Study on the Spatial Vitality of Waterfront Rail Transit Station Area: A Case Study of Main Urban Area in Chongqing

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Abstract : Urban waterfront rail transit stations exert a dual impact on both the waterfront and the transit station, resulting in a concentration of development elements in the surrounding space. In order to more effectively develop the space around the station, this study focuses on the perspective of the integration of station, city, and people. Taking Chongqing as an example, based on the Arc GIS platform, it explores the vitality of the site from the three dimensions of crowd activity heat, space facilities heat, and spatial accessibility. It conducts a comprehensive evaluation and interpretation of the vitality surrounding the waterfront rail transit station area in Chongqing. The study found that (1) the spatial vitality in the vicinity of waterfront rail transit stations is correlated with the waterfront's functional zoning and the intensity of development. Stations situated in waterfront residential and public spaces are more likely to experience a convergence of people, whereas those located in waterfront industrial areas exhibit lower levels of vitality. (2) Effective transportation accessibility plays a pivotal role in maintaining a steady flow of passengers and facilitating their movement. However, the three-dimensionality of urban space in mountainous regions is a notable challenge, leading to some stations experiencing limited accessibility. This underscores the importance of enhancing the optimization of walking space, particularly the access routes from the station to the waterfront area. (2) The density of spatial facilities around waterfront stations in old urban areas lags behind the population's needs, indicating a need to strengthen the allocation of relevant land and resources in these areas.