Why transportation planners want small area data

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Home-to-work flows are part of travel demand models

- The smaller the geography, the better trips can be assigned to network links.
- Advances in computer processing makes more links possible in the model.
- Transition to microsimulation makes small geography even more attractive.
Generalized Network
Detailed Network
## Data Sources for Transportation Planning

<table>
<thead>
<tr>
<th>Source</th>
<th>Number of MPOs</th>
<th>% of MPOs responding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decennial Census</td>
<td>138</td>
<td>91%</td>
</tr>
<tr>
<td>CTPP</td>
<td>112</td>
<td>74%</td>
</tr>
<tr>
<td>CPS</td>
<td>46</td>
<td>30%</td>
</tr>
<tr>
<td>Travel Surveys</td>
<td>21</td>
<td>14%</td>
</tr>
<tr>
<td>ACS</td>
<td>18</td>
<td>12%</td>
</tr>
<tr>
<td>State employment data</td>
<td>17</td>
<td>11%</td>
</tr>
<tr>
<td>MPO employment data</td>
<td>13</td>
<td>9%</td>
</tr>
<tr>
<td>Commercial Employment Data</td>
<td>4</td>
<td>3%</td>
</tr>
</tbody>
</table>
Main CTPP products

- Residence Tables: Households, Persons, Workers

- Workplace Tables of Workers
  - Mode to work * Characteristics like Income, vehicle availability
  - Industry and Occupation

- Flow between Home and Work
  - Count of workers
  - Means of Transportation by Vehicle Availability
  - Means of Transportation by Household Income
DRB Rules for CTPP2000 resulted in too much suppression

• Don’t know what rules will be for ACS.
• Rules for CTPP 2000 included rounding and thresholds.
  – Threshold requirement (3 unweighted records) resulted in too much suppression. Based on 3-Counties, 65-70 % of tract-to-tract flows suppressed, the 80-90 % of TAZ-to-TAZ flow suppressed.
• Interested in alternatives to thresholds.
ACS sample is about $\frac{1}{2}$ that of decennial long form

- Therefore thresholds based on unweighted cell counts (3) are likely to result in even more suppression of small geographic areas.
Place of Work Data
Coverage for
Montgomery County, MD
With the Rule of 3

Applying the Rule of 3 for Subway users

Geography = Tract
Importance of Home-to-Work Trips in the Travel Model

• The home-to-work trip is LONGER than other trip purposes, and more like to occur in periods of congestion

• Often times, the home-to-work O/D data from the CTPP is the only local small area data available, aside from traffic counts
COMMUTE
ATLANTA GPS
Number of Trips
By Roadway Segment

74 Days
313 Trips

Number of Trips

1 - 10
11 - 20
21 - 30
31 - 40
41 - 50
>50
Freeway
Street
County Boundary

0.5  0  0.5  1 Miles
Potential benefits of LEHD

• Annual (quarterly) data on total employment for small area workplace geography. Synthetic data allows for small area tabulation without disclosure risk.
• Data on workers at residence geography for small areas.
• Data on FLOW between home and work. Very large # of O/D pairs.
• Accessibility to State files differs from state to state.
Class of Worker
Census 2000

Hennepin County, MN

U.S. Total
Issues to explore, problems to resolve

• Large employers in one location.
  – Boeing, Microsoft. Are they included given Disclosure Avoidance rules?

• Self-employed.

• Government, including military.

• Informal labor force (Paul Ong)

• Commuting across State boundaries (test MO and IL)
Let’s evaluate the results.

• Will State ESD’s share the results from the On the Map pilot test?
  – Several MPOs in CA, WA, MO, and FL State DOT want to review the data.
  – Twin Cities MPO (Bob Paddock) working on review.

• Compare employment counts at workplace location to: other State estimates, CTPP2000 Part 2, licensed private databases

• Compare worker counts to Census 2000.
Issues

• Multiple site business lists.
  – Gravity model developed from MN data.
  – Completeness – BTS project/ Mix and Fulton paper
  – Other states with actual link between individual to specific worksite?

• How well is the imputation of persons to workplaces in multisite businesses working?
  Should it be adjusted for specific kinds of businesses? How can it be evaluated?

• Is the quality of the data consistent between States?
  – Payroll office vs. workplace addresses
  – PO Boxes
Who will pay?

• What and how should the transportation community contribute to the LEHD program to further the project?
  – First step: MPO and State DOTs assist in evaluating the results of the “On the Map” pilot data.
  – Develop relationships between ESD/EDDs with MPOs and State DOTs to improve quality of workplace location data.
  – Consider task in AASHTO pooled fund for new CTPP.