IMPROVING TRAFFIC STUDIES THROUGH BETTER DATA

November 6th, 2019
Outline

• How Data Drives Traffic Studies

• Case Studies
  – Atlanta Downtown Connector
  – Arnold Mill Bypass – City of Woodstock
  – I-440 Reconstruction
  – Chapman Highway/Henley Bridge Analysis

• What Does the Future Look Like?
How Data Drives Traffic Studies – Back in the Day…

- High Quality Data
- Time Intensive
  - Field Work
  - In-Office Processing
- Must be Pre-Planned
- High Cost

Source: San Antonio Express-News

Increasing Cost
Increasing Accuracy
Reduced Cost
Reduced Accuracy
How Data Drives Traffic Studies – Back in the Day…

- Low Cost
- Relatively Quick
- Able to Identify Future Trends
- Lower Reliability
- Only Available in Areas with a Regional Model
How Data Drives Traffic Studies – The Era of Big Data

- Based on sampling set similar to field survey
- Combines data collection/analysis into one step
- Historic data available
- More in-depth data possible
- Available within minutes
Turn Big Data into actionable transportation analytics on demand

Big Data + Contextual Data
- Geospatial Data
- Calibration Data
- Road Network
- Parcel/Land Use Data
- Demographic Data

Cloud Computing + Infrastructure

Machine Learning + Algorithmic Processing

StreetLight InSight On-Demand Platform

Customized, Actionable Transportation Analytics
- Origin Destination
- Select Link
- Zone Activity
- Trip Duration
- Trip Circuity
- Trip Length
- Trip Speed
- Home/Work Footprints
- Congestion
- Demographics
- AADT/AAHT
GDOT is conducting a study of Atlanta’s Downtown Connector, the common section of I-75 and I-85 through the Atlanta Central Business District.

• One of the primary goals of the study is to improve regional mobility.

• The composition of road users was determined through the analysis of traffic data sets including StreetLight origin-destination data.
Downtown Connector – Regional Travel Patterns

- The Connector serves as the spine of the regional transportation network
- Team wanted to better understand cross-regional trips using the facility
- Can I-285 improvements improve the Connector?
Downtown Connector – Corridor Travel Patterns

- Reviewed regional flows to identify patterns for motorists located within the Perimeter

- Analysis showed that a large portion of motorists were using the Connector for “non-through” trips

- Assisted team in defining the current and future purpose of the Connector
Downtown Connector – Segment-Level Data

- Data was also used to drill down into specific segments
- Utilized count data to put actual numbers to the percentages
- Detailed data led to more questions
## Downtown Connector – Segment-Level Data

### Southbound between 10th St and North Ave

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Through</th>
<th>Local</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>4,966 (31%)</td>
<td>11,279 (69%)</td>
<td>16,245</td>
</tr>
<tr>
<td>PM</td>
<td>3,458 (32%)</td>
<td>7,202 (68%)</td>
<td>10,660</td>
</tr>
<tr>
<td>Daily</td>
<td>67,139 (33%)</td>
<td>134,931 (67%)</td>
<td>202,070</td>
</tr>
</tbody>
</table>

### Southbound between Wesley Dobbs and John Portman Blvd

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Through</th>
<th>Local</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>4,966 (56%)</td>
<td>3,909 (44%)</td>
<td>8,875</td>
</tr>
<tr>
<td>PM</td>
<td>3,458 (38%)</td>
<td>5,572 (62%)</td>
<td>9,030</td>
</tr>
<tr>
<td>Daily</td>
<td>67,139 (45%)</td>
<td>83,356 (55%)</td>
<td>150,495</td>
</tr>
</tbody>
</table>

### Through vs. Local Trips Map

- Through traffic travels the full length of the downtown connector.
- Local traffic travels off ramps and interstate ramps.
- Northbound between Williams St and 10th St:
  - AM: 3,664 (44%), 13,730 (56%) | Total: 17,394
  - PM: 4,513 (52%), 9,717 (48%) | Total: 14,230
  - Daily: 7,177 (54%), 23,222 (46%) | Total: 30,399
- Southbound between 13th St and North Ave:
  - AM: 4,364 (19%), 5,000 (81%) | Total: 9,364
  - PM: 3,458 (39%), 5,177 (61%) | Total: 8,635
  - Daily: 67,139 (67%), 82,359 (33%) | Total: 152,518
- Southbound between Wesley Dobbs and John Portman Blvd:
  - AM: 4,364 (25%), 5,000 (75%) | Total: 9,364
  - PM: 3,458 (39%), 5,177 (61%) | Total: 8,635
  - Daily: 67,139 (67%), 82,359 (33%) | Total: 152,518
- Northbound between Fulton St and I-20 Off-Ramp:
  - AM: 5,098 (45%), 5,092 (55%) | Total: 10,190
  - PM: 4,032 (49%), 4,205 (51%) | Total: 8,237
  - Daily: 79,218 (60%), 75,780 (40%) | Total: 154,998
- Northbound between Langford Pkwy and University Ave:
  - AM: 5,098 (57%), 5,092 (43%) | Total: 10,190
  - PM: 4,032 (54%), 4,205 (46%) | Total: 8,237
  - Daily: 79,218 (63%), 75,780 (37%) | Total: 154,998
The City of Woodstock, Georgia conducted a study to determine the impact of constructing a reliever road to the east of the intersection of two major corridors through the city.

Two alignments for the reliever road were proposed.

Origin-destination data was used to quantify potential users of each alternative.
Arnold Mill Connector – Setting up Zones

• Users create their own zones or utilize standard areas

• Zones need to have sufficient population or traffic

• Zone scheme can include middle filters if you want to be more specific with results
Arnold Mill Connector – Results

- Trip ratios were applied to collected traffic counts to calculate diversion percentages.

- Length of the new facility and TAZ size would have led to potentially erroneous results

<table>
<thead>
<tr>
<th>Destination</th>
<th>AM</th>
<th>PM</th>
<th>Daily</th>
<th>Sat PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ridgewalk Pkwy</td>
<td>0.4%</td>
<td>0.3%</td>
<td>0.5%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Main St</td>
<td>1.4%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>0.9%</td>
</tr>
<tr>
<td>I-575 North</td>
<td>3.2%</td>
<td>0.5%</td>
<td>1.1%</td>
<td>1.0%</td>
</tr>
<tr>
<td>I-575 South</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.6%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>
Prior to letting the I-440 Resurfacing and Reconstruction project, TDOT conducted a study of alternative construction schedules. The intent was to provide maximum flexibility to potential contract teams.
I-440 Reconstruction –
Through Traffic

Daily Through Traffic
(As a % of I-440 Traffic)

<table>
<thead>
<tr>
<th>Description</th>
<th>Traffic %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of I-440</td>
<td>11.8%</td>
</tr>
<tr>
<td>Briley Pkwy to Briley Pkwy</td>
<td>1.3%</td>
</tr>
<tr>
<td>I-840 to I-840</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
I-440 Reconstruction – Segment-Level Destinations

- Drilled down to use by segments
- Figures show percent of traffic by where it leaves I-440
Henley Bridge Origins

O-D Traffic
Colors indicate the O-D Traffic from each TAZ during the selected time period.
Henley Bridge Destinations
What Does The Future Look Like?

- Datasets will become more integrated
- Need skill sets to analyze and provide answers from large datasets
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