FHWA Initiatives in Advancing Travel Modeling

TRB Innovations in Travel Modeling

Brian Gardner

FHWA Office of Planning

"… the conventional four-step models in use by most MPOs perform reasonably well in representing and forecasting aggregate system- and corridor-level travel demand.

As the problems being studied become more disaggregate and more linked to individual behavior, however, the four-step process yields less satisfactory results."

Metropolitan Travel Forecasting: Current Practice and Future Direction – TRB Special Report 288

Evolving Decision Needs

System Build-Out	Transport Management	Pricing

Secondary Impacts	Transport Controls	Pricing

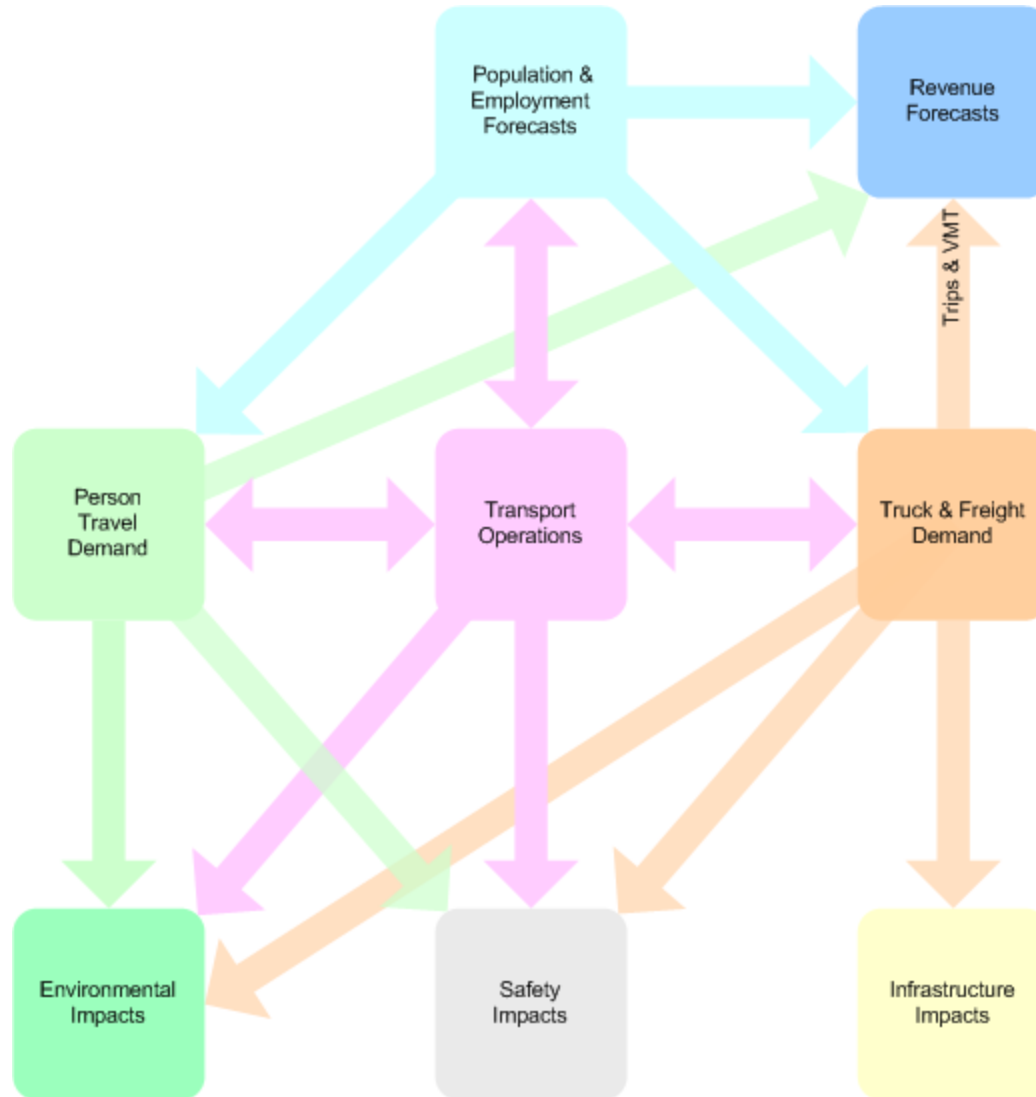| Budget Constraints	Transport Finance	Pricing

Increasingly Nuanced Analyses

- Evolving funding situations
- Vehicle population changes
- Tolling, pricing
- System reconstruction, deconstruction
- Performance based planning with competing goals
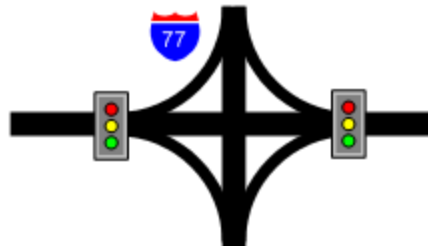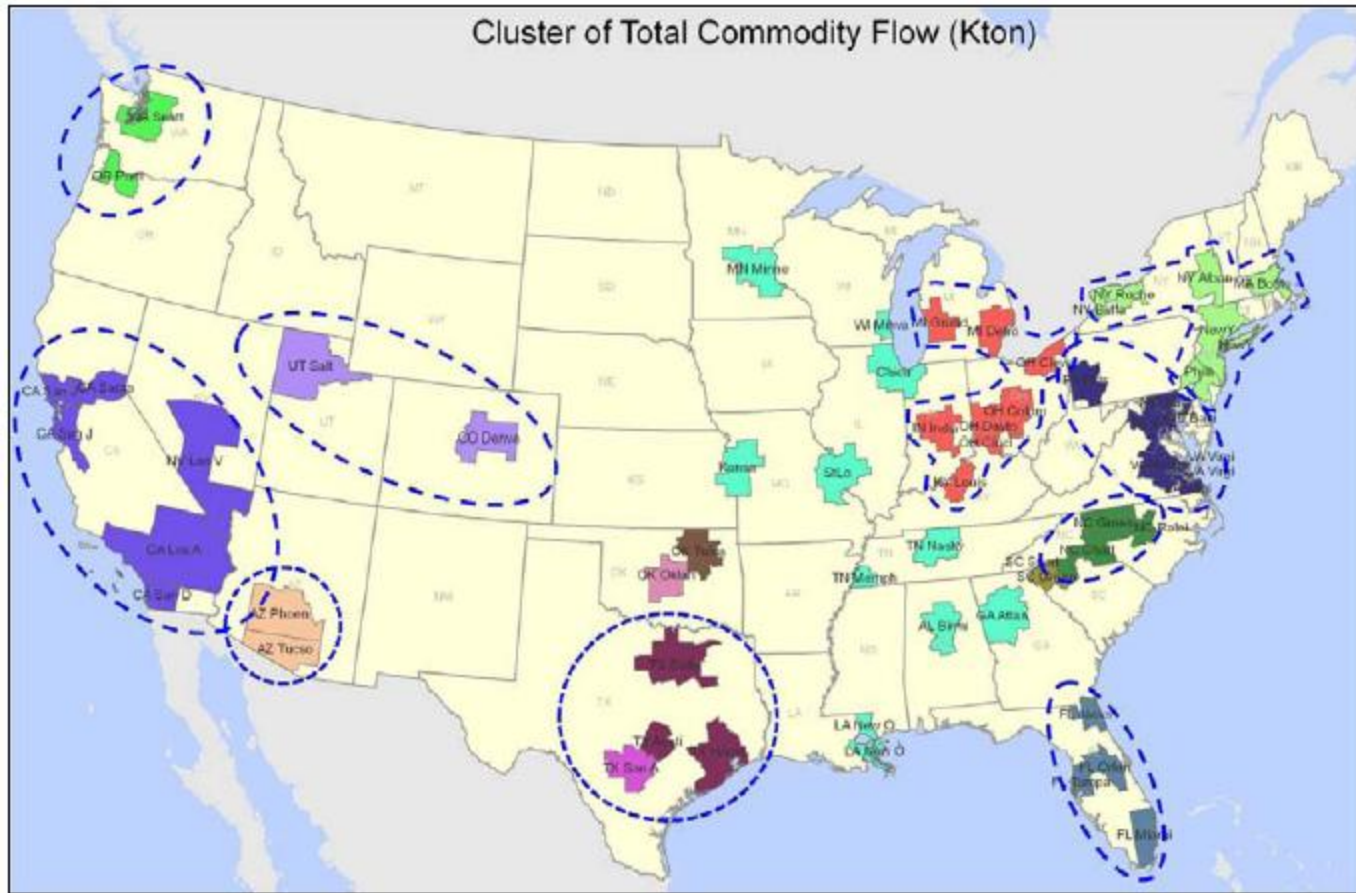
Analysis Relationships

Functional Geographies

Domestic Market Geographies

Cluster of Total Commodity Flow (Kton)

Ross, et al 2009

Deployment Snapshot

ABM & Tour Models

Columbus	OH
New York	NY
Sacramento	CA
San Francisco County	CA
Lake Tahoe	CA
Atlanta	GA
Denver	CO
San Francisco	CA
Dallas	TX
Portland	OR
San Diego	CA
Seattle	WA
Tampa	FL
Chicago	IL
Los Angeles	CA
Phoenix	AZ

Dynamic Network Models

Austin	TX
Baltimore	MD
El Paso	TX
Houston	TX
Las Vegas	NV
Minneapolis	MN
Sacramento	CA
Atlanta	GA
Burlington	VT
Chicago	IL
Phoenix	AZ
Dallas	TX
Los Angeles	CA
Portland	OR
San Diego	CA
San Francisco County	CA

Research vs Production

- 3-4% of the MPOs out in front
  - Critical mass of issues, resources, & staff
  - Active in many venues
  - Commonly cited in national discourse
- Vast majority of MPOs
  - Local focus
  - Don't publicize in national circles
  - Remarkable hidden talents & innovators

Core Travel Model Initiatives

- Data

- Methods

- People

Data Initiatives

- CTPP
- NHTS
- New sources
  - Archival records
  - Private data streams
  - Secure Data Center
- Synthesis & transferability
- Data fusion

Methods Initiatives

- Model integration
  - sABM & dynamic network models
  - Linked simulations: LU, dABM, DTA
- Megaregion concepts
- Static model improvements
- Long distance travel

Deployment Challenges

- Proving new technologies & methods
  - What does it do?
  - Where does it fit?
  - Value, cost, & risk tradeoffs
- Demonstrating production readiness
  - Robust
  - Responsive
  - Reliable

Deployment Challenges

- Reducing the development and maintenance costs of models
  - Making better use of current data streams
  - Finding new data streams
- Developing and maintaining practical guidance resources
  - By practitioners, for practitioners
- Improving transport M&S professional capacity across all sectors of practice
  - Balance
  - Availability

People

- Partnering & collaboration emphasis
- Building hands on experience
  - Deployment case studies
- Building connections
  - TMIP clearinghouse, listserv, webinars, peer reviews, topical exchanges

TMIP 2.0

- Second decade of work
- Incorporate web-based collaboration
- Partner with TRB in the Travel Forecasting Resource

Thank you!