PROBE DATA ANALYTICS SUITE

Quarterly Web Meeting

May 11, 2017
Webcast and Audio Information

• The call-in phone number is:

1-719-867-1571 & enter 725437# at the prompt

• Please call 917-974-4810 for difficulties with the web or audio application

• This is a **virtual meeting** experience
  - Please keep your phone muted until asking a question or speaking (press *6 to mute/unmute individual phone lines)
  - Please do not place call “on hold” as your hold music will be heard by the group

• This web meeting is being recorded

• All materials will be available to participants after the web meeting
Welcome

Marygrace Parker, I-95 Corridor Coalition
Introductions

**John C. Allen**
University of Maryland CATT Laboratory
Faculty Assistant

[jallen35@umd.edu](mailto:jallen35@umd.edu)
215.666.3057

**Ted Lucas**
Pennsylvania Department of Transportation
Consultant, Signals & Regional TMC Technician

[c-telucas@pa.gov](mailto:c-telucas@pa.gov)
215.906.3399
<table>
<thead>
<tr>
<th>Agency</th>
<th>Participating Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baltimore Metropolitan Council</td>
<td>North Jersey TPA</td>
</tr>
<tr>
<td>Delaware Valley Regional Planning Commission</td>
<td>Pennsylvania DOT</td>
</tr>
<tr>
<td>Durham-Chapel Hill-Carrboro (NC) MPO</td>
<td>Richmond Regional TPO</td>
</tr>
<tr>
<td>Federal Highway Administration</td>
<td>South Jersey TPO</td>
</tr>
<tr>
<td>ITRE/NSCU (NC)</td>
<td>Virginia DOT</td>
</tr>
<tr>
<td>MWCOCG</td>
<td>UMD – CATT Lab &amp; CATT Works</td>
</tr>
<tr>
<td>New Jersey DOT (and NJIT)</td>
<td>I-95 Corridor Coalition &amp; support</td>
</tr>
</tbody>
</table>
Please confirm that your line is muted

*6

Thank You!
Topics for today

› Coalition Update
› Feb/March Survey Results
› CY 2017 Deployment - Schedule Update & Summary Table
› Agency Spotlight Presentation: Managing the Delaware River Bridge Closure - PennDOT
› Video Tutorials
› O-D Data Suite Focus Group Status
› My History Quick-demo
› Agency Input Session
› Instant Polls
Coalition Update

> Recent Meetings
  - Volume & Turning Movement Steering Committee meeting – April 13, 2017
  - Using PMs to Justify Signal Systems on Arterials (PennDOT & GDOT) – May 4, 2017

> Upcoming Meetings
  - RITIS User Group Meeting – June 8, 2017 (in-person & via web)

> Reminder
  - Use the PDA Suite Trend Map and Congestion Scan tools to help travelers better plan for holiday travel
Volume & Turning Movement Project

• Coalition project funded through MCOM2 Grant
• Work being conducted in collaboration with the:
  • UMD CATT, Kaveh Sadabadi
  • NREL, Stan Young
  • Coalition, Denise Markow
  • INRIX (Rick Schuman), HERE (Terri Johnson), TomTom (Nick Cohn)
Volume & Turning Movement Project ◦ Goal

• Accelerate the timeframe to a ...
  • viable real-time volume and turning movement data feed,
  • anywhere on the network, and
  • to make every effort to ensure that initial data products meet the I-95 Coalition members’ information needs for...
    • operations,
    • performance measurement, and
    • planning.
Volume & Turning Movement Project • Status

> INRIX/UMD – Maryland dataset
  - Expanding analysis to more locations
  - More data at procurement stage

> TomTom/NREL – Data is flowing, work has commenced

> HERE – Still in process

> Calibration – FHWA TMAS

> Validation – In collaboration with TTI
Volume & Turning Movement Project • INRIX/UMD

• INRIX traces dataset/Maryland/4 months during 2015
• 20 million trips/1.4 billion waypoints/112GB
• ATR counts/MD SHA

• Machine learning technics used to estimate hourly counts
  • Artificial Neural Networks
Volume & Turning Movement Project  ◦  Next Steps

• How different time granularities would impact model accuracy (60, 30, 15, 10, 5 minutes)

• Grouping ATR locations based on factors such as proximity, highway type and geometry to calibrate group-specific models

• Pick two state/regions for INRIX to provide additional GPS trace data and repeat the analysis
Save the date...

- June 8, 2017, from 10:30 AM to 2:00 PM

Quarterly Webinar / In-person Meeting

Please join us for our first-ever webinar AND in-person RITIS User Group meeting, to be held at the CATT Lab at the University of Maryland. This special session will include our regular 10:30 AM -12:00 PM meeting that will demonstrate existing tools as well as present some upcoming features and functions, share recent agency use cases and provide ample opportunity for questions and feedback. For those attending in person, we’ll have a working lunch and networking opportunities from 12:00 – 1:00 PM, followed by some hands-on training geared towards real-world scenario evaluations until 2:00 PM (we highly recommend bringing your laptop for this part of the meeting.)

- hands-on training
- agency info-sharing
- upcoming new features
- networking opportunities
- and more!

An agenda, along with directions to the CATT Lab will be coming to your inbox soon...

Questions?
Please contact Denise Markow: Dmarkow@i95coalition.org
From the survey conducted on-line, Feb/Mar 2017:

- **43%** of respondents attended the last meeting
- Overall, **100%** found the meeting useful and/or informative
- **92%** said quarterly meetings work for them
- **73%** would consider giving a spotlight presentation
- **54%** consider themselves an intermediate-skilled user
- Roughly **25%** use the tools on a weekly, or by task basis:
Instant Poll

1. What will help you the most in becoming a more skilled user? (select one)

- More targeted spotlight presentations
- More “how-to” guidance
- Some “hands-on” training
- More user-friendly tool interfaces
What key focus areas are important to you?
(Users could select multiple topics)

- Planning and Performance Management: 100%
- TSMO: 50%
- Traveler Information: 50%
- Research: 25%
- Other: 0%
What ways are you using, or would like to use the PDA Suite?
(Users could select multiple topics)

Results Summary (continued)

Generally...

More Planning-oriented

More Operations-oriented

92% 92%
Problem Identification Developing Reports
Meeting MAP-21 Requirements Project Program Assessment/ After...
Travel Decision Making Presentations
Traffic Incident Management/ Operations
Managing/evaluating work zones
Project/ Program Development
Determining/ Evaluating detour routes
Leveraging Funds

Both Planning / Ops Capital Program-related

42% 42%

33% 17% 17%
Instant Poll

2 In what **areas** are you using/want to use the PDA Suite? *(select all that apply)*

- Planning
- TSMO / TIM
- Project / Program Development & Assessment
- Leveraging Funding
- Communication
- Research
Current Deployment Schedule for CY 2017 - Update

**Q1 (Jan-Mar)**
- Query Submission pages Flash Player dependency removed (done)
- “My Reports” New Functionality (done)
- MAP-21 Final Rule Widgets (in progress, pending Final Rule)
- Removal of TMC and Date range restrictions (done)

**Q2 (Apr-Jun)**
- Results pages Flash Player dependency removed (Performance charts in Q2, other tools in Q3; possibly Q4)
- Select TMCs via click and drag (Q3)
- Advanced Time Selection (Q3, possibly Q4)
- Custom graph formatting/exports (Q2)
- Basic O-D Data Analytics (Phase I)* (Q3)

**Q3 (July-Sep)**
- Sub-segment Data in results pages** (Q3)
- NWS/NASA Radar Data mapped to TMCs (on hold)
- Bottleneck Ranking with additional parameters, like volumes/capacity (Q2)
- Map tiling & rendering performance updates (Q3)

* Will require purchase of O-D Data from a vendor, and may be independent of the PDA Suite.
** Requires sub-segment data from a vendor and may require additional storage.
### How are we doing (based upon PDA Suite Feature Survey – from July 2016)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Origin-Destination Data Analytics</td>
<td>25</td>
</tr>
<tr>
<td>Fine-grain Zooming on Maps</td>
<td>25</td>
</tr>
<tr>
<td>Sub-segment Data Storage/Retrieval</td>
<td>25</td>
</tr>
<tr>
<td>&quot;My Reports&quot; List</td>
<td>25</td>
</tr>
<tr>
<td>Data Quality Filtering</td>
<td>25</td>
</tr>
<tr>
<td>Treeversity Features Integration</td>
<td>25</td>
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<tr>
<td>Email Report Notification</td>
<td>25</td>
</tr>
<tr>
<td>Cumulative Frequency Diagram Plots</td>
<td>25</td>
</tr>
<tr>
<td>Data Quality/Availability Visualizations</td>
<td>25</td>
</tr>
<tr>
<td>Traffic Volume Data Integration from Real-time Detectors</td>
<td>25</td>
</tr>
<tr>
<td>In-App User Feedback</td>
<td>20</td>
</tr>
<tr>
<td>Common Query Caching</td>
<td>20</td>
</tr>
<tr>
<td>Trend Map Movie Editor</td>
<td>15</td>
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<tr>
<td>% Time vs. Speed Graph</td>
<td>15</td>
</tr>
<tr>
<td>Shockwave Plots</td>
<td>15</td>
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<tr>
<td>Front-end Modernization Effort</td>
<td>15</td>
</tr>
<tr>
<td>Experienced Travel Times</td>
<td>15</td>
</tr>
<tr>
<td>New Dashboard Widgets</td>
<td>15</td>
</tr>
<tr>
<td>Travel-time Monitoring Report</td>
<td>10</td>
</tr>
<tr>
<td>Mile-marker Filters</td>
<td>10</td>
</tr>
<tr>
<td>Recurring Report Scheduling</td>
<td>10</td>
</tr>
<tr>
<td>Blue-tooth Sensor Data</td>
<td>10</td>
</tr>
<tr>
<td>Color Threshold Selection</td>
<td>5</td>
</tr>
<tr>
<td>Hourly Statewide Traffic Speeds</td>
<td>5</td>
</tr>
<tr>
<td>Enhanced Support for High-res Displays (Monitors)</td>
<td>5</td>
</tr>
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</tr>
</tbody>
</table>

#### CY 2017 New Feature Deployment

- **Q1 to Q3 scheduled deploys**

25 User Group-Ranked Improvements
Coming real soon...

> 2017 Q1 Deploy Summary Table

http://i95coalition.org/projects/probe-data-analytics/

<table>
<thead>
<tr>
<th>New Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Probe Data Analytics User Group</strong></td>
</tr>
<tr>
<td><strong>Probe Data Analytics Forum</strong></td>
</tr>
<tr>
<td><strong>Why Agencies choose PDA</strong></td>
</tr>
<tr>
<td><strong>Probe Data Analytics Tools</strong></td>
</tr>
</tbody>
</table>

**Feature Deployment Updates**
- VPP Suite Feature Deployment Table – CY2016 – Q4
- VPP Suite Feature Deployment Table – CY 2016 – Q3
- VPP Suite Feature Deployment Table – CY 2016 – Q2

**How to use the Multi-road Congestion Scan** deployed November 30, 2015

**Probe Data Analytics Suite | Calendar Year 2017 Deployments**

**Summary**
- 6Q1 Improvements
  - 2 Major New Features
  - 5 Functional Enhancements
  - 1 Significant Bug Fix

- 6YTD Improvements
  - 2 Major New Features
  - 3 Functional Enhancements
  - 1 Significant Bug Fix

**Detail**

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Tools Affected</th>
<th>Description</th>
<th>Deploy Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Redesign</td>
<td>PDA Suite</td>
<td>Fix a hotfix of minor issues present in the previous release.</td>
<td>05.06.2017</td>
</tr>
<tr>
<td>New PDA Feature</td>
<td>PDA Suite</td>
<td>The new PDA feature is now available on the Probe Analytics (PDA) Suite, to more accurately describe your probe and function.</td>
<td>05.06.2017</td>
</tr>
<tr>
<td>Performance Enhancements</td>
<td>PDA Suite</td>
<td>Visual redesign and platform upgrades both enhance the user experience and replace much of the underlying code with a modern, platform-agnostic architecture for a more seamless experience.</td>
<td>05.06.2017</td>
</tr>
</tbody>
</table>

**Large-scale, system-wide efforts (that extend beyond one quarter and aren’t included above)**
- Backlog Management
- Data Migration

**Key**
- **Major New Features**
  - Provides you with significant new abilities to interact with the tools in ways you couldn’t do before.

- **Functional Enhancements**
  - Smaller, but important new features or functions that help existing tools work better, faster or more efficiently.

- **Significant Bug Fix**
  - Corrects errors, flaws or faults in the system that may have been confusing, annoying or inhibiting.

- **Substantial, high-value deployments.**

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I-95 Corridor Coalition › Probe Data Analytics User Group

May 11, 2017
Instant Poll

3. Are you getting **value** from the Deploy Summary Table? *(select one)*

- Yes, definitely
- Some
- No, not really
- Never checked it out
NPMRDS v2 • Status Update*

› Awarded new contract in April 2017

› Monthly data backdated to February 2017 will be available on or before July 10th

› Webinar will be scheduled around July 10th to explain the new process

› The third performance measures rule on System Performance, CMAQ and Freight Movement is still on hold – Currently scheduled to become effective May 20, 2017

* - excerpts from the National Performance Management Research Data Set (NPMRDS) Quarterly Technical Assistance Webinar presented on May 4, 2017 by USDOT / FHWA
NPMRDS v2 • Main Highlights/Improvements

› Conflation Services
  (for HPMS Volumes over to the TMC network)

› Sample size indicator

› Epochs filled with Nulls
  (makes data management a little easier for some)

› Inner/outer TMC segments provided

› Improved data portal

› Faster Availability

https://ops.fhwa.dot.gov/freight/freight_analysis/perform_meas/
Agency Spotlight Presentation: Using the Dashboard for the I-276 Turnpike Closure

Ted Lucas, Pennsylvania DOT Consultant Signals & Regional TMC Technician
• Located in Bucks County (PA) & Burlington County (NJ)
• Crosses the Delaware River
• Connects the PA (I-276) and NJ (I-95) Turnpikes
• Serves ≈ 42,000 motorists each day
The Delaware River Bridge: Closure Cause

- On Friday January 20, 2017 a fractured steel truss was spotted under the bridge decking on the Pennsylvania side of the bridge.
The Delaware River Bridge: Closure Effect

- The Turnpike was closed in both directions on Friday January 20, 2017 at 3:15 PM.
- All Eastbound Traffic detoured off at US-1/Exit 351 (PA Turnpike).
• EB PA Turnpike Traffic detoured to Exit 351 (US-1) to I-95 North
I-276 Turnpike Closure Impact Map (2)

- EB PA Turnpike Traffic detoured to Exit 351 (US-1) to I-95 North
- WB NJ Turnpike Traffic detoured to Exit 7A to I-195
• Located in King of Prussia District 6-0 Office
• Monitor roadways and report incident information
  • 396 CCTV cameras
  • 163 message boards
• Dispatch service patrol vehicles (SPV) to incidents
  • 19 SPV
GoogleMaps travel time information, and what RTMC operators could see traffic cameras were initially used to quantify congestion. Not easy to summarize this information.

PennDOT used PDA Dashboard (with INRIX data) to monitor travel times on detour routes and anticipated alternate routes of travel.
Regional Traffic Management Process Overview

Travel Time is a metric that is quickly understood and easy to identify trends.

- Widgets were set up to show anticipated alternate travel routes from PA/to NJ, and from NJ/to PA.
- PDA Dashboard Tool was used by TMC Operators to monitor travel times during Peak Periods:
  - between 6:00AM and 10:00AM and
  - between 4:00PM and 8:00PM.
- The dashboard was:
  - Saved every 30 minutes
  - Emailed a screenshot to PennDOT staff / consultants and PA Turnpike staff / consultants
- The data was summarized and emailed at the conclusion of each peak period.
- The Dashboard data was saved between Monday January 23, 2017 and Monday February 6, 2017.
## Using the PDA Suite Dashboard (1)

### PA Turnpike Closure (includes NJ)

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
</tr>
</thead>
<tbody>
<tr>
<td>US-1 Northbound between 1-276/PA Turnpike and I-95</td>
<td>-3 mph</td>
<td>60 mph</td>
<td>56 mph</td>
<td>1 mph</td>
<td>79 mph</td>
<td>72 mph</td>
</tr>
<tr>
<td>I-95 Northbound between US-1/Exit 66 and PA-59 State Border</td>
<td>-1 mph</td>
<td>64 mph</td>
<td>60 mph</td>
<td>5 mph</td>
<td>66 mph</td>
<td>62 mph</td>
</tr>
<tr>
<td>I-95 between PA-59 State Border and US-1/Exit 67 Northbound</td>
<td>0 mph</td>
<td>63 mph</td>
<td>60 mph</td>
<td>0 mph</td>
<td>65 mph</td>
<td>62 mph</td>
</tr>
<tr>
<td>I-295 between US-1/Exit 67 and Exit 69 Southbound</td>
<td>-1 mph</td>
<td>66 mph</td>
<td>65 mph</td>
<td>0 mph</td>
<td>70 mph</td>
<td>67 mph</td>
</tr>
<tr>
<td>T-195 between I-295/Exit 60 and Exit 7 Westbound</td>
<td>-10 mph</td>
<td>57 mph</td>
<td>54 mph</td>
<td>3 mph</td>
<td>57 mph</td>
<td>54 mph</td>
</tr>
<tr>
<td>NJ-29 between NJ-195 and US-1 (TRENTON) (SOUTH) Northbound</td>
<td>-13 mph</td>
<td>43 mph</td>
<td>40 mph</td>
<td>0 mph</td>
<td>43 mph</td>
<td>40 mph</td>
</tr>
<tr>
<td>I-95 between US-195 and PA-59 State Border</td>
<td>-15 mph</td>
<td>66 mph</td>
<td>64 mph</td>
<td>0 mph</td>
<td>66 mph</td>
<td>64 mph</td>
</tr>
<tr>
<td>US-1 between PA-59 State Border and I-295/1-95 Northbound</td>
<td>-16 mph</td>
<td>49 mph</td>
<td>47 mph</td>
<td>0 mph</td>
<td>49 mph</td>
<td>47 mph</td>
</tr>
<tr>
<td>I-95 between PA-59 State Border and I-295/1-95 Northbound</td>
<td>-1 mph</td>
<td>24 mph</td>
<td>24 mph</td>
<td>1 mph</td>
<td>24 mph</td>
<td>24 mph</td>
</tr>
<tr>
<td>I-295 between Exit 60 and US-130/Exit 57 Southbound</td>
<td>2 mph</td>
<td>65 mph</td>
<td>64 mph</td>
<td>0 mph</td>
<td>65 mph</td>
<td>64 mph</td>
</tr>
</tbody>
</table>

### PA Turnpike Closure Travel Times into PA (includes NJ)

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
</tr>
</thead>
<tbody>
<tr>
<td>US-1 Southbound between 1-95 and I-276/PA Turnpike</td>
<td>-18 mph</td>
<td>56 mph</td>
<td>54 mph</td>
<td>23 mph</td>
<td>71 mph</td>
<td>72 mph</td>
</tr>
<tr>
<td>I-95 Southbound between PA-59 State Border and US-1/Exit 46</td>
<td>0 mph</td>
<td>66 mph</td>
<td>65 mph</td>
<td>55 mph</td>
<td>71 mph</td>
<td>72 mph</td>
</tr>
<tr>
<td>I-95 between PA-59 State Border and US-1/Exit 67 Southbound</td>
<td>-2 mph</td>
<td>57 mph</td>
<td>55 mph</td>
<td>10 mph</td>
<td>58 mph</td>
<td>56 mph</td>
</tr>
<tr>
<td>I-295 between US-1/Exit 67 and Exit 69 Southbound</td>
<td>0 mph</td>
<td>66 mph</td>
<td>65 mph</td>
<td>0 mph</td>
<td>67 mph</td>
<td>67 mph</td>
</tr>
<tr>
<td>T-195 between I-295/Exit 60 and Exit 7 Westbound</td>
<td>-10 mph</td>
<td>62 mph</td>
<td>60 mph</td>
<td>10 mph</td>
<td>63 mph</td>
<td>61 mph</td>
</tr>
<tr>
<td>NJ-29 between US-1 (TRENTON) (SOUTH) and I-95 Northbound</td>
<td>2 mph</td>
<td>44 mph</td>
<td>42 mph</td>
<td>11 mph</td>
<td>45 mph</td>
<td>43 mph</td>
</tr>
<tr>
<td>NJ-29 between US-1 (TRENTON) (SOUTH) and I-195/1-295/Exit 60 Northbound</td>
<td>3 mph</td>
<td>55 mph</td>
<td>53 mph</td>
<td>0 mph</td>
<td>55 mph</td>
<td>53 mph</td>
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<tr>
<td>US-1 Southbound between PA-59 State Border and I-95</td>
<td>3 mph</td>
<td>54 mph</td>
<td>53 mph</td>
<td>7 mph</td>
<td>55 mph</td>
<td>54 mph</td>
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<tr>
<td>US-1 between PA-59 State Border and I-295/1-95 Northbound</td>
<td>4 mph</td>
<td>48 mph</td>
<td>46 mph</td>
<td>2 mph</td>
<td>48 mph</td>
<td>46 mph</td>
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<tr>
<td>I-95 between PA-59 State Border and I-295/1-95 Northbound</td>
<td>-5 mph</td>
<td>23 mph</td>
<td>22 mph</td>
<td>0 mph</td>
<td>23 mph</td>
<td>22 mph</td>
</tr>
<tr>
<td>I-295 between US-130/Exit 57 and Exit 60 Northbound</td>
<td>-1 mph</td>
<td>66 mph</td>
<td>65 mph</td>
<td>0 mph</td>
<td>67 mph</td>
<td>66 mph</td>
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### Travel Time US 1/95 (PA) to NJ Exit 7 (NJ)

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 1 (PA) to Exit 7 (NJ) via I-95</td>
<td>-9 mph</td>
<td>62 mph</td>
<td>55 mph</td>
<td>55 mph</td>
<td>75 mph</td>
<td>75 mph</td>
</tr>
<tr>
<td>US 1 (PA) to Exit 7 (NJ) via US 1/NJ 29</td>
<td>17 mph</td>
<td>54 mph</td>
<td>41 mph</td>
<td>11 mph</td>
<td>54 mph</td>
<td>41 mph</td>
</tr>
</tbody>
</table>
### Using the PDA Suite Dashboard (2)

#### PA Turnpike Closure (includes NJ)

<table>
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<tr>
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<th>Historic</th>
<th>Differential</th>
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<th>Historic</th>
</tr>
</thead>
<tbody>
<tr>
<td>US-1 Northbound between 1-276/Pennsylvania Tpke and I-95</td>
<td>-8</td>
<td>39 mph</td>
<td>36 mph</td>
<td>-1</td>
<td>07 min</td>
<td>06 min</td>
</tr>
<tr>
<td>1-95 Northbound between US-1/Exit 46 and PA--NJ State Border</td>
<td>1</td>
<td>55 mph</td>
<td>64 mph</td>
<td>0</td>
<td>05 min</td>
<td>05 min</td>
</tr>
<tr>
<td>I-95 between PA--NJ State Border and I-95/Exit 67 Southbound</td>
<td>0</td>
<td>63 mph</td>
<td>63 mph</td>
<td>1</td>
<td>10 min</td>
<td>09 min</td>
</tr>
<tr>
<td>1-295 between US-1/Exit 67 and Exit 50 Southbound</td>
<td>1</td>
<td>66 mph</td>
<td>65 mph</td>
<td>0</td>
<td>07 min</td>
<td>07 min</td>
</tr>
<tr>
<td>1-95 between 1-295/Exit 60 and Exit 7 Eastbound</td>
<td>10</td>
<td>39 mph</td>
<td>57 mph</td>
<td>3</td>
<td>09 min</td>
<td>06 min</td>
</tr>
<tr>
<td>US-1 Northbound between 1-95 and US-1 (TRENTON) (SOUTH) Southbound</td>
<td>6</td>
<td>89 mph</td>
<td>45 mph</td>
<td>1</td>
<td>06 min</td>
<td>07 min</td>
</tr>
<tr>
<td>N-329 between US-1 (TRENTON) (SOUTH) and I-295/1-95 Exit 68 Southbound</td>
<td>13</td>
<td>39 mph</td>
<td>43 mph</td>
<td>1</td>
<td>09 min</td>
<td>06 min</td>
</tr>
<tr>
<td>US-1 Northbound between I-95 and PA--NJ State Border</td>
<td>7</td>
<td>55 mph</td>
<td>66 mph</td>
<td>0</td>
<td>06 min</td>
<td>06 min</td>
</tr>
<tr>
<td>US-1 between PA--NJ State Border and I-295/1-95 Southbound</td>
<td>9</td>
<td>77 mph</td>
<td>49 mph</td>
<td>0</td>
<td>08 min</td>
<td>08 min</td>
</tr>
<tr>
<td>10N - 413 (PA/NJ) - I-95 to US 130</td>
<td>1</td>
<td>22 mph</td>
<td>24 mph</td>
<td>1</td>
<td>09 min</td>
<td>08 min</td>
</tr>
<tr>
<td>1-295 between Exit 60 and US-130/Exit 57 Southbound</td>
<td>2</td>
<td>77 mph</td>
<td>65 mph</td>
<td>0</td>
<td>02 min</td>
<td>02 min</td>
</tr>
</tbody>
</table>

#### PA Turnpike Closure (includes PA/Glassboro, NJ)

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
</tr>
</thead>
<tbody>
<tr>
<td>US-1 Southbound between 1-95 and I-276/Pennsylvania Tpke</td>
<td>-10</td>
<td>33 mph</td>
<td>36 mph</td>
<td>-23</td>
<td>72 min</td>
<td>72 min</td>
</tr>
<tr>
<td>1-95 Southbound between PA--NJ State Border and US-1/Exit 46</td>
<td>0</td>
<td>65 mph</td>
<td>68 mph</td>
<td>0</td>
<td>05 min</td>
<td>05 min</td>
</tr>
<tr>
<td>I-95 between PA--NJ State Border and US-1/Exit 67 Southbound</td>
<td>2</td>
<td>33 mph</td>
<td>57 mph</td>
<td>10 min</td>
<td>11 min</td>
<td></td>
</tr>
<tr>
<td>1-295 between US-1/Exit 67 and Exit 50 Northbound</td>
<td>0</td>
<td>66 mph</td>
<td>66 mph</td>
<td>0</td>
<td>07 min</td>
<td>07 min</td>
</tr>
<tr>
<td>1-95 between 1-295/Exit 60 and Exit 7 Westbound</td>
<td>10</td>
<td>44 mph</td>
<td>62 mph</td>
<td>9</td>
<td>10 min</td>
<td>07 min</td>
</tr>
<tr>
<td>N-329 between US-1 (TRENTON) (SOUTH) and I-95 Northbound</td>
<td>2</td>
<td>32 mph</td>
<td>44 mph</td>
<td>11 min</td>
<td>08 min</td>
<td></td>
</tr>
<tr>
<td>N-329 between US-1 (TRENTON) (SOUTH) and I-195/I-295/Exit 68 Northbound</td>
<td>3</td>
<td>32 mph</td>
<td>55 mph</td>
<td>0</td>
<td>04 min</td>
<td>04 min</td>
</tr>
<tr>
<td>US-1 Southbound between PA--NJ State Border and I-95</td>
<td>7</td>
<td>81 mph</td>
<td>54 mph</td>
<td>0</td>
<td>07 min</td>
<td>07 min</td>
</tr>
<tr>
<td>US-1 between PA--NJ State Border and I-295/1-95 Southbound</td>
<td>4</td>
<td>52 mph</td>
<td>48 mph</td>
<td>0</td>
<td>07 min</td>
<td>08 min</td>
</tr>
<tr>
<td>10N - 413 (PA/NJ) - US 130 to I-95 (PA)</td>
<td>5</td>
<td>31 mph</td>
<td>23 mph</td>
<td>10 min</td>
<td>07 min</td>
<td></td>
</tr>
<tr>
<td>1-295 between US-130/Exit 57 and Exit 60 Northbound</td>
<td>1</td>
<td>35 mph</td>
<td>65 mph</td>
<td>0</td>
<td>02 min</td>
<td>02 min</td>
</tr>
</tbody>
</table>

#### Travel Time US 1/95 (PA) to Tpke Exit 7 (NJ)

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
<th>Differential</th>
<th>Current</th>
<th>Historic</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 1 (PA) to Exit 7 (NJ) via 95</td>
<td>-9</td>
<td>72 mph</td>
<td>62 mph</td>
<td>-5</td>
<td>55 min</td>
<td>30 min</td>
</tr>
<tr>
<td>US 1 (PA) to Exit 7 (NJ) via US 1/NJ 29</td>
<td>17</td>
<td>97 mph</td>
<td>54 mph</td>
<td>11</td>
<td>32 min</td>
<td>21 min</td>
</tr>
</tbody>
</table>

---

May 11, 2017
Using the PDA Suite Dashboard (3)
TMC operator was alerted by high travel time on Dashboard and found accident at 4:09 PM. Multi-vehicle accident had the right lane blocked for approximately 30 minutes.
Peak Period Summary (1)

**Travel Times into New Jersey**

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>6:00 AM</th>
<th>6:30 AM</th>
<th>7:00 AM</th>
<th>7:30 AM</th>
<th>8:00 AM</th>
<th>8:30 AM</th>
<th>9:00 AM</th>
<th>9:30 AM</th>
<th>10:00 AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 1 NB from PA Turnpike to I-95</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>US 1 NB from I-95 to PA/NJ Border</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>I-95 NB from US 1 to PA/NJ Border</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>10</td>
<td>7</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>PA-413 NB from I-95 and PA/NJ Border</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>14</td>
<td>7</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>US 13 between I-276 and Ben Franklin Blvd Northbound</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

**Travel Times into Pennsylvania**

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>4:00 PM</th>
<th>4:30 PM</th>
<th>5:00 PM</th>
<th>5:30 PM</th>
<th>6:00 PM</th>
<th>6:30 PM</th>
<th>7:00 PM</th>
<th>7:30 PM</th>
<th>8:00 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 1 NB from PA Turnpike to I-95</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>US 1 NB from I-95 to PA/NJ Border</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>I-95 SB from PA/NJ Border to US 1</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>PA-413 NB from PA/NJ Border and I-95</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>US 13 between I-276 and Ben Franklin Blvd Northbound</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

**Notes:**
- Current and historical travel times from VPP Suite Dashboard.
- * in minutes.

May 11, 2017
TMC operator was alerted by high travel time on Dashboard and found accident at 7:29 AM. Multi-vehicle accident had the right lane blocked for approximately 35 minutes.

Peak Period Summary (2)
Dashboard Benefits to PennDOT

• Data helped **quantify the effects** of the PA Turnpike closure and **confirm Traffic Management Plan**.

• Data used to **mitigate effects** of the PA Turnpike closure.

• Several **incidents were identified** by noticing significant spikes in travel time.

• **Identified increase in travel time** on PA-413 which initiated signal timing changes.

• Used to **monitor the effect of signal timing changes** on PA-413.
Regional Traffic Management Overview (1)

AM Peak Period 8:30 AM

Monday Before Turnpike Closure
First Monday of Turnpike Closure
First Thursday of Turnpike Closure
Regional Traffic Management Overview (2)

AM Peak Period 8:30 AM

- Monday Before Turnpike Closure
- First Monday of Turnpike Closure
- First Thursday of Turnpike Closure

May 11, 2017
Regional Traffic Management Overview (3)

PM Peak Period 5:45 PM

Monday Before Turnpike Closure
First Monday of Turnpike Closure
First Thursday of Turnpike Closure

May 11, 2017
Regional Traffic Management Overview (4)

PM Peak Period 5:45 PM

Monday Before Turnpike Closure  
First Monday of Turnpike Closure  
First Thursday of Turnpike Closure
Overall Benefits

• Provided data for Multi-Jurisdictional Management Plan.
• Dashboard data helped quantify effects of the Turnpike closure on neighboring roadways.
• Helped to monitor and mitigate delays by:
  › Retiming traffic signals (~ 20% reduction in travel time)
  › Identifying incidents on roadways
• US-1 SPV to start May 2018
• Dashboard Tool used to monitor
  › Major Events (Papal Visit, DNC)
  › Work Zones
• Crews realigned the bisected segment by erecting eight temporary towers and hydraulic jacks to return the span to its original position, then constructed a permanent splice.

• The bridge was reopened on Thursday March 9, 2017 at 10:56 PM.
Thanks!

For More Information...

Ted Lucas

c-telucas@pa.gov

(215) 906-3399
Free Video Tutorials

Using NPMRDS and MAP-21 Analytics

Transportation Project Prioritization

Trend Map Incident Evaluation

https://vimeo.com/208589756
https://vimeo.com/179829037
https://vimeo.com/192022736
Other Free Video Tutorials Available

- EQT Event Query Tool
  - Using the Event Query Tool (Maps, Tables & Graphs)

- Detector Explorer
  - Using Traffic Sensor Analytics

- ICE
  - ATMS Data Analytics using ICE

- Work Zone Performance Monitoring Application Overview

(https://vimeo.com/user55759816/videos; new videos added regularly)
Instant Poll

4. What other **video tutorials** would you like to see in the future? (select all that apply)

- Tool “how-to’s”
- “Tool tips” (on more subtle features)
- Using the tools for a specific purpose
- Something else
Focus Group

Inaugural Meeting

Date TBD  •  Time TBD
Technology Ventures Building  •  University of Maryland
Assembled Focus Group members (agencies / CATT Lab)

Selecting a date / time to meet at the Lab

Spend the good part of the day brainstorming use cases, desired features and functions and reviewing concepts to date

Will share results at an upcoming User Group meeting

(Note: O-D data will require purchase from a vendor, and tools may be independent of the PDA Suite.)
# Origin and Destination Matrix

## Selected date range
- June and July 2015 and March 2016
- All Days of Week

### Legend
- 0% of Trips
- 10%+ of Trips

### Matrix Overview

<table>
<thead>
<tr>
<th>Origins</th>
<th>Frederick County</th>
<th>Howard County</th>
<th>Baltimore County</th>
<th>Montgomery County</th>
<th>Total trips from selected geographies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryland</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maryland</td>
<td>Frederick County</td>
<td>Howard County</td>
<td>Baltimore County</td>
<td>Montgomery County</td>
<td></td>
</tr>
<tr>
<td>Frederick County</td>
<td>6%</td>
<td>6%</td>
<td>5%</td>
<td>4%</td>
<td>20%</td>
</tr>
<tr>
<td>Howard County</td>
<td>4%</td>
<td>8%</td>
<td>3%</td>
<td>7%</td>
<td>22%</td>
</tr>
<tr>
<td>Baltimore County</td>
<td>7%</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
<td>25%</td>
</tr>
<tr>
<td>Montgomery County</td>
<td>7%</td>
<td>12%</td>
<td>5%</td>
<td>10%</td>
<td>33%</td>
</tr>
<tr>
<td>Total trips into selected geographies</td>
<td>24%</td>
<td>29%</td>
<td>19%</td>
<td>29%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Conceptual, subject to change
Origin and Destination Matrix

- Selected date range: June and July 2015 and March 2016
  All Days of Week

Legend:
- 0% of Trips
- 2%
- 4%
- 6%
- 8%
- 100% of Trips

Conceptual, subject to change
Set Up Your Origin and Destination Matrix

Select geography from map

From state
Maryland

Road class
All

Use the controls on the map to define your geography. Controls with a '+' allow you to add TMCs while controls with a '-' allow you to remove TMCs from your selection.

Selected geography

- Geography 1
- Geography 2

Conceptual, subject to change
Conceptual, subject to change
Trips that traveled on the selected road segments
I-270 Southbound between Sam Elg Hwy and Montrose Rd

Geographic resolution
Sub-county

Show the:
- Origins of trips passing through the selected road segment
- Destinations of trips passing through the selected road segment
- Net totals of origins and destinations trips travelling through the selected road segment
- Routes

Data appearance
- Use the maps geometry
- Use simplified shapes
- Show values on map

Number of trip origins

Selected road segment

View Matrix
Trips that traveled on the selected road segment

1-270 Southbound between Sam Eg Hay and Montrose Rd

Geographic resolution

Show the...
- Origins of trips passing through the selected road segment
- Destinations of trips passing through the selected road segment
- Not totals of trips traveling through the selected road segment
- Routes

Number of trip destinations

Date range - July 2015

Time of day
12 AM - 12PM

Days of week
- Sun
- Mon
- Tue
- Wed
- Thu
- Fri
- Sat
Instant Poll

5 If you were to acquire O-D data, what would be your most likely use(s)? (select all that apply)

- Modeling (calibration / validation)
- Mapping / Graphics
- Studies (e.g. - Traffic Impact Studies)
- Project / Program Development & Assessment
- Reports / communication with various audiences
- I don’t use O-D data
Agency Input Session

“What’s on your mind?”
Wrap Up

Marygrace Parker, I-95 Corridor Coalition

• Thanks!
• Next meeting
• Contact information
Next Meeting

Thursday, August 10, 2017
10:30 am to Noon
Thank You!

For Questions, please contact:

**PDA Suite** – Denise Markow 301.789.9088 or dmarkow@i95coalition.org

**PDA Suite Technical Support** – vpp-support@ritis.org or John Allen (jallen35@umd.edu)

**Logistics** – Joanna Reagle 610.228.0760 or jreagle@kmjinc.com