Visualization of the supply-demand gap in childcare services in Tokyo

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With an increase in the number of working mothers in Japan, metropolitan areas face a shortage of childcare services. To overcome this problem, the Japanese government has, since 2015, sought to expand childcare facilities by implementing a comprehensive support system for children and child-rearing. This system is aimed at increasing the supply and type of childcare services available by creating more certified centers for early childhood education and care, in addition to providing greater public financial support for small-scale unlicensed childcare facilities. Some municipalities have also implemented their own childcare provision measures. In planning childcare resource allocation, the spatial distribution of childcare services supply and demand must be understood. This study examined the spatial aspects of the development of the supply-demand gap following the implementation of this system. To achieve this, spatial patterns of the gap between childcare supply and demand were visualized using geographic information systems (GIS). The study area was Koto Ward in Tokyo, where an extremely large number of children await enrollment in licensed childcare centers. To map the supply-demand gap using GIS, the difference between supply and demand densities was calculated after converting the vector data concerning childcare supply from the licensed childcare centers and preschool children into raster data using kernel density estimation. The results of the analysis reveal a spatial imbalance between childcare supply and demand within the municipality. A map adding the distribution of small-scale childcare centers proves that the gap in childcare supply from the licensed centers is spatially complemented by childcare services of small-scale childcare centers. Additionally, the map provides evidence of the effect of the new "satellite childcare service" measures originally enacted in Koto Ward.

Keywords: childcare services, supply-demand gap, kernel density estimation, raster calculation