Crowdsourcing Applications in Signal Operations

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Traffic Signals in Austin

• COA maintains 1012 traffic signals and 81 PHBs

• Current CS data sources:
  – Traction (Google, Waze, Azure)
  – INRIX

• Both purchased annually
Current Applications of Crowdsourced Data

• Prioritization of corridors for annual retiming
  • City only has capacity to retime 1/3 of signals annually

• “Hotspot” identification and repair
  • CS data can automate what used to be field observations

• Evaluate benefits of retiming (MOE’s)
  • Compare before and after travel time data to compute performance metrics

• Traveler information
  • Real time travel time display via DMS Messages
Prioritization of retiming corridors

Current criteria: What systems had the greatest percentage of segments with travel time increases since last retiming?
“Hotspot” Identification

- Very specific locations that have been identified as problem areas
- Reports can come via 311, TMC observation, etc.
“Hotspot” Identification

Mon-Wed – before retiming

Mon-Wed – after retiming
### Evaluating benefits of retiming

#### Before and After data for RM 2222

<table>
<thead>
<tr>
<th>Peak Period</th>
<th>Travel Time CI (s)</th>
<th>Speed CI (mph)</th>
<th>Travel Time Index CI</th>
<th>Buffer Time (s)</th>
<th>Planning Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM (6:30 AM - 9:00 AM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>99</td>
<td>106</td>
<td>17.35</td>
<td>18.93</td>
<td>0.56</td>
</tr>
<tr>
<td>After</td>
<td>105</td>
<td>63</td>
<td>17.72</td>
<td>14.59</td>
<td>0.60</td>
</tr>
<tr>
<td>(\Delta)</td>
<td>+6</td>
<td>-43</td>
<td>0.38</td>
<td>-4.33</td>
<td>0.04</td>
</tr>
<tr>
<td>(\Delta%)</td>
<td>+6%</td>
<td>-41%</td>
<td>+2%</td>
<td>-23%</td>
<td>+7%</td>
</tr>
</tbody>
</table>

#### Overall

<table>
<thead>
<tr>
<th>Peak Period</th>
<th>Travel Time CI (s)</th>
<th>Speed CI (mph)</th>
<th>Travel Time Index CI</th>
<th>Buffer Time (s)</th>
<th>Planning Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>79</td>
<td>57</td>
<td>14.67</td>
<td>12.76</td>
<td>0.45</td>
</tr>
<tr>
<td>After</td>
<td>73</td>
<td>47</td>
<td>13.82</td>
<td>11.57</td>
<td>0.41</td>
</tr>
<tr>
<td>(\Delta)</td>
<td>-6</td>
<td>-10</td>
<td>-0.85</td>
<td>-1.19</td>
<td>-0.03</td>
</tr>
<tr>
<td>(\Delta%)</td>
<td>-8%</td>
<td>-18%</td>
<td>-6%</td>
<td>-9%</td>
<td>-7%</td>
</tr>
</tbody>
</table>

Source: Kimley-Horn using INRIX data
Traveler Information

• COA is currently piloting arterial travel times on DMS (began Feb 6)
  – Azure data (via Traction)
• Information provided:
  – Travel time
  – Alternate route information
• System operated through ATMS (KITS)
DMS Travel Times - Messages

• Update every 5 minutes
• Standard Messages:
  – Travel Time
    
    B SPRGS - 8 MIN
    CHAVEZ - 14 MIN
    15TH - 22 MIN

  – Alternative Route Information
    
    5TH ST
    VIA LAMAR
    15 MIN

    5TH ST
    VIA GUAD
    18 MIN