Which Traffic Simulation Software is Best?
Mike Spack, PE, PTOE

Bryant Ficek, PE, PTOE
TRAFFIC STUDY MANUAL

The Insider’s Guide to Studying the Traffic Impacts of a Proposed Development

Mike Spack, PE, PTOE
Bryant Ficek, PE, PTOE

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mspack@spackconsulting.com
Calibrate to What???
Results = Reality?
Data Reduction = 76 Hours
Results (overall average delay) – Field vs Software

- Average Delay (seconds)
- Intersections:
  - All-Way Stop #1
  - All-Way Stop #2
  - Multi-Lane Signal #1
  - Multi-Lane Signal #2
  - Multi-Lane Signal #3
  - Single-Lane RA #1
  - Single-Lane RA #2
  - Single-Lane RA #3
  - Single-Lane RA #4
  - Multi-Lane RA #1

- Data Sources:
  - Field Measurements
  - HCM2010
  - RODEL
  - Synchro
  - SimTraffic
  - VISSIM
## Results (Intersection LOS) – Field vs Software

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</thead>
<tbody>
<tr>
<td>Single-Lane RA #1</td>
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<td>Single-Lane RA #3</td>
<td>Single-Lane RA #4</td>
<td>Multi-Lane RA #1</td>
<td>All-Way Stop #1</td>
</tr>
</tbody>
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95th Percentile Queues (vehicles) – Field vs Software

Intersections

- All-Way Stop #1
- All-Way Stop #2
- Multi-Lane Signal #1
- Multi-Lane Signal #2
- Multi-Lane Signal #3
- Single-Lane RA #1
- Single-Lane RA #2
- Single-Lane RA #3
- Single-Lane RA #4
- Multi-Lane RA #1

Graphical representation showing
- Field Measurements
- HCM2010
- RODEL
- Synchro
- SimTraffic
- VISSIM
95th Percentile Queue (vehicles from measurements) – Field vs Software

Number of Vehicles from the Field Measurements

Field Measurements
- HCM2010
- RODEL
- Synchro
- SimTraffic
- VISSIM

All-Way Stop #1
All-Way Stop #2
Multi-Lane Signal #1
Multi-Lane Signal #2
Multi-Lane Signal #3
Single-Lane RA #1
Single-Lane RA #2
Single-Lane RA #3
Single-Lane RA #4
Multi-Lane RA #1
95th Percentile Queue (% from measurements) – Field vs Software

- 95th Percentile
- Queue (% from measurements)
- Field vs Software

![Graph showing percent from 95th percentile queue field measurements for different traffic scenarios.](image-url)
Conclusions:

• No Software Nails it
• Models are Better at Predicting Delay than Queues
• Initial Use of HCM2010 may be Sufficient
• Round Your Results (No Tenth of a Second Delays)
• Experience Matters (Regional Calibration)
• Accurate Results for Long-Term Improvements are Questionable at Best
Next Steps –
More Questions to be Answered:

• What factors have the most influence on achieving better results?
• How many factors should be adjusted before it’s sufficient?
• Should more than one software be used on a project?
• Would a pass/fail system be better than A to F?