



# Partners Using Archived Operations Data: Congestion Management on the I-95 Corridor

## Quick Information

**Organization(s):** Delaware Valley Regional Planning Commission (DVRPC), I-95 Corridor Coalition

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**Website:** <http://www.dvrpc.org/>

**Cooperation Topic(s):** Congestion Management

**Cooperation Practice(s):** Forums for Communication and Idea Sharing; Data Sharing and Developing Common Modeling and Forecasting Tools

**Cost Information:** FHWA initially funded VPP Suite access to all members of the I-95 Corridor Coalition, and now, individual MPOs (or hosting States) must cover the cost.

Traffic congestion on interstates and major arterials has plagued many East Coast cities for decades, but a simple solution has been elusive. In an effort to create a more efficient commuting experience for residents in the Delaware Valley, Delaware Valley Regional Planning Commission (DVRPC), the metropolitan planning organization (MPO) for the Greater Philadelphia region, established Partners Using Archived Operations Data (the Partners). The Partners convene transportation planning organizations along the East Coast to share information and establish a uniform set of congestion management performance measures. States in the region, particularly Pennsylvania and New Jersey, have used the operations data to evaluate the success of past congestion management projects and make the case for funding transit projects that alleviate congestion problems during and after major roadway construction projects.

## Motivation for Establishing the Collaboration

Effective congestion management has been a growing concern among transportation planners across the United States for decades, particularly in densely populated, urbanized areas that span regional and oftentimes State boundaries. The Greater Philadelphia region—which is comprised of Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania and Burlington, Camden, Gloucester, and Mercer counties in New Jersey—is no stranger to congestion, and DVRPC has been working to solve mounting traffic delays on freeways throughout the region for years.

After several informal discussions with neighboring MPOs and State departments of transportation (DOTs), DVRPC realized there was a need for collaboration and consensus regarding which performance measures to use and how to communicate about them. Robust new data sources were available, but consistent performance measures did not exist among the various MPOs and DOTs. The agencies had not yet come to consensus on what methodologies for measuring performance were most appropriate and how results should be communicated to stakeholders and other members of the public. Congestion in the region was negatively impacting the effectiveness of public and local

leadership, but coherent messaging around the issues did not exist, and planning staff were overwhelmed by the range of different measures available to them.

## Collaboration Structure

In 2011, DVRPC invited neighboring members of the [I-95 Corridor Coalition](#)—an alliance of transportation agencies, toll authorities, and related organizations from Maine to Florida—to meet for a structured discussion about congestion management and the use of archived operations data. The agencies wanted to answer the same questions: which measures should be used, how should they be calculated, and how should they be communicated?

The I-95 Corridor Coalition had already been collecting data on speed and travel time for years. The Coalition's Vehicle Probe Project (VPP) was launched in 2008 to provide Coalition members with reliable travel time and speed data for their roadways without the need for sensors and other hardware, so the forum participants had experience with performance measures and indexes derived using archived traffic speed data provided by the Coalition. While the Coalition began as an I-95-focused forum to discuss freeway congestion, it has evolved into a much wider effort that incorporates arterial roads and smaller intersections throughout the participating regions. The I-95 Corridor Coalition has always been deeply supportive of the data sharing effort, but the Partners consciously remained separated from the Coalition in order to keep their data-sharing efforts focused to the specific needs of forum participants.

The Partners established annual meetings to discuss how to best apply operations data to shared measures. In the early years of the collaboration, the Partners held in-person meetings, which they supplemented with additional webinars, email conversations, and web-based surveys. It was critical to hold both in-person meetings and webinars so that members who could not travel to in-person meetings would have an opportunity to participate. The meetings have thus far included organizations from Massachusetts, New York, New Jersey, Pennsylvania, Delaware, Virginia, North Carolina, South Carolina, and Florida.

Through the annual meetings, the Partners established four high-level performance measures that its members agreed to use: (1) annual person-hours of delay; (2) travel times (including free flow, usual, and worst day of the month conditions); (3) a reliability index; and (4) the duration of congestion.

DVRPC has taken the lead on developing communications templates for the Partners, with assistance from the I-95 Corridor Coalition's graphics

## Takeaways

- To collaboratively reduce traffic congestion in the Greater Philadelphia Region, DVPRC established the Partners to share information and establish a uniform set of congestion management performance measures.
- Though data sources were available, consistent performance measures did not exist.
- The I-95 Corridor Coalition's participation was critical to the success of the collaboration.
- The Partners leveraged the I-95 Corridor Coalition's strong relationship with the University of Maryland's Vehicle Probe Project (VPP) Suite, a collection of data visualization and retrieval tools.
- The Partners were able to better anticipate Federal performance measure requirements and collectively respond to a Federal rulemaking.

professionals (see Appendix). These brochures and presentation templates—which are shared in PowerPoint format to ensure greater accessibility—save staff time and money and help the Partners more effectively communicate congestion management information to the public and local officials.

## Collaboration Accomplishments

In addition to opening lines of communication among MPOs and DOTs along the I-95 corridor, the Partners were able to leverage the I-95 Corridor Coalition's strong relationship with the University of Maryland's Center for Advanced Transportation Technology (CATT) Laboratory to access and analyze archived data. The Coalition's archived operations data is comprised of billions of individual records, requiring vast amounts of storage as well as sophisticated software for processing and analysis. The University of Maryland developed the Vehicle Probe Project (VPP) Suite, a collection of data visualization and retrieval tools that allow users to download reports, visualize data on maps and in graphic forms, and download data for off-line analysis. Developing such a tool in-house at each MPO would have been costly and time-consuming, so support from the Coalition and the University of Maryland was crucial. A VPP Suite user group staffed by representatives from the University of Maryland and I-95 Corridor Coalition solicits input from different users of the tool and develops and revises new features accordingly. Before the Partners began using the VPP Suite, they had to download huge amounts of traffic data and analyze it manually. Using the VPP Suite, what used to take months now takes minutes.

DVRPC continually uses results synthesized from the data to support a number of construction projects in the greater Philadelphia area. For instance, an ongoing reconstruction and bottleneck removal project along the I-95 corridor in Philadelphia has dramatically increased congestion. Using archived operations data from the VPP Suite, DVRPC was able to demonstrate the need for investments in local transit and, as a result, Pennsylvania DOT (PennDOT) flexed \$41 million to the Southeastern Pennsylvania Transportation Authority to improve parallel transit services and offset congestion.

The New Jersey DOT and DVRPC have used regression analyses to evaluate completed projects, and PennDOT incorporated the data into its statewide advanced traffic management system. Using archived data going back as far as 2008 and 2009, planners have been able to quantify congestion improvements resulting from previous projects. They plan to use the data in both transportation improvement plans (TIPs) and long-range transportation plans (LRTPs).

This effort has allowed the Partners to better prepare for Federal requirements on the use of performance measures for planning and programming. Because of the strong relationships formed by the partnership, the Partners were able to review Federal Rulemakings and submit comments to the Federal Highway Administration (FHWA) as a collective unit. As a result of the extensive operations data

application effort, many requirements of the new Federal measures are reflected in the Partners' current operations.

## Challenges and Lessons Learned

This collaboration has revealed that when each State, region, and organization collects different traffic and operations data and uses different methods to measure results, making comparisons across jurisdictions is difficult, if not impossible. This is even a challenge when analyzing intra-agency operations data, because supporting pieces of data are often collected using different platforms and stored on different networks within an agency. The partnership has offered the opportunity for knowledge exchange and consistent performance management across agencies.

Performance measures are only as good as the data that informs them, and the Partners benefited greatly from the I-95 Corridor Coalition's high-quality data dating back several years. When the I-95 Corridor Coalition first hired a vendor to collect operations data, the organization used validation exercises to evaluate the quality of the data, and the vendor was compensated proportionately to the quality of data collected. Challenges regarding data accuracy still remain; for example, it is more difficult to measure speed when vehicles are moving slowly and when there are complicating factors such as driveways and traffic signals, so congestion data on arterial roads is sometimes less accurate. The I-95 Corridor Coalition is working to improve its data collection practices for non-freeway roads using enhanced analysis tools and better understanding the nuances of different road types.

The Partners learned that while it may prove challenging, it is essential for planning and operations staff within the same agency to communicate and work together on data-intensive efforts. As efforts to increase national use of congestion performance measures move forward, planning and operations staff across the entire transportation industry will need to work together to establish performance targets and determine how to best implement performance measures.

Since the partnership began in 2011, data collection and analysis techniques have changed, which can put a strain on staff resources. Originally, FHWA covered the cost of making the VPP Suite available to all members of the I-95 Corridor Coalition. Future funding of the VPP Suite is never certain, and though the I-95 Corridor Coalition's membership has access to the tool, individual MPOs must pay for it themselves. Some State DOTs, such as PennDOT, fund VPP Suite access for the MPOs in their service areas.

Despite these few drawbacks, the Partners have experienced many benefits. Working toward a common performance goal, providing each other with modeling and methodology improvements, and sharing communications and messaging templates has led to improved project evaluation, strong justifications for better demand management strategies, and investment in transportation alternatives.

### Additional Resources

- [Delaware Valley Regional Planning Commission](#)
- [I-95 Corridor Coalition](#)
- Communications Brochures (see RMOB Handbook Appendix p. 41)