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Editorial for "Transportation" (2010)

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The art and science of forecasting where people want to go—to live, for shopping, working or even recreation—has a has a rich and beleaguered history. After all, can modelers reasonably be expected to accurately predict a phenomenon with so many considerations, personal taste, and so many uncertainties? Researchers continue to try, nonetheless; and, based on the advancements and progress witnessed over the past decades, evidence suggests that land use-transportation modelers are getting better at it.

Empirical and scientifically based location and destination choice models have been around and have evolved for decades, if not centuries. Considering, for example, the familiar work of Von Thünen or Reilly's law of retail gravitation, it is impressive to reflect on the countless improvements and refinements that have been made. We now sit in 2010 and it is readily apparent how at least three factors have been forcefully influencing this literature: (1) we now have better, richer, and more disaggregate data, (2) we have more sophisticated software and estimation procedures, (3) we have decades of experiences to build on—both in witnessing the decisions people make and efforts to model them. In short, the traditional aggregate approaches have been supplemented with disaggregate, econometric approaches and more recently with behavioural activity-based models.

This special issue of *Transportation* centers on location choice models of different kinds: where to live, where to shop, etc. It combines a set of papers, originally presented at the 2010 meeting of the Transportation Research Board, each of which make contributions on the one hand to newly emerging theories and modelling approaches and on the other hand to well-established traditions, stemming from notable advancements throughout the 1960s.

Of the seven papers, two hone in on advancements to residential modelling applications. Two tackle the case of shopping choice models. Two examine examples of trip distribution, generally. And one considers features of both home location and work travel. The

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papers are unique in their contribution. Each push the envelope with respect to basic research while at the same time keeping an eye on contributions from an applied research standpoint. After all, this is one of the distinguishing features of transportation research: the relatively intense interaction between academics and professionals. Valorisation and dissemination of research findings and models is well-developed compared to other disciplines. Particular lines of research evolve over a long period of time. Consequently, there is an active research community improving our knowledge and models about transportation; these papers provide no exception. Broadly speaking, we order the papers according to the usual duration of choice they address: residential location decisions being longer are addressed earlier in this issue.

To begin, Lee and Waddell's work drills down into a particularly vexing issue for urban modelers: adequately capturing and representing the joint decisions of residential mobility and relocation choice. The contribution here is that both are in the same estimation. Essential to any decisions of this nature are accurately representing a two-tier hierarchical structure and considering the alternatives that are available. Other researchers in this vein have tried to navigate around sampling issues associated such an endeavor with varying strategies. Not only does this paper present a novel nested logit model with sampling of alternatives, but it also offers a robust procedure to correct for sampling bias.

The paper by Eluru, Bhat, Pendyala and Konduri presents a joint GEV-based logit regression model of residential location choice, vehicle count by type choice, and vehicle usage (vehicle miles of travel). The estimation is based in the well-established and widely applied, but limitedly used in transportation research, Copula framework that allows the estimation of joint equations systems with error dependence structures within a simple and flexible closed-form analytic framework. The paper can be viewed as a further contribution to the state-of-the-art in econometric modelling of travel behaviour. The paper is positioned as a possible solution to the well-known self-selection problem in the literature on the influence of the built environment on travel behaviour. Using, a sample derived from the 2000 San Francisco Bay Area Household Travel Survey, the results show that self-selection effects cannot be ignored in this sample.

Manaugh, Miranda-Moreno, and El-Geneidy hone in on a well (perhaps over-?) subscribed issue in transportation literature: home-to-work travel distances. But, employing data from the Montréal Metropolitan region they shed new light on the subject by jointly explaining commuter trip length and home-work location as a function of neighborhood typologies, commuter socio-demographics and robust measures of job/work accessibility. A first and important step in their work is to use factor and cluster analysis to develop neighborhood typologies at both home and job locations. Relying on a simultaneous equation modeling approach that captures different measures of accessibility and commuter socio-demographics, they demonstrate that commuters who live and work in a different sub-regions almost double the average trip distance. The results underscore the importance of home-work location with respect to urban form and job accessibility, suggesting that policies spurring increased density in suburban areas would is insufficient, by itself, to substantially reduce commuter distances.

Research from Kusumastuti, Hannes, Janssens, Wets and Dellaert fits into the category of advancements in activity models. The issue whether behavioral principles can be validly derived from observed choice data has been subject of discussion in a variety of disciplines. The authors argue that qualitative methods may deepen the insight into human's travel behavior and should be developed in complement to quantitative studies. The paper

described an application of the Causal network Elicitation technique (CNET) in the context of fun-shopping. Association rules are derived to express the associations between variables present in cognitive subsets of activity timing, transport mode choice and location choice decisions, generated by the CNET technique. The small scale case study shows that the approach can be used to make operational decisions in activity-based models or can in principle be developed into a modeling approach of its own right.

Veenstra, Thomas and Tutert re-address the issue of the specification of the distance deterrence function in gravity/spatial interaction models, which did receive a lot of attention, especially in mathematical geography and regional science in the 1970–1980s. They suggest a variation to earlier work in these disciplines by taking the discontinuous configuration of destinations into account. The performance of this limited destinations model is compared with the performance of a gravity and intervening opportunities model in the context of grocery shopping in a Dutch city. Results show that their model outperforms the traditional gravity and intervening opportunities models.

In conventional transportation modeling practice, destination choice precedes mode choice. Using Knoxville, Tennessee (US) as the setting, Newman and Bernardin argue that, in certain circumstances, the ordering of these decisions and choices could be reversed. In a relatively straightforward but useful illustration, they employ an integrated nested choice model to uncover a relationship between mode and destination choice. In particular, they suggest that in environments with less well developed public transit systems that draw few choice riders, travelers are more likely to change destinations than change transportation modes. While it can remain a relatively open question as to which processes should be modeled first in which environments (cities), such work questioning the status quo is appreciated.

Finally, Horowitz's paper is a contribution to the long-standing problem of disaggregating an O-D matrix. It discusses a method for creating trip tables rather than location choice models per se. While location choice models do result in travel matrices, this work takes an aggregate approach to creating the tables, and assumes that more aggregate tables already exist in its approach. In so doing it discusses several optimization models that can disaggregate O-D matrices by using information from ground counts. These models differ in terms of their assumption about the O-D table (approximate versus perfect) and assumption about whether or not the O-D table is affected by trip utility. These four optimization models are tested on real data from Northfield, MN. Results show their effectiveness. Fratar biproportional estimation seeks the solution of this nonlinear, least-squares minimization problem to obtain sets of row and column factors to refine a rough (or "seed") table at the same level of aggregation.

The end result is a collection of papers that serves to broaden our understanding of the issues, methods, strengths, and weaknesses of predicting location choice models, whatever their nature. We look forward to the contributions of these seven papers being used to shape and refine future lines of inquiry as well as their advancements being woven into applied practice.

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