Status of Statewide Models in the United States

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Framework for More Discussion

- What are the motivations for building statewide travel demand models?
- What is the status of statewide models since the synthesis?
- What is the status of research into long-distance travel demand?
- What research directions have already been identified?
- What are the emerging issues?
Status of Statewide Models (Early Fall 2008)

Operational
Dormant
Developing
Revising
Partial

Practitioner Driven Process

- “Guidebook on Statewide Travel Forecasting” and Irvine Conference, Transportation Research Circular E-C011, 1999
- Statewide Travel Demand Modeling: Peer Exchange, Transportation Research Circular E-C075, September 2004
- “Statewide Travel Forecasting Models”, NCHRP Synthesis #358, 2006
- TRB Annual Meeting Sessions in 2004, 2006 and 2008; web page
- Meetings of the TRB Subcommittee on Statewide Travel Forecasting Models
Major Themes

- Statewide models have roughly similar methodology as metropolitan models, but there are many variations.
- The largest problems relate to issues of scale.
- Models from different states vary greatly in complexity, cost and development time.
- Models are most successful when they address statewide priorities.
- There are major deficiencies in our data about long-distance and rural passenger travel.
- Statewide models are more compatible with secondary freight data sources, such as the Commodity Flow Survey, than are metropolitan models.
- Interest is high among states in progress in deploying models.

Statewide Planning Values (Florida)

- Safety
- Security
- Environmental stewardship
- Community Livability
- Conserve non-renewable resources
- Accommodate the human scale
- Sustainable growth
- Efficiency
- Protect the public’s investment
- Reduce delay
- Economic competitiveness
- Economic development
- Provide choices
- Accessibility
- Mobility
Key R&D Recommendations I

- Peer Exchange
  - Include rural and commercial trip characteristics in the Quick Response Freight Manual.
  - Develop a national passenger travel model (NCHRP Project 8-36, Task 70).
  - Develop accepted validation performance standards for statewide models (New project).
  - Redo the American Travel Survey.

Key R&D Recommendations II

- Synthesis #358
  - Better representation of travel during peak periods.
  - Better methods to overcome coarse zone systems.
  - Faster traffic assignment steps.
  - Better ways of handling intermodal shipments.
  - Better methods for multiclass, synthetic OD tables.
  - Innovative methods for combining existing data sources and economic models for filling-in the gaps in the Commodity Flow Survey. (FHWA-sponsored project)
  - Conduct a National Business Travel Survey.
  - Upgraded university transportation planning curricula.
Key R&D Recommendations III

- TRB Subcommittee Initiatives
  - Better ways of modeling commodity flow traffic attraction for geographical areas of different sizes (efforts are now ongoing to disaggregate FAF² ODs).
  - Determine missing flows in the Commodity Flow Survey (addressed by FAF².)
  - Compile and/or collect origin-destination surveys at all state ports-of-entry, both interstate and international.
  - Review mode choice models for passenger and freight.
  - Create a synthesis on statewide models (accomplished).
  - Perform a survey of GIS applications in travel demand modeling.
  - Identify the existence, characteristics, and location of data on freight movements.

What’s Happened Since 2005

- FAF, National Model, Freight OD Tables
- Economic Development Post-Processors
- New and Improved Models
- Academic Research
Economic Development, Example: LEAP

- Businesses will gain employment in direct proportion to operational cost savings from transportation system improvements.
- Business cost savings can be tabulated separately by freight mode (e.g., truck, air cargo, and railroad), by county and by industrial category (e.g., three-digit NAICS).
- Business cost savings are proportional to positive changes in various accessibility indices that are calculated from network origin-destination travel times.
- Businesses also will increase employment if there are cost savings to customers and suppliers due to transportation system improvements, also indicated by accessibility indices.
- Only a fraction of the cost savings becomes employment gains.
- Employment gains are sensitive to the cost of doing business in a county and by the availability in a county of an appropriately trained labor forces.
- Employment gains within an industry can be constrained by the historic rate of growth nationally or regionally and can be constrained to occur only in industries that are underrepresented in the county.

Academic Research I

- Most studies can be summarized in a couple sentences.
- Heavy use of logit.
- Highlights:
  - Time-of-Day Choice for LD Trips
  - Small Aircraft Mode Split
  - Perceptions of Security and Safety
  - Side-Trip Purpose
  - Stability of LD Trip Rates over Time
  - Freight Mode Split
  - Trucker Route Choice
Innovations in Statewide Models

- Highlights
  - Methods of Validating Models
  - Effective Use of Data
  - Toll Road Models
  - High Speed Rail Model
  - Sensitivity Analysis
  - Interface with MPO Models

Other Big Issues

- World View
- Fuel Prices
- Global Warming
- Visualization
Conclusions

- There are no conclusions, just mileposts; our work is not done yet.