ASSESSING LONGITUDINAL ARTERIAL PERFORMANCE & TRAFFIC SIGNAL RETIMING OUTCOMES

Steven Lavrenz, Christopher Day, W. Benjamin Smith, James Sturdevant, Darcy Bullock
### Assessing Longitudinal Arterial Performance and Traffic Signal Retiming Outcomes

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**STUDY CORRIDOR: SR37 NORTH, FISHERS, IN**

- **High-Resolution Controller Data**
- **Travel Time: Bluetooth Reidentification**

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**DATA-DRIVEN OFFSET OPTIMIZATION**

2010, 2013, 2015 Retiming

- **2010 Before/After Flow-Profile Diagram**

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**ASSESSMENT OF 5-YEAR OPTIMIZATION OUTCOMES**

- **Volumes Increased; Percent on Green Also Increased**
- **Percent Arrivals on Green/Red**
- **Travel Time Costs**
- **Travel Time Reliability Costs**

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- **Arterial Green Times Remained Constant**

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**User Costs Decreased During Each Optimization**

- **Travel Time (TT) + Travel Time Reliability (TTR) Costs**

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**Annualized User Cost Tabulation**

Total annualized user benefits from 2010, 2013, and 2015 optimizations:

<table>
<thead>
<tr>
<th>Saturdays</th>
<th>Weekdays</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2010</strong></td>
<td>2013</td>
</tr>
<tr>
<td>$538,449</td>
<td>$68,430</td>
</tr>
<tr>
<td>$2,638,318</td>
<td>$2,638,318</td>
</tr>
<tr>
<td>$2,000,000</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>$8</td>
<td>$500,000</td>
</tr>
</tbody>
</table>

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- **Weekdays**
- **Saturdays**

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**Benefit**

- **Travel Time**
- **Reliability Benefit**

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<table>
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<tr>
<th>Year</th>
<th>Northbound</th>
<th>Southbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>119,458</td>
<td>138,231</td>
</tr>
<tr>
<td>2013</td>
<td>76,220</td>
<td>127,386</td>
</tr>
<tr>
<td>2015</td>
<td>63,852</td>
<td>138,231</td>
</tr>
</tbody>
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Weekday Travel Time Reliability Costs

- **TT**
- **TTR**

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- **Travel Time**
- **Reliability Benefit**

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**Before**

- **Travel Time Distribution Analysis**

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- **Cumulative Distribution**

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