Can Conventional Measures Identify Geographically Varying Mixed Regression Relationships? A Simulation-based Analysis

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Regional scientists are increasingly utilizing data analysis techniques that allow for spatial heterogeneity of various forms. Regression specifications like Geographically Weighted Regression and Locally Weighted Regression allow the regression parameters to vary over space thereby reflecting spatially non-stationary relationships. Such spatial heterogeneity is appealing in a regional science context in which location is assumed to matter in various ways. Recent work has begun to estimate "mixed" relationships in which some variables exert non-stationary effects on the dependent variable, while others exhibit a constant effect over space. With so many possibilities available, researchers face a daunting task determining which variables to estimate in a (non-)stationary fashion. This paper uses Monte Carlo simulations to generate mixed regression relationships to determine whether commonly used metrics (for example Leave One Out Cross Validation and the Akaike Information Criterion) can adequately distinguish between the different possibilities.

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