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GIS-Based Clustering Technique for Identifying Tourism Hotspots in Huntsville, Alabama

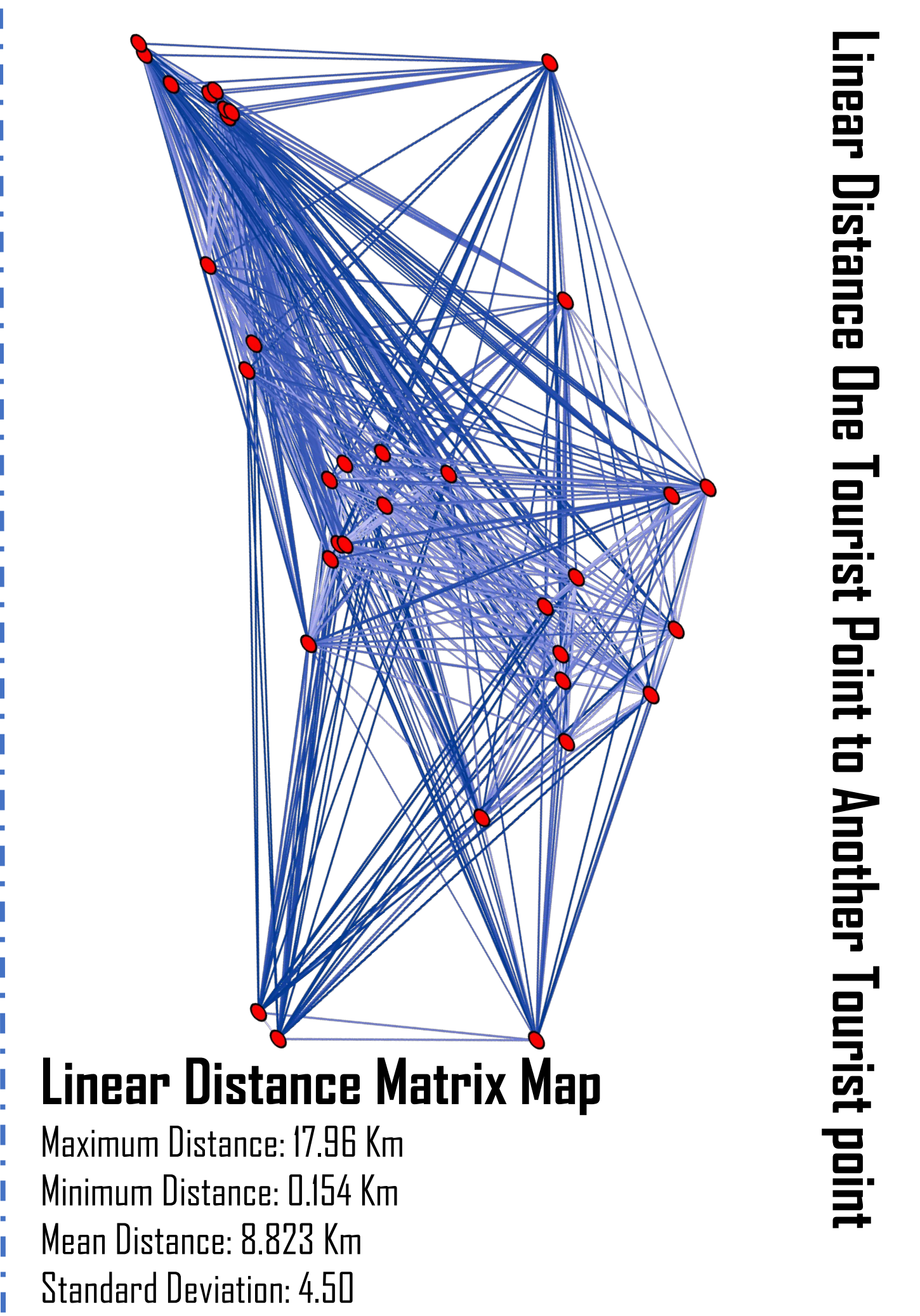
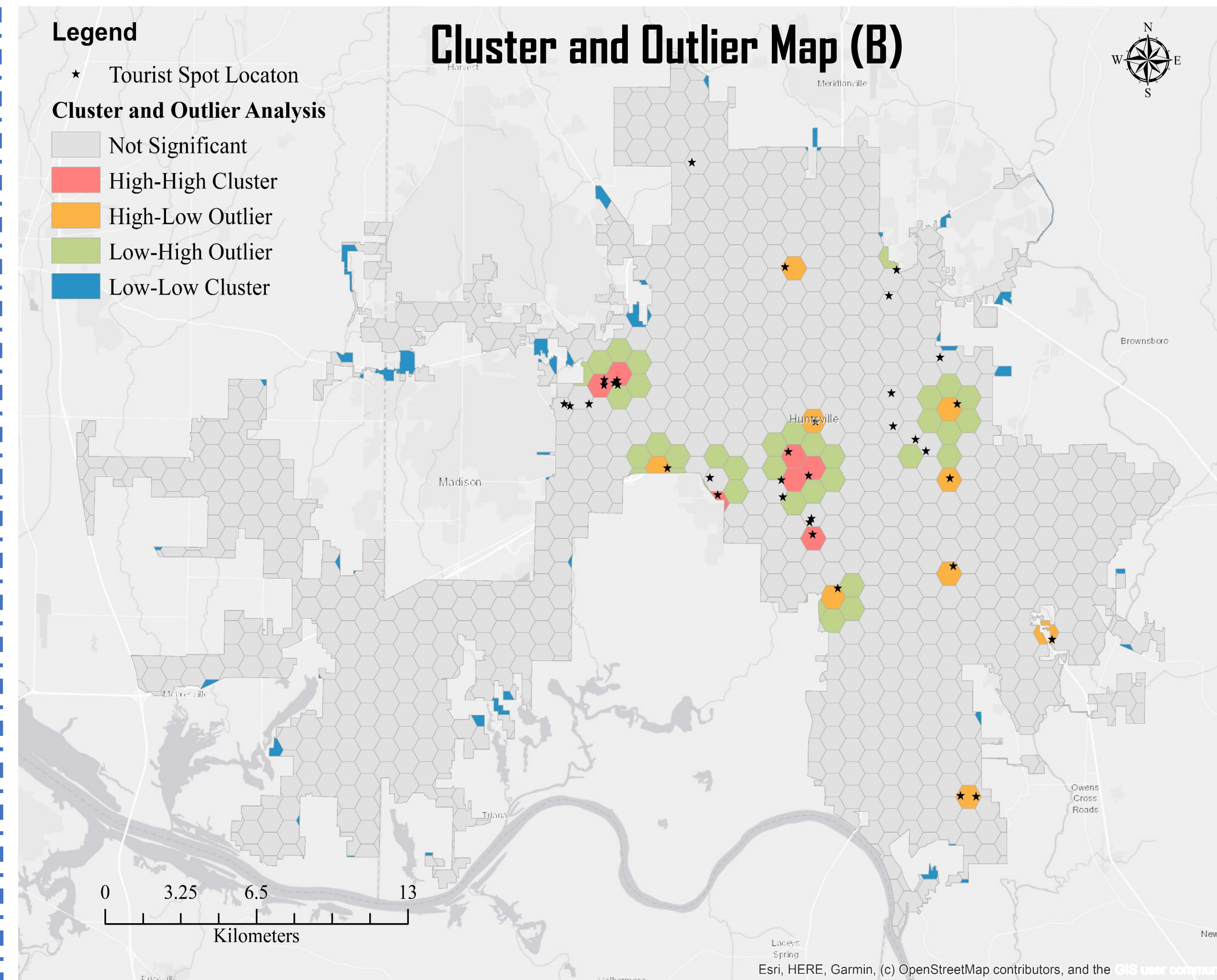
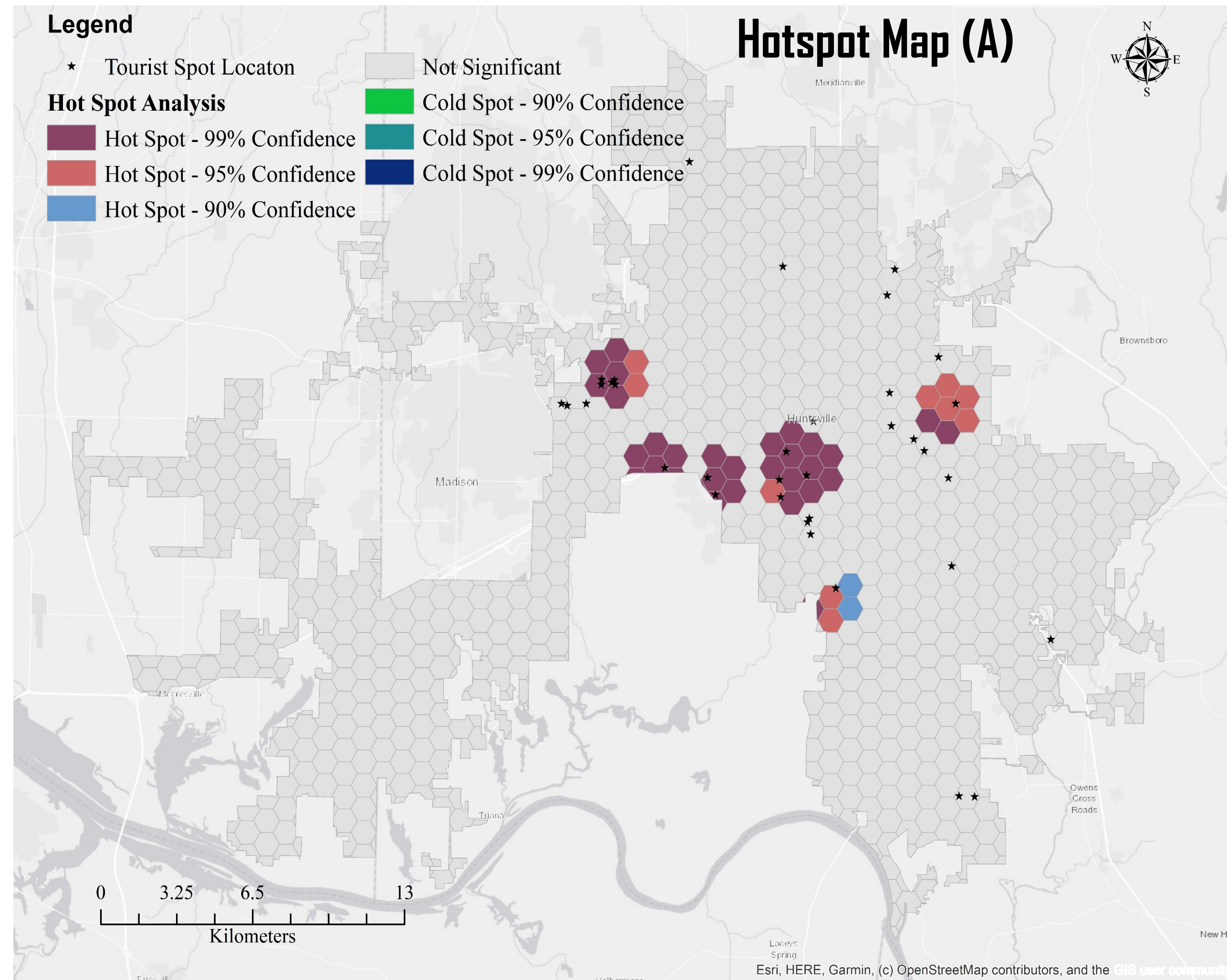
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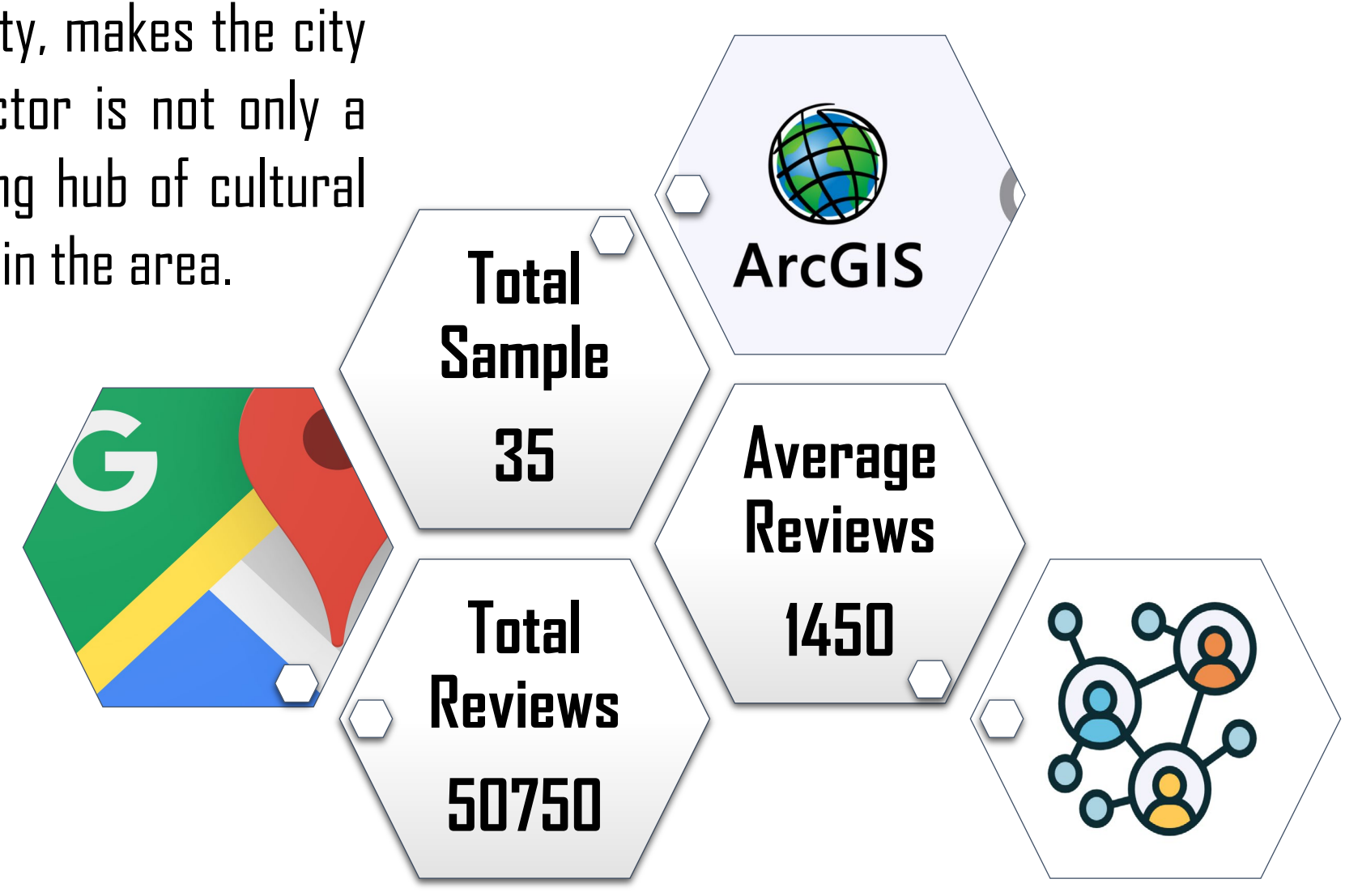
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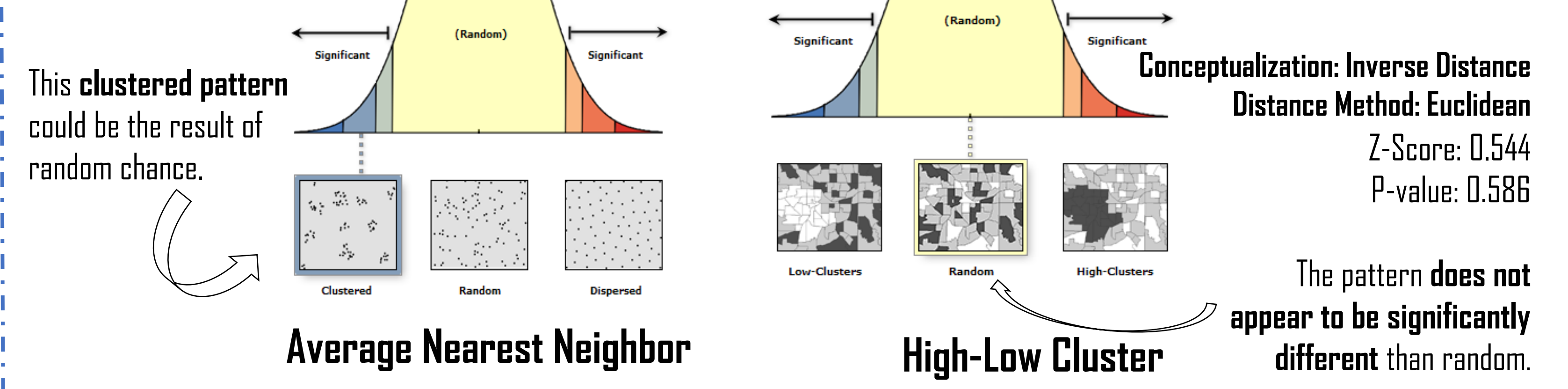


Background: Huntsville, Alabama, often known as "The Rocket City" having historical significance, technological innovation, & natural beauty, makes the city a compelling destination for tourists. Huntsville's tourism sector is not only a significant contributor to the local economy but also a growing hub of cultural and recreational activities, ensuring a bright future for tourism in the area.

Method: The data for the research was collected from secondary sources utilizing Google Maps. The tourist spot was chosen randomly that is present within Huntsville. A total of 35 potential spots were considered in this research, having total reviews of 50,750. Average Nearest Neighbor, High-Low Cluster, and Hotspot analysis were performed in the ArcGIS platform to identify the cluster pattern and tourism hotspot in Huntsville.



Observed Mean Distance: 1.31 Km
Expected Mean Distance: 1.6 Km
Nearest Neighbor Ratio: 0.82
Z-Score -2.10
P-value: 0.044 (less than 5%)



Findings: **Hotspot Map (A)** shows the high tourism activities are concentrated in specific regions with varying confidence level. These areas indicate thriving tourism and can be targeted for further investment and infrastructure development.

Cluster and Outlier Map (B) identifies high-high clusters areas with concentrated tourist activity, surrounded by similarly high values, indicating key hubs of tourism in Huntsville. High-low outliers signify regions with high tourist activity surrounded by low-value areas, while low-high outliers highlight regions with low activity amidst high-value areas, representing potential gaps in tourism development

Tourist spots, marked by stars, are predominantly aligned with high-high clusters, reinforcing their role as major attractions. Gray areas are not statistically significant, indicating a lack of strong clustering patterns.

Recommendation:

- This analysis provides insights for targeted tourism development, infrastructure improvements, and resource allocation, ensuring balanced and sustainable growth of tourist activities across the region