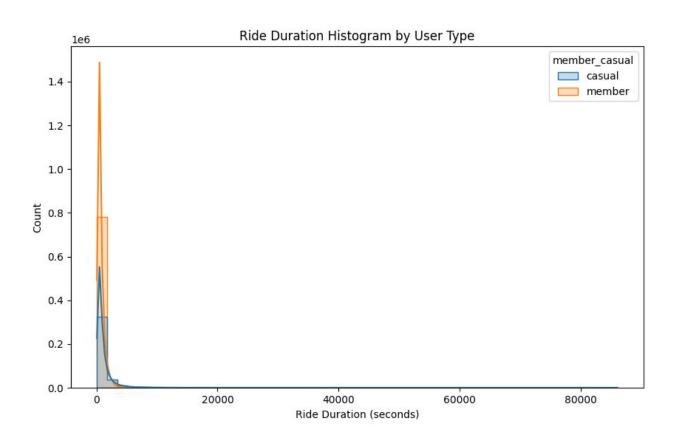


- Casual rides have a higher median and more variability.
- Members have tighter distributions and shorter medians, reflecting regular patterns.

Ride Duration Distribution







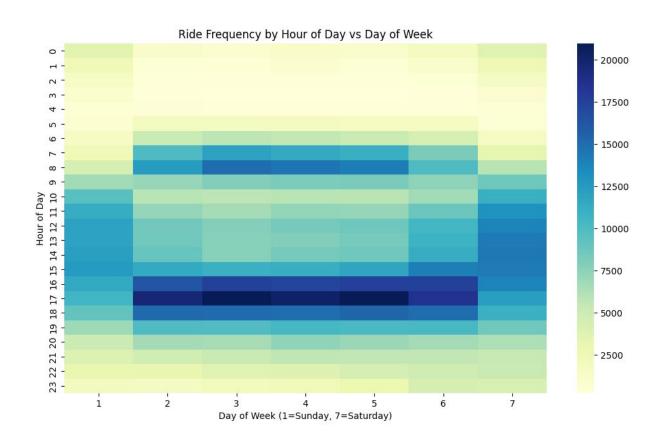


- Casual riders' duration is more right-skewed, showing a greater spread in ride lengths.
- Members' rides cluster around shorter durations, indicating structured trips (e.g., last-mile commutes).

Ride Frequency by Hour of Day vs Day of Week





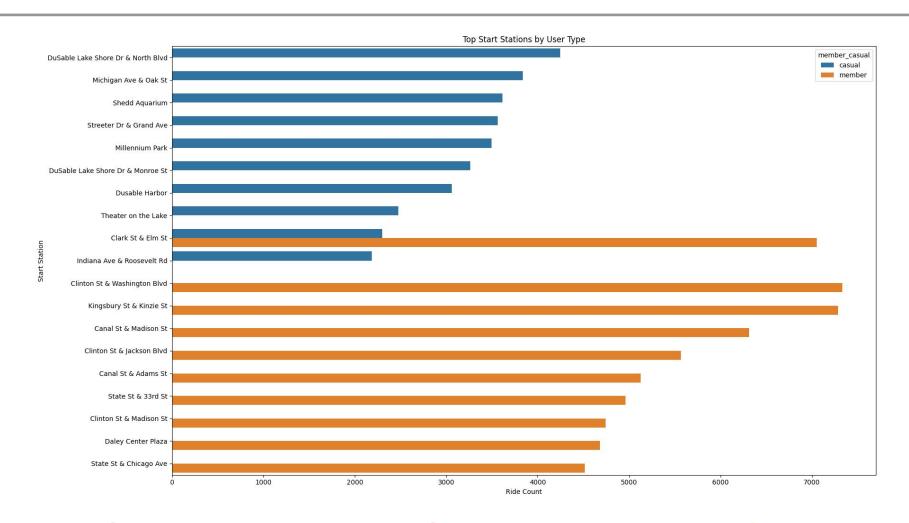




- Peak usage for all users occurs weekdays at 8–9 AM and 5–6 PM, aligned with commute hours.
- Weekend afternoon usage is also visible, mainly from casual riders.

Top Start Stations by User Type



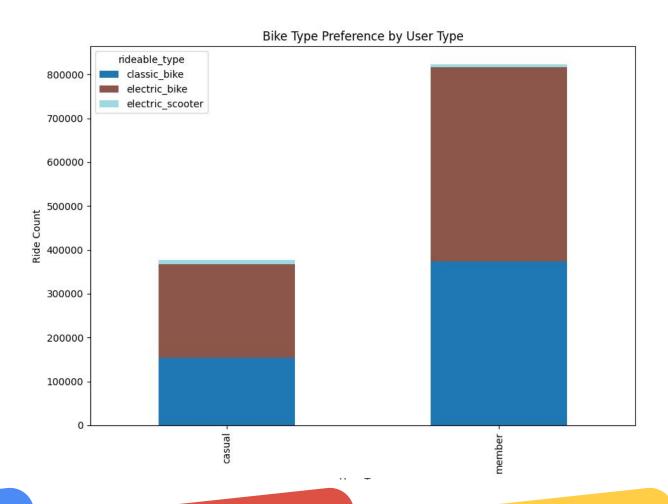




- Casual riders start rides from tourist-heavy locations (Millennium Park, Navy Pier).
- Members start from transit-connected stations (Clinton, Canal St), reinforcing commuter behavior.

Bike Type Preference by User Type







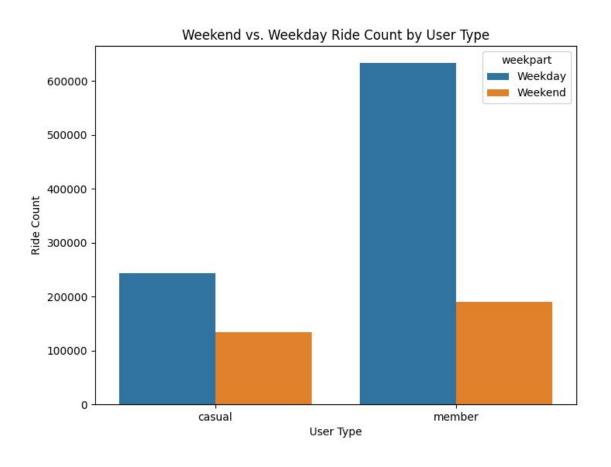


- Both user types favor electric bikes, but members use classic bikes more often than casuals.
- Casuals show higher relative interest in electric scooters, suggesting leisure-focused usage.

Weekend vs. Weekday Ride Count by User Type







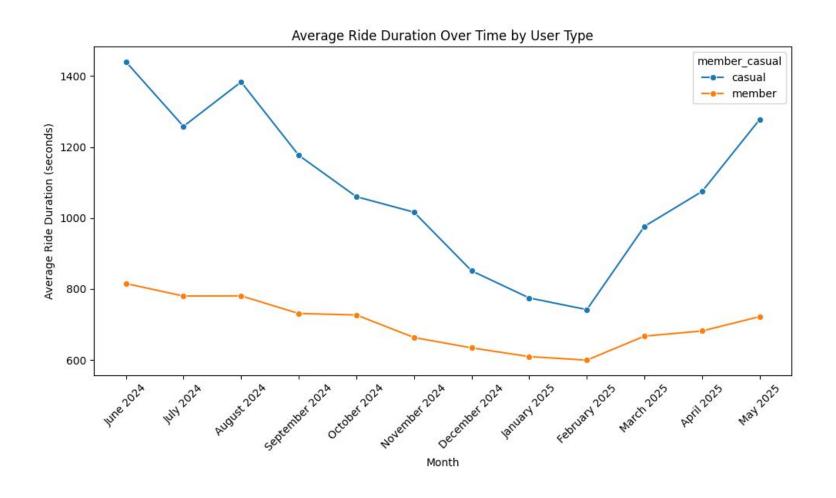


- Casuals ride more on weekends, while members overwhelmingly ride on weekdays.
- This strengthens the case for targeting weekend casuals for conversion using weekday-use incentives.

Average Ride Duration Over Time (by Month)







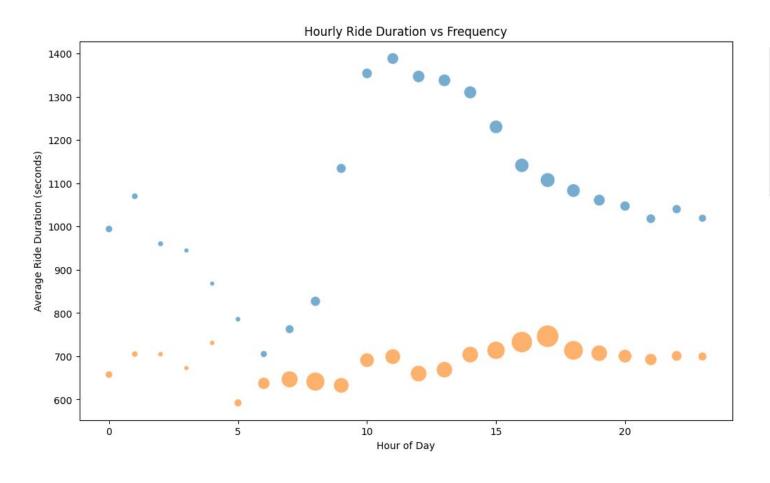


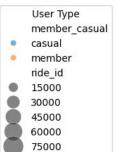
- Casual riders consistently have longer ride durations than members across all months.
- Casual ride duration peaks during summer months (June–August) and dips in winter.
- Members have shorter, steadier rides, indicating routine usage (e.g., commuting).

Hourly Ride Duration vs Frequency











- Casual riders peak in late afternoon, with long durations and moderate frequency.
- Members peak during commute hours (7–9 AM and 4–6 PM) with consistent short rides and high frequency.
- Bubble size reinforces member usage is dense and time-specific, casuals are more spread out.

Conclusions



Recommendations based on analysis

Conclusions



Casual riders demonstrate leisure-oriented behavior:

- Longer average ride durations (peaking in summer)
- Ride mostly on weekends and afternoons
- Prefer tourist-heavy start stations and electric bikes
- Seasonal patterns suggest weather-dependent, recreational use

Members ride more frequently and consistently:

- Shorter, regular ride durations throughout the year
- Primarily ride on weekdays and during commute hours
- Start rides from commuter-accessible stations

Conclusions



The **behavioral gap** between casual and member riders is clear, indicating that **casual users** with **repeat**, **long-duration**, or **weekend rides** are **high-potential targets** for membership conversion.

Recommendations



- 1. Launch a Weekend-to-Weekday Membership Campaign
 - a. Offer limited-time weekday access or commuter trial memberships to casual riders who ride frequently on weekends.
 - b. Target this promotion through in-app messages, email, or ads on popular weekend-use start stations.
- 2. Promote Membership Benefits for Electric Bike Users
 - a. Since casual riders disproportionately use electric bikes, introduce electric bike credits or discounts as part of the annual membership.
 - b. Market this as a cost-saving and convenience upgrade for users already preferring e-bikes.

Recommendations



- 3. Geo-target Promotions at Tourist and Leisure Stations
 - a. Use station-based marketing (QR codes, digital screens, app notifications) at top casual hotspots like Millennium Park and Navy Pier.
 - b. Highlight benefits like priority support, extended ride time, and seasonal perks for joining as a member.

Appendix



• GitHub URL for this Project : https://github.com/azkaihsan/cyclistic-bike-share-analysis

Thank You!

