NCHRP 8-36 (104) — Integrating Performance Measures into a Performance-Based Planning and Programming (PBPP) Process

FHWA/FTA Workshop on Performance-Based Planning

Raleigh, North Carolina,

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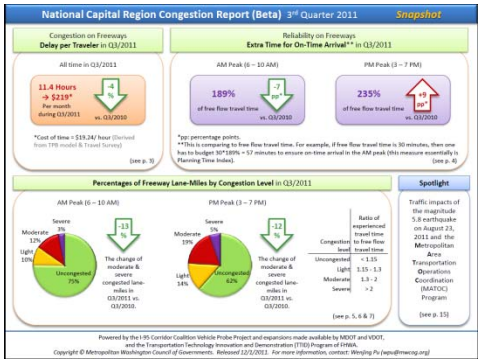
Eric Randall
Department of Transportation Planning
Metropolitan Washington Council of Governments

Metropolitan Washington Council of Governments

MPO's Role in Regional Planning

NCR Congestion Report (Dashboard)

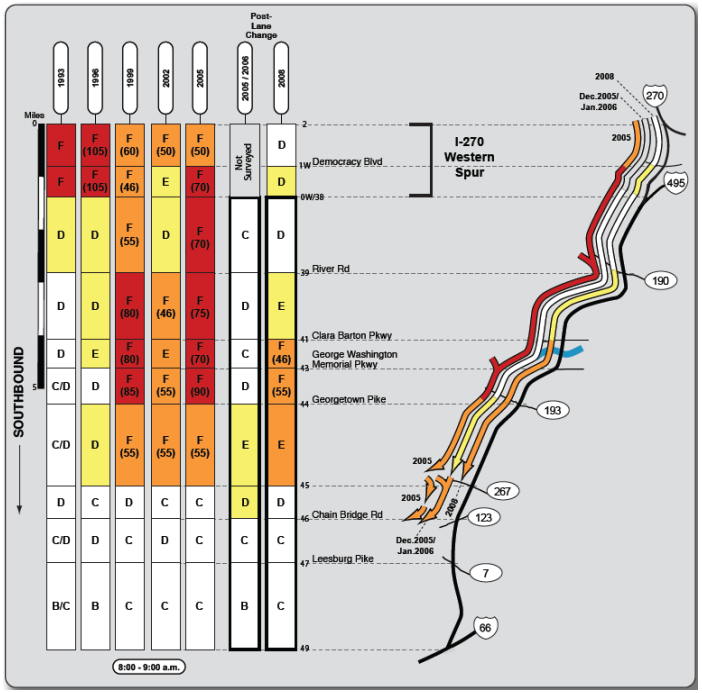


- MPO roles
  - Regional analyses in support of CLRP/TIP
    - Travel demand model development and execution
    - Financial constraints
    - Air quality conformity
  - Technical input to state/local corridor planning
    - Data
    - Travel demand model technical support
  - Regional Planning Applications of Performance Measurement
    - Determine best locations for future improvements
    - Determine best types of improvements
    - Prioritize improvements based on anticipated impacts

- State and local roles
  - Planning/engineering for specific corridors
    - NEPA/EA
  - Operational decisions
- Demand management – shared state/local/MPO responsibility

TPB Corridor Planning Support

- CLRP/TIP
- Scenario studies and priorities plan
- Travel demand modeling
  - Model development
  - Model applications: scenarios, corridor studies
- Highway performance monitoring
  - Freeway aerial survey
  - Arterial floating car travel time study
  - Use of third-party data (e.g., INRIX, traffic.com)
  - Household travel survey
  - HOV facility survey
  - Airport ground access travel time study
  - Cordon counts
  - Traffic signal surveys
  - Etc.



NCHRP 8-36 Overview

National Cooperative Highway Research Program (NCHRP) study of the potential for performance based planning and programming (PBPP) of transportation projects.

- Consulting team of Cambridge Systematics, Inc.
- Three pilot sites/themes:
  - Kansas City – safety,
  - Pennsylvania – pavement and bridge preservation,
  - DC/Maryland – multimodal congestion hotspots.

Project Objectives

- Move from conceptual framework to realistic examples for PBPP.
- Examine how state DOTs can work with regional partners to use national performance measures within regional planning processes.
- Identify barriers and obstacles, and strategies for addressing them.

TPB/WMATA/Suburban Maryland pilot

NCHRP 8-36 Pilot Participants:

- MPO: National Capital Region Transportation Planning Board (TPB)
- Transit Agency: WMATA
- State DOT: Maryland DOT/State Highway Administration
- Local: Prince George's and Montgomery Counties, Maryland National Capital Park and Planning Commission

Objective

- Develop a **collaborative** methodology for identifying and prioritizing strategies to address **congestion** at two **multimodal** hotspots

NCHRP 8-36 Pilot Activities

- Identified two multimodal congestion hotspots.
  - Made use of ongoing Multimodal Coordination / Bus Hot Spots study to select locations
- Compiled and assessed data in these locations to investigate options for analysis.
  - Transit operations, traffic counts and analysis, INRIX data
- Agencies interviewed regarding current practices and opportunities for improvement.
- Developed a prioritization framework.
- Reviewed options for communicating results.

Applying Performance Measures:

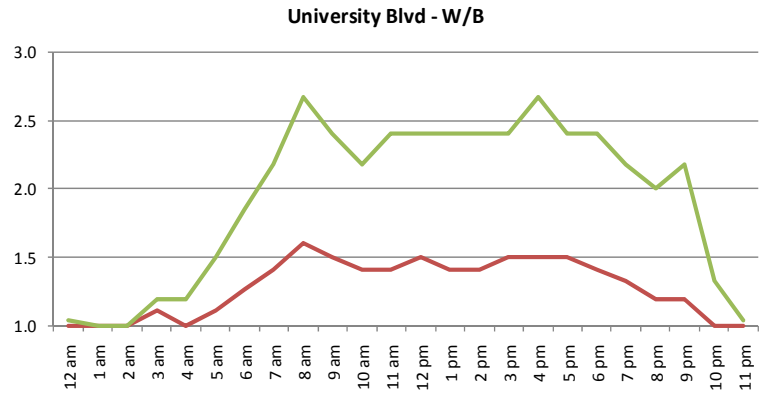
Location analysis was completed as follows:

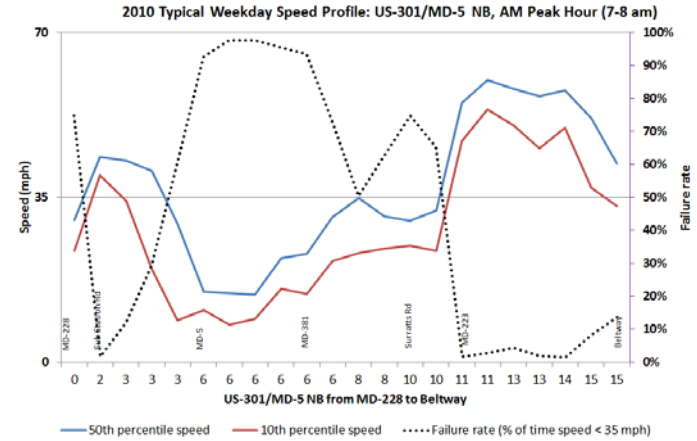
1. Identified a hot spot by regional bus speed and volume data analysis. A field survey proposed several options for improvements.

2. Conducted a Benefit-Cost Analysis (BCA)
   - Based on USDOT TIGER Grant BCA.
     - Potential model for national performance measures.
   - Transit and highway data.
   - "Ballpark" costs and benefits.

INRIX Data Analysis

- INRIX data is complementary to volume counts data.
  - Provides 24/7 speed/travel time profile; most congested and unreliable time periods can be clearly identified.
  - Can enhance Benefit/Cost Analysis (by monetizing travel time and reliability) and Before/After Analysis.
  - With appropriate volume data, can calculate:





- Vehicle Delay
- Vehicle Miles Traveled (VMT)
- Vehicle Hours Traveled (VHT)
- Person-Delay
- Person Miles Traveled (PMT)
- Person-Hours Traveled (PHT)

BCA Conclusions

- All modes are interested in the same “real estate” – roadway, signal cycle time.
  - Requires multi-modal comparison of trade-offs.
  - Can be measured in:
    1. Simple modal terms: AADT, LOS, CLV, Bus Trips;
    2. Person throughput: Auto and Bus occupancy;
    3. Broader range of considerations: User cost and time, Accessibility, Livability.

- Benefit-Cost Analysis is sensitive to projected assumptions.
  - Sensitivity analysis can provide some range of comfort to account for project uncertainties, but not an exact science.
  - Requires effort to collect data and analyze.

Overall NCHRP Pilot Study Findings (1)

Within the Washington Metropolitan Region:

- Significant work is being done already in performance measurement and analysis, however there are opportunities to improve.
  - New and better data as technology improves (e.g., INRIX, Transit AVL).
  - Improved use and input into the planning process.
- Separate modal planning reflects history and responsibilities of each agency:
  - There is an opportunity to move towards a multi-modal planning approach, with person-based, mode neutral measures.

Pilot Study Findings (2)

- Biggest challenge is moving from collaborative prioritization and selection of a preferred strategy to agency-specific implementation.
  - Involves an implementing agency programming, funding, and building the preferred strategy.
  - Preferred strategy must compete with other priorities and needs of the implementing agency.
  - Added complexity if multiple implementing agencies are involved.
  - Public involvement is a critical part of the decision-making process.

Pilot Study Recommendations (1)

- Improve presentation of performance measures to public and decision-makers.
  - Investigate communication techniques for presenting performance measurements and analysis.

- Maximize use of current information and “traditional” project justification reports.
  - Identify key pieces of information included.
  - Develop a template that reflects best practices.

Pilot Study Recommendations (2)

- Within each agency:
  - Identify steps for framing discussions around the total user experience perspective.
  - Maintain a list of priorities and potential strategies and look for opportunities to attach improvements to large mode-specific projects.
  - Create line item programs for addressing multi-modal issues.
    - Example: Maryland SHA's competitive Fund 87 Program for capacity improvements at failing intersections.
  - Improve inter-agency coordination
    - Performance data: share transit AVL and ridership data
    - Implementation: coordinate as in TIGER Grant project.

Briefing on NCHRP 8-36 (104) — Integrating Performance Measures into a Performance-Based Planning and Programming (PBPP) Process

Questions?