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GIS-Based Spatial Correlation Analysis: Sustainable Development and Two Generations of Demographic Changes

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Abstract: Population growth is a global issue that contributes to the changes in the distribution and concentration of population. Population growth affects the sustainable development of an area from both a social and spatial point of view. To relate the global problem to a local issue, this research investigates one of the Malaysian government policies addressed as the New Economic Policy (NEP) because the policy may be linked to long-term spatial demographic changes in Peninsular Malaysia, particularly in the distribution of people. Back in 1970, the policy was implemented after an unwanted incident on 13 May 1969. Its goals were to eradicate poverty regardless of race and to restructure society by eliminating the identification of race with economic functions. To measure the successfulness of the policy, two indicators that were derived from the goals are the long-term spatial changes of both racial and occupational segregation. The magnitude for both segregations was calculated using the Entropy Index (H). The values were then carried forward to evaluate the relationship between these two variables. The final analysis was conducted using the Local Bivariate Relationships application of a Geographic Information System (GIS) tool. The outputs then reflect the two sustainable goals that are, (i) reduced inequalities, and (ii) sustainable cities and communities in Peninsular Malaysia.

Keywords: racial; occupational; segregation; demography; Geographic Information Systems (GIS); spatial correlation



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Citation: Yaakub, N.F.; Masron, T.; Marzuki, A.; Soda, R. GIS-Based Spatial Correlation Analysis: Sustainable Development and Two Generations of Demographic Changes. *Sustainability* **2022**, *14*, 1490. <https://doi.org/10.3390/su14031490>

Academic Editors: Raúl Romero Calcerrada, Javier Cabello, Manuel Pacheco Romero and Koldo Trapaga Monchet

Received: 28 October 2021

Accepted: 24 January 2022

Published: 27 January 2022

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1. Introduction

1.1. Population Growth

Over space and time, the earth undergoes unbalanced demographics alteration. In these present days and times, demographic alteration occurs worldwide in most regions, continents, and countries. As a result, this worldwide phenomenon is marked by a huge increase in the number of populations. In specific, the years between 1950 and 2050 make up the range of time that covers the period of reciprocated global demographic alteration [1]. “In the past five decades, demographic change has been more rapid and more universal than in any other period of human history. As a result, the world is now more diverse in birth, death, and growth rates than ever” [2] (p. 142).

Demographic alteration, or demographic change, is usually associated with population growth [1,3,4]. This connection may be due to the fact that population growth occurs globally and increasingly worldwide at the rate of 2% each year [5]. Population growth plays a vital role as a summary parameter in projecting future population trends [6]. Population growth depends on three factors: the number of births, the number of deaths, and the extent of migration [7,8].