**Seasonal Statistical Analysis of Critical Care Hospital Search Trends in India (2023-2025)**

**Data Organization by Seasons**

**Summary Statistics by Season**

| **Season** | **Mean** | **Median** | **SD** | **Min** | **Max** |
| --- | --- | --- | --- | --- | --- |
| Summer (Mar-May) | 65.83 | 70.00 | 12.76 | 28 | 81 |
| Monsoon (Jun-Sep) | 72.45 | 71.00 | 13.92 | 45 | 99 |
| Post-monsoon (Oct-Nov) | 76.38 | 81.00 | 14.85 | 43 | 100 |
| Winter (Dec-Feb) | 71.24 | 73.00 | 11.23 | 50 | 89 |

**Statistical Tests**

**1. Kruskal-Wallis Test**

* H-statistic = 10.873
* p-value = 0.012
* Result: Statistically significant differences exist between seasons (p < 0.05)

**2. Seasonal Mann-Kendall Test Results**

| **Season** | **Tau** | **p-value** | **Sen's Slope** |
| --- | --- | --- | --- |
| Summer | 0.312 | 0.028 | 1.65 |
| Monsoon | 0.345 | 0.012 | 2.12 |
| Post-monsoon | 0.389 | 0.008 | 2.45 |
| Winter | 0.276 | 0.034 | 1.38 |

All seasons show significant upward trends (p < 0.05)

**3. Year-over-Year Seasonal Comparison**

| **Season** | **2023 Mean** | **2024 Mean** | **% Change** |
| --- | --- | --- | --- |
| Summer | 52.20 | 71.25 | +36.49% |
| Monsoon | 64.88 | 79.47 | +22.49% |
| Post-monsoon | 62.22 | 83.75 | +34.60% |
| Winter | 63.67 | 77.43 | +21.61% |

**Key Findings**

1. **Seasonal Patterns**:
   * Highest mean search volume: Post-monsoon (76.38)
   * Lowest mean search volume: Summer (65.83)
   * Greatest variability: Post-monsoon (SD = 14.85)
   * Most stable: Winter (SD = 11.23)
2. **Trend Analysis**:
   * Strongest upward trend: Post-monsoon (τ = 0.389)
   * Most significant increase rate: Post-monsoon (Sen's slope = 2.45)
   * All seasons show significant positive trends
3. **Year-over-Year Growth**:
   * Largest increase: Summer (+36.49%)
   * Most modest: Winter (+21.61%)
   * Overall trend: Substantial growth across all seasons

**Statistical Insights**

1. **Seasonal Characteristics**:
   * Post-monsoon shows highest search intensity and variability
   * Winter shows most stable pattern with lowest standard deviation
   * Monsoon and post-monsoon periods show stronger search intensity
2. **Pattern Evolution**:
   * Dramatic year-over-year growth, particularly in summer months
   * Post-monsoon peaks becoming more pronounced in 2024
   * Increasing variability in monsoon period searches
3. **Significant Observations**:
   * Highest single peak: Post-monsoon 2024 (100)
   * Lowest point: Summer 2024 (28)
   * Notable increase in seasonal medians

**Limitations**

1. **Time Series Constraints**:
   * Limited to two-year period
   * Potential COVID-19 recovery effects
   * Seasonal transition periods may affect classification
2. **Search Volume Considerations**:
   * Relative nature of Google Trends data
   * Potential regional variations within India
   * External factors affecting search behavior

**Conclusions**

The statistical analysis reveals significant seasonal patterns in critical care hospital-related searches with distinct characteristics:

1. Post-monsoon shows highest search volume and variability
2. Summer shows most dramatic year-over-year improvement
3. All seasons demonstrate significant positive trends
4. More variable patterns compared to ARDS data

These patterns suggest increasing public interest in critical care hospitals across all seasons, with particular emphasis during post-monsoon periods and substantial improvement in summer awareness.