InSITE

Initiative to Simulate Individual Travel Events

Baltimore Regional Transportation Board

February 23, 2022
# Aggregate Versus Disaggregate Modeling

<table>
<thead>
<tr>
<th>Trip Based Model - Aggregate</th>
<th>Activity Based Model - Disaggregate</th>
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<td><strong>Model 44 c</strong></td>
<td><strong>InSITE</strong></td>
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<tr>
<td>1) Model Design 2004/MTA New Start</td>
<td>1) Model Design 2014</td>
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<tr>
<td>2) Estimated using 2001 HH Travel Survey</td>
<td>2) Estimated using 2008 HH Travel Survey</td>
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<td>3) Calibrated using 2008 HH Travel Survey</td>
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<th>4 - Step Model</th>
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<td>Households - Unit of Analysis</td>
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<tr>
<th><strong>Cooperative Forecast</strong></th>
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<td>1) TAZ Household Stratification</td>
<td>1) TAZ Synthetic Household/Population</td>
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| Trip Tables - Household Person Trips by Purpose |
| Time of Day – 4 Periods |

| Person Trip Roster |
| Time of Day – ½ hour |

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<th>Explicitly Capture</th>
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<tr>
<td>1. School/Day Care Escorting</td>
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<tr>
<td>2. Full Joint Non-Mandatory Travel</td>
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| Parcels – MD Property View |
InSITE – Modeling Components

• Three Models
  – PopGen2.0 – Synthetic Household and Person Roster
    • Synthesized record for each household and persons roster containing characteristics – income group, household size (persons (child/adult) & PT/FT workers), person type (eight), gender, race (non-Hispanic white alone & other), and poverty. Jurisdiction/TAZ margins developed from Round9A, demographic sub models, and pOPTICS.
  – Freight Modeling System – Long distance commodity flows, and local freight and commercial truck/vehicle goods, deliveries, and service tours
    • Micro simulation of establishment fleet’s tour/trip roster simulating origin start time, destination, dwell time, purpose, and pick-up and/or deliveries. Estimated from FAF and truck/commercial vehicle survey data (Texas & Ohio) and calibrated to regional truck counts.
  – Activity Based Model – Daily Activity Pattern/Person Trip Roster
    • Micro simulation of household/person long term choices (auto ownership, usual place of work) and average weekday tours/trips – destination, mode, time of day, and purpose for all synthesized persons.
InSITE: Synthetic Household/Population Model Components

- **TAZ Totals**
  - Household/Person Roster
  - Aggregate Marginals
  - Disaggregate
  - Synthetic Households and Persons within Household Roster
  - TAZ 7 Employment Type Totals

- **Demographic Models**
  - Aggregate Share Models - TAZ Level
  - Univariate - Households by Persons (5)
  - Households by Workers (4), Households by Income Group (5)
  - Bivariate - Jurisdiction Households by Workers (4) & Income (5)

- **pOPTICS** - Components of Change
  - Fertility, Survival, and Migration (White/Non-White, Male/Female, and Age Cohort)
  - Jurisdiction Population by Age (18) and Sex (2)
  - Jurisdiction Civilian Labor Force

- **PopGen 2.0** - Control Variables
  - Jurisdiction - (A) Households by Workers (4) and Income group (5)
  - Population by Age (18) and Sex (2)
  - Group Quarter Population
  - TAZ - (B) Households by Persons (5)
  - Households by Income group (5)
  - HH Persons - Total, Non-Workers, and Workers
  - Group Quarter - NIGQ, IGQ

- **Census**
  - TAZ - Median Household Income, Civilian Labor Force to HH Population Ratio

- **US Census Bureau**
  - American Community Survey - Public Use Microdata Sample (PUMS)

- **2010 Decennial TAZ**
  - Institutional/Non-Institutional

- **Round 9 Cooperative Forecast Group**
  - TAZ - Total Population, Group Quarters, Households, Total Employment
InSITE: Freight Modeling System

Maryland Statewide Model (MSTM)
- Passenger Model
- National Supply Chain (Firms, Shipments, Modes)
  - Conversion to modal trip tables
  - National/Statewide Networks

BMC Regional Model (InSITE)
- Passenger Model
- Freight Truck-Touring Model
- Commercial Services Touring Model
  - Conversion to truck trip tables
  - Regional Networks
InSITE: Activity Based Model Components
For More Information

Charles Baber | Principal Transportation Planner
410-732-0500 x1056 | cbaber@baltometro.org | www.baltometro.org