

RITIS

Real-Time Data, Situational Awareness, & Analytics Platform



Performance Measures

| | 4 PM | 5 PM | |
|----------|------------|----------|----------|
| \$31.5K | \$23.8K | \$120.3K | \$132.7K |
| \$8K | \$16.4K | \$42.1K | \$153.3K |
| \$10K | \$10.5K | \$131.8K | \$246.8K |
| \$4.7K | \$27K | \$131.2K | \$214.7K |
| \$2.2K | \$34K | \$156.8K | \$269.3K |
| \$3K | \$111.9K | \$180K | \$271.8K |
| \$52.9K | \$18.8K | \$13.7K | \$28.9K |
| \$684.4K | \$1,246.9K | \$1 | |

Planning



Operations



Communications



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CATT Laboratory

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What is RITIS?

The Regional Integrated Transportation Information System (RITIS) is an automated data fusion and dissemination system that provides an enhanced, multi-faceted view of the transportation network. Participating agencies are able to view essential transportation information through innovative visualizations and use it to improve their project planning, traffic operations, and emergency preparedness. RITIS also uses regional standardized data to provide information to third parties, the media, and other traveler information resources, such as web sites, paging systems, and 511. There are three main components in RITIS: (1) real-time data feeds, (2) real-time situational awareness tools, and (3) archived data analysis tools.

Real-Time Data Feeds: RITIS data feeds deliver direct access to real-time incident, event, detector, probe, weather, transit, and other data sources (e.g., ITS device status). These data feeds are designed to facilitate the reintegration of RITIS data into legacy and third-party systems, and for third-party application developers who need access to real-time information for dynamic mobility applications. The data feeds offer implementation flexibility in both data format and retrieval method. The RITIS platform allows each agency to determine which data elements it wishes to include in the data feed, and which to keep secure from other agencies or the public.

Real-Time Situational Awareness Tools: The RITIS website allows users to view all of the real-time RITIS data in a browser. The website provides users with a dynamic set of visualizations and tools that present efficient situational awareness. Authorized users can interact with live events, incidents, weather, sensors, radio scanners, response vehicles, and other data sources and devices in maps, lists, and other graphics. Other capabilities include a rich set of filters, access contact information, and the ability to set up alerts.

Archived Data Analysis Tools: All data within RITIS is archived indefinitely, meaning that no data is ever deemed “too old” to be removed from user access. RITIS has a number of tools allowing users to query, analyze, and derive performance measures from this archive. Many of these tools are highly interactive and dynamic. They have been developed with the user in mind, and possess a high degree of freedom to explore the data with minimal training needed. Data within the archive can also be downloaded and/or exported so that users can perform their own independent analysis. These tools allow users to identify accident hotspots, analyze queue lengths and traffic congestion/bottlenecks at specific areas, perform after-action reviews, and evaluate the effectiveness of transportation operations strategies.

RITIS is used by over 4,200 decision makers, researchers, planners, operations specialists, the military, and homeland security officials in every state to:

- Significantly reduce agency costs while dramatically speeding up the ability of agency staff to respond to the media and decision makers;
- Reduce transportation research costs by as much as 50%;
- Enable coordinated regional responses and improved interagency cooperation among hundreds of agencies;
- Deliver transparent decision making through data-driven approaches to prioritizing and justifying projects; and
- Facilitate better communication with decision makers and the public.

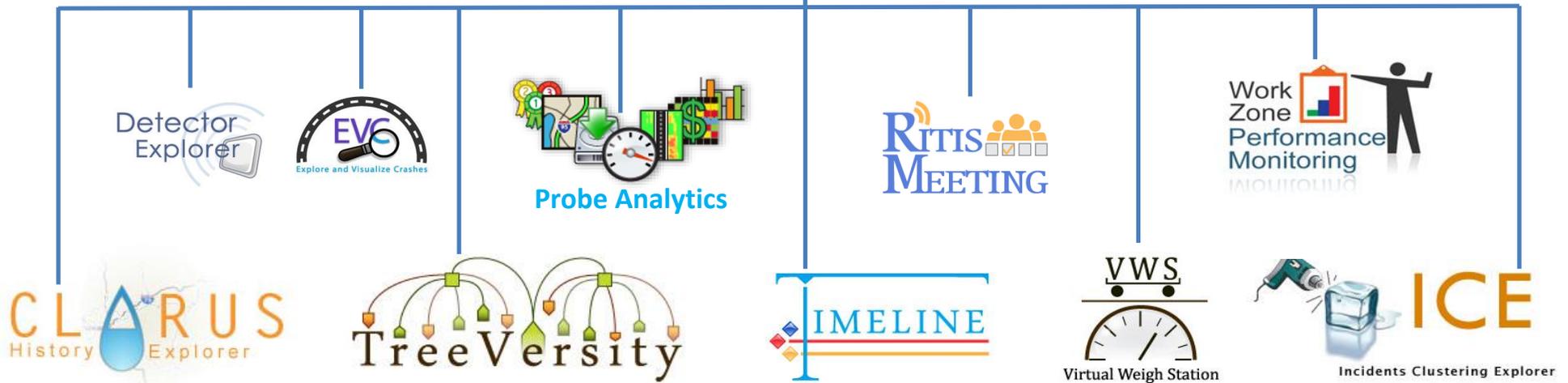


If you are interested in using RITIS within your agency or have questions or feedback for any of the information below, please contact Michael L. Pack at PackML@umd.edu, or at 301.405.0722.

The following provides a high-level pictorial overview of the RITIS tools and their functionality and applications.

RITIS enables real-time operations, coordination between agencies, planning and performance measures, analytics, and visualization through several embedded tools:

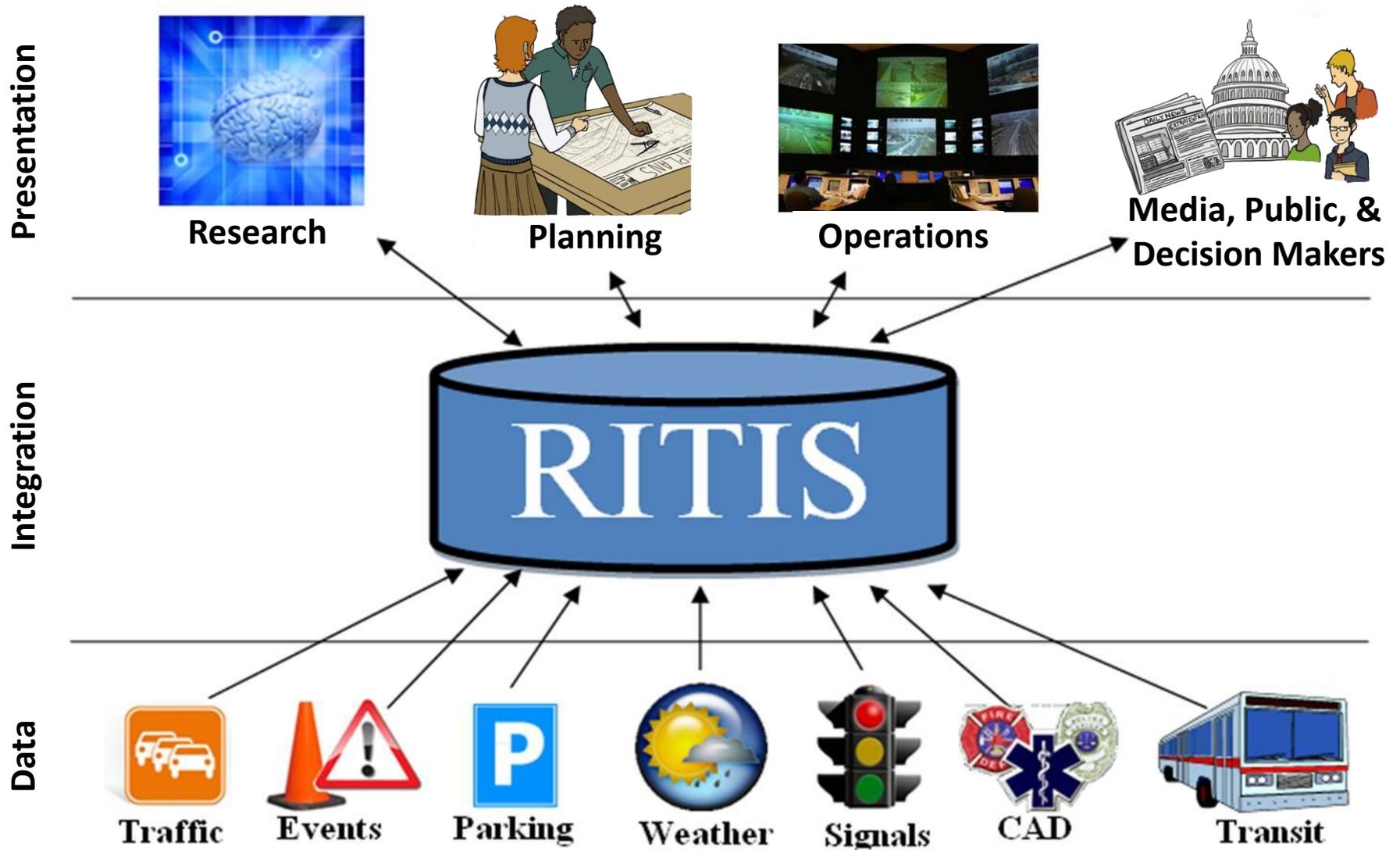
RITIS



Integrated • Easy to Use • Powerful • Dramatically Increases Productivity • Cost-Effective

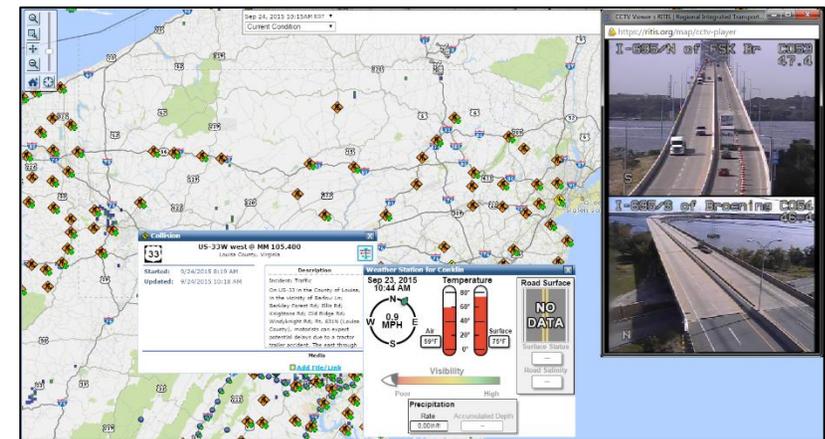
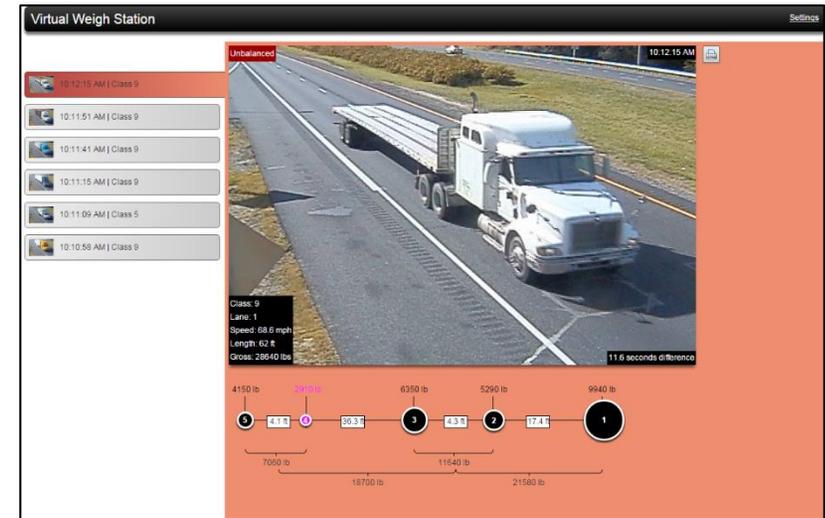
RITIS Fusion Platform Overview

RITIS consolidates, standardizes, and fuses disparate data sources and systems into a platform for use by a wide range of users and application:



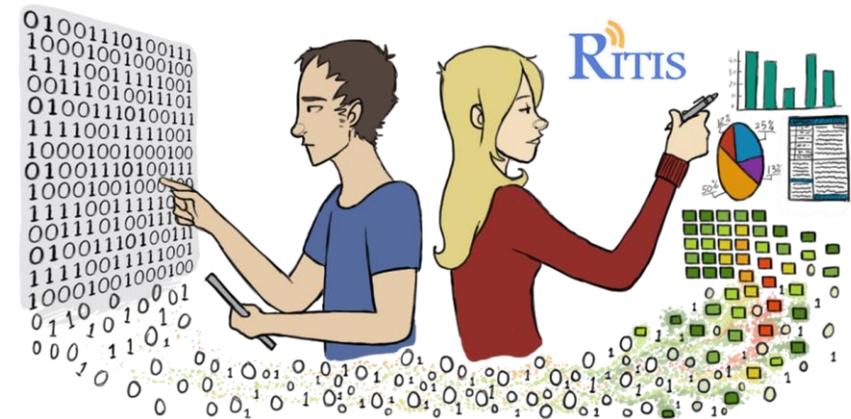
Why Choose RITIS?

- Tens of millions of dollars have already been invested in RITIS by public safety agencies, DOTs, Homeland Security, and the Military.
- RITIS does not have complex software licensing fees or restrictions on agency usage.
- RITIS developers have focused on usability and visualization to ensure the best possible user experience for operations, planners, and researchers alike.
- We process, archive, and fuse more data (including sheer quantity, depth, and breadth) from more agencies than ANY other transportation system in the world, public or private.
- We can act as a broker for agency data transmission to third parties, relieving the agency of the need to worry about responding to data inquiries.
- Because our system is not hosted on a DOT network, it can dramatically reduce the bandwidth needed to share data with the public and with other agencies.



The Three Primary Components of the RITIS Process

- Real-Time Data Fusion
- Real-Time Redistribution of Fused Data
- Archiving & Analytics of Data



The ultimate goal of this process is to provide users with concise, actionable information that speaks to senior leadership, legislators, and the general public for (1) comprehensive conditions analysis; (2) clear communication; (3) effective decision making; and (4) cost-effective project programming and evaluation.

RITIS Data Feeds – Trusted Feeds for Public Agencies

RITIS Filter

RITIS Filter Web Service is the most complex and robust data dissemination interface in RITIS. Most clients will find this to be the best option. It is a polling web service that allows consumers to receive data in several different formats (XML, JSON, and GeoRSS). Data can be consumed in either the standard format or the custom-built RITIS format. The RITIS format provides additional information that is not available in these standards, but is provided by the source agencies. The most significant difference between this service and the other services RITIS provides is a robust set of filtering capabilities that allow consumers to filter data not just by source agencies, but also by specific fields (such as geospatial filters, time filters, event type filters, lane closure number and percentages, etc). This service also provides data from a wider array of agency sources. A user may subscribe to event data, but can only request the information that changed since the last request.

Benefits

- Several data format options
- Rich set of filtering capabilities allowing consumers to obtain highly specific sets of data
- Largest set of data sources
- All of the information is secured using SSL and IP address filtering

RITIS Data Feeds – Trusted Feeds for Public Agencies

JMS Filter

This feed utilizes real-time publish/subscribe model using a Java Messaging Service broker. This method allows update messages in XML format to be pushed asynchronously to the subscribers as RITIS receives them. Upon the initial connection, the subscriber receives a full inventory of devices or events, followed by asynchronous incremental updates.

Benefits

- Provides data in as close to real-time as possible, since each message is generated and sent as soon as data arrives in RITIS.
- Updates are incremental.

XML Filter

XML Feed is an SSL-secured web page that provides a list of XML GZIP files with a snapshot of current data. The data consumers poll the page at a set interval to pull the latest snapshot in the XML format. The files are updated no more than once a minute, and should not be downloaded more often than that.

Benefits

- Simple to implement, since a consumer can connect at their own time interval and pull the snapshot data.



Developer Tools

[Request API Key](#)

This is the complete reference documentation for TrafficView API. It includes extensive information for the specific filters as well as general usage information and examples. This document is still a work in progress and subject to change at any time.

TrafficView API Reference

Version: 2.2.1

Last updated: 09/16/2015

1. [Overview](#)
 - 1.1. [Authentication](#)
 - 1.2. [Sending filter requests](#)
 - 1.2.1. [GET](#)
 - 1.2.2. [How filters are applied](#)
 - 1.3. [Output formats](#)
 - 1.3.1. [ATIS/TMDD Schema](#)
 - 1.3.2. [CATT Lab Schema \(rf-schema-xml\)](#)
 - 1.3.3. [CATT Lab JSON Schema \(rf-json\)](#)
2. [Available agencies](#)
3. [Filters](#)
 - 3.1. [General filters](#)
 - 3.2. [id-filters](#)
 - 3.3. [location-filters](#)
 - 3.4. [location-filters/road-filters](#)
 - 3.5. [output-parameters](#)
 - 3.6. [request-headers](#)
4. [Endpoints](#)
 - 4.1. [GeoRSS feeds](#)

Trusted Feeds for Third-Party Developers and the Public:

- [TrafficView API & Developer Resource Page](#)

Trusted Feeds for Public Agencies include:

- [RITIS Filter](#)
- [JMS Feed](#)
- [XML Feed](#)



Welcome to RITIS. Please login to view traffic status.

E-mail

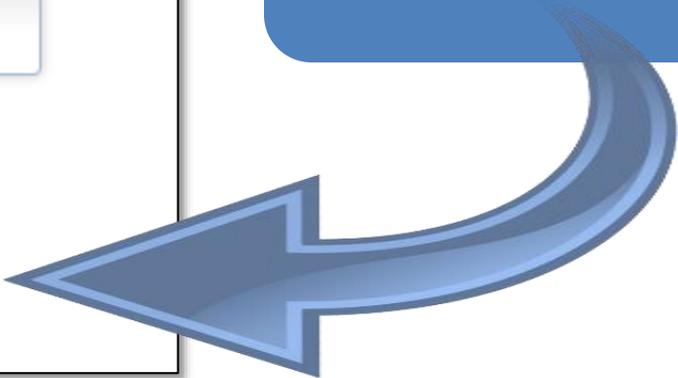
Password

Connect

[Forgot your Password?](#) • [Request an Account](#)

RITIS is for military, public safety, and transportation agency/research use only:
www.ritis.org

To gain access, users and/or agencies must register for an account through a simple online form:



Examples of the Suite of Tools for:

- Real-Time Visualizations
- User Preferences & Customization
- Evacuation Support
- Communication
- Website Administration
- Personal Alerts
- Collaborative Decision Making
- Work Zone Dashboard

Transportation System Status for Operations

Incident List

Once logged in, the user has access to the RITIS Incident list, Traffic Map, and an ever-growing suite of operations, planning, research, and collaboration tools.

The screenshot displays the RITIS Transportation System Status interface. At the top, there is a navigation bar with the RITIS logo and various menu items like 'Incident List', 'Traffic Map', and 'Incident Overview'. A user greeting 'Welcome Carolyn Siu!' is visible in the top right. Below the navigation bar, a table lists 100 incidents (showing 1-100 of 4326 total). The table has the following columns: Source, Location, Type, Updated, Start Time, Lane Status, and Description. Each row represents an incident, including details like road names, incident types (e.g., Road Maintenance Operations, Disabled Vehicle, Alert), update times, and lane closure diagrams. Some incidents include detailed descriptions and links to 'Display More' information.

| Source | Location | Type | Updated | Start Time | Lane Status | Description |
|------------|--|-----------------------------|---------------------|---------------------|-----------------------|--|
| MDOT_CHART | MD 144 EAST/WEST AT MARRIOTTSVILLE RD | Road Maintenance Operations | less than a min ago | 2 hrs 5 mins ago | West East | |
| MDOT_CHART | I-97 SOUTH AT NEW CUT RD | Road Maintenance Operations | less than a min ago | 06/08/15 4:40AM | South North | |
| MDOT_CHART | MD 542 NORTH AT LOCH RAVEN SERVICE RD | Road Maintenance Operations | less than a min ago | 1 hr 23 mins ago | South North | |
| MDOT_CHART | MD 648 SOUTH AT WELLS AVE | Road Maintenance Operations | less than a min ago | 3 hrs 49 mins ago | South North | FLAGGING OPERATION |
| MDOT_CHART | I-95 SOUTH PRIOR TO EXIT 109B MD 279 ELKTON NEWARK RD MM 109.3-109.1 | Road Maintenance Operations | less than a min ago | 1 hr 3 mins ago | South North | |
| MDOT_CHART | MD 25 SOUTH BETWEEN SHAWAN RD AND PADONIA RD | Road Maintenance Operations | less than a min ago | 3 hrs 27 mins ago | South North | |
| MDOT_CHART | US 15 SOUTH FROM S JEFFERSON ST TO MD 28 | Road Maintenance Operations | less than a min ago | 3 hrs 7 mins ago | South North | |
| MDOT_CHART | I-495 EAST PRIOR TO EXIT 28A MD 650 NEW HAMPSHIRE AVE (EB) | Disabled Vehicle | less than a min ago | less than a min ago | - | One responder on scene |
| MDOT_CHART | US 219 SOUTH AT MP 23 | Road Maintenance Operations | less than a min ago | 1 hr 16 mins ago | South North | |
| MDOT_CHART | I-895 SOUTH PAST TUNNEL, MP 8.8 - 7.6, R SHLDR, (LONG TERM AND CONTINUOUS) | Road Maintenance Operations | less than a min ago | 08/19/15 2:48AM | South North | |
| MDOT_CHART | MD 85 SOUTH AT I-270 | Alert | less than a min ago | Wed 09/23 1:20AM | - | <ul style="list-style-type: none"> CHANCE CONFIRMED THAT THE ELECTRICAL BOX IS ASSOCIATED W/ THE LIGHTS UNDER THE BRIDGE AT THIS LOCATION. ADVISED THE BRIDGE DEPT OF THE ELECTRICAL BOX THAT FELL FROM THE BRIDGE TO CONFIRM THAT THERE IS NO STRUCTURAL DAMAGE Display More |
| MDOT_CHART | US 40 WEST AT CENTENNIAL LA | Road Maintenance Operations | less than a min ago | 1 hr 42 mins ago | West East | |
| MDOT_CHART | US 40 EAST/WEST AT LEWIS LA | Road Maintenance Operations | less than a min ago | 3 hrs 38 mins ago | West East | |
| MDOT_CHART | US 29 NORTH AT EXIT 20A MD 175 ROUSE PKWY (SB) | Road Maintenance Operations | less than a min ago | 09/13/15 9:34PM | South North | Ken advised that they will be putting a barrier wall up to close the ramp until they finish widening of the road. He told me that everybody in the District is aware and he does not need a permit for this closure. This ramp will be closed until 12/31/2015. The permit is in process, you have to look at the remarks about the long term closure. |
| MDOT_CHART | I-695 OUTER LOOP AT EXIT 21 STEVENSON RD (SB) | Road Maintenance Operations | less than a min ago | 1 min ago | Inner Loop Outer Loop | |
| MDOT_CHART | I-70 EAST FROM MD 17 TO CO 237 | Road Maintenance Operations | 1 min ago | 3 hrs 8 mins ago | West East | MIKE ADVISED WILL BE WORKING IN MEDIAN AREA |
| MDOT_CHART | I-95 SOUTH PAST EXIT 89 MD 155 LEVEL RD (SB) MM 87.4-87.3 (LONG TERM AND CONTINUOUS) | Road Maintenance Operations | 1 min ago | 08/26/15 11:39AM | South North | |
| MDOT_CHART | MD 270 WEST AT MD 10 | Road Maintenance Operations | 1 min ago | 1 hr 24 mins ago | - | |

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Transportation System Status for Operations (Cont'd.)

Incident List

Once logged in, the user has access to the RITIS Incident list, Traffic Map, and an ever-growing suite of operations, planning, research, and collaboration tools.

The screenshot displays the RITIS Transportation System Status interface. At the top, there are navigation tabs for Incident List, Traffic Map, Incident Overview, Traffic Cameras, RSS Feed, VWS, WZPMA, and RITIS Meeting. A user greeting 'Welcome Carolyn Siu!' is visible in the top right. Below the navigation is a table of incidents. The table has columns for Source, Location, Type, Updated, Start Time, Lane Status, and Description. One incident is highlighted with a blue border and a callout box. The callout box contains the following information:

- Source:** MDOT_CHART
- Location:** MD 85 SOUTH AT I-270
- Type:** Alert (represented by a yellow question mark icon)
- Updated:** 7 mins ago
- Start Time:** Wed 09/23 1:20AM
- Description:**
 - CHANCE CONFIRMED THAT THE ELECTRICAL BOX IS ASSOCIATED W/ THE LIGHTS UNDER THE BRIDGE AT THIS LOCATION.
 - ADVISED THE BRIDGE DEPT OF THE ELECTRICAL BOX THAT FELL FROM THE BRIDGE TO CONFIRM THAT THERE IS NO STRUCTURAL DAMAGE
- Action:** Display More

At the bottom right of the screenshot, a blue callout box contains the text: "These buttons allow users to open an incident on the map, open a chatroom associated with the incident, and open the incident timeline." A blue arrow points from the callout box to the incident details in the table.

Traffic Map and Display Modes

Traffic Map

The real-time map has many interactive layers, search functionality, filters, and navigation features.



Map Layer Customization

Through the map's User Preferences, users can customize their default region of interest:

User Preferences

Map Settings

Default State View: Organization View ▼

Default Zoom Level: 3 - Multi-State ▼

County View: Unspecified ▼

Labels Opacity: 100% ▼

Preview



Map Settings

Layer functionality includes:

- Ordering
- Opacity
- ITS devices
 - Inactive devices can be hidden
 - Devices with “expired” data can be removed
- Search and zoom functionality in some layers (e.g., transit and points of interest)

Options for Evacuation Routes ✕

Opacity:

Evacuation Support Sub-Layers ✕

- Staging Areas P
- Comfort Station/Travel Services ●
- Public Shelters ↑
- Hospitals H
- Traffic Control Points ⊗
- Gov't Vehicle Fueling Stations 🚰
- Evacuation Routes ↑

Sub Layer Lists

Map Layer List

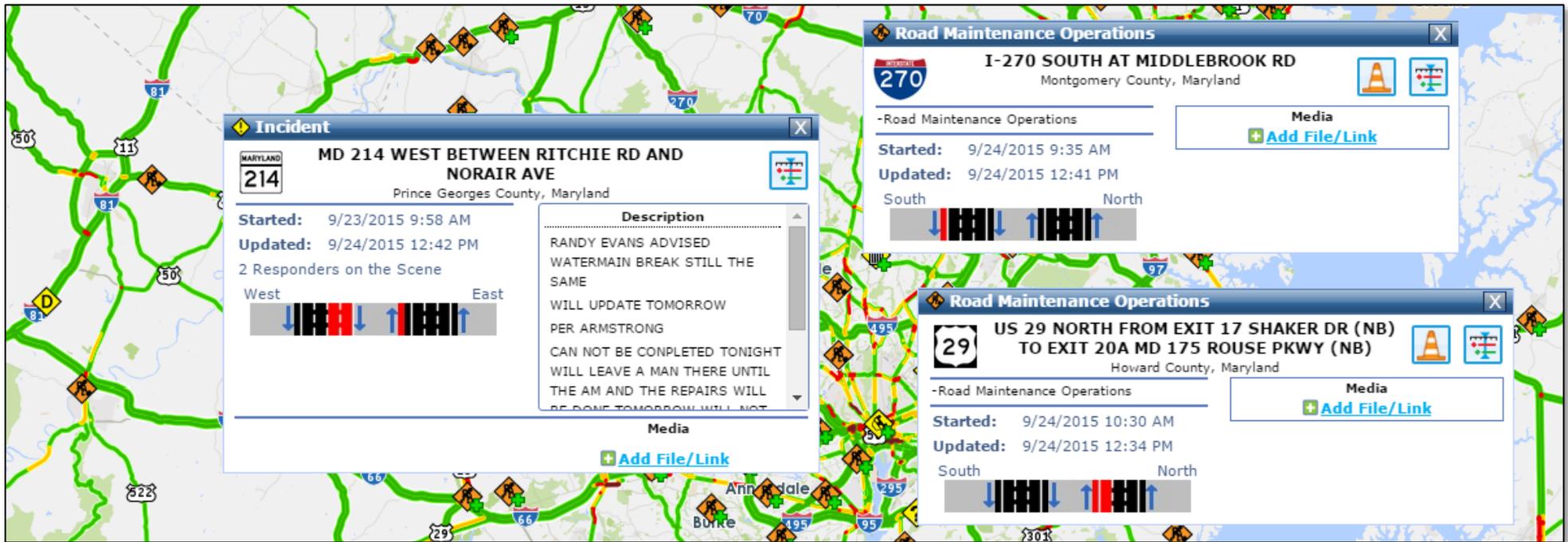
Hide Layer List

- Incidents and Events ⚠
- Dynamic Message Signs 📡
- Traffic Detectors 🚦
- Traffic Cameras 📹
- Road Weather 🌦
- Radio Scanners 📻
- FITM Plans ⬇
- Evacuation Support ↑
- Public Transit 🚌
- Montgomery County 🏛
- CAD 911
- Fleets 🕒
- Philadelphia Papal 👤
- Points of Interest 📍
- Metro Routes M
- Probe Speed Data 📊
- Weather Radar 🌩
- Weather Alerts ⚠

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Interactive Incident Layer

When clicked, incident and event icons display additional details about the incident.



Filtering Customization

Each user has complete control over which data is displayed and/or hidden—thus making it easier to customize for specific operations scenarios and minimize information overload.

Set Incident Filters
✕

Show me events where...

Data Source is equal to ✕
or

Closed Lanes is greater than

Incident Type is not equal to ✕
or ✕
or

Incident Attributes is equal to ✕
or ✕
or ✕
or

Road is equal to ✕
or

Percent of Closed Lanes is greater than

Update Time is less than in the past

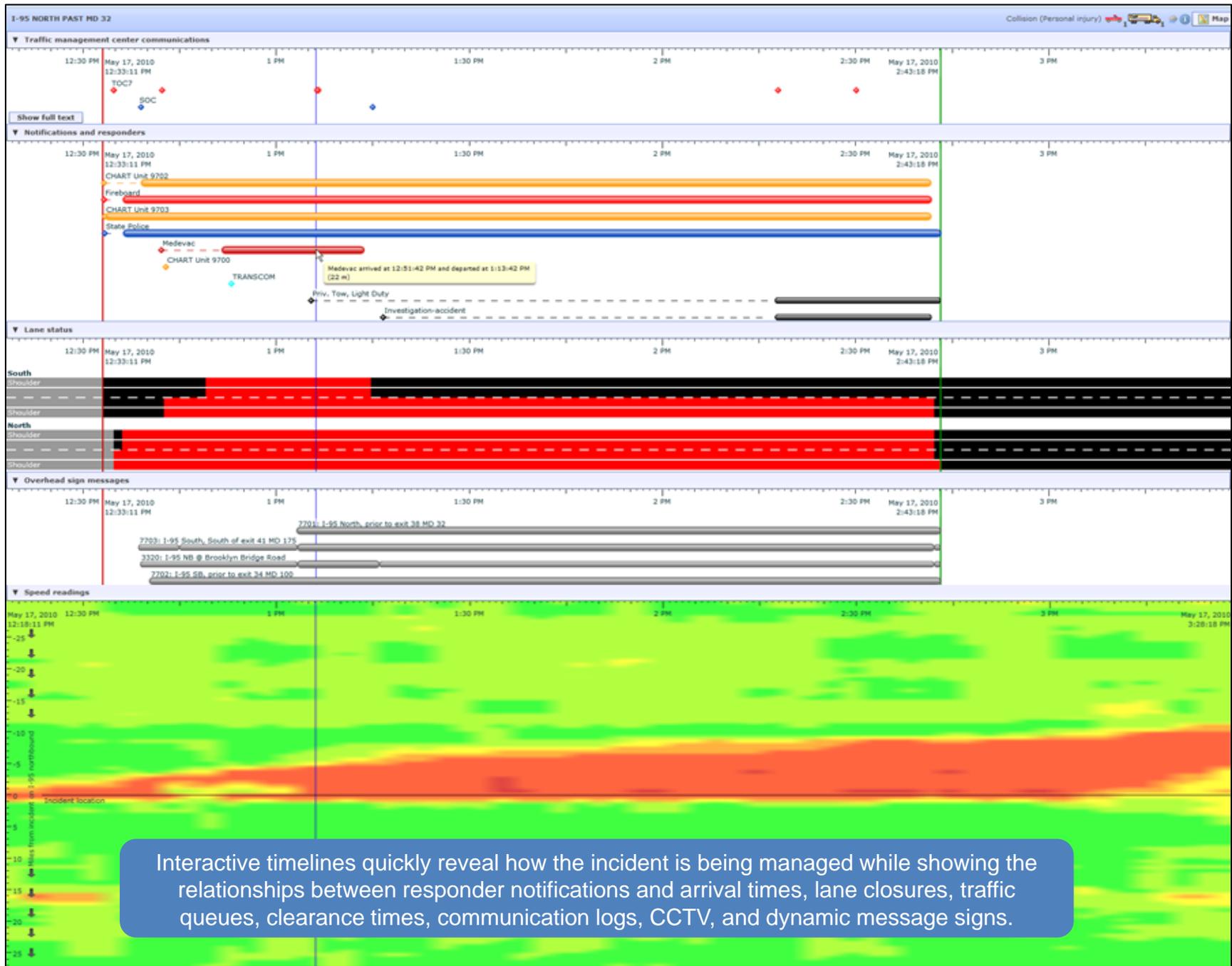
Selected Incident Filters Summary

Data Source is equal to IOWADOT.
 Closed Lanes is greater than 3.
 Incident Type is not equal to unknown, disturbances.
 Incident Attributes is equal to fatalities involved, bomb exploded, animal struck.
 Road is equal to I-95.
 Percent of Closed Lanes is greater than 50.
 Update Time is less than 10 minutes in the past.

Incident Filtering

By setting Incident Filters, users can choose to show or hide incidents based on their type, the number of lanes they close and a number of other qualifiers.

Incident Timelines



Interactive timelines quickly reveal how the incident is being managed while showing the relationships between responder notifications and arrival times, lane closures, traffic queues, clearance times, communication logs, CCTV, and dynamic message signs.

Incident Timelines (Cont'd.)

- Nearby CCTV feeds
- Active DMS with historic and real-time message postings

The screenshot shows a web browser window titled "Collision (Personal injury) @ I-695 OUTER LOOP AT EXIT 34 MD 7 PHILADELPHIA RD (NB) - Event Timeline - Google Chrome". The URL is https://timeline.ritis.org/timeline/?incidentId=MDOT_CHART_79fff2948b9602050056fa2ec4235c0a. The page header shows the location "I-695 OUTER LOOP AT EXIT 34 MD 7 PHILADELPHIA RD (NB)" and the incident type "Collision (Personal injury)".

The main content is a map of the area around Parkville, Essex, and Sparrows. A timeline window is open, showing the incident details:

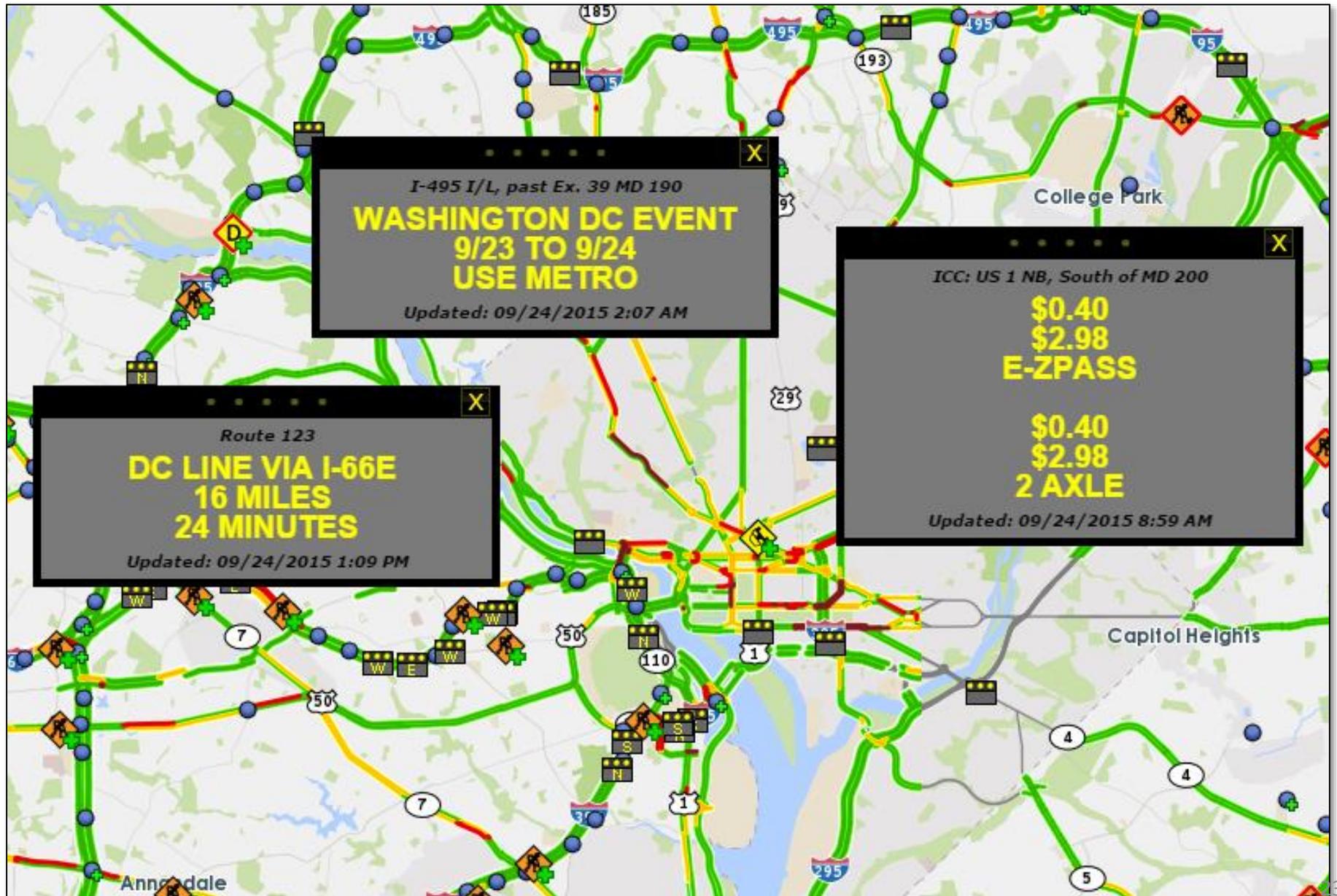
| Date and Time | Event |
|-------------------------------|--|
| September 25, 2015 2:46:43 PM | 4428: I-695 O/L (North), 1 mi prior to Ex. 36 Md 702 (N. of Chesaco Ave) |
| September 25, 2015 3:01:13 PM | |

A "Close" button is visible below the timeline window.

A "Nearest CCTV - Current conditions" window is also open, showing a live video feed from a camera labeled "MD200E E of US29 C-222 16.2". The video shows a road at night with a bright light source. The camera orientation is "NE". Below the video, the text reads "ICC MD200E E of US29 MM 16.2 (C222)".

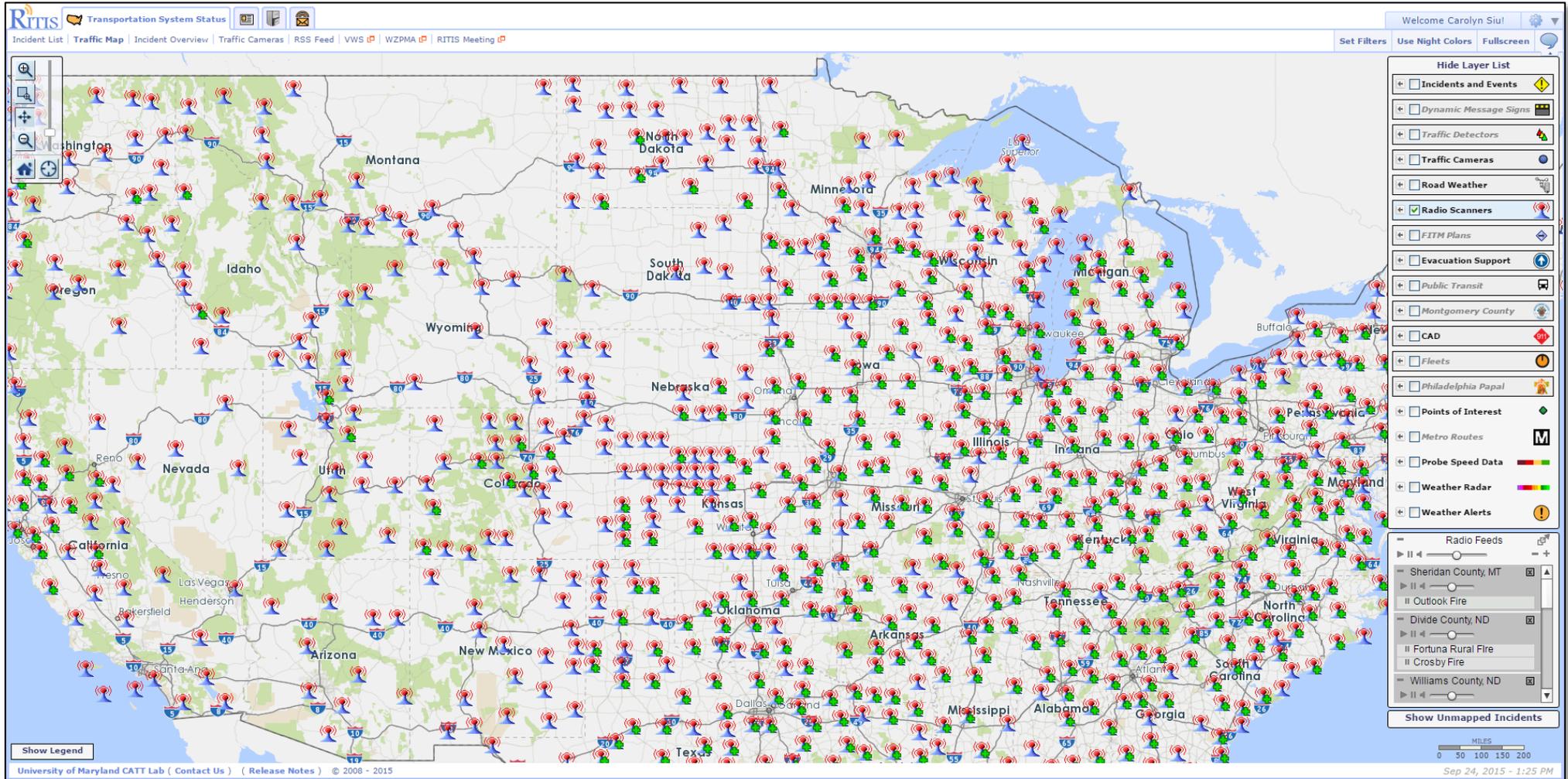
Dynamic Message Signs

Active and inactive, portable or fixed dynamic message signs can be visualized. Even the status of beacons and other related device information can be displayed.



National Radio Scanners

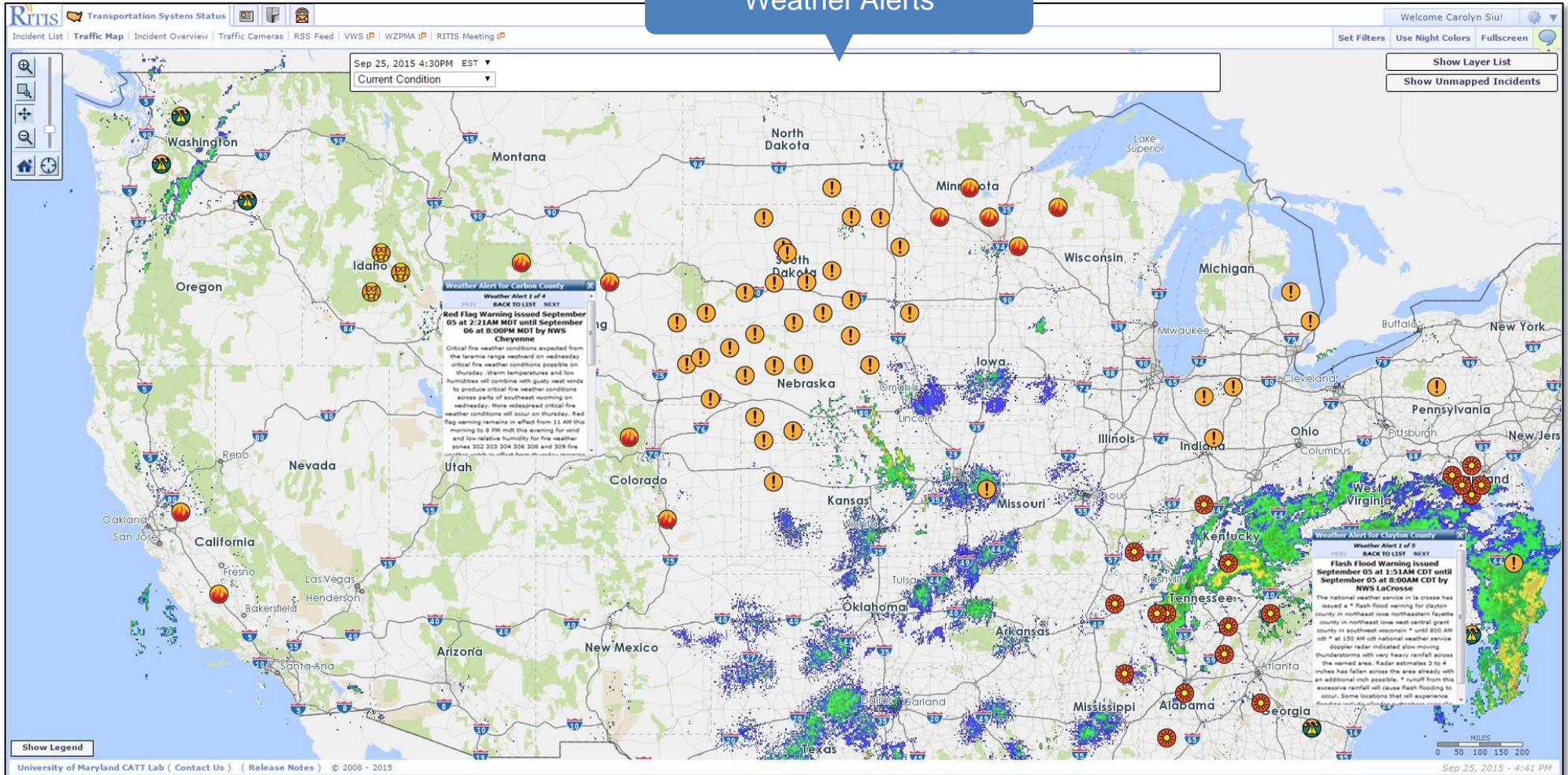
Listen to multiple police, fire, rescue, air traffic control, etc. simultaneously across the entire country.



Real-Time Weather Alerts

National Weather Service weather alerts are mapped with detailed reports available on demand.

Weather Alerts



Real-Time Weather Radar

RITIS provides many options for displaying both real-time and predicted weather.

Real-Time Weather Radar

The screenshot displays the RITIS Real-Time Weather Radar interface. The main map shows a geographic area of Maryland with various weather data overlays, including wind direction and speed (5.1 MPH), temperature (80°F Air, 88°F Surface), and precipitation (0.00in/h Rate, 0.00in Accumulated Depth). A 'Traffic Signal Not Working' incident report is visible for MD 410 (EAST WEST) @ TOLEDO TERR [Traffic Control Signal] in Prince Georges County, Maryland, with a description 'LEFT VOICEMAIL FOR 489' and a media link. A 'Weather Station for RT 15 LUCKETTS' window shows current conditions for Sep 24, 2015 at 1:15 PM. A 'Road Surface' window displays 'NO DATA' for Surface Status and Road Salinity. On the right, a 'CCTV Viewer' window shows two live camera feeds: 'I-270 - FATHER HURLEY N' (CAM-134 A) and 'MD. 355 - SHADY GROVE S' (CAM-0057-A). The interface includes a 'Show Legend' button, a 'Hide Layer List' button, and a scale bar in miles (0 to 40).

Real-Time Ground Weather

The plus icons (⊕) indicate multiple RWIS stations in a given area. The data can be viewed in “Standard” or “Advanced” formats.



Standard format provides a quick, easy-to-read overview of typical weather-related info, including road surface status.

Advanced format provides much more robust data and key performance indicators to help make crucial weather-related decisions.

Weather Station for I-95 and Marsh Road

Station 1 of 2

PREV BACK TO LIST NEXT

Sep 24, 2015
1:45 PM

W 4.1 MPH E

Gusts up to
6.3 MPH

Temperature

Air
78°F

Surface
--

Road Surface

NO DATA

Surface Status
--

Road Salinity
--

Visibility

Poor 7.1mi High

Precipitation

| | |
|----------|-------------------|
| Rate | Accumulated Depth |
| 0.00in/h | 0.00in |

Weather Station for I-95 and Marsh Road

Station 1 of 2

PREV BACK TO LIST NEXT

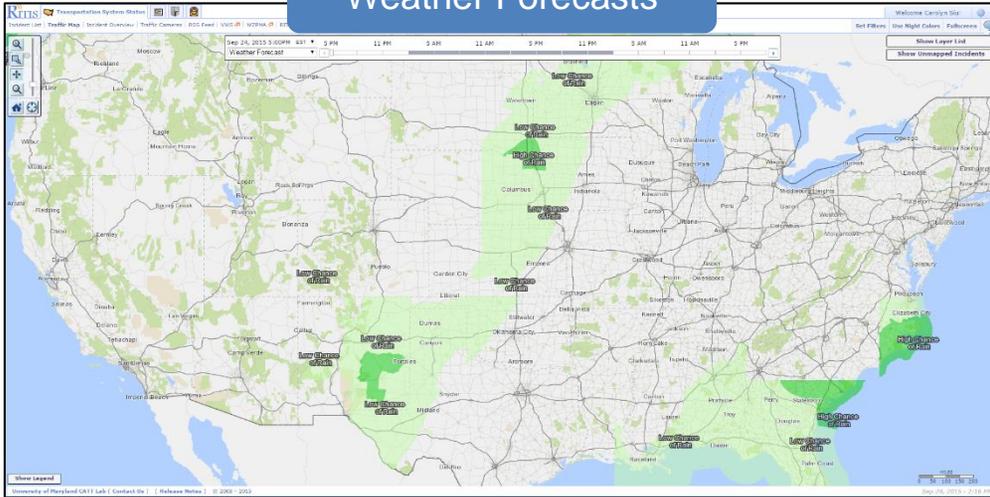
Station Code 274014
Contributor DE_State_DOT
Coordinates 39.780059, -75.506027
Sep 24, 2015

| Observation Type | Time | Value | Complete | Manual | Sensor Range | Climate Range | Like Instrument Step | Persistence | IQR Spatial | Barnes Spatial | Dew Point | Sea Level/Pressur | Precip Accum |
|--|---------|--------------------------------|----------|--------|--------------|---------------|----------------------|-------------|-------------|----------------|-----------|-------------------|--------------|
| Precipitation Sensor | | | | | | | | | | | | | |
| Total Precipitation Past Twenty-Four Hours | 1:45 PM | 0in | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Total Precipitation Past Twelve Hours | 1:45 PM | 0in | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Total Precipitation Past Three Hours | 1:45 PM | 0in | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Rainfall or Water Equivalent of Snow | 1:45 PM | 0 ⁱⁿ / _h | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Total Precipitation Past One Hour | 1:45 PM | 0in | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Total Precipitation Past Six Hours | 1:45 PM | 0in | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Temperature Sensor | | | | | | | | | | | | | |
| Air Temperature | 1:45 PM | 77.9°F | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Temperature Sensor Table | | | | | | | | | | | | | |
| Wetbulb Temperature | 1:45 PM | 62.96°F | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Relative Humidity | 1:45 PM | 39% | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Maximum Temperature | 1:45 PM | 79.52°F | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Minimum Temperature | 1:45 PM | 53.42°F | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Dew Point Temperature | 1:45 PM | 51.44°F | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Visibility Sensor | | | | | | | | | | | | | |

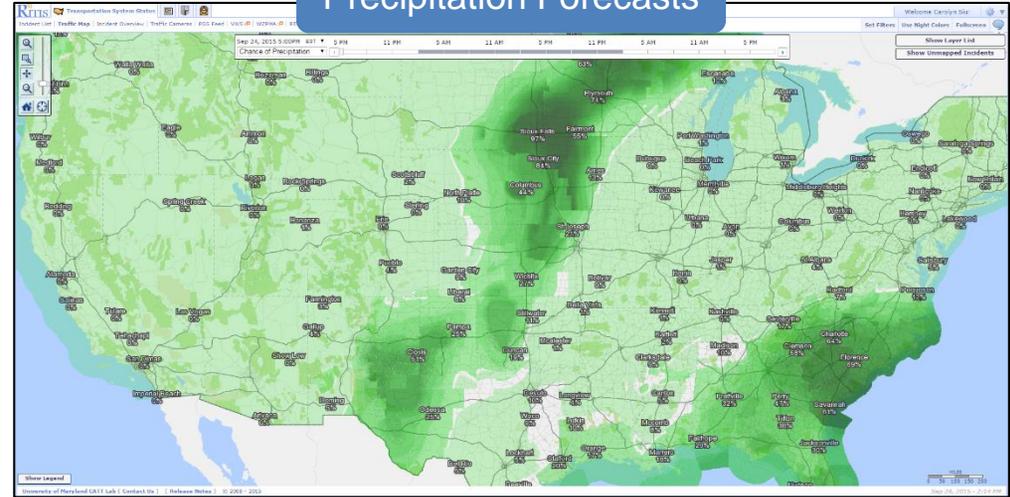
Weather Forecasts

Using a time slider bar, users can move forward and backward in time to view predicted conditions anywhere in the country for various types of weather forecasts.

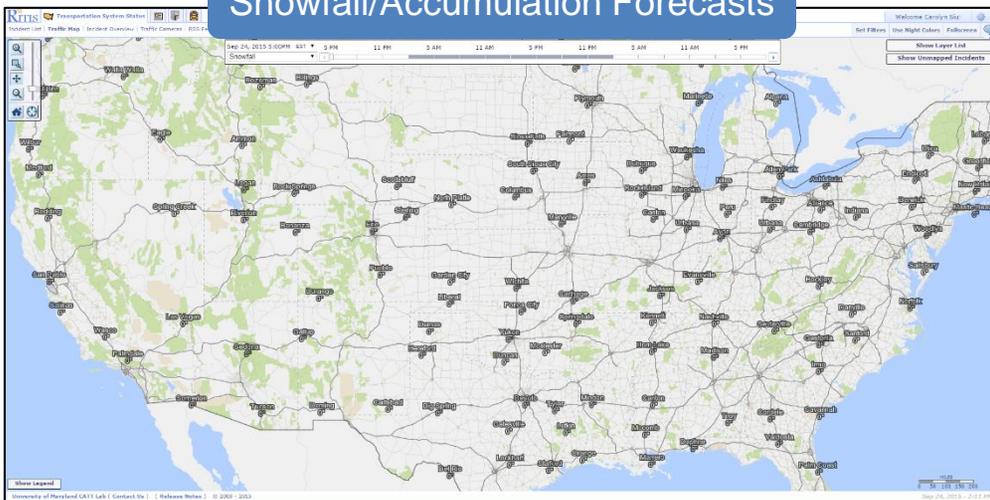
Weather Forecasts



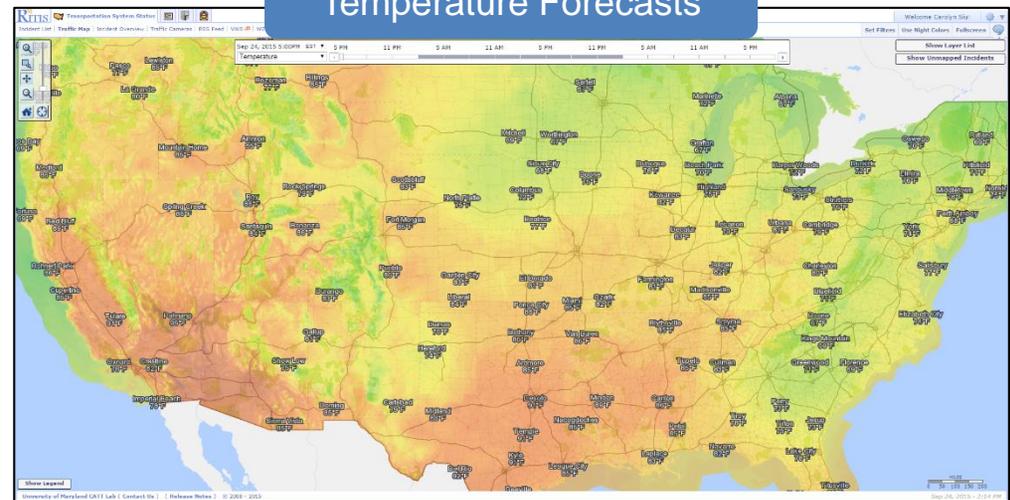
Precipitation Forecasts



Snowfall/Accumulation Forecasts

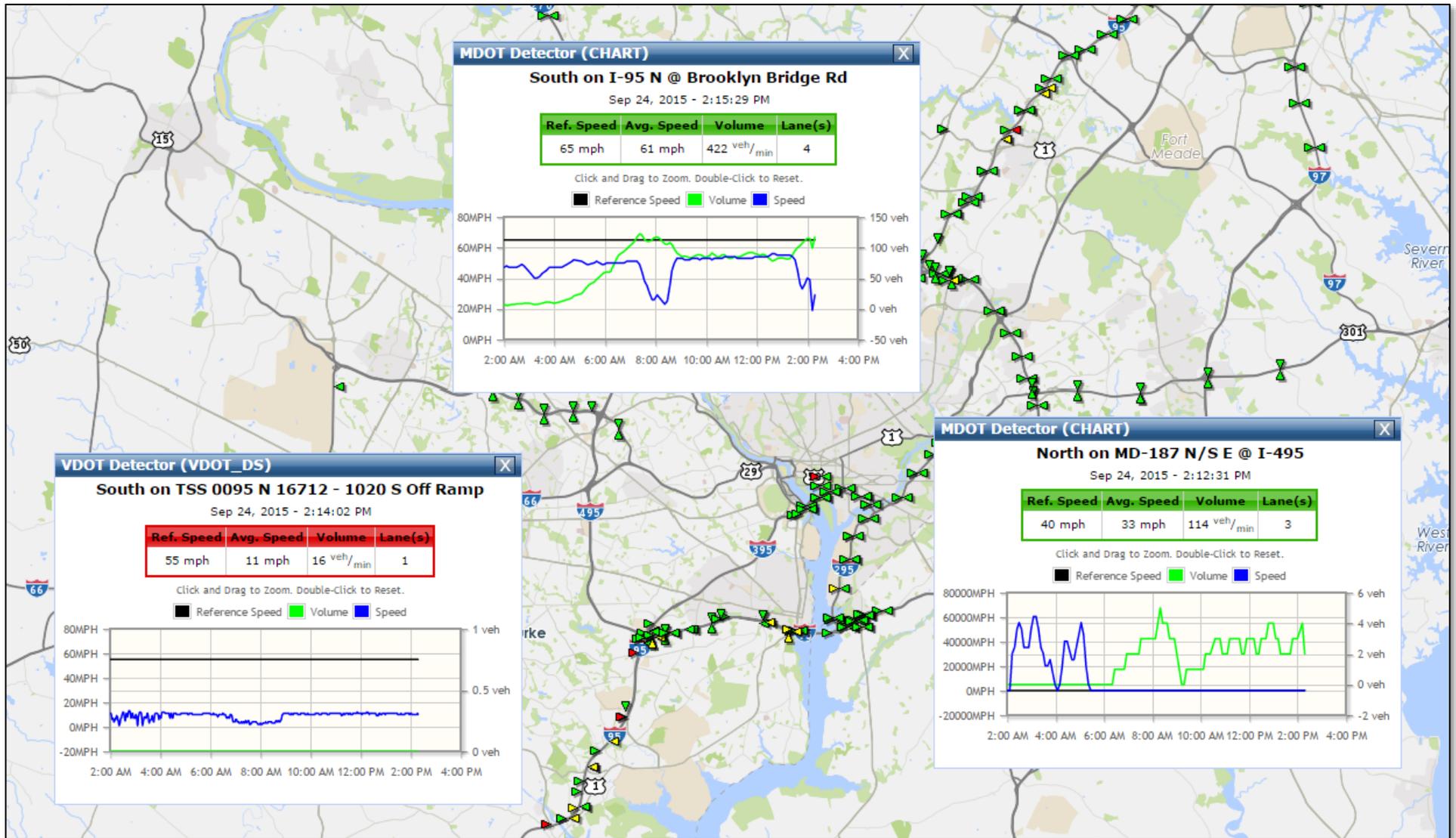


Temperature Forecasts



Speed and Volume Sensor Data

Interactive sensor station data from HERE, SpeedInfo, and sensor deployments from individual DOTs can be displayed. Details can be viewed in pop-up windows that help to identify trends.



Probe Data support for HERE, INRIX, TomTom, LPR, Bluetooth, etc.

Probe-based speed and travel time data can be drawn in various forms: Speed, Comparative Speed, Congestion, and Average Congestion.

Probe Speed Layer Help

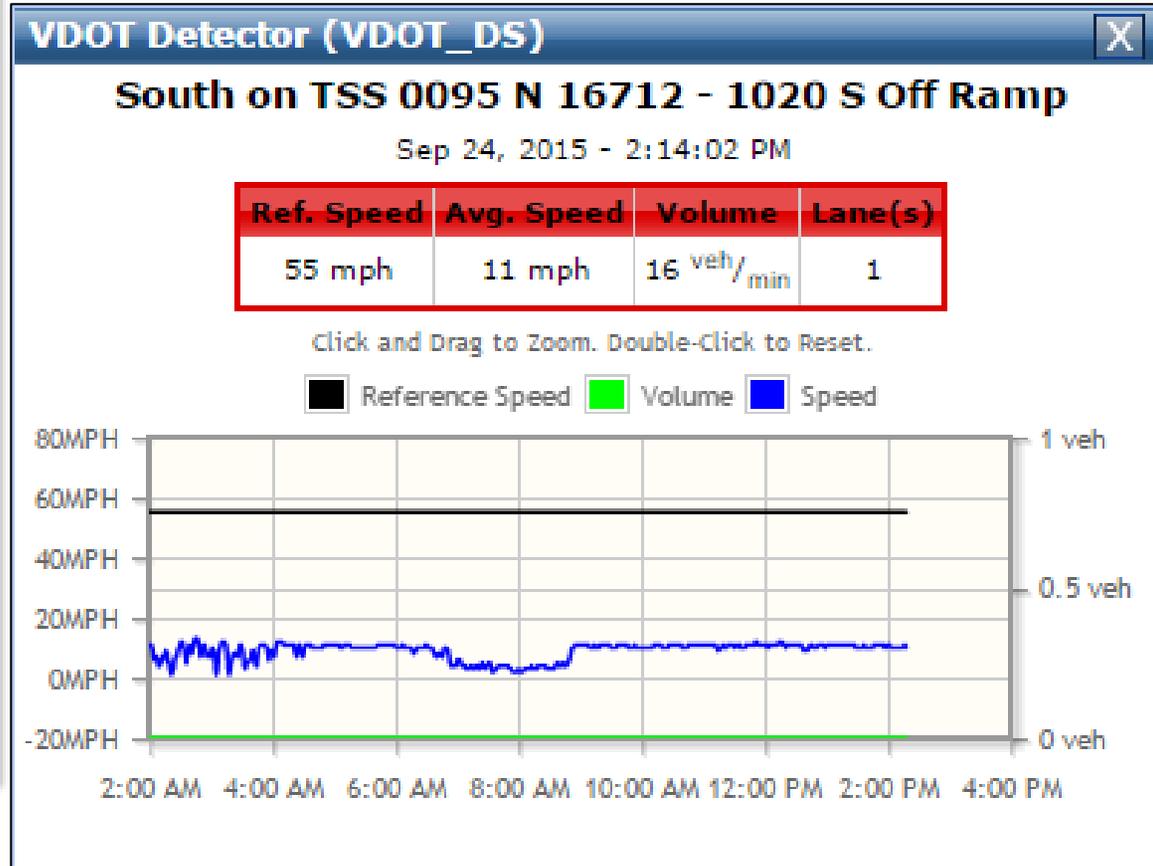
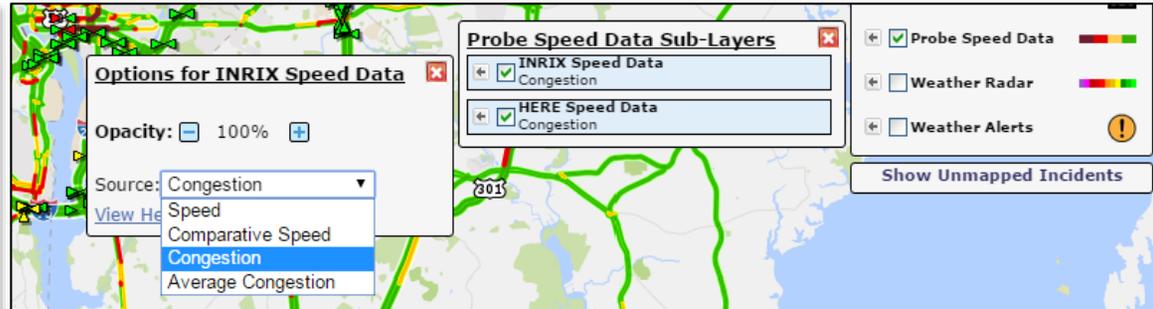
If the Probe Speed layer is active, double clicking on the map will display the speed data popup instead of re-centering the map.

Confidence Score: Ranges from low (worst) to high (best)

- High:** The data is based on real-time time data for that specific segment
- Moderate:** The data is based on real-time data across multiple segments and/or based on a combination of expected and real-time data
- Low:** The data is based primarily on historical data

Selection Box

- All Sections:** The following style applies to all sections
 - Brown:** No data is has been recently reported for this section of road
- Speed:** Current speed of the segment in MPH
 - Green:** Speed is above 50MPH
 - Yellow:** Speed is between 25MPH and 50MPH
 - Red:** Speed is between 15MPH and 25MPH
 - Dark Red:** Speed is below 15MPH
- Comparative Speed:** Current speed of the segment compared to the average speed recorded for that hour of the day and day of week
 - Green:** Current speed is greater than 75% of the average speed
 - Yellow:** Current speed between 55% and 75% of the average speed
 - Red:** Current speed between 25% and 55% of the average speed
 - Dark Red:** Current speed is less than 25% of the average speed
- Congestion:** Current speed of the segment compared to the calculated speed of traffic on that road when there is no congestion (reference speed)
 - Green:** Current speed greater than 75% of the reference speed
 - Yellow:** Current speed is between 55% and 75% of reference speed
 - Red:** Current speed is between 25% and 55% of reference speed
 - Dark Red:** Current speed is less than 25% of the reference speed
- Average Congestion:** The average speed compared to the calculated speed of traffic on that road when there is no congestion (reference speed)
 - Green:** Average speed is greater than 75% of the reference speed
 - Yellow:** Average speed is between 55% and 75% of the reference speed
 - Red:** Average speed is between 25% and 55% of the reference speed
 - Dark Red:** Average speed is less than 25% of the reference speed



Virtual Weigh Stations

Virtual Weigh Station data are visible within RITIS. They are used primarily by law enforcement, and are available in both the desktop and mobile versions. For each vehicle that passes, axle weights, axle spacing, speeds, and other measurements are taken, along with photos of the vehicle. License plate recognition will be deployed soon to help identify repeat offenders.

Virtual Weigh Station
Settings

- 02:32:50 PM | Class 9
- 02:32:49 PM | Class 9
- 02:32:46 PM | Class 9
- 02:32:43 PM | Class 9
- 02:32:30 PM | Class 7
- 02:32:17 PM | Class 9
- 02:32:15 PM | Class 7

Over Weight (Bridge)
02:32:50 PM

Class: 9
 Lane: 1
 Speed: 51.3 mph
 Length: 63 ft
 Gross: 75470 lbs

11.7 seconds difference

| | | | | |
|----------|----------|----------|----------|----------|
| 15270 lb | 14550 lb | 16720 lb | 17900 lb | 11030 lb |
| ⑤ | ④ | ③ | ② | ① |
| 4 ft | | 36.4 ft | | 4.3 ft |
| 29820 lb | | 34620 lb | | 45650 lb |
| 64440 lb | | | 45650 lb | |

Live CCTV

Users can view camera locations on the map. Clicking on an individual camera icon will play that camera's live video feed.

The screenshot displays the RITIS Transportation System Status web application. The interface includes a navigation menu at the top with options like 'Incident List', 'Traffic Map', and 'Traffic Cameras'. A 'Welcome Carolyn Siul' message is visible in the top right. A 'Hide Layer List' panel on the right side contains various map layers, with 'Traffic Cameras' checked. The main map area shows a network of roads with colored overlays (green, yellow, red) and numerous camera icons (blue dots). A large blue arrow points from a camera icon on the map to a preview window. The preview window has a pink border and contains the text 'Click to view CCTV feed for Fairfax County Pkwy (VA-286) NB VA-7'. Below this text is a video player showing a live feed of a highway with the text 'VDOT FREE TRAFFIC INFO | 511virginia.org Preview Loading'. The video player shows a multi-lane highway with a few vehicles. At the bottom of the interface, there is a 'Show Legend' button, a scale bar in miles (0 to 8), and a timestamp 'Sep 24, 2015 - 2:37 PM'. The footer contains the text 'University of Maryland CATT Lab (Contact Us) (Release Notes) © 2008 - 2015'.

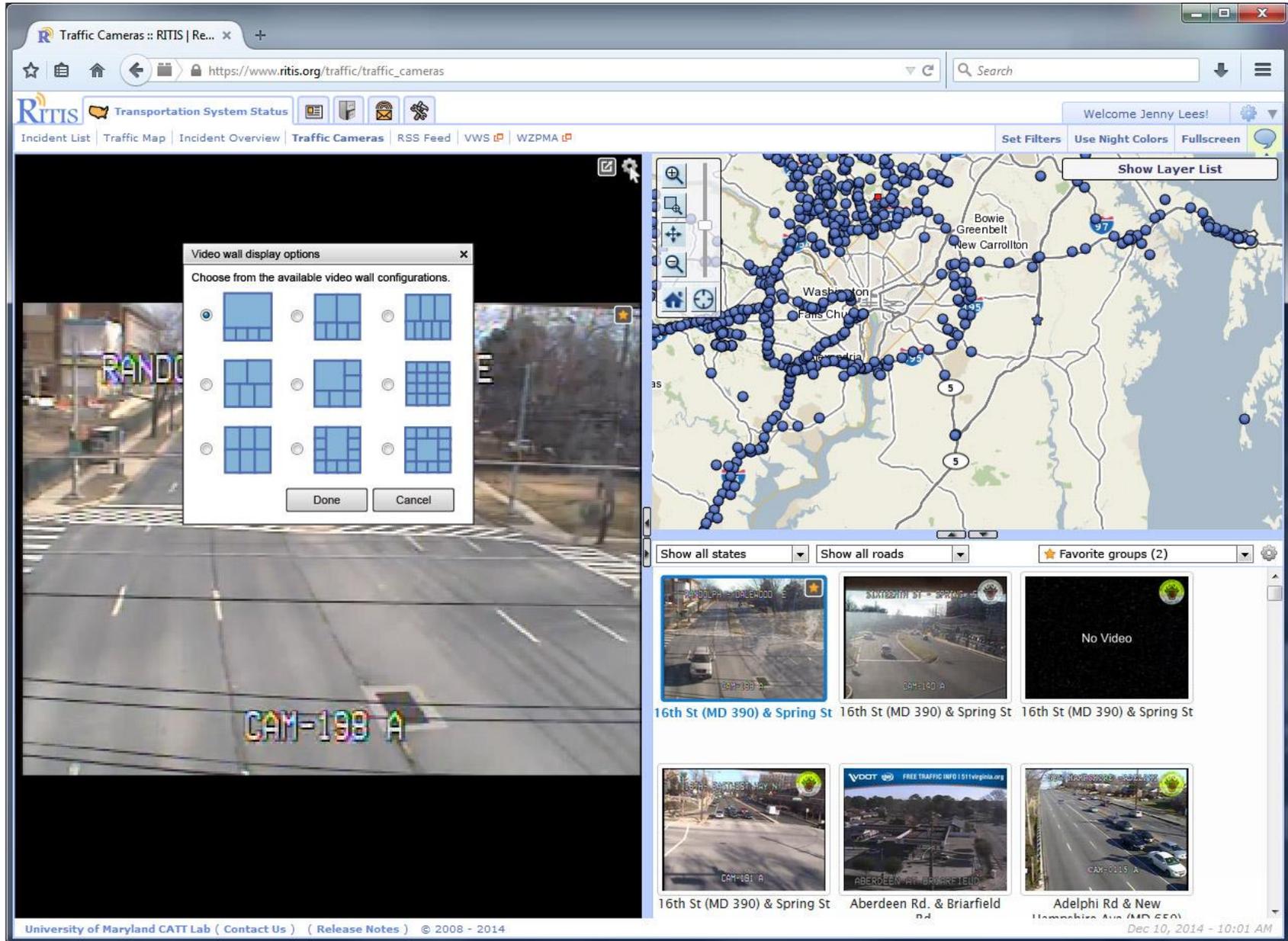
CCTV Media Wall

Users can create their own Personal Media Wall with anywhere from 1 to 100+ simultaneous live-streaming videos.

The screenshot displays the RITIS Real-Time Visualizations interface. On the left, a map shows a network of roads with color-coded segments (green, yellow, red) indicating traffic conditions. The map includes labels for locations like Columbia, Potomac, Centerville, Burke, Occoquan Reservoir, and Cedarville State Forest. A navigation toolbar is visible on the far left. The main content area is a 'CCTV Viewer' window titled 'RITIS | Regional Integrated Transportation Information System - Google Chrome'. This window contains a grid of live-streaming video feeds from various traffic cameras. The feeds show different perspectives of roadways, including highway overpasses and multi-lane roads with traffic. The video feeds are arranged in a grid, with some larger and some smaller. The interface also features a 'Hide Layer List' on the right side, which includes options for 'Incidents and Events', 'Dynamic Message Signs', 'Traffic Detectors', 'Traffic Cameras', 'Road Weather', 'Radio Scanners', 'FITM Plans', 'Evacuation Support', 'Public Transit', 'Montgomery County', 'CAD', 'Fleets', 'Philadelphia Papal', 'Points of Interest', 'Metro Routes', 'Probe Speed Data', 'Weather Radar', and 'Weather Alerts'. A 'Show Unmapped Incidents' button is located at the bottom of the layer list. The bottom of the interface shows the 'University of Maryland CATT Lab' logo and contact information, along with a copyright notice for 2008-2015 and a timestamp of 'Sep 24, 2015 - 2:42 PM'.

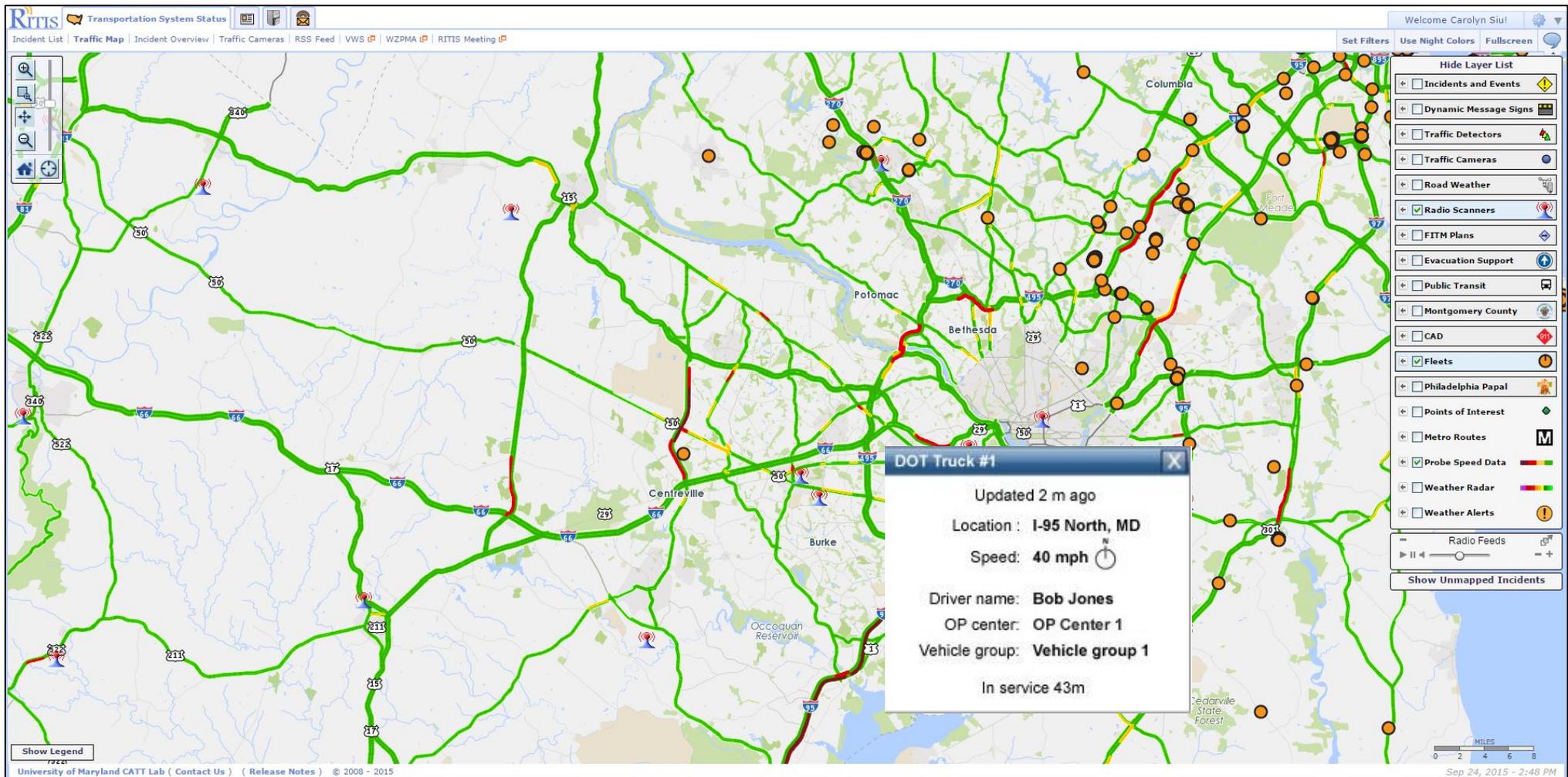
Customizing & Saving Media Walls

Through the Traffic Camera page, users can save favorite video streams and customize their video wall layout.



DOT and Public Safety Fleet Management

The Fleets layer can be used to track and monitor agency vehicle fleets. Live videos directly from patrol vehicles can be streamed, and the status of in-vehicle equipment can be viewed (e.g., plow status, treatment spreading rates, etc).



Real-Time Fleet Data in Action

During major events, fleet tracking can show how many responders are on-scene, and what their exact positions are. In the RITIS screenshot below, orange circles are actual first responders and DOT service patrol vehicles at or near the scene of an incident.

The screenshot displays the RITIS interface with the following components:

- Map:** Shows a section of I-95 with an incident location marked by an orange circle. Other vehicles are shown as small icons. Labels include 'Radecke Ave', 'Wood Ave', 'Rossville Blvd', 'Federal St', and 'E Federal St'.
- CCTV View:** A window titled 'I-95/495 S OF US-50' showing a live camera feed of the accident scene.
- Fatalities Involved Panel:**

1-95 INNER LOOP/OUTER LOOP AT EXIT 19 US 50
 Prince Georges County, Maryland

| Fatalities Involved | Description |
|---------------------------|---|
| PER 9004 | I-95/495 S OF US 50 CAMERA B LOCKED |
| 7 Responders on the Scene | RAMPS FROM US50 WEST TO THE OUTER LOOP A CLOSED AND TRAFFIC IS BEING DIVERTED TO THE RAMP TO THE NEW CARROLLTON METRO STATION |
- Special Event Panel:**

JEHOVAH WITNESS INTERNATIONAL CONVENTION
 Prince Georges County, Maryland

Started: 8/1/2014 9:39 AM
 Updated: 8/1/2014 11:15 AM
- Event Timeline Panel:**

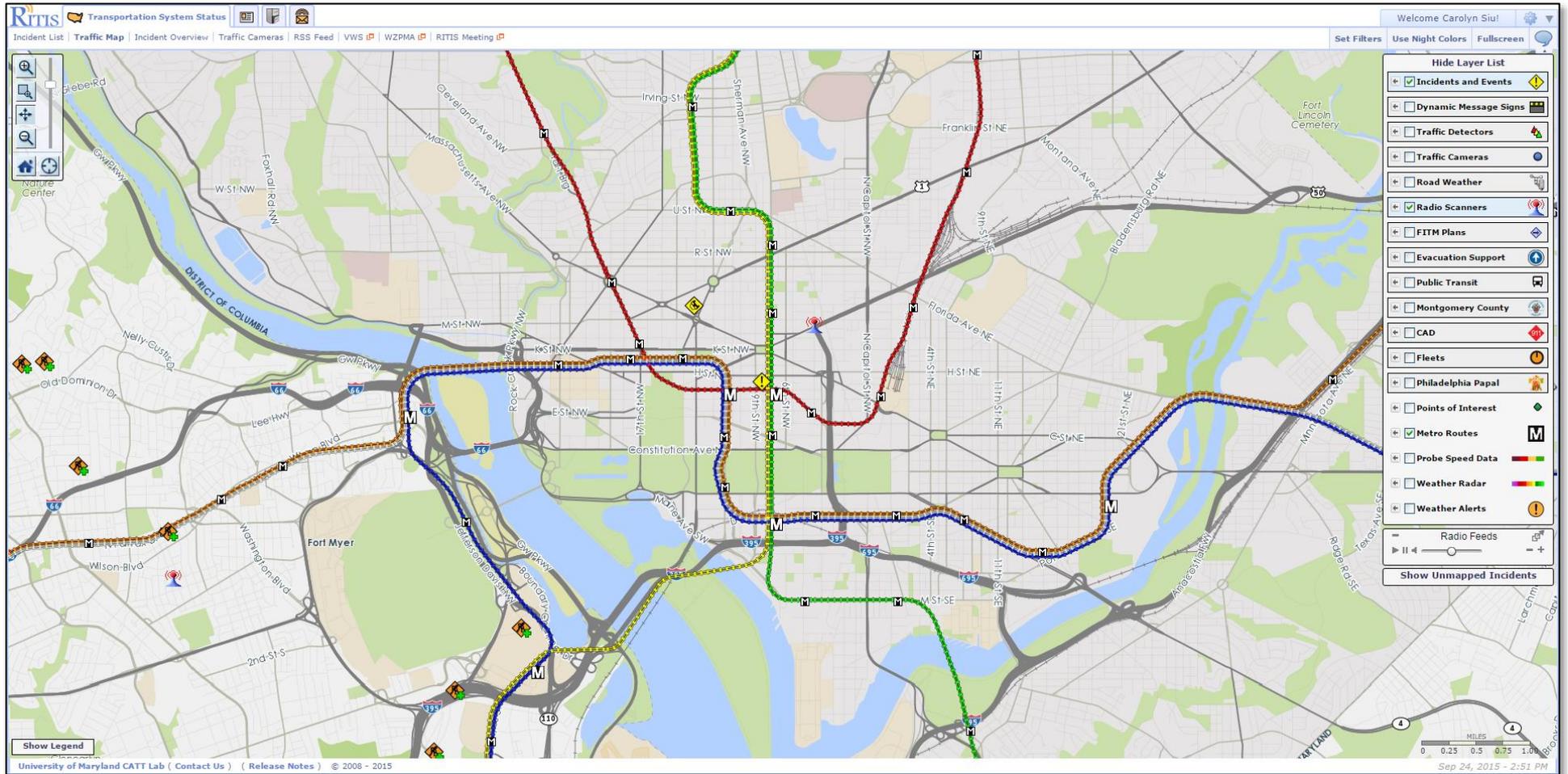
Collision (Fatality) @ I-95 INNER LOOP/OUTER LOOP AT EXIT 19 US 50 - Event Timeline

Timeline showing events from 8:51:26 AM to 11:43:44 AM on August 1, 2014.

 - TOC3 (bsharpless) (9:03:42 AM): PER 9301 1 PERSON TRANSPORTED
 - TOC3 (bsharpless) (9:12:03 AM): PER 9301 BLACK FORD EXPEDITION CVD UNIT(MD-622M361)MSP DEPARTMENTAL
 - TOC3 (bsharpless) (9:28:23 AM): PER 9301 RELOCATING GREEN LINCOLN (MD 6B/A4485)
 - TOC3 (bsharpless) (9:31:26 AM): PER 9301 INCIDENT IS NOW BEING CLASSIFIED AS A SERIOUS FI AND RECONSTRUCTION IS WILL BE IN ROUTE. LANES 1 AND 2 WILL BE CLOSED WITH EXTENDED DURATION. SGT WHITE STATED THAT LANES WOULD BE CLOSED FOR ABOUT 4HRS
 - TOC3 (bsharpless) (9:35:47 AM): PER MSP, PERSON TRANSPORTED PASSED UPON ARRIVING AT HOSPITAL.
 - SOC (jdicembre1) (10:06:54 AM): PER MSP CRASH TEAM: Three MSP Crash Team units are en-route with one 5 minutes away. MSP Media Communications also en-route as is States Attorney's Office.
 - TOC3 (bsharpless) (10:35:30 AM): PER 9301 CRASH TEAM WANTS ALL LANES CLOSED AND A DETOUR FROM THE OUTER LOOP ON TO US50 WEST
 - SOC (jdicembre1) (10:39:03 AM): MD 511 HAS BEEN ACTIVATED SINCE 0945 HRS
 - SOC (jdicembre1) (10:56:09 AM): PER 9004: Evidence spans all NB lanes so they have closed all lanes and the on ramp to allow the Crash Team to photograph, mark and measure. This should be short term then all but the two left lanes should be reopened.
 - SOC (jdicembre1) (10:56:26 AM): CIV (NB) delays begin past exit 11, near D'Arcy Rd. I/L (SB) delays begin on I-95 prior to the 495 Split, at the ICC. One factor adding to this delay is the fact that there is a Jehovah's Witness International Convention being held at FedEx Field today (and the rest of the weekend). There is also an Africa Leaders Summit that begins on the 3rd (some people may be arriving early).
 - TOC3 (bsharpless) (10:58:53 AM): RAMPS FROM US50 WEST TO THE OUTER LOOP A CLOSED AND TRAFFIC IS BEING DIVERTED TO THE RAMP TO THE NEW CARROLLTON METRO STATION
 - SOC (jdicembre1) (11:26:24 AM): I-95/495 S OF US 50 CAMERA B LOCKED
 - SOC (jdicembre1) (11:40:35 AM): PER 9004

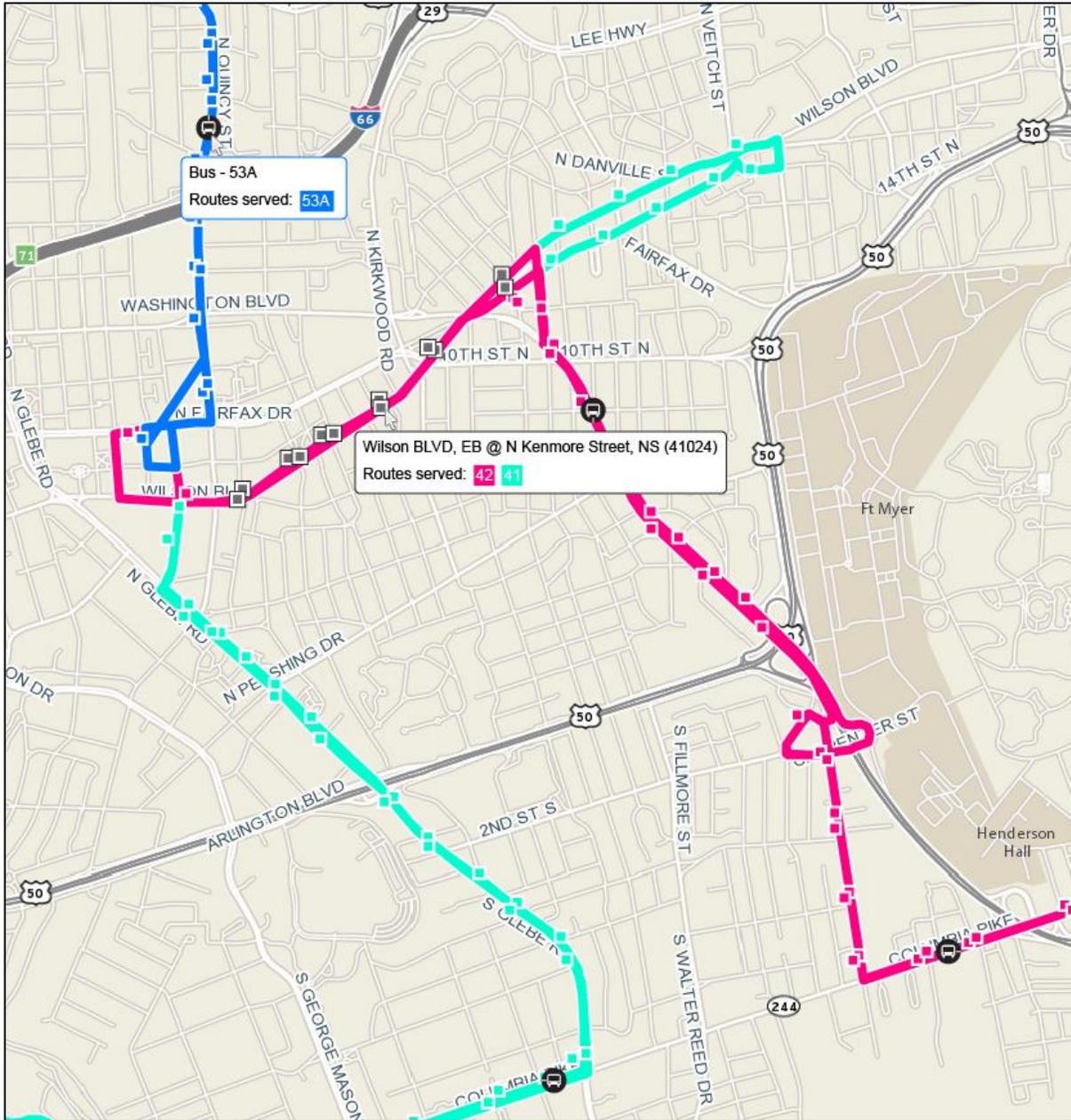
Rail Transit

Rail lines, stations, AVL, and arrival data are displayed on the map.



Bus Stops and Bus AVL

Bus routes, stops, and vehicle data are displayed on the map.



Bus #555

Wilson Blvd @ N Veitch Street

Next Stop: **900 Second Street, 10 min**
Route: **41 Columbia Pike-Ballston-Court House**
Direction: **Inbound to Friendship Heights**
Speed: **30 mph**
Heading: **Northbound**
Passenger Count: **25/50**
Driver Name: **Driver 1**
In service 3 hours

Wilson Blvd @ N Veitch Street

Next Arrival: **Rte. 41 to Court House, 10 min**
Routes Served: **41 Columbia Pike-Ballston-Court House**
42 Columbia Pike-DHS/Sequoia-Rosslyn
Accessible: **Yes**
Nearby Parking: **Street**
Nearby Incidents: **Fort Myer Dr.**
Key Blvd.

Evacuation Support Layers

The Evacuation support layer is currently integrated for six regions, including:

- Delaware
- District of Columbia
- Maryland
- Pennsylvania
- Virginia
- West Virginia

The screenshot displays a GIS application interface. At the top, there is a user greeting "Welcome Carolyn Siu!" and navigation buttons for "Set Filters", "Use Night Colors", and "Fullscreen". The main map area shows a region with roads labeled "197", "50", and "301", and locations "Gambrills" and "Crofton". Several blue circular icons with a white "P" are scattered across the map. Overlaid on the map is a legend titled "Evacuation Support Sub-Layers" with the following items:

- Staging Areas (P icon)
- Comfort Station/Travel Services (pink dot icon)
- Public Shelters (green house icon)
- Hospitals (blue H icon)
- Traffic Control Points (red target icon)
- Gov't Vehicle Fueling Stations (gas pump icon)
- Evacuation Routes (blue arrow icon)

To the right of the map is a "Hide Layer List" panel containing the following layers:

- Incidents and Events (yellow diamond icon)
- Dynamic Message Signs (black sign icon)
- Traffic Detectors (red and green sensor icon)
- Traffic Cameras (blue camera icon)
- Road Weather (weather icon)
- Radio Scanners (red antenna icon)
- FITM Plans (blue diamond icon)
- Evacuation Support (blue arrow icon)
- Public Transit (bus icon)
- Montgomery County (county seal icon)
- CAD (red 911 icon)
- Fleets (orange clock icon)
- Philadelphia Popal (orange figure icon)
- Points of Interest (green diamond icon)
- Metro Routes (M icon)
- Probe Speed Data (colorful bar icon)
- Weather Radar (colorful radar icon)
- Weather Alerts (yellow exclamation mark icon)

At the bottom right of the interface, there is a button labeled "Show Unmapped Incidents" and a page number "39".

Staging Areas

Clicking on a staging area shows how many parking spaces are available at that location, paved conditions, and the address, and provides aerial photography of the location with access points overlaid.

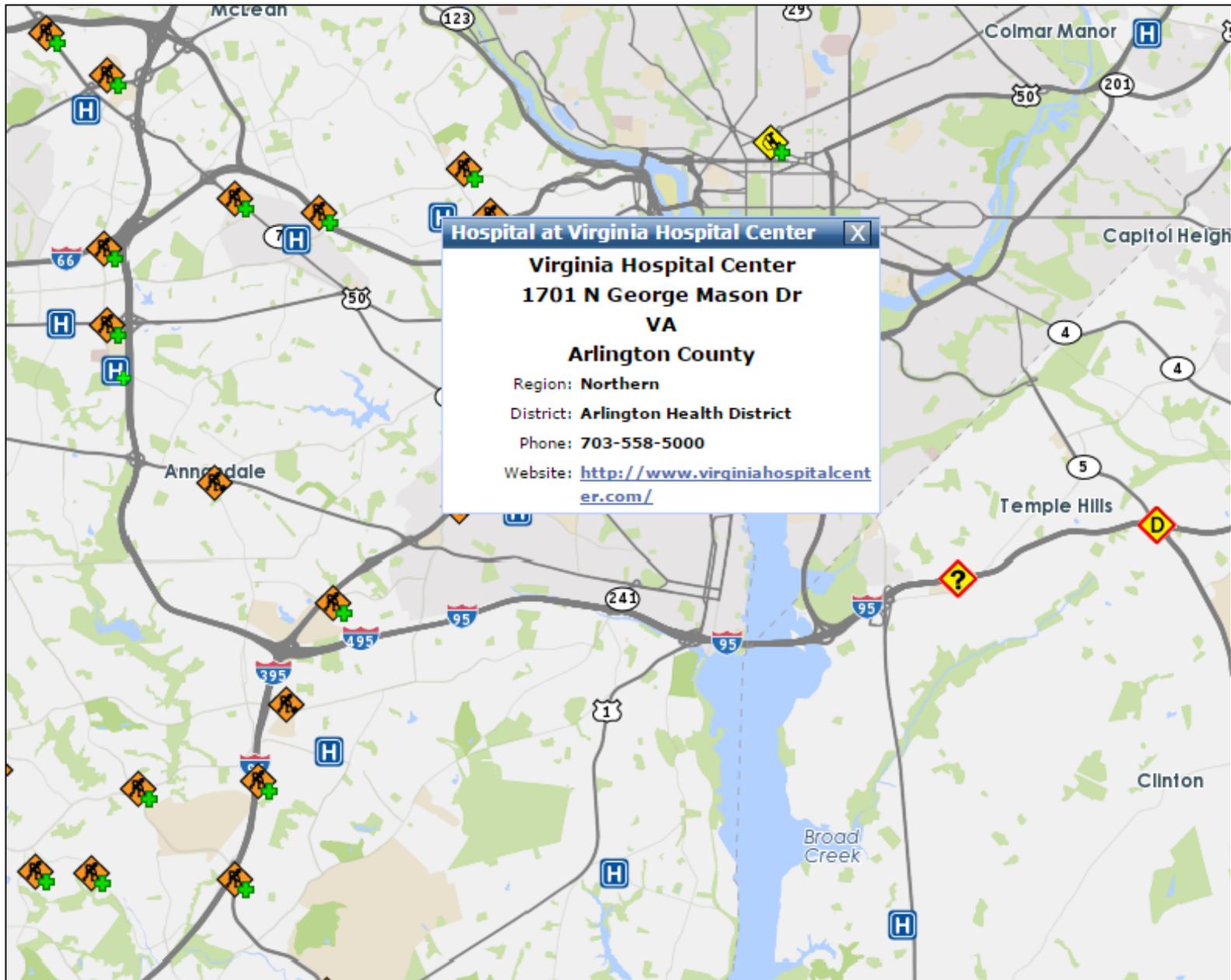
The screenshot displays the RITIS Transportation System Status web application. The interface includes a top navigation bar with links for Incident List, Traffic Map, Incident Overview, Traffic Cameras, RSS Feed, VWS, WZPMA, and RITIS Meeting. A user profile for Carolyn Siul is visible in the top right. The main map area shows a network of roads with numerous blue and green circular icons representing staging areas. A popup window is open over a specific staging area, providing the following information:

- Staging Area at Saks Fifth Avenue ...**
- Saks Fifth Avenue Parking Lot**
- 5555 Wisconsin Avenue**
- Chevy Chase, MD 20815**
- Montgomery County**
- Function: Private Parking Lot
- Surface Type: Paved
- Avail. Space: 475
- Lot Size: Small
- Truck Access: No
- Area Information

On the left side of the interface, there are two aerial photographs of the parking lot. The top one is labeled 'MG-S55: MD 355 (Wisconsin Ave) NB' and shows the building and surrounding area. The bottom one is labeled 'Access Point 1' and shows a closer view of the parking lot entrance. Below the photos is the label 'MG-S55'. On the right side, there is a 'Hide Layer List' panel with various map layers like Incidents and Events, Dynamic Message Signs, Traffic Detectors, etc. A scale bar at the bottom right indicates 0 to 3 miles, and the date/time is Sep 24, 2015 - 2:56 PM.

Hospitals and Beds

Clicking on hospital icons provides contact information for the hospital, as well as the number of available beds.



Traffic Control Points

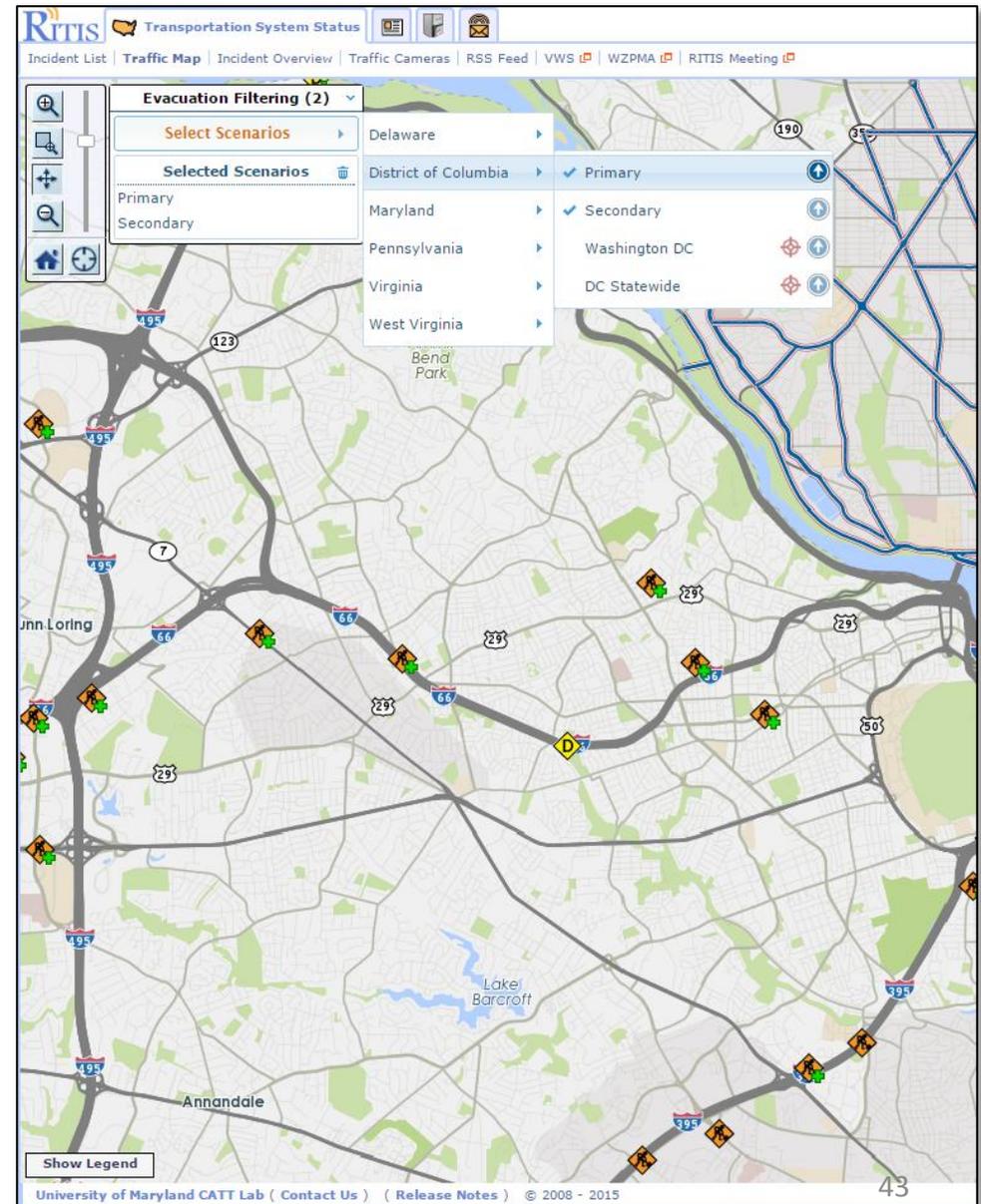
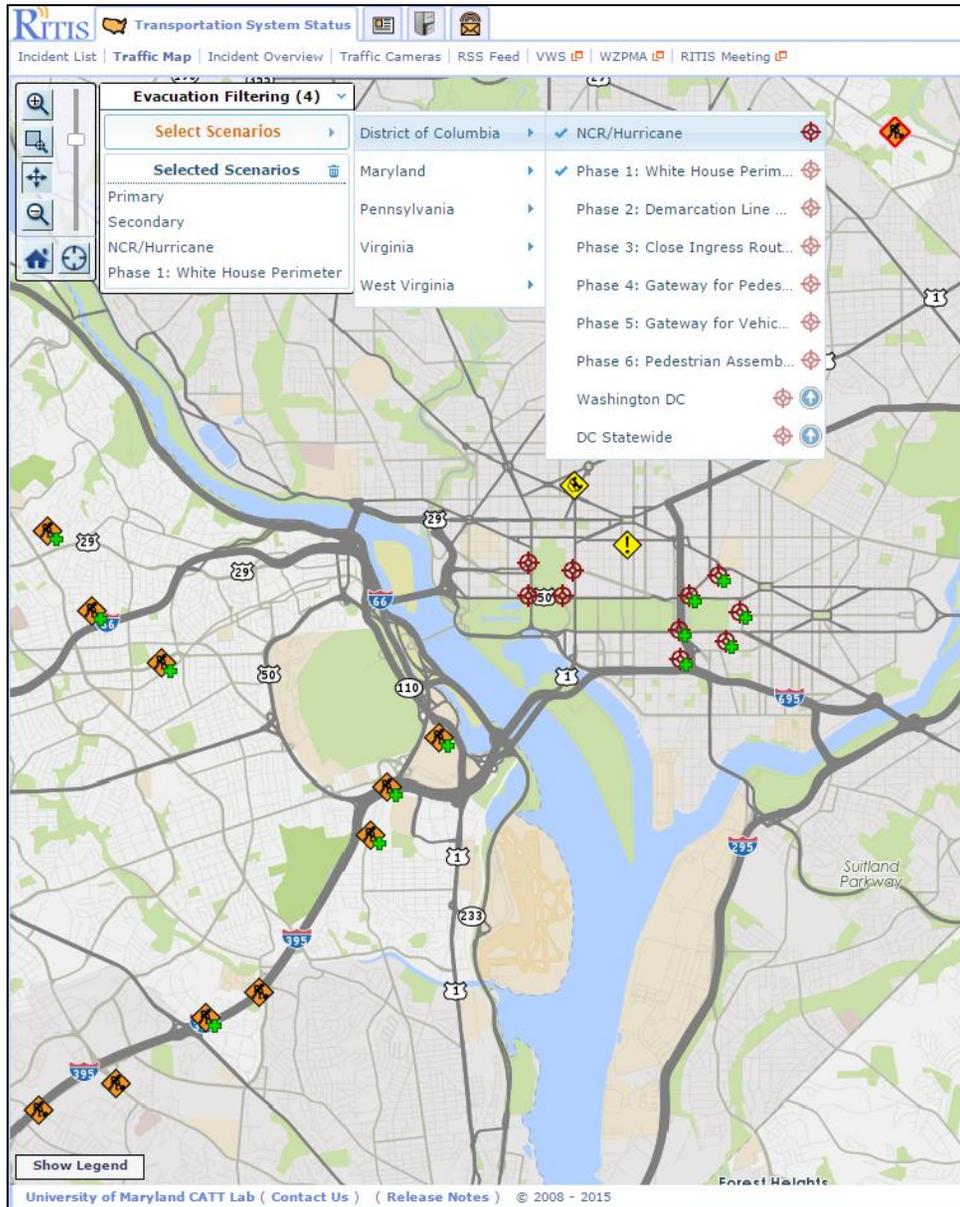
Clicking on a traffic control point brings up a diagram depicting how that intersection should be managed during the course of an active evacuation. Details include turning restriction, signal timing plan changes, the number of cones or other traffic control devices needed, signage, and recommended personnel locations.

The screenshot displays the RITIS Evacuation Support interface. On the left, a detailed diagram for the 'Traffic Control Point at 7th St NW @ Rhode Island Ave NW & R St NW' is shown. This diagram includes a 'Priority 1' section with three numbered instructions: 1. Adjust signal timing to accommodate evacuation traffic directions. 2. Provide watch duty personnel to monitor and manage traffic at this location. 3. Provide signage to encourage evacuees to take Rhode Island Ave NW EB or continue along 7th St NW NB. Below this, 'Resource Requirements' list one Evacuation Route sign and one watch duty position, with 'Responsible Agency' listed as blank. The diagram also shows a street layout with traffic signals, a purple 'EVACUATION ROUTE' sign, and a satellite view inset.

The main map area shows the District of Columbia with various traffic control points marked by red diamond icons. A pop-up window for the selected point reads: 'Traffic Control Point at 7th St NW @ Rhode Island Ave NW & R St NW DC Phase 5: Gateway for Vehicular Traffic'. The interface includes several panels: 'Evacuation Filtering (0)' with 'Select Scenarios' and 'Showing all scenarios'; 'Evacuation Support Sub-Layers' with options for Staging Areas, Comfort Station/Travel Services, Public Shelters, Hospitals, Gov't Vehicle Fueling Stations, and Evacuation Routes; and a 'Hide Layer List' on the right with numerous layers like Incidents and Events, Dynamic Message Signs, Traffic Detectors, etc. A 'KEY' section at the bottom left defines symbols for Personnel, Road Block, Cones/Barrels, Traffic signal, Evac Traffic, Evac Pedestrian, and Traffic Lane. It also identifies the location as 'District of Columbia National Mall Phase 5: Gateways for Veh. Traffic TCP DC-T047 7th St NW @ Rhode Island Ave NW & R St NW NM-T142' and includes a 'FINAL DRAFT FOR OFFICIAL USE ONLY NO PUBLIC RELEASE' warning.

Evacuation Filtering

Evacuation layers can be filtered based on the event type, scenario, and location. Blue lines with slight red outlines represent scenario-specific evacuation routes.



Points of Interest

If the user is looking for a specific location like a school or a business, they can use the Point of Interest search option. The user can define a radius of miles within which to search in order to narrow down the search results.

The screenshot displays a map with a large blue circular search radius centered on a red pin. The map includes labels for roads such as Boyard Rd, Stephanie Roper Hwy, and Roots And Tides Byway. A sidebar on the right contains various map layers, with 'Points of Interest' checked. A pop-up window titled 'Options for Points of Interest' is open, showing settings for search radius and number of results.

Options for Points of Interest

Opacity: 100%

Set the Search Reference Point

Search from Center of Map
38.81593,-76.68647

Search radius and number of results can be edited as text or by using the up and down arrows

Search Radius: 2 mile(s)

Limit number of results to: 500

Map layers sidebar:

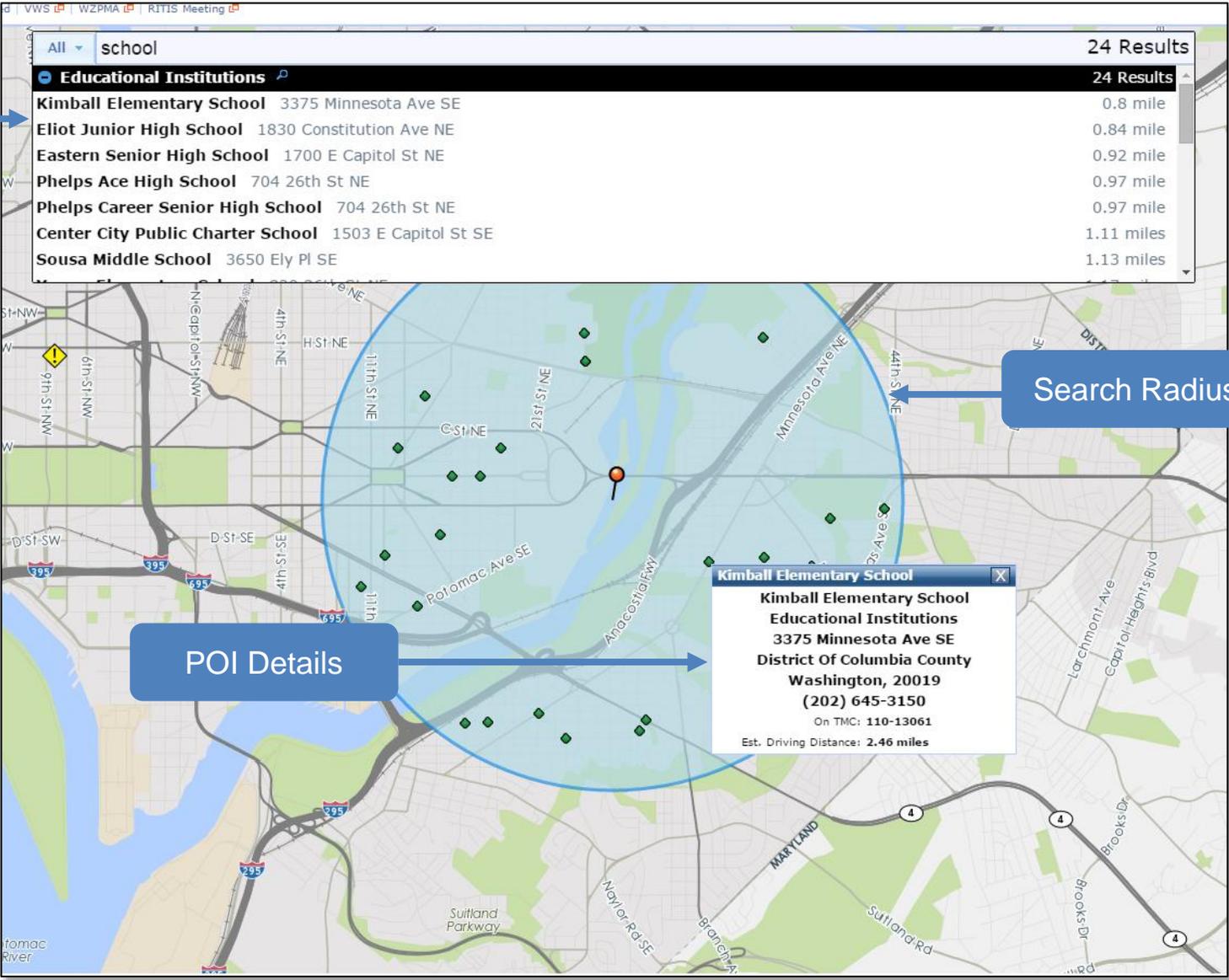
- Road Weather
- Radio Scanners
- FITM Plans
- Evacuation Support
- Public Transit
- Montgomery County
- CAD
- Fleets
- Philadelphia Papal
- Points of Interest
- Metro Routes
- Probe Speed Data
- Weather Radar
- Weather Alerts

Show Unmapped Incidents

Points of Interest

Search results are displayed directly on the map and in a list. Details can include names, addresses, and phone numbers.

Search Bar & Results



Search Radius

POI Details

Chatroom & File Sharing

Users can chat with any other user currently logged into RITIS, including users on agency-run chat services. Users are sorted by agency. Chats can be between two users, or they can be specific to an event, with an unlimited number of users sharing and collaborating. Images, documents, and other files can be associated with events and shared between users.

Taran Hutchinson - RITIS Chat

US 29 NORTH AT TECH RD

(5:05:01 PM) John Minisi has entered the room

(4:52:49 PM) The topic is: Fatalities Involved at US 29 NORTH AT TECH RD

(4:54:37 PM) Taran Hutchinson: Look for associated media; Waze, Twitter, News Outlets, etc

(4:55:28 PM) Taran Hutchinson: If appropriate we can upload incidents to incident timeline

(4:55:32 PM) John Minisi: @ClohertyWTOP has posted a picture of the incident scene, I saved a copy for future reference

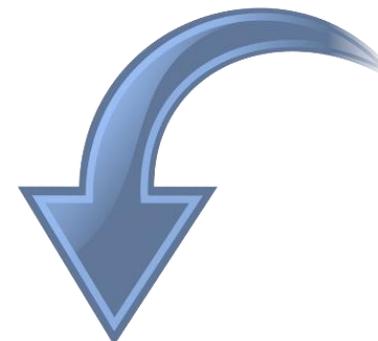
2 people in the room

John Minisi (RITIS - MAT...)

Taran Hutchinson

+ Invite a User

Start Entering a Name Send



- RITIS - DHS
- FEMA NWC-NCR
- RITIS - Maryland State Poli...
- Jeffrey Dean
- Justin Zimmerman
- Phillip Nickerson
- Wayne Santmyer
- William Forte
- RITIS - MATOC
- Kelly Taylor
- RITIS - Michigan DOT
- Jennifer Foley
- RITIS - Missouri DOT
- Jonathan Nelson
- RITIS - NJIT
- Branislav Dimitrijevic
- RITIS - VDOT
- Russell Davenport

Welcome Michael Pack!

Use Night Colors Fullscreen

Status Room List Sign Out

Search

- RITIS - DC HSEMA
- bobby smith
- RITIS - DHS
- FEMA NWC-NCR
- RITIS - FDOT Contractors
- Kathryn Ortega
- RITIS - Federal Reserve Boa...
- John Nash
- RITIS - JFHQ-NCR-NorthCom
- William Hegedusich
- RITIS - Maryland State Poli...
- Quindell Hudson
- RITIS - MATOC
- MATOC Instructor
- Valerie Weeks
- William Truong
- RITIS - MD SHA
- CHART GenericUser
- Mohammed Raqib
- RITIS - MEMA or MIEMS
- Jordan Nelms
- RITIS - Metric Engineering
- Mark Askins
- RITIS - Montgomery County
- Matthias Miziorko
- RITIS - pa.gov
- Shawn Sanders
- RITIS - PRTC / OmniRide
- Doris Chism
- RITIS - US Army
- Kenneth Lyons
- RITIS - US DOT
- Richard Jurey
- RITIS - VDOT
- Nancy Jones
- Tonya Vaughan

All conversations on RITIS Chat are logged.

Address Books

Detailed address books can be sorted by location or agency, are searchable, and will show contact information, operating hours, and other details about a specific agency or individual employee.

RITIS
Address Book
Welcome Carolyn Siu!

Contact List
Use Night Colors

Sort By:

Location
Category

Add Agency

- ▶ 911 Call Center
- ▶ Emergency Operations Center
- ▶ Fire
- ▶ Media
- ▶ **Medical**
 - ▶ **No Sub-Category**
 - [Emergency Medical services](#)
 - [Emergency Medical Services System](#)**
 - [Office of Chief Medical Examiner](#)
 - [Southern Maryland Electric Cooperative, Inc.](#)
- ▶ Other
- ▶ Police
- ▶ Public Information Officer (PIO)
- ▶ Railroad Companies
- ▶ Traffic Management Center
- ▶ Transit
- ▶ Utility

Edit
Save
Cancel
Delete
Add Individual

General Information

***Name:** Emergency Medical Services System

***Category:** Medical

Sub-Category:

Availability

24 Hours:

| | SUN | MON | TUE | WED | THUR | FRI | SAT |
|--------------|----------|----------|----------|----------|----------|----------|----------|
| OPEN | 12:00 AM |
| CLOSE | 12:00 AM |

Address

Primary

Street:

City:

State: Maryland

County:

Zip:

Contact Information

Primary Phone: 410-706-7814

University of Maryland CATT Lab ([Contact Us](#)) ([Release Notes](#)) © 2008 - 2015

47
Sep 24, 2015 - 3:43 PM

Active Incident Management

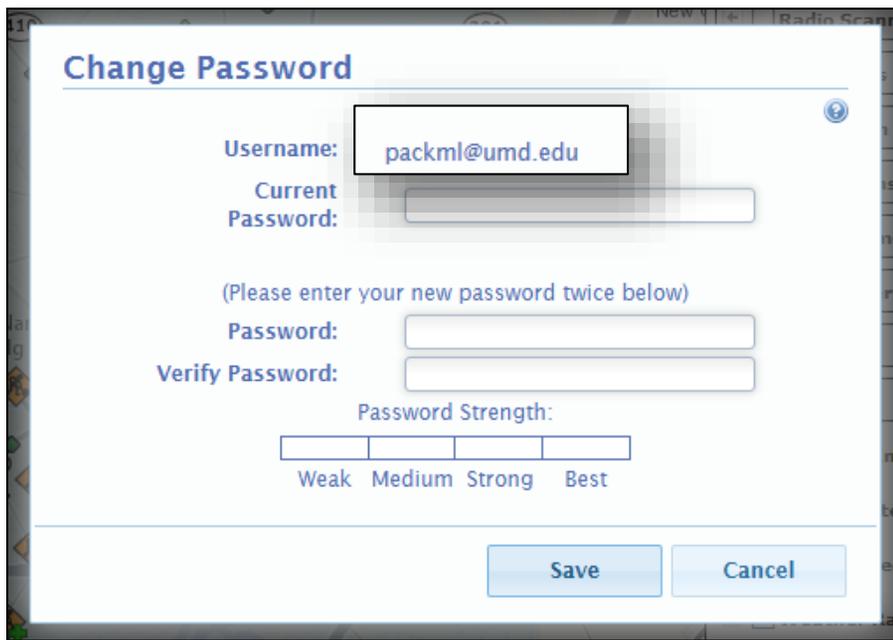
This screenshot shows an active incident being managed within RITIS. Note the wide array of information available, including operator notes, a live chat room dedicated to the incident, real-time CCTV feeds, and pictures taken at the scene and uploaded to the site.

The screenshot displays the RITIS (Regional Integrated Transportation Information System) interface for an active incident. The central map shows the location of the incident on US 29 North at Tech Rd in Montgomery County, Maryland. The interface is populated with several key components:

- Map:** Shows the incident location with various icons for fatalities, responders, and nearby features. Major roads like I-95, I-70, and I-495 are visible.
- Fatalities Involved Panel:**
 - Incident:** US 29 NORTH AT TECH RD, Montgomery County, Maryland.
 - Status:** 29 fatalities involved.
 - Timeline:** Started: 2/26/2014 2:35 PM; Updated: 2/26/2014 4:50 PM.
 - Details:** 3 Responders on the Scene.
 - Description:** Rob Murry (Fairland Shop) called and advised that Mont Co Police said approximately 2 hrs. The victim was an elderly man with a walker and he was walking against the light but was in the crosswalk.
 - Media:** Includes a photo of a school bus and a link to 'school bus struck ped 22614...'. There is an 'Add File/Link' button.
 - Nearby FITM Plans:** Lists '1495 Exit 28 to Exit 29' and '1495 Exit 27 to Exit 28'.
- Chat Room:** Taran Hutchinson - RITIS Chat.
 - Topic:** Fatalities Involved at US 29 NORTH AT TECH RD.
 - Participants:** John Minisi (RITIS - MAT...), Taran Hutchinson.
 - Messages:**
 - 5:05:01 PM John Minisi has entered the room
 - 4:52:49 PM The topic is: Fatalities Involved at US 29 NORTH AT TECH RD
 - 4:54:37 PM Taran Hutchinson: Look for associated media: Waze, Twitter, News Outlets, etc
 - 4:55:28 PM Taran Hutchinson: If appropriate we can upload incidents to incident timeline
 - 4:55:32 PM John Minisi: @ClohertyWTOP has posted a picture of the incident scene, I saved a copy for future reference
- Timeline:** Shows the event history for 'Collision (Fatality) @ US 29 NORTH AT TECH RD'.
 - 2:30 PM:** February 26, 2014
 - 2:35:42 PM:** TOC3 (bsharpless)
 - 4:00:17 PM:** SOC (cmoss)
 - 4:05:03 PM:** SOC (skellam)
 - 4:48:33 PM:** SOC (skellam)
 - 4:50:23 PM:** SOC (skellam)
- CCTV Feed:** A live video feed showing a street scene with a yellow school bus and a white car.
- Operator Notes:** A large text area at the bottom right contains detailed notes from responders:
 - TOC3 (bsharpless) (2:36:54 PM):** PER CARLOS @ TMC A PEDESTRIAN WAS STRUCK
 - SOC (cmoss) (4:00:17 PM):** After talking with Rob, I was just advised that it was a School Bus out of Howard County loaded with 12 children that had struck the pedestrian. The children are fine and were moved to another bus. There are 3 arrowboards and 1 vms set up for this incident. NB all lanes are closed from 650 to Tech Road, traffic is being detoured off of NB MD 650 to Randolph Rd to US 29. Rob is heading out to the scene to ascertain a time frame.
 - SOC (skellam) (4:05:03 PM):** Rob Murry from Fairland shop's number is 240-882-2187. He is heading out to the scene.
 - SOC (skellam) (4:48:33 PM):** Per Scott @4:34p: Lt. McCullagh called back after speaking to investigators at the scene. The victim had been transported so no body remains at the scene. Montgomery County PD's investigative team will have to mark, measure and map the entire intersection and it is anticipated northbound will be closed through evening rush hour. He estimated the closure of between 3-4 hours.
 - SOC (skellam) (4:50:23 PM):** Rob Murry (Fairland Shop) called and advised that Mont Co Police said approximately 2 hrs. The victim was an elderly man with a walker and he was walking against the light but was in the crosswalk.

User Administration

- Users can change their own passwords while logged in.
- If passwords are forgotten, they can be automatically reset by the user.
- User self-registration is simple and quick. For vetted agencies, individual user account approval is automatic, instantaneous, and secure.



Change Password

Username:

Current Password:

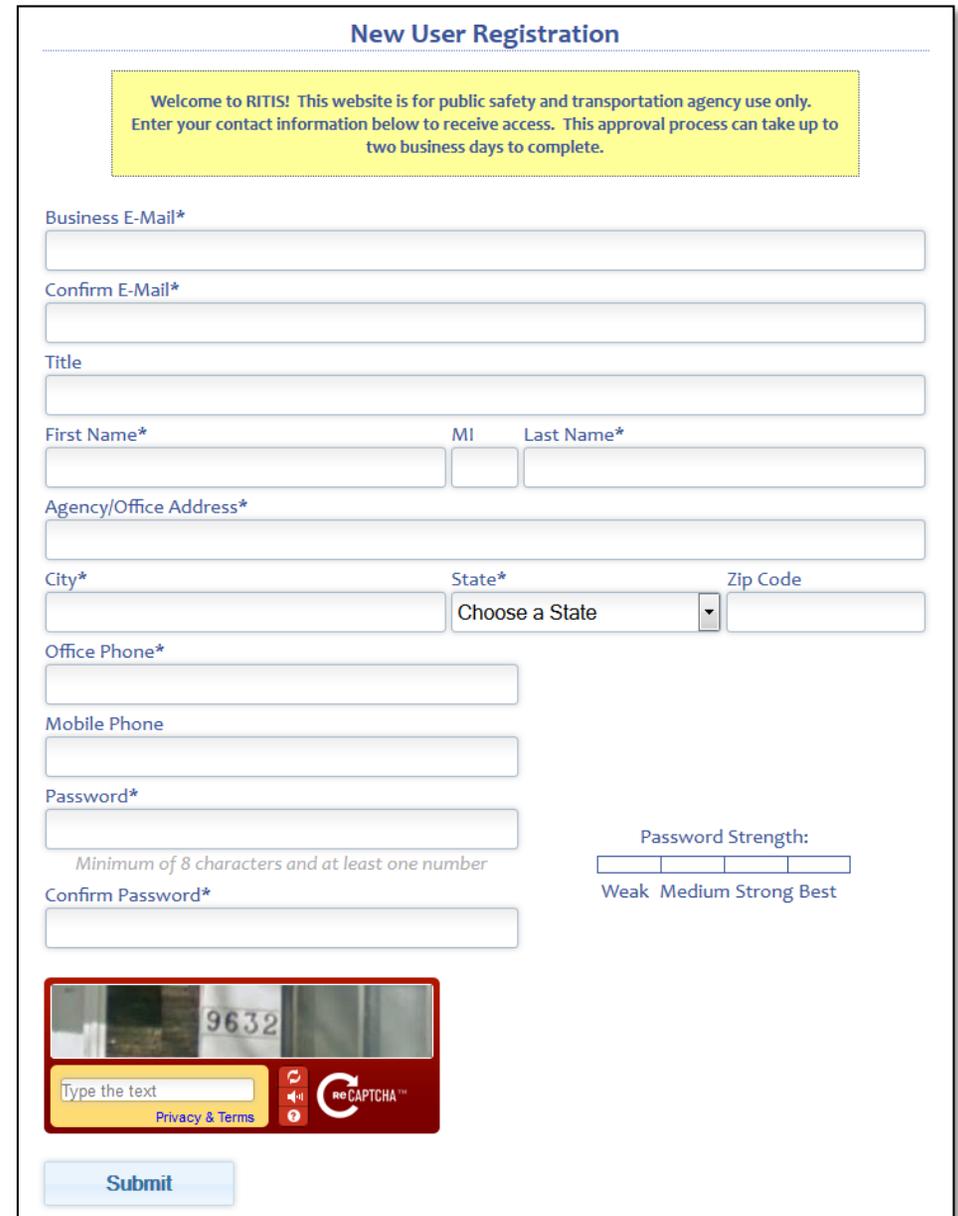
(Please enter your new password twice below)

Password:

Verify Password:

Password Strength:

| | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Weak | Medium | Strong | Best |



New User Registration

Welcome to RITIS! This website is for public safety and transportation agency use only. Enter your contact information below to receive access. This approval process can take up to two business days to complete.

Business E-Mail*

Confirm E-Mail*

Title

First Name* MI Last Name*

Agency/Office Address*

City* State* Zip Code

Office Phone*

Mobile Phone

Password*

Confirm Password*

Minimum of 8 characters and at least one number

Password Strength:

Weak Medium Strong Best

Administration – Data access controls

All data sources and tools can be restricted per user or per agency. Archived data can also be restricted by date range.

The screenshot displays the 'Editing MD SHA Group' interface. At the top, there are navigation links like 'User Manage', 'Group Manage', and 'Permission Manage'. The main content area is divided into several sections:

- Group Information:** Group Name: MD SHA, E-mail Domain: sha.state.md.us, Description: Maryland State Highway Administration.
- Permissions:**
 - App Permissions:** Includes 'The Regional Integrated Transportation Information Site', 'Virtual Weigh Stations (VWS)', 'Address Book', 'Modify', 'Event Query Tool', 'Detector Tools', 'Launched', and 'Detector Profile'.
 - INRIX Permissions:** Lists various regions and states like California, Ohio, and Michigan.
- Data Sources:** A list of data sources with checkboxes, including CAD, OCTV, Detector, DHS, Evac, and F1TH.
- Users in Group:** A table listing group members with columns for Name, E-Mail, Role, and Last Login.

An 'INRIX Access Date Range' modal is open, showing a calendar for December 2014. The text in the modal reads: 'The MD SHA group is allowed to access INRIX data... all time'. The calendar shows dates from 1 to 31, with the 1st and 2nd highlighted.

Custom Personal Alerting

Customize Alerts to be sent to your:

- Cell phone
- Email

Alerts can be based off of:

- Speeds (falling above or below some threshold for some amount of time)
 - Time of Day & Day of Week
 - Single or multiple corridors
- Events and Incidents
 - Event types
 - Percent of lanes closed
 - Time of Day and Day of Week
 - Single or multiple corridors

View Current Subscriptions | [Subscribe to a New Incident Alert](#) | **Subscribe to a New Speed Alert**

1.Road Selection > 2.Name Subscription > **3.Speed Thresholds** > 4.Time of Day > 5.Contact Info > 6.Confirmation > 7.Done! >

Speed Thresholds

Step 3: Tell us under what conditions you'd like to receive a speed alert.

Alert me when the speed on any segment of the selected road has...

fallen below percent of the free flow speed

fallen below MPH

...for at least minutes.

Alert me minutes after *all* segments along the selected roads no longer match the criteria selected above.

Next

Personal Event Alerts

Users can define routes for which they want to be notified. Alert criteria include time-of-day and day-of-week, event type, lane status, and location. Alerts can be emailed or sent via text message to your cell phone.

Build Your Route

Step 1: Click on the map to start building your route. You must select a starting point and at least one waypoint before you can move to the next step. You can zoom in or out of the map using your mouse scroll wheel or the map controls in the upper right-hand corner of the map. Click "Next" when you are comfortable with your route.

Jump to State Next

Lane Status

Step 4: Sometimes incidents happen on or near the roadway, but they don't block any lanes. Here you can set your preference for how many lanes must be blocked before you will be sent an alert. You can skip this step if you just want to be notified regardless of how many lanes are blocked.

Alert me regardless of how many lanes are closed.
 Alert me when 25% or more of the lanes are closed.
 Alert me when 50% or more of the lanes are closed.
 Alert me when 75% or more of the lanes are closed.
 Alert me when all of the lanes are closed.

Next

Select the days you would like to get your alerts:

| | | | | | | |
|------------------------------|---|---|---|---|---|------------------------------|
| <input type="checkbox"/> Sun | <input checked="" type="checkbox"/> Mon | <input checked="" type="checkbox"/> Tue | <input checked="" type="checkbox"/> Wed | <input checked="" type="checkbox"/> Thu | <input checked="" type="checkbox"/> Fri | <input type="checkbox"/> Sat |
|------------------------------|---|---|---|---|---|------------------------------|

During the time:
 Starting at: 5:15 p.m. and ending at: 8:45 p.m.

12:00 a.m. 4:45 a.m. 9:30 a.m. 2:15 p.m. 7:00 p.m. 11:45 p.m.

Add Time Segment Next

Alert Types

Step 3: Select only the incident types for which you would like to receive alerts.

Select All Select None Next

| | | | |
|--|--|--|---|
| <input checked="" type="checkbox"/> Injury Accident | <input checked="" type="checkbox"/> Hazardous Material | <input checked="" type="checkbox"/> Vehicle Fire | <input checked="" type="checkbox"/> Police Activity |
| <input checked="" type="checkbox"/> Collision | <input checked="" type="checkbox"/> Debris on Roadway | <input checked="" type="checkbox"/> Water-Main Break | <input checked="" type="checkbox"/> Fire |
| <input checked="" type="checkbox"/> Flooding | <input checked="" type="checkbox"/> Animal Struck | <input checked="" type="checkbox"/> Disabled Vehicle | <input checked="" type="checkbox"/> Medical Emergency |
| <input checked="" type="checkbox"/> Signal Malfunction | <input checked="" type="checkbox"/> Roadwork | <input checked="" type="checkbox"/> Emergency Roadwork | <input checked="" type="checkbox"/> Incident |
| <input checked="" type="checkbox"/> Tornado | <input checked="" type="checkbox"/> Foggy Conditions | <input checked="" type="checkbox"/> Windy Conditions | <input checked="" type="checkbox"/> Fallen Rocks |
| <input checked="" type="checkbox"/> Closure | <input checked="" type="checkbox"/> Fallen Tree | <input checked="" type="checkbox"/> Drawbridge Opening | <input checked="" type="checkbox"/> Sporting Event |
| <input checked="" type="checkbox"/> Special Event | <input checked="" type="checkbox"/> Overgrown Plants | <input checked="" type="checkbox"/> Congestion | <input checked="" type="checkbox"/> Delays |

Select All Select None Next

Personal Traffic Alerts

With personal traffic alerts, users can define routes for which they will receive notification when speeds fall below their predefined speed thresholds. Alert criteria include full or partial road selections, time of day, and day of week. Alerts can be emailed or sent via text message to your cell phone.

1. Road Selection

Step 1: Select one or more roads on which you'd like to receive alerts.

Your selected roads: I-94 between I-69/US-27/Exit 108 and M-10/John C Lodge Fwy/Exit 215

Speed Thresholds

Step 3: Tell us under what conditions you'd like to receive a speed alert.

Alert me when the speed on any segment of the selected road has...

- fallen below 70 percent of the free flow speed
- fallen below 65 MPH

...for at least 15 minutes.

Alert me 15 minutes after all segments along the selected roads no longer match the criteria selected above.

Select the days you would like to get your alerts.

| | | | | | | |
|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |

During the time: Starting at 7:00 a.m. and ending at 9:00 a.m.

12:00 a.m. 4:45 a.m. 9:30 a.m. 2:15 p.m.

Confirm Your Info

Step 6: Please look over the following information to confirm that we've correctly gathered all your data.

Route Name
I-94 Alerts

Road Selection
You have selected to receive alerts for I-94 between I-69/US-27/Exit 108 and M-10/John C Lodge Fwy/Exit 215.

Speed Thresholds
You have selected to receive an alert when any segment on your selected roads falls below 70 percent of freeflow speed for 15 minutes. You have asked to be notified when all segments along your selected roads have recovered for 15 minutes.

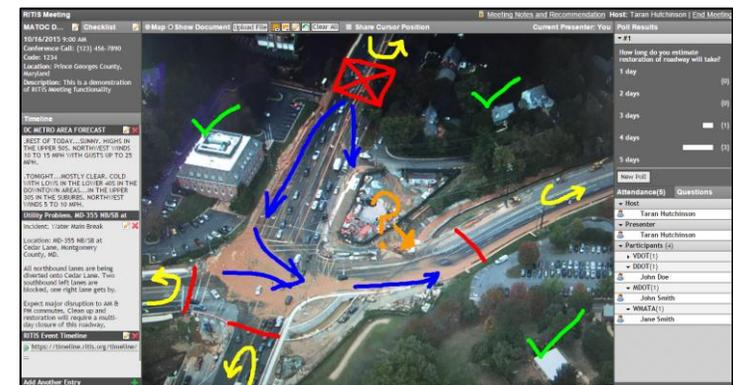
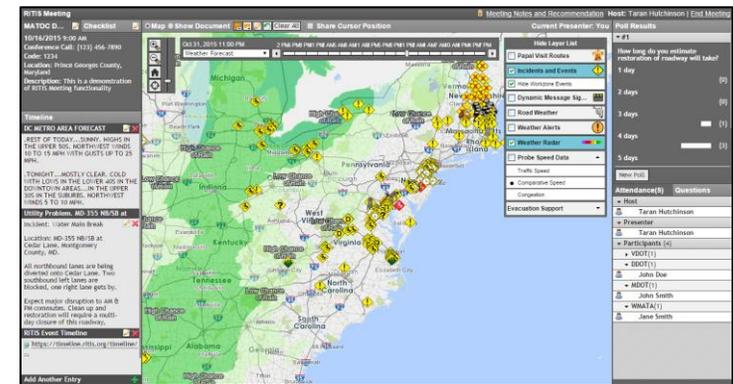
Time of Day
You've selected to receive alerts during the following time periods:
Mon-Fri: 7:00 a.m.-9:00 a.m.
Mon-Fri: 4:00 p.m.-6:00 p.m.

Notification Method
You entered the following notification methods:
Email: jallen35@umd.edu
Text: 2156663057 - Verizon

Subscribe to Alerts!



- Originally developed for the NCR and now available to other RITIS users
- Simple RITIS-based webinar function that allows for:
 - Faster call management (eliminates the need for roll-call)
 - Multiple-presenter functionality
 - Interactive mapping – data layer control, share documents, draw on the screen
 - Shared view of an event or incident
 - Meeting note-taking
 - Open and transparent decision making (e.g., real-time polling)
 - Participants receive a PDF meeting summary at the conclusion of the call
- Works on all internet browsers.
 - No plugins required
 - Supports up to 300 participants per session



Collaborating During Significant Events (Hurricanes or Other...)

- **RITIS Meeting Platform**
 - Anytime/anywhere
 - PC or mobile device, such as iPad (participants only)
- **It's situational awareness**
 - Weather (radar, alerts, road surface condition)
 - Events/incidents (construction, crashes, etc)
 - Probe speed data/DMS messages
- **It's collaborative decision making**
 - Leverage multiple layers of data
 - Share documents
 - Discuss ideas and recommendations
 - Conduct attendee polling
- **It's multifaceted**
 - Multi-agency/multi-user
 - Plan, respond to, follow up
 - Extreme weather, special events, incident management
- **It's fast and easy**
 - Simple meeting set-up, agenda creation
 - One-click hyperlinks to send to attendees
 - Intuitive and user-friendly
 - Instant follow-up email with an automatically generated meeting log (MOR)



Collaborative Decision Making Tools – Meeting in Progress

Clear, comprehensive, and organized layout of tools and information makes collaborating simple and easy.

The screenshot displays a web-based collaborative decision-making interface. The central element is a weather radar map showing precipitation intensity over a geographic region. Several blue callout boxes with arrows point to specific interface components:

- Active Poll:** A modal window titled "School Closing" is open, asking "When should the schools be closed?". It features three radio button options: "8am" (selected), "10am", and "12pm", along with a "No closing needed" option. Buttons for "Edit Poll", "End Poll in 10 Seconds", and "Cancel Poll" are visible at the bottom.
- Notes/Agenda:** A vertical sidebar on the left contains a "Forecast" section with text: "A strong storm will be advancing through the area with potential wind gusts of 35mph." Below it, an "Event Timeline/Forecast" section shows time slots: "12pm - 4pm" (with a note about the storm moving east of Springfield) and "4pm - 8pm" (with a note about the storm moving out of the region).
- Annotations:** Two red circles on the map highlight specific areas, with arrows pointing to a text box that reads: "Flash Flood Warning issued September 17 at 11:55AM CDT until September 17 at 3:00PM CDT by NWS Springfield".
- Attendee List:** A sidebar on the right titled "Attendance(6)" lists participants: Host (Nikola Ivanov), Presenter (Nikola Ivanov), and five participants (JJ Biel-Goebel, CATT Lab(4), Pat Redding, Kevin Van, Pyae, and Walter).
- Other UI Elements:** A top-left sidebar shows meeting details (date, time, call ID, location, description). A top-right sidebar includes a "Meeting Notes and Recommendation" section, a "Poll Results" section (currently empty), and a "Hide Layer List" with options like "Incidents and Events", "Dynamic Message Signs", "Road Weather", "Weather Alerts", "Weather Radar", "Probe Speed Data", and "Evacuation Support". A weather station data popup for "Sep 17, 2014 1:49 PM" shows wind speed (3.7 MPH), air temperature (86°F), surface temperature (70°F), and visibility (1.1mi).

Collaborative Decision Making Tools – Meeting in Progress (Cont'd.)

Pre-weather event meeting showing impending weather and incidents.

RITIS Meeting
Meeting Notes and Recommendation
Host: Taran Hutchinson | End Meeting

MATOC D... Checklist Map Show Document Clear All Share Cursor Position

10/16/2015 9:00 AM
Conference Call: (123) 456-7890
Code: 1234
Location: Prince Georges County, Maryland
Description: This is a demonstration of RITIS Meeting functionality

Timeline

DC METRO AREA FORECAST

.REST OF TODAY...SUNNY. HIGHS IN THE UPPER 50S. NORTHWEST WINDS 10 TO 15 MPH WITH GUSTS UP TO 25 MPH.

.TONIGHT...MOSTLY CLEAR. COLD WITH LOWS IN THE LOWER 40S IN THE DOWNTOWN AREAS...IN THE UPPER 30S IN THE SUBURBS. NORTHWEST WINDS 5 TO 10 MPH.

Utility Problem. MD-355 NB/SB at

Incident: Water Main Break

Location: MD-355 NB/SB at Cedar Lane, Montgomery County, MD.

All northbound lanes are being diverted onto Cedar Lane. Two southbound left lanes are blocked, one right lane gets by.

Expect major disruption to AM & PM commutes. Clean up and restoration will require a multi-day closure of this roadway.

RITIS Event Timeline

<https://timeline.ritis.org/timeline/>

Add Another Entry

Oct 31, 2015 11:00 PM

Weather Forecast

Hide Layer List

- Papal Visit Routes
- Incidents and Events
- Hide Workzone Events
- Dynamic Message Sig...
- Road Weather
- Weather Alerts
- Weather Radar
- Probe Speed Data
- Traffic Speed
- Comparative Speed
- Congestion
- Evacuation Support

Poll Results

#1

How long do you estimate restoration of roadway will take?

| | |
|--------|-----|
| 1 day | (0) |
| 2 days | (0) |
| 3 days | (1) |
| 4 days | (3) |
| 5 days | |

New Poll

Attendance(5) Questions

Host: Taran Hutchinson

Presenter: Taran Hutchinson

Participants (4)

- VDOT(1)
- DDOT(1)
- Jacqui Stapleton
- MDOT(1)
- Robert Franklin
- WMATA(1)
- Louise Mortimer

Collaborative Decision Making Tools – Meeting in Progress (Cont'd.)

Running a Poll

The host of a meeting has the ability to run polls and get input from the meeting participants. Poll results are displayed in the top right panel.

The screenshot displays a weather meeting interface. On the left, a sidebar contains meeting details and a forecast. The main area is a map with weather overlays. A poll overlay is positioned in the center-right, and a larger poll results panel is on the right. A blue arrow labeled 'Poll Results' points from the poll overlay to the results panel. Another blue arrow points from the poll results panel to the right side of the interface.

Forecast

- 8am - 12pm**
A strong storm will be advancing through the area with potential wind gusts of 35mph.
- 12pm - 4pm**
The storm will move to the east of Springfield by 3pm, and weaken as it approaches St. Louis.
- 4pm - 8pm**
The storm will move out of the region completely by 8pm.
- 8pm - 12am**
Significantly colder air will settle over the region causing rapid freezing on the roadways.

Poll Results

on Host: Nikola Ivanov | End Meeting

School Closing

When should the schools be closed?

| | |
|-------------------|---|
| 8am | 2 |
| 10am | 0 |
| 12pm | 2 |
| No closing needed | 0 |

4 of 6 participants voted

New Poll

Collaborative Decision Making Tools – Meeting in Progress (Cont'd.)

Sharing Documents or Images (and annotating them)

The host of the meeting or a designated presenter can share images and documents during the meeting. This person can add and remove annotations on the files they are sharing. In the image below, RITIS Meeting is used during a water main break to identify closures, rerouting, and other items. The meeting host used the drawing tool to walk participants through the event.

The screenshot displays the RITIS Meeting interface. The central map shows an aerial view of a road intersection with several hand-drawn annotations: a red square with an 'X' over a building, blue arrows indicating traffic flow, yellow arrows pointing to specific areas, and green checkmarks. The interface includes a top navigation bar with options like 'Map', 'Show Document', and 'Upload File'. The left sidebar contains meeting details such as 'MATOC D...', 'Checklist', and a 'Timeline' section with weather forecasts and utility problem information. The right sidebar shows 'Meeting Notes and Recommendation', 'Host: Taran Hutchinson', and a 'Poll Results' section with a question about restoration time and a list of participants.

Meeting Details:
RITIS Meeting
MATOC D... Checklist
10/16/2015 9:00 AM
Conference Call: (123) 456-7890
Code: 1234
Location: Prince Georges County, Maryland
Description: This is a demonstration of RITIS Meeting functionality

Timeline:
DC METRO AREA FORECAST
.REST OF TODAY...SUNNY. HIGHS IN THE UPPER 50S. NORTHWEST WINDS 10 TO 15 MPH WITH GUSTS UP TO 25 MPH.
.TONIGHT...MOSTLY CLEAR. COLD WITH LOWS IN THE LOWER 40S IN THE DOWNTOWN AREAS...IN THE UPPER 30S IN THE SUBURBS. NORTHWEST WINDS 5 TO 10 MPH.

Utility Problem: MD-355 NB/SB at
Incident: Water Main Break
Location: MD-355 NB/SB at Cedar Lane, Montgomery County, MD.
All northbound lanes are being diverted onto Cedar Lane. Two southbound left lanes are blocked, one right lane gets by.
Expect major disruption to AM & PM commutes. Clean up and restoration will require a multi-day closure of this roadway.

RITIS Event Timeline
<https://timeline.ritis.org/timeline/>

Meeting Notes and Recommendation Host: Taran Hutchinson | End Meeting

Poll Results
#1
How long do you estimate restoration of roadway will take?
1 day (0)
2 days (0)
3 days (1)
4 days (3)
5 days (3)

Attendance(5) Questions
Host: Taran Hutchinson
Presenter: Taran Hutchinson
Participants (4):
VDOT(1)
DDOT(1)
Jacqui Stapleton
MDOT(1)
Robert Franklin
WMATA(1)
Louise Mortimer

Collaborative Decision Making Tools – Meeting Log

A meeting log is generated after every meeting. This log keeps track of all the information shared in the meeting, who attended, who voted, which documents were shared, recommendations, meeting minutes, and what actions need to be taken. It is sent out to all the participants automatically at the conclusion of the meeting.

MATOC Weather Call: January 26 Event

1/25/15 2:00 PM
Host: Taran Hutchinson
District of Columbia

This is the RITIS Meeting for MATOC Severe Weather Coordination Working Group to discuss the anticipated winter weather event forecasted to impact the region Sunday night into Monday (1/26) morning.

Recommendation:

Recommend MWCOG Snow Call for 3AM Monday (1/26)

We will have a follow up MATOC Weather Call at 2PM Monday (1/26) to discuss how the event is progressing and impacts to PM rush as well as impacts for Tuesday AM rush.

Number of Attending: 9

Forecast:

Current Advisory

NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC
1040 AM EST SUN JAN 25 2015

...WINTER WEATHER ADVISORY REMAINS IN EFFECT FROM 2 AM TO 6 PM EST MONDAY...

* PRECIPITATION TYPE...SNOW...POSSIBLY HEAVY AT TIMES.

* ACCUMULATIONS...1 TO 2 INCHES.

* TIMING...SNOW WILL BEGIN LATE TONIGHT AND CONTINUE THROUGH LATE MONDAY AFTERNOON. THE HEAVIEST SNOWFALL WILL OCCUR BETWEEN EARLY MONDAY MORNING AND MONDAY AFTERNOON.

* TEMPERATURES...IN THE LOWER 30S.

* WINDS...NORTHEAST 10 TO 15 MPH.

* IMPACTS...ROADS WILL BE SNOW COVERED AND SLIPPERY WITH VISIBILITIES BEING REDUCED TO NEAR ONE-QUARTER MILE AT TIMES. THE COMBINATION OF SNOW COVERED ROADS AND LOW VISIBILITY WILL MAKE TRAVELING DANGEROUS.

* OUTLOOK...SNOW WILL CONTINUE MONDAY NIGHT INTO TUESDAY...WITH ADDITIONAL ACCUMULATION POSSIBLE.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A WINTER WEATHER ADVISORY FOR SNOW MEANS THAT PERIODS OF SNOW WILL CAUSE PRIMARILY TRAVEL DIFFICULTIES. BE PREPARED FOR SNOW COVERED ROADS AND LIMITED VISIBILITIES...AND USE CAUTION WHILE DRIVING.

Polls:

| Poll #1 | 2:08 PM |
|--|---------|
| When do you recommend a MWCOG Snow Call? | |
| Sunday afternoon (late) | (0) |
| Sunday evening | (1) |
| Monday morning (early, 3AM) | (4) |
| Monday morning (late) | (0) |
| 5 of 8 Attendance Voted | |

Shared Media:

Uploaded by: Taran Hutchinson

Time: 1:46 PM

Description: MATOC Road Conditions Table

| TABLE 1: Transportation system status levels | | Suggested terminology and PID templates |
|--|---|--|
| <p>Road Condition 5: IMPASSABLE/ DANGEROUS/ TREACHEROUS</p> <p>Some roads could be temporarily impassable. This may be the result of severe weather (low visibility, etc.) or road conditions (drifting, excessive unplowed snow, glare, ice, accidents, stranded vehicles, etc.) Skeletal transit services. Limited above-ground rail service if more than 8" of accumulation. Lane drops in certain sections.</p> |  | <p>"treacherous", "impassable", "dangerous" Be where you need to be by <times>. Get where you need to be before the weather gets bad. Stay where you are.</p> |
| <p>Road Condition 4: ICY/SNOW PACKED</p> <p>The pavement surface is covered with packed snow and/or ice. There may be loose snow on top of the icy or packed snow surface. Transit lifeline services only with significant delays for rail and bus. Refreeze possible. Lane drops in certain sections.</p> |  | <p>"unsafe", "impassable" "major delays" Be where you need to be by <times>. Avoid or postpone travel for next <hours>. Stay at the office an extra <hour>, or leave early, to avoid travel during a winter storm.</p> |
| <p>Road Condition 3: SNOW AND/OR SLUSH COVERED</p> <p>The pavement surface has continuous stretches of packed snow with or without loose snow on top of the packed snow or ice. Core bus services only, delays in rail services. Lane drops on certain sections of roadways.</p> |  | <p>"caution", "passable" Avoid being stranded at bus stops Avoid or postpone travel for next <hours>. Stay off the roads. Stay at the office an extra <hour>, or leave early, to avoid travel during a winter storm.</p> |
| <p>Road Condition 2: SNOW / SLUSH COVERED W/ WHEEL TRACKS EXPOSED</p> <p>Accumulations of loose snow or slush up to 2 inches are found on the pavement surface. Packed and bonded snow and ice are not present. Regular transit services with some minor exceptions and detours for buses. Drifting snow.</p> |  | <p>"passable" Avoid discretionary travel. Road crews engaged in clearing activities. Curtail "elective" travel. Avoid unnecessary travel.</p> |
| <p>Road Condition 1: CLEAR WET/DRY</p> <p>Clear and wet/dry pavement surface is the general condition. There are occasional areas having snow or ice accumulations resulting in drifting, sheltering, cold spots, frozen melt-water, etc. Transit operations per schedules.</p> |  | <p>"passable"</p> |



The **Work Zone Performance Monitoring (WZPM)** tool was developed to facilitate compliance with the Final Rule on Work Zone Safety and Mobility.

WZPM targets three different user groups:

- Project engineers and managers – Real-time performance and alert capabilities
- Public affairs officials – Real-time and historical performance information when responding to customer inquiries
- Planners and decision makers – Review of past performance and information on work zone costs associated with user delays

Work Zone Dashboard Interface – UDC, Queues, and Nearby Accidents

CURRENT WORK ZONES IN MARYLAND

| REGION/EVENT | # OF NEARBY INCIDENTS | QUEUE LENGTH (MI) | USER DELAY COST (\$) |
|-------------------------|-----------------------|-------------------|----------------------|
| Anne Arundel (5) | 575 | 0.1 | \$3,280,361 |
| MD 2 SOUTH AT M... | 12 | - | \$278,323 |
| US 50 WEST PRIOR ... | 2 | 0 | \$444,022 |
| US 50 EAST EAST O... | 535 | 0.1 | \$1,928,019 |
| MD 2 NORTH FRO... | 2 | - | \$50,568 |
| MD 2 NORTH BETW... | 24 | 0 | \$579,429 |
| Baltimore (3) | 478 | 0 | \$1,467,547 |
| I-695 OUTER LOOP... | 172 | - | \$872,035 |
| I-895 NORTH PAST ... | 149 | - | \$214,853 |
| I-895 SOUTH PRIOR... | 157 | - | \$380,659 |
| Calvert (1) | 7 | 0 | \$228,265 |
| MD 2 SOUTH SOUT... | 7 | - | \$228,265 |
| Caroline (1) | 0 | 0 | \$0 |
| MD 311 EAST AT M... | - | - | - |
| Harford (1) | 6 | 0 | \$6,244,393 |
| MD 24 SOUTH/NO... | 6 | - | \$6,244,393 |
| Howard (1) | 0 | 0 | \$20,300 |
| US 40 EAST AT RID... | - | 0 | \$20,300 |
| Kent (2) | 0 | 0 | \$0 |
| MD 289 WEST AT Q... | - | - | - |
| MD 20 EAST/WEST ... | - | - | - |
| Queen Annes (1) | 1 | 0 | \$5,412,152 |
| MD 313 NORTH PA... | 1 | 0 | \$5,412,152 |
| Saint Marys (1) | 0 | 0.1 | \$1,671,645 |
| MD 4 NORTH BETW... | - | 0.1 | \$1,671,645 |
| Worcester (4) | 27 | 0 | \$811,508 |
| US 13 SOUTH BET... | 16 | - | \$808,144 |

TOP CRITICAL WORK ZONES

| SEVERITY/EVENT | LANE STATUS | QUEUE LENGTH (MI) | USER DELAY COST (\$) |
|---|-------------|-------------------|----------------------|
| Major (7) | | 0.1 | \$7,901,651 |
| MD 4 NORTH BETWEEN MD 235 AND PATUXENT BLVD | | 0.1 | \$1,671,645 |
| I-895 NORTH PAST 295 ENTRANCE (MM 3.6-4.7) LONG TERM SHOULDER CL... | | 0 | \$214,853 |
| US 50 WEST PRIOR TO MD 611 | | 0 | \$3,024 |
| US 40 EAST AT RIDGE RD | | 0 | \$20,300 |
| MD 313 NORTH PAST HIGH BRIDGE RD | | 0 | \$5,412,152 |
| US 113 NORTH BETWEEN US 13 AND MD 12 | | 0 | \$248 |
| MD 2 NORTH BETWEEN MD 648 AND WHITE RD | | 0 | \$579,429 |

WORK ZONE LOCATIONS

USER DELAY COST BY CORRIDOR AND DAY OF WEEK

Total User Delay Cost

| | I-95 | I-695 | I-495 | US-50 | I-70 | Daily Totals |
|------------------------|---------------|---------------|----------------|---------------|-----------------|-----------------------------|
| Tue 12/30 | \$161.1K | \$318.9K | \$2.2M | \$185.7K | \$31.1K | \$2.9M |
| Wed 12/31 | \$106.2K | \$82.9K | \$1.7M | \$69.6K | \$45.5K | \$2.0M |
| Thu 1/01 | \$15.8K | \$19.7K | \$22.8K | \$59.7K | \$43.2K | \$161.1K |
| Fri 1/02 | \$45.5K | \$26.8K | \$62.1K | \$62.3K | \$22.8K | \$219.4K |
| Sat 1/03 | \$107.8K | \$65.1K | \$662.6K | \$95.3K | \$50.1K | \$980.9K |
| Sun 1/04 | \$70.5K | \$41.5K | \$537.2K | \$67.2K | \$57.8K | \$774.1K |
| Mon 1/05 | \$56.8K | \$453.3K | \$2.2M | \$494.1K | \$46.1K | \$3.2M |
| Tue 1/06 | \$813.9K | \$1.3M | \$4.1M | \$517.3K | \$462.7K | \$7.2M |
| Corridor Totals | \$1.4M | \$2.3M | \$11.5M | \$1.6M | \$759.2K | Grand Total: \$17.5M |

Weekend Lowest Highest No Data

Individual Work Zone Analysis – Today’s Performance Compared to History

Incident @ US 40 EAST AT RIDGE RD [Emergency Roadwork]
 Started: Wed, Jan 07, 2015 at 10:58:53 AM

logged in as Jenny Lees | [logout](#)

SETTINGS

Data Type...

- Measured Speeds
- Comparison to Historical Average

Show...

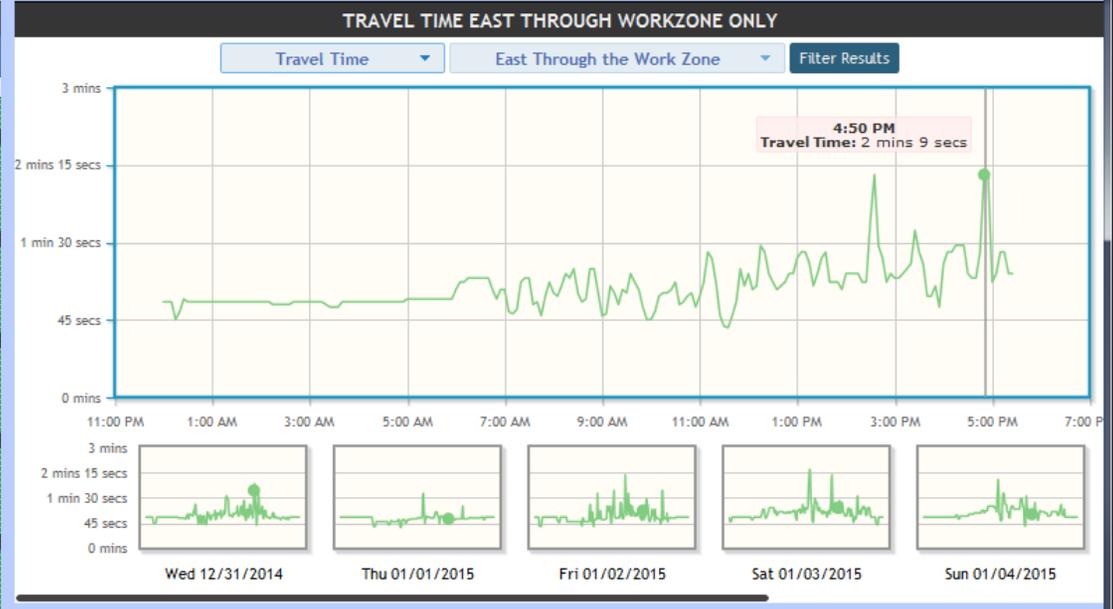
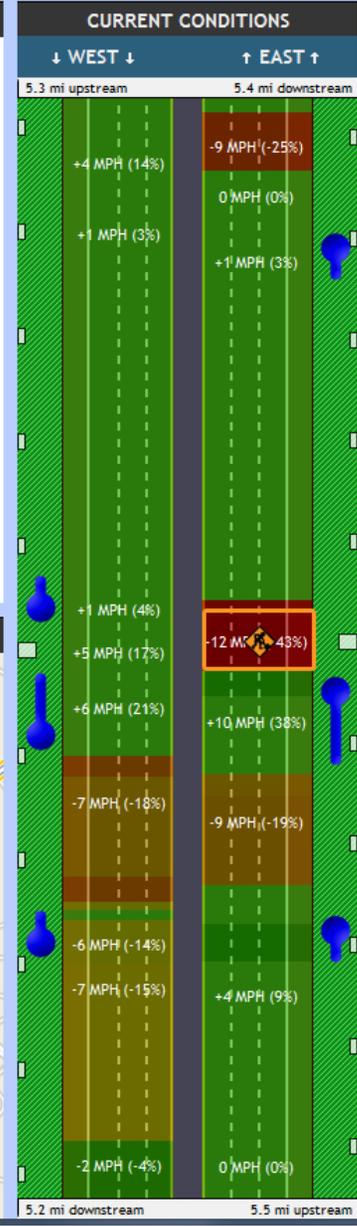
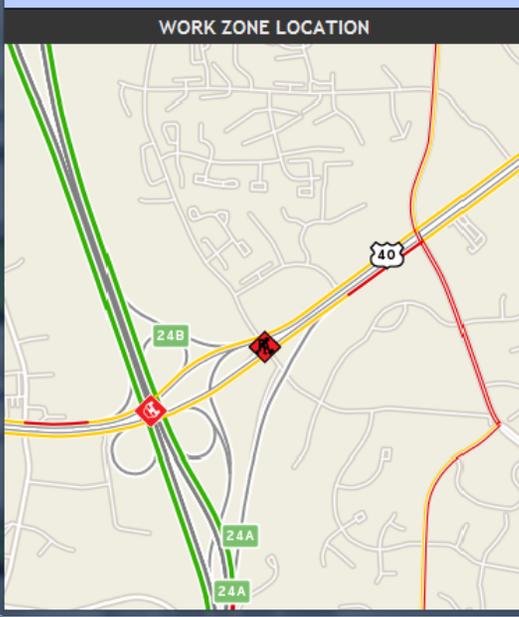
- Work Zone Bounds
- Posted Speeds (none)
- Associated DMS (none)
- Nearby Cameras (none)
- Nearby Incidents (none)
- Closed Lanes
- Bottlenecks

Current Conditions Bounds...

5 miles upstream

5 miles downstream

[Configure Alerts](#)



USER DELAY COST

Total User Delay Cost

| | 12AM - 4AM | 4AM - 8AM | 8AM - 12PM | 12PM - 4PM | 4PM - 8PM | 8PM - 12AM | Daily Totals |
|---------------|------------|-----------|------------|------------|-----------|------------|----------------------|
| Wed 12/31 | \$0.00 | \$0.1K | \$0.1K | \$0.9K | \$0.8K | \$0.00 | \$2.0K |
| Thu 1/01 | \$0.00 | \$0.00 | \$0.00 | \$0.2K | \$25.73 | \$0.00 | \$0.2K |
| Fri 1/02 | \$0.00 | \$0.00 | \$0.3K | \$0.9K | \$0.5K | \$2.64 | \$1.7K |
| Sat 1/03 | \$0.00 | \$0.1K | \$0.5K | \$1.3K | \$0.7K | \$0.2K | \$2.9K |
| Sun 1/04 | \$0.00 | \$43.81 | \$0.8K | \$1.1K | \$0.4K | \$0.1K | \$2.4K |
| Mon 1/05 | \$0.00 | \$0.2K | \$0.5K | \$1.3K | \$1.6K | \$0.1K | \$3.7K |
| Tue 1/06 | \$0.00 | \$0.7K | \$2.1K | \$0.8K | \$0.9K | \$75.94 | \$4.5K |
| Hourly Totals | \$0.00 | \$1.2K | \$4.2K | \$6.5K | \$4.9K | \$0.6K | Grand Total: \$17.4K |

Legend: Weekend (dark blue), Lowest (green), Highest (red), No Data (grey)

Individual Work Zone Analysis – Camera & Graph Options

Planned Closure @ MD 2 SOUTH SOUTH OF MONTICELLO DR
Started: Tue, Nov 18, 2014 at 10:01:03 AM logged in as Jenny Lees | [logout](#)

SETTINGS

Data Type...

- Measured Speeds
- Comparison to Historical Average

Show...

- Work Zone Bounds
- Posted Speeds (none)
- Associated DMS (none)
- Nearby Cameras
- Nearby Incidents (none)
- Closed Lanes
- Bottlenecks (none)

Current Conditions Bounds...

5 miles upstream

5 miles downstream

Configure Alerts

CURRENT CONDITIONS

↓ SOUTH ↓ ↑ NORTH ↑

TRAVEL TIME SOUTH THROUGH WORKZONE ONLY

Travel Time South Through the Work Zone Filter Results

FILTER RESULTS

- Work zone only
- Work zone and queue upstream
- Work zone and entire bottleneck
- Work zone TMC and 5 mi upstream

WORK ZONE LOCATION

Traffic Cameras

USER DELAY COST

Total User Delay Cost

| | 12AM - 4AM | 4AM - 8AM | 8AM - 12PM | 12PM - 4PM | 4PM - 8PM | 8PM - 12AM | Daily Totals |
|-----------|------------|-----------|------------|------------|-----------|------------|----------------------|
| Wed 12/31 | \$0.00 | \$0.1K | \$0.4K | \$0.9K | \$0.5K | \$22.21 | \$2.0K |
| Thu 1/01 | \$0.00 | \$28.92 | \$85.47 | \$0.2K | \$66.90 | \$46.91 | \$0.4K |
| | \$0.00 | \$0.1K | \$0.4K | \$0.6K | \$0.4K | \$71.42 | \$1.7K |
| | \$0.00 | \$17.71 | \$0.3K | \$0.4K | \$0.2K | \$89.41 | \$0.9K |
| | \$0.00 | \$0.00 | \$68.51 | \$0.3K | \$0.2K | \$8.90 | \$0.6K |
| | \$0.00 | \$0.2K | \$0.5K | \$1.0K | \$0.7K | \$0.2K | \$2.6K |
| | \$0.00 | \$0.4K | \$0.6K | \$0.7K | \$0.2K | \$59.69 | \$2.0K |
| | \$0.00 | \$0.9K | \$2.4K | \$4.0K | \$2.3K | \$0.5K | Grand Total: \$10.1K |

Work Zone Alerting

Customizing Work Zone Alerts

Customized Work Zone Alerts can be sent via:

- Text message
- Email

Work Zone Alerts can be based off of:

- Nearby incidents
- Bottleneck/Queue Severity
- Speeds surpassing a threshold

Work Zone Alerts can be scheduled:

- By time of day
- By day of week

CREATE AN ALERT FOR THIS WORK ZONE

Fill out each section to set up an alert for this work zone.

1. Alert me if...

An accident happens near this work zone.
Within mile(s) upstream or mile(s) downstream

There is a bottleneck that's head or queue includes this work zone.
Keep in mind [the formula for determining bottleneck conditions.](#)

Alert me only when the queue upstream from the work zone exceeds mile(s)

Speeds in the work zone fall below or exceed a certain range.

When speeds fall below mph

When speeds rise above mph

Alert me when speed is out of range for longer than minute(s)

Alert me when speed returns within range for longer than minute(s)

2. Alert me by...

Send me an email
Alert will be sent to your account email: packml@umd.edu

Send me a text message
Enter your phone number Verizon Wireless ▾

3. Alert me when...

Time zone
 ▾

Time period

Select days of week
Sun Mon Tue Wed Thu Fri Sat

Select hours of day
12 AM 6 AM 12 PM 6 PM 12 AM

RITIS as an Input Tool for Incident Management

- RITIS has the capability to be an “input” tool for agencies who want to get involved in operations and incident management.
- This functionality is currently being tested by two agencies in the National Capital Region. It is scheduled to be released to additional agencies in late 2015.
- If your agency is interested in this feature, please contact us at PackML@umd.edu.

RITIS Analytics Tools



Probe Analytics



Probe Data • Events • Detectors • Road Weather • Virtual Weigh Station • CHART Reporting

Exploring and Visualizing Crashes • Hierarchical Data Explorers

Transit Data (In Development)



Probe Analytics

Overview

Probe analytics allow agencies to support operations, undertake planning activities, perform analysis and research activities, and develop performance measurement reports with lightning speed. The probe analytics tools make use of third-party probe data fused with other agency transportation data in a true “big data” analytics platform.

Algorithms are Open and Transparent

The algorithms used in the Probe Data Analytics Suite are open and transparent. Our algorithms and displays were developed by a mix of academics, professional computer scientists, statisticians, graphic artists, and state and MPO transportation engineers. All of the algorithms used to calculate performance metrics are published online in our FAQs so that agencies can review them, reproduce them, better understand their meaning, and provide input and feedback for continuous improvement.

Vehicle Probe Project Suite
Welcome, John | [Help](#) | [Screencasts](#) | [Logout](#)

Help

General Information

- [The Vehicle Probe Project Suite](#)
- ▶ [Data Types](#)
- ▶ [Bottlenecks](#)
- ▶ [TMC Codes](#)
- ▶ [Incident/Event Icons](#)
- [Support](#)

Tools

- ▶ [Region Explorer](#)
- ▶ [Massive Raw Data Downloader](#)
- ▶ [Congestion Scan](#)
- ▶ [Trend Map](#)
- [Performance Charts](#)
- [Performance Summaries](#)
- [Bottleneck Ranking](#)
- ▼ [User Delay Cost Analysis](#)
 - ▶ [User Delay Cost Report Parameters](#)
 - ▶ [Preferred Volume Formats](#)
- ▼ [How User Delay Cost is Calculated](#)
 - [Using AADT Counts](#)
 - [Limiting Volumes](#)
 - [Applying Vehicle Percentages](#)
 - [Vehicle-Miles of Travel](#)
 - [Travel Delay](#)
 - [Delay Cost](#)
 - [UDC Report Totals](#)
 - [Hourly Volume Distribution Charts](#)
 - [User Delay Cost Warnings](#)
- ▶ [Dashboard](#)

User delay calculations are performed hourly at the TMC level, then aggregated across the requested geographic region for each day in the analysis period.

Calculating User Delay Cost with AADT Counts

When calculating Average Daily Traffic counts (ADT) from Annual Average Daily Traffic (AADT) counts, daily factors must be applied.

| Day of Week | Adjustment factor |
|--------------------|-------------------|
| Monday to Thursday | +5% |
| Friday | +10% |
| Saturday | -10% |
| Sunday | -20% |

Some TMC segments may span across two or more defined volume link locations, and vice versa (as shown in Figure 1). In order to obtain a single AADT measurement for TMCs that fall under this case, the AADT of the overlapped detector locations must be weighted by the distance of the portion of the TMC that falls into the range of each link location.

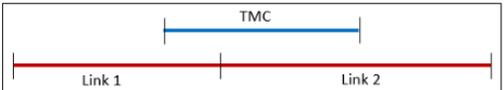


Figure 1: Example of a TMC and overlapping detector locations.

In order to be able to calculate many of the delay analysis measures, hourly profiles must be found for each TMC to give an hourly volume. In order to find these, the following calculations must be performed (assuming the necessary data is provided):

Define the functional class of the TMC — the functional class (Freeway or Non-Freeway) is defined based on TMC information. If the road class is Interstate, the functional class is Freeway. Any other road class is Non-Freeway.

Day type — weekday or weekend, the day of week determines which hourly profile to use. Note that all hourly weekend delay calculations rely solely on the two unique weekend profiles, regardless of congestion level or directionality (see Exhibit A-5).

Congestion level — can be one of: Low, Moderate, or Severe. Congestion level is found for each TMC segment through multiple steps:

- Calculate an average peak period speed using speed data from 6am - 10am and 3pm - 7pm. The days to select this data from depend on the desired outcome of the reports. If looking at a whole year and you only want to see annual values, each TMC will need to have the average speed calculated for all weekdays (giving one result). If looking at a week of data and you want to see values for every day of the week, the average speed would be calculated per weekday (giving 5 results), therefore five hourly profiles for each day of week.
- Get the free-flow speed for each TMC.
- Calculate a peak period speed reduction factor that will determine the congestion level. This is done by dividing the average peak period speed by the free-flow speed.

$$\text{speed reduction factor (SRF)} = (\text{average peak period speed} \div \text{freeflow speed}) \times 100$$

For Freeways:

 - SRF is greater than or equal to 90 (low congestion)
 - SRF is between 75 and 90 (moderate congestion)
 - SRF is below 75 (severe congestion)

For Non-Freeways:

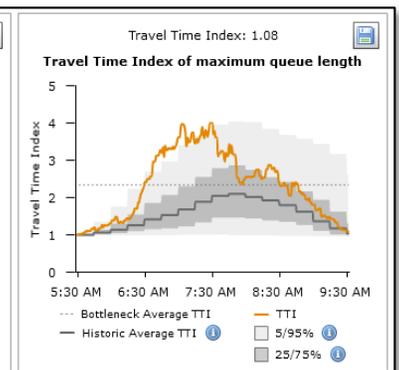
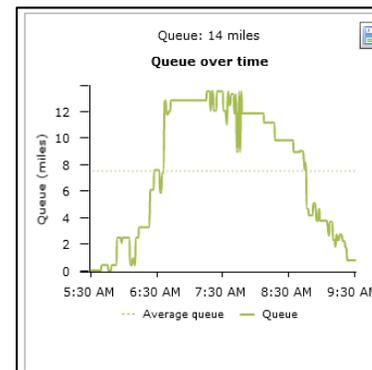
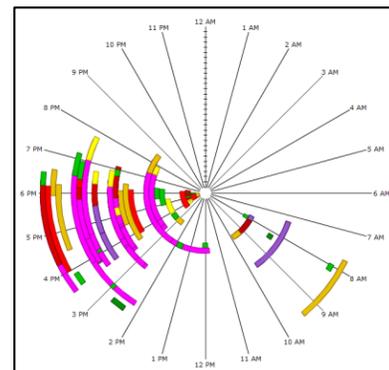
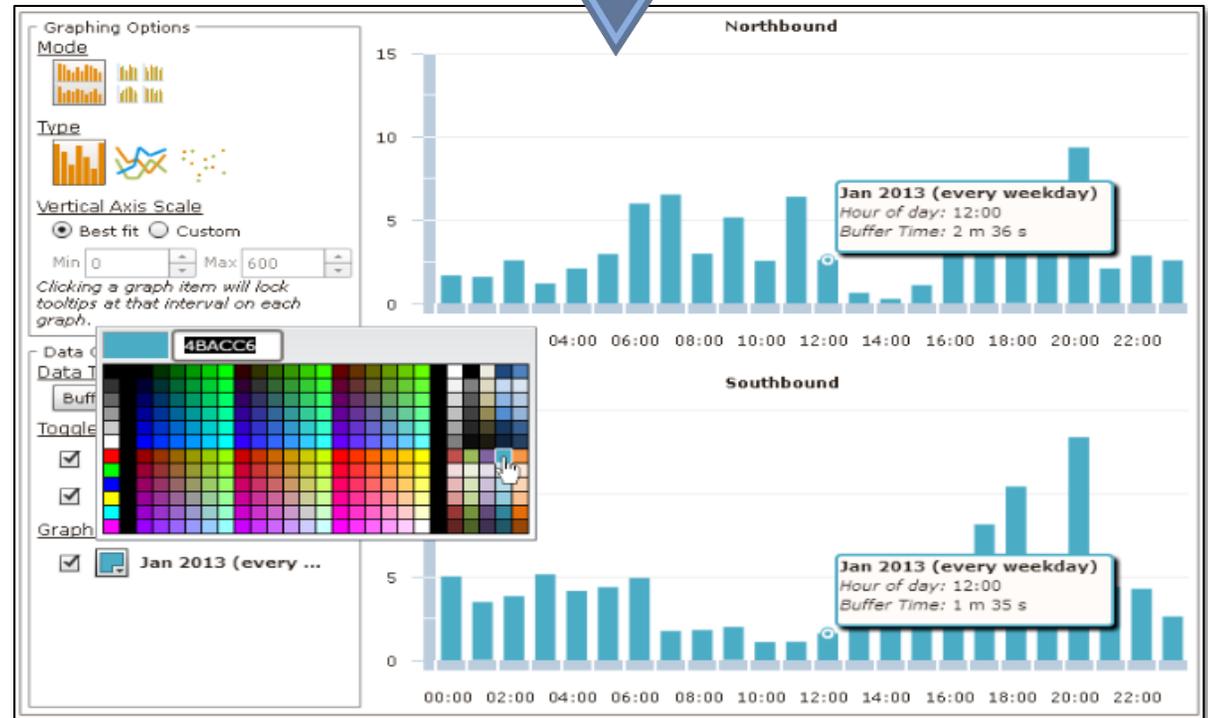
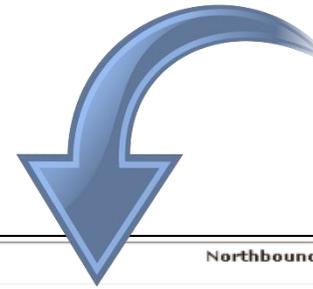
 - SRF is greater than or equal to 80 (low congestion)
 - SRF is between 65 and 80 (moderate congestion)
 - SRF is below 65 (severe congestion)

Determine the directionality of the TMC — Directionality defines which peak period (AM or PM) this TMC segment is congested worse during. This is found by calculating both peak period speeds (AM being 6am - 10am and PM being 3pm - 7pm). The lowest speed of the two determines the directionality. If the difference between the two speeds is less than or equal to 5, the directionality is considered Even. The same day selection rules for average peak period speed apply here.

Assign the hourly profile to the TMC — See the [hourly volume distribution charts](#) for percentages of the ADT for the day. For single days, the ADT for that day must be multiplied for each of the hourly factors in the profile.

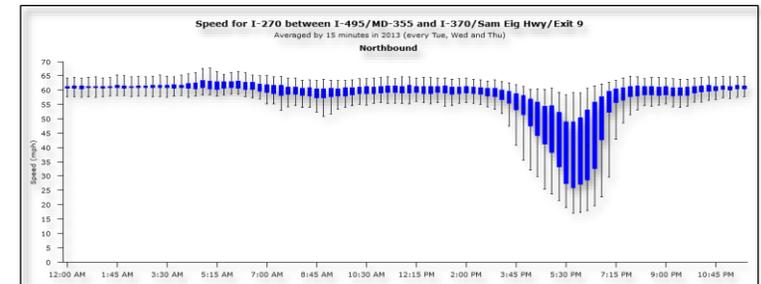
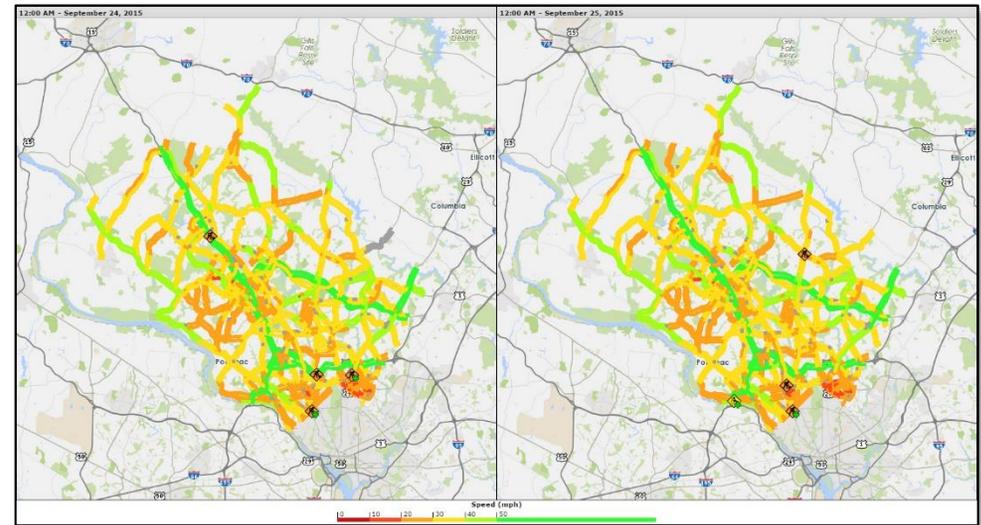
Probe Data Analytics Features

- Travel time and reliability analysis
- Real-time and historic dashboards
- Vehicle- and person-hours of delay
- User delay costs
- Animated historic maps
- Shareable reports for press releases
- Collaborative analytics
- Regional and state-wide bottleneck ranking
- Congestion trend analysis
- Performance summary tables
- Graphics and data exports
- Raw and aggregated data downloads
- Interactive and engaging



Common Uses of Probe Data Analytics

- Develop system performance reports
- Identify problems
- Prioritize projects
- Perform after-action incident review
- Conduct “before and after” studies
- Make informed, real-time operations decisions
- Travel time and reliability analysis
- Work zone monitoring
- Develop and publish press releases for public and media consumption
- Measure the economic and environmental impacts of passenger and commercial vehicle user delay



Combined passenger and commercial delay costs (in thousands of dollars)

| | 12 AM | 1 AM | 2 AM | 3 AM | 4 AM | 5 AM | 6 AM | 7 AM | 8 AM | 9 AM | 10 AM | 11 AM | 12 PM | 1 PM | 2 PM | 3 PM | 4 PM | 5 PM | 6 PM | 7 PM | 8 PM | 9 PM | 10 PM | 11 PM | Daily Totals | |
|---------------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|---------|--------|--------|--------|--------|--------------|-----------------------|
| 1/14/13 | \$0.2K | \$0.1K | \$0.1K | \$0.1K | \$0.2K | \$0.1K | \$0.2K | \$11.9K | \$16.2K | \$2.7K | \$0.5K | \$0.2K | \$0.1K | \$0.2K | \$0.1K | \$1.4K | \$7.7K | \$10K | \$1K | \$0.1K | \$0.1K | \$0.1K | \$0.3K | \$0.1K | \$53.7K | |
| 1/15/13 | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0K | \$0.4K | \$12.9K | \$17.6K | \$2.7K | \$0.1K | \$0.2K | \$0.1K | \$0K | \$0.2K | \$5.8K | \$12.9K | \$21K | \$8.5K | \$3.1K | \$0K | \$0.1K | \$0.1K | \$0K | \$86.1K | |
| 1/16/13 | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$0K | \$0.1K | \$12.1K | \$14.4K | \$0.9K | \$0.1K | \$0.1K | \$0K | \$0K | \$0.6K | \$4.4K | \$14.9K | \$21.4K | \$6.5K | \$0.1K | \$0K | \$0.1K | \$0K | \$0K | \$75.9K | |
| 1/17/13 | \$0K | \$0K | \$0K | \$0K | \$0K | \$0K | \$0.3K | \$12.2K | \$14.8K | \$2.1K | \$0K | \$0.4K | \$0.1K | \$0K | \$0.2K | \$4.3K | \$19.6K | \$25.8K | \$6.5K | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$86.5K | |
| 1/18/13 | \$0K | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$0K | \$9K | \$7K | \$0.2K | \$0K | \$0.4K | \$0.1K | \$0K | \$0.2K | \$4.3K | \$19.6K | \$25.8K | \$6.5K | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$86.5K | |
| 1/19/13 | \$0.1K | \$0.1K | \$0.2K | \$0.1K | \$0K | \$0.1K | \$0K | \$0.1K | \$0.1K | \$0.2K | \$0K | \$0.4K | \$0.1K | \$0K | \$0.2K | \$4.3K | \$19.6K | \$25.8K | \$6.5K | \$0.1K | \$0.1K | \$0K | \$0K | \$0.6K | \$0.1K | \$51.3K |
| 1/20/13 | \$0K | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$0K | \$0.1K | \$0K | \$0.1K | \$0K | \$0.4K | \$0.1K | \$0K | \$0.2K | \$4.3K | \$19.6K | \$25.8K | \$6.5K | \$0.1K | \$0.1K | \$0.2K | \$0.1K | \$0.1K | \$0.1K | \$2.2K |
| Hourly Totals | \$0.5K | \$0.5K | \$0.6K | \$0.3K | \$0.4K | \$0.2K | \$1.1K | \$58.4K | \$70.2K | \$8.8K | \$0.8K | \$0.4K | \$0.1K | \$0K | \$0.2K | \$4.3K | \$19.6K | \$25.8K | \$93K | \$23.5K | \$3.6K | \$0.4K | \$0.4K | \$1.2K | \$0.5K | Grand Total \$357,444 |

Thu Jan 17 2013 17:00:00

Delay cost:
 Total: \$25,751.51
 Per user: \$9.22

Hours of delay:
 Total: 1,176.45 hours
 Per user: 0.35 hours

Data validity: 96.67%

Click the table cell to see links to congestion scans

Geographic Search Parameters & Filters

- Individual Road(s)/Corridor(s)
- Region(s)
 - State(s)
 - County(s)
 - Zip code(s)
- List of TMC segments
- Full or partial corridors by:
 - Mile-marker
 - Intersection
 - TMC
- Save TMC sets from previous searches

1. Select one or more roads.

| Road | Region | List of TMC codes | Saved TMC Set |
|---------------------|----------------------|-------------------|---------------|
| States and counties | All | | |
| Directions | All | | |
| Zip codes | Example: 20742,20904 | | |
| Road classes | All | | |

[+ Add region](#)

Your selected roads [i](#) [X Remove all](#)

[X](#) [Eye](#) [Map](#) I-270 between I-495/MD-355 and I-70/US-40 ▲

Directions

Northbound Southbound

Entire road Partial road

From: Intersection To: Intersection

I-495/MD-355 I-70/US-40

66 miles of roadway selected (70 TMC codes) [i](#)

[Report a problem with this road...](#)

[Save as TMC set](#)

Add and compare multiple regions, roads or TMC sets

Time Based Queries

Select time by:

- Day or days
- Month or months
- Year or years
- Date range
- Filter by day of week
- Filter by time of day
- Average date ranges
- Leave dates separate

2. Select one or more time periods to analyze. Days

Day(s) | Month(s) | Year

A maximum of 7 days is allowed within a single date range

12/19/2014  - through - 12/19/2014 

Create a single time period for this range

Limit to specific days of the week

Create a time period for each day within this range

+ Add time period

2. Select one or more time periods to analyze. Months

Day(s) | Month(s) | Year

March 2012 through May 2012 (3 months) 

Create a single time period for this range

Create a time period for each month within this range

Days of week

Sun | Mon | Tue | Wed | Thu | Fri | Sat

+ Add time period

2. Select one or more time periods to analyze. Years

Day(s) | Month(s) | Year

Year 2013 

Days of week

Sun | Mon | Tue | Wed | Thu | Fri | Sat

+ Add time period

Data Granularity & Aggregation Options

Available Granularity

- 1 minute (raw data)
- 5 minutes
- 10 minutes
- 15 minutes
- 1 hour
- Day of week (and filtered by specific time ranges)

3. Granularity

1 minute
 5 minutes
 10 minutes
 15 minutes
 1 hour
 Day of week

12:00 AM 6:00 AM 12:00 PM 6:00 PM 12:00 AM ✖
6:00 AM 9:00 AM

12:00 AM 6:00 AM 12:00 PM 6:00 PM 12:00 AM ✖
4:00 PM 7:00 PM

A chart will be created for each pair of periods and time ranges.

[+ Add another time range](#)

Customizable Dashboards

The “Dashboard” application was launched in the first quarter of 2015 and includes:

- Customizable widgets
- Custom geographic setting
- Multi-state
- State
- County
- Multi-county
- Corridor
- Multi-corridor
- Multiple date/comparison parameters
- Resizable and interactive



Customizable Dashboards – Building Your Dashboard

Users will be able to generate their own customized dashboards, share their dashboards with others, and create multiple layouts for each dashboard.

Vehicle Probe Project Suite Welcome, jlees@umd.edu | [FAQs](#) | [Screencasts](#) | [Logout](#)

Dashboard + Add widget Select a dashboard...

First time in the Dashboard tool?

Try adding a new widget or select one of our pregenerated dashboards from the drop down.

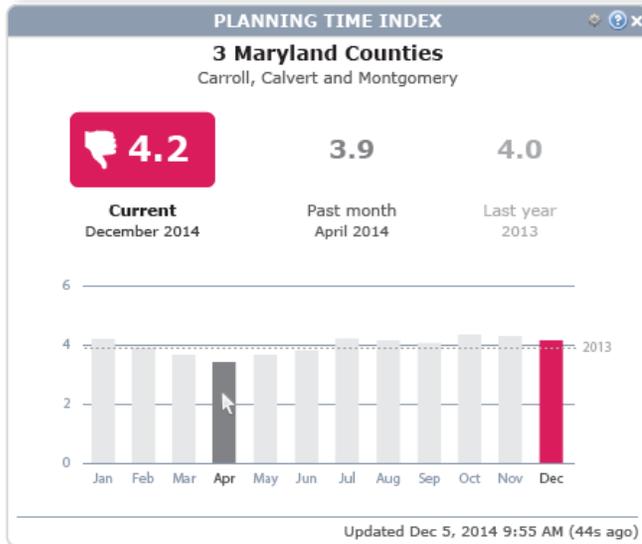
Customizable Dashboards – Adding and Customizing Widgets

Various widgets are available for analyzing speeds, travel times, reliability, and accident data. Each widget allows users to see current conditions compared to one or more historic values.

The screenshot shows the 'Vehicle Probe Project Suite' interface. At the top, there is a navigation bar with the text 'Vehicle Probe Project Suite' and a series of icons representing different data types: a speedometer, a green checkmark, a bar chart, a map, a document, a ribbon, and a dollar sign. To the right of these icons, it says 'Welcome, jlees@umd.edu | [FAQs](#) | [Screencasts](#) | [Logout](#)'. Below this is a dark header with 'Maryland Performance' on the left, a '+ Add widget' button in the center, and a dropdown menu on the right labeled 'Select a dashboard...'. The main content area is a light gray box titled 'Add widget' with the instruction '1. Choose a widget type'. It displays six widget options in a 2x3 grid. The first row includes 'Speed and Travel Time Table' (a table with speed and travel time columns and color-coded cells), 'Ranked Bottleneck Table' (a table with a star and numbers 1, 2, 3), and 'Performance Comparison' (a bar chart comparing 'Last year' and 'YTD'). The second row includes 'Delay Meter' (a gauge), 'Reliability Chart' (a bar chart), and 'Accidents & Events' (a pie chart). Each of the three widgets in the second row has a yellow 'Coming Soon' banner overlaid on its preview. A 'Continue' button is located at the bottom right of the 'Add widget' box.

Probe Data Analytics

Each widget can be laid out in a single-page view that can be recalled by the user quickly and easily.



Top Bottlenecks

| | State | Location | Length (miles) | Duration |
|----|-------|--|----------------|------------|
| 1 | NJ | NJ-35 N @ HERBERT ST | 6.6 | 12 min |
| 2 | VA | I-95 N @ VA-7100/EXIT 166 | 5.4 | 25 min |
| 3 | MD | I-495 CW @ MD-4/PENNSYLVANIA AVE/EXIT 11 | 4.7 | 34 min |
| 4 | MD | MD-355 S @ MONTROSE RD/RANDALPH RD | 3.3 | 12 min |
| 5 | VA | I-66 E @ VA-7/LEESBURG PIKE/EXIT 66 | 3.1 | 5 h 35 min |
| 6 | MD | MD-295 S @ I-195 | 2.9 | 38 min |
| 7 | NJ | RTE-581 S @ NJ-49/QUINTON RD | 2.9 | 14 min |
| 8 | DC | CLARA BARTON PKWY E @ MARYLAND AVE | 2.6 | 2 h 36 min |
| 9 | NJ | NJ-72 E @ W BAY AVE | 2.4 | 12 min |
| 10 | VA | FURNACE RD S @ US-1/RICHMOND HWY (LORTON) (WEST) | 2.3 | 1 h 02 min |

Updated Dec 5, 2014 9:55 AM (44s ago)

Maryland Performance

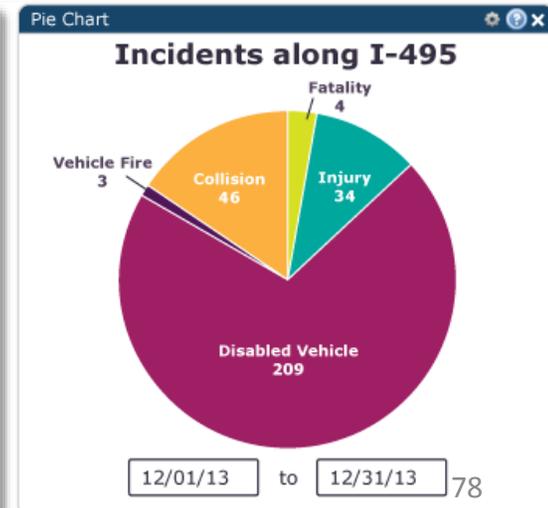
| Corridor | Average Speed | | | Travel Time | | |
|---|---------------|---------|----------|--------------|---------|----------|
| | Differential | Current | Historic | Differential | Current | Historic |
| I-270 Northbound Between MD-28/MONTG... | ↑ 10 | 55 mph | 45 mph | ↓ 5 | 15 min | 20 min |
| I-270 Southbound Between MD-28/MONTG... | ↓ -2 | 45 mph | 47 mph | ↑ 3 | 22 min | 19 min |
| I-495 Clockwise Between MD-295/MD-193... | ↓ -18 | 24 mph | 42 mph | ↑ 8 | 30 min | 22 min |
| I-495 Counter Clockwise Between MD-295... | ↓ -37 | 10 mph | 47 mph | ↑ 9 | 28 min | 19 min |
| Route 29 Northbound | - | 45 mph | 45 mph | - | 22 min | 22 min |

Updated Dec 5, 2014 9:55 AM (44s ago)

Regional performance table

| Region | PLANNING TIME INDEX | | | BUFFER TIME INDEX | | | TRAVEL TIME INDEX | | |
|----------------------|---------------------|------------|-----------|-------------------|------------|-----------|-------------------|------------|-----------|
| | Current | Last month | Last year | Current | Last month | Last year | Current | Last month | Last year |
| MD Montgomery County | 2.5 | 2.8 | 3.0 | 4.3 | 4.6 | 4.1 | 3.6 | 3.2 | 3.4 |
| MD Calvert County | 2.5 | 2.8 | 3.0 | 4.3 | 4.6 | 4.1 | 3.6 | 3.2 | 3.4 |
| MD Carroll County | 3.8 | 3.6 | 3.9 | 3.8 | 3.6 | 3.9 | 3.8 | 3.6 | 3.9 |
| DC | 2.2 | 2.2 | 2.5 | 2.2 | 2.2 | 2.5 | 2.2 | 2.2 | 2.5 |

Updated Dec 5, 2014 9:55 AM (44s ago)



Customizable Dashboards – Roadway Performance/Top Bottlenecks Widgets

The top widget shows current speed and travel times compared to a two-year historic average for that time of day and day of week.

The bottom widget shows current bottleneck and queue statistics for the region of interest. For both widgets, the user can define their own set of corridors, counties, or other regions to include.

| Maryland Performance | | | | | | | |
|---|---------------|---------|----------|--------------|---------|----------|--|
| Corridor | Average Speed | | | Travel Time | | | |
| | Differential | Current | Historic | Differential | Current | Historic | |
| I-270 Northbound Between MD-28/MONTG... | ↑ 10 | 55 mph | 45 mph | ↓ 5 | 15 min | 20 min | |
| I-270 Southbound Between MD-28/MONTG... | ↓ -2 | 45 mph | 47 mph | ↑ 3 | 22 min | 19 min | |
| I-495 Clockwise Between MD-295/MD-193... | ↓ -18 | 24 mph | 42 mph | ↑ 8 | 30 min | 22 min | |
| I-495 Counter Clockwise Between MD-295... | ↓ -37 | 10 mph | 47 mph | ↑ 9 | 28 min | 19 min | |
| Route 29 Northbound | - | 45 mph | 45 mph | - | 22 min | 22 min | |

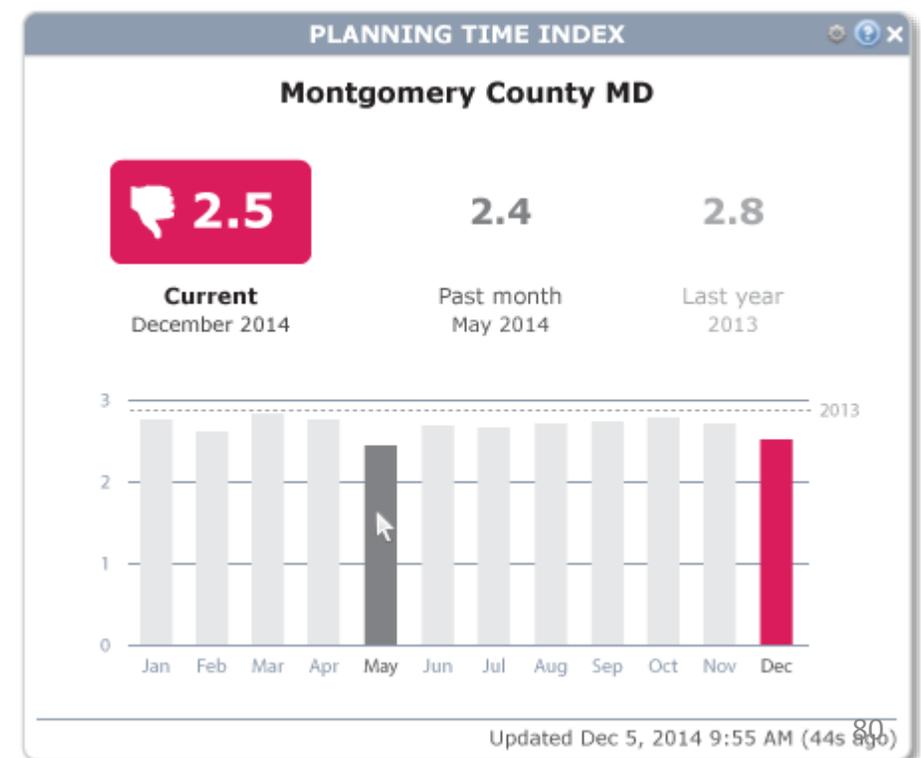
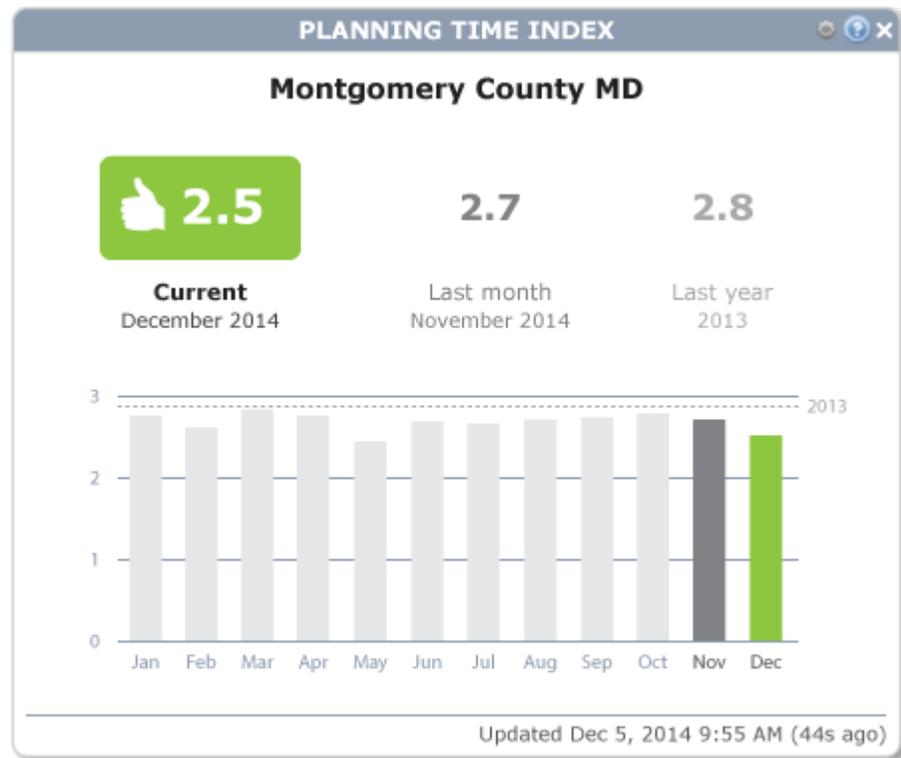
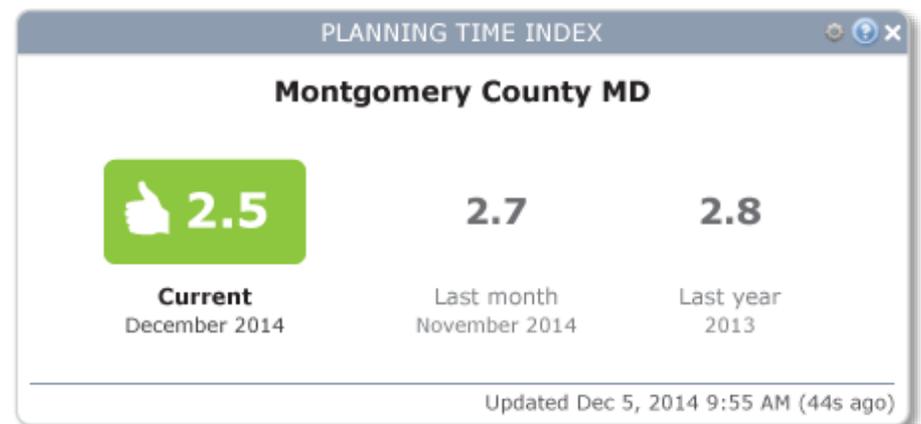
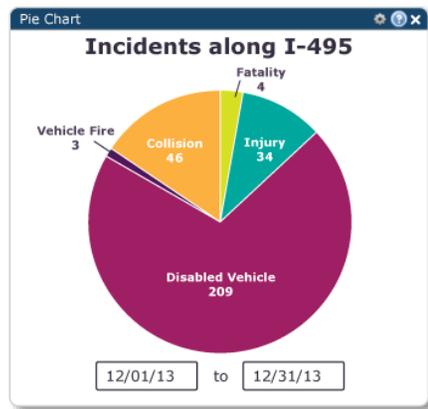
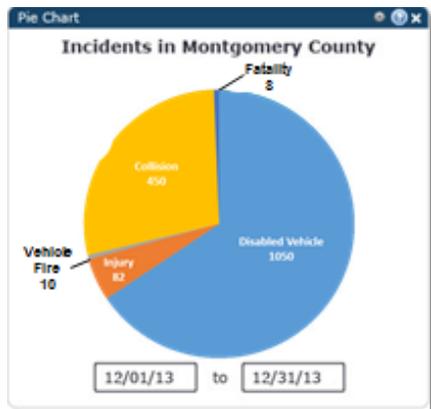
Updated Dec 5, 2014 9:55 AM (44s ago)

| Top Bottlenecks | | | | | |
|-----------------|-------|--|----------------|------------|--|
| | State | Location | Length (miles) | Duration | |
| 1 | NJ | NJ-35 N @ HERBERT ST | 6.6 | 12 min | |
| 2 | VA | I-95 N @ VA-7100/EXIT 166 | 5.4 | 25 min | |
| 3 | MD | I-495 CW @ MD-4/PENNSYLVANIA AVE/EXIT 11 | 4.7 | 34 min | |
| 4 | MD | MD-355 S @ MONTROSE RD/RANDALPH RD | 3.3 | 12 min | |
| 5 | VA | I-66 E @ VA-7/LEESBURG PIKE/EXIT 66 | 3.1 | 5 h 35 min | |
| 6 | MD | MD-295 S @ I-195 | 2.9 | 38 min | |
| 7 | NJ | RTE-581 S @ NJ-49/QUINTON RD | 2.9 | 14 min | |
| 8 | DC | CLARA BARTON PKWY E @ MARYLAND AVE | 2.6 | 2 h 36 min | |
| 9 | NJ | NJ-72 E @ W BAY AVE | 2.4 | 12 min | |
| 10 | VA | FURNACE RD S @ US-1/RICHMOND HWY (LORTON) (WEST) | 2.3 | 1 h 02 min | |

Updated Dec 5, 2014 9:55 AM (44s ago)

Customizable Dashboards – Incident/Planning Time Index Widgets

These widgets show accident stats (pie charts) and planning time index stats for the current time compared to historic times (years and months).



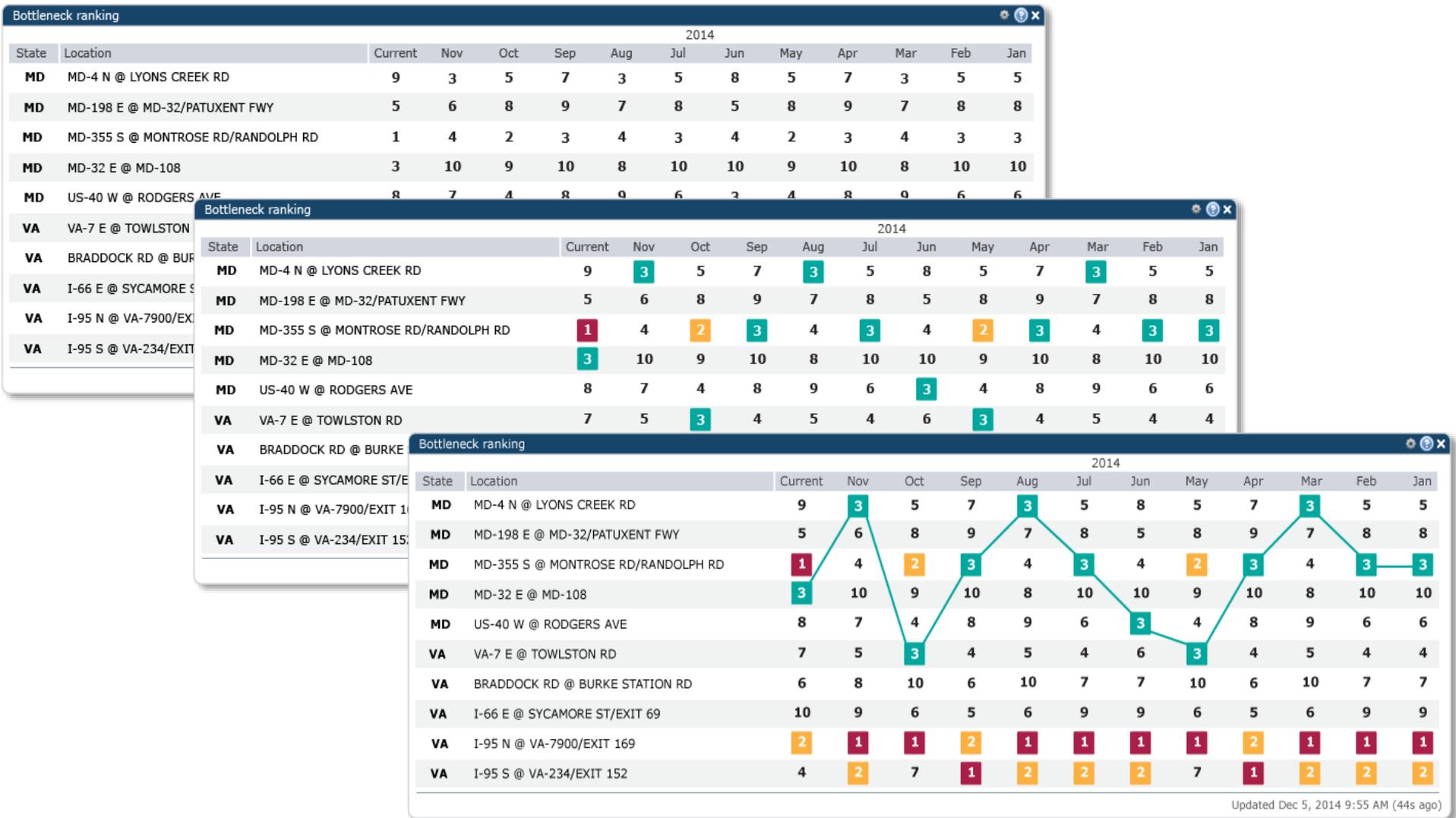
Customizable Dashboards – Region/Multi-corridor Widgets

Any number of congestion and reliability measures can be displayed, including planning time index, buffer time index, travel time index, etc. Users can choose to generate these measures for a single corridor, a group of corridors, a single county, multiple counties, a single state, or multiple states. Each widget is interactive.



Customizable Dashboards - Interactive Bottleneck Ranking Widget

This widget shows the top x bottlenecks in a region. The table depicts how the ranking of each bottleneck location has changed over the past 12 months (**top**). The user can highlight the top x bottlenecks to see how their rank changes over time (**middle**). They can also mouse over a single bottleneck ranking number to highlight its movement within the list over time (**bottom**).



Probe Data Analytics – Regional History

Choose any point in time to view historical accident stats, weather radar, queues, travel times, bottlenecks, and other conditions.

Ranked Bottleneck List

- ▶ I-395 N @ EADS ST
- ▶ MD-5 N @ MD-337/ALLENTOWN RD
- ▶ I-495 CW @ US-1/EXIT 1
- ▶ US-29 S @ MD-384/COLESVILLE RD
- ▶ I-495 CCW @ MD-185/CONNECTICUT AVI
- ▶ I-495 OUTER LOOP AT EXIT 27 I 95
- ▶ VA-7 E @ TOWLSTON RD
- ▶ I-95 N @ MD-216/EXIT 35
- ▶ US-50 E @ I-66/US-50/THEODORE ROOSE
- ▶ I-495 CW @ CLARA BARTON PKWY/EXIT
- ▶ I-270 Local S @ I-270
- ▶ I-270 S @ MONTROSE RD/EXIT 4
- ▶ I-95 S @ I-495/EXIT 27-25
- ▶ MD-190 E @ LITTLE FALLS PKWY
- ▶ I-66 E @ VA-243/NUTLEY ST/EXIT 62
- ▶ MD-32 W @ MD-175/ANNAPOLIS RD
- ▶ I-66 W @ 25TH ST
- ▶ MD-295 S @ POWDER MILL RD
- ▶ I-66 W @ VA-123/EXIT 60
- ▶ US-50 W @ SOUTH DAKOTA AVE
- ▶ VA-267 E @ RESTON PKWY/PLAZA AMERI
- ▶ MD-5 N @ MD-414/ST BARNABAS RD
- ▶ SUITLAND PKWY W @ ALABAMA AVE
- ▶ BRADDOCK RD E @ BACKLICK RD
- ▶ MD-3 S @ MD-450/ANNAPOLIS RD
- ▶ MD-4 W @ DOWER HOUSE RD/MARLBORC
- ▶ I-495 CW @ VA-650/GALLOWES RD/EXIT 7
- ▶ MD-295 N @ ARUNDEL--PRINCE GEORGE'
- ▶ I-66 E @ FAIRFAX DR/EXIT 71
- ▶ MD-185 S @ MD-191/BRADLEY LN
- ▶ MD-190 E @ LITTLE FALLS PKWY
- ▶ MD-650 S @ ADELPHI RD
- ▶ VA-123 N @ WAVERLY WAY

Links to Timelines and Other Visualizations

Injuries Involved

Location: I-270 NORTH AT EXIT 4 MD 927 MONTROSE RD

Started: Dec 03, 2014 8:01 AM

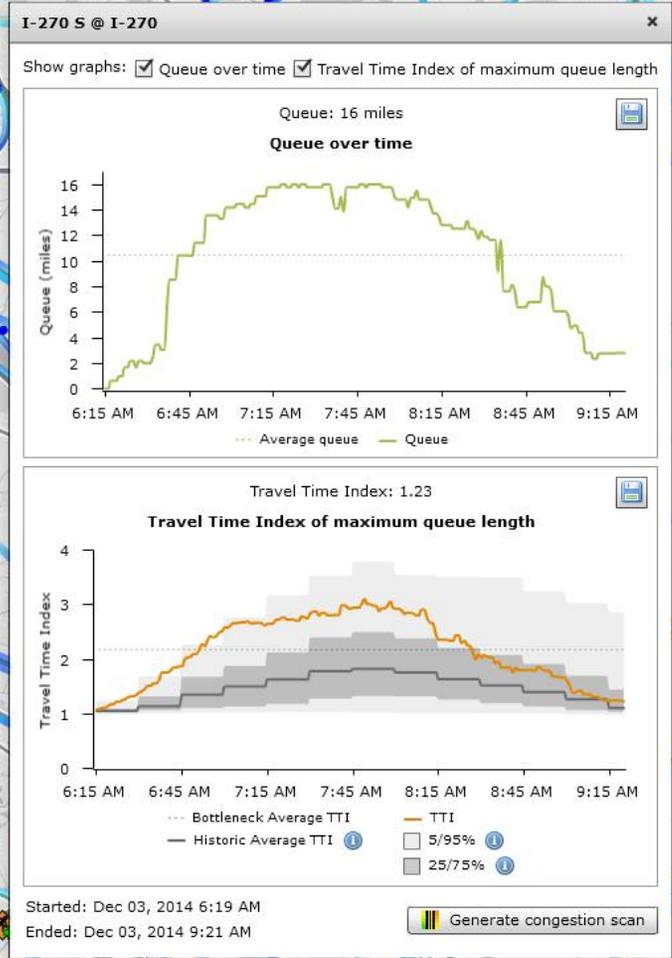
Ended: Dec 03, 2014 9:13 AM

Duration: 1 h 12 m 30 s

[Timeline](#)

Updated Dec 03, 2014 9:13 AM

Bottleneck Queue Stats and Travel Time Index



Time selection

What time would you like to see data for?

Right now, and keep the data up to date in real-time

A previous point in time

12/03/2014 08:30 AM

Fade out incidents that haven't been updated in the last 12 hours

[Done](#)

You're looking at data from December 3, 2014 @ 8:30 AM. Bottlenecks are shown at their maximum length. There are 655 bottlenecks and 3919 events.

Raw Data Downloads

Users can select any combination of road segments (an entire region, set of corridors, zip codes, etc), and any date range and time of day. Raw or aggregated data can be downloaded, along with quality indicators and other measurements.

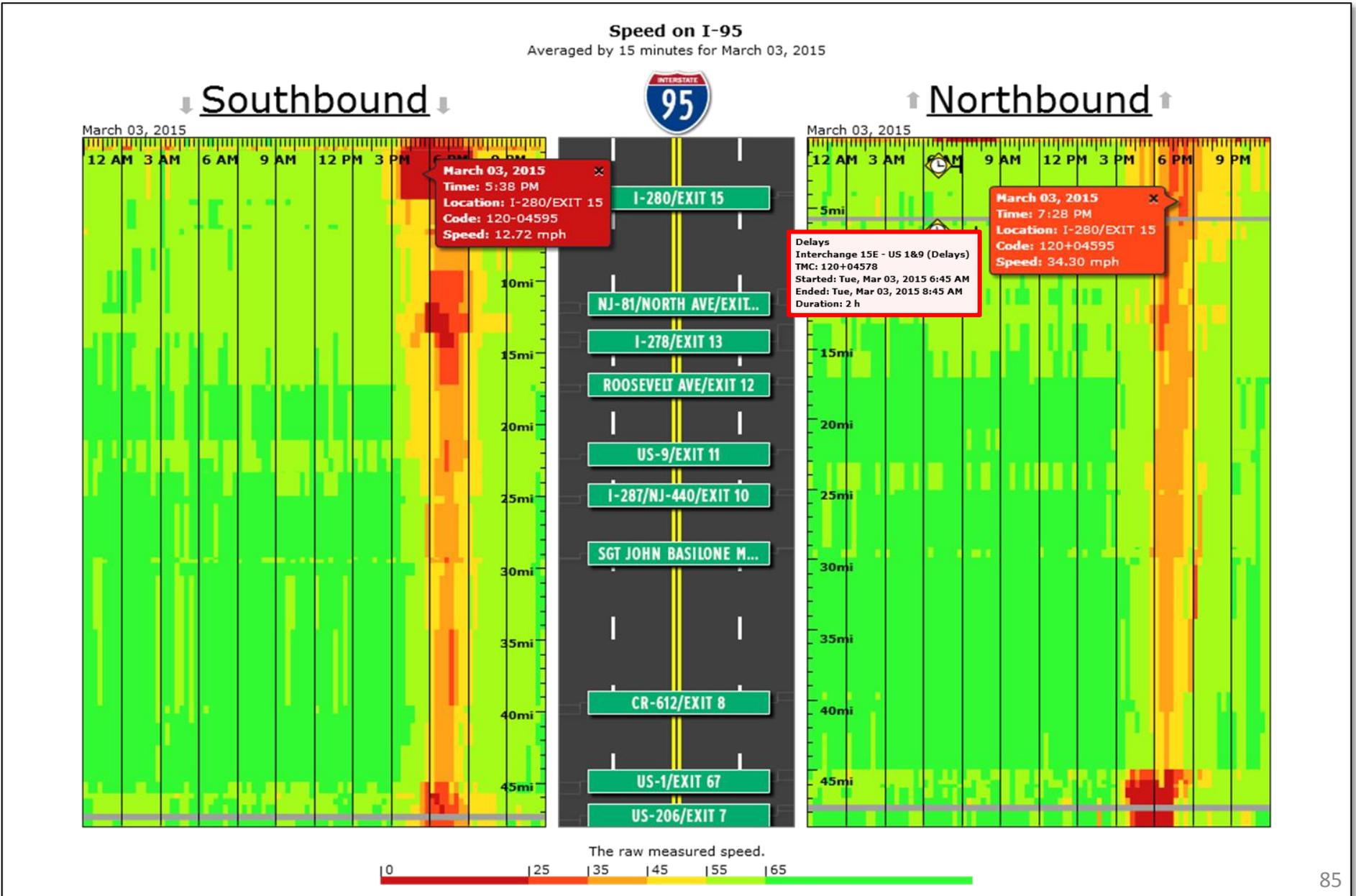
Massive Data Downloader Data exports

- Roads**
 - States and counties:
 - Directions:
 - Zip codes:
 - Road classes:
 -
 - Your selected roads:
 -
- Date Range**
 -
 -
- Days of week**
 - Sun Mon Tue Wed Thu Fri Sat
- Time of day**
 - : AM -to- : PM
 -
- Data Sources and Fields**
 - HERE
 - INRIX
 - NPMRDS (Passenger vehicles)
 - NPMRDS (Trucks and passenger vehicles)
 - NPMRDS (Trucks)
- Download format**
 - All data sources in one CSV file
 - One CSV file per data source
- Averaging**
 - Don't average
 - 5 minutes
 - 10 minutes
 - 15 minutes
 - 30 minutes
 - 1 hour
- Description**
 -

The map on the right shows a geographical area with a dense network of roads highlighted in blue, representing the selected data for download. Major roads like I-70 and I-15 are visible, along with locations like Potomac, Columbia, and Ellicot.

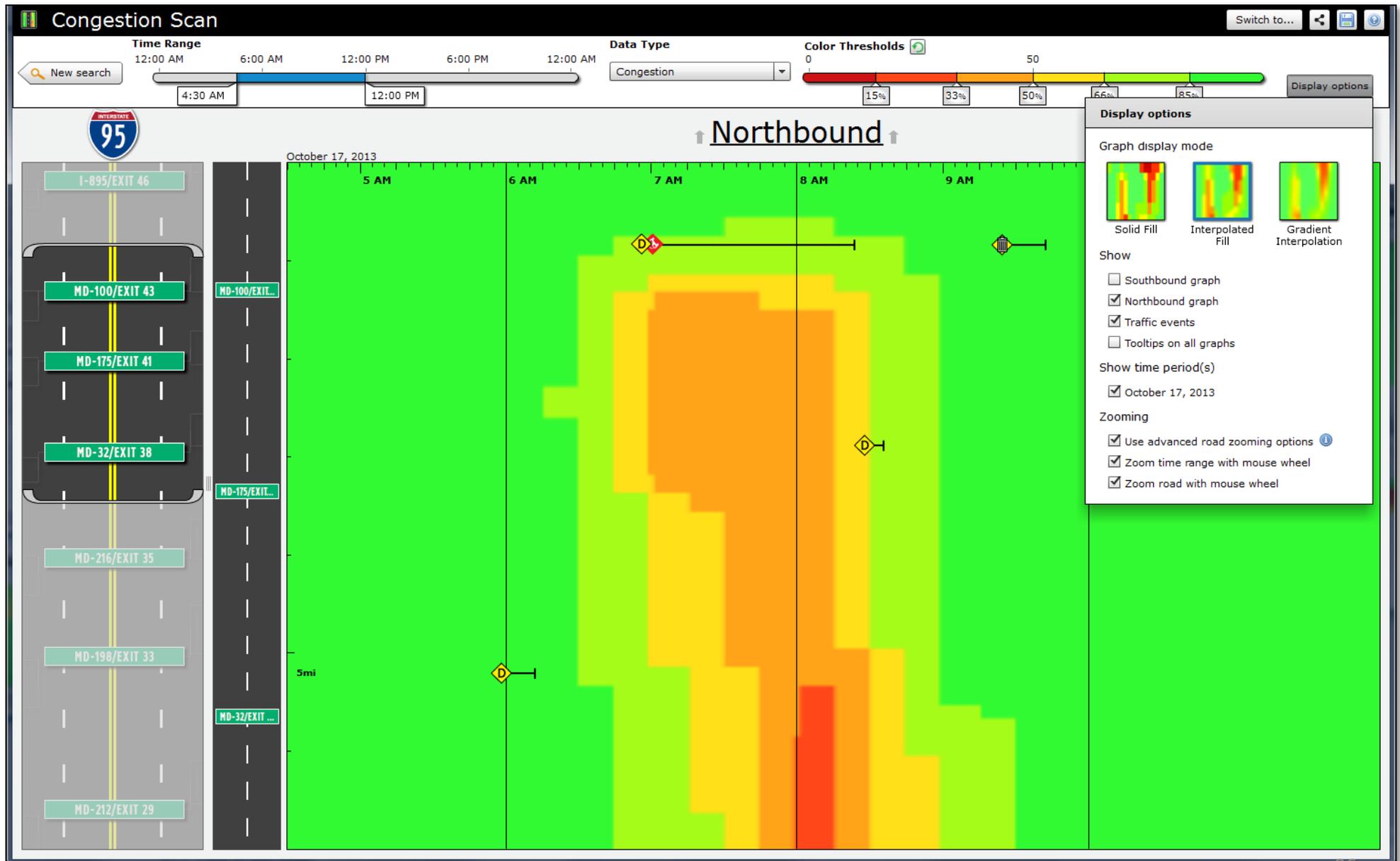
Congestion Scans

Congestion and other measures can be visualized in both directions of travel along a corridor. Accident and event data can be overlaid on the Congestion Scan to help determine causality.



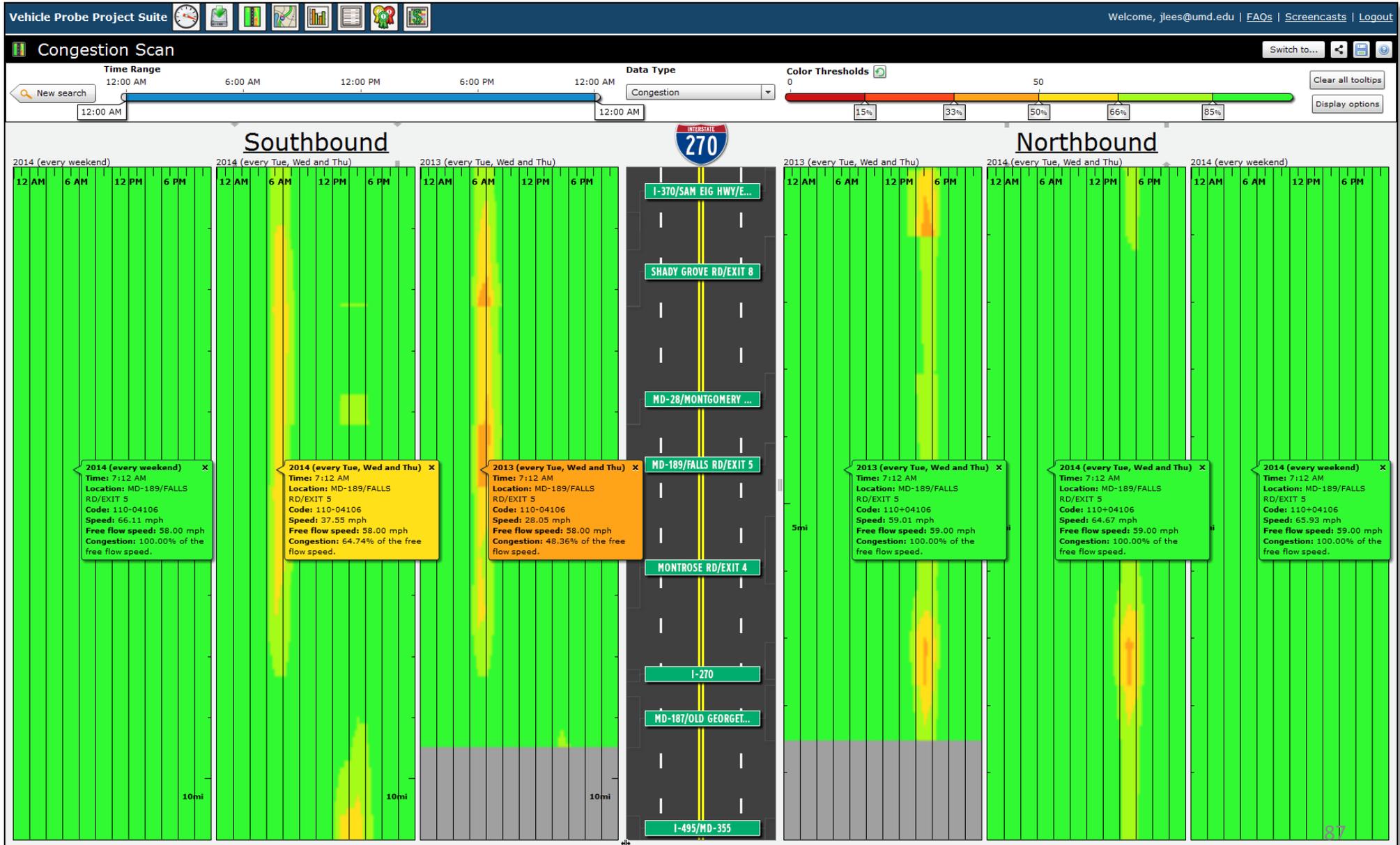
Congestion Scans (Cont'd.)

The Congestion Scan tool allows for detailed zooming, cropping, and custom display configurations for each of its graphs.



Congestion Scans (Cont'd.)

Users can display multiple date ranges for each scan. This is useful for “before and after” studies on the impacts of construction projects.



Congestion Scan Exports

Export all Congestion Scan data to a preformatted Excel file.

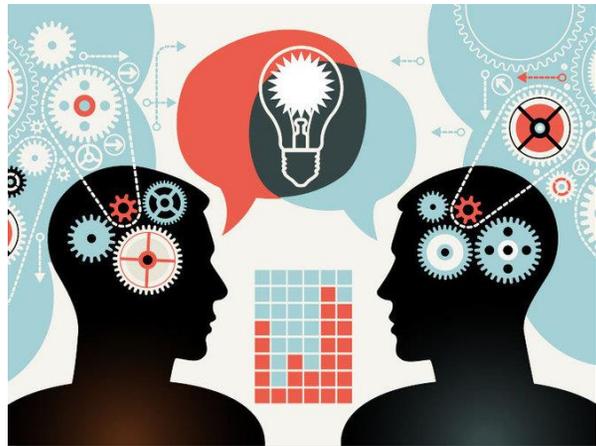
The screenshot shows an Excel spreadsheet titled "Congestion Scan Congestion - Excel". The ribbon includes FILE, HOME, INSERT, PAGE LAYOUT, FORMULAS, DATA, REVIEW, and VIEW. The data is organized in a grid with columns representing time intervals from 5:15 AM to 12:15 PM and rows representing different data points. A large blue arrow points from a section of the data to a zoomed-in view of that section.

| | Y | Z | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM | AN | AO | AP | AQ | AR | AS | AT | AU | AV | AW | AX | AY | AZ | BA | | | |
|----|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | 5:15 AM | 5:30 AM | 5:45 AM | 6:00 AM | 6:15 AM | 6:30 AM | 6:45 AM | 7:00 AM | 7:15 AM | 7:30 AM | 7:45 AM | 8:00 AM | 8:15 AM | 8:30 AM | 8:45 AM | 9:00 AM | 9:15 AM | 9:30 AM | 9:45 AM | 10:00 AM | 10:15 AM | 10:30 AM | 10:45 AM | 11:00 AM | 11:15 AM | 11:30 AM | 11:45 AM | 12:00 PM | 12:15 PM | | |
| 4 | | 100 | 100 | 100 | 100 | 100 | 100 | 98.13 | 100 | 92.87 | 95.79 | 100 | 98.13 | 100 | 97.43 | 93.92 | 98.01 | 96.49 | 97.19 | 97.78 | 94.27 | 97.54 | 98.01 | 98.36 | 92.87 | 80.94 | | | | | | |
| 5 | | 100 | 100 | 100 | 100 | 100 | 96.97 | 95.64 | 88.97 | 96.36 | 81.7 | 52.97 | 60.36 | 100 | 70.79 | 91.15 | 100 | 100 | 93.94 | 100 | 99.64 | 99.39 | 100 | 89.82 | 96.24 | 93.7 | 88.36 | 91.27 | 90.18 | | | |
| 6 | | 100 | 100 | 100 | 100 | 100 | 97.54 | 89.12 | 65.96 | 44.09 | 34.27 | 26.2 | 17.66 | 16.49 | 14.27 | 13.45 | 13.57 | 15.2 | 14.27 | 17.08 | 15.67 | 19.42 | 33.45 | 55.32 | 94.97 | 89.24 | 84.91 | 90.53 | 91.11 | | | |
| 7 | | 99.27 | 100 | 95.15 | 100 | 98.3 | 100 | 93.33 | 64.24 | 44 | 43.39 | 32.36 | 20.85 | 14.55 | 21.82 | 11.76 | 10.79 | 13.45 | 15.03 | 19.48 | 17.33 | 37.21 | 32.85 | 29.45 | 83.27 | 89.33 | 87.64 | 84.12 | 85.82 | | | |
| 8 | | 100 | 100 | 100 | 100 | 100 | 99.22 | 100 | 100 | 71.63 | 60.52 | 54.64 | 45.88 | 22.61 | 17.91 | 19.35 | 19.74 | 19.08 | 20.52 | 19.61 | 19.48 | 21.83 | 29.41 | 38.3 | 33.2 | 80.78 | 94.51 | 92.16 | 85.49 | 88.63 | | |
| 9 | | 100 | 100 | 100 | 100 | 96.41 | 97.18 | 100 | 73.97 | 78.33 | 75.13 | 72.95 | 20 | 19.23 | 18.59 | 35.77 | 35.9 | 35.77 | 37.05 | 48.85 | 53.46 | 65.77 | 63.33 | 52.82 | 90.77 | 94.74 | 88.46 | 86.41 | 86.92 | | | |
| 10 | | 100 | 100 | 100 | 100 | 98.97 | 99.36 | 100 | 90.77 | 84.23 | 87.69 | 83.85 | 24.74 | 23.46 | 25.9 | 37.05 | 38.21 | 40.77 | 49.23 | 62.31 | 63.33 | 75.64 | 75.26 | 63.46 | 92.82 | 96.67 | 93.72 | 89.36 | 87.05 | | | |
| 11 | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 93.21 | 100 | 98.97 | 74.49 | 58.33 | 72.95 | 62.69 | 57.82 | 54.1 | 46.54 | 76.28 | 100 | 100 | 97.69 | 91.79 | 100 | 100 | 93.59 | 92.56 | 86.79 | | | |
| 12 | | 100 | 100 | 95.56 | 100 | 100 | 100 | 100 | 99.58 | 100 | 100 | 92.36 | 60.56 | 45.14 | 65.83 | 68.89 | 45.1 | 78 | 60.97 | 77.92 | 100 | 99.17 | 95.69 | 95.42 | 100 | 98.61 | 94.03 | 95.69 | 92.08 | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Trend Maps

Trend Maps (sometimes called animated maps) can be used for:

- Comparing multiple travel days, weeks, or other time periods.
- Providing the public with information on expected travel conditions for holidays.
- Showing the impacts of events.
- After-incident analysis.
- Collaborative analysis.



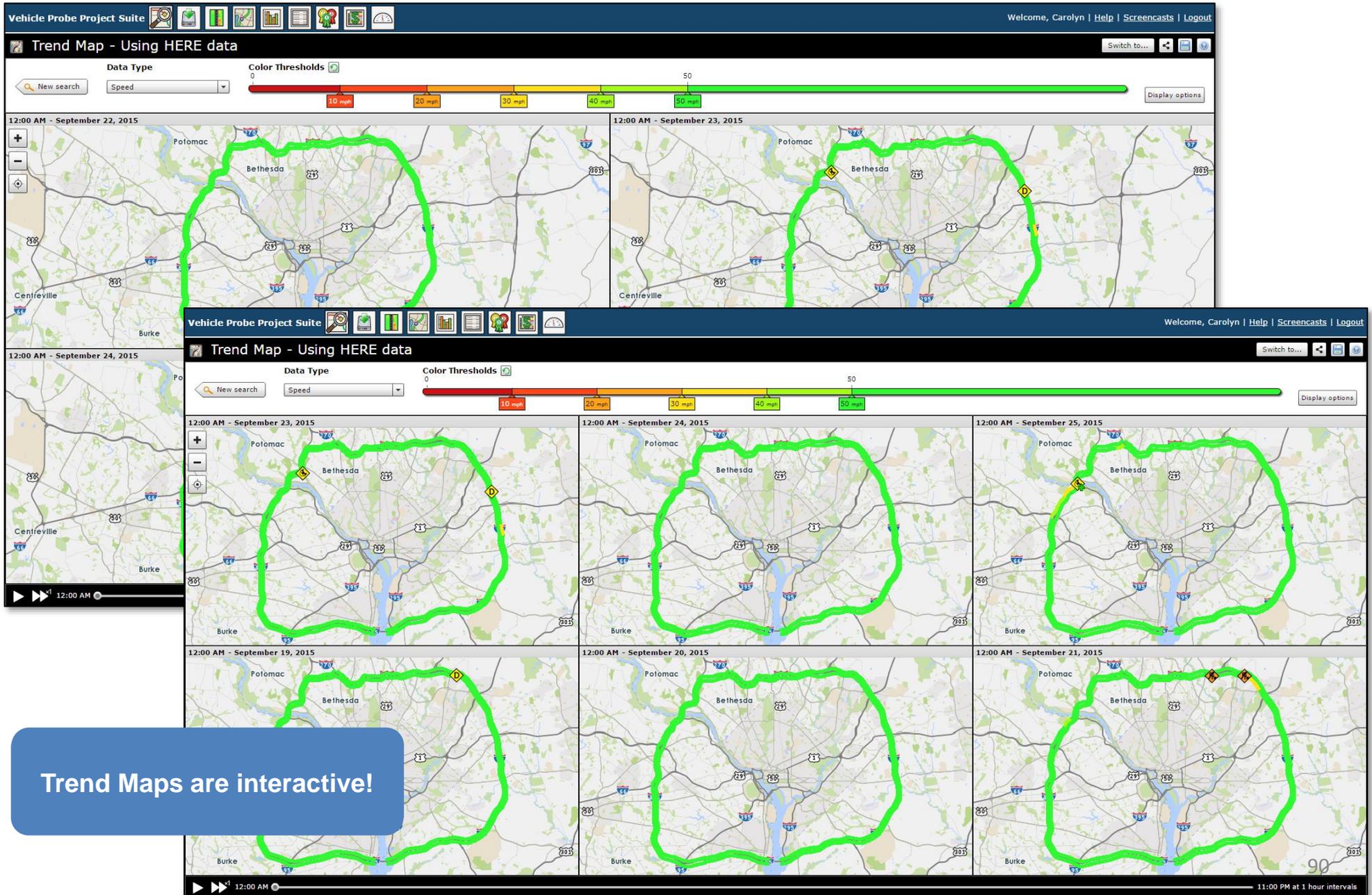
**Collaborative
Analysis**

&



Trend Maps (Cont'd.)

Up to seven maps can be drawn and animated simultaneously with the Trend map tool.



Trend Maps (Cont'd.)

Trend maps can be shared as **links**, **movies**, **animated GIFs**, and **interactive embeds** on agency webpages.

Vehicle Probe Project Suite

Trend Map - Using HERE data

Data Type: Speed

Color Thresholds: 0, 10 mph, 20 mph, 30 mph, 40 mph, 50 mph

12:00 AM - September 22, 2015

12:00 AM - September 23, 2015

12:00 AM - September 24, 2015

12:00 AM - September 25, 2015

11:00 PM at 1 hour intervals

Share

Hyperlink (Requires login)
<https://analytics-test.ritis.org/suite/#/trend-map/?uuid=0510d4bf-5965-4e70-b4bd-e8f3dc94b04d>

Embed title
I-495 during Snowmageddon

Video size
560x315 px

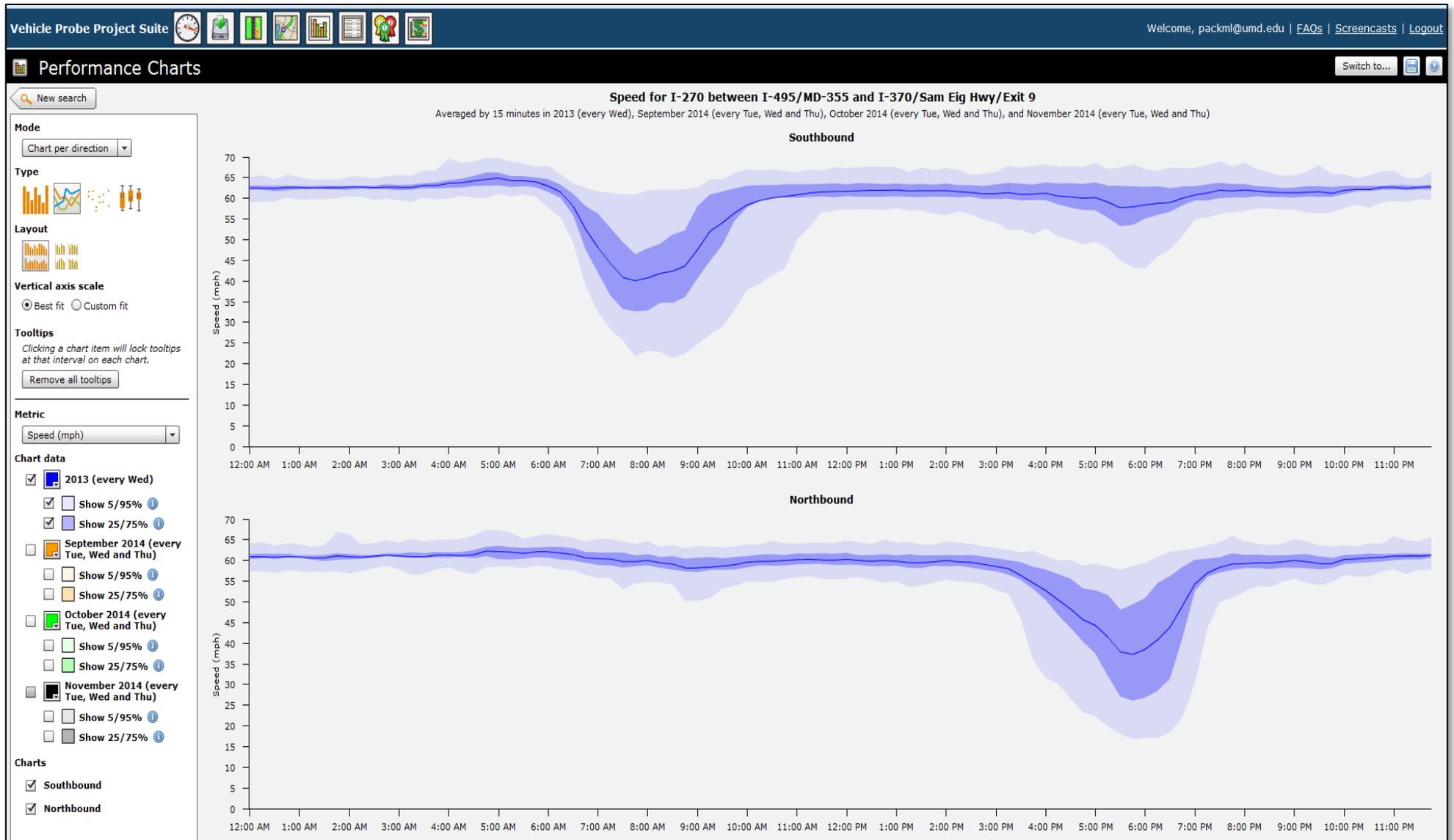
Update embed link

Embed (Publicly available)
`<iframe width="560" height="315" src="https://analytics-test.ritis.org/embed/trend-map/?uuid=0510d4bf-5965-4e70-b4bd-e8f3dc94b04d&thresholds=[10,20,30,40,50]&colors=[13374484,16729881,16753433,16769049,10" />`

Trend Maps are interactive!

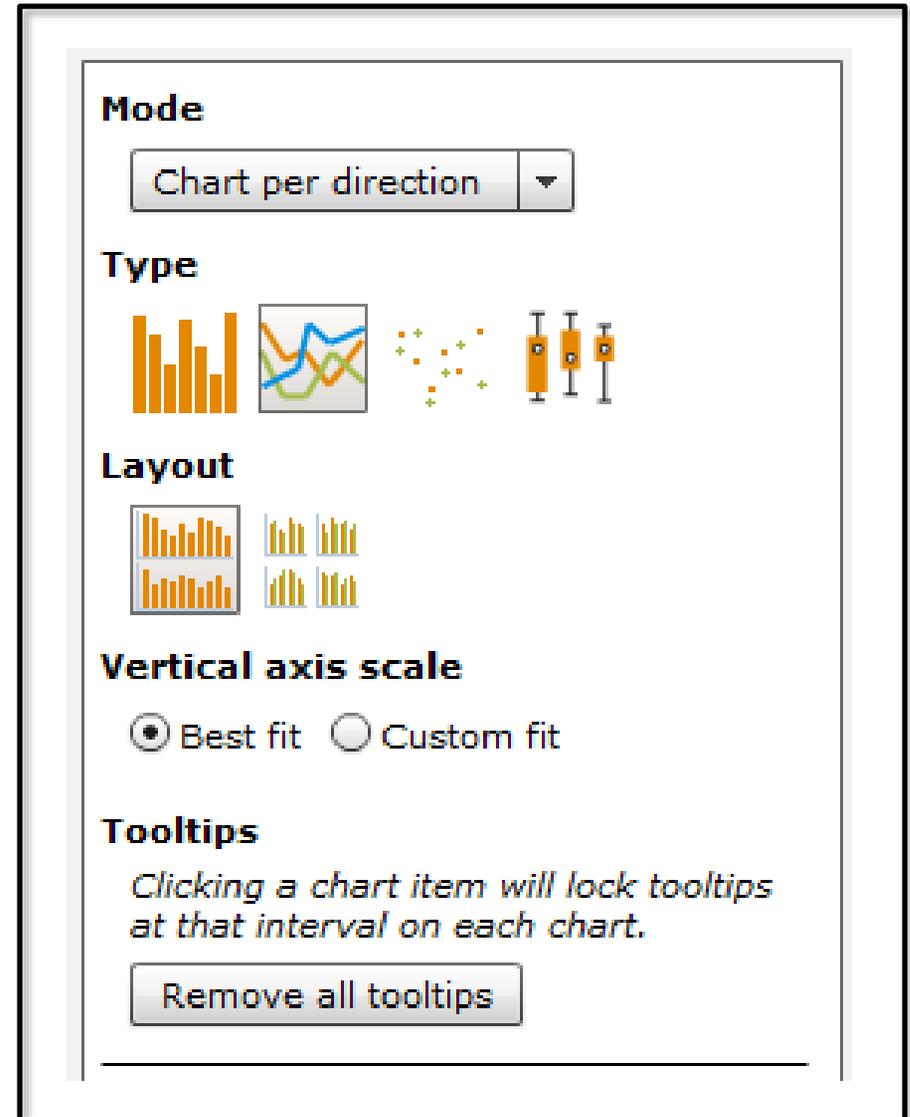
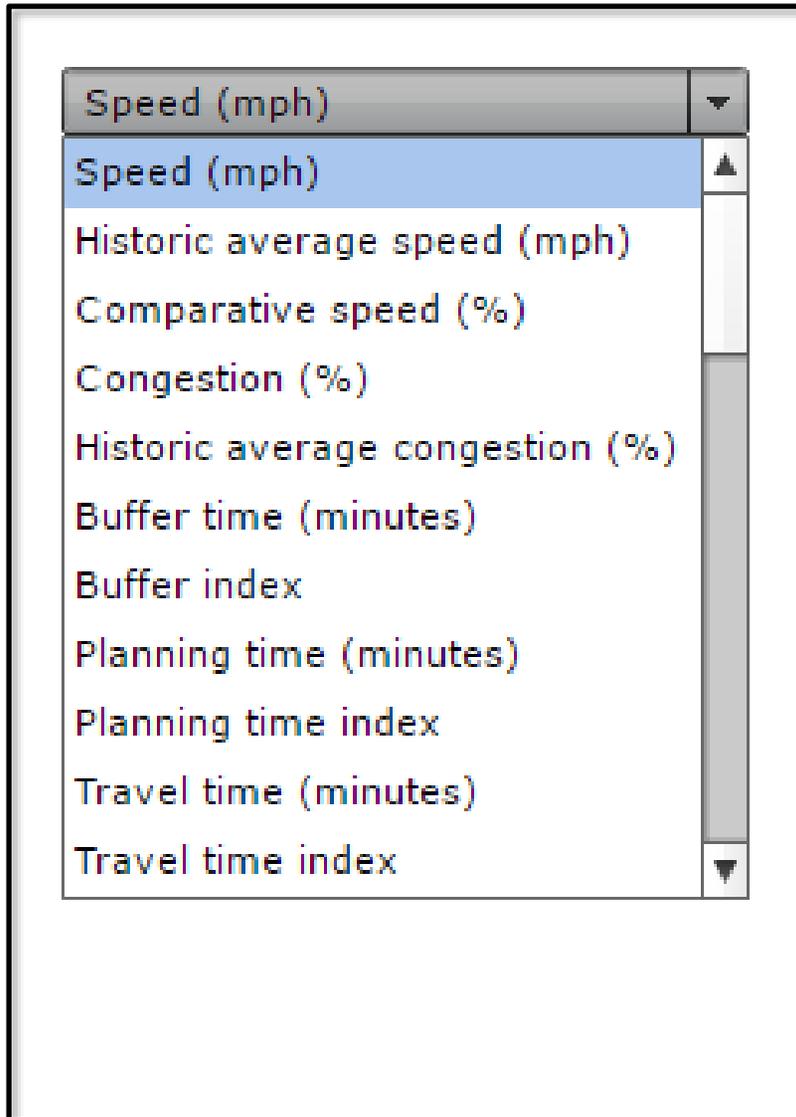
Performance Charts

Line charts let users see average travel times, speeds, reliability measures, etc; colored bands depict the variability in the data over time. The dark blue band below represents the 25th/75th percentile, while the lighter blue bands represent the 5th/95th percentile.



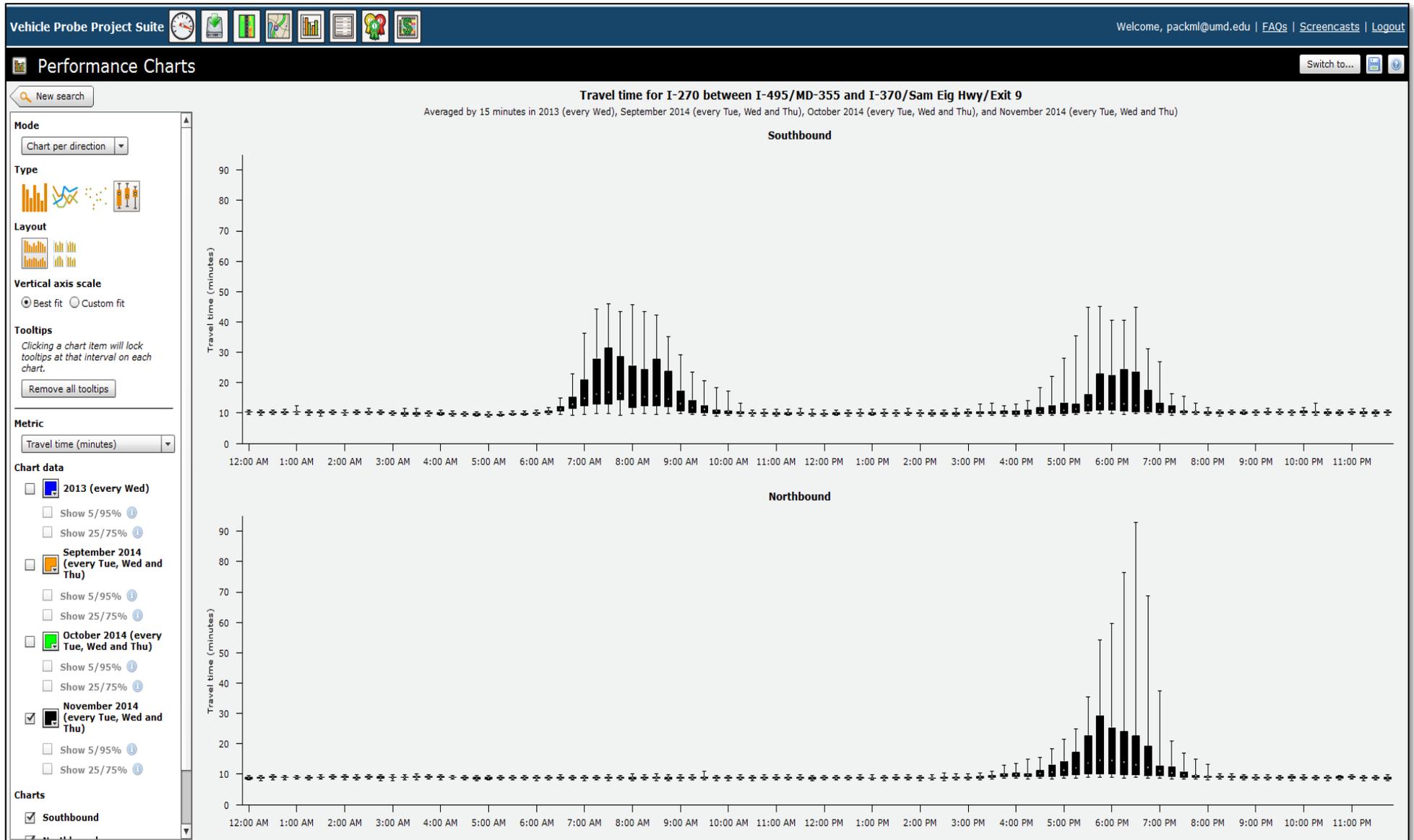
Performance Charts – Metrics/Display Modes

Performance Charts has a number of different Metrics and Display Modes available.



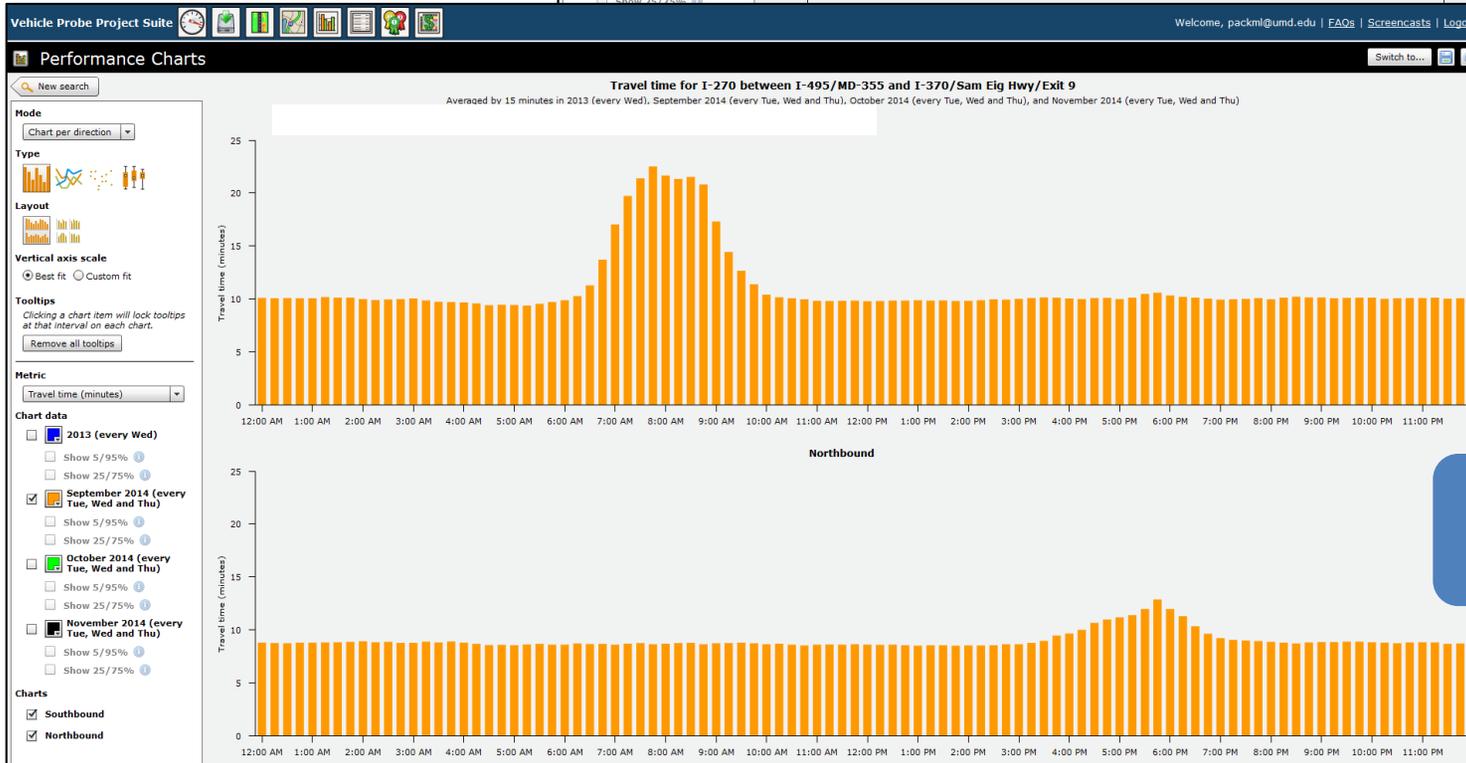
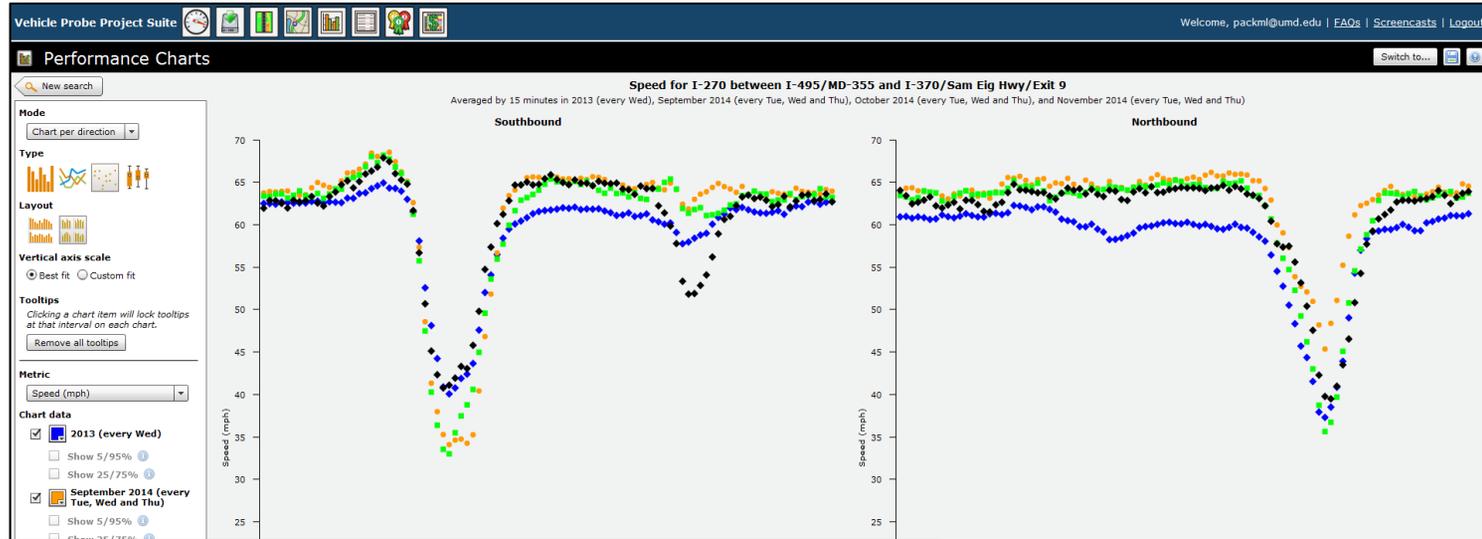
Performance Charts – Display Modes

Box-and-whisker plots show average values, along with 25th/75th percentile and 5th/95th percentile bands to give a sense of variability in travel times, reliability, and other metrics.



Performance Charts – Display Modes (Cont'd.)

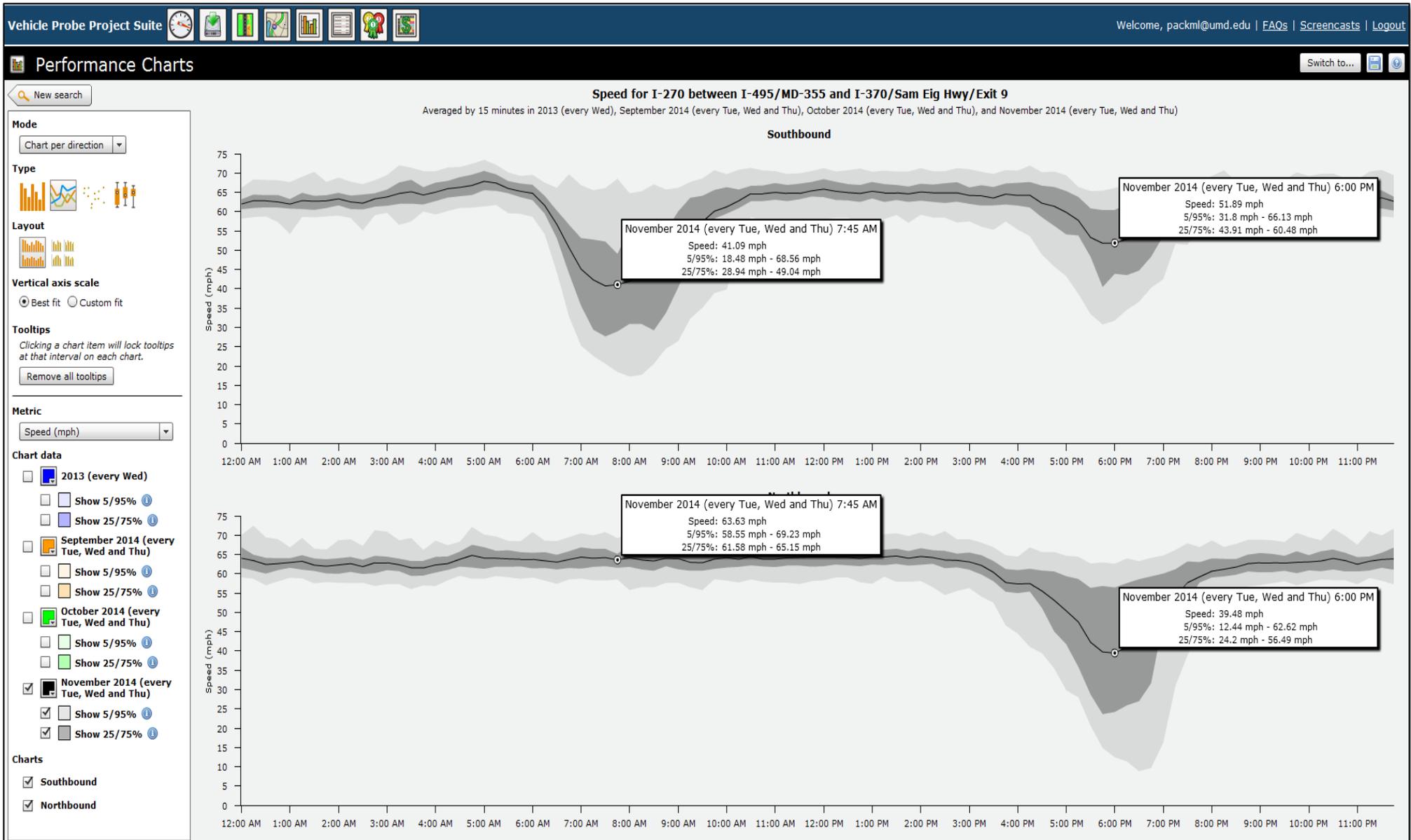
Bar, scatter, line, and box-and-whisker plots are all options.



All charts can be exported as images or Excel files.

Performance Charts - Tool Tips

The Performance Charts tool also has lockable tool tips.



Bottleneck Ranking – Results Summary Page

Useful for identifying problem locations, the bottleneck ranking tools allow a user to “rank” the most congested locations in a corridor, a county, a state, or a larger region. The results (shown on the next few slides) provide details on how severe each bottleneck was in terms of queue length, average duration, and number of occurrences during a given date range. Event information has been overlaid to give a much more robust picture of conditions. All results summaries can be exported.

Each bottleneck location includes a column for “All Events/Incidents” indicating the total number of occurrences for the selected date range

Vehicle Probe Project Suite

Bottleneck Ranking

Bottleneck locations from Interstates in MD (1175 tmc) between August 25, 2015 and September 25, 2015 (581 total)

| Rank | Map | Location | Average duration | Average max length (miles) | Occurrences | Impact factor | All Events/Incidents |
|------|--------------------------|-----------------------------------|------------------|----------------------------|-------------|---------------|----------------------|
| 1 | <input type="checkbox"/> | I-270 S @ I-270 | 2 h 19 m | 17.53 | 50 | 121,849 | 115 |
| 2 | <input type="checkbox"/> | I-695 CW @ I-83/MD-25/EXIT 23 | 1 h 44 m | 11.60 | 59 | 71,197 | 128 |
| 3 | <input type="checkbox"/> | I-95 N @ MD-100/EXIT 43 | 2 h 16 m | 8.56 | 53 | 61,729 | 67 |
| 4 | <input type="checkbox"/> | I-270 N @ MD-109/EXIT 22 | 2 h 11 m | 11.85 | 34 | 52,764 | 39 |
| 5 | <input type="checkbox"/> | I-695 CCW @ EDMONDSON AVE/EXIT 14 | 2 h 38 m | 8.61 | 38 | 51,713 | 95 |
| 6 | <input type="checkbox"/> | I-695 CCW @ US-40/EXIT 15 | 1 h 34 m | 8.49 | 58 | 46,296 | 90 |
| 7 | <input type="checkbox"/> | I-495 CCW @ US-50/EXIT 19 | 2 h 2 m | 6.80 | 42 | 34,859 | 102 |

Show Events/Incidents: During selected time range Only during bottleneck conditions

I-270 S @ I-270

Show ranks Highlight selected bottleneck Show events/incidents label next to rank

Occurrences

3 visualization options: Line Spiral Table

Maximum queue length in miles: Grayscale Compact View

Icon Legend

Maps provide a display of bottleneck conditions with the bottleneck rank and total number of incidents shown in the blue box

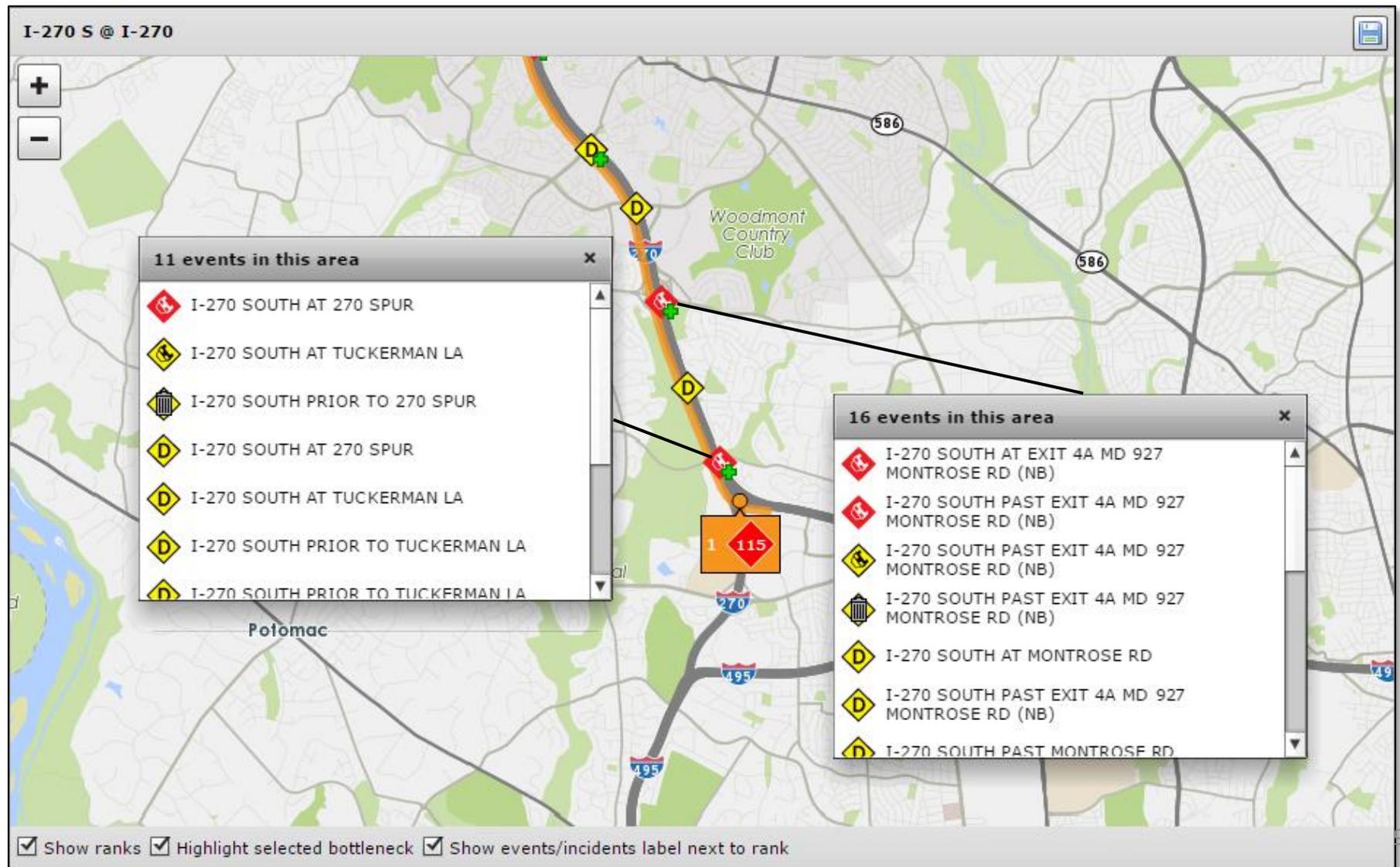
The line diagram shows detail over the course of each day for the months of August and September, for both bottlenecks and events.

Hovering over a specific bottleneck or incident will give more detailed information. Clicking on a chart element will generate a Congestion Scan (bottleneck) or Event Timeline (events).

Bottleneck Ranking – Mapped multiple ranked bottlenecks with event information

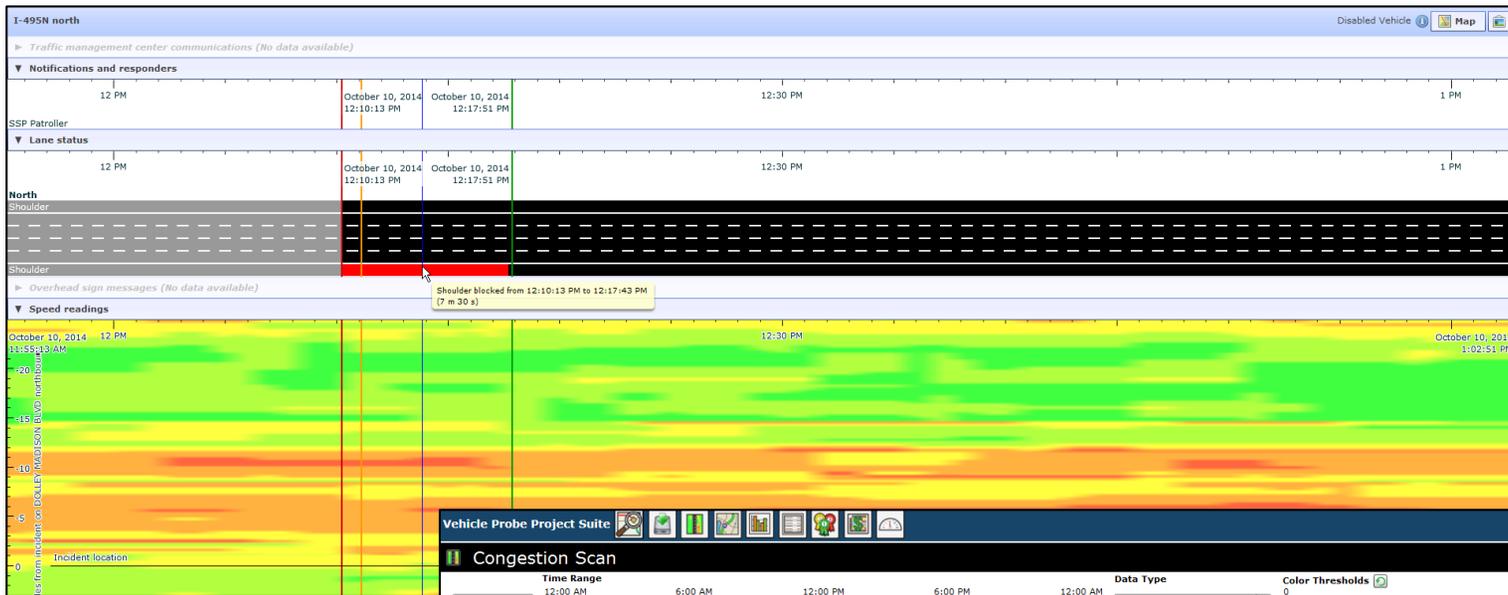
Each row in the table from the previous page includes a checkbox that controls whether the bottleneck shown in that row will be plotted on the map.

Checkboxes on the map panel allow the user to disable “highlighting” for the selected bottleneck and toggle the ranking numbers next to each map icon. The total number of events is shown in the diamonds. Zooming in reveals more event details. Clicking on a plus icon (area of multiple events) opens a detail box for that location.



Bottleneck Ranking – Event Timelines & Congestion Scans

Additional details generated by clicking on an event icon (resulting in an Event Timeline) or clicking on a bottleneck (resulting in a Congestion Scan).



Bottleneck Ranking – Additional Visuals & Event Icon Legend

Incident Icons Legend

- ◆ **Red** — Severe events and incidents
 - Emergency Roadwork
 - Injury
 - Medical Emergency

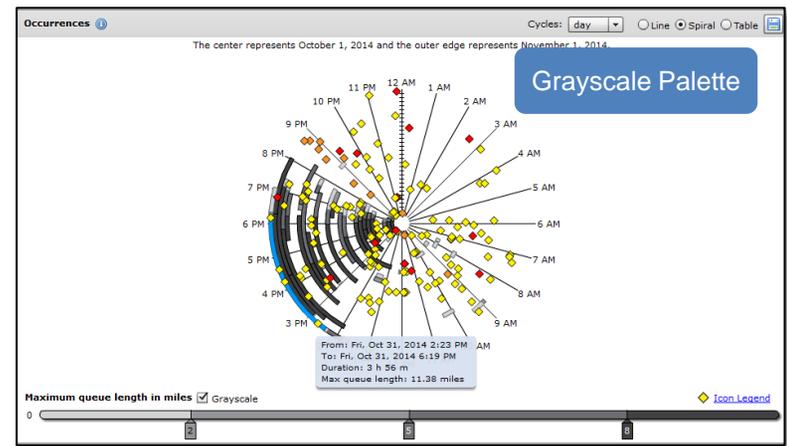
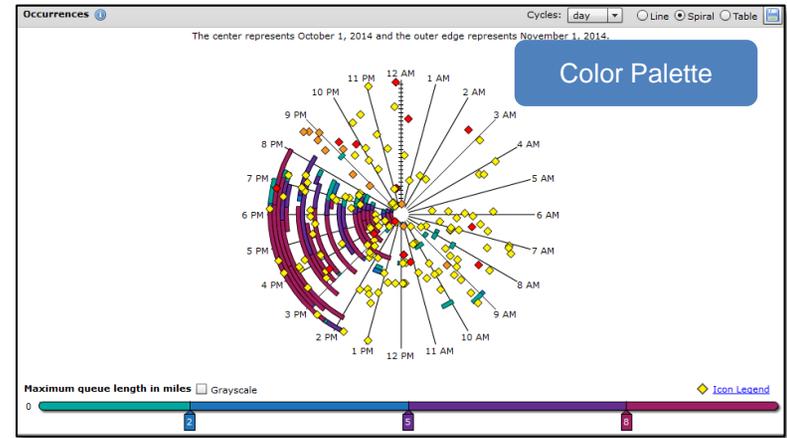
- ◆ **Orange** — Roadwork

- ◆ **Yellow** — All other events and incidents
 - Animal struck
 - Closure
 - Collision
 - Congestion
 - Debris
 - Delays
 - Disabled Vehicle
 - Drawbridge Opening
 - Fallen Rocks
 - Fallen Tree
 - Fire
 - Flood
 - Fog
 - Hazmat
 - Incident
 - Other
 - Overgrown Foliage
 - Police Activity
 - Signal System
 - Special Event
 - Sports Event
 - Tornado
 - Vehicle Fire
 - Water Main Work
 - Wind

For ease of illustration, the 29 possible incident and event types have been grouped into three categories.

Temporal spirals can be shown in color or grayscale, and have the same features as the line chart in terms of hovering over and clicking on bottlenecks or events to get more details.

The Bottleneck Location Table provides additional details (start time/clear time) and can be exported to Excel.



| Start time | Clear time | Duration | Max queue len... | Events/Incide... |
|---------------------------|---------------------------|----------|------------------|------------------|
| Wed, Oct 1, 2014 10:53 AM | Wed, Oct 1, 2014 12:12 PM | 1 h 19 m | 3.81 | 0 |
| Wed, Oct 1, 2014 10:53 AM | Wed, Oct 1, 2014 12:12 PM | 1 h 19 m | 3.81 | 0 |
| Wed, Oct 1, 2014 2:51 PM | Wed, Oct 1, 2014 7:19 PM | 4 h 27 m | 11.88 | 1 |
| Wed, Oct 1, 2014 2:57 PM | Wed, Oct 1, 2014 7:19 PM | 4 h 21 m | 11.88 | 0 |
| Wed, Oct 1, 2014 3:27 PM | Wed, Oct 1, 2014 7:19 PM | 3 h 51 m | 11.88 | 0 |
| Wed, Oct 1, 2014 6:51 PM | Wed, Oct 1, 2014 7:36 PM | 45 m | 5.98 | 0 |
| Wed, Oct 1, 2014 7:09 PM | Wed, Oct 1, 2014 7:19 PM | 10 m | 1.53 | 0 |
| Wed, Oct 1, 2014 7:25 PM | Wed, Oct 1, 2014 7:39 PM | 14 m | 0.97 | 0 |
| Thu, Oct 2, 2014 2:53 PM | Thu, Oct 2, 2014 7:20 PM | 4 h 27 m | 12.29 | 0 |
| Thu, Oct 2, 2014 3:03 PM | Thu, Oct 2, 2014 7:20 PM | 4 h 17 m | 12.29 | 0 |
| Thu, Oct 2, 2014 3:03 PM | Thu, Oct 2, 2014 7:20 PM | 4 h 17 m | 12.29 | 0 |
| Thu, Oct 2, 2014 3:10 PM | Thu, Oct 2, 2014 7:20 PM | 4 h 10 m | 12.29 | 0 |
| Thu, Oct 2, 2014 6:26 PM | Thu, Oct 2, 2014 7:30 PM | 1 h 04 m | 5.72 | 0 |
| Thu, Oct 2, 2014 6:30 PM | Thu, Oct 2, 2014 7:30 PM | 1 h 00 m | 5.72 | 0 |
| Thu, Oct 2, 2014 7:01 PM | Thu, Oct 2, 2014 7:15 PM | 14 m | 2.26 | 0 |
| Thu, Oct 2, 2014 7:04 PM | Thu, Oct 2, 2014 7:15 PM | 11 m | 0.52 | 0 |
| Fri, Oct 3, 2014 2:55 PM | Fri, Oct 3, 2014 6:17 PM | 3 h 22 m | 8.92 | 2 |
| Fri, Oct 3, 2014 3:08 PM | Fri, Oct 3, 2014 6:17 PM | 3 h 08 m | 8.92 | 1 |

Speed Threshold Breakdown

The Michigan Analytics Suite includes a Speed Threshold Breakdown tool with which users can choose a stretch of road to view speeds that occur above or below a particular threshold, using time-of-day and day-of-week criteria for one or more specific date range(s).

1. Road
 Region: Search in all states...
 Your selected roads: I-375
 Directions: Northbound Southbound
 Entire road Partial road
 3.37 miles of roadway selected (12 TMC codes)

2. Date range
 09/25/2015 - 09/25/2015

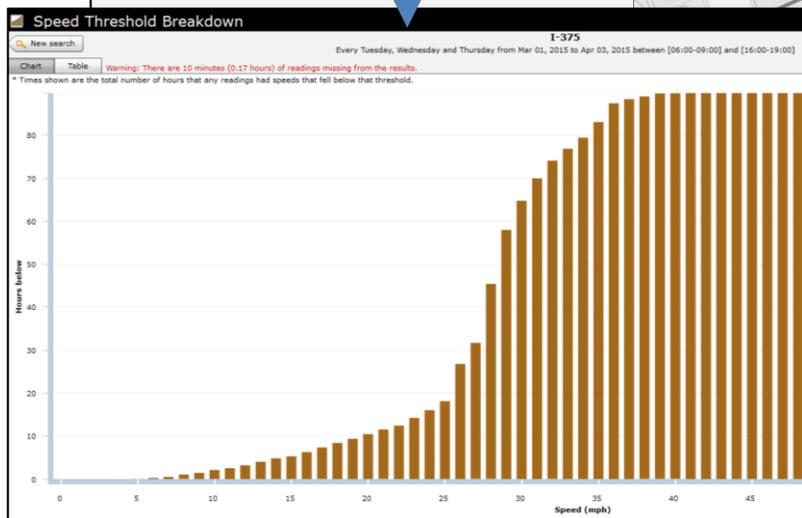
3. Days of week
 Sun Mon Tue Wed Thu Fri Sat

4. Time of day
 12:00 AM - 11:59 PM
 12:00 AM - 11:59 PM

Submit

Chart Results

Tabular Results



| Speed | Number of readings | % of readings below | Hours Below | % of time below | Minutes Below | % of readings above | Hours Above | Minutes Above |
|-------|--------------------|---------------------|-------------|-----------------|---------------|---------------------|-------------|---------------|
| 0 | 0 | 0.00 | 0.00 | 0.00 | 0 | 100.00 | 89.83 | 5389 |
| 1 | 0 | 0.00 | 0.00 | 0.00 | 0 | 100.00 | 89.83 | 5389 |
| 2 | 0 | 0.00 | 0.00 | 0.00 | 0 | 100.00 | 89.83 | 5389 |
| 3 | 0 | 0.00 | 0.00 | 0.00 | 0 | 100.00 | 89.83 | 5389 |
| 4 | 0 | 0.00 | 0.00 | 0.00 | 0 | 100.00 | 89.83 | 5389 |
| 5 | 2 | 0.01 | 0.03 | 0.04 | 1 | 99.99 | 89.80 | 5388 |
| 6 | 17 | 0.04 | 0.27 | 0.30 | 16 | 99.96 | 89.57 | 5374 |
| 7 | 36 | 0.09 | 0.50 | 0.56 | 30 | 99.91 | 89.33 | 5350 |
| 8 | 70 | 0.18 | 1.03 | 1.15 | 61 | 99.82 | 88.80 | 5328 |
| 9 | 109 | 0.28 | 1.43 | 1.59 | 85 | 99.72 | 88.40 | 5304 |
| 10 | 157 | 0.40 | 2.10 | 2.33 | 126 | 99.60 | 87.73 | 5263 |
| 11 | 188 | 0.48 | 2.53 | 2.81 | 151 | | | |
| 12 | 237 | 0.61 | 3.20 | 3.56 | 190 | | | |
| 13 | 302 | 0.78 | 4.20 | 4.44 | 242 | | | |
| 14 | 376 | 0.97 | 4.83 | 5.27 | 289 | | | |
| 15 | 440 | 1.13 | 5.37 | 5.85 | 316 | | | |
| 16 | 526 | 1.36 | 6.27 | 6.96 | 376 | | | |
| 17 | 612 | 1.58 | 7.33 | 8.15 | 439 | | | |
| 18 | 705 | 1.82 | 8.40 | 9.33 | 504 | | | |
| 19 | 800 | 2.06 | 9.37 | 10.41 | 562 | | | |
| 20 | 899 | 2.32 | 10.47 | 11.43 | 628 | | | |
| 21 | 1015 | 2.62 | 11.53 | 12.61 | 691 | | | |
| 22 | 1125 | 2.90 | 12.43 | 13.81 | 745 | | | |
| 23 | 1284 | 3.31 | 14.23 | 15.81 | 853 | | | |
| 24 | 1469 | 3.79 | 16.03 | 17.81 | 961 | | | |
| 25 | 1715 | 4.42 | 18.13 | 20.15 | 1087 | | | |
| 26 | 2185 | 5.63 | 26.80 | 29.78 | 1408 | | | |

| % of readings above | Hours Above | % of time above |
|---------------------|-------------|-----------------|
| 100.00 | 89.83 | 99.81 |
| 100.00 | 89.83 | 99.81 |
| 100.00 | 89.83 | 99.81 |
| 100.00 | 89.83 | 99.81 |
| 100.00 | 89.83 | 99.81 |
| 99.99 | 89.80 | 99.78 |
| 99.96 | 89.57 | 99.52 |
| 99.91 | 89.33 | 99.26 |

User Delay Cost Analysis

Tool allows user to:

- Define one or more corridors for analysis
- Customize delay parameters:
 - Deviation from historical average
 - Fall below a certain percentage of free-flow
 - Fall below an absolute speed
- Edit commercial and passenger vehicle average hourly time value

User Delay Cost Analysis

1. Select one or more roads.

| Road | Region | List of TMC codes | Saved TMC Set |
|--|--------|--|---------------|
| ▼ | | Search in all states... 🔍 | |

[Advanced](#) ▼
2. Select a time period for the report.

Custom
 Month
 Quarter
 Year

📅 - to - 📅
3. Select volume data provider:

INRIX ℹ️
4. Select speed data source:

HERE

INRIX

NPMRDS (Passenger vehicles) ℹ️

NPMRDS (Trucks and passenger vehicles) ℹ️

NPMRDS (Trucks) ℹ️
5. Confirm the average cost and percent of volume for passenger and commercial vehicle types.

Using vehicle costs from Texas Transportation Institute ↻

Passenger: 2015 - \$16.79

Commercial: 2015 - \$86.81

Percent of passenger and commercial volume is based on data provided by the DOT on an annual basis. If no value was provided by the DOT, the default will be 90% passenger vehicles, and 10% commercial vehicles.

You can manually adjust these percentages [here](#).
6. Define where delay should be calculated.

Where speeds fall below... ℹ️

Historic average speed ℹ️

Free-flow speed minus mph

Absolute speed

For all segments
7. Calculate user delay costs against:

Freeflow speed
 Historic average speed ℹ️
8. Provide a title for your report (optional):

User Delay Cost Analysis (Cont'd.)

Here is an example of UDC estimates for both passenger and commercial vehicles. The table is interactive: mousing over any cell brings up additional details about that hour of day and day of week. The user can switch what is displayed in the table from "Combined UDC" to "Delay Per Person," "Delay Per Vehicle," "Person Hours of Delay," "Volumes," "Data Availability," etc. Tables can be exported to Excel.

Tuesday, December 9, 2014 5:00 PM
Delay cost:
 Total: \$63,510.48
 Per vehicle: \$0.38
 Per person: \$0.32
Hours of delay:
 Person-hours: 2014h 13m 12s
 Vehicle-hours: 1696h 11m 7s
 Per vehicle: 36s
Volume:
 Total: 168,319 vph
 Passenger: 126,239 vph
 Commercial: 42,080 vph
Data validity: 100%
 Click the table cell to see links to congestion scans

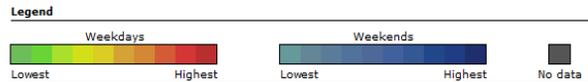
Vehicle Type: All | Display: Total cost

| | 12 AM | 1 AM | 2 AM | 3 AM | 4 AM | 5 AM | 6 AM | 7 AM | 8 AM | 9 AM | 10 AM | 11 AM | 12 PM | 1 PM | 2 PM | 3 PM | 4 PM | 5 PM | 6 PM | 7 PM | |
|---------------|--------|--------|--------|--------|--------|--------|----------|----------|----------|----------|---------|---------|---------|---------|----------|----------|----------|----------|----------|---------|----------------------------|
| 12/01/14 | \$0K | \$0K | \$0K | \$0K | \$0K | \$0.5K | \$17.7K | \$34.1K | \$50.7K | \$8.9K | \$0.3K | \$0.2K | \$0.3K | \$0.6K | \$3.1K | \$11.3K | \$31.8K | \$69.1K | \$48.3K | \$10.9K | |
| 12/02/14 | \$0K | \$0.1K | \$0K | \$0K | \$0.1K | \$2.4K | \$36.2K | \$43.5K | \$49.1K | \$23.1K | \$5.6K | \$12K | \$1.6K | \$2.1K | \$8K | \$15.9K | \$49.2K | \$82.4K | \$48.1K | \$5.3K | |
| 12/03/14 | \$0.1K | \$0K | \$0K | \$0.1K | \$0K | \$0.5K | \$17.6K | \$35K | \$29K | \$8.4K | \$1.2K | \$0.7K | \$0.5K | \$1.4K | \$4.5K | \$12.1K | \$33.7K | \$56.7K | \$27.3K | \$3.5K | |
| 12/04/14 | \$0K | \$0K | \$0K | \$0.1K | \$0K | \$0.5K | \$17.6K | \$35K | \$29K | \$8.4K | \$1.2K | \$0.7K | \$0.5K | \$1.4K | \$4.5K | \$12.1K | \$33.7K | \$56.7K | \$41.4K | \$1.8K | |
| 12/05/14 | \$0.2K | \$0K | \$0K | \$0K | \$0K | \$0.2K | \$5.2K | \$27.3K | \$22K | \$6.1K | \$1.1K | \$3.3K | \$2.9K | \$8.8K | \$13.4K | \$42.4K | \$66.4K | \$61.6K | \$25.9K | \$5.4K | |
| 12/06/14 | \$0.5K | \$0.1K | \$0K | \$0K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.4K | \$0.3K | \$0.6K | \$2.8K | \$11.9K | \$10.7K | \$12.4K | \$10.6K | \$14.7K | \$7.5K | \$2.6K | |
| 12/07/14 | \$0.2K | \$0.1K | \$0.1K | \$0K | \$0K | \$0.1K | \$0.1K | \$0.1K | \$0K | \$0.1K | \$0.2K | \$0.6K | \$0.2K | \$0.3K | \$2.9K | \$2.4K | \$9.4K | \$6.2K | \$1.4K | \$2.2K | |
| 12/08/14 | \$0K | \$0K | \$0K | \$0K | \$0.1K | \$0.4K | \$12.7K | \$26K | \$21.9K | \$5K | \$0.5K | \$0.5K | \$1.1K | \$0.6K | \$3K | \$10.2K | \$23K | \$27.7K | \$15.2K | \$1.1K | |
| 12/09/14 | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$1.1K | \$26.2K | \$47.5K | \$51.9K | \$35.8K | \$13.5K | \$1.8K | \$5.1K | \$2K | \$6.8K | \$16.4K | \$43.3K | \$63.5K | \$35.2K | \$0.2K | |
| 12/10/14 | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$0.3K | \$13.4K | \$37.7K | \$31.5K | \$12.1K | \$1.1K | \$0.3K | \$0.2K | \$10.4K | \$7.1K | \$40.7K | \$48.3K | \$54.2K | \$39.3K | \$0.3K | |
| 12/11/14 | \$0.1K | \$0K | \$0K | \$0K | \$0K | \$0.7K | \$19.7K | \$35.6K | \$37.5K | \$15.3K | \$3.6K | \$0.6K | \$0.5K | \$2.4K | \$12.8K | \$29.8K | \$37.1K | \$32.7K | \$25.2K | \$0.2K | |
| 12/12/14 | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$0.4K | \$25.5K | \$32.9K | \$18.5K | \$5.4K | \$3.1K | \$1.7K | \$3.8K | \$6.4K | \$12.6K | \$29.4K | \$41.5K | \$37.8K | \$25.2K | \$0.2K | |
| 12/13/14 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | \$2K | \$11.1K | \$9K | \$9.2K | \$8.1K | \$0.8K | \$0.6K | |
| 12/14/14 | \$0.1K | \$0.1K | \$0.1K | \$0K | \$0K | \$0.1K | \$0.1K | \$0K | \$0K | \$0.1K | \$0.2K | \$0.2K | \$0.1K | \$0.3K | \$1.1K | \$1K | \$1.9K | \$1.9K | \$0.1K | \$0.3K | |
| 12/15/14 | \$0K | \$0K | \$0.1K | \$0K | \$0K | \$0.5K | \$16.7K | \$33.6K | \$27.4K | \$6.2K | \$0.2K | \$0.6K | \$6.6K | \$28.1K | \$30.9K | \$19.7K | \$31.8K | \$48.3K | \$28.2K | \$0.1K | |
| 12/16/14 | \$0K | \$0K | \$0K | \$0K | \$0K | \$0.6K | \$11.5K | \$26.3K | \$40.6K | \$18.3K | \$5.3K | \$8.5K | \$12.5K | \$6.4K | \$10.3K | \$21.5K | \$54.6K | \$57.5K | \$28.2K | \$0.1K | |
| 12/17/14 | \$0K | \$0K | \$0K | \$0K | \$0K | \$0.3K | \$15.6K | \$37.9K | \$26.2K | \$11.5K | \$6K | \$4.7K | \$6.2K | \$5.1K | \$8.2K | \$16.4K | \$55K | \$61.5K | \$41.9K | \$5.3K | |
| Hourly Totals | \$1.6K | \$1K | \$0.6K | \$0.5K | \$0.6K | \$9.2K | \$238.5K | \$458.2K | \$439.6K | \$172.7K | \$44.7K | \$36.9K | \$44.9K | \$89.4K | \$154.8K | \$309.3K | \$579.6K | \$742.6K | \$428.1K | \$68.2K | |
| | | | | | | | | | | | | | | | | | | | | | Grand Total \$3,859,177.94 |

Export to Excel

Want to know how the user delay cost is calculated? Read more in our [documentation](#).

- Notes**
- The values in the 'Total cost' display mode are rounded to the nearest hundredth and displayed in thousands when values larger than \$1K exist.
 - The range of values for the colored backgrounds of each cell are based on the data of the selected display mode.
 - Delay metrics are displayed for every hour of every day within the selected time range.
 - The totals for every hour are shown in the bottom row while the totals for every day are shown in the rightmost column.
 - The grand total for the entire time period is shown as the actual value and displayed at the bottom right corner.
 - Volumes shown for each hour are summed across all road segments.



Performance Measures Tables

Users can generate tables with all performance measures during morning and evening rush hours (or any other time of day), for use in reports or modeling and simulation inputs.

Performance Summaries
Switch to...

I-270 between I-495/MD-355 and I-370/Sam Eig Hwy/Exit 9

Selected time ranges

6:00 AM - 9:00 AM

4:00 PM - 7:00 PM

+ Add another time range

Submit

| October 2014 Southbound | | October 2014 Northbound | |
|------------------------------|-------------------|-------------------------|--|
| Buffer time (minutes) | | | |
| | 6:00 AM - 9:00 AM | 4:00 PM - 7:00 PM | |
| Monday | 11.42 | 6.76 | |
| Tuesday | 13.94 | 12.16 | |
| Wednesday | 18.1 | 0 | |
| Thursday | 15.06 | 1.32 | |
| Friday | 7.05 | 0 | |
| Saturday | 0 | 0 | |
| Sunday | 0 | 0 | |
| Weekends | 0 | 0 | |
| Weekdays | 15.52 | 3.09 | |
| All Days | 16.02 | 2.99 | |

| Buffer index | | | |
|--------------|-------------------|-------------------|--|
| | 6:00 AM - 9:00 AM | 4:00 PM - 7:00 PM | |
| Monday | 0.68 | 0.56 | |
| Tuesday | 0.82 | 0.93 | |
| Wednesday | 1.06 | 0 | |
| Thursday | 0.89 | 0.08 | |
| Friday | 0.51 | 0 | |
| Saturday | 0 | 0 | |
| Sunday | 0 | 0 | |
| Weekends | 0 | 0 | |
| Weekdays | 0.96 | 0.22 | |
| All Days | 1.14 | 0.23 | |

| Planning time (minutes) | | | |
|-------------------------|-------------------|-------------------|--|
| | 6:00 AM - 9:00 AM | 4:00 PM - 7:00 PM | |
| Monday | 28.29 | 18.86 | |
| Tuesday | 30.94 | 25.29 | |
| Wednesday | 35.24 | 12.59 | |
| Thursday | 31.93 | 18.21 | |
| Friday | 20.84 | 16.64 | |
| Saturday | 10.63 | 10.88 | |
| Sunday | 10.65 | 10.63 | |
| Weekends | 10.64 | 10.78 | |
| Weekdays | 31.72 | 17.04 | |
| All Days | 30.1 | 15.78 | |

| Planning time index | | | |
|---------------------|-------------------|-------------------|--|
| | 6:00 AM - 9:00 AM | 4:00 PM - 7:00 PM | |
| Monday | 2.7 | 1.8 | |
| Tuesday | 2.95 | 2.41 | |
| Wednesday | 3.37 | 1.2 | |
| Thursday | 3.05 | 1.74 | |
| Friday | 1.99 | 1.59 | |
| Saturday | 1.01 | 1.04 | |
| Sunday | 1.02 | 1.02 | |
| Weekends | 1.02 | 1.03 | |
| Weekdays | 3.03 | 1.63 | |
| All Days | 2.87 | 1.51 | |

| Speed (mph) | | | |
|-------------|-------------------|-------------------|--|
| | 6:00 AM - 9:00 AM | 4:00 PM - 7:00 PM | |
| Monday | 49.74 | 61.67 | |
| Tuesday | 43.93 | 61.82 | |
| Wednesday | 44.69 | 63.76 | |
| Thursday | 42.61 | 63 | |
| Friday | 56.15 | 61.62 | |
| Saturday | 66.18 | 64.79 | |
| Sunday | 66.8 | 65.13 | |
| Weekends | 66.49 | 64.98 | |
| Weekdays | 47.47 | 62.43 | |
| All Days | 52.37 | 63.04 | |

| Travel time (minutes) | | | |
|-----------------------|-------------------|-------------------|--|
| | 6:00 AM - 9:00 AM | 4:00 PM - 7:00 PM | |
| Monday | 13.15 | 10.59 | |
| Tuesday | 15.3 | 10.51 | |
| Wednesday | 14.93 | 10.14 | |
| Thursday | 16.03 | 10.33 | |
| Friday | 11.5 | 10.7 | |
| Saturday | 9.7 | 9.93 | |
| Sunday | 9.61 | 9.86 | |
| Weekends | 9.66 | 9.89 | |
| Weekdays | 13.88 | 10.42 | |
| All Days | 12.39 | 10.27 | |

| Travel time index | | | |
|-------------------|-------------------|-------------------|--|
| | 6:00 AM - 9:00 AM | 4:00 PM - 7:00 PM | |
| Monday | 1.25 | 1.01 | |
| Tuesday | 1.46 | 1 | |
| Wednesday | 1.43 | 0.97 | |
| Thursday | 1.53 | 0.99 | |
| Friday | 1.1 | 1.02 | |
| Saturday | 0.93 | 0.95 | |
| Sunday | 0.92 | 0.94 | |
| Weekends | 0.92 | 0.94 | |
| Weekdays | 1.32 | 0.99 | |
| All Days | 1.18 | 0.98 | |

Online Video Tutorial

All tutorial videos are bookmarked by subject area and/or tool.

Tutorial

Region Explorer
Explore the relationships between bottlenecks and traffic events in real-time and in the past.

Congestion Scan
Analyze the rise and fall of congested conditions on a stretch of road.

Performance Charts
Chart performance metrics over time.

Bottleneck Ranking
Rank bottlenecks and discover which ones have the greatest impact.

Dashboard
Create your own personal dashboards to monitor corridor performance in regions of interest.

Massive Raw Data Downloader
Download raw probe data from our archive for offline analysis.

Trend Map
Create animated maps of roadway conditions.

Performance Summaries
Report on Buffer Time Index, Planning Time Index, and other performance metrics.

User Delay Cost Analysis
Put a dollar amount on how much a road's performance impacts its users.

Tutorials
Learn how to use each of the tools in the suite.

Getting Access
00:25

The Tools Available
01:20

Road Selection
02:53

Time Period Selection
01:44

The Region Explorer
04:21

The Massive Data Downloader
01:42

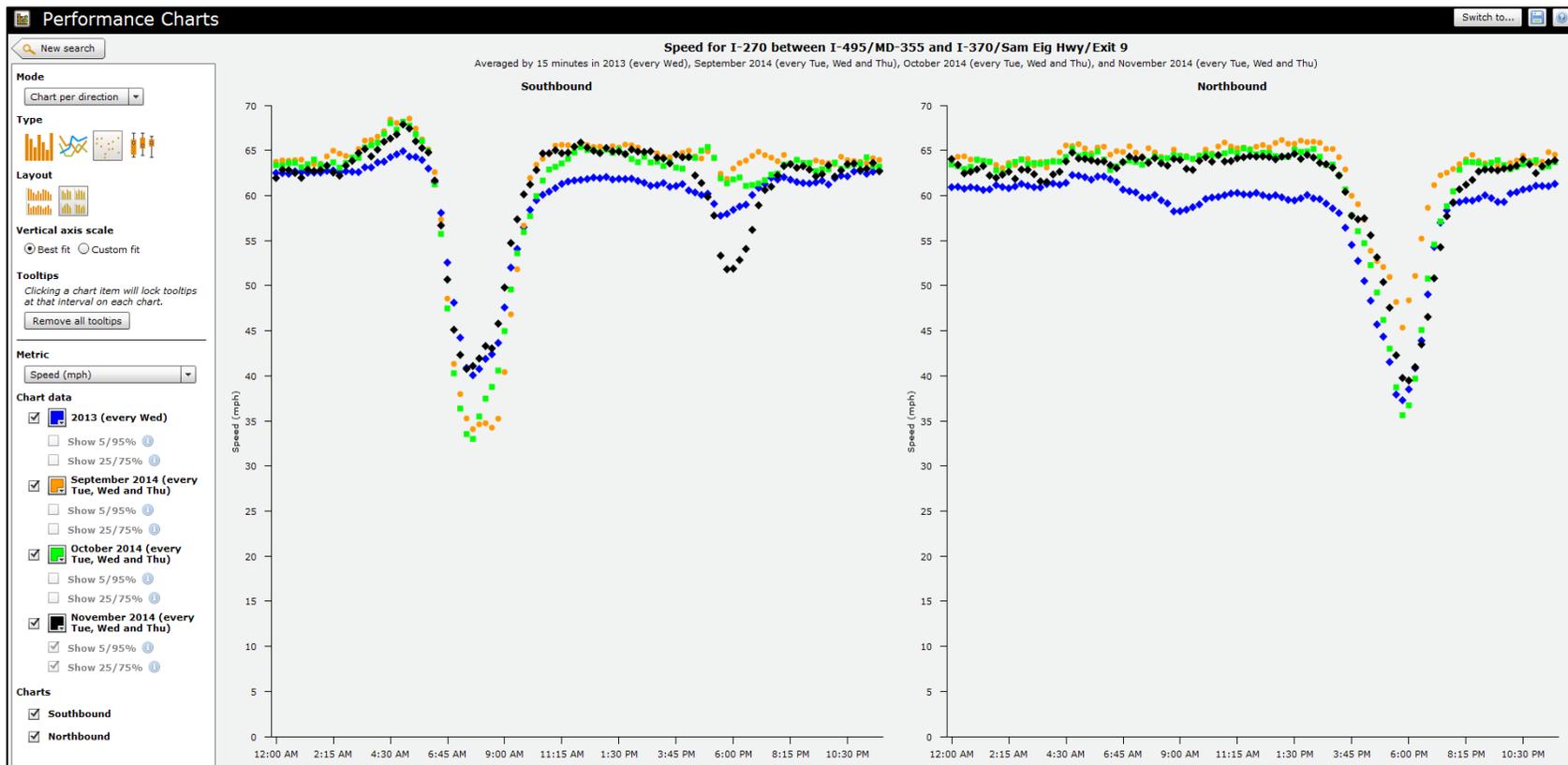
Retrieving Exports
00:48

Sponsored by
SVA, MDOT, CATT

0:47 / 1:41

NPMRDS Data is Available

- Where appropriate, NPMRDS data has been integrated into all of the previously mentioned tools.
- NPMRDS data produces meaningful results when looking at a month and/or an entire year's worth of aggregated performance measure data.
- The Probe Data Analytics tools show where gaps exist in the NPMRDS when viewing individual days and/or weeks worth of data.



Reporting Templates for Before and After Studies

- Multiple PowerPoint® and Word® templates have been developed to help agencies quickly produce:
 - Project Justification Reports
 - Before and After Study Fliers
- The following slides showcase two sample brochure templates that are available.
- Agencies can cut/paste graphics from the Probe Data Analytics Suite and drop them directly into these templates (along with their own description).
- I-95 Corridor Coalition Members, in partnership with the CATT Lab, have aided in the development of these templates.



Project Assessment Summary

July 16, 2012

Technical
Toolbox



Vehicle Probe Project Suite

The VPP Suite is a Flash-based web site that supports operations, planning, analysis, research & performance measure generation using probe data.



NJ OpenReach

NJ OpenReach is a web-based, multi-modal regional (NY/NJ/CT) tool that integrates incidents, construction, travel times and video.



Google™ Earth

Google™ Earth is a virtual globe and geographical information program that maps the Earth using superimposition of satellite imagery, aerial photography and GIS 3D.



NJ Department of Transportation

This Summary incorporates data, analyses and reports by various NJDOT Units, such as: Data Development, Safety, Mobility and Systems Engineering, Project Management and Systems Planning.



I-80/Squirrelwood Road

Highway Operational Improvement

Interchange #56, MP 56.76 – 57.47

West Paterson, Passaic County

Start Date: June 8, 2007

Completion Date: March 3, 2008

Construction Cost: \$1,282,304

Geographic Context

Route I-80 is a vital east-west interstate facility in northern New Jersey. It provides a continuous route between the Delaware Water Gap (at the PA border) and the George Washington Bridge (at the NY border) and is essential in serving the bedroom communities of northeast NJ and New York City, goods movement (local, regional and national) and recreational areas, such as the Pocono Mountains and Delaware Water Gap National Recreation Area.

Squirrelwood Road is classified as a urban minor arterial (County Route 636) and is accessed from I-80 at Interchange 56. This road serves the densely populated municipalities of Paterson and West Paterson in Passaic County.

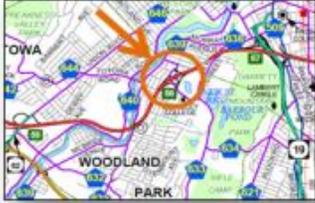
Project Background

In March, 1990, the I-80/Squirrelwood Road interchange was entered into the NJDOT's Pipeline Process via a Problem Statement generated by Township officials.

According to the Problem Statement, inadequate capacity at the unsignalized intersection of the WB exit ramp of I-80 with Squirrelwood Road causes traffic to backup on the ramp and into the I-80 mainline, creating safety and operational problems. There is also a secondary capacity constraint at the intersection of Squirrelwood Road and Glover Avenue that may contribute to this problem.

In June, 1992, a Needs Assessment report was prepared by the Bureau of Transportation and Corridor Analysis. This report described the existing conditions, general characteristics of the surrounding region, traffic analyses and proposed improvement concepts.

Subsequently, a Tier II Screening Report was completed in February, 2005, that presented accident history, revised traffic analyses and proposed traffic control and geometric improvements.



Project Area Location Map

Reporting Templates for Before and After Studies (Cont'd.)

Project Assessment Summary

July 16, 2012



Technical Toolbox

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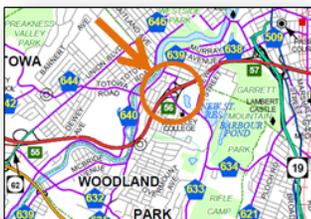
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Mobility ASSESSMENT

Project Detail

The project will eliminate the bottleneck occurring at the intersection of Squirrelwood Road and the WB I-80 off ramp, that causes traffic to queue back down the ramp and deceleration lane and into the I-80 through lanes, by:

- ▶ Signalizing the intersection of the WB off-ramp and Squirrelwood Road (to reduce left turn delays and queues)

- ▶ Widening the ramp to 2 lanes (for extra storage capacity and to remove the conflict of left turning vehicles blocking right turning vehicles)

- ▶ Extending the deceleration lane leading to the WB I-80 off ramp (for extra storage capacity)

There are no right-of-way issues with widening the ramp or extending the deceleration lane on I-80.

Project Element Location Map



Highway Capacity Software Intersection Analysis

| Location | | Volume | Level of Service | | Avg. Queue (ft.) | |
|--------------------------------|----------|--------|------------------|----------|------------------|--------|
| Approach | Movement | AM | No Signal | Signal | No Signal | Signal |
| Squirrelwood Road | | | | | | |
| Eastbound | Through | 250 | A | A | 0 | 38 |
| Westbound | Through | 1020 | A | B | 0 | 145 |
| Route I-80 Exit 56 Ramp | | | | | | |
| Northbound | Left | 250 | F | C | 209 | 72 |
| | Right | 570 | D | See note | 65 | 0 |

| Location | | Volume | Level of Service | | Avg. Queue (ft.) | |
|--------------------------------|----------|--------|------------------|----------|------------------|--------|
| Approach | Movement | PM | No Signal | Signal | No Signal | Signal |
| Squirrelwood Road | | | | | | |
| Eastbound | Through | 490 | A | B | 57 | 98 |
| Westbound | Through | 800 | A | B | 0 | 162 |
| Route I-80 Exit 56 Ramp | | | | | | |
| Northbound | Left | 340 | F | C | 386 | 116 |
| | Right | 600 | F | See note | 424* | 424* |

HCS analysis indicates a substantial LOS and Avg. Queue improvement on the ramp approach of the intersection with only a slight LOS degradation on the Squirrelwood Rd. approaches.

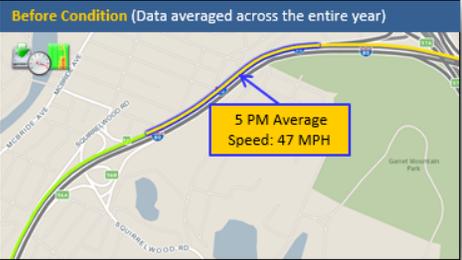
* This queue represents the available storage on the ramp. Observed queue extends as far back as 1,500' on the I-80 WB mainline.

Note: LOS under signalized conditions is not provided for channelized right turn. Results would be similar to un-signalized analysis.

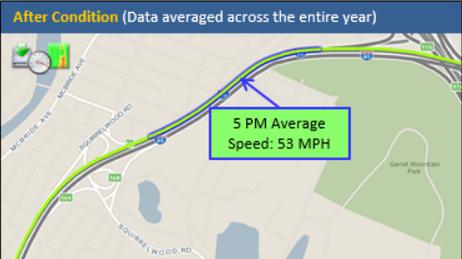
Reporting Templates for Before and After Studies (Cont'd.)

Average Speed Change

Before Condition (Data averaged across the entire year)



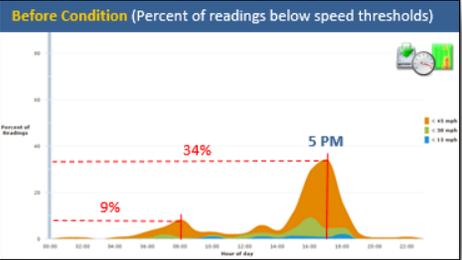
After Condition (Data averaged across the entire year)



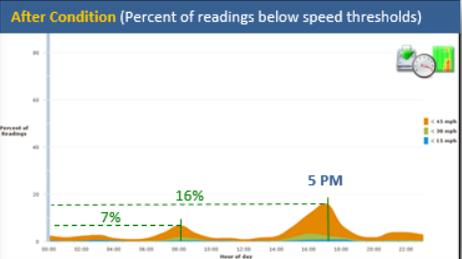
During the PM Peak Hour (5:00 PM), there has been a **13% increase in speed** along the section of WB I-80 approaching the Squirrelwood Road interchange (blue highlight) since the implementation (and "shake-out" period) of the project. (the AM Peak Hour showed a **4% increase in speed**).

Speed Threshold Change

Before Condition (Percent of readings below speed thresholds)



After Condition (Percent of readings below speed thresholds)



There has been a substantial improvement in speeds that fall below 45 MPH (a threshold indicating the beginning of congested conditions). In the "Before" condition, PM Peak Hour (5:00 PM), 34% of readings were < 45 MPH. In the "After", the percentage of readings dropped to 16%, an **overall decrease of 53%**.

Congestion Comparison



Using a VPP congestion scan, comparisons between the before & after condition show improvement in congestion intensity and duration in the 5 PM WB direction of I-80, prior to the Squirrelwood Rd Interchange.

Performance ASSESSMENT

Reliability

The project was evaluated for changes in **Reliability** using the VPP Suite **Performance Summaries** module:

- Travel Time** – the time it takes to drive along a stretch of road
- Buffer Time** – the extra time you must add to your average trip to ensure on time arrival
- Planning Time** – the total time you should allow to ensure on time arrival

User Delay Cost

The project was further evaluated for changes in **Delay Cost** (total, per vehicle and per person) and **Hours of Delay** (person-hours, vehicle-hours and per vehicle) using the VPP Suite **User Delay Cost Analysis** module.

Reliability Comparison

Before Condition

| | Buffer time (minutes) 5:00 PM - 6:00 PM | Planning time (minutes) 5:00 PM - 6:00 PM | Travel time (minutes) 5:00 PM - 6:00 PM |
|-----------|--|--|--|
| Monday | 1.12 | 4.88 | 3.81 |
| Tuesday | 1.76 | 5.56 | 3.91 |
| Wednesday | 1.17 | 4.91 | 3.87 |
| Thursday | 1.12 | 4.88 | 3.82 |
| Friday | 1.47 | 5.23 | 3.9 |
| Saturday | 1.07 | 4.62 | 3.64 |
| Sunday | 0.58 | 4.09 | 3.55 |
| Weekends | 1.78 | 5.23 | 3.72 |
| Weekdays | 2.69 | 6.14 | 4.23 |
| All Days | 2.35 | 5.8 | 4.06 |

After Condition

| | Buffer time (minutes) 5:00 PM - 6:00 PM | Planning time (minutes) 5:00 PM - 6:00 PM | Travel time (minutes) 5:00 PM - 6:00 PM |
|-----------|--|--|--|
| Monday | 1.1 | 4.85 | 3.72 |
| Tuesday | 0.62 | 4.42 | 3.7 |
| Wednesday | 0.61 | 4.35 | 3.66 |
| Thursday | 1 | 4.76 | 3.71 |
| Friday | 0.52 | 4.28 | 3.64 |
| Saturday | 0.41 | 3.96 | 3.43 |
| Sunday | 0.57 | 4.08 | 3.48 |
| Weekends | 1.07 | 4.53 | 3.61 |
| Weekdays | 2.03 | 5.48 | 3.85 |
| All Days | 1.57 | 5.03 | 3.76 |

25% ↓ (Weekdays)
11% ↓ (Weekdays)
9% ↓ (Weekdays)

Comparisons of changes in **Travel, Buffer and Planning Times** show favorable reductions in the After condition that can be attributed to the improved flow in the WB lanes of I-80 prior to the Squirrelwood Road off-ramp.

User Delay Cost Comparison

Before Condition

5 PM

Delay cost:
 Total: \$4,903,322.13
 Per vehicle: \$1,151.86
 Per person: \$969.98

Hours of delay:
 Person-hours: 155,492.15 hours
 Vehicle-hours: 130,940.76 hours
 Per vehicle: 30.76 hours

Data validity: 88.08%

After Condition

5 PM

Delay cost:
 Total: \$902,379.14
 Per vehicle: \$192.3
 Per person: \$161.94

Hours of delay:
 Person-hours: 28,719.9 hours
 Vehicle-hours: 24,185.18 hours
 Per vehicle: 5.15 hours

Data validity: 95.89%

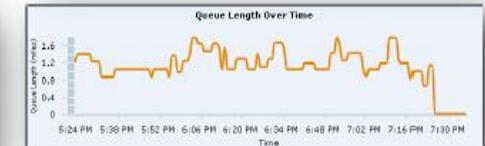
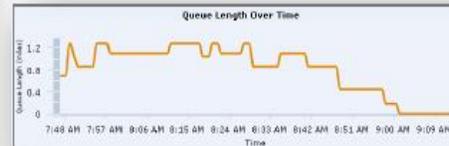
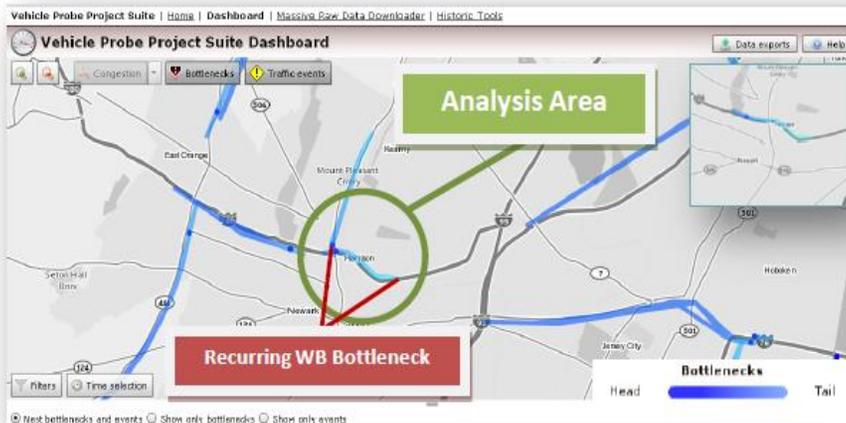
Comparisons of changes in **User Delay Cost** show substantial reductions in cost and hours of delay in the After condition, across all categories.

Project Justification Report

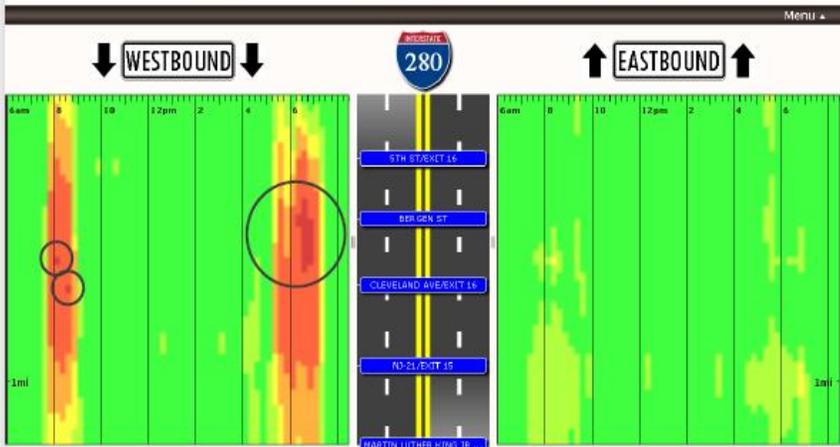
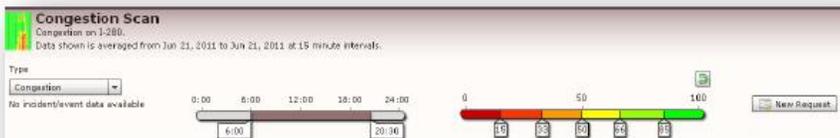


I-280 (from MP 14.7 to 15.9) Harrison Town, Hudson County -- VPP Suite* Bottleneck & Congestion Scan Analysis

Using the Vehicle Probe Project (VPP) Suite, information was gathered on *bottleneck conditions and associated travel times, queue lengths and congested speeds* for this section of I-280.



Bottleneck conditions on June 21, 2011 typical commuter day, non-holiday @ 8:00 AM (see ▶ Inset above for conditions @ 6:30 PM)



Assessment

VPP Bottleneck & Congestion Scan analysis for this segment of WB I-280 can be summarized as follows:

- ▶ **Travel Time Indices** show TTIs of 2-5 for most of the AM peak period, and 2-4 for the PM peak period, indicating that travel within this section is taking 2 to 5 times longer than under free-flow conditions during these periods
- ▶ **Queue Lengths** generally range between 1.0 and 1.2 miles during the same AM & PM peak periods
- ▶ **Congestion Scan** results show severely slow speeds (indicated by the circled dark red areas) between 5th Street and Cleveland Ave., from approximately 8:00-8:20 AM, and 6:15-7:00 PM. Excessively slow speeds (indicated by the red areas) occur between 5th Street and NJ Route 21, from approximately 7:45-8:30 AM and 5:30-7:00 PM
- ▶ A 5-day average congestion scan (June 20th – June 24th, 2011) showed slightly better speed conditions during the WB peak periods. There are no apparent excessive to severe congestion problems in the EB direction

* The Vehicle Probe Project (VPP) Suite is being developed by the University of Maryland for the I-95 Corridor Coalition

Analyzing Incidents and Events from Agency Traffic Management Systems

RITIS Data Archive

Event Query Tool | Detector Tools | Data Archive Portal | Vehicle Probe Project Suite

Agencies All agencies

- 511NY (New York and Connecticut Traveler Information)
- Caltrans (California DOT)
- DDOT CapTOP (Washington DC DOT)
- Dallas/Fort Worth 511
- FDOT (Florida State DOT)
- MDOT CHART (Maryland DOT)
- MassDOT (Massachusetts DOT)
- MS TRAFFIC (Mississippi DOT)
- NCDOT (North Carolina DOT)
- NJDOT (New Jersey DOT)
- ODOT (Ohio DOT)
- PennDOT (Pennsylvania DOT)
- TXDOT (Texas State DOT)
- VDOT NOVA (Northern Virginia DOT)
- Virginia 511 (Statewide Virginia Traveler Information)
- WMATA (Washington Metropolitan Area Transit Authority)
- WSDOT (Washington State DOT)

Location **All corridors**

From 12/01/2014 00:00

To 12/19/2014 23:59

Exclude holidays

Only show incidents

Search

Different styles of Maps and Charts are shown on the next few pages

RITIS may be temporarily unavailable tonight (12/19) from 11pm to 1am EST due to scheduled maintenance. Welcome Michael Pack!

Showing 391 of 391 events

Operator notes | Response | Timeline | Choose Columns

Events from MDOT CHART that started on December 1, 2014

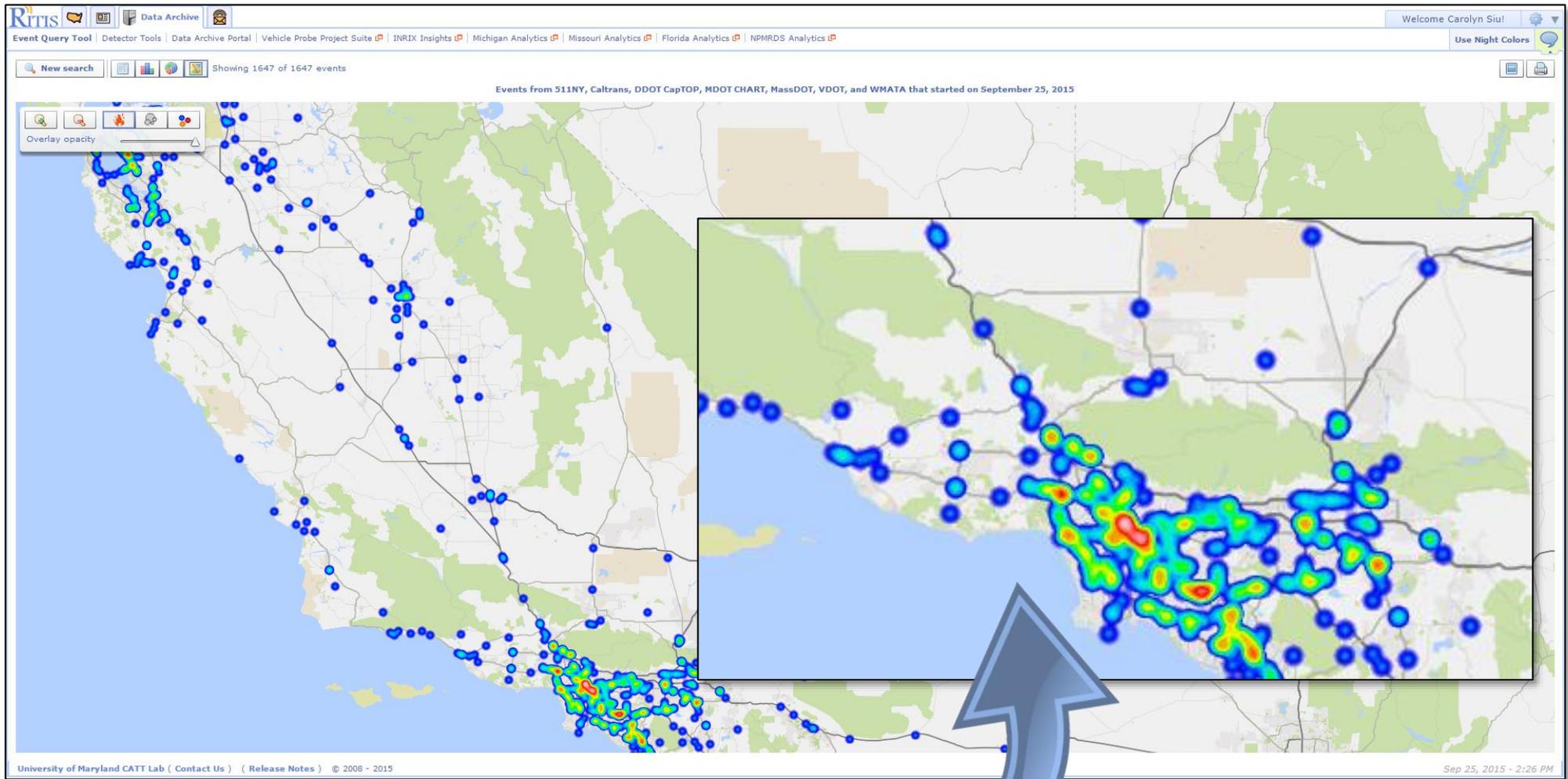
| Agency-specific Type | Location | County | Time Opened | Time Closed | Duration | Operator Notes | Responders |
|-----------------------------|---------------------------------|----------------|------------------|------------------|--------------------|----------------|------------|
| HART Incident | US 1 SOUTH/NORTH AT KIT KAT R | Howard | 12/1/14 7:25 PM | 12/2/14 12:11 AM | 4 hours 45 minutes | 14 | 12 |
| HART Incident | I-695 OUTER LOOP AT EXIT 4 I 9 | Anne Arundel | 12/1/14 4:49 AM | 12/1/14 5:38 AM | 49 minutes | 4 | 8 |
| HART Incident | MD 295 SOUTH PAST BALTO BELT | Anne Arundel | 12/1/14 5:09 AM | 12/1/14 6:26 AM | 1 hour 17 minutes | 1 | 8 |
| HART Incident | I-695 INNER LOOP AT EXIT 41 CO | Baltimore | 12/1/14 9:26 AM | 12/1/14 10:33 AM | 1 hour 6 minutes | 1 | 6 |
| HART Incident | I-495 INNER LOOP PAST EXIT 33 I | Montgomery | 12/1/14 6:01 PM | 12/1/14 6:57 PM | 56 minutes | 1 | 5 |
| HART Incident | MD 295 NORTH NORTH OF I-695 | Anne Arundel | 12/1/14 10:38 PM | 12/1/14 11:39 PM | 1 hour 1 minute | 2 | 5 |
| HART Incident | I-83 SOUTH AT EXIT 36 MD 439 C | Baltimore | 12/1/14 4:29 PM | 12/1/14 5:22 PM | 52 minutes | | 4 |
| HART Incident | I-495 OUTER LOOP PRIOR TO EXI | Montgomery | 12/1/14 8:46 PM | 12/1/14 8:55 PM | 9 minutes | | 4 |
| HART Incident | I-695 OUTER LOOP PRIOR TO PR | Baltimore | 12/1/14 7:54 AM | 12/1/14 8:30 AM | 36 minutes | 1 | 4 |
| HART Incident | I-70 EAST AT MP 39 | Frederick | 12/1/14 2:28 PM | 12/1/14 3:21 PM | 53 minutes | 1 | 4 |
| HART Incident | I-270 SOUTH PAST EXIT 1 MD 187 | Montgomery | 12/1/14 6:54 PM | 12/1/14 7:31 PM | 37 minutes | | 3 |
| HART Incident | I-95 SOUTH AT MP 55.7 (TOLL PL | Baltimore City | 12/1/14 6:59 AM | 12/1/14 7:17 AM | 18 minutes | 1 | 3 |
| HART Incident | MD 295 SOUTH AT MD 32 | Anne Arundel | 12/1/14 5:09 PM | 12/1/14 5:16 PM | 7 minutes | | 3 |
| HART Incident | I-70 EAST AT MORGAN STATION R | Howard | 12/1/14 7:34 PM | 12/1/14 7:46 PM | 12 minutes | 1 | 3 |
| HART Incident | I-270 NORTH AT EXIT 18 MD 121 | Montgomery | 12/1/14 6:12 PM | 12/1/14 7:39 PM | 1 hour 26 minutes | 2 | 3 |
| HART Incident | I-895 NORTH AT EXIT 9 CHILDS S | Baltimore City | 12/1/14 8:13 AM | 12/1/14 8:33 AM | 19 minutes | | 3 |
| MDOT CHART Disabled vehicle | I-95 NORTH PAST EXIT 60 MORA | Baltimore City | 12/1/14 10:55 PM | 12/2/14 12:06 AM | 1 hour 11 minutes | 1 | 3 |
| MDOT CHART Incident | I-695 INNER LOOP AT EXIT 31C M | Baltimore | 12/1/14 8:37 AM | 12/1/14 9:03 AM | 25 minutes | | 3 |
| MDOT CHART Incident | US 40 NORTH PAST JEFFERSON NA | Frederick | 12/1/14 7:09 PM | 12/1/14 7:46 PM | 37 minutes | | 3 |
| MDOT CHART Incident | I-95 OUTER LOOP AT EXIT 11 MD | Prince Georges | 12/1/14 7:38 PM | 12/1/14 8:00 PM | 21 minutes | 2 | 3 |
| MDOT CHART Incident | I-495 INNER LOOP PRIOR TO EXI | Montgomery | 12/1/14 11:17 PM | 12/1/14 11:29 PM | 11 minutes | | 3 |
| MDOT CHART Incident | MD 295 SOUTH PAST POWDER MI | Prince Georges | 12/1/14 9:16 AM | 12/1/14 9:59 AM | 42 minutes | 2 | 3 |

University of Maryland CATT Lab (Contact Us) (Release Notes) © 2008 - 2014

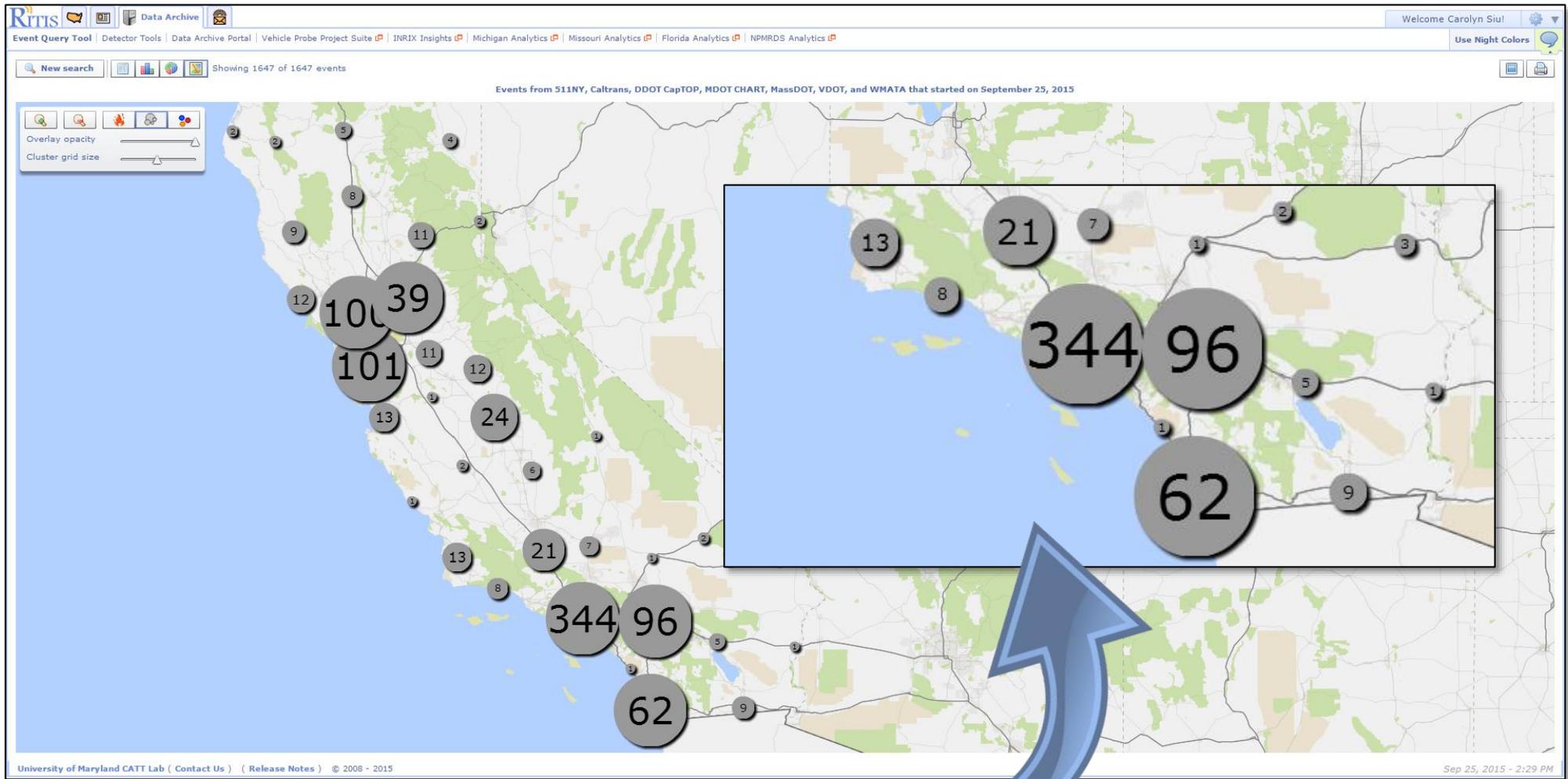
Dec 19, 2014 - 6:48 PM



Accident and Event Analytics – Event Heat Map

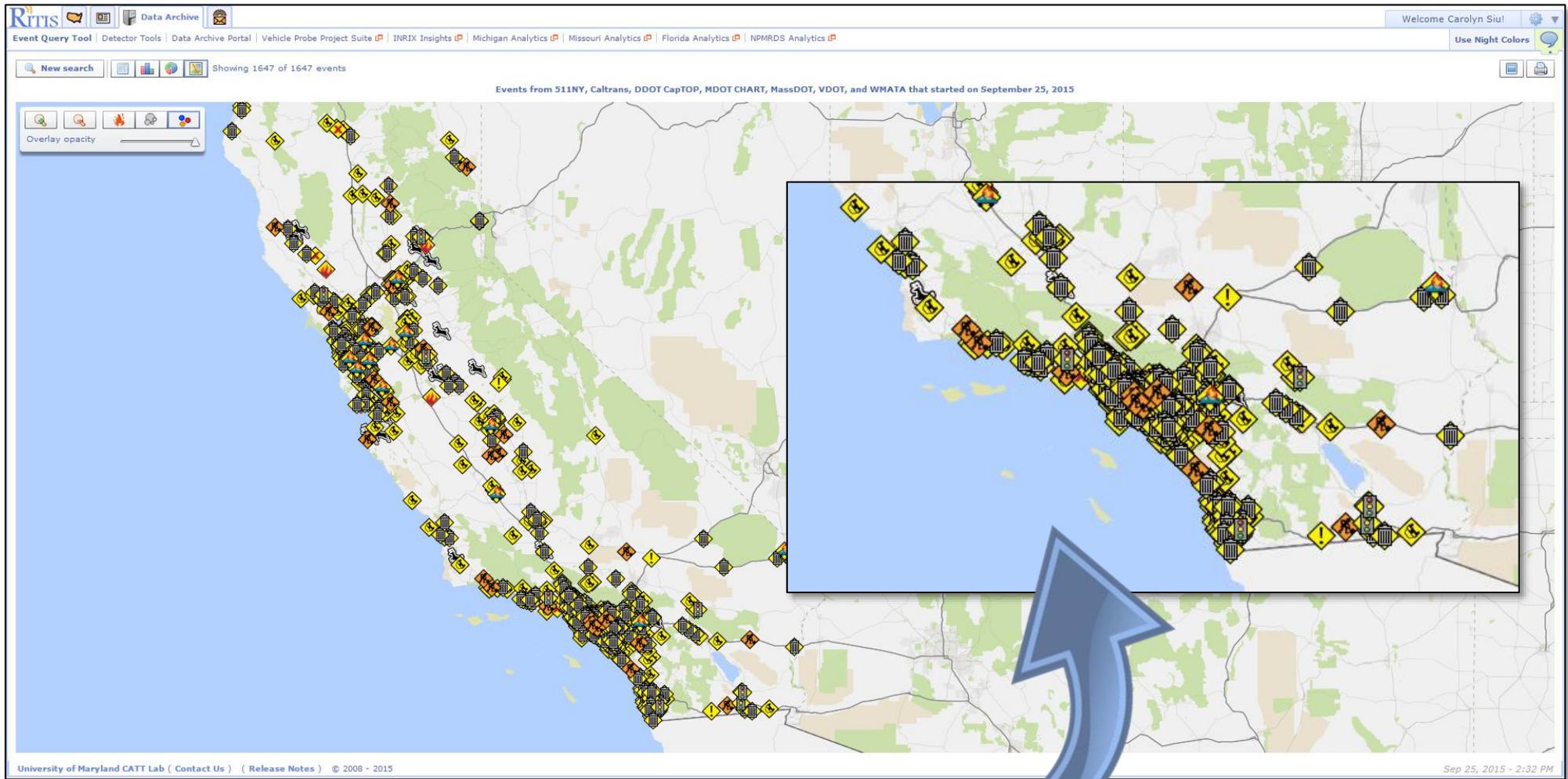


Accident and Event Analytics – Event Cluster Diagram



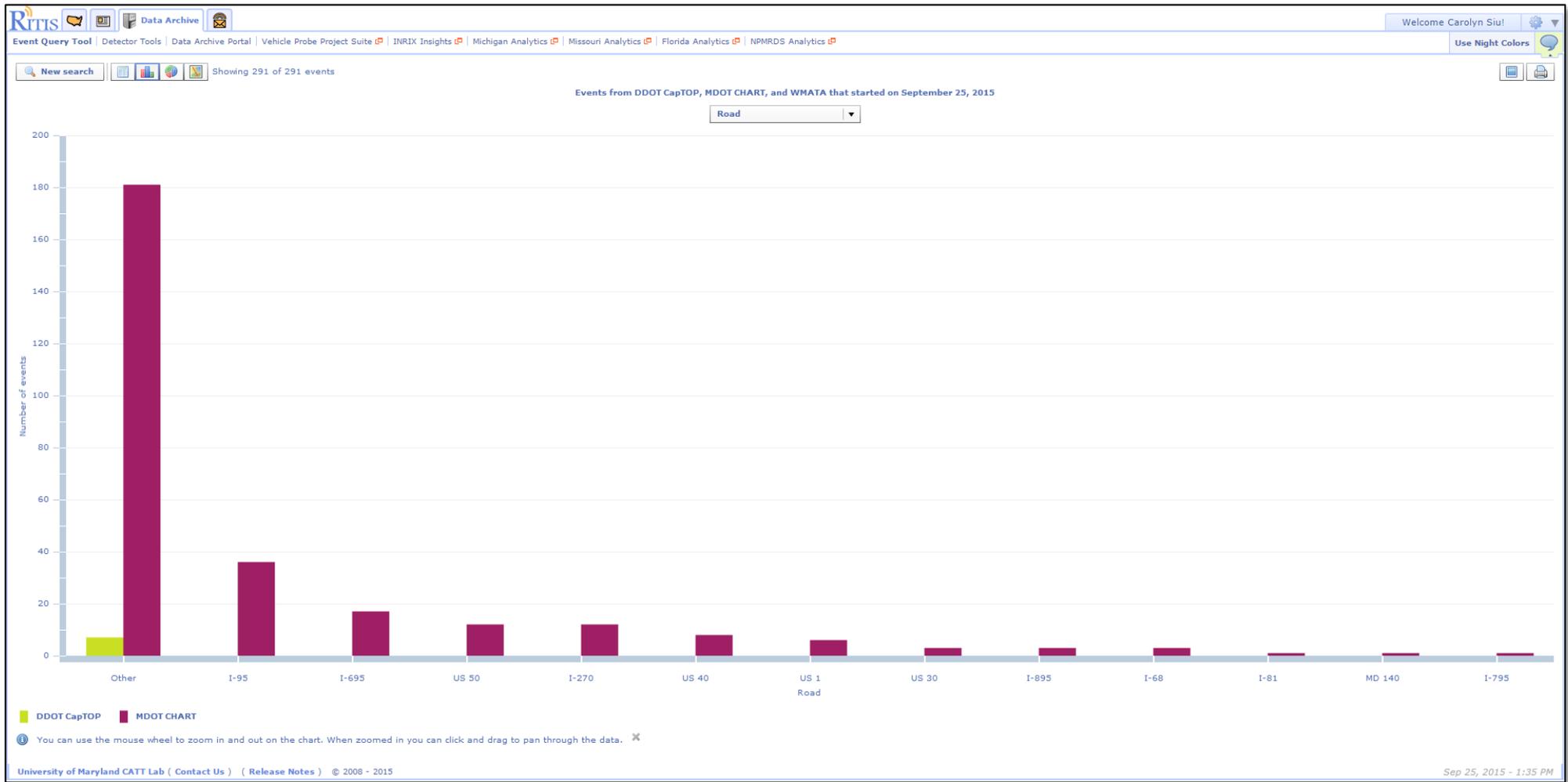
Accident and Event Analytics – Event Icon Map

Event icon maps are filterable by event type and other characteristics.



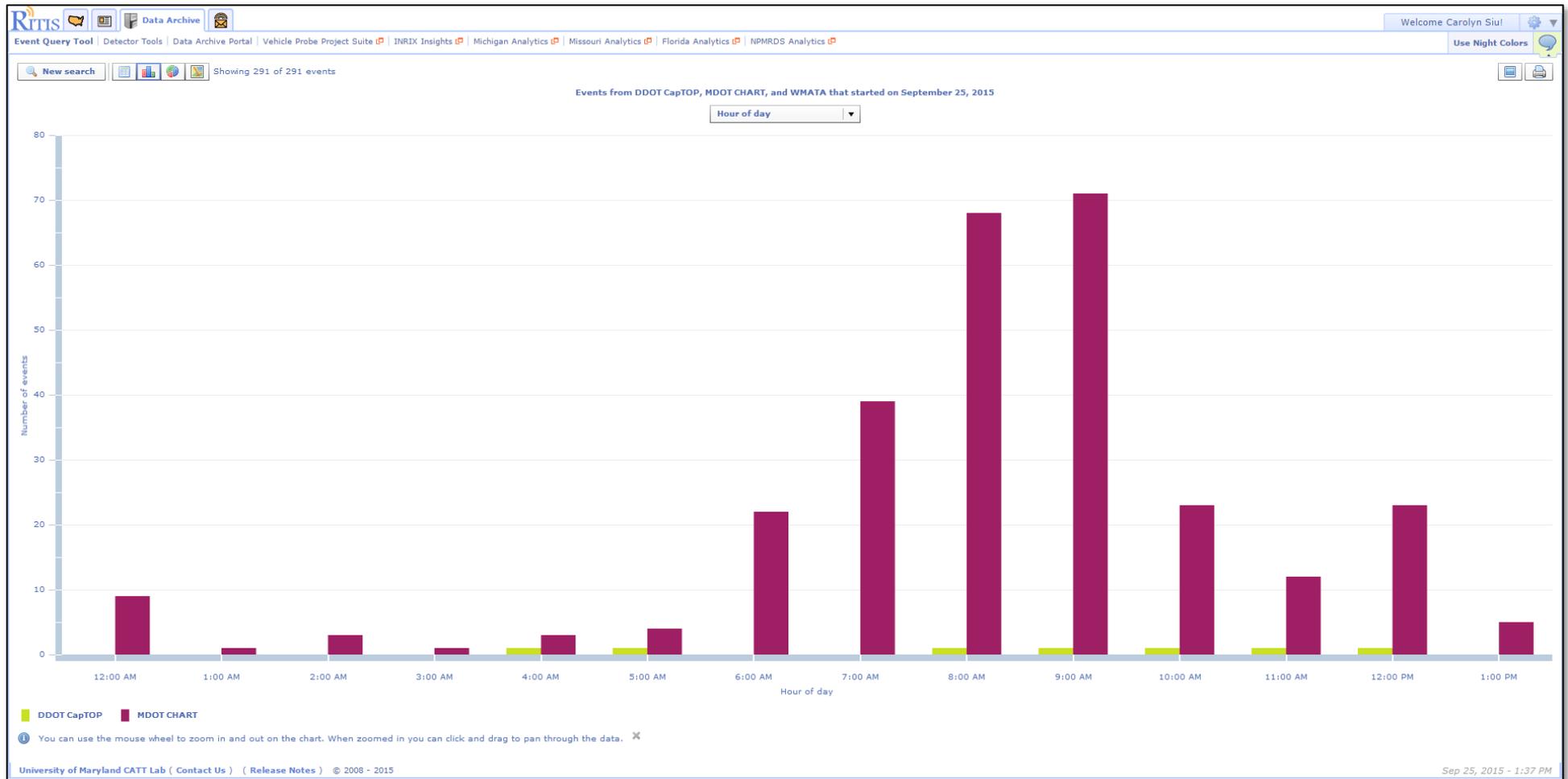
Incident and Event Analytics

Simple bar charts depict how many accidents occur on each corridor over a given date range.



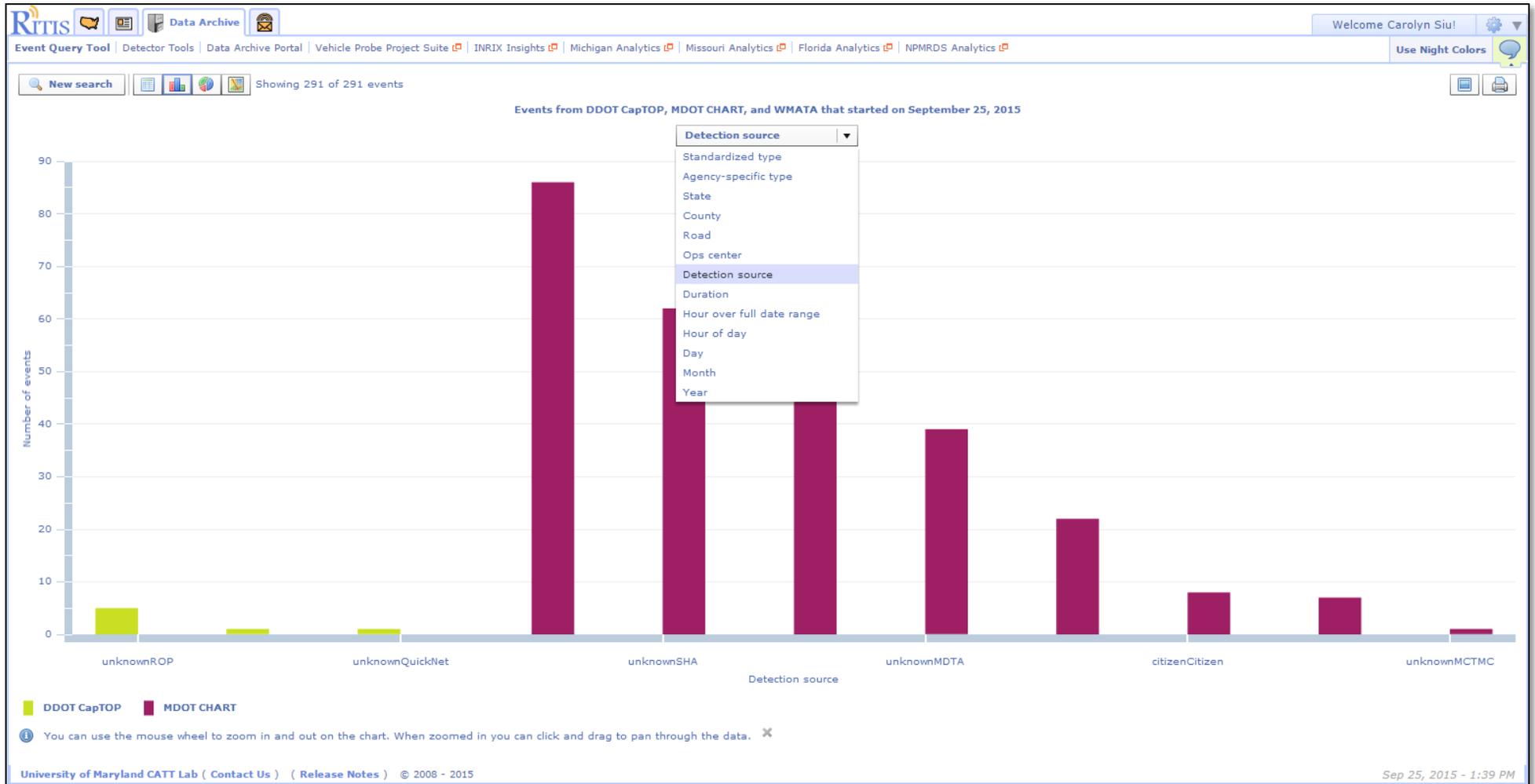
Incident and Event Analytics (Cont'd.)

Events aggregated by time of day.



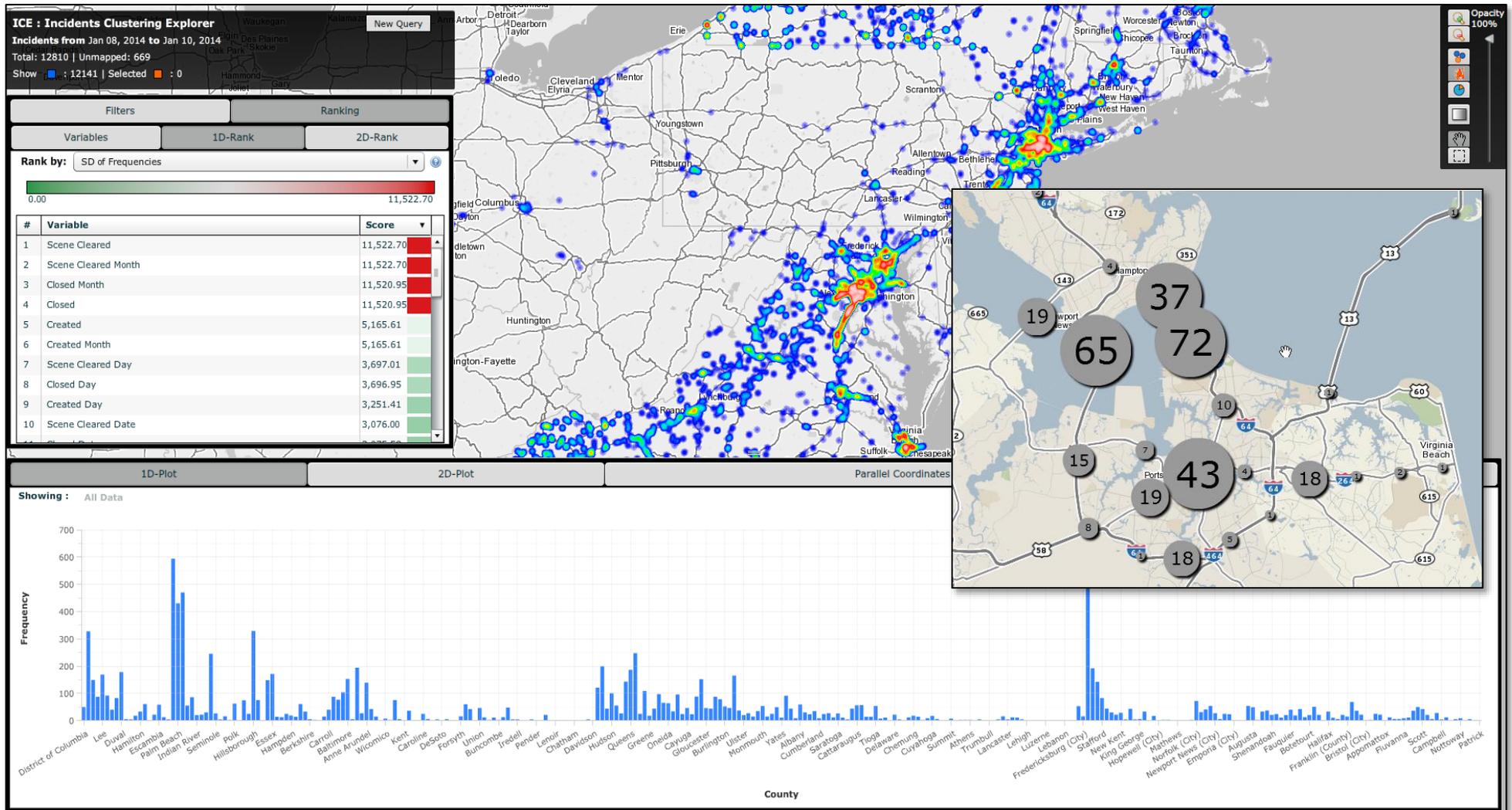
Accidents by Ops Center (and other options)

Other graphing options include things like incident duration by type of incident, incident detection source, number of incidents managed by each operations center, etc.



Incident Cluster Explorer (ICE)

The web-based “ICE” tool provides advanced analytics for incident data. This includes multivariate statistical analysis and many interactive visualizations. One- and two-dimensional histograms, parallel coordinate plots, and other interactive graphics make this incident analytics tool a favorite among researchers.



RWIS Analytics

The CLARUS History Explorer allows users to view the effect of various road weather issues (e.g., precipitation rates, visibility, wind speed, etc) on speeds, volumes, and accident rates.



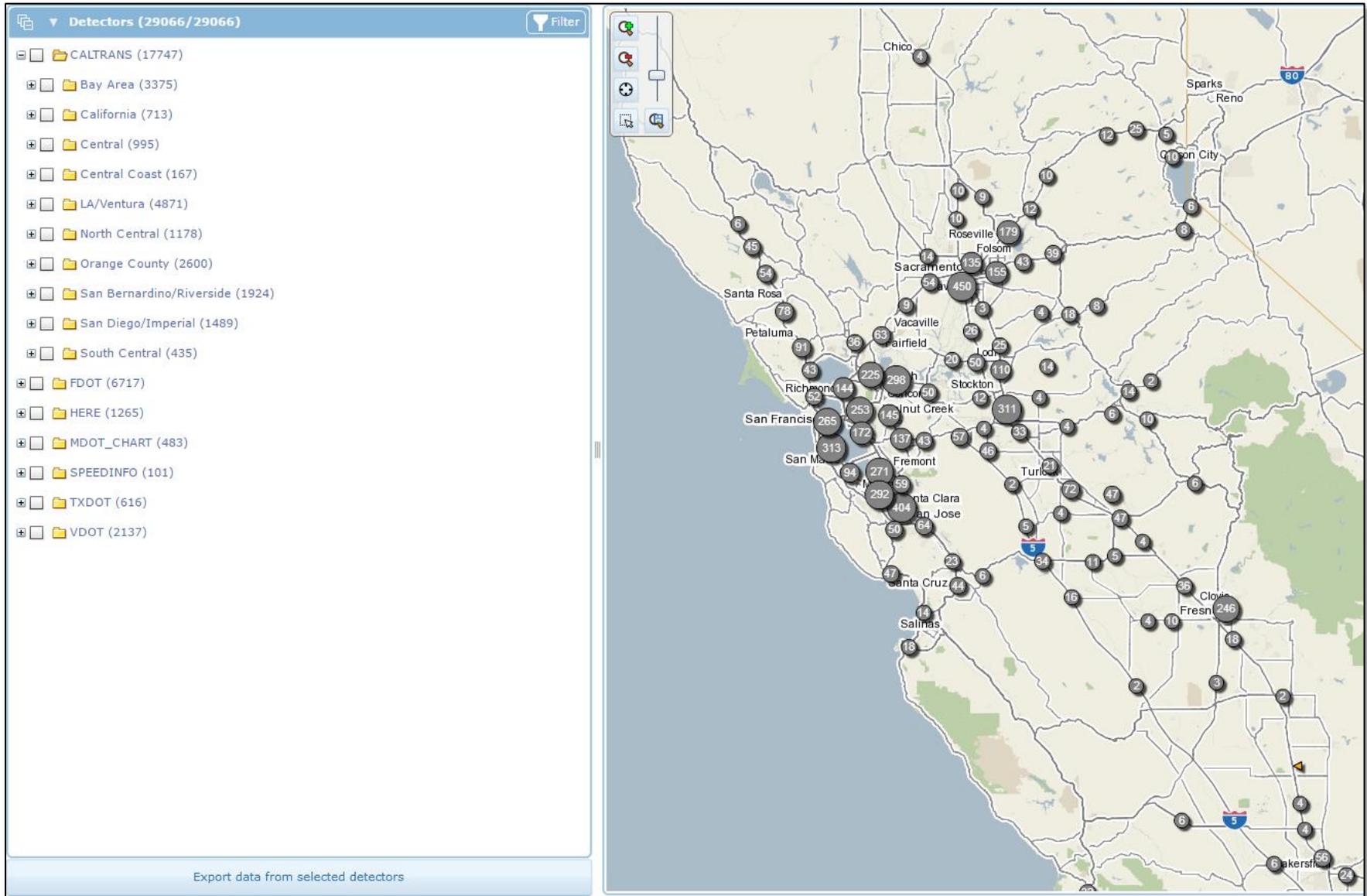


Detector Explorer

The following pages showcase the visualizations and query capabilities of the RITIS Detector Explorer. This tool allows users to download raw or aggregated detector data. It also allows the user to graph data (speeds, volumes, occupancy, etc), analyze detector health, and develop reliability, travel time, and other metrics. All tools are interactive and allow the user to save and export graphs and background data.

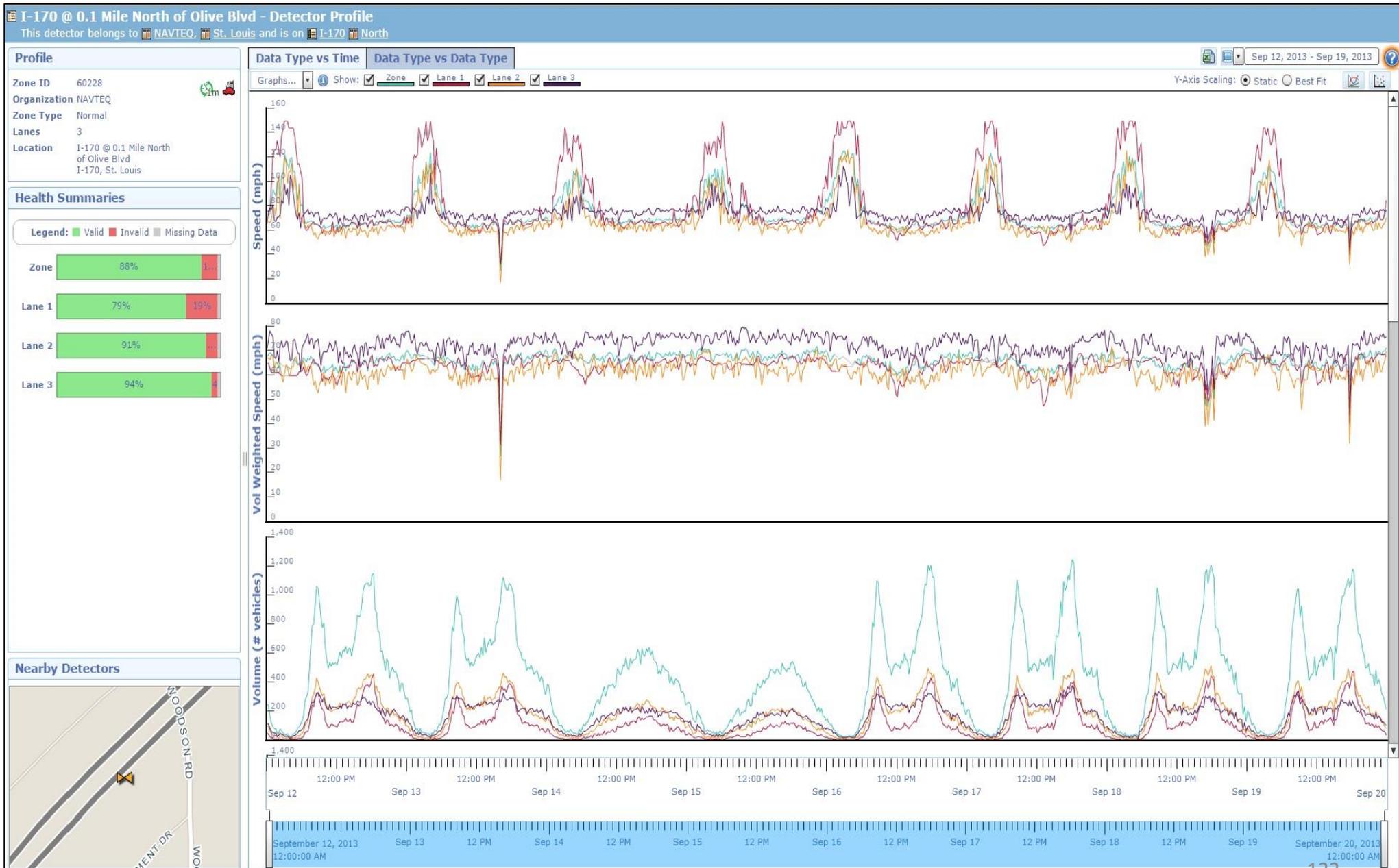
Detector Explorer

The Detector Explorer application allows users to select one or more detectors from a hierarchical list or map.



Detector Explorer – Graphing & Quality Tools

The interactive tools also allow users to analyze the profiles of detectors, roadways, and quality.



Detector Explorer – User-Defined Graphs

With Detector Tools users can graph any pair of variables and date ranges.



Detector Explorer – Congestion & Reliability Metrics

Road profiles can zoom into a section of roadway, and, based on the selected date range, display an analysis of travel times, congestion, reliability, and more.

I-70 - Road Profile
This road is managed by NAVTEQ, St. Louis

7.91 miles of I-70 Westbound (17 detectors)
Broadway/Exit 246 to MO-115/Natural Bridge Rd/Exit 237-238

Road Graph | **Data Request Form**

Westbound

FLORISSANT...
FLORISSANT...
SHREVE AV...
SHREVE AV...
N KINGSHI...
N KINGSHI...
I-70/BIRCH...
BICHER BLW...
RIVERVIEW...
GOODFELLO...
LUCAS AND...
LUCAS AND...
BERMUDA D...
BERMUDA D...
FLORISSANT...
HANLEY RD...
HANLEY RD...
I-170/EXIT ...
I-170/EXIT ...
MO-115/NAT...

1) Select a segment of you are interested in from the road slider to the left.

2) Select a date range to view data for.
Date Range by: Day
From: 09/12/2013
To: 09/13/2013

3) Choose which days to include.
Sun Mon Tue Wed Thu Fri Sat
 Exclude Holidays

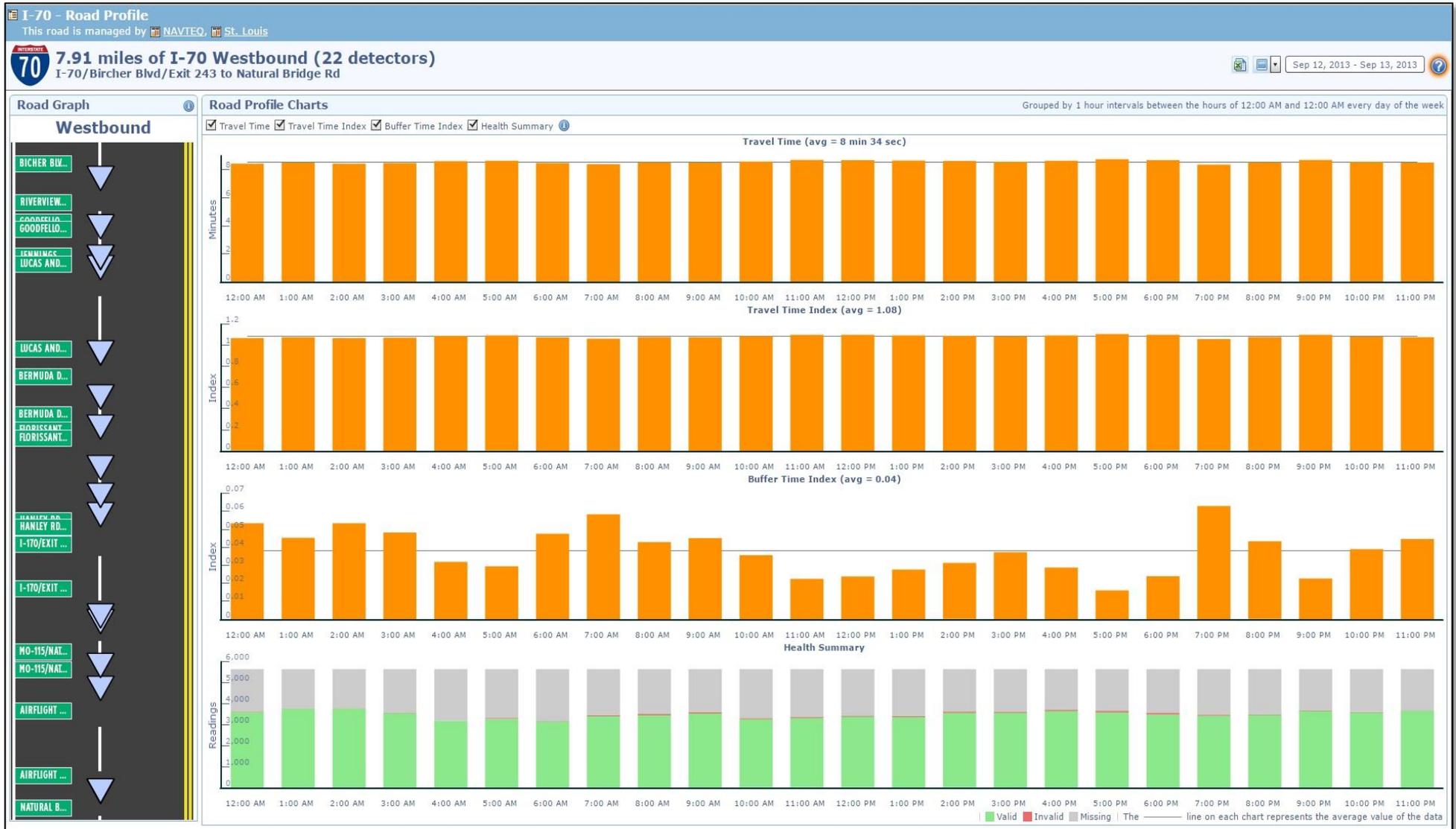
4) Select a range of time to view.
12 AM 12 PM 12 AM

5) Select a grouping method.
Group by: Time Aggregated by: 1 hour

Submit

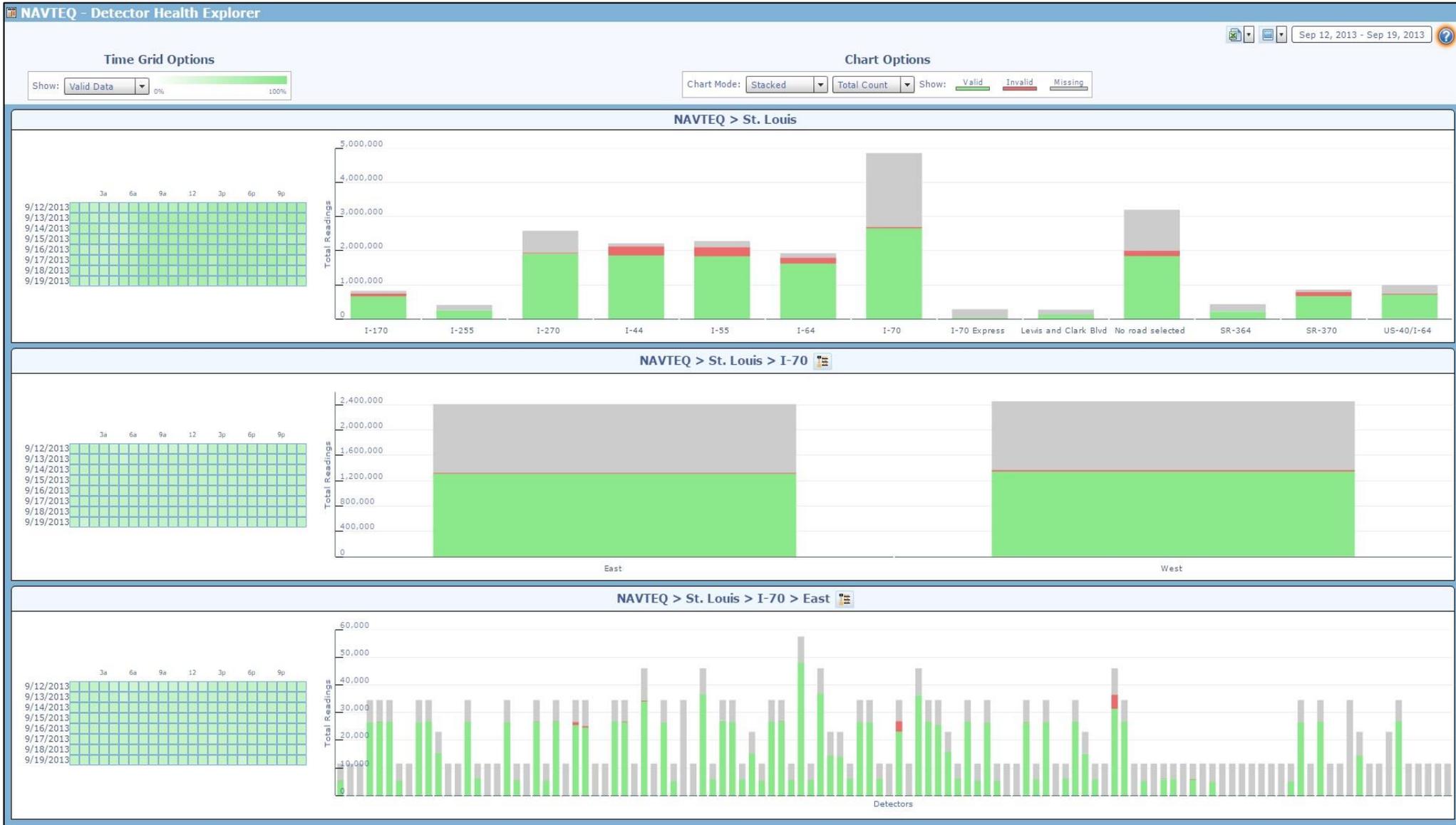
Detector Explorer – Road Profile Charts

The results of a query to analyze speeds, travel times, and reliability along a corridor.



Detector Explorer – Health of Sensors

View a hierarchy of sensor health by agency, road, and direction of travel.



Virtual Weigh Station Analytics

Users can monitor, analyze, and print violations directly from within RITIS. Officers are also provided with analytics tools to help identify dates and times of day at which the most significant violations are likely to occur. Reports can be generated, emailed, and printed.

The screenshot displays the 'Virtual Weigh Station' interface. On the left, a list of violations is shown with timestamps and vehicle classes. The main area features a video feed of a white semi-truck with a teal cab, labeled 'Over Weight (Bridge)'. A data box provides details: Class: 9, Lane: 1, Speed: 51.3 mph, Length: 63 ft, Gross: 75470 lbs, and a 11.7 seconds difference. Below the video, an axle weight diagram shows five axles with weights of 15270 lb, 14550 lb, 16720 lb, 17900 lb, and 11030 lb. Axle spacings are 4 ft, 36.4 ft, 4.3 ft, and 17.9 ft. Grouped axle weights are 29820 lb (axles 1-2), 34620 lb (axles 3-4), and 45650 lb (axles 4-5). The total gross weight is 64440 lb. A 'Settings' link is in the top right.

| Item | Value |
|-----------------|--------------|
| Class | 9 |
| Lane | 1 |
| Speed | 51.3 mph |
| Length | 63 ft |
| Gross | 75470 lbs |
| Time Difference | 11.7 seconds |

| Axle | Weight (lb) | Spacing (ft) |
|------|-------------|--------------|
| 5 | 15270 | - |
| 4 | 14550 | 4 |
| 3 | 16720 | 36.4 |
| 2 | 17900 | 4.3 |
| 1 | 11030 | 17.9 |

| Group | Axles | Weight (lb) |
|---------|-------|-------------|
| Group 1 | 1, 2 | 29820 |
| Group 2 | 3, 4 | 34620 |
| Group 3 | 4, 5 | 45650 |
| Total | - | 64440 |

Virtual Weigh Station Analytics (Cont'd.)

The analytics tools help:

- Search for times at which violations are most likely to occur.
- Search for repeat offenders.
- License Plate Recognition will help to identify and track repeat offenders.



Virtual Weigh Station Analytics (Cont'd.)

Detailed Violation Report

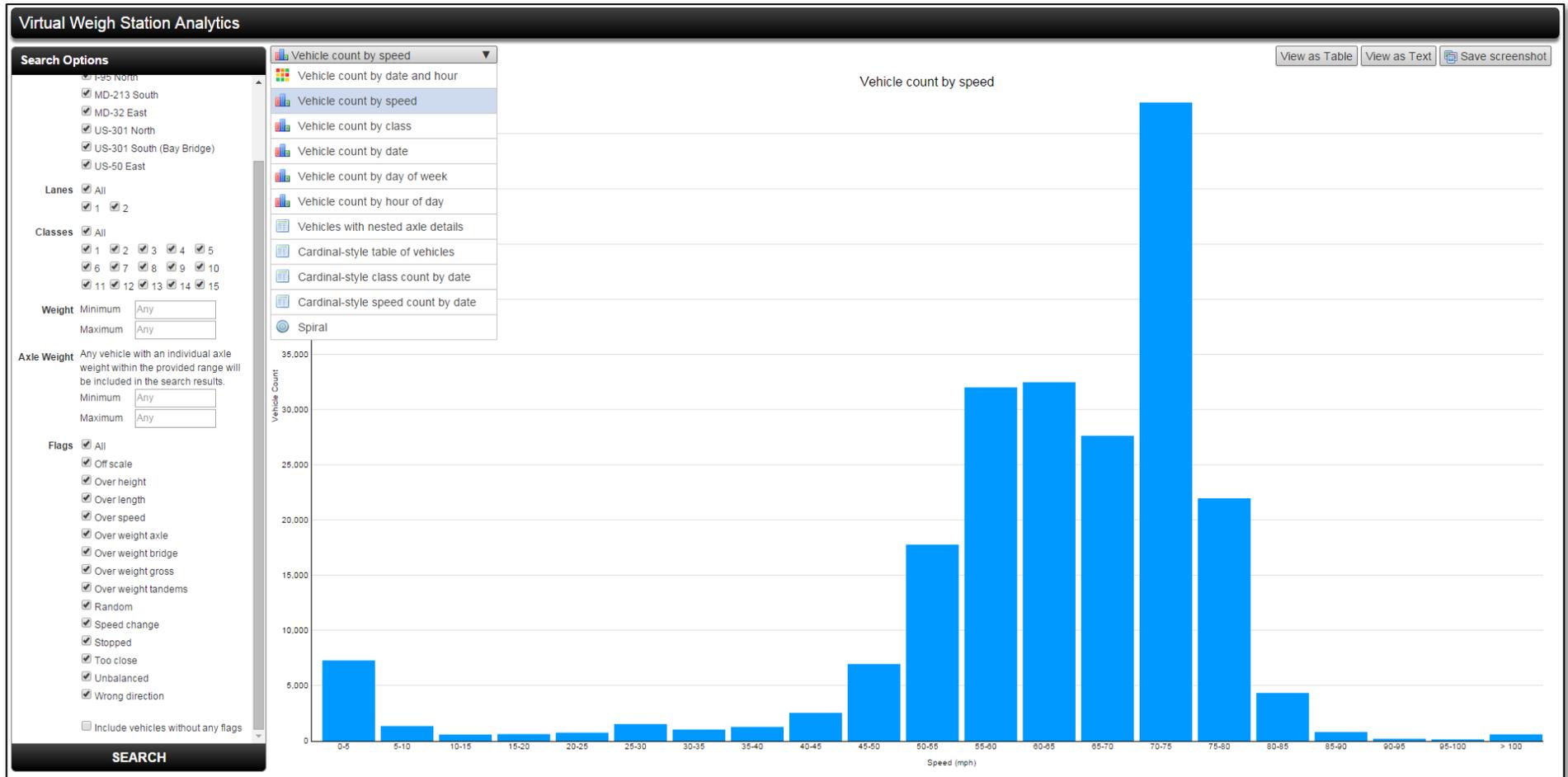
- Clicking on an hour from the prior slide opens up a list of violators for that hour.
- Clicking directly on an individual vehicle within this image will print out a field violation notice.

10 vehicles match your filters:

| | |
|---|---|
|  | <p>Vehicle ID: 20141113120105-3-783330 Printable report Pre-populated field notice Date: 11/13/2014 12:01:05 PM Weight: 45170 lbs Speed: 49.2 mph Length: 17.4 ft Class: 6 Flags: Over weight axle VIOLATION</p> <p>Spacing: 4.6 12.8 Axles: ● ● ● Wt: 16.2 15.9 13.1</p> |
|  | <p>Vehicle ID: 20141113120539-3-783342 Printable report Pre-populated field notice Date: 11/13/2014 12:05:39 PM Weight: 31320 lbs Speed: 37.6 mph Length: 23.5 ft Class: 5 Flags: Over weight axle VIOLATION</p> <p>Spacing: 23.5 Axles: ● ● Wt: 21.9 9.5</p> |
|  | <p>Vehicle ID: 20141113120605-3-783343 Printable report Pre-populated field notice Date: 11/13/2014 12:06:05 PM Weight: 61080 lbs Speed: 34.0 mph Length: 20.6 ft Class: 7 Flags: Over weight bridge, over weight tandems VIOLATION</p> <p>Spacing: 4.6 4.6 11.4 Axles: ● ● ● ● Wt: 19.3 18.0 12.4 11.4</p> |
|  | <p>Vehicle ID: 20141113120731-3-783348 Printable report Pre-populated field notice Date: 11/13/2014 12:07:31 PM Weight: 67240 lbs Speed: 41.5 mph Length: 20.6 ft Class: 6 Flags: Over weight axle, over weight bridge, over weight tandems VIOLATION</p> <p>Spacing: 4.6 16 Axles: ● ● ● Wt: 24.0 23.7 19.5</p> |

Virtual Weigh Station Analytics (Cont'd.)

The Virtual Weigh Station Analytics tool provides many other violation report types and graphing options.





Hierarchical Data Explorer

The following pages contain screenshots from the TreeVersity2 application, which allows users to explore changes to hierarchical (tree structure) data sets. The tool can be used to explore the changes in traffic bottlenecks over time, and is being integrated for use with certain RITIS data sets.

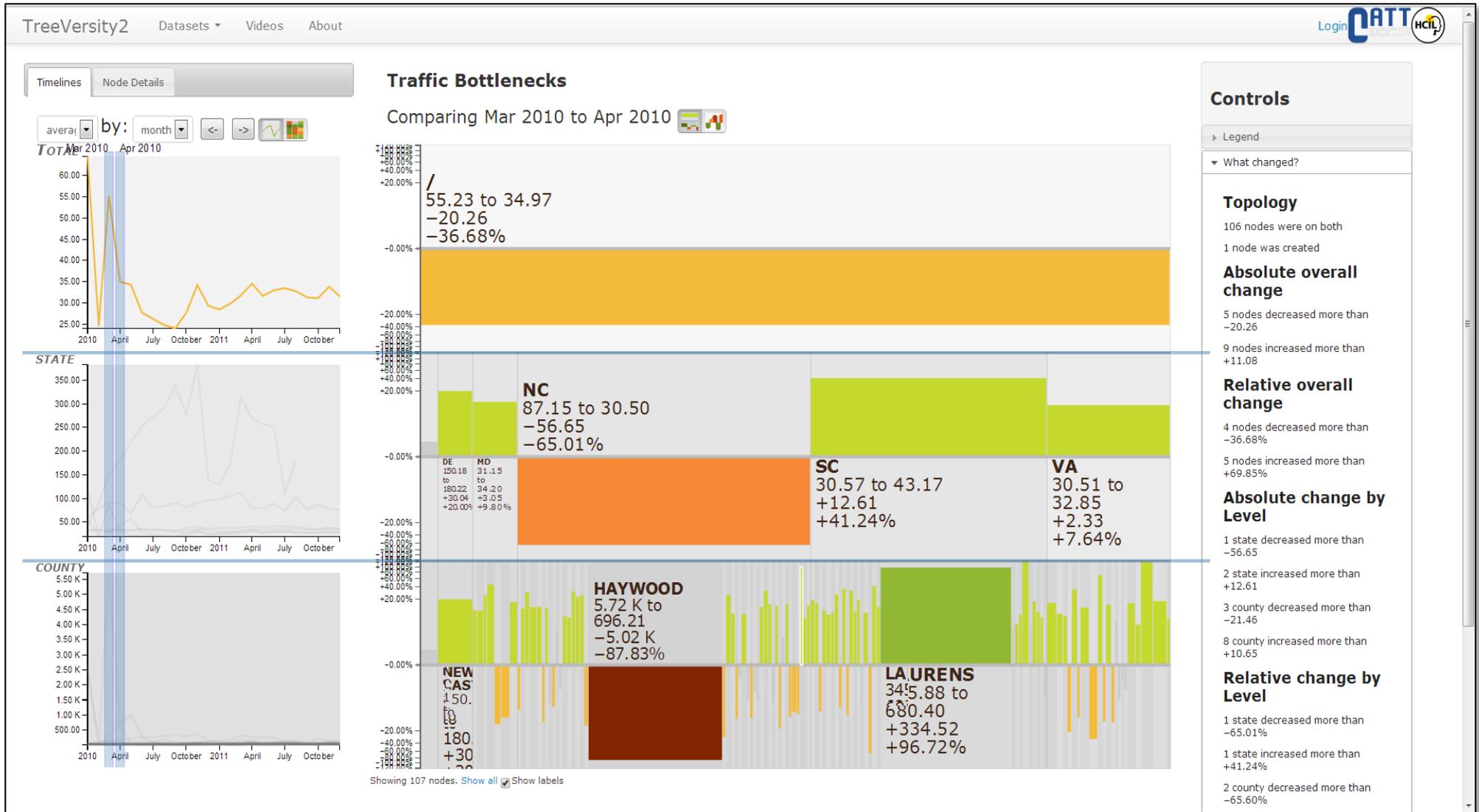
There are two YouTube videos that explain this advanced analytics tool in greater detail.

Visit the TreeVersity page on the CATT Lab website (www.cattlab.umd.edu) to view them.

(Note: This tool is in a beta stage, and has not been released to a wide audience yet. Slated deployment is mid to late 2015.)

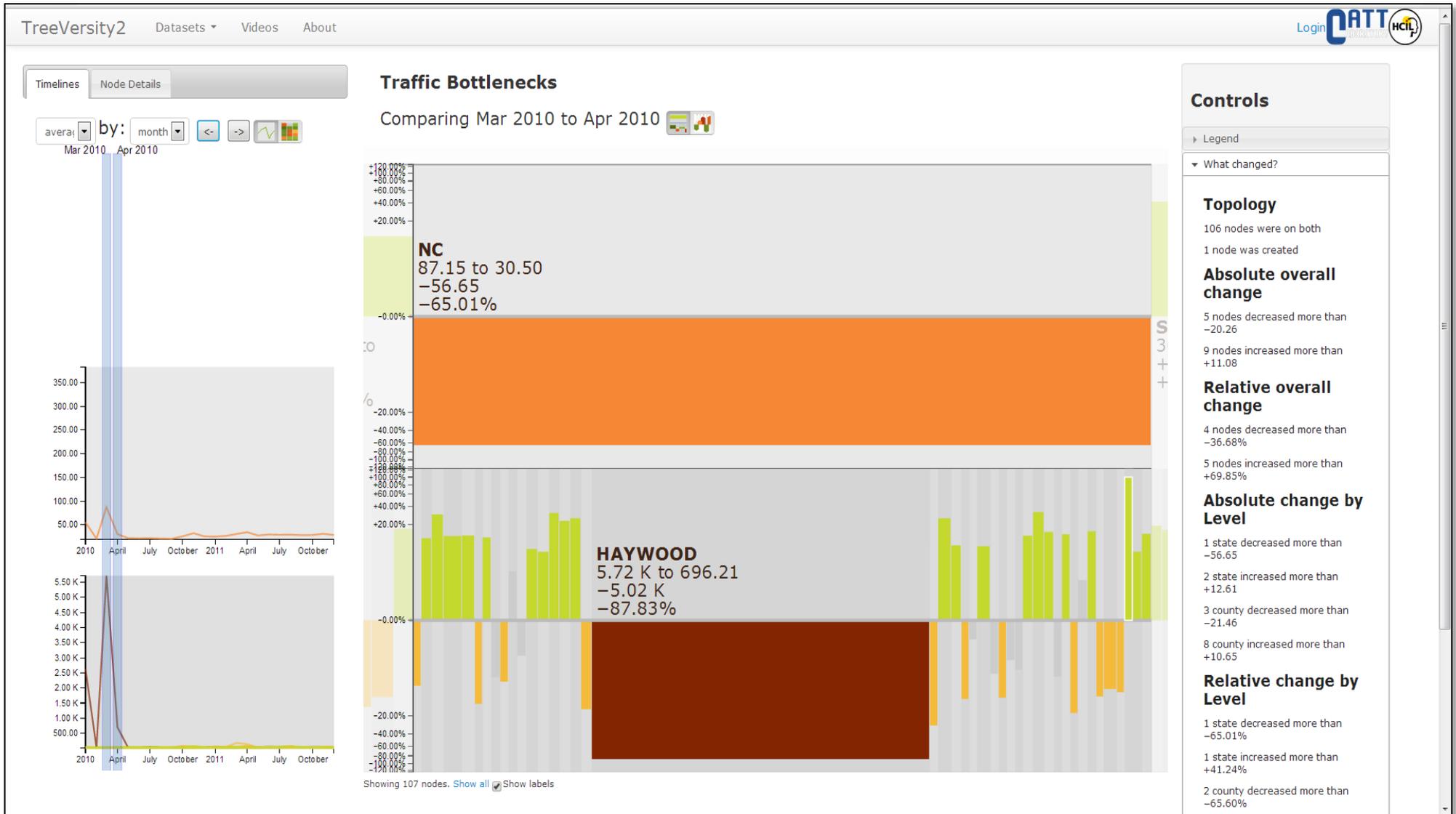
Hierarchical Data Analytics

Changes in the severity of bottlenecks over time by nation→state→county can be explored.



Hierarchical Data Analytics (Cont'd.)

Here the user has zoomed in to see which county in North Carolina seems to be experiencing an abnormal amount of congestion for this particular month.



Transit Analytics

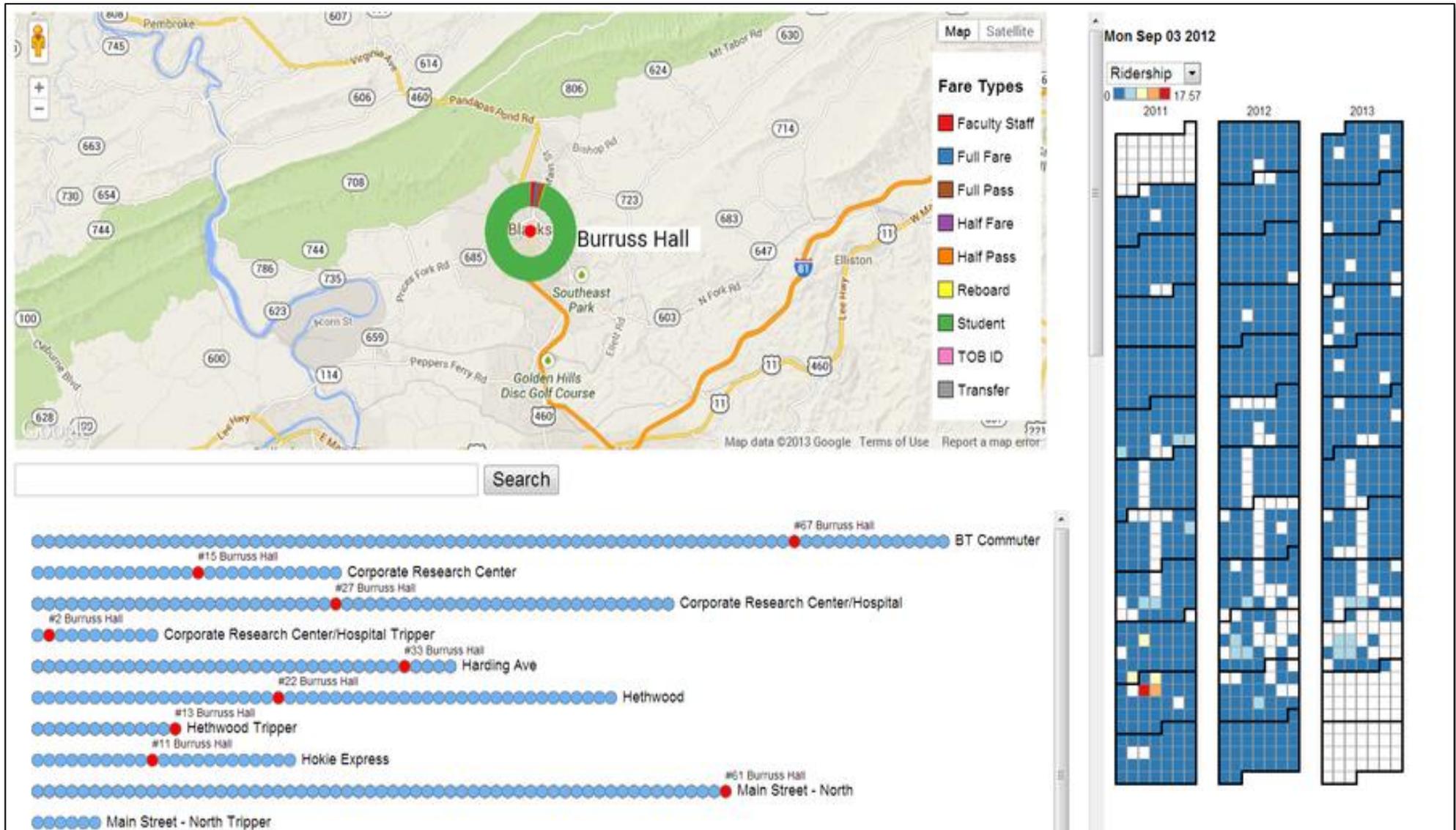
The CATT Lab is working with the MTA, WMATA, and Blacksburg Transit agencies to develop a suite of transit analytics for measuring:

- On-time performance
- Reliability
- Maintenance issues that affect performance
- Ridership and fare collection
- Operations HR data and performance
- Etc.

The following page is a screenshot of an early version of one such web-based interactive tool, which is expected to be deployed to RITIS in the future for transit agencies.

Transit Analytics

In this web-based tool, a user can explore the on-time performance and ridership for various routes and stops. Clicking on calendar dates, stops, and routes changes other graphs and reports to help the user identify trends and issues.





Custom Reporting for Agency and Third-Party ATMS Data

Customized reporting tools can be integrated into RITIS for use by individual agencies with specialized reporting needs.

The following screenshots show a case study in which the Maryland State Highway Administration's ATMS data was integrated into a specialized operations log reporting tool. The reports take into account the detailed nature of the operations logs from their ATMS platform.

Filtering by agency-specific attributes

[Events](#) | [Devices](#) | [Operations](#) | [Response Times](#) | [Logs](#) | [Manage Schedules](#) | [Logout](#)

Filters
Hide Filters

Date options

Currently active events

Events created between two dates

Events created between two dates during specific times

Event features

Lanes Closed Any

Number of lanes closed ▼

Minimum Between Maximum

and

Events Any

Congestion

Disabled vehicle

Planned roadway closure

Recurring congestion

Safety message

Special event

Weather sensor alert

Weather service event

Action Events Any

Incidents Any

Operation centers Any

AA Co Police HQ

AA CTY 911

Submit

Events

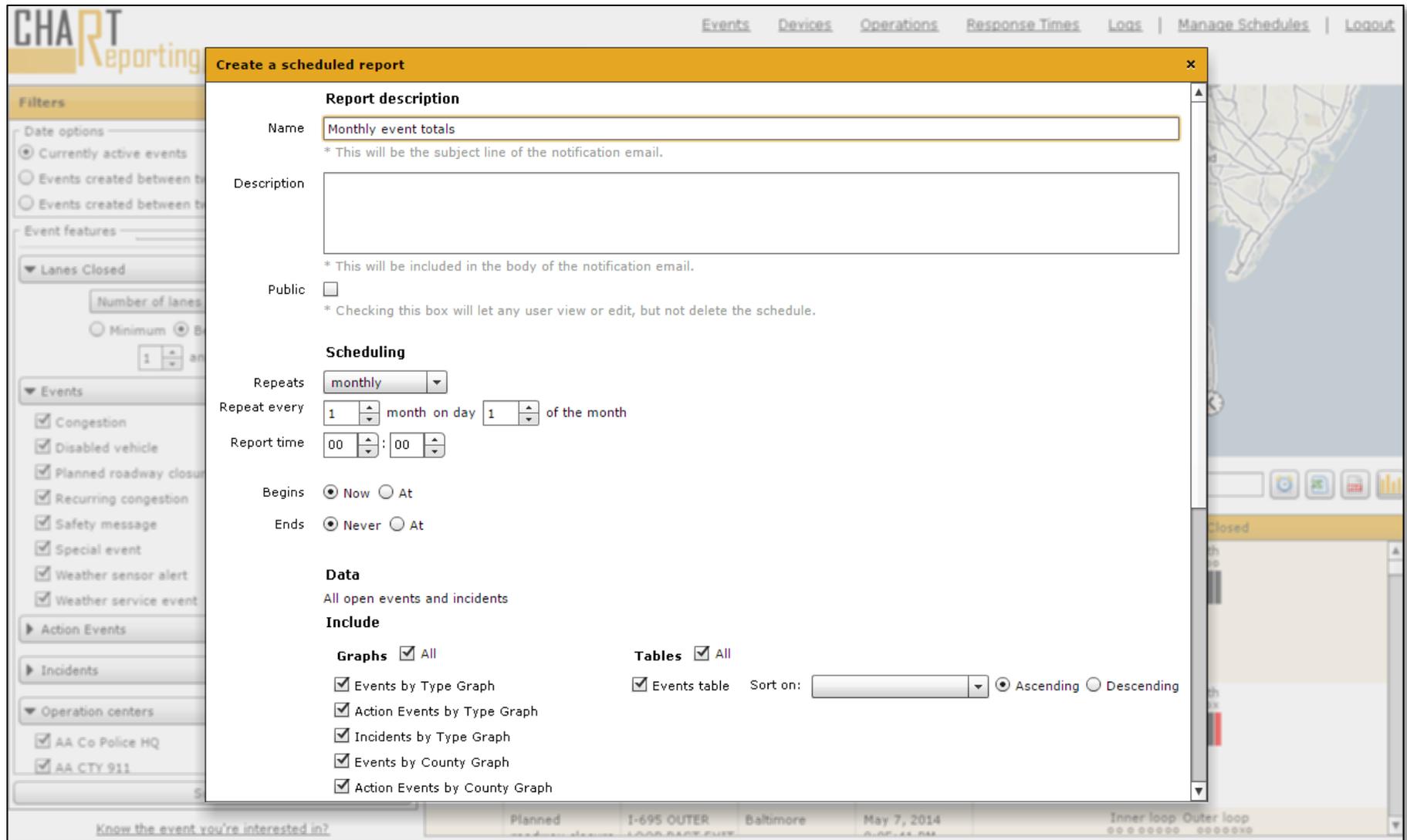
39 events

| | Type | Location | County | Start date | Current Lanes Closed |
|--|-------------------------|--|-----------|-------------------------|--|
| | Planned roadway closure | I-895 SOUTH PRIOR TO EXIT 4 MD 295 BALTIMORE WASHINGTON PARKWAY (LONG-TERM & CONTINUOUS) | Baltimore | Aug 9, 2013 12:59:17 PM | <div style="display: flex; justify-content: space-between;"> South North </div> <div style="display: flex; justify-content: space-between; align-items: center;"> xxxx xxxx </div> |
| | Planned roadway closure | I-895 NORTH PAST 295 ENTRANCE (MM 3.6-4.7) LONG TERM SHOULDER CLOSURE | Baltimore | Sep 19, 2013 8:30:35 AM | <div style="display: flex; justify-content: space-between;"> South North </div> <div style="display: flex; justify-content: space-between; align-items: center;"> xxxx xxxx </div> |
| | Planned roadway closure | I-695 OUTER LOOP PAST EXIT | Baltimore | May 7, 2014 8:05:41 PM | <div style="display: flex; justify-content: space-between;"> Inner loop Outer loop </div> <div style="display: flex; justify-content: space-between; align-items: center;"> oooo oooo </div> |

Know the event you're interested in?

Scheduling automatic report delivery

All reports can be “scheduled” to run at specific intervals. During major snow events or catastrophes, it is not uncommon to have them run every 30 minutes. The resulting reports are automatically emailed to various user groups, which include ops managers, state and local emergency management officials, and the Governor.



Operator performance statistics

CHART wanted access to detailed reports on the response and clearance times for each operations center and field responder. The reports can be filtered to show on-duty and off-duty response times by operator, ops center, responder type, and vehicle type. Additional charts and graphs can be generated on demand.

| CHART Reporting | | | | | | Events Devices Operations Response Times Logs Manage Schedules Logout |
|--|-----------------------------------|-----------------------|---|---------------------------------|-----------------------|---|
| Activity Today Yesterday Last week Last month Custom | | | | | | |
| Responder filters | | | | | | |
| <input type="button" value="Add a filter"/> | | | | | | |
| Responders 225 responders   | | | | | | |
| Responder | Notified or responded (all hours) | Responded (all hours) | Notified but no recorded response (all hours) | Response percentage (all hours) | Average response time | |
| Allegany Power | 2 | 2 | 0 | 100% | 3 m 53 s | |
| AOC Central | 4 | 0 | 4 | 0% | | |
| AOC South | 1 | 0 | 1 | 0% | | |
| Arrow Board | 73 | 60 | 13 | 82% | 1 h 17 m 5 s | |
| Baltimore TMC | 2 | 0 | 2 | 0% | | |
| Barrels | 14 | 5 | 9 | 36% | 1 h 12 m 35 s | |
| BGE | 26 | 17 | 9 | 65% | 1 h 18 m 21 s | |
| CHART | 6 | 0 | 6 | 0% | | |
| CHART Unit | 3 | 3 | 0 | 100% | 0 s | |
| CHART Unit 5665 | 57 | 55 | 2 | 96% | 1 m 53 s | |
| CHART Unit 9003 | 6 | 0 | 6 | 0% | | |
| CHART Unit 9004 | 19 | 5 | 14 | 26% | 12 s | |
| CHART Unit 9300 | 20 | 5 | 15 | 25% | 44 m 21 s | |
| CHART Unit 9301 | 55 | 40 | 15 | 73% | 21 m 56 s | |
| CHART Unit 9302 | 32 | 22 | 10 | 69% | 30 m 8 s | |
| CHART Unit 9303 | 100 | 88 | 12 | 88% | 7 m 47 s | |
| CHART Unit 9304 | 140 | 134 | 6 | 96% | 5 m 41 s | |
| CHART Unit 9305 | 149 | 139 | 10 | 93% | 4 m 14 s | |
| CHART Unit 9306 | 131 | 116 | 15 | 89% | 5 m 56 s | |
| CHART Unit 9307 | 61 | 54 | 7 | 89% | 10 m 31 s | |
| CHART Unit 9308 | 123 | 115 | 8 | 93% | 4 m 42 s | |
| CHART Unit 9309 | 146 | 132 | 14 | 90% | 5 m 6 s | |
| CHART Unit 9310 | 134 | 118 | 16 | 88% | 4 m 3 s | |
| CHART Unit 9312 | 55 | 48 | 7 | 87% | 5 m 17 s | |
| CHART Unit 9313 | 102 | 93 | 9 | 91% | 7 m 53 s | |
| CHART Unit 9314 | 141 | 128 | 13 | 91% | 9 m 37 s | |
| CHART Unit 9315 | 178 | 166 | 12 | 93% | 5 m 48 s | |
| CHART Unit 9316 | 186 | 175 | 11 | 94% | 6 m 41 s | |
| CHART Unit 9400 | 40 | 8 | 32 | 20% | 14 m 11 s | |
| CHART Unit 9401 | 55 | 38 | 17 | 69% | 12 m 8 s | |
| Total (225) | 11522 | 9177 | 10.422222222222222 | 62% | 57 m 18 s | |

Analysis of Detailed Police Accident Reports

For agencies that provide detailed accident reports from state and local police departments, the “EVC” application can be used to generate detailed reports and perform other safety data analyses. The user interface allows analysts to run queries on specific intersections, corridors, or other regions (where a “region” can be a city, county, or entire state).

EVC - Exploring and Visualizing Crashes
Welcome, Michael VanDaniker [Admin](#) [Settings](#) [About](#) [Logout](#)

Query
Table
Map
Report
Crash diagram
Hot spots
Flagged records

Location & Time

Crash

Environment

Person

Vehicle

Type of analysis: INTERSECTION CORRIDOR REGION

Select a county or several counties. Selecting a narrower date range will allow you to select more counties and vice versa - you can select a wider date range if you select few counties.

Counties:

| | | | | | |
|---|--|--|--|--|--|
| <input type="checkbox"/> All counties | | | | | |
| <input type="checkbox"/> Allegany 0.9% | <input type="checkbox"/> Carroll 2.0% | <input checked="" type="checkbox"/> Harford 3.1% | <input type="checkbox"/> Somerset 0.4% | | |
| <input type="checkbox"/> Anne Arundel 8.8% | <input type="checkbox"/> Cecil 1.5% | <input type="checkbox"/> Howard 3.9% | <input type="checkbox"/> St Marys 1.2% | | |
| <input type="checkbox"/> Baltimore 13.9% | <input type="checkbox"/> Charles 2.5% | <input type="checkbox"/> Kent 0.2% | <input type="checkbox"/> Talbot 0.8% | | |
| <input type="checkbox"/> Baltimore City 19.5% | <input type="checkbox"/> Dorchester 0.5% | <input type="checkbox"/> Montgomery 13.3% | <input type="checkbox"/> Washington 2.7% | | |
| <input type="checkbox"/> Calvert 1.0% | <input type="checkbox"/> Frederick 2.9% | <input type="checkbox"/> Prince Georges 15.9% | <input type="checkbox"/> Wicomico 1.9% | | |
| <input type="checkbox"/> Caroline 0.4% | <input type="checkbox"/> Garrett 0.6% | <input type="checkbox"/> Queen Annes 0.7% | <input type="checkbox"/> Worcester 1.3% | | |

Select a date range: All (data available: 1993 - 2013)

From: to:

Select days of week: All days

Sun Mon Tue Wed Thu Fri Sat

Select the time of day: All times

From : to : [add another interval](#)

Submit

CURRENT SELECTION

Location

Counties(Harford) ✕

Save
Clear

HISTORY

SAVED QUERIES

140

EVC status: Idle

Analysis of Detailed Police Accident Reports

The Detailed Query Builder within EVC makes it extremely quick and easy for users to generate complex queries based on location, date range, crash type, damage received, causality, lighting conditions, vehicle type, age, gender, type of injury received, and drug/alcohol involvement.

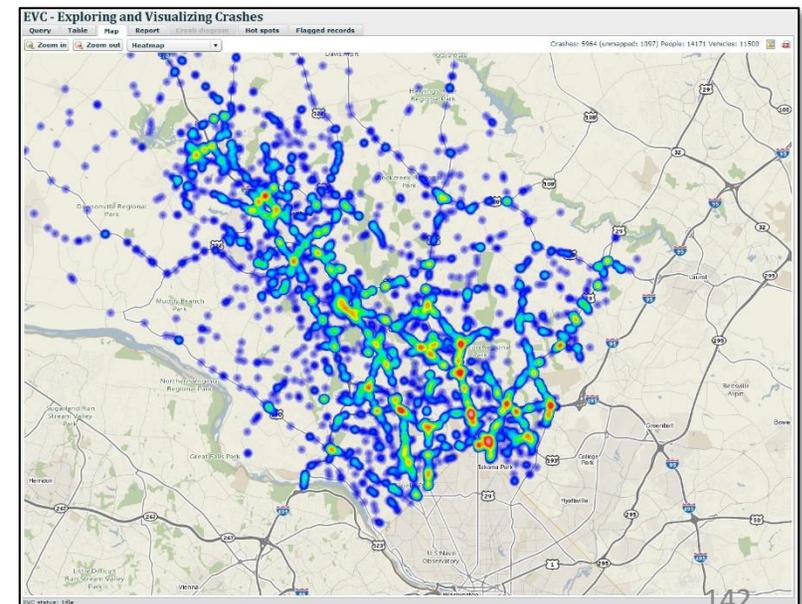
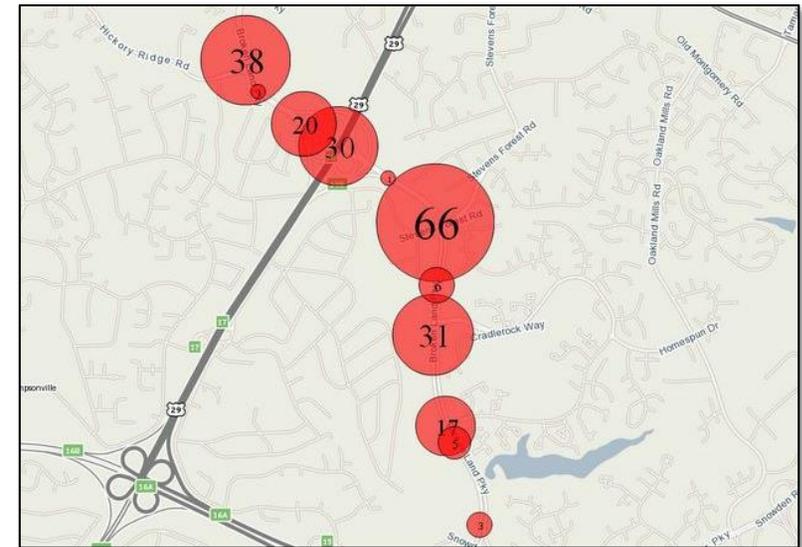
The screenshot displays the EVC - Exploring and Visualizing Crashes interface. At the top, there is a navigation bar with tabs for Query, Table, Map, Report, Crash diagram, Hot spots, and Flagged records. The main area is divided into several sections:

- Location & Time:** A sidebar menu on the left with options for Crash, Environment, Person, and Vehicle.
- Collision type:** A section with a dropdown arrow and a list of checkboxes for various collision types. Selected options include: Angle Meets Left Head On, Same Direction Right Turn, Opposite Dir Both Left Turn, Head On Left Turn, Single Vehicle, Straight Movement Angle, and Angle Meets Left Turn.
- Fixed objects involved:** A section with a dropdown arrow and a list of checkboxes for various fixed objects. Selected options include: Light Support Pole, Sign Support Pole, Traffic Signal Support, Building, Tree Shrubbery, Other Traffic Barrier, and Unknown.
- Harmful event code:** A section with a dropdown arrow and a list of checkboxes for various harmful event codes. Selected options include: All event codes, Not Applicable, Other Vehicle, Parked Vehicle, Pedestrian, Bicycle, Other Pedalcycle, Other Conveyance, Spilled Cargo, Jackknife, Units Separated, Other Non Collision, Off Road, Downhill Runaway, and Explosion Or Fire.

On the right side, there is a 'CURRENT SELECTION' panel listing the active filters in the query, such as CollisionType(Angle Meets L..., FixedObj(Unknown, Traffic ..., Radius(1.0mi (5280ft)), County(Howard), MainRoute(CO1161 BROKEN..., InterRoute(CO1140 SNOW..., and Date(1/1/2008 to 12/31/2... Each item has a red 'X' icon to remove it. Below this panel are 'Save' and 'Clear' buttons. At the bottom right, there is a 'Submit' button. The bottom status bar shows 'EVC status: Idle'.

Analysis of Detailed Police Accident Reports – Detailed Report Generation

Accident maps, cluster diagrams, and stock summary reports can be generated and printed from the results of any query.



Analysis of Detailed Police Accident Reports – Hot Spot Diagrams

Accident “hot spot diagrams” help to easily identify the most dangerous intersection or stretch of road along any corridor.



Intersection Crash Diagrams

EVC: Exploring and Visualizing Crashes MAARS records Logged in as: Michael Pack Admin Settings About Logout

Query Table Map Report **Crash diagram** Hot spots

Mode: grouped Export Print Crashes: 61 People: 144 Vehicles: 122

Font: 10 Spacing: 15 Geometry Reset

KEY: LogMile-CollisionType-Date-Severity-Time-Surface
 HDONL-Head On Left Turn | REL-Same Dir Rend Left Turn | SDLL-Same Dir Both Left Turn | SNGL-Single Vehicle | UNK-Unknown | I-Incapacitating Injury | NINC-Non-Incapacitating Injury | D-D | UNK-UNK
 RE-Same Dir Rear End | SDSS-Same Direction Sideswipe | ANG-Straight Movement Angle | OTH-Other | PINC-Possible-Incapacitating Injury | N-No Injury | S-S | W-W

EVC status: Idle

CURRENT SELECTION

- Date and Time
 - Date(from 1/1/2001)
- Location
 - County(Howard)
 - MainRoute(CO1161 BROKE...)
 - InterRoute(CO1140 SNOW...)

Save selection... HISTORY SAVED QUERIES

What Our Customers are Saying:

“Analysis that used to take an entire year to accomplish with one or two full-time employees now takes only 10 minutes, and I don’t need an entire IT staff to support it.”

~MPO Senior Transportation Analyst

“The VPP Suite represents a quantum leap in capabilities for problem identification, problem confirmation, and communicating with the public.”

~DOT Planner

“The amount of funding we have to ask for from our DOT program manager has decreased as a result of access to these tools. They are saving money, and we are more nimble.”

~DOT Consultant



What Our Customers are Saying (Cont'd.):

“We are making better-informed decisions about which ops centers to keep open, where to deploy patrols, and what type of economic impact we are having on the traveling public. We’ve never had this type of insight into operations before.”

~DOT Operations Manager

“Someone finally understands how to display operations data in a way that makes sense and doesn’t make me rely on 10 different systems on 5 different computer terminals. And it’s fast! I’m simply blown away!”

~Center Operations Engineer

“This is amazing! We can tell some really compelling stories to the public about our impact, and it’s so easy!”

~Private Sector Public Information Officer and Media Relations for a DOT



Resources (and costs) shared among all agencies.

- When one agency invests in a new feature or new hardware, all agencies benefit. RITIS is akin to a pooled fund project.

All algorithms are open and transparent.

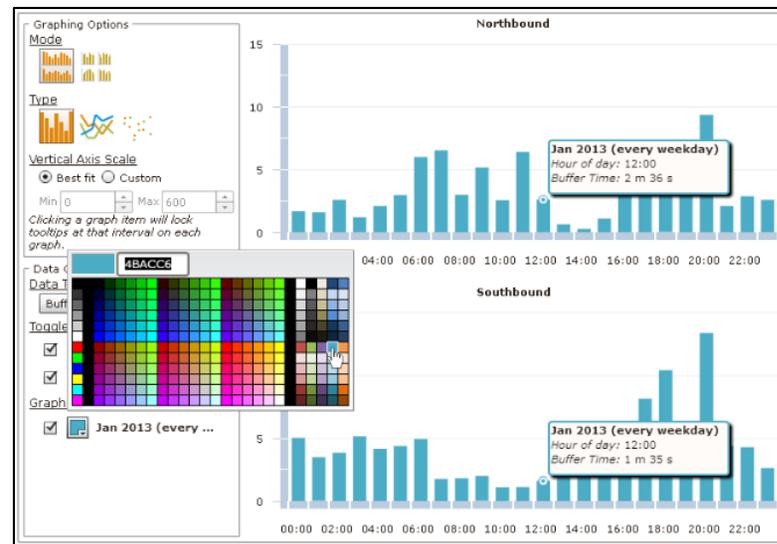
- Want to know how we calculate BTI, TTI, bottlenecks, and UDC? All of our formulas are open to the public, and your members helped us define, review, and approve them.

We can do more as a team than as individual agencies.

- There is great value to “seeing” across our jurisdictional boundaries.
- Working together as dozens of states and MPOs means we can ultimately accomplish more by pooling our resources and our knowledge to ensure success.

Agencies influence and prioritize features.

- Your analysts, statisticians, managers, and operations specialists drive our development goals.



| Combined passenger and commercial delay costs (in thousands of dollars) | | | | | | | | | | | | | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|---------|---------|---------|--------|---|--|--------|--------|--------|---------|---------|---------|---------|
| | 12 AM | 1 AM | 2 AM | 3 AM | 4 AM | 5 AM | 6 AM | 7 AM | 8 AM | 9 AM | 10 AM | 11 AM | 12 PM | 1 PM | 2 PM | 3 PM | 4 PM | 5 PM | 6 PM |
| 1/14/13 | \$0.2K | \$0.1K | \$0.1K | \$0.1K | \$0.2K | \$0.1K | \$0.2K | \$1.9K | \$16.2K | \$2.7K | \$0.9K | \$0.2K | \$0.1K | \$0.2K | \$0.1K | \$1.4K | \$7.7K | \$10K | \$1K |
| 1/15/13 | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0K | \$0.4K | \$12.9K | \$17.6K | \$2.7K | \$0.1K | \$0.2K | \$0.1K | \$0K | \$0.2K | \$5.8K | \$12.9K | \$21K | \$8.5K |
| 1/16/13 | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$0.3K | \$12.1K | \$14.4K | \$0.9K | \$0.2K | \$0.1K | \$0K | \$0K | \$0.6K | \$4.4K | \$14.9K | \$21.4K | \$6.5K | \$6.5K |
| 1/17/13 | \$0K | \$0K | \$0K | \$0K | \$0K | \$0.3K | \$12.2K | \$14.8K | \$2.1K | \$0K | \$0.4K | \$0.1K | \$0K | \$0.2K | \$4.3K | \$19.6K | \$29.8K | \$6.5K | \$6.5K |
| Thu Jan 17 2013 17:00:00 | | | | | | | | | | | | | | | | | | | |
| 1/19/13 | \$0K | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$0K | \$9K | \$7K | \$0.2K | \$0K | Delay cost: Total: \$25,751.51 Per user: \$9.22 | | \$0K | \$0K | \$0K | \$0K | \$0K | \$0K |
| 1/19/13 | \$0.1K | \$0.1K | \$0.2K | \$0.1K | \$0K | \$0.1K | \$0.1K | \$0.1K | \$0.2K | \$0K | Hours of delay: Total: 1,176.45 hours Per user: 0.35 hours | | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | |
| 1/20/13 | \$0K | \$0.1K | \$0.1K | \$0K | \$0K | \$0K | \$0.1K | \$0K | \$0.1K | \$0K | Data validity: 96.67% Click the table cell to see links to congestion scans | | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | \$0.1K | |
| Hourly Totals | \$0.5K | \$0.5K | \$0.6K | \$0.3K | \$0.4K | \$0.2K | \$1.1K | \$56.4K | \$70.2K | \$8.8K | \$0.4K | \$0.4K | \$0.4K | \$0.4K | \$0.4K | \$14.8K | \$29.8K | \$14.8K | \$14.8K |

Data Agnostic

- RITIS works with all agency data, plus third-party data from ATMS vendors, ITS device manufacturers, and data providers like HERE, INRIX, and TomTom. You can even change providers and keep your historic data.

Engaged in and Committed to MAP-21

- RITIS Developers, management, and user group members are tuned in to MAP-21 rulemaking efforts, and have provided significant guidance to FHWA
- The team has been preparing and performing work in the background to ensure the Suite meets your MAP-21 target-setting goals.

Unparalleled Team Support

- RITIS is developed and supported by a dedicated interdisciplinary team of graphic artists, UX specialists, transportation faculty, IT staff, professional engineers, software developers, and you, making RITIS a powerful national asset.



To find out more about RITIS, please contact:



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