

ORIGINAL ARTICLE

Aging in Motion: Mapping the Dynamic Interplay Between Urban Growth and Senior Citizen Density in Sarawak, Malaysia (1980–2020)

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ABSTRACT

The global rise in aging populations is reshaping urban landscapes, particularly in Southeast Asia. In Malaysia, Sarawak is projected to become an aging state by 2028, but the spatial patterns of senior citizen distribution remain underexplored, especially in the context of long-term urbanization. Despite the growing need for age-inclusive planning, little is known about how urban growth affects senior citizen density in diverse regions like Sarawak, where rapid urbanization coexists with vast rural territories. This knowledge gap limits effective policy responses and urban planning for elder populations. This study employs a mixed-method geospatial approach using decadal census data (1980–2020) and spatial analysis in ArcGIS to map the distribution of individuals aged 65 and above across 40 administrative districts. Built-up area growth was assessed using remote sensing-derived indices to track urban expansion and correlate it with elderly population shifts. Findings reveal a consistent increase in senior citizen density in key urban districts such as Kuching, Sibu and Miri, with patterns reflecting infrastructural availability and socio-ecological influences. Spatial overlays demonstrate that urban peripheries are becoming hotspots for aging populations, driven by proximity to services and improved connectivity. This research provides the first long-term spatial account of aging and urban growth in Sarawak. The results offer critical insights for demographers, urban planners and social policymakers seeking to future-proof cities against aging-related challenges, particularly in Malaysia and similar developing contexts. Given the accelerating pace of demographic aging, we call for data-driven, spatially sensitive urban policies that promote equity, accessibility and social integration for senior citizens in emerging cityscapes.

1 | Introduction

The aging population phenomenon is an increasingly critical issue in both developed and developing nations, reflecting pro-

found demographic transitions worldwide. Japan remains the most aged society globally, with over 29.3% of its population aged 65 and above as of 2024, a figure expected to rise to nearly 40% by 2070 (Statistics Bureau of Japan 2024a; Statistics Bureau of

All authors agree to be accountable for all aspects of the work.