A New Activity-Based Planning Model for the Twin Cities
Travel Behavior Inventory

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Forecast Model Purpose

- Regional planning, scenario analysis
- Emissions modeling
- Highway/transit project forecasts
- Travel market insight
New in the Model

• All estimation based on 2010 TBI
• New transportation analysis zone (TAZ) system
• New highway, transit, non-motorized networks
• New model structure/theory
An Activity-Based Model

- Population Synthesizer
- Land Use and Demographic Data
- Highway and Transit Networks
- Long-Term Choice Models
- Daily Activity Pattern and Tour Generation
- Tour-Based Choice Models
- Trip Level Models
- Other Models (Trucks, External, Special Event, Airport)
- Highway and Transit Assignment
Tour Example

Secondary Tour
After the PM peak, travel for dinner (other)

Primary Tour
AM peak travel to work with one intermediate stop in the PM peak
Implementation

- Population Synthesizer (PopGen)
- Land Use and Demographic Data
- Activity-Based Model Components (TourCast)
- Highway and Transit Networks
- Other Models: Truck, External, Toll, Airport (Cube)
- Highway and Transit Assignment (Cube)
Why have a more complicated model?
Theoretical Advantages

• Modeling for activities rather than travel
• Explicit modeling of time-of-day
• Consistency of trips in a tour, household
• Household coordination
• Characteristics of individuals
Analytical Advantages

• Effects on specific population segments can be isolated and analyzed directly (e.g.: environmental justice)
• Better sensitivity to congestion, time of day
• Better sensitivity to pricing
• Reduced aggregation error
Current progress: Validation

- Best practice approach to validation:
  - Examination of each model and sub-model
  - Validation at each stage
  - Overall results: highway volumes/speed and transit ridership
Next Steps (through late-2015)

- Complete validation
- Internal forecast sensitivity testing
- Training
- Coordination with FHWA, FTA, EPA
- Distribution

Fall/Winter 2015: expect to recommend use of the new model for comprehensive plans and new project-level forecasts
Questions