

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

Presentation to Travel Forecasting
Subcommittee
November 16, 2007

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Shortcomings of Current Practice
(from Special Report 288)

- Current models have inherent weaknesses
- They cannot adequately represent:
 - Travel behavior of individuals
 - Non-motorized travel
 - Time chosen for travel and time-specific traffic volumes and speeds
 - Freight and commercial vehicle movements



Shortcomings Related to Practice

(from Special Report 288)

- Inadequate data, especially for model validation
 - Hourly, directional traffic counts
 - Rich set of household travel data
 - Freight origin-destination
- Optimism bias
- Quality control
- Validation errors
 - Lack of independent sources for validation



New Forecasting Procedures

(from Special Report 288)

- *“Insufficient evidence exists that advanced models can be implemented for a reasonable cost and will provide significant improvements over current practice.”*



Summary Recommendation (1)

(from Special Report 288)

- Research program
- Peer reviews
- Reasonableness checks of forecasts
 - Sensitivity tests of model forecast year projections



Summary Recommendation (2)

(from Special Report 288)

- MPOs experimenting with or fully implementing advanced modeling practices
 - Should document their experiences, including:
 - costs,
 - advantages,
 - drawbacks,
 - any transferable data or model components
 - Ohio embarking on program to evaluate their advanced model



Matching the Model to the Context

(from Special Report 288)

- A rapidly growing metropolitan area that:
 - Is not in attainment
 - Has severe congestion
 - Is planning to apply dynamic tolling
- Should have a forecasting process that:
 - Is sensitive to price
 - Allows analysis of mode choice, time-of-day choice and trip chaining
 - Permits detailed assessment of travel speeds
 - Supports analysis of impacts to minority and low-income populations

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Advancing the State-of-the-Practice: Improvements in 4-Step Modeling

(from Special Report 288)

- Improved measures of arterial congestion
 - Intersection delay and queuing
- Inclusion of both highway and transit time in trip distribution
- Destination choice model
- Improved modeling of non-motorized travel
- Sensitivity testing

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Advancing the State-of-the-Practice: Advanced Modeling Practices

(from Special Report 288)

- Improved land use modeling
- Tour-based models
- Activity-based models
- Discrete-choice modeling
 - Based on population synthesis
- Supply-side models
 - Traffic microsimulation (e.g. TRANSIMS)

Relationship to TPB Work Program

Shortcomings Related to Practice (1) (TPB Actions)

- Inadequate data, especially for model validation
 - Hourly, directional traffic counts
 - (In work program)
 - Rich set of household travel data
 - (Collecting data)
 - Freight origin–destination
 - (FY 07 Freight Study)



Shortcomings Related to Practice (2) (TPB Actions)

- Optimism bias
- Quality control
 - Input data
 - Model coding
- Validation errors
 - Lack of independent sources for validation



New Forecasting Procedures (TPB Actions)

- “*Insufficient evidence exists that advanced models can be implemented for a reasonable cost and will provide significant improvements over current practice.*”
- (Monitor work by other MPOs)



Summary Recommendation (TPB Actions)

- Research program – Participates in AMPPO
- Peer reviews – TRB Sponsored peer review conducted
- Reasonableness checks of forecasts
 - Sensitivity tests of model forecast year projections
- Actively monitor experience of MPOs who have implemented advanced modeling techniques
 - Analyze pluses and minuses annually
 - Consider work program modifications



Matching the Model to the Context (TPB Actions)

- A rapidly growing metropolitan area that:
 - Is not in attainment
 - Has severe congestion
 - Is planning to apply dynamic tolling
- **Should have a forecasting process that:**
 - Is sensitive to price (price in mode choice; cost could be included in destination choice model)
 - Allows analysis of mode choice, time of day choice and trip chaining
 - Permits detailed assessment of travel speeds
 - Supports analysis of impacts of minority and low-income populations (income could be carried through model chain)



Advancing the State-of-the-Practice: Improvements in 4-Step Modeling (1) (Possible TPB Actions)

- Improved measures of arterial congestion
 - Intersection delay and queuing (could be done with current software; testing required)
- Inclusion of both highway and transit time in distribution
 - (currently part of TPB process)



Advancing the State-of-the-Practice: Improvements in 4-Step Modeling (2)

(Possible TPB Actions)

- Destination choice model
 - (consider adding to work program)
- Improved modeling of nonmotorized travel (?)
- Sensitivity testing (?)



- ## Advancing the State-of-the-Practice: Advanced Modeling Practices
- (Possible TPB Actions)
- Improved land use modeling (sensitive issue)
 - Tour-based models (monitor other MPOs)
 - Activity-based models (monitor other MPOs)
 - Discrete-choice modeling
 - Based on population synthesis (consider adding to work program)
 - Supply-side models
 - Traffic microsimulation (e.g. TRANSIMS)
(monitor other MPOs)



Questions?