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**TRAVEL MODEL  
IMPROVEMENT PROGRAM**

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**ACTIVITY-BASED TRAVEL  
FORECASTING CONFERENCE**

**JUNE 2-5, 1996**

**SUMMARY, RECOMMENDATIONS  
AND COMPENDIUM OF PAPERS**

**February 1997**

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# ACTIVITY-BASED TRAVEL FORECASTING CONFERENCE

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## INTRODUCTION

The principal goal of this conference was to promote use of activity-based approaches for travel forecasting. Corollary purposes were to identify activity-based forecasting techniques that can be used now and to recommend actions to advance the state-of-the-art. The conference was organized as one plenary session and three workshops.

This report includes papers that document the keynote address and five other presentations in the plenary session. Konstadinos Goulias' keynote address laid out the issues regarding activity based travel forecasting that were to be addressed at the conference. Martin Lee-Gosselin then presented a synthesis of experience with activity based forecasting. Richard Beckman described the approaches to activity based analysis used in the TRANSIMS model. Eric Pas summarized recent research and advances in activity based analyses. Keith Lawton described applications of activity and time-use data for transportation planning in Portland, Oregon. Ryuichi Kitamura described other applications of activity information for forecasting travel behavior. Eric Miller reported on applications of microsimulation for activity based forecasting. A paper based on the introductory seminar presented at the conference is also included here.

Following those papers are summaries of the discussions and recommendations in the three workshops:

- Data Resources and Survey Methods for Activity Analysis
  - ◆ Chaired by Martin Lee-Gosselin and John Polak
  - ◆ With discussions by Kay Axhausen, Ken Cervenka and Christopher Fleet
- Models of Activity and Travel Behavior
  - ◆ Chaired by Eric Pas and Ram Pendyala
  - ◆ With discussions by Charles Purvis and Thomas Golob
- Microsimulation in Activity Analysis
  - ◆ Chaired by Robert Sicko and Hani Mahmassani
  - ◆ With discussions by Konstadinos Goulias and Richard Beckman

The workshops began by considering techniques that are currently available for activity based travel forecasting. Gaps in the availability and workability of those techniques were identified, and research and development were recommended to overcome those deficiencies.

The first workshop examined the kinds of data needed for activity forecasting and the resources and procedures for obtaining that data. The content and structure of activity and time-use diaries were discussed. There have been at least six major regional activity diary surveys in the United States: Portland, Dallas, Honolulu, Boston, Washington, DC, and Triangle Transit Authority (North Carolina). The progression of those surveys represents significant developments in activity diary survey techniques. Much can be learned in the near term by examining the data from those surveys and from the successes and failures of the travel behavior analyses and forecasts using that data. Needs identified include improving panel methods, event based data collection, stated response methods and including transportation service supply data.

The second workshop considered models of activity engagement and their relationship to travel behavior models. Three discrete choice models have been implemented: a Dutch national model, a Stockholm model and work by Cambridge Systematics, Inc., in Boise, Idaho. The latter has also been applied in a statewide model for New Hampshire. Some additional work in Portland is in progress. The discussions dealt with data requirements for those models and how to interface with currently conventional models. The strengths and weaknesses of various approaches were identified and remedial actions were recommended.

The third workshop examined the potential for microsimulation in activity analysis and forecasting. This technique holds opportunity for forecasting person and household characteristics and possibly inputs to travel forecasting models as well. The discussion also addressed the special needs of microsimulation procedures. Those techniques are currently being developed for use in the new TRANSIMS models. Two microsimulation approaches that have been applied are the AMOS work in Washington, DC, and the Midas model for microsimulation of demographic change in the Netherlands. Also, an extension of AMOS, adding in-vehicle transactions is being applied in California but was not yet complete at the time of the conference.

Most comments indicated that the conference was useful because it brought together researchers and practitioners to introduce and discuss the need and potential for new procedures. The practitioners were exposed to some new developments that may improve their practice in the future. However there was disappointment that the state-of-the-art had not yet reached the point of providing tested techniques that the practitioners could use now. The researchers were apprised of the needs of practitioners as guidance for their development efforts.

## LIST OF ATTENDEES

Isaac Akem	INCOG
Liz Ampt	Steer Davies Gleave
Carlos Arce	NuStats International
Kay Axhausen	Universitat Innsbruck
Gustavo Baez	North Central Texas Council of Governments
Chris Barrett	Los Alamos National Laboratory
Patti Bass	Texas Transportation Institute
Richard Beckman	Los Alamos National Laboratory
Julian Benjamin	North Carolina A&T State University
Jim Benson	Texas Transportation Institute
Eeden Bingham	Utah Department of Transportation
John Bowman	Massachusetts Institute of Technology
Mark Bradley	Bradley Research & Consulting
Meg Bryson	Georgia Department of Transportation
Ken Cervenka	North Central Texas Council of Governments
Neil Chadwick	Steer Davies Gleave
Cynthia Chen	RDC, Inc.
Steve Colman	Dowling Associates
Costas Constantinos	University of Hawaii
David Danforth	Wilbur Smith Associates
Sean Doherty	University of Toronto
Bob Donnelly	Parsons Brinckerhoff
Jerry Dudeck	North Carolina Department of Transportation
Huey Dugas	CRPC
Mike DuRoss	Delaware Department of Transportation
Jerry Faris	Transportation Support Group
Li-Yang Feng	Denver Regional Council of Governments
Kim Fisher	Texas Transportation Institute
Ron Fisher	Federal Transit Administration
Chris Fleet	Federal Highway Administration
Chris Forinash	Parsons Brinckerhoff
Tristan Galvez	Universidad de Chile
Brian Gardner	Federal Highway Administration
John Gibb	DKS Associates
Mike Gillett	Oregon Department of Transportation
Tom Golob	ITS, University of California, Irvine
Kostas Goulias	Penn State University
Zach Graham	Texas Department of Transportation
Stephen Greaves	Louisiana State University
Greig Harvey	DHS Associates
Sam Herrera	Federal Highway Administration

## LIST OF ATTENDEES

Jim Hicks	University of Illinois at Urbana-Champaign
Eric Hildebrand	University of New Brunswick
Eric Ho	Gallop Corporation
Dennis Hooker	Orlando Urban Area MPO
Joe Huegy	Triangle Transit Authority
Bruce Huchinson	University of Waterloo
Imad Ismail	Houston MTA
John Ivan	University of Connecticut
Sam Karni	S. Karni Engineers Ltd.
Brenda Killen Johnson	New Jersey Transit
Kyung-Hwa Kim	Metro
Shinwon Kim	Southwest Washington Regional Transportation Council
Ryuichi Kitamura	University of California-Davis
Paul Koch	North Carolina Department of Transportation
Ken Kurani	ITS, University of California, Davis
David Kurth	Barton-Aschman Associates, Inc.
Rich Kuzmyak	Cambridge Systematics, Inc.
Keith Lawton	Metro, Portland
Martin Lee-Gosselin	University of Laval
Ruth Lev-Ran Kleiner	MAAZ Public Works Department
Hani Mahmassani	University of Texas at Austin
Bob McCullough	Florida Department of Transportation
Helen Metcalf	Plan Trans
Bob Miller	New Jersey Department of Transportation
Eric Miller	University of Toronto
David Moffett	Bernarden, Lochmueller & Associates, Inc.
Andy Mullins	Houston-Galveston Area Council
Elaine Murakami	Federal Highway Administration
Gary Nelson	Mitretek Systems
Bob Noland	U.S. Environmental Protection Agency
Felix Nwoko	City of Durham Department of Transportation
Marin Outwater	KJS Associates
Eric Pas	Duke University
David Pearson	Texas Transportation Institute
Ram Pendyala	University of South Florida
John Polak	Imperial College
Chuck Purvis	Metro Transportation Commission
Tricia Quigley	Imperial Calcasieu Regional Planning & Dev. Comm.
Rishi Rao	Rao Associates, Inc.
Bud Reiff	Lane Council of Governments
Michael Replogle	Environmental Defense Fund

## LIST OF ATTENDEES

Tom Rossi	Cambridge Systematics
Scott Rutherford	University of Washington
Nabil Safwat	Texas A&M University
David Schellinger	URS Consultants, Inc.
Yoram Shiftan	Cambridge Systematics
Gordon Shunk	Texas Transportation Institute
Bob Sicko	Puget Sound Regional Council
LaRon Smith	Los Alamos National Laboratory
Frank Southworth	Oak Ridge National Laboratory
Peter Stopher	Louisiana State University
Xiaoduan Sun	University of SW Louisiana
Don Vary	Cambridge Systematics, Inc.
Kenneth Vaughn	National Institute of Statistical Science
Ed Weiner	U.S. Department of Transportation
Chieh-Hua Wen	Northwestern University
Jim Wilkinson	Gulf Regional Planning Commission
Jim Williams	RDC, Inc.
Chester Wilmot	Louisiana State University
Brad Winkler	Michigan Department of Transportation
Kyle Winslow	Parsons Brinckerhoff
Ping Yu	Bucher, Willis & Ratliff Corp.
Julia Zhou	North Jersey Transportation Planning Authority, Inc.