Wisconsin Statewide Model

Outline of a Proposed Approach

presented by
Kimon Proussaloglou
Cambridge Systematics, Inc.

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Project Team

- Wisconsin DOT
  - Doug Dalton, Project Manager
  - Don Uelmen, David Cipra, and Al Stanek
- HNTB
  - Derek Hungness, Chris Johnson, and Ken Kinney
- Cambridge Systematics
  - Yasasvi Popuri, Dan Beagan, Krishnan Kasturirangan, Julie Colby, Chris Kopp, and Dan Tempesta
**Project Objectives**

- Decision-making support to the Long Range Plan
  - Policy-sensitive approach
  - Multimodal evaluation framework
  - Methods consistent with urban MPO models

- Passenger model to address:
  - Current and future flows of passengers
  - Diversion among routes and across modes

- Freight model to address:
  - Intercity commodity flows
  - Forecasts of intercity truck traffic

**Policy-Sensitive Approach**

- A practical decision-support tool
- Consistency in data sources and input assumptions

- Corridor-level versus statewide evaluations
  - Highway capacity expansion
  - Level of service improvements
  - Diversion among existing facilities
    - Corridor 2020 backbone
    - Intercity corridors
    - Key metropolitan corridors

- Diversion to improved or new intercity modes
Passenger Model – A “Best Practice” Approach

- Tour- versus trip-based model
- Trip rates by market segment
- Destination choice model
- Disaggregate mode choice model
- Separate model for “long trips”
- Stated preference mode choice model

Key Data Sources

- National Household Transportation Survey (NHTS) - Add-on sample for Wisconsin:
  - Household (N=17,600),
  - Person (N=41,000),
  - Vehicle (N=38,000),
  - Daily Trips (N=164,000), and
  - Long Distance Trips (44,000).
- Journey-to-Work data (CTPP)
- US Census, Department of Workforce Development (DWD), Department of Administration (DOA), and Woods and Poole
- Commodity flow data (TRANSEARCH)
Model Integration with Urban Areas

- Existing condition of urban area models
  - Major metropolitan areas
  - Smaller urban areas in the state

- Updates of smaller urban area models

- Consistency in travel demand forecasts
  - Adopt best practical approach to model integration
  - Ensure network and socio-economic data are consistent
  - Develop urban network and zonal overlays
  - Use “external station” trip data from statewide model as input to urban models

Preliminary Statewide Network

- Network: 125,000 links based on WISLR
  - Major rural collectors or higher
  - Minor urban arterials or higher
  - Merging of STHN attribute data
  - Interface with TAFIS/Meta-manager
Preliminary Statewide Zone System

- 1,645 CVT zones (City-Village-Township)
  - 1,215 rural zones
  - 430 urban zones
  - Consistency with inputs from
    - Census,
    - DWD and DOA, and
    - O-D survey data

Model Functionality

- Practical considerations
- User-defined “what if” scenarios
- Modular approach to model building
- Future model updates
  - Data updates
  - Model enhancements
- Practical, user-friendly analysis tool
**Freight Model – A Commodity Flow Approach**

- Four-step freight model with Wisconsin parameters
- Model input datasets in required formats
  - Zonal socio-economic data
  - Special terminal generators
- Model outputs from base and forecast years
  - Tons produced and attracted by commodity
  - Origin-Destination tables of tons by commodity by mode
  - Origin-Destination table of daily truck trips
  - Assigned freight truck volumes by commodity
  - Assigned tonnage on other modal networks

**Structure of the Freight Model**

- Generation
- Total Tons
- Distribution
- Tons by O-D
- Mode Choice
- O-D Tons by Mode
- Network Assignment
- O-D Tons by Mode and Route
Overview of Freight Model

- **TRANSEARCH 2001**
  - 51 BEA ZONES
  - 238 STCC-3 COMMODITIES

- **WI STATEWIDE MODEL**
  - 132 ZONES
    - 72 WI COUNTIES
    - 60 REST OF US, CANADA, MEXICO
  - 25 COMMODITY GROUPS
    - STCC-2 GROUPINGS
    - TONNAGES BY MODE

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**Freight Model Zone System**

[Map of the United States with zones colored in different colors.]
Summary

- A multimodal approach to intercity travel
- A “best practice” approach to passenger modeling
- A commodity-flow approach to statewide freight flows
- Development of a practical, user-friendly analysis tool
- Modular approach allows future expansion of model system
- Approach design with linkages to existing management systems

Model Components

- 2001 NHTS Survey
- Trip Generation
- Total Trips
- Distribution/Destination
- Trips by O-D
- Mode Choice
- O-D Trips by Mode
- Network Assignment
- O-D Trips by Mode and Route
- Statewide Network