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Spatial Distribution of Tourism Infrastructure in Awka, Onitsha and Nnewi Urban Areas of Anambra State.

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ABSTRACT

One major contributor to the economic sector in many developing countries is Tourism. In Nigeria however, the tourism sector remains relatively underdeveloped. In this study the spatial distribution of tourism infrastructure in major cities like Awka, Onitsha and Nnewi of Anambra state were examined with the aim of understanding existing patterns and their implication for tourism planning. Various categories of tourism infrastructures such as Hotels, Banks, Schools, Eateries etc. was mapped and analyze using Geographic Information System (GIS) techniques. In other to determine the spatial distribution of these facilities to know whether they are clustered, random or dispersed, Average Nearest Neighbour analysis was employed. The results of this analysis however revealed that in these major cities there exists predominantly clustered distribution of these tourism facilities with eateries, hotel and leisure being the most dominant. Clustered tourism facilities may however enhance the accessibility and convenience for tourists, but on the other hand it limits the activities to limited area. This study however encourages the need for strategic tourism planning in the state such that there will be a more balanced spatial distribution of tourism infrastructure across the state.

Keywords: Tourism, GIS, Spatial Distribution, Anambra State.

INTRODUCTION

In today's world Tourism can be seen as a major source of income in many countries. In countries like China, Germany and Austria etc. tourism is viewed as an important industry for foreign exchange. Also some African countries such as Kenya and Zimbabwe approximately have 80% of tourist visiting their country primarily for the sole purpose of wildlife. Needless to say Tourism is now seen as the greener pastures for most developing countries. However in Nigeria, tourism is a sector that has not been fully developed and explored. (FaladeObalade, T. A., & Dubey, S. 2014).

Geographical Information System (G.I.S) when integrated with Remote Sensing it's a very powerful tool which can be used to Gather, Process, Organize and Store important parameters on which tourism depends on. (Singh, P. 2015). These parameters includes: Location (Where the tourist wishes to go), Accessibility (Road network) and the standard of the facilities. In general it can be said that Geographic Information Systems (GIS) is one of the most remarkable technological innovations in tourism planning and decision making.

Both GIS and tourism share a common characteristic, that is, both cross the boundaries of disciplines and application areas. This makes the potential applications of GIS in tourism significant. Moreover, maps have been known to play vital roles in identifying and locating tourist attractions. GIS however provides the facility to extract different sets of information (e.g. tourist attractions, hotels and their distances from one another, roads, settlements, vegetation, land use data, changes in tourism resources) from a map and use them as required. (Singh, P. 2015).

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SCOPE OF THE RESEARCH

Specifically, the scope of this research is limited to the locational analysis of tourist facilities in, Awka, Onitsha and Nnewi urban areas of Anambra State using GIS.

Study Area

Anambra derived its name from Omambala River which is easily called Anambra River. Omambala River is on the Northern part of Anambra State and stretches to the famous River Niger. The indigenous ethnic groups in Anambra state are the Igbo (98% of population) and a small population of Igala (2% of the population) who live in the North western part of the state. (Ayadiuno, R. U., & Ndulue, D. C. 2024).

Anambra State is geographically located in the South-Eastern Nigeria, and it is bounded by Delta State to the West, Imo State to the South, Enugu State to the East and Kogi to the North. It is located between Latitude 5° 41.293'N and Latitude 6° 46.327'N, and Longitude 6° 37.014'E and Longitude 7° 21.608'E (Fig. 1). It has one of the highest population's densities in Africa. The State comprises numerous thickly populated villages, a number of small towns and a few major towns; some areas are so thickly populated that the estimated density is 1500-2000 persons living within every square kilometer. (Igbokwe, J. I., Okwuenu, C. M., & Igbokwe, E. C. 2023).

Anambra State has a tropical climate marked by two distinct seasons, the dry and rainy season. The dry season occurs from November to April and rainy season from May to October. There exists a brief dry spell in August commonly referred to as August break; the dry harmattan wind blows over the state. It maintains an average tropical temperature of 25 °C during the dry season and an average fertile rainfall of 2,700 millimetres (106 in) during the rainy season. Anambra State is home to the longest river in Nigeria which is the River Niger. About 35% of the State's total land mass consists of water. The State also boasts of a tropical Savanna climate with average annual rainfall estimated at 2,700 millimetres. The average temperature of Anambra State is 25 degrees centigrade with topography prone to gully erosions but comprising of arable farmlands for agricultural activities. (Igbokwe, J. I., Okwuenu, C. M., & Igbokwe, E. C. 2023).

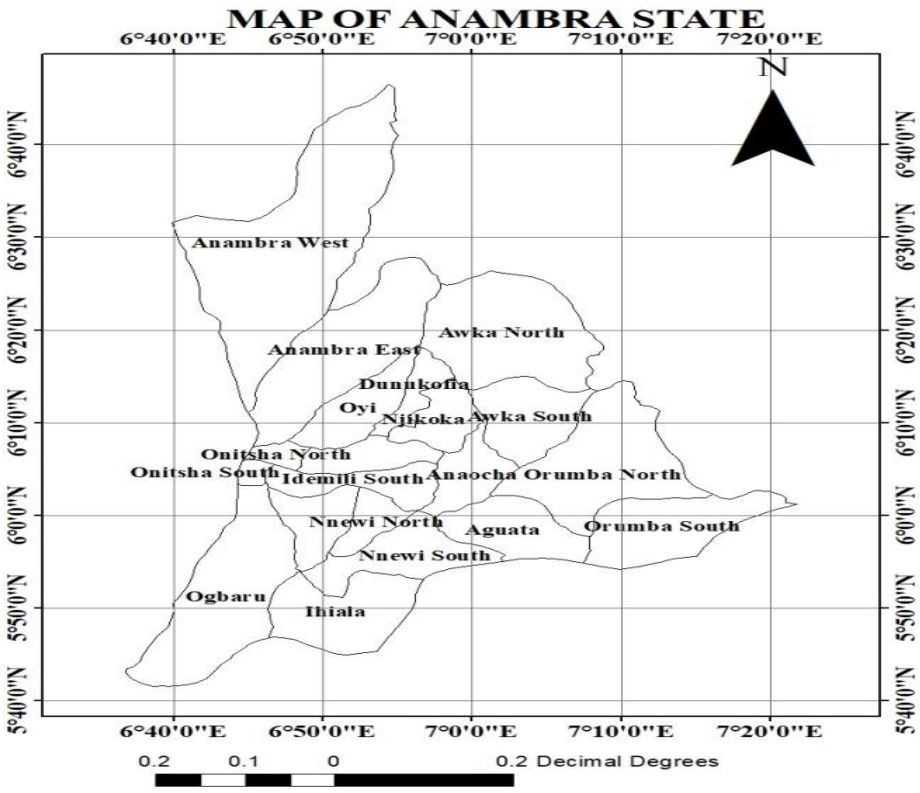

Figure 1: Map of Anambra State

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Maps of The Three Major Cities in Anambra State

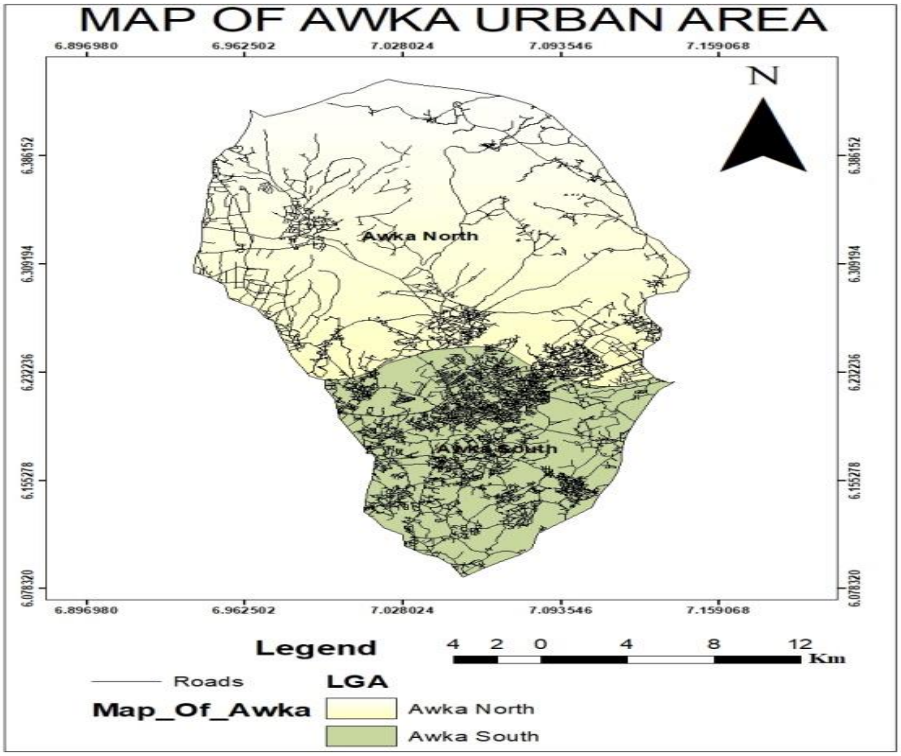

Fig 2a: Map of Awka Urban Area

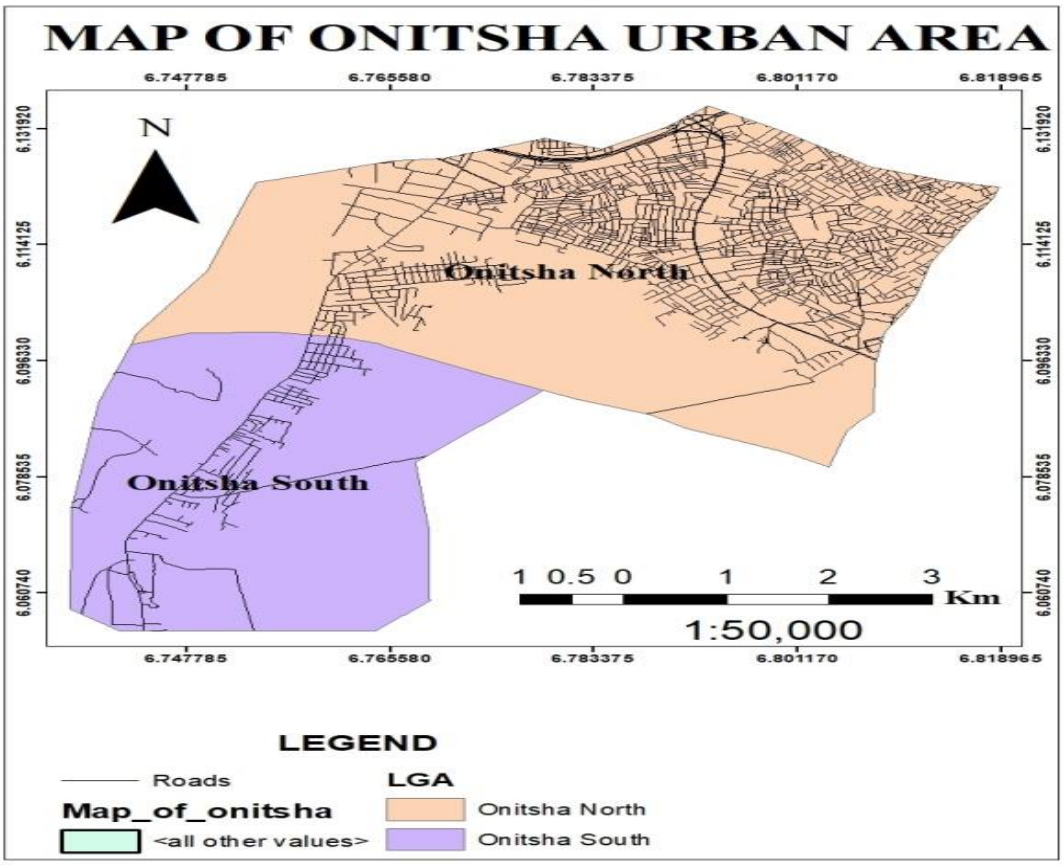

Fig 2b: Map of Onitsha Urban Area

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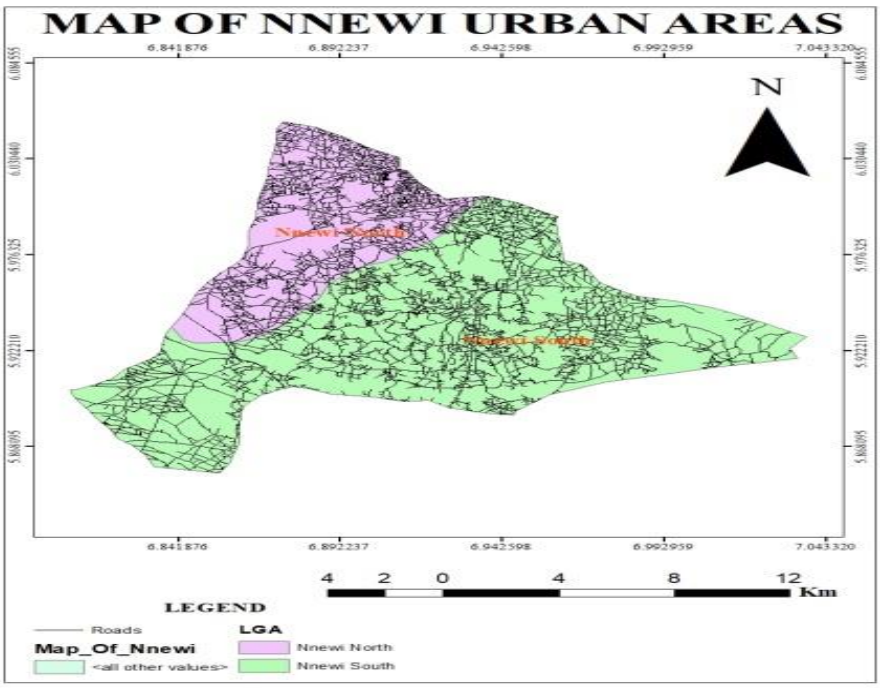

Fig 2c: Map of Nnewi Urban Area

METHODOLOGY

In this paper Average Nearest Neighborhood analysis was used in calculating the spatial distribution of tourism infrastructure in Awka, Onitsha and Nnewi in Anambra State. Distances between various features centroid location and its nearest neighbor were being measured, thereafter these distance are averaged. If the averaged distance is less than the average for a hypothetical random distribution, the distribution of the features being analyzed is considered clustered. If the averaged distance is greater than a hypothetical random distribution, the features considered dispersed. The ratio of this measured distance is computed by dividing the observed average by the expected average distance (with expected average distance being based on a hypothetical random distribution with the same number of features covering the same total area).

Mapping of Tourism Infrastructure in Awka, Onitsha and Nnewi Urban Areas of Anambra State.

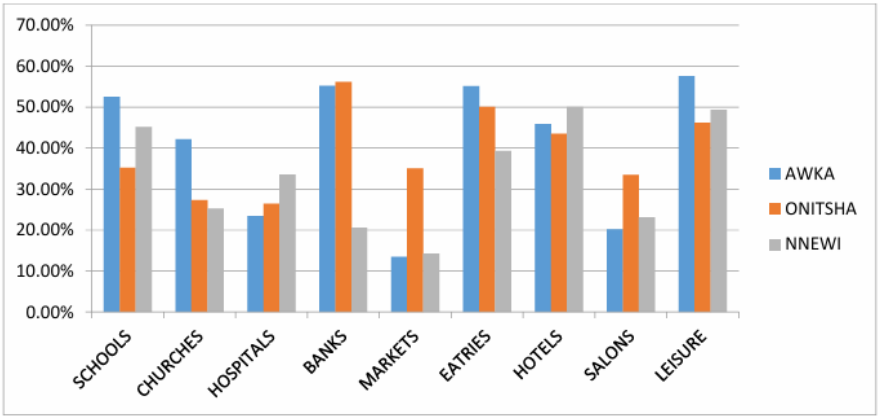

Figure 3: Showing Tourism Infrastructure within the Study Area.

In Anambra urban areas tourism infrastructure are classified into Banks, Leisure, Schools, Churches and Eateries etc. However in Awka Leisure centers, Eateries, Banks and Schools have the highest coverage of 50% and above which is closely followed by Churches and Hotels of about 40% and above. Hospitals, Markets and Salons are below 40%.

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In Onitsha the result shows that the number of Banks in the area has coverage of above 50%, while Eateries, Hotels and Leisure are with a coverage of 40% and above with Churches and Hospitals having the least coverage. Similarly in Nnewi it can be seen that Hotels and Leisure centers are of higher coverage of about 50.00% followed carefully by Schools, Eateries and Hospitals which has coverage of 30.0% to 40%.

Also from figure 3 above, it can be observed that Leisure, Hotels and Eateries are the most dominant category of tourism infrastructure in Awka, Onitsha and Nnewi Urban Areas of Anambra which indicates that the city caters well to the needs of tourists looking for recreational activities. Schools centers also have a significant presence in these cities, indicating that these urban areas are well-suited for both leisure and educational tourism.

Spatial Distribution of Hotels in Awka

The result of the analysis indicates that the spatial distribution of Hotels in Awka, Anambra State is random. The observed mean distance is 343.17m while the expected mean distance is 379.17m. The nearest neighbour ratio of 0.905047 further supports this conclusion, as a value closer to 1 indicates a more dispersed (Random) distribution and a value closer to 0 indicates a more clustered distribution.

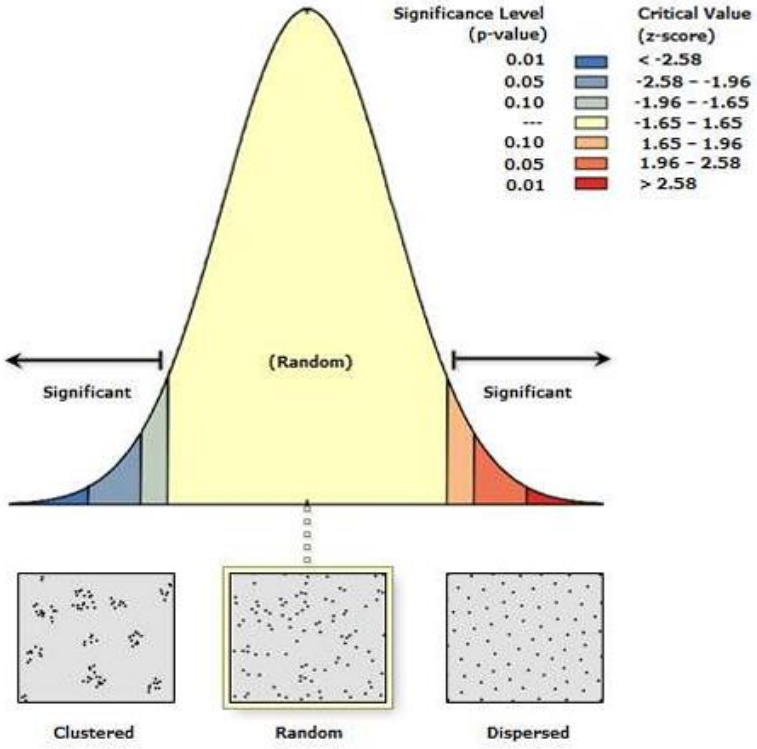

Figure 4: Result of Average Neighbor Analysis for the Spatial Distribution of Hotels in Awka

Spatial Distribution of Banks in Awka: The results of the analysis indicate that the spatial distribution of Banks in Awka is clustered. The observed mean distance of 161.12m is lower than the expected mean distance of 301.64m, which is consistent with a clustered pattern. The nearest neighbour ratio of 0.534151 further supports this conclusion, as a value closer to 1 indicates a more dispersed distribution and a value closer to 0 indicates a more clustered distribution. The p-value and z-score of 0.00019 and -4.274054 respectively, provide a statistical assessment of the significance of the observed clustering pattern. The p-value is a measure of the probability that the observed clustering pattern could be the result of random chance, and a p-value of 0.00019 indicates that the probability is extremely low. The z-score measures the number of standard deviations away from the mean. A negative z-score indicates that the observed mean is less than the expected mean, which is consistent with a clustered pattern.

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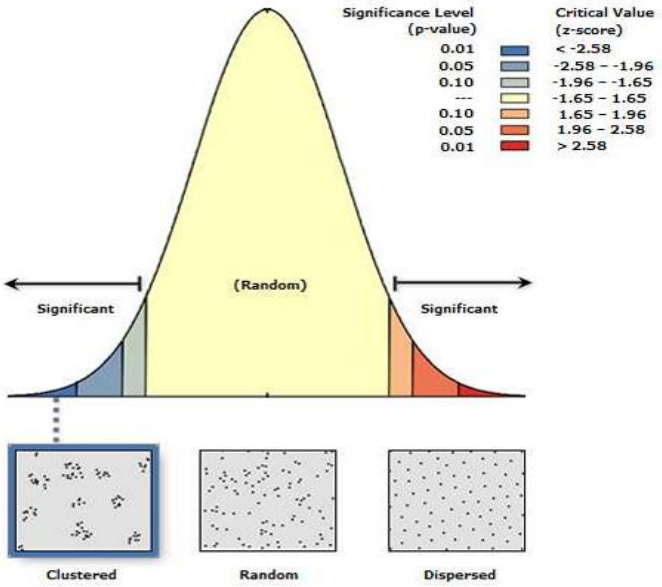

Figure 5: Result of Average Neighbor Analysis for the Spatial Distribution of Banks in Awka

Spatial Distribution of Tourism Infrastructure in Onitsha Urban Areas of Anambra State: The results of the analysis indicate that the spatial distribution of Tourism Infrastructure in Onitsha is clustered. The observed mean distance of 224.63m is lower than the expected mean distance of 345.24m, which is consistent with a clustered pattern. The nearest neighbour ratio of 0.650656 further supports this conclusion, as a value closer to 1 indicates a more dispersed distribution and a value closer to 0 indicates a more clustered distribution. The p-value and z-score of 0.00077 and -3.953830 respectively, provide a statistical assessment of the significance of the observed clustering pattern. The p-value is a measure of the probability that the observed clustering pattern could be the result of random chance, and a p-value of 0.00077 indicates that the probability is extremely low. The z-score measures the number of standard deviations away from the mean. A negative z-score indicates that the observed mean is less than the expected mean, which is consistent with a clustered pattern. Given the p-value of 0.00077 at a confidence level of 99%, it can be concluded that there is less than 1% likelihood that this clustered pattern of Tourism Infrastructure in Onitsha could be the result of random chance.

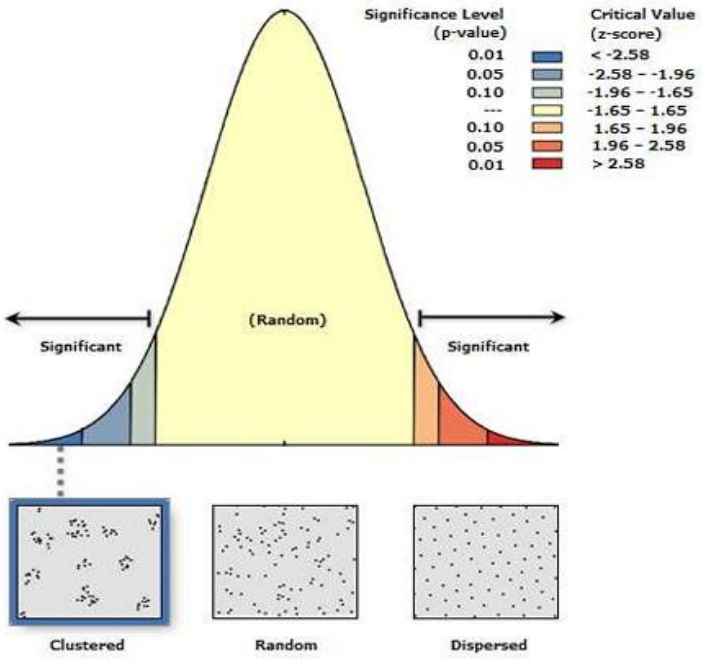

Figure 6: Result of Average Nearest Neighbor Analysis for tourism Infrastructure in Onitsha Urban Area of Anambra State.

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Spatial Distribution of Tourism Infrastructure in Nnewi Urban Areas of Anambra State.

The results of the analysis indicate that the spatial distribution of Tourism Infrastructure in Nnewi is clustered. The observed mean distance of 176.18m and the expected mean distance is 235.79m, which is consistent with a clustered pattern. The nearest neighbour ratio of 0.747196 further supports this conclusion, as a value closer to 1 indicates a more dispersed distribution and a value closer to 0 indicates a more clustered distribution. The p-value and z-score of 0.008074 and -2.648956 respectively, provide a statistical assessment of the significance of the observed clustering pattern. The p-value is a measure of the probability that the observed clustering pattern could be the result of random chance, and a p-value of 0.008074 indicates that the probability is extremely low. The z-score measures the number of standard deviations away from the mean. A negative z-score indicates that the observed mean is less than the expected mean, which is consistent with a clustered pattern. Given the p-value of 0.008074 at a confidence level of 99%, it can be concluded that there is a less than 1% likelihood that this clustered pattern of Tourism Infrastructure in Nnewi could be the result of random chance.

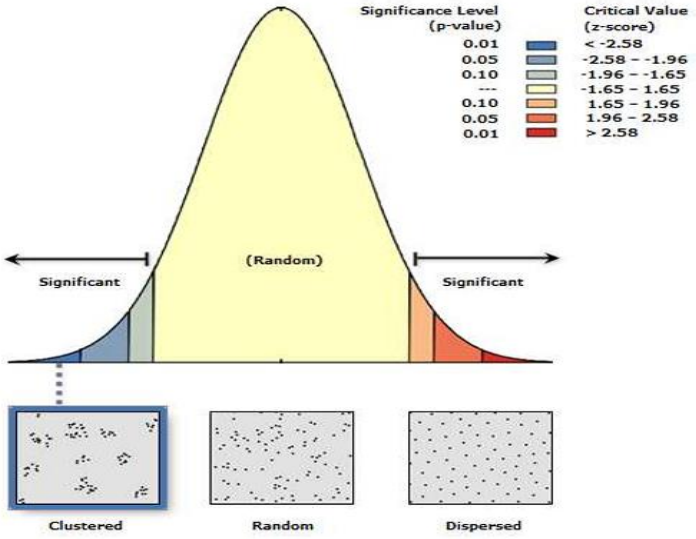

Figure 7: Result of Average Nearest Neighbor Analysis for tourism Infrastructure in Nnewi Urban Area of Anambra State.

SUMMARY OF FINDINGS

In conclusion, it can be observed from the analysis carried out that in major cities of Anambra State tourism infrastructure are observed to be clustered. This simply means that tourist sites such as leisure, Hotels, Eateries are mostly located close to each other. Although this could be of great benefit to the tourist as this will comfortable allow them (Tourist) to easily move from one spot to another. On the other hand however it can be viewed as a limitation to the tourist and the state such that to the tourist he is only limited to or confined to only certain areas or location in the state where these facilities are available limiting his ability to fully explore the whole state.

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