**Seasonal Statistical Analysis of ICU Bed Search Trends in India (2023-2025)**

**Data Organization by Seasons**

**Summary Statistics by Season**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Season** | **Mean** | **Median** | **SD** | **Min** | **Max** |
| Summer | 57.94 | 56.0 | 11.26 | 39 | 88 |
| Monsoon | 62.40 | 62.0 | 11.14 | 39 | 90 |
| Post-monsoon | 63.65 | 66.0 | 12.93 | 31 | 86 |
| Winter | 69.74 | 70.0 | 13.93 | 46 | 100 |

**Statistical Tests**

1. **Kruskal-Wallis Test**
   * H-statistic = 9.60
   * p-value = 0.022
   * **Result:** Statistically significant differences exist between seasons (p < 0.05)
2. **Seasonal Mann-Kendall Test Results**

|  |  |  |  |
| --- | --- | --- | --- |
| Season | Tau | p-value | Sen's Slope |
| Summer | 0.15 | 0.403 | 1.11 |
| Monsoon | 0.31 | 0.009 | 0.51 |
| Post-monsoon | 0.39 | 0.029 | 1.18 |
| Winter | 0.20 | 0.184 | 0.43 |

* **Monsoon and Post-Monsoon show statistically significant increasing trends (p < 0.05).**

1. **Year-over-Year Seasonal Comparison**

|  |  |  |  |
| --- | --- | --- | --- |
| Season | 2023 Mean | 2024 Mean | % Change |
| Summer | 59.00 | 57.54 | -2.48% |
| Monsoon | 58.94 | 65.67 | +11.41% |
| Post-monsoon | 55.89 | 72.38 | +29.50% |
| Winter | 62.00 | 69.92 | +12.78% |

**Key Findings**

* **Seasonal Patterns:**
  + **Highest mean search volume:** Winter (69.74)
  + **Lowest mean search volume:** Summer (57.94)
  + **Greatest variability:** Winter (SD = 13.93)
  + **Most stable:** Summer (SD = 11.26)
* **Trend Analysis:**
  + **Significant upward trends detected in Monsoon and Post-Monsoon**
  + **Winter and Summer exhibit positive but not statistically significant trends**
* **Year-over-Year Growth:**
  + **Largest increase:** Post-Monsoon (+29.50%)
  + **Monsoon and Winter also saw notable rises**
  + **Slight decline observed in Summer (-2.48%)**

**Statistical Insights**

* **ICU bed search interest has significantly increased in Monsoon and Post-Monsoon.**
* **Winter shows the highest search volume, but its growth trend is less pronounced.**
* **Overall, seasonal differences in search patterns are statistically significant.**

**Limitations**

* **Time Series Constraints:**
  + Limited to a two-year period.
  + External factors such as pandemic effects and policy changes may influence trends.
* **Search Volume Considerations:**
  + Data is from Google Trends and represents relative search interest.
  + Regional variations within India may affect results.

**Conclusions**

The analysis indicates **statistically significant seasonal differences** in ICU bed search trends, with **notable upward trends in Monsoon and Post-Monsoon**. Winter maintains the highest overall search volume. The findings suggest evolving public interest in ICU resources, potentially influenced by seasonal healthcare demands and broader medical concerns.