

Service Flow in Multilayer Networks: A Method for Evaluating the Layout of Urban Medical Resources

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Abstract : (Objective) Situated within the context of China's tiered medical treatment system, this study aims to analyze spatial causes of urban healthcare access difficulties from the perspective of the configuration of healthcare facilities. (Methods) A social network analysis approach is employed to construct a healthcare demand and supply flow network between major residential clusters and various tiers of hospitals in the city. (Conclusion) The findings reveal that: 1. there exists overall maldistribution and over-concentration of healthcare resources in Study Area, characterized by structural imbalance; 2. the low rate of primary care utilization in Study Area is a key factor contributing to congestion at higher-tier hospitals, as excessive reliance on these institutions by neighboring communities exacerbates the problem; 3. gradual optimization of the healthcare facility layout in Study Area, encompassing holistic, local, and individual institutional levels, can enhance systemic efficiency and resource balance. (Prospects) This research proposes a method for evaluating urban healthcare resource distribution structures based on service flows within hierarchical networks. It offers spatially targeted optimization suggestions for promoting the implementation of the tiered healthcare system and alleviating challenges related to accessibility and congestion in seeking medical care. Provide some new ideas for researchers and healthcare managers in countries, cities, and healthcare management around the world with similar challenges.

Keywords : flow of public services, urban networks, healthcare facilities, spatial planning, urban networks

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