

Analyzing the Spatial Relationship Between Population Distribution and Land Area in the Western Province of Sri Lanka: A Pearson's Correlation Approach

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Abstract

It is imperative to comprehend the spatial interrelation between population distribution and land area to facilitate effective urban planning, resource allocation, and sustainable development, particularly in regions undergoing rapid urbanization. The present study investigates the correlation between population figures and land area across divisional administrative units in the Western Province of Sri Lanka. This province comprises the country's most densely populated and urbanized zones, including Colombo, Gampaha, and Kalutara districts. The present study employs Pearson's correlation coefficient to quantify the strength and direction of the relationship between population size and land extent at the Divisional Secretariat Division (DSD) level.

The present study utilizes secondary data from the Department of Census and Statistics (2020), encompassing population statistics and official land area measurements for each DSD. The data are processed for statistical analysis, with additional visualization through Geographic Information System (GIS) tools to support spatial interpretation. The findings suggest that urbanization trends and land-use configurations are pivotal factors influencing the spatial distribution of populations within the Western Province. The results of the study further emphasize the necessity for region-specific planning approaches that take into account the spatial mismatch between population concentration and land availability. By emphasizing the magnitude of demographic pressure on constrained land resources, this study offers significant insights for policymakers, urban planners, and development authorities seeking to optimize land use and manage growth in a sustainable manner in Sri Lanka's Western Province.

Keywords

Population Distribution, Land Area, Pearson's Correlation, Urbanization, Western Province, Sri Lanka.