Prioritizing Today’s Needs for Tomorrow’s Mobility

Performance Measures from Real World Data to Assess Regional Needs in Atlanta

Kyung-Hwa Kim
WHAT IS PERFORMANCE-BASED PLANNING?

1. Vision, Goals, and Objectives
2. Performance Measurement Process
3. Project Evaluation
4. Allocate Resources
5. Measure and Report Results

WHAT IS PERFORMANCE-BASED PLANNING?
MAP-21: NATIONAL PERFORMANCE GOALS

- Safety
- Infrastructure Condition
- Congestion Reduction
- System Reliability
- Freight Movement and Economic Vitality
- Environmental Sustainability
- Reduced Project Delivery Delays
PERFORMANCE DATA

USABLE DATA ANALYSIS

MODEL OUTPUT DATA

OBSERVED PERFORMANCE DATA (SPEED, COUNTS, CRASH)

regional impact + local relevance
LIMITED INFORMATION WITH LIMITED TOOL SET

regional impact + local relevance
Performance Measure

Project Evaluation

Regional Evaluation

Macro Travel Demand Model

- Regional Level average GOOD
- Project Level Issues
  - Volume
  - Travel Speed
  - B/C
  - Accuracy
NEW APPROACH
CONGESTION INDEX (2010 NAVTEQ)
CRASH RATE ANALYSIS (2009)
2010 ACTIVITY CENTER ACCESSIBILITY

Legend
- NPO Boundary
- Activity Center Trips
- Less than 1%
- 15% to 50%
- Greater than 50%
- Activity Centers
- Counties

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regional impact + local relevance
MESOSCOPIC MODELING
### Intersection Analysis

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing 2010 Delay (sec/veh)</th>
<th>No-Build 2040 Delay (sec/veh)</th>
<th>Build 2040 Delay (sec/veh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minola Dr – Fairington Rd</td>
<td>49(59)</td>
<td>97(92)</td>
<td>34(52)</td>
</tr>
<tr>
<td>W Fairington Pkwy</td>
<td>25(29)*</td>
<td>100(145)*</td>
<td>8 (6)*</td>
</tr>
<tr>
<td>Thompson Mill Rd</td>
<td>13 (16)</td>
<td>17 (21)</td>
<td>11 (19)</td>
</tr>
</tbody>
</table>

**Legend**

- **LOS A** (25+)
- **LOS B** (10+)
- **LOS C** (25+)
- **LOS D** (35+)
- **LOS E** (55+)
- **LOS F** (80+)

**Note:**

*W Fairington Pkwy intersection is two-way stop controlled in no-build and signal controlled in build.*
VISSIM MICROSCOPIC SIMULATION

No_Build

Build
LESSONS LEARNED

- Need Clean Curvilinear Network to Reference Real data and Model Output
- Data Quality Control
- Understand Pros & Cons of Various Modeling Toolsets
- Research and More Research
- Advanced Skill Sets (e.g., database administration, GIS, traffic engineering)
- Lots of Work!!
COLLAPSE VARIOUS NETWORK DATASETS

Plan 2040 Project

NAVTEQ Network

Model Stick Network

TTI Data

Accessibility Data

Crash Data
COMPLEXITY OF THE TOOLBOX

**Performance Level**
- Link, Corridor, Centers, System, Regional Level
- Current year vs. Future year

**Model Type**
- Macro
- Meso
- Micro

**Project Type**
- M&O
- Interchange
- Extra Capacity
- By-Pass
- BRT, LRT..etc
FIND THE RIGHT TOOL
THIS IS HOW WE GET THERE

Observe by Real Data
Understand Need & Gap
Evaluate Project Level Performance
“Individual Benefit”

Understand with Future Scenarios
Evaluate Corridor, System and Regional Level Performance
“Package Benefit”

Complete Financially Constrained Network and Conformity Analysis
“Regional Benefit”
NEXT STEPS

- Complete Curvilinear Network for 6000 TAZ system
- Complete Methodology by Type of Projects
- Detailed Gap Analysis based on Need Assessment
- Develop Scenario Testing Assumptions
Thank you

Any Questions?

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