SCAG Transportation Models Update

01/28/2015
SCAG Modeling Task Force

Modeling and Forecasting
Hsi-Hwa Hu
Outline

- SCAG Trip-Based Model Updates
- SCAG Activity-Based Model Updates
- Software & Hardware
- SCAG ABM Framework
Updated various model modules including:

- Auto ownership model
- Trip production model
- Heavy-Duty Truck Model (particularly warehouse component)
- Parking cost model
TBM Updates (continued)

- Updated various model inputs including:
  - SED (with new income category)
  - Highway and transit networks
  - Trip-in-motion factors
TBM Updates (continued)

- Updated various model parameters including:
  - Auto operating cost, HDT cost, Value of time
  - All cost-related variables and parameters updated from $1999 to $2011
- Recalibrated destination choice model and mode choice model
- Validated to year 2012 conditions
SCAG ABM Updates

- Completed Model Estimations:
  - For 40+ sub-models
- Conducted 1st Peer Review Panel on June 26th 2014:
  - Overall the comments were positive
  - Some concerns about complexity of the model

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Role</th>
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<tbody>
<tr>
<td>Eric Pihl</td>
<td>Federal</td>
<td>Panel member</td>
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<td>Chaushie Chu</td>
<td>SCAG Region</td>
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<td>Guy Rousseau</td>
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<td>David Ory</td>
<td>MPO</td>
<td>Panel member</td>
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<td>Cynthia Chen</td>
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<td>Eric Miller*</td>
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<td>Keith Lawton</td>
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<td>Tom Rossi</td>
<td>Consultant</td>
<td>Panel member</td>
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<tr>
<td>Ken Cervenka</td>
<td>Federal</td>
<td>Advisor</td>
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SCAG ABM Assessment

- SCAG staff initiated an internal review procedure of the SCAG ABM Development.
- Each sub-model has been reviewed and analyzed by SCAG staff.
- Based on our data analysis, about 70% of sub-models have been enhanced by SCAG staff.
SCAG ABM Software & Hardware

- SCAG ABM is built in new TransCAD 7.0
- The software has been delivered to SCAG.
- Current running time is 10 days - with 5 loops.
SCAG ABM Software & Hardware

UI Snapshot
SCAG ABM Software & Hardware

Model Inputs & Parameters
## SCAG ABM Software & Hardware

### Model Server

<table>
<thead>
<tr>
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<th>Description</th>
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<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>Intel Xeon E5-4627 v2, 3.3Ghz 8-Core (effective: 32x3.3Ghz cores)</td>
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<tr>
<td><strong>Memory</strong></td>
<td>480 GB</td>
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<tr>
<td><strong>Hard Drive</strong></td>
<td>2TB SSD (2x1TB RAID1)</td>
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<tr>
<td><strong>OS</strong></td>
<td>Windows Server 2012 R2</td>
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SCAG ABM Framework

Population Synthesis Model

Long-Term Choice Models

Mobility Choice Models

Short-Term Choice Models

Activity Generation Allocation

Joint Activity Scheduling

Tour & Trip Scheduling

Assignment - same as TBM
Population Synthesis

- Creates basic socioeconomic data for each individual and household.
- PopSyn model is operated by Forecasting staff.
Long Term and Mobility Choices

- Location choice models for students and workers
- Work arrangement and work flexibility models
- Mobility choice models
Activity Generation-Allocation

- Activity generation, frequency, start time/end time, and duration.
Joint Activity Scheduling

- Household members participate in same activity
  - Joint activity: location, mode, start time
Tour and Trip Scheduling

- Individual Activity: mode, location, travel start/arrival time
Thank You
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