NPMRDS - Probe Data Analytics Tools for Transportation Planning: Bottlenecks

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Transportation Planning

• **Early Years (1960s)**

  • **The 3 C’s — Continuous, Comprehensive and Cooperative**
  
  • Estimates, Forecasts, and “Guesstimates”
  
  • “**What should we build next?**”
Transportation Planning

- **Intelligent Transportation Systems (1990s)**
  - Real-time Operations Data
  - Transportation Management Centers (TMC)
  - “How can we use what we’ve built better?”
Transportation Planning

Performance Measures (2010s)

• Archived Probe Data

• Captured at the Traffic Message Channel (the other TMC) level every 5 minutes

• State and MPO Level Annual Aggregations

• “What are our benchmarks for going forward?”
Transportation Planning

• **Emerging Era (2020s)**
  • Local Project Identification, Prioritization, Implementation and Monitoring (e.g., TMC road segment level, Intersections, Routes, Networks)
  • “**What infrastructure and operational changes will make a difference, and do they?**”
NYSDOT’s Integrated Platform (2014 - 2016)

- Organized User Group with NYSDOT & MPOs to meet new legislative requirements through our University Transportation Research Center (UTRC)
- Developed a suite of tools using the original NPMRDS
- Envisioned interoperability for every day transportation planning and operations applications using probe and other available data
NYSDOT’s Advanced Platform (2017-2019)

- Refining tool suite and developing use cases (e.g., Congestion Management Plans, state freight plan project prioritization, etc.)
- Calculating PM3 metrics for all States, MPOs, Counties, and Urbanized Areas
- Next step: to use modern processing strategies for deep integration (e.g., InfoUSA, National Household Travel Survey, Traffic Counts Program and more)
Interface - Login
Quick Start Guide

Do you need to develop a corridor analysis, create reports showing trends and visualizations, or simply want to find the best or worst time to travel? Through the NPMRDS app, these analyses can be performed quickly and intuitively. The first step is to create a route in Route creation tool. Next, you can load your route into a pre-designed report template based on your chosen analysis theme. Lastly, you can modify the template to better fit your research needs.

Open this guide →

Create Routes

Getting started in the tool suite. The first step is to create a route. In this guide you'll learn how to create a route.

Open this guide →
Interface — Tools
**Geospatial Options**

**Single Route, Multiple Routes, Entire Networks**
# Route-level Tools

The image displays a web interface for managing routes. The main features include:

- **Routes View**:
  - **Search** field to find specific routes.
  - **New Route** button for adding new routes.
  - **Compare Routes** option for comparing different routes.

### Route List

- **14th St**: Group Route
- **23rd St**: Group Route
- **2nd Ave (south)**: Group Route
- **3rd Ave (midtown - east village)**: Group Route
- **3rd Ave (north)**: Group Route
- **65th Street East-West**: Group Route
- **65th Street West-East**: Group Route
- **6th Ave (Greenwich Village)**: Group Route
- **81 South**: Group Route
- **87 project compare**: Group Route
- **87 project southbound**: Group Route

The interface also includes options for viewing, comparing, adding to folders, removing from folders, sharing, renaming, copying, editing, and deleting routes.
Route-level Tools
Route-level Tools
Route-level Analytics
Route-level Analytics
Bottleneck Analytics
Bottleneck Analytics
Defining The Term “Bottleneck”

• ATRI
  • Algorithm used by American Transportation Research Institute

• Chenea

• PHED
  • PM3 measure for Peak Hours of Excessive Delay
Use Case: ATRI
Use Case: Chenea
What Problems Are You Trying to Solve?

- Regional consensus on approach
- Special outreach to the freight community for urban trucks and long haul trucks
- Opportunities to use operational solutions before building more infrastructure
Beyond “Silent” Probe Data

App-enhanced data feeds

- Identified as a potential data source in *NCFRP Report 29, Making Trucks Count: Innovative Strategies for Obtaining Comprehensive Truck Activity Data* (pg. 41)

- Context-specific conditions
  - Weather observations, road elevations, saturation levels, etc.

- Back-end integration with archived data, real-time data, and conditions data, to produce near- and longer-term forecasts
Beyond the 2020s

• Hands-free apps providing “informed” traffic feeds to drivers, and harvestable traffic “responsiveness” metrics based on decisions made by drivers.

• Getting a Smart Start into the future.
Beyond the 2020s

• “Are we ready for connected/autonomous vehicles?”
• “Are we really going to give up the wheel to a computer?”
• “What kinds of technologies will make us feel more comfortable to do this?”
Questions?

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