Emerging Hot Spot Analysis detects trends in spatial clustering over time by combining the Getis-Ord Gi\* statistic with the Mann-Kendall trend test to identify temporal patterns in hot and cold spots.

associated with local clustering of hot and cold spots

Several provinces in the northern and northeastern regions of Thailand are identified as sporadic hotspots

* **Oscillating Hotspots:** Several provinces in the northern and northeastern regions of Thailand are identified as oscillating hotspots. This suggests that these regions experienced significant fluctuations in the ratio of tourist stay overnight during the study period, potentially indicating emerging tourist destinations with growing popularity or seasonal variations in tourist behavior.
* **Oscillating Coldspots:** Some provinces in the southern region, particularly near the border with Malaysia, are classified as oscillating coldspots. This suggests that these regions experienced fluctuations in the ratio of tourist stay overnight, potentially due to factors such as competition from neighboring countries or seasonal changes in tourist preferences.

1. **Global Measures of Spatial Association**

Except for Revenue from all tourists (revenue\_all) where the Global Moran's I statistic was not significant, for the remaining 4 variables (Number of All Tourists, Average ratio of tourist stay, Revenue per tourist and Ratio of Foreign to Thai tourist), the results were significant and indicate signs of clustering as the statistic value is larger than 0.

1. **Local Indicators of Spatial Association (LISA)**

**Total Revenue**

* There are clusters with Low-Low values in the North Easten region of Thailand, indicating low revenue from tourism in this area.
* There are 2 Low-High clusters adjacent to Bangkok, this indicate the tourism revenue of the area around Bangkok is not evenly distributed.
* There is 1 High-Low cluster at Kanchanaburi province, indicating the tourism revenue in this area is significantly higher than the surrouding neighbors.

**Number of Tourists**

* Similar to the LISA map on revenue\_all, there are Low-Low clusters in the North Easter region and Low-High clusters around Bangkok.
* There is 1 High-High cluster at Phetchaburi province, suggesting this can be a popular tourist destination compared to surrounding provinces.

**Average Ratio Tourist Stay**

* There are High-High clusters in the North region, suggesting tourists tend to stay overnight in this area.
* There is 1 Low-High cluster also in the North region, suggesting tourists are less likely to stay overnight in this province, they may prefer to stay in the neighboring High-High provinces.

**Foreign to Thai tourist**

* There are Low-Low clusters in the Central region, suggesting these provinces are less popular to foreign visitors.
* There are High-High clusters in the Coastal region at Phuket,  
  Phang Nga and Surat Thani provinces. These are well-known destination for foreign visitors.

**Revenue per tourist**

* There are Low-Low clusters in the North East and Central regions, suggesting the revenue per tourist is lower in the provinces.
* There are High-High clusters in Phukey and Phang Nga province. As these areas are popular to foreign visitors (also High-High cluster on Foreign to Thai tourists ratio), suggesting foreign visitors tend to spend more on their visits.

1. **Emerging Hot Spot Analysis (EHSA)**

**Total Revenue**

Several provinces in the northern, northeastern and southern regions of Thailand are identified as **sporadic coldspots**. This suggests that these regions experienced some declines or stagnation in tourism revenue, in which COVID-19 travel restriction can be a major factor.

**Number of Tourists**

The EHSA map shows only 1 oscillating coldspot in Phichit province, suggesting this province used to be popular to tourists in the past but not as of February 2023.

**Ratio Tourist Stay**

* Several provinces in the northern and central regions are identified as **oscillating hotspots.** This suggests these regions experienced significant fluctuations in the ratio of tourist stay overnight during the period 2019-2023, potentially indicating emerging tourist destinations with growing popularity.
* Some provinces in the northeastern region are classified as **oscillating coldspots**. This suggests these regions experienced fluctuations in the ratio of tourist stay overnight with an overall downward trend.

**Foreign to Thai tourist**

* Several provinces in the central and northern regions of Thailand are identified as **sporadic hotspots**. This suggests significant fluctuations in the ratio of foreign to Thai tourists in these areas during the study period, potentially indicating increased popularity among foreign visitors.
* Many provinces in the northern, northeastern and central region around Bangkok are classified as **sporadic coldspots**, indicating fluctuations in the ratio of foreign to Thai tourists with an overall downward trend.

**Revenue per tourist**

* Several provinces in the central and northern regions of Thailand, are identified as sporadic hotspots. This suggests significant fluctuations in revenue per tourist during the study period, with the overall value is still high compared to the neighboring provinces.
* Many provinces nationwide are classified as sporadic coldspots, indicating fluctuations in revenue per tourist with a relatively low value compared to their neighbors, may of which has sporadic hotspots pattern.