Trip Generation Characteristics of North Texas Mixed-Use Developments

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Basic Problem

- Popularity of Mixed-Use Developments (MXD):
  - TOD: Mockingbird Station, Others Coming Soon?
  - Suburban Infill: Southlake Town Center, Legacy T.C.
- Roles of Transportation Professionals:
  - Development of TIA for Proposed MXD Projects
  - Identification of Internal Trip Capture/External Travel
  - Recommendations for Mitigating Traffic Impacts
- Issues:
  - Little Data? (Land Uses, Time Periods)
  - Old Information?
  - Data from Florida?
  - Negotiations = Costly Delays for All Parties
TTI Research Projects

• On-Going MXD Research to Address Issues
• NCHRP 8-51
  – “Enhancing Internal Trip Capture Estimation for Mixed-Use Developments”
  – Funded Data Collection at 2 MXD Sites
• Texas Department of Transportation
  – “Mixed-Use Developments Internal Trip Capture Estimator”
  – Funded Additional Data Collection Site with NCHRP Methodology
• Both Projects Nearing Completion!

Study Sites
Data Collection – Details

• Identified Internal Travel via Survey
  – On-Site, Origin-Destination Intercept Survey
  – Designed as an Interview of Travelers Exiting Buildings
  – Morning and Afternoon Peak Periods

• Mockingbird Station
  – May 2006
  – 761 Total Interviews (14% Participation Rate)

• Legacy Town Center
  – May 2007
  – 846 Total Interviews (16% Participation Rate)

Total Internal Trip Capture-Comparison

<table>
<thead>
<tr>
<th>Site</th>
<th>AM Period</th>
<th>PM Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy Town Center</td>
<td>13%</td>
<td>35%</td>
</tr>
<tr>
<td>Mockingbird Station</td>
<td>26%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Note: Preliminary Findings. All percentages reported in person-trip ends.
Internal Trip Capture – Synergies

- LU Pairs with High Internal Trip Capture Rates
- Morning Peak Period
  - Office-Restaurant/Retail
  - Residential-Restaurant/Retail
- Afternoon Peak Period
  - Office-Restaurant
  - Residential-Retail
  - Restaurant-Retail
  - Restaurant-Cinema
- Actual Capture Rates Still in Draft Form

Improved Estimation Procedure

- Improvement to Existing ITE “Chapter 7” Method
- Developed Using These Data + Another Site
- Includes AM and PM Peak Period Data
- Internal Trip Capture Data For:
  - Office
  - Retail
  - Restaurant
  - Residential
  - Cinema
  - Hotel
- Spreadsheet Estimator Tool to be Released
### Trip Generation – PM Comparison

<table>
<thead>
<tr>
<th>Scenario (Vehicles per Hour)</th>
<th>Legacy</th>
<th>Mockingbird</th>
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</thead>
<tbody>
<tr>
<td>Observed Count</td>
<td>1,888</td>
<td>720</td>
</tr>
<tr>
<td>Base Trip Generation (No Capture)</td>
<td>3,100 (+64.2%)</td>
<td>1,565 (+117.4%)</td>
</tr>
<tr>
<td>Current ITE Method (Handbook Ch. 7)</td>
<td>2,210 (+17.1%)</td>
<td>1,076 (+49.4%)</td>
</tr>
<tr>
<td>Proposed Method</td>
<td>1,769 (-6.3%)</td>
<td>988 (+37.2%)</td>
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**Questions??**

Image Source: Researcher Photo