Statistical Analysis:

The project employed a series of statistical tests to understand factors influencing Yulu e-cycle rentals.

- **Bivariate Analysis:** Contrary to initial assumptions, there was no statistically significant difference in rental counts between working days and non-working days using t-tests.
- **Kruskal-Wallis Test:** This non-parametric test revealed significant variations in rentals across seasons. This suggests a strong seasonal component driving demand.
- **Chi-Square Test:** A significant association was found between weather conditions and bike rentals, highlighting the influence of environmental factors.

Inferences from the Analysis:

- **Temporal Patterns:**
    - The data indicates a positive trend in e-cycle usage, with a notable peak in 2012 compared to the previous year.
    - Seasonality plays a crucial role, with summers (July-September) witnessing higher rentals, while winters (January-March) experience a decline.
- **Weather and Seasonal Influence:**
    - Weather significantly impacts rental rates. Favourable conditions like sunny days correlate with increased rentals, while adverse weather like rain or cold reduces demand.
    - Distinct seasonal preferences for cycling are evident, suggesting a clear seasonal influence on usage patterns.
- **Usage Consistency Across Days:**
    - Unexpectedly, weekdays and holidays display similar demand for bikes, implying a consistent usage trend regardless of the day type.

Additional Considerations:

1. **Demographic Analysis:** Exploring how age, income level, and occupation influence shared e-cycle demand could provide valuable insights for targeted marketing and service optimization.
2. **External Factors:** Analyzing external forces like public transport strikes, local events, or fuel price fluctuations could provide further depth to the understanding of demand shifts and help anticipate future trends.

Recommendations:

These findings offer valuable insights for Yulu's management team to optimize their e-cycle service and maximize demand:

- **Seasonality and Weather:** Develop targeted marketing campaigns promoting e-cycles during favourable weather conditions and seasons.
- **Pricing Strategies:** Consider dynamic pricing models that adjust rental costs based on weather and seasonality to incentivize usage during less popular periods.
- **Network Optimization:** Analyze usage patterns to strategically expand Yulu zones in areas with high rental potential during peak seasons.

- **User Segmentation:** Explore the influence of demographics and develop targeted user acquisition and retention strategies.