Travel Time Index
Travel Time Index

Ratio = \frac{\text{Measured Travel Time}}{\text{Free Flow Travel Time}}

For interstate routes:

- \text{TTI} < 1.1 (Little or no congestion)
- 1.1 \leq \text{TTI} < 1.5 (Moderate Congestion)
- 1.5 \leq \text{TTI} < 2.0 (Significant Congestion)
- \text{TTI} > 2.0 (Severe Congestion)
AM Peak Period TTI for selected Segments

MAX_SEG_TTI_AM
ROAD_NUMBER: I-20/I-59
ROAD_DIRECTION: WESTBOUND
SEGMENT: TUSCALOOSA CO.LINE TO I 459

MAX_SEG_TTI_AM
ROAD_NUMBER: US-11/AL-7
ROAD_DIRECTION: SOUTHBOUND
SEGMENT: I65 TO RME(US_11)
AM Peak Period TTI for selected Segments

MAX.SEG.TTI_AM
ROAD_NUMBER: US-280
ROAD_DIRECTION: WESTBOUND
SEGMENT: I459 TO SR119
PM Peak Period TTI for selected Segments

MAX_SEG.TTI_PM
ROAD_NUMBER: I-20/I-59
ROAD_DIRECTION: WESTBOUND
SEGMENT: 165 TO RME(I_20/59)

MAX_SEG.TTI_PM
ROAD_NUMBER: I-459
ROAD_DIRECTION: NORTHBOUND
SEGMENT: 165 TO I20
Highway Segments with Significant Increases in TTI in 2016-17

AM Peak

- US 11 between I-65 and Red Mt. Expressway
- US 280 WB between Rocky Ridge and RME

PM Peak

- I-20/59 between I-65 and Red Mt. Expressway
- I-459 NB between I-20/59 and I-65
- I-459 NB/SB between I-65 and I-20
- I-65 SB between I-20/59 and I-459
Travel Time Reliability
Travel Time Reliability

Travel Time on I-65 between I-459 and US 31 in Hoover
Travel Time Reliability

Travel Time on I-65 between I-459 and US 31 in Hoover (April 2016)
Planning Time Index (PTI)

\[
\text{Ratio} = \frac{95\text{th percetile travel time}}{\text{Free Flow Travel Time}}
\]

For example, if a trip normally takes 15 minutes during off-peak times a PTI of 2.2 means 33 minutes should be allotted to be certain of arriving on time.
AM Peak Period PTI for selected Segments

MAX.SEG.PTI_AM
ROAD_NUMBER: US-11/AL-7
ROAD_DIRECTION: SOUTHBOUND
SEGMENT: I65 TO RME(US_11)
PM Peak Period PTI for selected Segments

MAX SEG PTI PM
ROAD NUMBER: I-20/I-59
ROAD DIRECTION: WESTBOUND
SEGMENT: I65 TO RME (I_20/59)

MAX SEG PTI PM
ROAD NUMBER: US-78
ROAD DIRECTION: EASTBOUND
SEGMENT: SR5 (BANKHEAD HWY) TO COALBURG RD
Highway Segments with Significant Increases in PTI in 2016-17

AM Peak

- I-20/59 between I-65 and Red Mt. Expressway
- US 11 between I-65 and Red Mt. Expressway
- US 280 WB between I-459 and Rocky Ridge

PM Peak

- I-459 between I-65 and I-20
- I-20/59 between I-65 and Red Mountain Expwy.
- US 11 between I-65 and Red Mountain Expwy.
- US 31 between I-20/59 and I-65
Congestion Analysis
Summaries for I-65 (peak periods only)

<table>
<thead>
<tr>
<th>Month</th>
<th>Total Congestion (veh-hrs)</th>
<th>% RC</th>
<th>% NRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 2016</td>
<td>139,436</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>Apr 2016</td>
<td>140,743</td>
<td>56</td>
<td>44</td>
</tr>
</tbody>
</table>

**Congestion per Day (veh-hrs)**

- Mon
- Tue
- Wed
- Thu: High congestion
- Fri: Moderate congestion

Legend:
- NRC/day
- RC/day
- Total/day
Congestion on I-459 (full length)

<table>
<thead>
<tr>
<th>Year</th>
<th>RC (veh-hrs)</th>
<th>NRC (veh-hrs)</th>
<th>Total Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>282,793</td>
<td>197,530</td>
<td>480,323</td>
</tr>
<tr>
<td>2016</td>
<td>256,526</td>
<td>258,256</td>
<td>514,782</td>
</tr>
</tbody>
</table>
Congestion on I-20/59

<table>
<thead>
<tr>
<th>Year</th>
<th>RC (veh-hrs)</th>
<th>NRC (veh-hrs)</th>
<th>Total Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>282,664</td>
<td>326,420</td>
<td>609,084</td>
</tr>
<tr>
<td>2016</td>
<td>369,416</td>
<td>332,855</td>
<td>702,271</td>
</tr>
</tbody>
</table>

Analysis of I-20/59 between I-65 and Red Mt. Expwy. found a 50+\% increase in delay from 2015-2016 during peak months.
Implications for Birmingham

1. The potential for TSMO projects to reduce delays and improve travel time reliability seems to be high

2. Track impacts of TSMO projects on:
   - TTI
   - PTI
   - Total Congestion

3. Assess impacts of construction projects and work zones on overall delay and travel time reliability