

**Minutes of the**  
**Emerging Methods Subcommittee A1C02(1)**  
**of the Passenger Travel Demand Forecasting Committee A1C02**  
**January 14th, 2003, Tuesday, 1:30 p.m.**

82<sup>nd</sup> Annual Meeting of the Transportation Research Board  
Hilton Washington Hotel and Towers, Farragut Room  
Washington, D.C.

1. Introductions & Agenda: Co-chairs Karthik Srinivasan and Joan Walker introduced themselves and distributed copies of the meeting agenda (attached). The attendees introduced themselves. A total of 20 individuals were in attendance with 13 from academia, 5 from consulting agencies, and 2 from local, regional, state, and federal transportation agencies. The list of attendees is attached.
2. Activities at 2003 Annual Meeting: The subcommittee placed three calls for papers for the 2003 TRB Annual Meeting. The subcommittee received 2 papers for presentation only, 8 papers for presentation and publication, 1 paper submitted for publication only. 7 papers were accepted for presentation (acceptance rate 70%), and 6 papers are being considered for publication. These papers ended up in several A1C02 sessions, including well attended sessions on Discrete Choice and Spatial Modeling Methods (265), Emerging Data Collection and Microsimulation Techniques for Activity-based Travel Modeling (745), and Innovative Analysis Methods in Travel Modeling (814). Thanks to all of the committee members for the thoughtful and timely reviews.

The remainder of the meeting focused on potential activities for the subcommittee to embark on this year and on important emerging methods for the subcommittee to promote. There was a lot of great discussion, and an attempt to capture the essence is provided below. Apologies in advance for inaccuracies in who said what.

3. Role of Subcommittee: There was a discussion of how the group could do more to “Foster Innovation”, which is the charge of this subcommittee. Ideas included:
  - a. Working with the parent committee to lobby for support and money, for example through NCHRP/TCRP problem statements and Proposals. [Koppelman and Bhat]
  - b. Developing targeted TRB Calls for Papers – a valuable outlet for promoting priority research. [Waddell]
  - c. There was a lot of interest in the idea of organizing an “Emerging Methods in Transportation” conference for consultants and MPOs to teach new methodologies [Bhat]. This would be a demonstration/workshop setting, focusing on the educational role of the committee. It was suggested that sponsorship be sought from a group of consultants or a progressive MPO with

major decisions looming (e.g., Florida - Miller) to sponsor and/or host the event to encourage attendance and dissemination. Alternatively, this could be done at the TRB midyear conference in Portland or the AMPO conference in Baton Rouge, which provides the advantage of TRB providing the meeting space and logistics, or via dissemination and discussions through sessions at Sunday workshops at other conferences. The workshops would focus on specific model areas to work into practice of MPOs, and bring together application-minded researchers. It was suggested that such a conference may be valuable as a forum where 10-15 participants were invited from MPO's, universities (application-oriented researchers), and practitioners to address a focused topic area and specific application-oriented questions. There's a need to focus on incremental adjustments that practitioners can make and provide (more) concrete evidence as to how the adjustments will lead to better forecasting results. [Koppelman and Prousaloglou] There was a question as to whether consultants would be interested in supporting such an event, particularly since differential advantages is an important selling point. Frank Koppelman mentioned a related association he had with Bruce Williams. Chandra Bhat suggested Rick Donnelley from the RTT subcommittee as a contact person for coordinating/organizing such an activity. Chris Forinash suggested Mike Culp at Federal Highways as a potential contact for resources (supporting peer review function).

- d. In a similar vein, there was interest in organizing workshops and specialty conferences to bring researchers together tackle cutting edge research topics, for example microsimulation or dynamics. Such workshops would aim for a focused, high level discussions organized around invited people and papers. Again, it would make sense to organize such workshops around existing conferences [AMPO, TRB midyear, etc.].
  - e. There was a suggestion that we all encourage Ph.D.s working in related areas to submit abstracts to the TRB dissertation sessions [Bhat].
  - f. There was a suggestion to make efforts to specially target innovative Consultants and MPOs to respond to the subcommittee's Calls for Papers [Koppelman].
4. Emerging Methodological Developments: There was a lot of discussion of important areas of emerging methodological developments, including:
- a. There are a host of modeling components that are critical (particularly to air quality), which are not well understood, including vehicle ownership and fleet mix. Kimon Prousaloglou mentioned the importance of modeling time of day. Ryuichi Kitamura pointed out that transaction-modeling including vehicle ownership, fleet mix, translating person trips to vehicle occupancy, and time of day have not adequately considered dynamic issues such as state-

dependence, problem of initial conditions, and heterogeneity. There was a question as to whether we could do publishable research in this area.

- b. Microsimulation: Several members highlighted that to be valuable as a practical tool, issues regarding statistical properties of simulators need to be understood, and demonstration of consistent results was critical for adoption/use of these tools by MPO. Issues regarding differences in estimation for forecasting versus estimation for explaining current trends were noted.
- c. Spatial correlation and Taste heterogeneity: The need for methods and models that explicitly account for spatial effects and impacts was mentioned [Kitamura, Miller] and the absence of spatial content in current analysis methods was indicated.
- d. Multidimensional choice problems: Issues regarding treatment of endogeneity/simultaneity were mentioned. Difficulties regarding modeling large dimensional data sets and multiple and correlated dimensions were raised, particularly in the context of spatial models. The relevance of this topic to freight models and choice set construction was also discussed.
- e. Multiple agents: The discussion also broached the issue of decision-making among multiple agents/decision-makers. In this context, given the large number of alternatives, the potential to explore alternative choice frameworks such as algorithmic/computational process/ rule-based vis-à-vis random utility/discrete choice models was noted.
- f. Behavioral processes: In particular, the need for expanding the behavioral insights on choice set formation, and decision-making, drawn from social sciences, psychological issues, cognitive science, and microeconomics was indicated. In this context, it was suggested that this subcommittee could partner with the A1C04 subcommittee (Sean Doherty) to pursue a call for paper in this area for 2004.
- g. Dynamics and models of decision-making in a temporal context: Several attendees indicated the need for better representation of temporal aspects and effects in decision-making. The members [Miller provided a nice list of issues] suggested several open research directions and threads were advances were possible, including i) methods/models that account for state dependence, ii) treatment of the initial condition problem (how to synthesize history), iii) interaction, integration and feedback (how short term feeds into long term), iv) dynamic stability, equilibrium versus disequilibrium and steady state, v) simulation, processing of decisions (sequencing/search), vi) temporal aggregation (the role of time step selection and its effect on simulation consistency and forecasts). Though there is limited work in relation to transportation applications, it was suggested that some aspects such as state-

dependence etc. have received attention in marketing literature [Bhat]. In addition, use of hazard models, role of discrete versus continuous time, models of triggers/discontinuous jumps on choice processes/outcomes, path dependency, and investigation of the potential value/need for dynamic models were also mentioned.

- h. Choice Set Construction. The attendees also mentioned that limited methodological and substantive insights are available with regard to the process of choice set generation/construction, particularly with large number of (spatial) alternatives. Miller pointed out the need to capture the role of awareness, and information search processes in spatial decision contexts (e.g. destination choice). Bhat and Miller suggested an investigation into the open question of whether the choice process is a two-stage (construction/choice) or a single stage process (both take place in one stage). In the context of choice set and decision-process, it was felt that the role of information, particularly, imperfect and spatially incomplete information needs to be examined. It was noted that the role of learning/adaptation/ partial information/inertia/ were not well understood. Kitamura mentioned the need to capture learning from multiple sources including experiences of other individuals (neighbors etc.). Bhat and Miller observed the need for methods/insights on context-dependent and latent choice sets. Miller discussed the possibility of using rule-based/computational process models to account for constraints in choice set formation. Computational issues with large-dimensional and correlated choice sets were also mentioned.

5. Action Items for 2003:

Based on the discussion, the subcommittee concluded on the following action items for the coming year.

- a. Submit a call for papers to the parent committee in the area of Dynamic Processes. Perhaps approach A1C04(1) (Time Use and Activity Patterns) for a joint call.
- b. Submit a call for papers to the parent committee in the area of Choice Set Construction. Approach Sean Doherty of A1C04(4) (Behavioral Processes) to discuss the possibility of a joint call for the Choice Set Construction topic.
- c. Work with the A1C02 Activities subcommittee to bring together a workshop at the TRB midyear conference that focuses on Microsimulation. There was some discussion on the form of the workshop. The thought is to aim for a focused discussion organized around invited people and papers. Paul Waddell and Eric Miller will lead this effort.
- d. In addition, the topics of vehicle ownership and other items of point 5a and other issues related to moving advanced techniques to practice were deemed important to pass on to the main committee (as being outside of the scope of this “Emerging Methods” subcommittee).

6. Conference Reports/News:
  - a. Chris Forinash described the new A1C02 website ([www.a1c02.net](http://www.a1c02.net)). He asked that people check it out, send him comments, and answer his email queries when you receive them.
  - b. Related conferences mentioned during the meeting, include:
    - i. **TRB 9th Application of Transportation Planning Methods Conference**,  
April 6-10, 2003  
Baton Rouge, Louisiana  
<http://www.ltrc.lsu.edu/TRBConference/>
    - ii. **TRB Midyear Meeting: Joint Summer Meeting of the Planning, Economics, Finance, Freight, and Management Committees**  
July 13-18, 2003  
Portland, Oregon
    - iii. **10th International Conference on Travel Behavior Research (IATBR)**  
August 10-14, 2003  
Lucerne, Switzerland  
[http://www.ce.utexas.edu/iatbr/Conference2003/iatbr\\_2003.html](http://www.ce.utexas.edu/iatbr/Conference2003/iatbr_2003.html)
7. There were no other discussions, and the meeting was adjourned.

Minutes prepared by Joan Walker and Karthik Srinivasan

# AGENDA

## 2003 TRB Annual Meeting

Emerging Methods Subcommittee A1C02(1)  
of the Passenger Travel Demand Forecasting Committee A1C02  
January 14th, Tuesday, 1:30 p.m.- 3:15 p.m. at the Hilton

1. Introductions
2. 2002 TRB Meeting Activities (Calls for Papers, Sessions)
3. Role of Subcommittee  
“Fostering Innovations on Emerging Methods”
4. Discussion of Emerging Methodological Developments  
(Open Discussion)
5. 2003 Plans (Based on Above Discussion)
  - TRB 2003 (Workshops/Calls for Papers/Review Process)
  - Collaboration with Other TRB Committees/Subcommittees
  - Activities beyond TRB... Summer Workshops/Sessions?
6. Conference Reports/News
7. Other Business
8. Adjournment

**A1C02(1) - Emerging Methods**  
**Technical Subcommittee of A1C02**

Scope: The charge of this subcommittee is to foster innovations on emerging methods and methodological issues in activity and travel demand analysis. As methods become more mainstream, they are transferred under the domain of the parent committee of passenger travel demand forecasting to allow this subcommittee to focus on stimulating emerging developments. The primary activities of the subcommittee are to lead discussions at TRB of emerging methodological developments, recommend calls for papers for TRB sessions to the Research Agenda Subcommittee, and work with all research and technology transfer facilitation subcommittees of the A1C02 committee to foster and support activities aimed at furthering the development and application of emerging methods in the travel demand analysis field.

Subcommittee Chairs: Karthik Srinivasan and Joan Walker

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**List of Attendees**

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