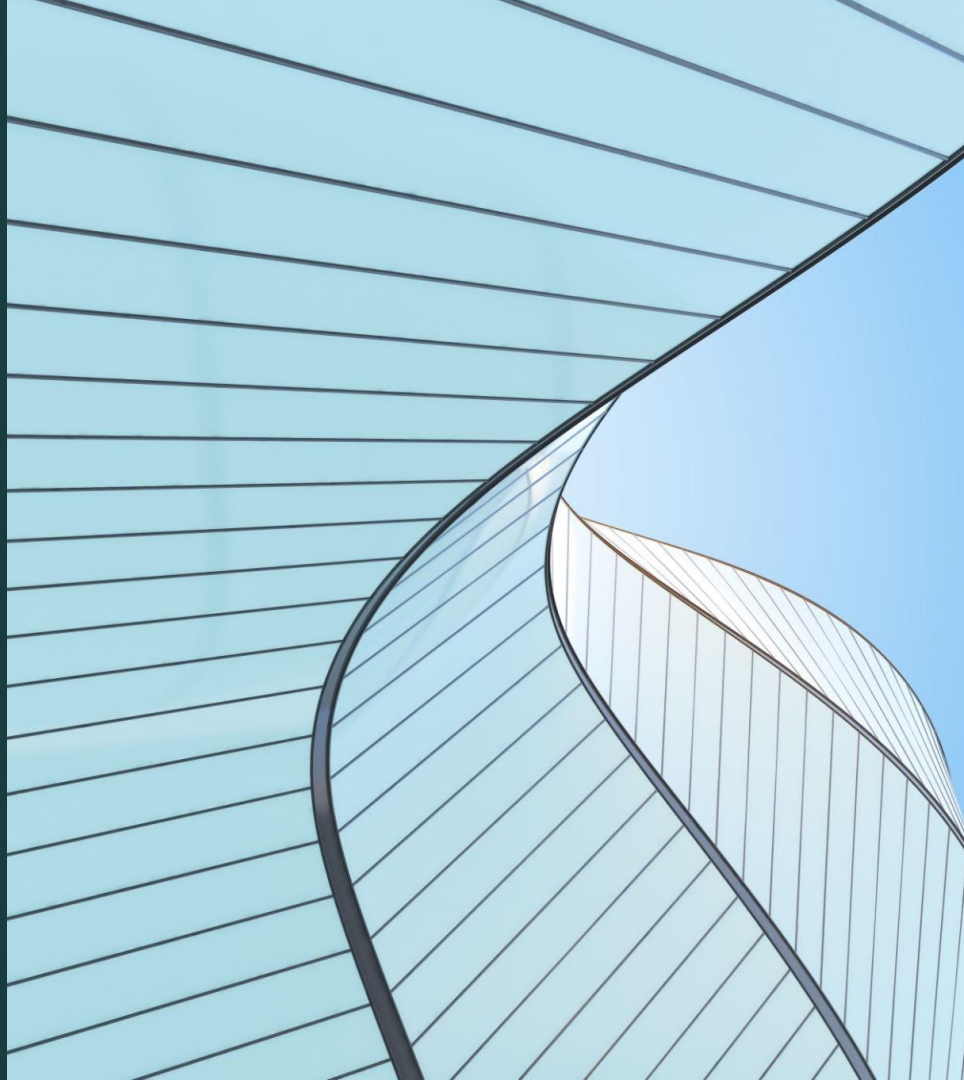
Riding the Demand: Bike-Share Insights

Kevin Serrano Lopez



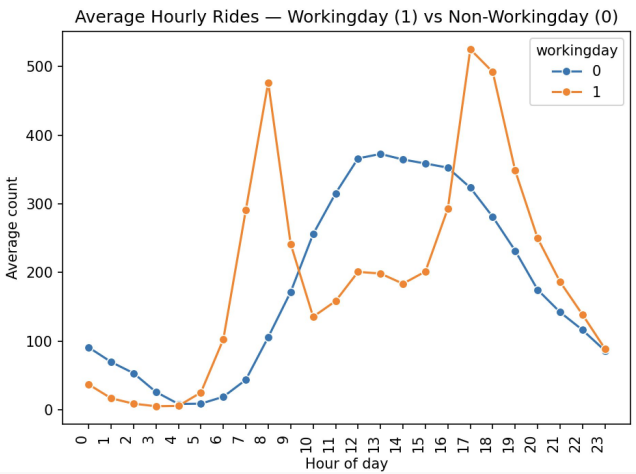
Content *overview*

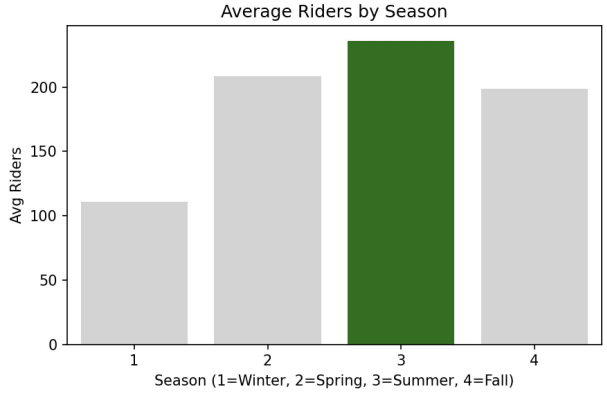
Project Overview

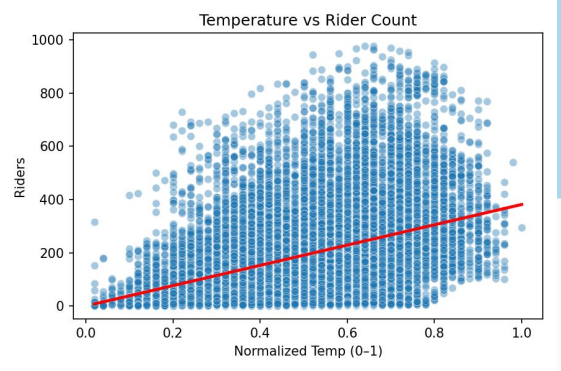
Objective: Extract actionable insights for pricing, promotions, staffing, and bike availability.
Data: Hourly bike-share with weather, season, weekday, and user type.
Approach:

1. EDA & Trends
2. Hypothesis Testing (Q1, Q2)
3. A/B Test (Evening Intervention)

Key Trends







Trend 1: Peak usage during working hours (6–8 AM, 17 - 19 PM)

Trend 2: Summer has highest demand; winter lowest

Trend 3: Bad weather reduces usage. As the weather get warmer so does our rider cout

Q1 — Working vs Non-Working Day

Test: Two-sample t-test

Results:

- Working = 193.21, Non-Working = 181.41
- t = 4.095, p = 0.00004
- 95% CI: [6.15, 17.45]

Interpretation: Usage significantly higher on working days therefore we should have additional staffing to deal with the rush.

Q2 — Seasonal Effect Overview

Test: One-way ANOVA

Results:

- $F = 409.18$, $p \approx 7.40 \times 10^{-257}$

Interpretation: Since summer is our high season and winter our low season we should have seasonal deals, and lead into the trend!

A/B Test — Evening Intervention

Eligibility: Working days, 5–7 PM, good weather
Test: Two-sample t-test (unequal variance)
Results:

- Mean difference = +43.78 rides/hour
- t = -1.567, p = 0.12 (not significant)
- 95% CI: [-11.72, 99.29]

Interpretation: Practical increase observed but not statistically significant; further testing recommended.

Recommendations

- Staff bikes during peak commuting hours (6–8 AM, 17–19 PM)
- Plan for summer demand spikes; consider seasonal promotions
- Monitor evening intervention; collect additional data before full rollout
- Ensure equitable bike distribution to avoid disadvantaging low-demand neighborhoods