Housing Prices and Travel Costs: Insights from Origin-Destination Demand Estimation in Taiwan’s Science Parks

Authors : Kai-Wei Ji, Dung-Ying Lin

Abstract : This study investigates the impact of transportation on housing prices in regions surrounding Taiwan's science parks. As these parks evolve into crucial economic and population growth centers, they attract an increasing number of residents and workers, significantly influencing local housing markets. This demographic shift raises important questions about the role of transportation in shaping real estate values. Our research examines four major science parks in Taiwan, providing a comparative analysis of how transportation conditions and population dynamics interact to affect housing price premiums. We employ an origin-destination (OD) matrix derived from pervasive traffic data to model travel patterns and their effects on real estate values. The methodology utilizes a bi-level framework: a genetic algorithm optimizes OD demand estimation at the upper level, while a user equilibrium (UE) model simulates traffic flow at the lower level. This approach enables a nuanced exploration of how population growth impacts transportation conditions and housing price premiums. By analyzing the interplay between travel costs based on OD demand estimation and housing prices, we offer valuable insights for urban planners and policymakers. These findings are crucial for informed decision-making in rapidly developing areas, where understanding the relationship between mobility and real estate values is essential for sustainable urban development.

Keywords : demand estimation, genetic algorithm, housing price, transportation
Conference Title : ICIEEM 2025 : International Conference on Industrial Engineering and Engineering Management
Conference Location : Tokyo, Japan
Conference Dates : February 24-25, 2025