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Special section: Innovations in location choice modeling underlying activity-travel behavior

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This special section of the *Journal of Transport and Land Use* focuses on location choice modeling underlying activity-travel behavior and includes five manuscripts that were originally presented in Toronto, Canada, at the Thirteenth International Conference on Travel Behaviour Research, organized by the International Association for Travel Behaviour Research (IATBR). This collection of works contributes to the growing literature on location choice modeling with innovations in modeling approaches and spatial measurement techniques, as well as notable advancements in the development of theories and conceptual frameworks. The five papers tackle a spectrum of location choice issues, including the operationalization of residential location variables, the accessibility of moving objects to locations of interest, model transferability in the temporal dimension, spatial self-selection and the roles of attitudinal and socioeconomic characteristics, and integration of location choice into microscopic travel demand simulation.

In "The role of location in residential location choice models: A review of literature," Patrick Schirmer, Michael van Eggermond, and Kay Axhausen present a new classification system to categorize location variables and assess the various ways in which they have been operationalized in residential discrete choice models. Residential alternatives have been modeled at different spatial aggregation levels, from zones or neighborhoods to disaggregated units such as buildings or dwellings. The authors organize the wide range of measurements used to define residential location at different aggregation levels into four main categories—built environment, points of interest, socioeconomic environment, and accessibility—and synthesize recent findings by comparing different analysis approaches and highlighting common location attributes measured and used between studies.

While Schirmer et al. highlight common approaches for measuring accessibility in the context of residential location choice, Mark Horner and Joni Downs develop a new accessibility measure for mobile objects (e.g., vehicles) in "Integrating people and place: A density-based measure for assessing accessibility to opportunities." The metric, which builds on earlier work by the authors concerning time-geographic density estimation, estimates how accessible a moving object is to locations of interest given constraints on its movement. Using synthetic activity-travel data for 11 individuals, a road network, and job counts for census blocks, Horner and Downs demonstrate the use of their metric within the context of Leon County, Florida. The analysis clearly shows how the metric bridges "people-based" and "place-based" measures of accessibility.

An important assumption of travel forecast models is that parameters estimated from observed behavior in the base year are applicable for predicting future behavior; this is known as model transferability in the temporal dimension. James Fox, Andrew Daly, Stephane Hess, and Eric Miller examine this assumption and assess the degrees to which it is valid in, "Temporal transferability of models of mode-destination choice for the Greater Toronto and Hamilton area." Using cross-sectional data from the same travel survey administered in different years during a 20-year period, Fox et al. developed three different model specifications and evaluated their temporal transferability with three tests. Not only does this paper provide insights on improving model transferability and recognizing limitations over

longer forecasting horizons, but the results also have important implications for the transferability of different policy-related parameters.

In recent years, the issue of residential self-selection has garnered increased attention from researchers in part given policymakers' assumption that land-use policies promoting high densities and mixed land uses can curb auto travel. Residential self-selection suggests that the linkage between land use and travel behavior may be influenced by peoples' attitudes and locational preferences. João de Abreu e Silva contributes to this debate in "Spatial self-selection in land-use travel behavior interactions: Accounting simultaneously for attitudes and socioeconomic characteristics." In the paper, he extends the concept of self-selection to also include both residence and workplace, and uses the term "spatial self-selection" to account for both locations. The data used in the study were collected in Lisbon, Portugal, in 2009 from a travel behavior survey administered via the Internet. The results of the structural equations modeling show that attitudes and socioeconomic characteristics influence both residential and workplace locations as well as travel behavior, lending support to the notion of spatial self-selection. However, further analysis shows that land use also has an impact on travel behavior after controlling for self-selection.

This special section concludes with a paper by Fabian Märki, David Charypar, and Kay Axhausen. In "Location choice for a continuous simulation of long periods under changing conditions," the authors integrate a continuous location choice procedure into a microscopic travel demand simulation called C-TAP (Continuous Target-Based Activity Planning), which simulates agent behavior for periods greater than a day, such as weeks or months. In the simulation, agent behavior is guided over long periods of time by "targets" that describe agents' desires, preferences, and goals. The location choice procedure developed by the authors combines expected travel time, current location effectiveness, prospective location effectiveness, and individual unexplained location preference. The authors demonstrate their procedure by devising a simulation scenario whereby agents must choose between four locations for leisure activities. To account for seasonal effects on locations, the scenario assumes a 12-day year with three days for each season. The simulation runs produce realistic behavior based on simulation inputs (travel times, effectiveness functions for each location, location preference).

References

de Abreu e Silva, J. 2014. Spatial self-selection in land use travel behavior interactions. Accounting simultaneously for attitudes and socioeconomic characteristics. *Journal of Transport and Land Use* 7(2): 63-84. http://dx.doi.org/10.5198/jtlu.v7i2.696.

Fox, J., A. Daly, S. Hess, E. Miller. 2014. Temporal transferability of models of mode-destination choice for the Greater Toronto and Hamilton area. *Journal of Transport and Land Use* 7(2): 41-62. http://dx.doi.org/10.5198/jtlu.v7i2.701.

Horner, M. and J. Downs. 2014. Integrating people and place: A density-based measure for assessing accessibility to opportunities. *Journal of Transport and Land Use* 7(2): 23-40. http://dx.doi.org/10.5198/jtlu.v7i2.417.

Märki, F., D. Charypar, K. W. Axhausen. 2014. Location choice for a continuous simulation of long periods under changing conditions. *Journal of Transport and Land Use* 7(2): 85-103. http://dx.doi.org/10.5198/jtlu.v7i2.547.

Schirmer, P. M., M. A.B. van Eggermond, K. W. Axhausen. 2014. The role of location in residential location choice models: A review of literature. *Journal of Transport and Land Use* 7(2): 3-21. http://dx.doi.org/10.5198/jtlu.v7i2.740.