Webcast and Audio Information

- The call-in phone number is:
  
  719-867-1571 & enter 725437# at the prompt

- Due to the number persons participating in the meeting, we will be muting participant lines as you enter until the Agency Input Session.

- Please call 609-970-2584 for difficulties with the web or audio application

- Please press *0 to speak to an operator for questions regarding audio

- This web meeting is being recorded

- All materials will be available to participants after the web meeting
Asking Questions

While muted...

- Please pose your questions using the chat box
- Questions will be monitored then answered by the speakers at the end of the webinar
Welcome

Co-chair
Jesse Buerk, DVRPC
User Group Co-chair
## Participating Agencies

<table>
<thead>
<tr>
<th>Agency</th>
<th>Agency</th>
<th>Agency</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anne Arundel County office of Transportation</td>
<td>CORE MPO</td>
<td>Loudoun County Government Mapping</td>
<td>New Hampshire DOT</td>
</tr>
<tr>
<td>Baltimore Metropolitan Council</td>
<td>DCHC MPO</td>
<td>Maine DOT</td>
<td>New Jersey DOT</td>
</tr>
<tr>
<td>Central Shenandoah Planning District Commission</td>
<td>Delaware Valley Regional Planning Commission</td>
<td>Manatee County - Public Works Dept &amp; Government</td>
<td>New Jersey Institute of Technology</td>
</tr>
<tr>
<td>Charles County Sheriff’s Office</td>
<td>District DOT</td>
<td>Maryland DOT/SHA</td>
<td>New York State DOT</td>
</tr>
<tr>
<td>Chittenden County, Vermont</td>
<td>FHWA</td>
<td>Maryland Transportation Authority</td>
<td>NJTPA</td>
</tr>
<tr>
<td>City of Alpharetta</td>
<td>Florida DOT</td>
<td>MetroCOG</td>
<td>North Carolina DOT</td>
</tr>
<tr>
<td>City of Arlington</td>
<td>Florida Turnpike Enterprise</td>
<td>MetroPlan Orlando</td>
<td>Northern Virginia Transportation Authority</td>
</tr>
<tr>
<td>City of Boca Raton</td>
<td>Gainesville Hall MPO</td>
<td>Miami Dade County</td>
<td>Pennsylvania Turnpike Commission</td>
</tr>
<tr>
<td>City of Charlotte (NC)</td>
<td>Georgia DOT</td>
<td>Missouri DOT</td>
<td>Pennsylvania DOT</td>
</tr>
<tr>
<td>City of Philadelphia</td>
<td>I-81 Corridor Coalition</td>
<td>Montgomery County OEM (MD)</td>
<td>Pennsylvania State Police</td>
</tr>
<tr>
<td>City of Tallahassee (FL)</td>
<td>I-95 Corridor Coalition</td>
<td>Montgomery County Planning Commission (PA)</td>
<td>Pinellas County</td>
</tr>
<tr>
<td>Connecticut DOT</td>
<td>INRIX</td>
<td>Metropolitan Washington Council of Governments</td>
<td>Prince George’s County OEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Topics for today

› Coalition Update
› Spotlight Presentation from PennDOT on Signalized Corridor Performance Measures in the PDA Suite
› Spotlight Presentation on WAZE Probe Data Analysis for Coalition States
› Description of new features and other recent updates
› Introduction of new States participating in RITIS and the PDA Suite
› New Feature Development Roadmap update
› Agency Feedback Session
› New on-site Training Opportunities
› Wrap-up / Next Meeting

July 19, 2018
Introductions

Denise Markow, PE
I-95 Corridor Coalition Director

Michael Pack
UMD CATT Lab Director

Daniel Farley
PennDOT Section Chief, Traffic Operations Deployment & Maintenance Section

Mark Franz, PhD
UMD CATT Lab Lead Transportation Analyst
Coalition Update

Denise Markow, PE
I-95 Corridor Coalition
Director
Coalition Quarterly Update – Recent Meetings

✓ Probe Data Analytics Suite User Group Meeting – March 8, 2018
✓ TSMO Summit – March 14, 2018
✓ Travel Information Services Committee Meeting – March 15, 2018
✓ Intermodal/Freight Committee Web Meeting – March 21, 2018
✓ I-95 CC Steering Committee Web Meeting – March 12, 2018
✓ Work Zone Webinar – April 19, 2018
✓ Computer Aided Dispatch Data Integration Workshop – April 23-24, 2018
✓ CAV - Moving Forward along the East Coast Webinar – May 15, 2018
✓ Webinar on Accurate Estimates of Traffic Volume Anywhere, Anytime - from GPS Probe Samples – May 23, 2018
✓ Integration of Maine Tow Operators into Maine Incident Management Workshop – June 8, 2018
✓ Bi Annual Validation Meeting – June 18, 2018
✓ Shared Transportation Services - Leveraging GTFS with Regional Partners Webinar – June 20, 2018
Coalition Quarterly Update
July-August-September Upcoming Meetings

• Volume and Turning Movement Webinars
  • Georgia – July 2, 2018
  • Florida – July 9, 2018
  • New Hampshire – August 8, 2018
  • Volume and Turning Movement Steering Committee – August 16, 2018

• TSMO Dashboard Webinar
  Building TSMO Performance Measures – August 30, 2018
  Internal Performance Reporting & Public Dashboard Consumption

• Summit on Traveler Info Strategies during Emergency Operations
  • Getting the Word Out to the Public – September 13, 2018

• Connected Vehicle Webinar: Member State Roadmap Showcase – September 2018
Enabling Signalized Arterial Performance Measures Comparisons

Dan Farley
Section Chief
Traffic Operations Deployment and Maintenance
PennDOT’s investment in the Probe Data Analytics Suite to enable Signalized Arterial Performance Measures Comparisons

I-95 Corridor Coalition Traffic Signal and Arterial Performance Metric Webinar

July 19, 2018
PennDOT
• 11,500 – Employees
• 11 – Engineering Districts
• 4 – Regional TMC’s
• 52,000+ Events in 2016
• 1,700+ ITS Devices
Current Traffic Signal Ownership in Pennsylvania

- 13,581 traffic signals in Pennsylvania
- 1,153 municipal traffic signal owners

Traffic Signal Breakdown

75% of municipalities own under 10 traffic signals
80%+ of signals are maintained by contractors
10,500 (77%) traffic signals are on state highways
Travel Time Comparison Tool
Cumulative Frequency Diagram (CFD)

Northbound US 31 in Kokomo

Timing Plan 0  Timing Plan 1  Timing Plan 2  Timing Plan 3  Timing Plan 4  Timing Plan 5  Timing Plan 0

Before Retiming

Travel Time (min.)
Cumulative Frequency

Travel Time (min.)
Frequency
Cumulative Frequency

July 19, 2018
I-95 Corridor Coalition › RITIS & PDA Suite User Group
Arterial Ranking Tool

Travel Time Normalization

Median travel time and speed limit travel time on Newtown Bypass (shown in black) and US-1 (shown in red) for the study period 12/5/2016 to 12/10/2016

Normalized TT = \frac{\text{Median TT}}{\text{Speed limit TT}}
3 Congestion Ticker
4 Benefit Evaluation

Case Study: US 1/State Rd/Township Line Rd/City Ave

Volume

\[ \text{vol}_i = AADT_i * k_i * d \]

Change in median TT

\[ \Delta T_{T_i} = T_{T_{\text{before},i}} - T_{T_{\text{after},i}} \]

User benefits (cars)

\[ \text{user}_{\text{car},i} = \text{vol}_i * \Delta T_{T_i} * \%C_i * PPV_c * VOT_c \]

User benefits (trucks)

\[ \text{user}_{\text{truck},i} = \text{vol}_i * \Delta T_{T_i} * \%T_i * PPV_t * VOT_t \]

Maintenance activities in “after” period

Over $30M in annualized user benefits
Enabling Access, Scalability, and Usability

• PennDOT desired to integrate the Purdue work into the Probe Data Analytics Suite for many reasons including:
  • Scalability
  • Usability
  • “known” platform
  • Easier access
  • Etc.

• Contracted with the CATT Lab and Purdue to enhance the PDA Suite

• The following slides showcase this ongoing effort.
### Travel Time Delta Ranking

<table>
<thead>
<tr>
<th>Rank</th>
<th>Rank</th>
<th>Corridors</th>
<th>Direction</th>
<th>TTDL</th>
<th>Median Before</th>
<th>Median After</th>
<th>IQR Before</th>
<th>IQR After</th>
<th>IQR Delta</th>
<th>Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>US 1 - State Rd - Twin Line Rd - City Ave</td>
<td>W</td>
<td>16.4</td>
<td>144%</td>
<td>123%</td>
<td>97%</td>
<td>54%</td>
<td>-43</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>US 1 - State Rd - Twin Line Rd - City Ave</td>
<td>E</td>
<td>16.3</td>
<td>122%</td>
<td>157%</td>
<td>37%</td>
<td>21%</td>
<td>-16</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>US 262 - Osbalt Pk</td>
<td>N</td>
<td>10.8</td>
<td>120%</td>
<td>120%</td>
<td>24%</td>
<td>15%</td>
<td>-9</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>US 30 - Lancaster Ave</td>
<td>W</td>
<td>16.4</td>
<td>125%</td>
<td>119%</td>
<td>64%</td>
<td>70%</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>US 262 - Osbalt Pk</td>
<td>S</td>
<td>10.5</td>
<td>117%</td>
<td>113%</td>
<td>24%</td>
<td>12%</td>
<td>-12</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>US 30 - Lancaster Ave</td>
<td>E</td>
<td>16.4</td>
<td>156%</td>
<td>162%</td>
<td>60%</td>
<td>53%</td>
<td>-7</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>US 262 Parkway - Welsh Rd to PA 313</td>
<td>W</td>
<td>15.4</td>
<td>113%</td>
<td>120%</td>
<td>6%</td>
<td>47%</td>
<td>41</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>US 262 Parkway - Welsh Rd to PA 313</td>
<td>E</td>
<td>15.8</td>
<td>145%</td>
<td>167%</td>
<td>70%</td>
<td>81%</td>
<td>11</td>
<td>2</td>
</tr>
</tbody>
</table>
### Travel Time Delta Ranking

<table>
<thead>
<tr>
<th>Rank</th>
<th>Map</th>
<th>Corridors</th>
<th>Direction</th>
<th>TTDL</th>
<th>Median Before</th>
<th>Median After</th>
<th>Delta Median</th>
<th>IQR Before</th>
<th>IQR After</th>
<th>Delta IQR</th>
<th>Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✅</td>
<td>US 1 - State Rd - Tap line Rd - City Ave</td>
<td>W</td>
<td>16.4</td>
<td>144%</td>
<td>123%</td>
<td>-21%</td>
<td>97%</td>
<td>54%</td>
<td>-43%</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>US 1 - State Rd - Tap line Rd - City Ave</td>
<td>E</td>
<td>16.3</td>
<td>172%</td>
<td>157%</td>
<td>-15%</td>
<td>37%</td>
<td>21%</td>
<td>-18%</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>US 222 - Dekalb Pk</td>
<td>N</td>
<td>10.5</td>
<td>125%</td>
<td>132%</td>
<td>-7%</td>
<td>24%</td>
<td>15%</td>
<td>-7%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>US 38 - Lancaster Ave</td>
<td>W</td>
<td>16.4</td>
<td>125%</td>
<td>116%</td>
<td>-9%</td>
<td>64%</td>
<td>78%</td>
<td>14%</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>US 222 - Dekalb Pk</td>
<td>S</td>
<td>10.5</td>
<td>117%</td>
<td>113%</td>
<td>-4%</td>
<td>24%</td>
<td>12%</td>
<td>-12%</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>US 38 - Lancaster Ave</td>
<td>E</td>
<td>16.4</td>
<td>156%</td>
<td>162%</td>
<td>6%</td>
<td>60%</td>
<td>53%</td>
<td>-7%</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>US 222 Parkwy - Walsh Rd to PA 313</td>
<td>W</td>
<td>15.4</td>
<td>113%</td>
<td>126%</td>
<td>13%</td>
<td>6%</td>
<td>47%</td>
<td>41%</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>US 222 Parkwy - Walsh Rd to PA 313</td>
<td>E</td>
<td>15.8</td>
<td>145%</td>
<td>167%</td>
<td>22%</td>
<td>70%</td>
<td>81%</td>
<td>11%</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Delta Chart
- **Trending Worse**
- **Trending Better**

#### Map
- **Thombury Township**
- **Other Townships**

---

**July 19, 2018**
Next Steps

• CATT Lab is actively archiving XD INRIX data
• Integrating XD functionality into existing PDA Tools
• User Interface Design is complete (the slides you just saw)
• Timeline for Deployment
  • End of September, 2018 (dependent on ongoing XD integration work)
• Requirements for use by other states: RITIS + PDA + XD Integration
• Turn this collaboration into a model for other states, R&D groups, etc. to pool funds for the greater good of all states
Questions?

Daniel P. Farley
Section Chief
Traffic Operations Deployment and Maintenance

dfarley@pa.gov
717-783-0333
Waze Integration & Analysis
Dr. Mark Franz
Presentation Agenda

• Motivation and Objectives
• Waze Data Background
• Waze Data Challenges
• Waze Data Assessment
• Recommendations
Motivation

• Crowd-sourced data has potential to improve situational awareness and traffic incident management (TIM)

• Limited studies on utilizing this emerging data
  • Most DOTs filter out the following:
    Police activities, cars stopped on shoulders, road closure reports and reports with reliability < 5
  • Most DOTs consolidate duplicates – no specific rules discussed
Objectives

1. Understand Waze Data
   - A. Review Existing Waze Studies
   - B. Select Data Attributes of Interest

2. Investigate Benefits of Waze
   - A. Measure Differences in Event Detection Time
   - B. Assess Enhanced Network Monitoring Potential

3. Share Best Practices for Integrating Waze Data
   - A. Determine Level of Clustering and Filtering
# Waze Data Background

Note:
- Waze data excludes jams event type
- 3 Month Period of 3/17 – 5/17 displayed

## Weather/Hazard (88%)
- Construction (12%)
- Pot Hole (5%)
- Car on Shoulder (52%)
- Car Stopped on Road (4%)
- Object in Road (4%)
- Fog (1%)
- Animals on Shoulder (1%)
- Road Kill (1%)
- Hazard on Shoulder (1%)

## Accidents (10%)
- Major (2%)
- Minor (3%)

## Road Closed (2%)
- Road Closed Event (1%)

---

### Waze Events by Road Type

- **Primary Streets**: 14%
- **Streets**: 3%
- **Ramps**: 6%
- **Freeways**: 60%
- **Secondary Streets**: 8%
- **Primary Streets**: 4%

Note:
- (Graph details and categories not fully transcribed due to image quality limitations)
Waze Data Challenges

### Data Quality Considerations:
- Redundancy
- Reliability

#### Note:
- Waze data excludes jams event type
- 3 Month Period of 3/17 – 5/17 displayed

<table>
<thead>
<tr>
<th>State</th>
<th>Avg Waze Events Per Day</th>
<th>Avg DOT Events Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>28,389</td>
<td>3,184</td>
</tr>
<tr>
<td>DC</td>
<td>777</td>
<td>16</td>
</tr>
<tr>
<td>FL</td>
<td>17,210</td>
<td>1,895</td>
</tr>
<tr>
<td>IA</td>
<td>810</td>
<td>114</td>
</tr>
<tr>
<td>MA</td>
<td>5,613</td>
<td>14</td>
</tr>
<tr>
<td>PA</td>
<td>9,171</td>
<td>70</td>
</tr>
<tr>
<td>VA</td>
<td>9,168</td>
<td>681</td>
</tr>
</tbody>
</table>
Two event types: Crashes and disabled vehicle events.
Two road types: Freeways/ramps and primary/secondary roads.

1. Freeway/Ramp Crashes
2. Freeway/Ramp Disabled Vehicles
3. Primary/Secondary Crashes
4. Primary/Secondary Disabled Vehicles
Waze Data Assessment: Methodology

Data Needs

- Waze Data
- DOT Event Data

Data Processing

- DOT-Waze Matching
- Waze Event Clustering

Data Analysis

- Waze-DOT Matched Events
  - Detection Time Analysis
- Unmatched Waze Events
  - Increased Situation Awareness/Coverage Analysis
## Matching and Clustering Procedure

<table>
<thead>
<tr>
<th>Step 1: Established initial search parameters</th>
<th>Step 1: Established initial search parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2: Created rules to match DOT events to Waze events</td>
<td>Step 2: Created rules to cluster Waze events</td>
</tr>
<tr>
<td>Step 3: Analyzed matching distributions to refine thresholds</td>
<td>Step 3: Analyzed clustering distributions to refine thresholds</td>
</tr>
</tbody>
</table>

### Temporal Matching Threshold
- Time is limited ± X minutes
- Identified 4 Waze events within ± X minutes of the DOT event

### Spatial Matching Threshold
- Distance is limited to ± Y miles
- Determined that 3 of the Waze events were within ± Y miles of the DOT event

### Road Matching Rules
- Apply Final Road Matching Criteria
- Determined that 1 of the Waze events was on the correct road and direction of travel

### Analysis Scenario

<table>
<thead>
<tr>
<th>Analysis Scenario</th>
<th>Matching Refined Thresholds</th>
<th>Clustering Refined Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X (Minutes)</td>
<td>Y (Miles)</td>
</tr>
<tr>
<td>Freeway/Ramps Crashes</td>
<td>10</td>
<td>0.37</td>
</tr>
<tr>
<td>Freeway/Ramps DV</td>
<td>30</td>
<td>0.44</td>
</tr>
<tr>
<td>Primary/Secondary Crashes</td>
<td>10</td>
<td>0.19</td>
</tr>
<tr>
<td>Primary/Secondary DV</td>
<td>30</td>
<td>0.37</td>
</tr>
</tbody>
</table>
# Analysis Summary: Matching & Detection Time

<table>
<thead>
<tr>
<th>Type of Event</th>
<th>% DOT Matched to Waze</th>
<th>Average Time that a Waze Event was Reported Before a DOT Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeways/Ramps Crashes</td>
<td>40%</td>
<td>3 Minutes</td>
</tr>
<tr>
<td>Primary/Secondary Crashes</td>
<td>12%</td>
<td>3 Minutes</td>
</tr>
<tr>
<td>Freeways/Ramps Disabled Vehicles</td>
<td>37%</td>
<td>14 Minutes</td>
</tr>
<tr>
<td>Primary/Secondary Disabled Vehicles</td>
<td>4%</td>
<td>16 Minutes</td>
</tr>
</tbody>
</table>
Waze Data Assessment: Clustering Results

Crash Results on Freeways/Ramps

<table>
<thead>
<tr>
<th>Type of Event</th>
<th>Percent Reduction in Events Due to Clustering</th>
<th>Percent Reduction Attributable to Duplication in DOT Sharing Data with Waze</th>
<th>Percent Reduction in Events Due to Clustering (including adjustments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA Crashes</td>
<td>8.6%</td>
<td>0.8%</td>
<td>7.8%</td>
</tr>
<tr>
<td>FL Crashes</td>
<td>16.6%</td>
<td>7.4%</td>
<td>9.2%</td>
</tr>
<tr>
<td>CA Crashes</td>
<td>19.8%</td>
<td>7.8%</td>
<td>12.0%</td>
</tr>
</tbody>
</table>

- **VA**: 585 additional unique events per day
- **FL**: 1,528 additional unique events per day
- **CA**: 2,294 additional unique events per day

The additional unique Waze events are events that have been clustered and were not matched to DOT events.
Analysis Summary: Enhanced Network Monitoring

<table>
<thead>
<tr>
<th></th>
<th>Virginia</th>
<th>Florida</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing VDOT</td>
<td>178</td>
<td>408</td>
<td>1,477</td>
</tr>
<tr>
<td>Crash / Disabled Vehicle Events</td>
<td>4,349</td>
<td>9,358</td>
<td>2,294</td>
</tr>
<tr>
<td>Additional Unique VA Waze Crash / Disabled Vehicle Events</td>
<td>-</td>
<td>2,763</td>
<td>1,182</td>
</tr>
<tr>
<td>Existing FDOT Crash / Disabled Vehicle Events</td>
<td>-</td>
<td>12,121</td>
<td>3,476</td>
</tr>
<tr>
<td>Additional Unique FL Waze Crash / Disabled Vehicle Events</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Combined Total</td>
<td>222</td>
<td>408</td>
<td>1,477</td>
</tr>
<tr>
<td>Freeways/Ramps</td>
<td>5,755</td>
<td>1,406</td>
<td>2,294</td>
</tr>
<tr>
<td>Primary/Secondary</td>
<td>44</td>
<td>-</td>
<td>1,182</td>
</tr>
<tr>
<td>Combined Total</td>
<td>222</td>
<td>408</td>
<td>1,477</td>
</tr>
</tbody>
</table>

- ~26X more events/day
- ~30X more events/day
- ~3X more events/day (no disabled vehicles)
Next Steps

National Waze Data-Feed

Waze Event Query Tool
Thank you!

Mark L. Franz, Ph.D.
Lead Transportation Analyst
CATT Laboratory
mfranz1@umd.edu
Poll Question #1

1. Is your agency using Waze data?

___ Yes
___ No
___ Not Sure
What’s New
RITIS Recent Deployments

• CCTV Player Modernization
• New Tiling Infrastructure
• Enhanced performance of Work Zone Application
• Added PA Turnpike Incident Data
• GDOT CCTV Feeds
• Numerous Bug Fixes related to:
  • Chat rooms
  • Media Uploads
  • API Key requests
Significant documentation updates
Segment positioning at zoom levels
Night-mode for Region Explorer
Dashboard formatting
Tiling/Mapping modernization
Probe Data Analytics Recent Deployments (cont.)

- Trend map performance enhancements
- Road search bug fixes
- MAP-21/PM3 screencasts and tutorials
- PM3 finalization (significant)
- Integrated state speed limits, vehicle occupancy, etc.
- Massive Data Downloaded bug fixes
- Ability to archived XD data
Planned Work & Work in Progress

• RITIS
  • Flash Conversion
    • Event Query Tool
    • Detector Query Tool
  • General UI Improvements
  • Transit Analytics
  • WZPMA Improvements
  • Origin-Destination Analytics
    • Route analytics
    • Chord Diagrams
    • More

• PDA
  • XD visualizations
  • Flash Conversion
    • Congestion Scan Modernization
    • Region Explorer Modernization
    • Bottleneck Ranking Modernization
  • Signalized Arterial PMs
  • Mid-block travel time analysis
  • Advanced intersection analytics
  • New Performance Widgets
Developing a “traditional” OD Matrix

<table>
<thead>
<tr>
<th>DATA SETS</th>
<th>DATA PROVIDER</th>
<th>DATE RANGE</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryland Data Set</td>
<td>INRIX</td>
<td>February, June, July, October 2015</td>
<td>Temporal Data Granularity: 1 Second&lt;br&gt;Vehicle Types Included: Cars and Trucks (separated or aggregated)&lt;br&gt;Waypoints Included: Yes</td>
</tr>
<tr>
<td>Washington DC Metropolitan Statistical Area Data Set</td>
<td>INRIX</td>
<td>February, June, July, October 2015</td>
<td>Temporal Data Granularity: 1 Second&lt;br&gt;Latitude,Longitude&lt;br&gt;Cars and Trucks (separated or aggregated)&lt;br&gt;Waypoints Included: Yes</td>
</tr>
<tr>
<td>Washington DC Data Set</td>
<td>INRIX</td>
<td>January, February, March, April, May, June, July, August, September, October, November, December 2015</td>
<td>Temporal Data Granularity: 1 Second&lt;br&gt;Latitude,Longitude&lt;br&gt;Cars and Trucks (separated or aggregated)&lt;br&gt;Waypoints Included: Yes</td>
</tr>
</tbody>
</table>
### Developing a “pass through” trip map visualization

#### INRIX Trajectory Analytics

**Welcome to the OD Data Suite**

Please choose one of the available data sets to explore:

<table>
<thead>
<tr>
<th>DATA SETS</th>
<th>DATA PROVIDER</th>
<th>DATE RANGE</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryland Data Set</td>
<td>INRIX</td>
<td>February, June, July, October 2015</td>
<td>Temporal Data Granularity: 1 Second&lt;br&gt;Latitude/Longitude&lt;br&gt;Cars and Trucks (separated or aggregated): Yes</td>
</tr>
<tr>
<td>Washington DC Metropolitan Statistical Area Data Set</td>
<td>INRIX</td>
<td>February, June, July, October 2015</td>
<td>Temporal Data Granularity: 1 Second&lt;br&gt;Latitude/Longitude&lt;br&gt;Cars and Trucks (separated or aggregated): Yes</td>
</tr>
<tr>
<td>Washington DC Data Set</td>
<td>INRIX</td>
<td>January, February, March, April, May, June, July, August, September, October, November, December 2015</td>
<td>Temporal Data Granularity: 1 Second&lt;br&gt;Latitude/Longitude&lt;br&gt;Cars and Trucks (separated or aggregated): Yes</td>
</tr>
</tbody>
</table>
Chord Diagrams

**Top Ten OD Pairs**

1. Montgomery, Maryland → Montgomery, Maryland 11.83%
2. Prince Georges, Maryland → Prince Georges, Maryland 10.38%
3. Baltimore, Maryland → Baltimore, Maryland 10.27%
4. Anne Arundel, Maryland → Anne Arundel, Maryland 7.09%
5. Baltimore City, Maryland → Baltimore City, Maryland 7.86%
6. Howard, Maryland → Howard, Maryland 4.28%
7. Frederick, Maryland → Frederick, Maryland 3.38%
8. Harford, Maryland → Harford, Maryland 3.06%
9. Washington, Maryland → Washington, Maryland 2.45%
10. Baltimore, Maryland → Baltimore City, Maryland 2.06%
National Travel Maps

Top N OD Locations Dashboard

Map View Scaled by Relative Ranking

Bar View Scaled by Magnitude of Trips

I-95 Corridor Coalition › RITIS & PDA Suite User Group

July 19, 2018
Ranked intersection movements in the 10011 zip code for the date range of 05/06/18 through 05/12/18

<table>
<thead>
<tr>
<th>Rank</th>
<th>Map</th>
<th>Intersection</th>
<th>Approach</th>
<th>Movement</th>
<th>Volume</th>
<th>User Delay Cost</th>
<th>Average Travel Time</th>
<th>25th Percentile</th>
<th>75th Percentile</th>
<th>5th Percentile</th>
<th>95th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>8th Ave at W 23rd St</td>
<td>Northbound</td>
<td>Left</td>
<td>486</td>
<td>$4,235.00</td>
<td>5.5 mins</td>
<td>2.5 mins</td>
<td>7.2 mins</td>
<td>1.5 mins</td>
<td>7.5 mins</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>W 30th St at 8th Ave</td>
<td>Eastbound</td>
<td>Through</td>
<td>781</td>
<td>$4,194.00</td>
<td>5.2 mins</td>
<td>2.1 mins</td>
<td>7.9 mins</td>
<td>1.4 mins</td>
<td>7.1 mins</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>W 10th St at 9th Ave</td>
<td>Westbound</td>
<td>Left</td>
<td>904</td>
<td>$4,895.00</td>
<td>5.0 mins</td>
<td>3.1 mins</td>
<td>8.8 mins</td>
<td>1.4 mins</td>
<td>9.9 mins</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>W 23rd St at 8th Ave</td>
<td>Eastbound</td>
<td>Through</td>
<td>210</td>
<td>$2,205.00</td>
<td>4.9 mins</td>
<td>1.7 mins</td>
<td>7.1 mins</td>
<td>1.2 mins</td>
<td>7.2 mins</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>W 30th St at 8th Ave</td>
<td>Westbound</td>
<td>Left</td>
<td>904</td>
<td>$3,204.00</td>
<td>4.7 mins</td>
<td>1.8 mins</td>
<td>6.0 mins</td>
<td>1.3 mins</td>
<td>6.8 mins</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>7th Ave at W 17th St</td>
<td>Southbound</td>
<td>Through</td>
<td>159</td>
<td>$2,387.00</td>
<td>4.7 mins</td>
<td>1.5 mins</td>
<td>6.3 mins</td>
<td>1.2 mins</td>
<td>6.6 mins</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>W 10th St at 11th Ave</td>
<td>Westbound</td>
<td>Left</td>
<td>263</td>
<td>$2,015.00</td>
<td>4.5 mins</td>
<td>1.4 mins</td>
<td>5.0 mins</td>
<td>1.1 mins</td>
<td>5.5 mins</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>W 10th St at 8th Ave</td>
<td>Westbound</td>
<td>Right</td>
<td>166</td>
<td>$1,420.00</td>
<td>4.4 mins</td>
<td>0.8 mins</td>
<td>5.6 mins</td>
<td>0.6 mins</td>
<td>5.2 mins</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>W 14th St at 7th Ave</td>
<td>Eastbound</td>
<td>Through</td>
<td>216</td>
<td>$1,543.00</td>
<td>4.3 mins</td>
<td>1.5 mins</td>
<td>5.6 mins</td>
<td>1.0 mins</td>
<td>5.0 mins</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>W 21st St at 11th Ave</td>
<td>Eastbound</td>
<td>Left</td>
<td>188</td>
<td>$1,294.00</td>
<td>4.0 mins</td>
<td>0.7 mins</td>
<td>5.5 mins</td>
<td>0.8 mins</td>
<td>5.0 mins</td>
</tr>
</tbody>
</table>

Map of 8th Ave at W 23rd St and 8th Ave and W 23rd St with travel times indicated.
New Agencies Participating in RITIS

- Illinois
- Missouri
- Austin, TX
- Louisiana (coming soon)
Agency Input Session

“What’s on your mind?”
Asking Questions during the Agency Input Session

- When the phone lines are opened...
  - **Please mute your phone line** until you are asking a question (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
  - Please state your name and agency before asking a question
Denise Markow, I-95 Corridor Coalition
Use of Crowdsourcing to Advance Operations
Every Day Counts (EDC)-5 (2019-2020)

Crowdsourcing turns transportation system users into sensors on system performance, providing real-time, high-quality data on traffic operations, conditions, and driver behavior.
Crowdsourcing Initiative: EDC-5

• Focusing on traffic operations uses:
  • Early notification of incidents
  • Real-time traffic monitoring (situational awareness)
  • Traveler information
  • Active traffic management
  • Others

• Benefits include:
  • **Increased safety** through quicker and improved responses to congestion events.
  • **Improved operations** through better traffic management and more accurate traveler information.
  • **Cost savings** through reduced need for sensors and associated maintenance costs.
Crowdsourcing Initiative: EDC-5

Next steps:

• The crowdsourcing Implementation Team is still determining which uses to encourage.

• 5 EDC Summits will take place this fall.
  • All States attend a summit.
  • Each state will select which initiatives they would like to support.
  • Encourage State attendees to select the crowdsourcing initiative.
Wrap Up

Denise Markow, I-95 Corridor Coalition
Questions?

Please contact:

**I-95 Corridor Coalition** – Denise Markow 301.789.9088 or dmarkow@i95coalition.org

**RITIS or PDA Suite** – Michael Pack at packml@umd.edu

**RITIS Technical Support** – support@ritis.org

**PDA Suite Technical Support** – vpp-support@ritis.org

**Logistics** – Joanna Reagle 610.228.0760 or jreagle@kmjinc.com
Please confirm that your line is muted

*6

Thank You!