**Title:**

Capturing the Relationship Between Spatial Structure and Individual Outcomes: Variation in the Concept of “Access to Parks” and its Association with BMI

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**Description:**

Park accessibility and physical health associations are evaluated, as measured through Body Mass Index (BMI) with a cadre of GIS park accessibility indices. With a longitudinal study of the effects of neighborhoods on human development and cognitive aging as our backdrop, we examine how choices of spatial representation, sources of spatial data, and methods of spatial analysis yield a variety of different conclusions regarding the fundamental research questions about the associations between neighborhoods and their residents’ lives. Our results will clarify the amount of variance that subjective decisions like these introduce into quantitative studies. We use these results to provide guidance on how certain decisions should be made, and when researchers’ omitted discussions about such choices should raise red flags; in so doing, we set the stage for a broader discussion about social science’s replication crises in the special context of spatial data. Keywords: accessibility, BMI, neighborhood effects, externality space, uncertain geographic context problem

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