
Cyclistic Bike-Share Case Study

1. Business Task

Cyclistic wants to convert casual riders into annual members by understanding how their usage patterns differ. The goal of this analysis is to answer:

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

By identifying key behavioral differences between the rider type, Cyclistic can design targeted marketing campaigns to encourage casual riders to become members.

2. Data Sources Used

The analysis was conducted using 12 months of Cyclistic trip data, consisting of 12 individual CSV files, which were merged into a single dataset.

Key Columns in the Dataset

- ride_id – Unique identifier for each ride.
 - rideable_type – Type of bike used (`electric_bike`, `classic_bike`, `electric_scooter`).
 - started_at / ended_at – Ride start and end timestamps with date.
 - start_station_name / end_station_name – Station names.
 - start_lat / start_lng / end_lat / end_lng – Location coordinates.
 - member_casual – Rider type (`member` or `casual`).
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3. Data Cleaning & Manipulation

To prepare the dataset for analysis, the following data cleaning and transformation steps were performed:

Cleaning Steps:

- Converted timestamps (`started_at`, `ended_at`) into proper `datetime` format.
- Created new columns:
 - Ride length (minutes) = `ended_at - started_at`.
 - Weekday (1 = Monday, 7 = Sunday).
 - Month (1 = January, 12 = December).
- Removed anomalies:
 - Dropped negative ride lengths (errors).
 - Filtered out rides under 1 minute.
 - Dropped rows containing null values.

4. Summary of Analysis

The analysis uncovered significant differences in how casual riders and members use Cyclistic bikes:

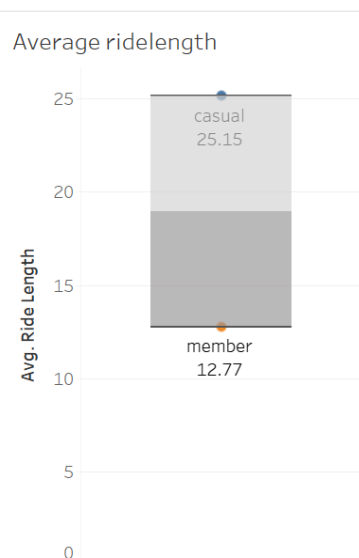
1. Casual riders take longer rides on average (average: 25 min), while members' rides are shorter (average: 12 min).
2. Casual riders mostly ride on weekends, while members ride consistently across weekdays (suggesting daily commuting, possible the working class).
3. Casual riders use electric bikes more compared to classic bike and electric scooter.
4. Popular stations differ – members' top stations are near business districts, while casual riders prefer stations near parks and tourist areas.
5. Casual riders' peak usage is in the afternoons, while members ride more during commute hours (7-9 AM, 4-6 PM).
6. Casual riders' typically ride more frequently during the summer season, while members are consistent throughout the year.

These patterns suggest that casual riders are primarily leisure riders, whereas members use bikes for daily commutes.

5. Supporting Visualizations & Key Findings

→ 1. Ride Length Analysis

- Casual riders take longer rides than members.
- Members have more consistent ride lengths, indicating routine usage.

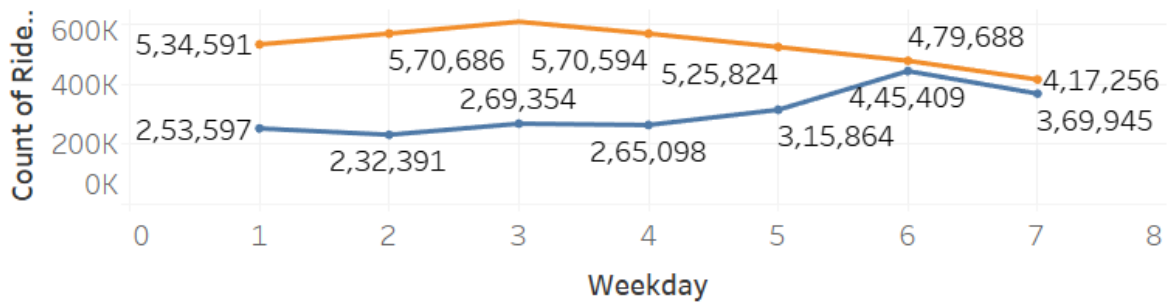


📌 Insight: Casuals ride for leisure, while members take short, frequent trips (likely commuting).

2. Rides by Weekday

- Casual riders peak on weekends, while members ride evenly throughout the week.
- Weekdays have a sharp rise in member rides at commute hours (morning/evening).

Rides per weekday

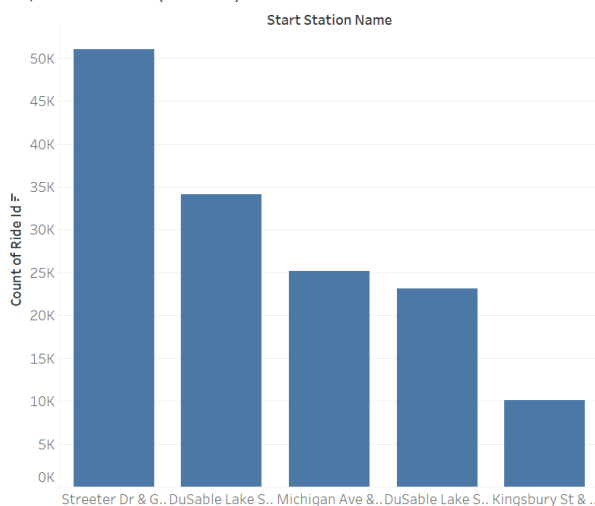


📌 Insight: Casuals ride for fun, while members use bikes for work-related commutes.

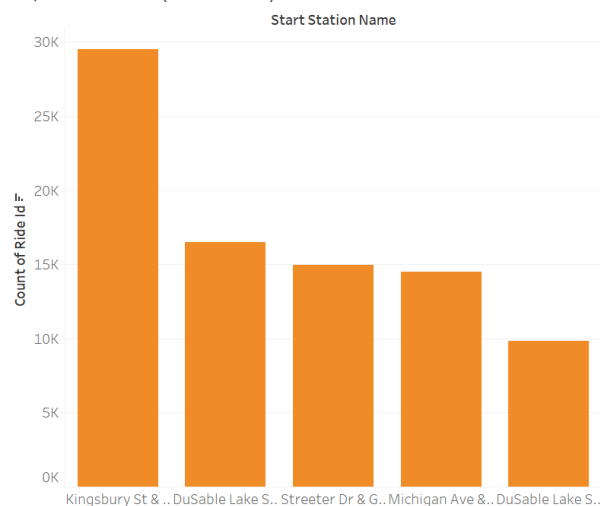
3. Top 5 Start Stations

- Members' top stations are in commercial/business areas.
- Casual riders' top stations are near parks, lakes, and tourist hotspots.

Top 5 stations(Casual)



Top 5 stations(Members)



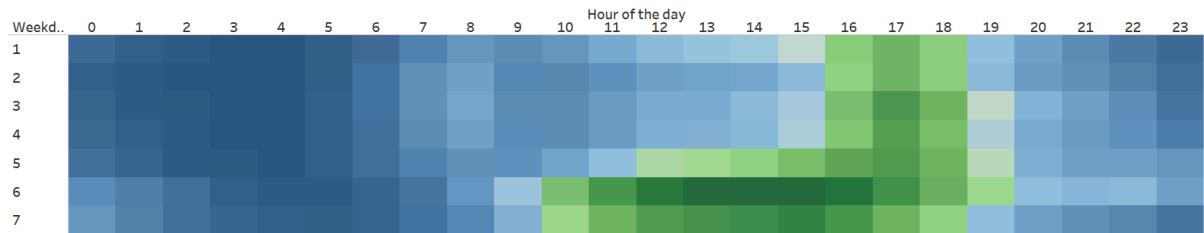
📌 Insight: Membership marketing should focus on popular casual rider stations.



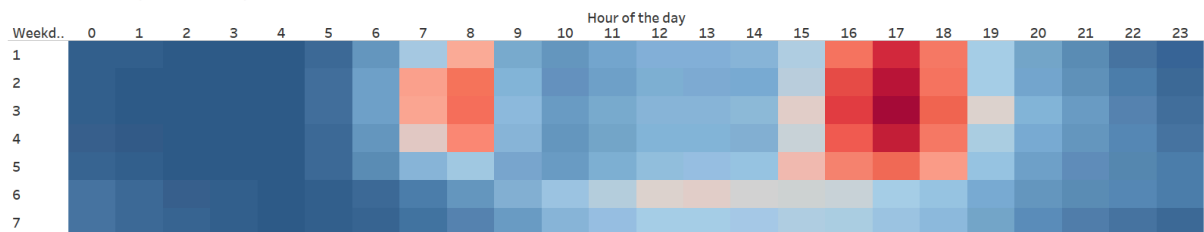
4. Hourly Ride Patterns

- Members ride most from 7-9 AM & 5-7 PM (work commute).
- Casual riders ride mostly from 12 PM to 4 PM (leisure time).

Peak hours (Casual Riders)



Peak hours (Members)



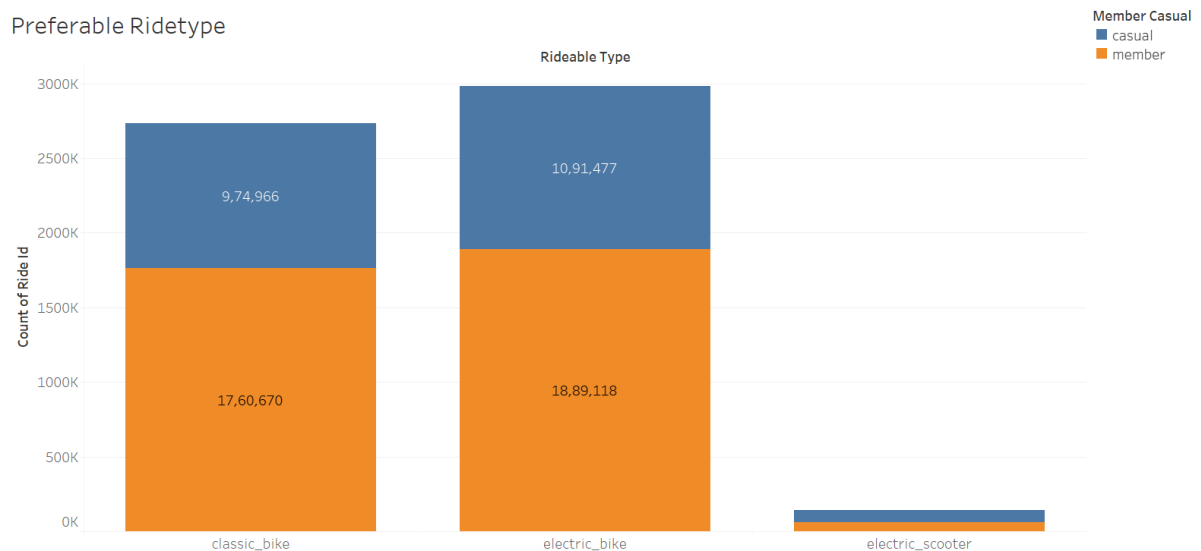
Insight: Promotions for casual riders should focus on afternoon deals.



5. Bike Type Usage

- Casual riders prefer electric bikes.
- Members use classic bikes more (probably due to cost-saving).

Preferable Ridetype

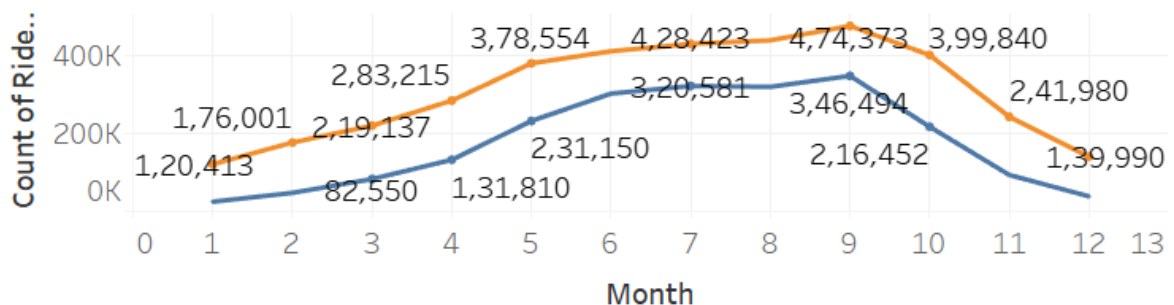


📌 Insight: Electric bikes could be a membership incentive for casual riders.

🚲 6. Rides by Month

- Both casual and member rides increase from January to peak in September.
- Casual riders (blue line) show a sharper seasonal trend—rising steeply from spring, peaking in summer, and dropping sharply in fall.
- Members (orange line) have a more stable trend, with consistent ridership even in colder months

Rides by Month



📌 Insight: Casual Riders Are Highly Seasonal, Members Show More Consistency, Peak for both present in September.

6. Recommendations

- ♦ 1. Create a "Weekend Pass to Membership" Upgrade
 - Since casual riders prefer weekends, offer discounted weekend passes with an option to upgrade to a monthly membership. This would give a good reason to buy the membership.
- ♦ 2. Promote Membership Benefits at Popular Casual Rider Stations
 - Advertise membership discounts near casual-friendly stations (parks, beaches, tourist areas). Collaboration with the tourist and leisure spots would be beneficial.
 - Use bike dock screens & mobile push notifications for targeted promotions.
- ♦ 3. Use Electric Bikes as an Incentive for Membership

- Since casual riders prefer electric bikes, offer a discounted deal for membership of electric bikes.
 - ◆ 4. Target Casual Riders with Summer Promotions
 - Offer seasonal memberships (Spring-Summer deals) to convert casual users.
 - Advertise discounts in parks, tourist spots, and near summer event locations.
 - ◆ 3. Launch Special September Campaigns
 - Since September is a peak month, it's an ideal time to push membership deals.
 - Run "Back-to-Work" or "Back-to-School" membership promos to encourage daily commuting.
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Final Conclusion

Casual and member riders use Cyclistic bikes very differently:

- ✓ Members ride shorter distances on weekdays → Commuters.
- ✓ Casual riders take longer rides on weekends → Leisure users.
- ✓ Casual riders use electric bikes more → Potential marketing hook.
- ✓ Casual ridership is strongly influenced by seasonality, peaking in summer.
- ✓ Members ride consistently year-round, indicating commuting behavior, typically for work.
- ✓ Targeted marketing during peak casual rider months (May–September) can increase membership conversions.

To convert casual riders into members, Cyclistic should focus on pricing strategies, location-based promotions, and e-bike incentives, and seasonal trends.
