

98th TAOYAKA Program Seminar

357th IDEC seminar

Built environment and travel behavior: Validation and application of a continuous-treatment propensity score stratification method

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ABSTRACT:

This presentation will discuss the validation and implementation of a propensity score approach with continuous treatment to test the existence of a causal relationship between the built environment and travel behavior using cross-sectional data from an original survey conducted in Fukuoka City, Japan. The implemented methodology differs from previous applications in the planning literature in that it relaxes the binary treatment assumption which polarizes the built environment into two extremes (e.g. urban vs suburban). The effectiveness of the proposed methodology in reducing bias was validated via Monte Carlo simulation. The proposed approach was shown to reduce self-selection bias against OLS in all but extreme levels of non-linearity. Empirical results suggest that an increase in urbanization level has a negative effect on home-based maintenance car trip frequencies, and conversely, a positive effect on home-based maintenance non-motorized trip frequencies. Result estimates suggest the existence of a causal mode substitution mechanism between car and non-motorized modes given increases in the urbanization level at residential location, thus providing some empirical support to the arguments put forth by compact city advocates.

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d Feb. 17 (Fri), 2017

d 10:30-12:00

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