

Cyclistic Bike-Share: How Members and Casual Riders Differ

Google Data Analytics Capstone · Lester Dion Harvey

1. Business Task

Cyclistic's marketing team wants to convert casual riders into annual members, who are more profitable. This analysis answers one question: how do annual members and casual riders use Cyclistic bikes differently? The findings inform a targeted conversion strategy for executive approval.

2. Data Sources

Twelve months of public Divvy trip data (May 2025–May 2026), released by Motivate International Inc. under license. Each monthly file shares a 13-column schema (ride ID, rideable type, start/end timestamps, station names/IDs, coordinates, and member/casual designation). The data is first-party, current, and comprehensive; it contains no personally identifiable information, so individual riders cannot be tracked across trips.

Note: the January 2026 file was unavailable at time of analysis and is documented as a known gap. The remaining ~6.2M rides are more than sufficient to establish reliable patterns.

3. Data Cleaning & Integrity

A Python (pandas) pipeline processed each file individually for memory safety, logging every transformation with before/after row counts. A pre-clean audit flagged issues; each cleaning step removed only what was documented; post-clean assertions re-verified the output and would fail loudly on any violation.

Check	Records	Action
Raw rides loaded	6,213,372	—
Duplicate ride IDs	28	Removed
Ride length ≤ 0	29	Removed
Ride length > 24h	6,215	Removed (system error)
Null station names	1,328,474	Retained (not needed for analysis)
Clean rides	6,207,100	0.10% removed total

The decision to retain rows with missing station names is deliberate: station is irrelevant to the member-vs-casual comparison (ride length, day, and type are all intact), and dropping ~21% of data would distort volume patterns. Documenting that judgment is part of keeping the analysis honest.

4. Analysis Summary

Members account for 63.7% of rides, casuals 36.3%. Three dimensions separate them clearly:

Metric	Member	Casual
Share of rides	63.7%	36.3%
Average ride	12.0 min	19.0 min
Median ride	8.6 min	11.4 min
Peak days	Tue–Thu	Sat–Sun

Metric	Member	Casual
Winter drop	Moderate	Severe

- Duration — casual rides run ~58% longer on average, signaling leisure use versus members' short, purposeful trips.
- Day of week — members peak midweek (commute); casuals peak on weekends, where their volume nearly doubles.
- Season — both decline in winter, but casual ridership collapses far harder (December: ~28K casual vs ~112K member).
- Rideable type does not meaningfully differentiate the two groups (both favor electric bikes) — a useful non-finding.

5. Key Visualizations

An interactive Tableau dashboard presents six views: headline KPIs, rides by day of week, monthly trend, rides by hour, rideable-type mix, and a station map. Consistent color encoding (member = navy, casual = orange) runs across every view, and each chart is titled with its insight rather than its metric.

6. Top Three Recommendations

1. Launch a weekend-focused membership campaign.

Casual demand concentrates on Saturdays and Sundays. Promote a membership tier that highlights weekend value, and target casual riders in-app on weekend mornings when intent is highest.

2. Position membership around leisure, not just commuting.

Casuals take longer, recreational rides. Frame messaging around unlimited leisure time and cost savings on long rides, rather than commuter efficiency, which already-loyal members value.

3. Run seasonal conversion pushes in peak months.

Casual ridership peaks May–September. Concentrate acquisition spend and introductory offers in this window, when casual riders are most active and most receptive to converting.

Next Steps

- Add pricing/cost data to model the break-even point where membership beats casual passes.
- Acquire the missing January 2026 data to complete the seasonal picture.
- A/B test weekend campaign messaging against a control before full rollout.