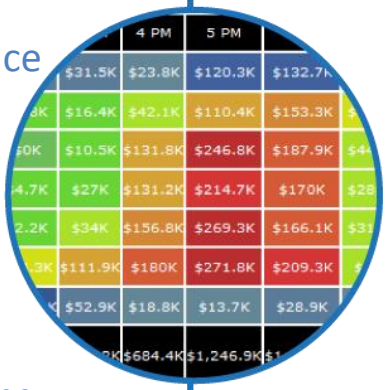
RITIS Platform

Features & Applications Overview

Performance Measures



Planning

Operations

Communications

CATT LABORATORY

RITIS: Enabling Decision Making & Effective Communication

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Purpose of this Document

This document is a high-level, pictorial overview of the Regional Integrated Transportation Information System.

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

Real-Time Data Feeds: RITIS data feeds are services that provide direct access to real-time incident, event, detector, probe, weather, transit, and other data sources including ITS device status. The RITIS data feeds are designed to facilitate integration of RITIS data back into legacy and third party systems and for third-party application developers that need access to real-time information for dynamic mobility applications. The data feeds provide for implementation flexibility both in data format and retrieval method. The RITIS platform allows each agency to determine which data elements it wishes to provide in the data feed or maintain secure and secluded from other agencies or the public.

Real-time Situational Awareness Tools: The RITIS website allows users with appropriate credentials 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 afford 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. Users can apply a rich set of filters, access contact information, and even 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 afford 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 can allow users to identify accident hot-spots, analyze queue lengths and traffic congestion/bottlenecks at specific areas, perform after-action reviews, and evaluate the effectiveness of transportation operations strategies.

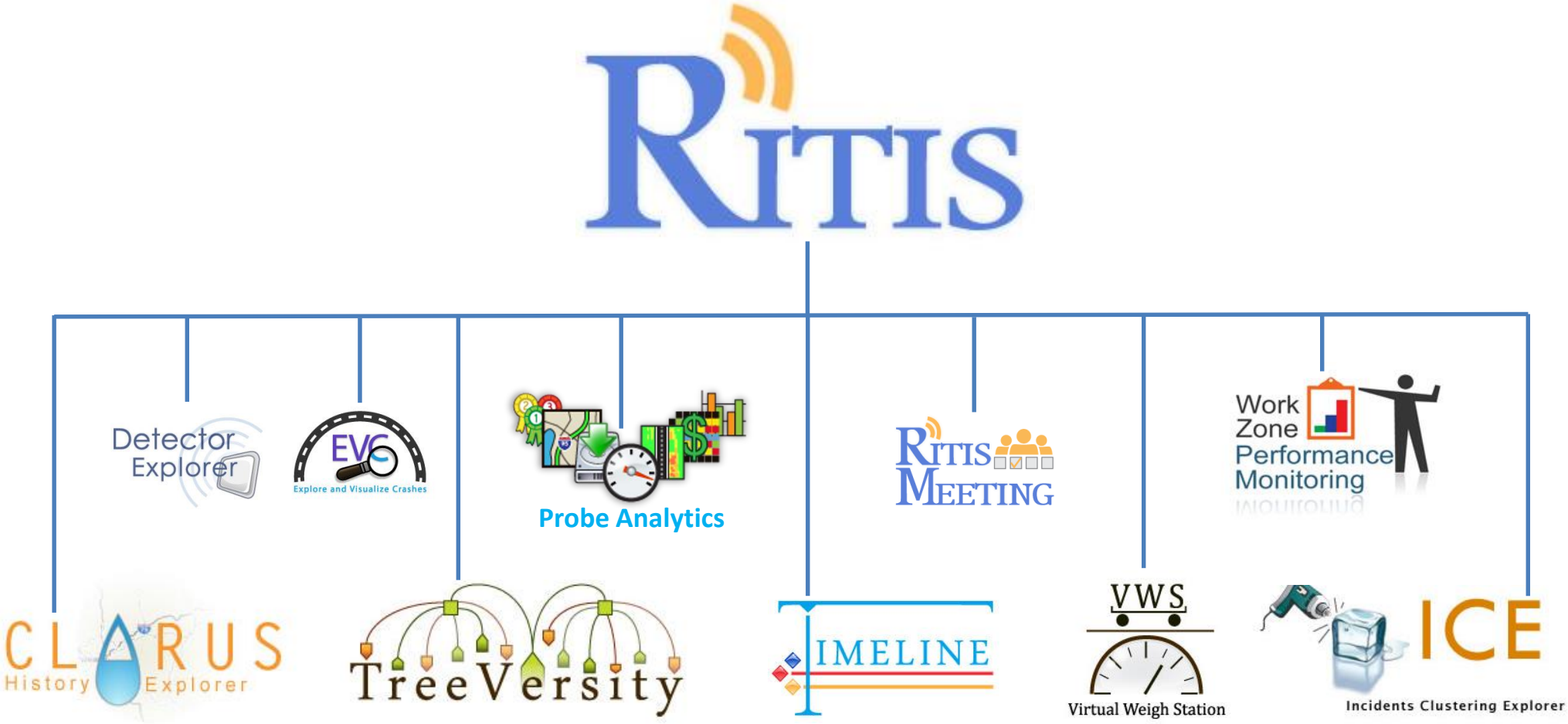
RITIS is in use by decision makers, researchers, planners, operations specialists, the military, and homeland security officials in every state. The use of RITIS has been shown to:

- Reduce transportation research costs by as much as 50%;
- Be a significant asset to 4,200+ Federal, State, and Local officials for real-time situational awareness;
- Enable regional response and inter-agency coordination among hundreds of agencies;
- Provide for transparent decision making through data-driven approaches to prioritizing and justifying projects;
- Provide for better communication to decision makers and the public;
- Significantly reduce agency costs while dramatically speeding up the ability of agency staff to respond to media and decision makers.

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

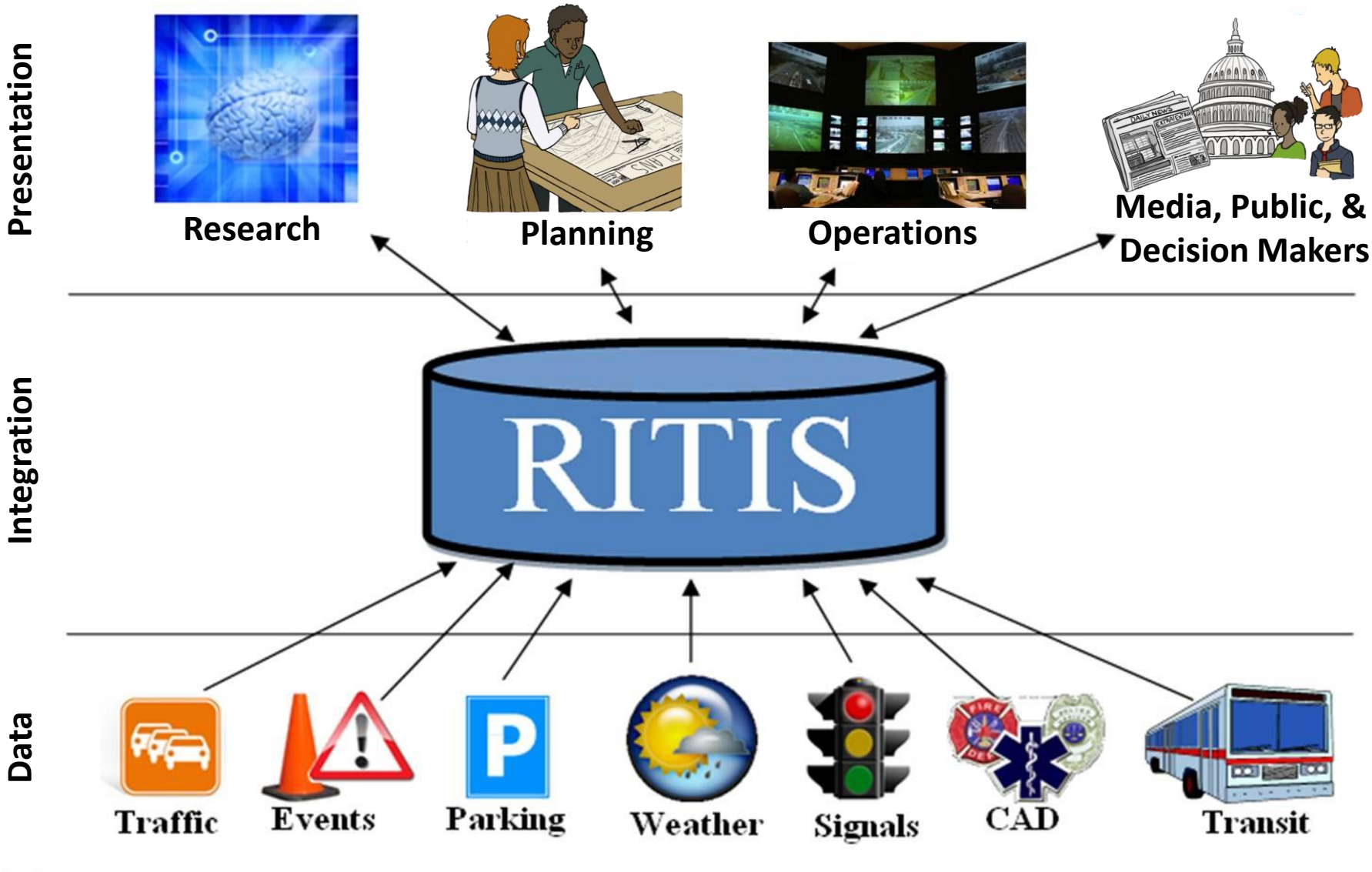
The Regional Integrated Transportation Information System (RITIS) enables real-time operations, coordination between agencies, planning & performance measures, analytics, and visualization.

There are many tools embedded within and enabled through RITIS.



RITIS Overview

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



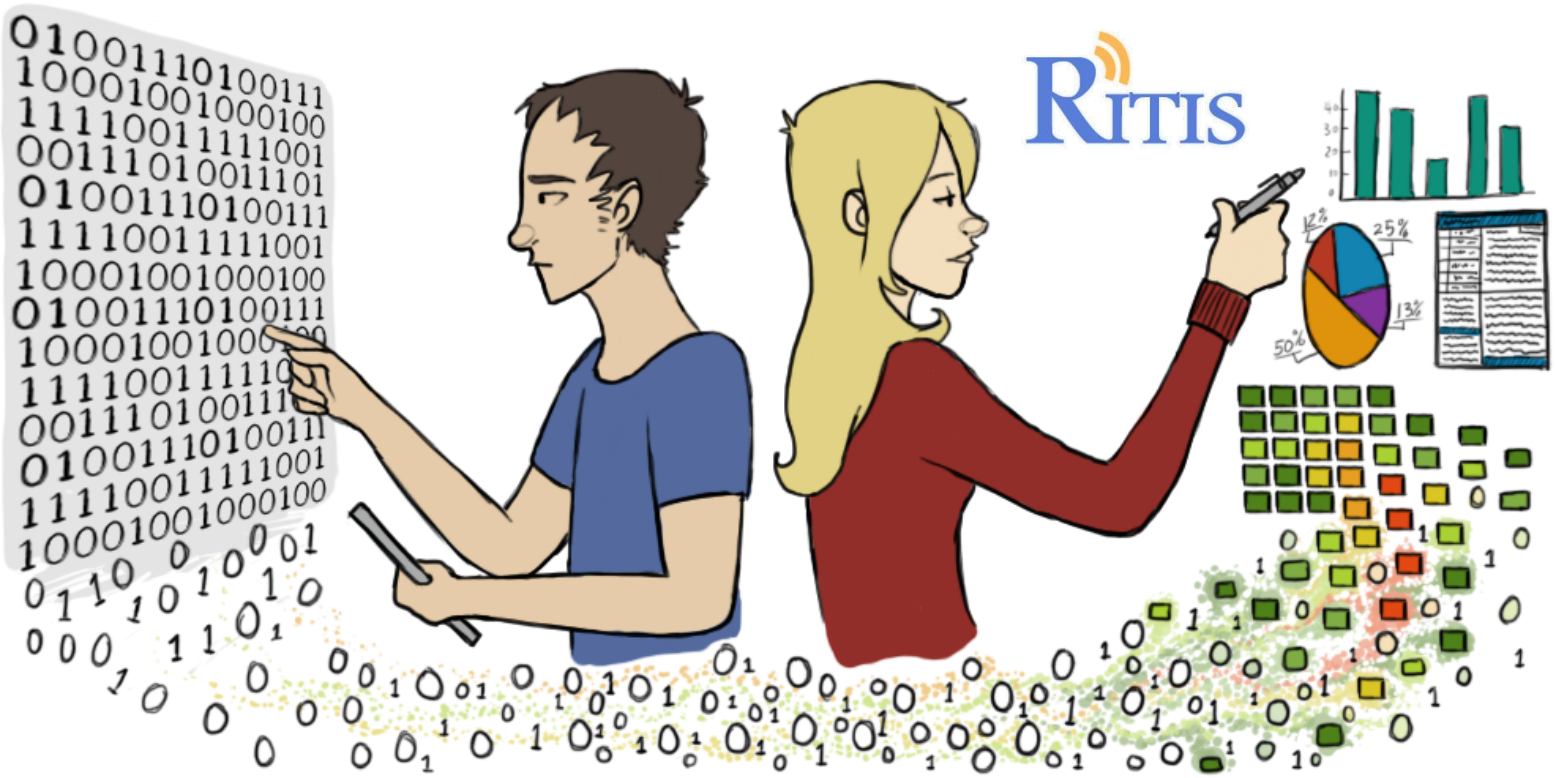
The following include screenshots and high-level descriptions of functionality available within RITIS.

This is not an exhaustive list.

The Three Primary Components of RITIS

1. Real-time Data Fusion
2. Real-time Redistribution of Fused Data
   - Via electronic data feeds
   - Via websites and other real-time visualization tools
3. Archiving & Analytics of Data

The goal of each component is to turn data into information for Ops, Planners, Researchers, & the Public.



Trusted Feeds for 3rd Party Developers and the Public:

- **TrafficView API & Developer Resource Page**

Trusted Feeds for Public Agencies include:

- **RITIS Filter**
- **JMS Feed**
- **XML Feed**

TrafficView Live Traffic My Routes Camera List Login | Register

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.

Table Of Contents
- Introduction
- Sending Requests
- Filters
- Interpreting Responses
- More Information

TrafficView API Reference Documentation

Deployed Version: 1.4.0p

Documentation Last Updated: 6/13/2014

Contact:
support@trafficview.org

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

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1 Introduction
- 1.1 Types of Data
- 1.2 Data Sources

2 Sending Requests
- 2.1 HTTP Get
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3 Filters
- 3.1 General Filters
  - 3.1.1 Data Type Filter
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    - 3.1.3.4 Associated ID DMS Filter
  - 3.1.4 Location Filters
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    - 3.1.4.2 Box Filter
    - 3.1.4.3 Elevation Filter
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    - 3.1.4.6 City Filter
    - 3.1.4.7 Road Filter

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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 both standard format, and custom-built RITIS format. Custom-built RITIS format provides additional information not available in these standards, but provided by the source agencies. The most significant difference between this services and 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. For event data, there is a subscription-like ability. A user can request only the information which changed since the last request.

Benefits

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

Drawbacks

- Can be slightly more complex to implement than a simple XML polling client
- Possible introduction of data latency based on the client polling cycle
- Data contains a full snapshot of open/active events and devices which may require additional processing on the consumer side to determine what has changed

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 near-real-time as possible since each message is generated and sent as soon as data arrives to RITIS
- Updates are incremental

Drawbacks

- Requires implementation of a JMS listener that maintains persistent connection to the RITIS message broker
- Only rudimentary filtering capabilities (listeners receive either all or none of the data from a particular data source)
- Limited number of data sources

XML Filter

XML Feed is an SSL secured web page that provides a list of GZIP-ed XML 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 its own time interval and pull the snapshot data

Drawbacks

- Data is near real-time as there is some latency introduced between feed updates and polling frequency
- Files contain a full snapshot of open/active events and devices which may require additional processing on the consumer side to determine what has changed
- Only rudimentary filtering capabilities (each user has access to specific files which are separated by a data source)
- Limited number of data sources

Log in screen

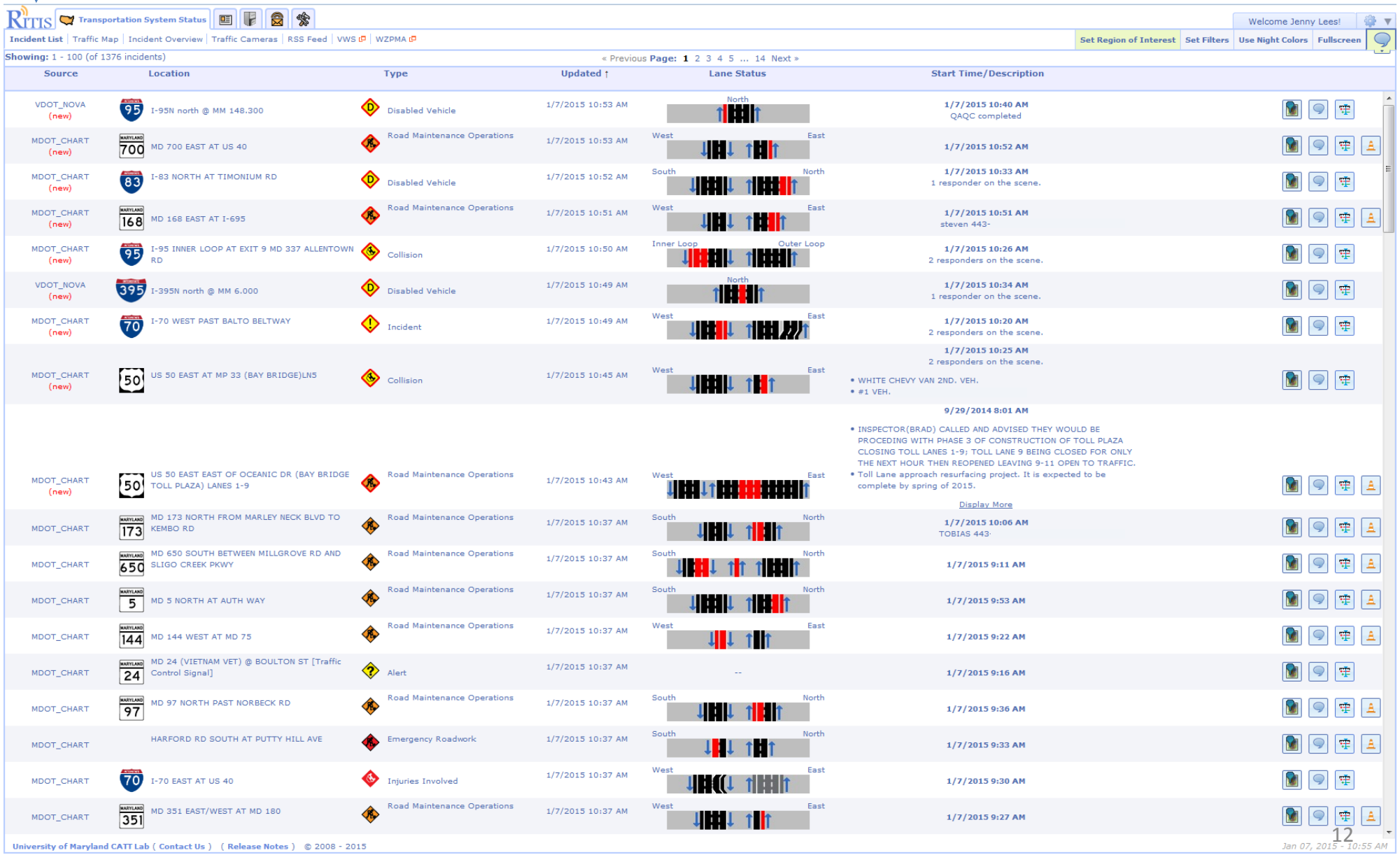
RITIS is for military, public safety, and transportation agency/research use only.

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

Real-time Visualizations 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.



Source	Location	Type	Updated ↑	Lane Status	Start Time/Description
VDOT_NOVA (new)	I-95N north @ MM 148.300	Disabled Vehicle	1/7/2015 10:53 AM	North	1/7/2015 10:40 AM QAQC completed
MDOT_CHART (new)	MD 700 EAST AT US 40	Road Maintenance Operations	1/7/2015 10:53 AM	West East	1/7/2015 10:52 AM
MDOT_CHART (new)	I-83 NORTH AT TIMONIUM RD	Disabled Vehicle	1/7/2015 10:52 AM	South North	1/7/2015 10:33 AM 1 responder on the scene.
MDOT_CHART (new)	MD 168 EAST AT I-695	Road Maintenance Operations	1/7/2015 10:51 AM	West East	1/7/2015 10:51 AM steven 443-
MDOT_CHART (new)	I-95 INNER LOOP AT EXIT 9 MD 337 ALLENTOWN RD	Collision	1/7/2015 10:50 AM	Inner Loop Outer Loop	1/7/2015 10:26 AM 2 responders on the scene.
VDOT_NOVA (new)	I-395N north @ MM 6.000	Disabled Vehicle	1/7/2015 10:49 AM	North	1/7/2015 10:34 AM 1 responder on the scene.
MDOT_CHART (new)	I-70 WEST PAST BALTO BELTWAY	Incident	1/7/2015 10:49 AM	West East	1/7/2015 10:20 AM 2 responders on the scene.
MDOT_CHART (new)	US 50 EAST AT MP 33 (BAY BRIDGE)LN5	Collision	1/7/2015 10:45 AM	West East	1/7/2015 10:25 AM 2 responders on the scene. • WHITE CHEVY VAN 2ND. VEH. • #1 VEH.
MDOT_CHART (new)	US 50 EAST EAST OF OCEANIC DR (BAY BRIDGE TOLL PLAZA) LANES 1-9	Road Maintenance Operations	1/7/2015 10:43 AM	West East	9/29/2014 8:01 AM • INSPECTOR(BRAD) CALLED AND ADVISED THEY WOULD BE PROCEDING WITH PHASE 3 OF CONSTRUCTION OF TOLL PLAZA CLOSING TOLL LANES 1-9; TOLL LANE 9 BEING CLOSED FOR ONLY THE NEXT HOUR THEN REOPENED LEAVING 9-11 OPEN TO TRAFFIC. • Toll Lane approach resurfacing project. It is expected to be complete by spring of 2015. Display More
MDOT_CHART	MD 173 NORTH FROM MARLEY NECK BLVD TO KEMBO RD	Road Maintenance Operations	1/7/2015 10:37 AM	South North	1/7/2015 10:06 AM TOBIAS 443-
MDOT_CHART	MD 650 SOUTH BETWEEN MILLGROVE RD AND SLIGO CREEK PKWY	Road Maintenance Operations	1/7/2015 10:37 AM	South North	1/7/2015 9:11 AM
MDOT_CHART	MD 5 NORTH AT AUTH WAY	Road Maintenance Operations	1/7/2015 10:37 AM	South North	1/7/2015 9:53 AM
MDOT_CHART	MD 144 WEST AT MD 75	Road Maintenance Operations	1/7/2015 10:37 AM	West East	1/7/2015 9:22 AM
MDOT_CHART	MD 24 (VIETNAM VET) @ BOULTON ST [Traffic Control Signal]	Alert	1/7/2015 10:37 AM	--	1/7/2015 9:16 AM
MDOT_CHART	MD 97 NORTH PAST NORBECK RD	Road Maintenance Operations	1/7/2015 10:37 AM	South North	1/7/2015 9:36 AM
MDOT_CHART	HARFORD RD SOUTH AT PUTTY HILL AVE	Emergency Roadwork	1/7/2015 10:37 AM	South North	1/7/2015 9:33 AM
MDOT_CHART	I-70 EAST AT US 40	Injuries Involved	1/7/2015 10:37 AM	West East	1/7/2015 9:30 AM
MDOT_CHART	MD 351 EAST/WEST AT MD 180	Road Maintenance Operations	1/7/2015 10:37 AM	West East	1/7/2015 9:27 AM

Real-time Visualizations for Operations

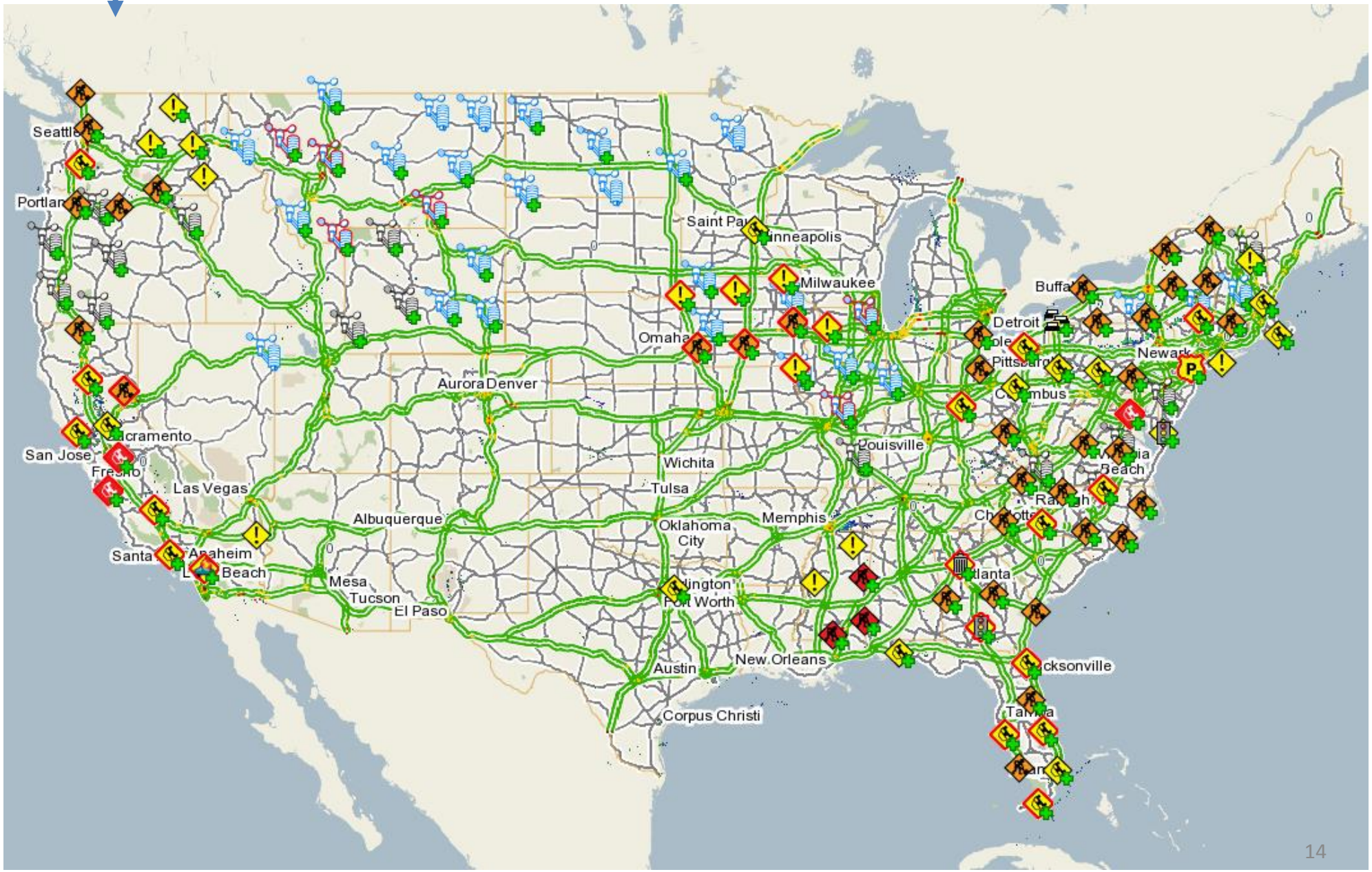
Incident List

Each row of the Incident list contains information about a single incident. Data like location, type of incident, lane closer and start and end times are available for each incident.

Real-time Visualizations for Operations

Traffic Map

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



Real-time Visualizations for Operations: Customizing

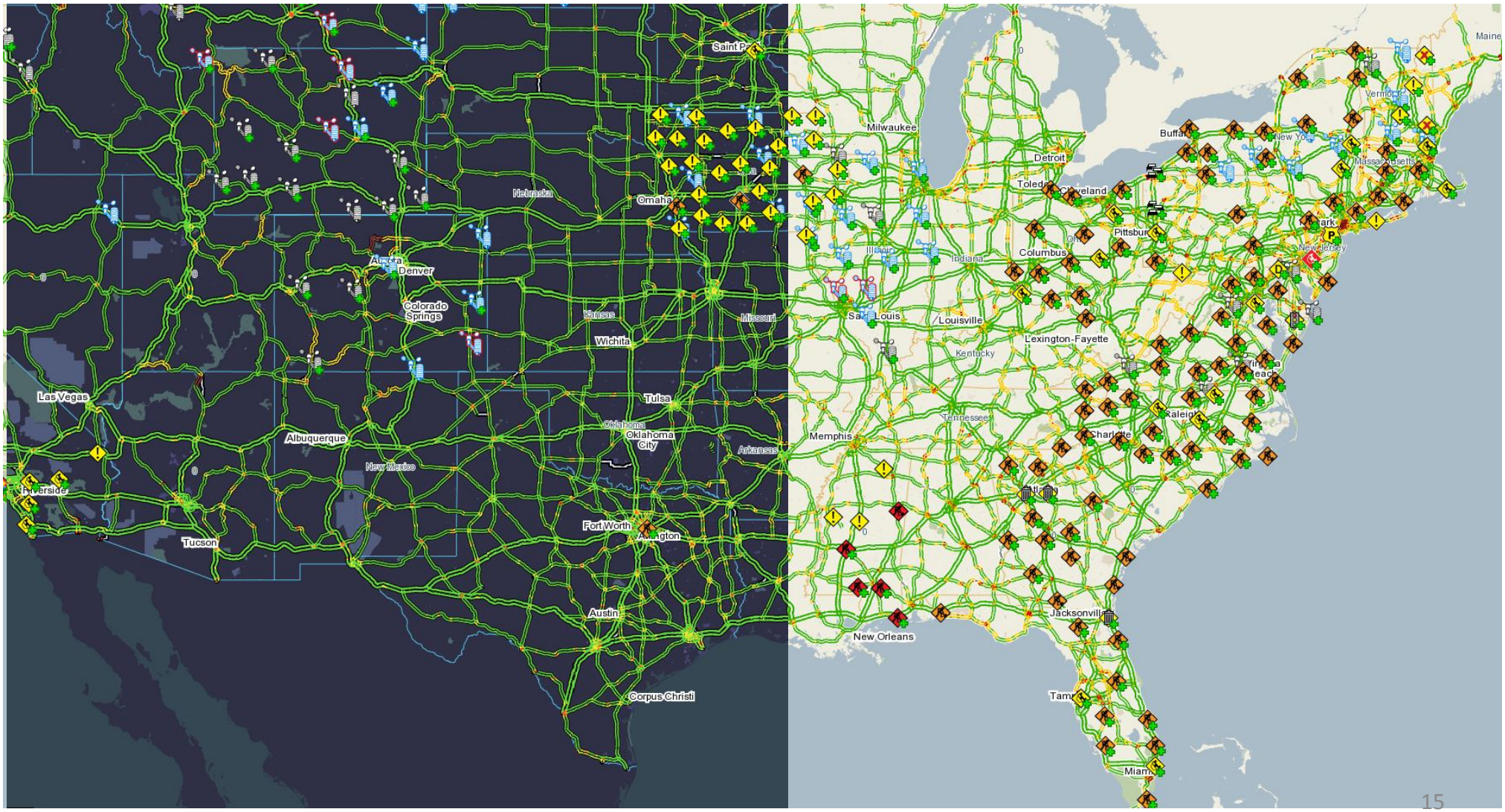
RITIS provides two display modes for users. A **Night Mode** and a **Day Mode**.

Night Mode is ideal for darker environments like a control room or patrol vehicle at night.

Night Mode

Day Mode

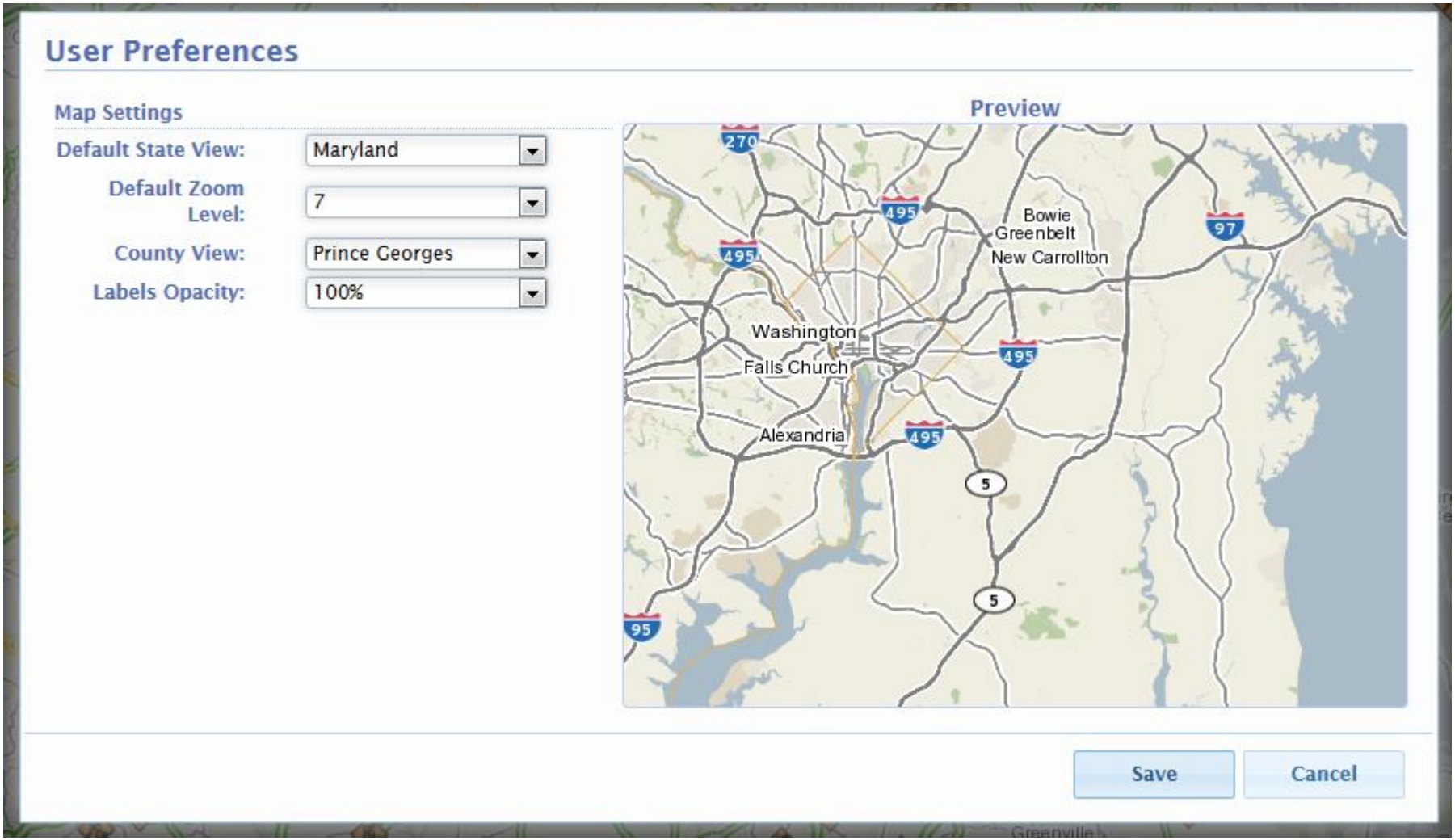
Day Mode is brighter and ideal for well lit rooms and offices.



Real-time Visualizations for Operations: Customizing

Through the Map User Preference, users can customize their default region of interest.

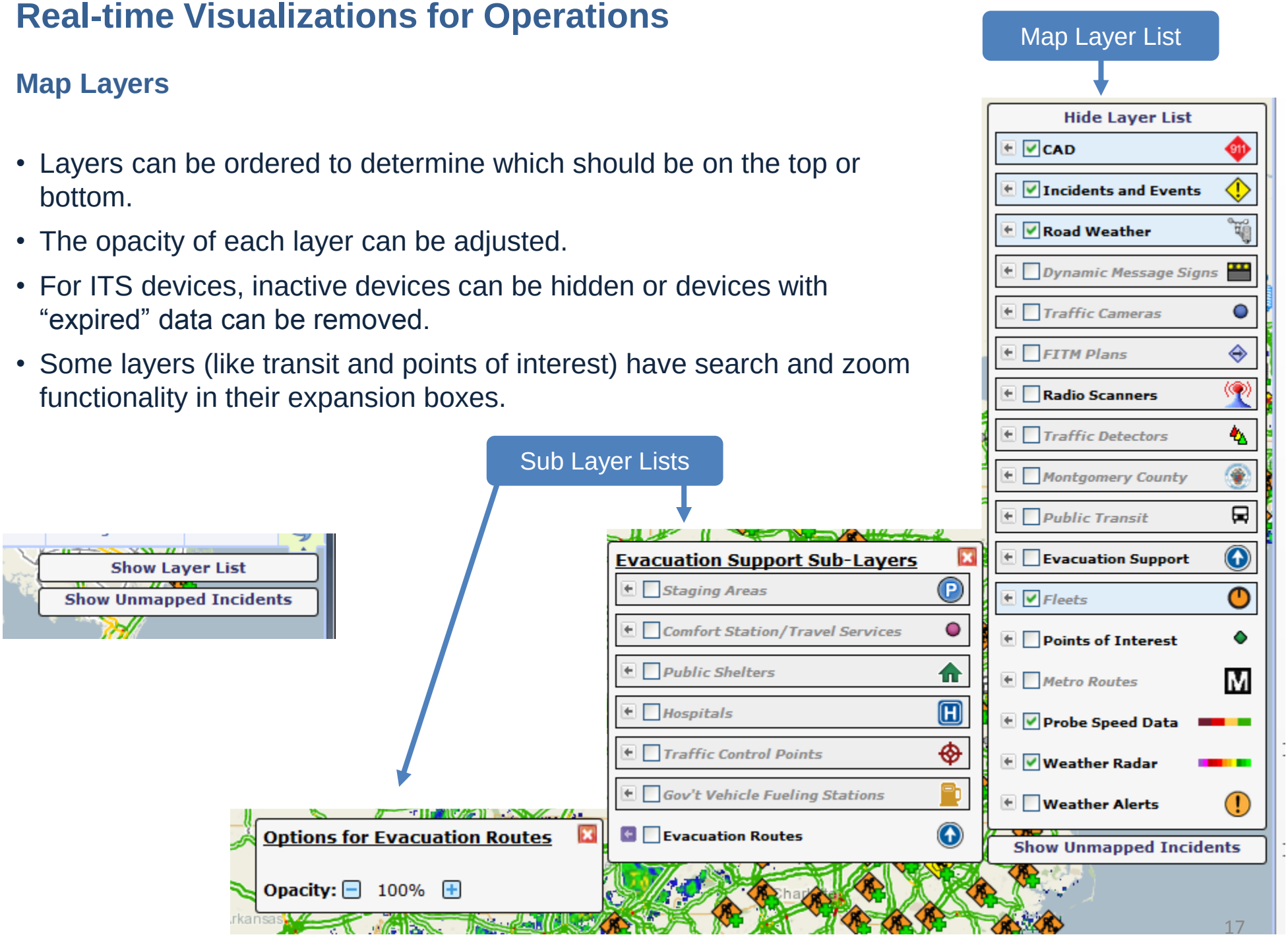
Map Settings



Real-time Visualizations for Operations

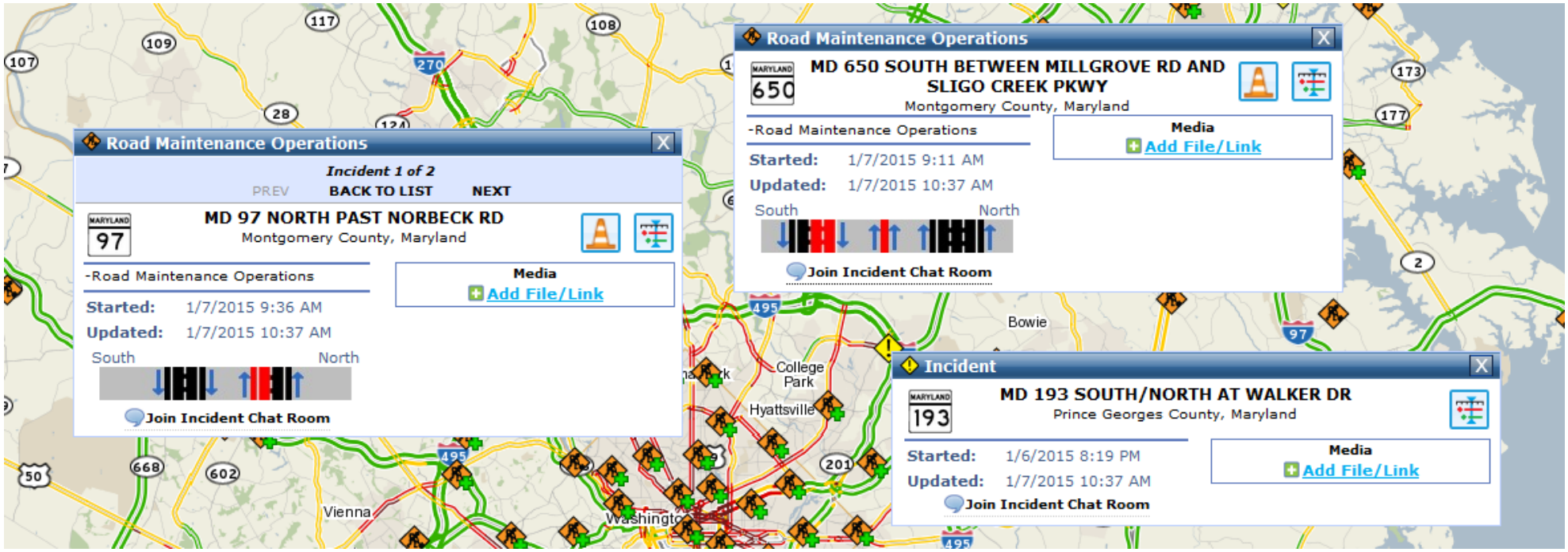
Map Layers

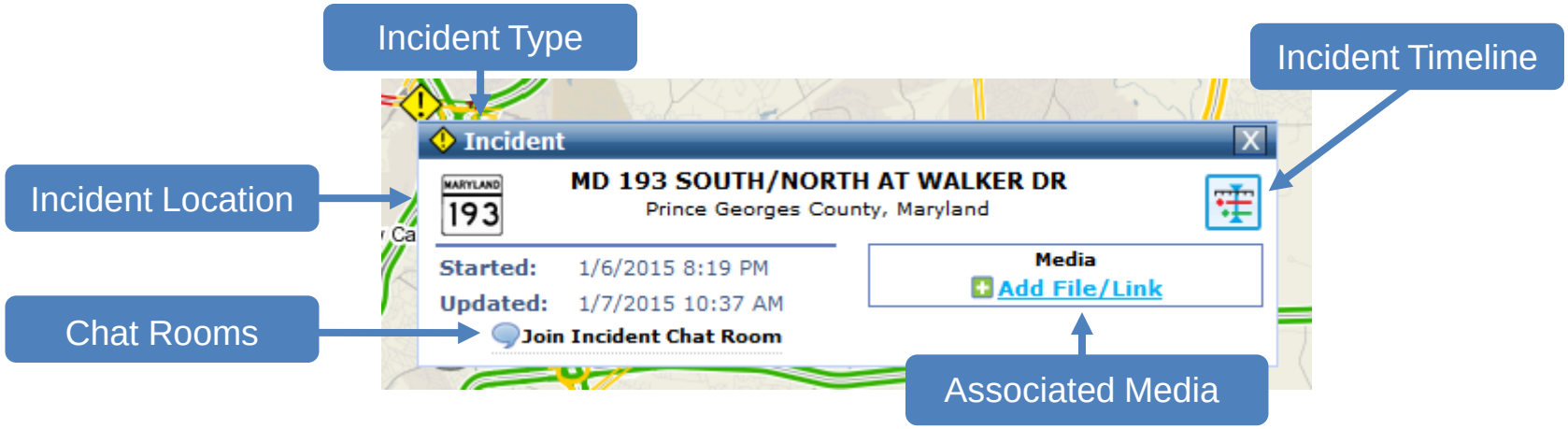
- Layers can be ordered to determine which should be on the top or bottom.
- The opacity of each layer can be adjusted.
- For ITS devices, inactive devices can be hidden or devices with “expired” data can be removed.
- Some layers (like transit and points of interest) have search and zoom functionality in their expansion boxes.



Interactive Incident Layer

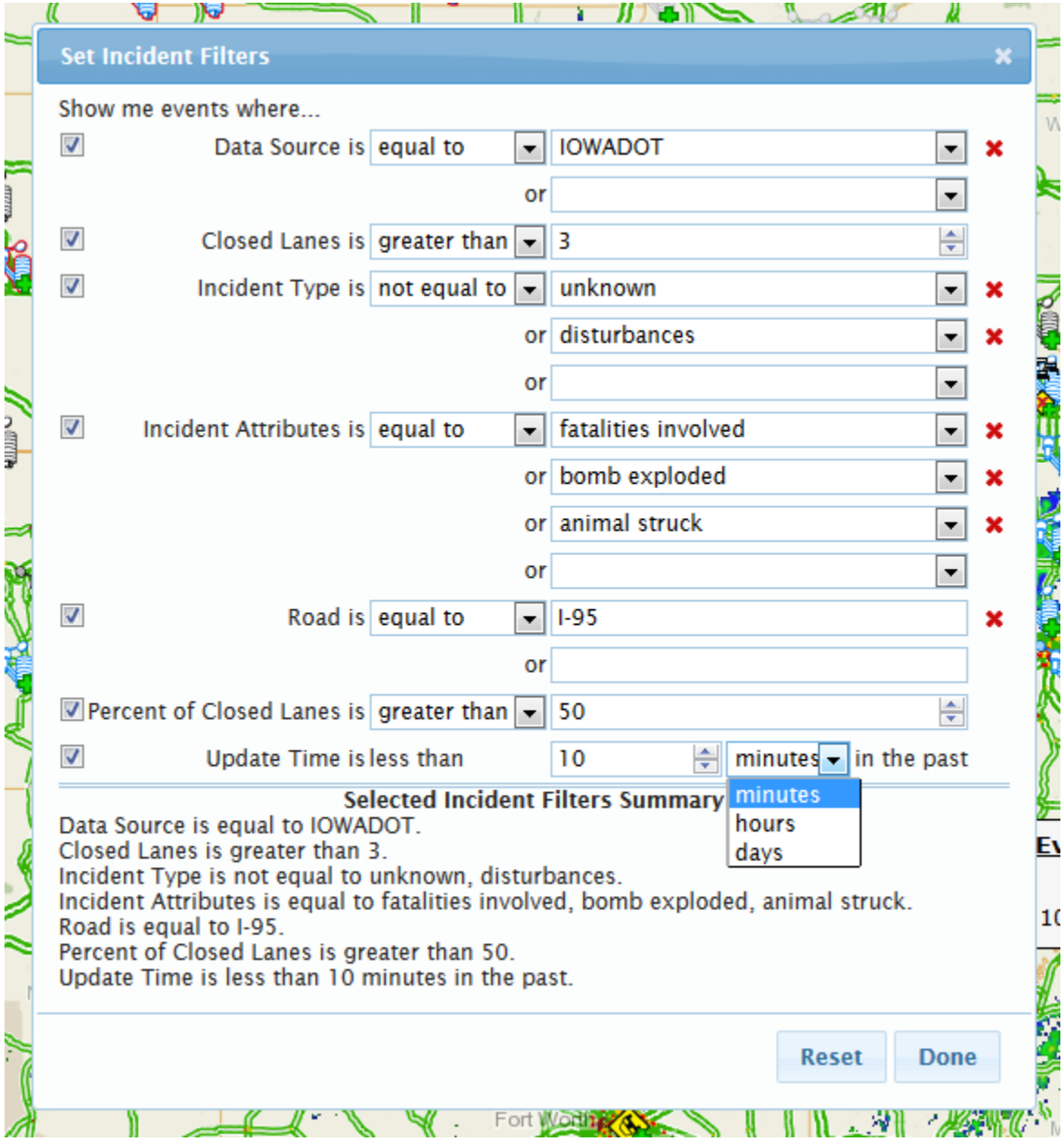
When clicked, incident and event icons displaying additional details about the incident.





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.

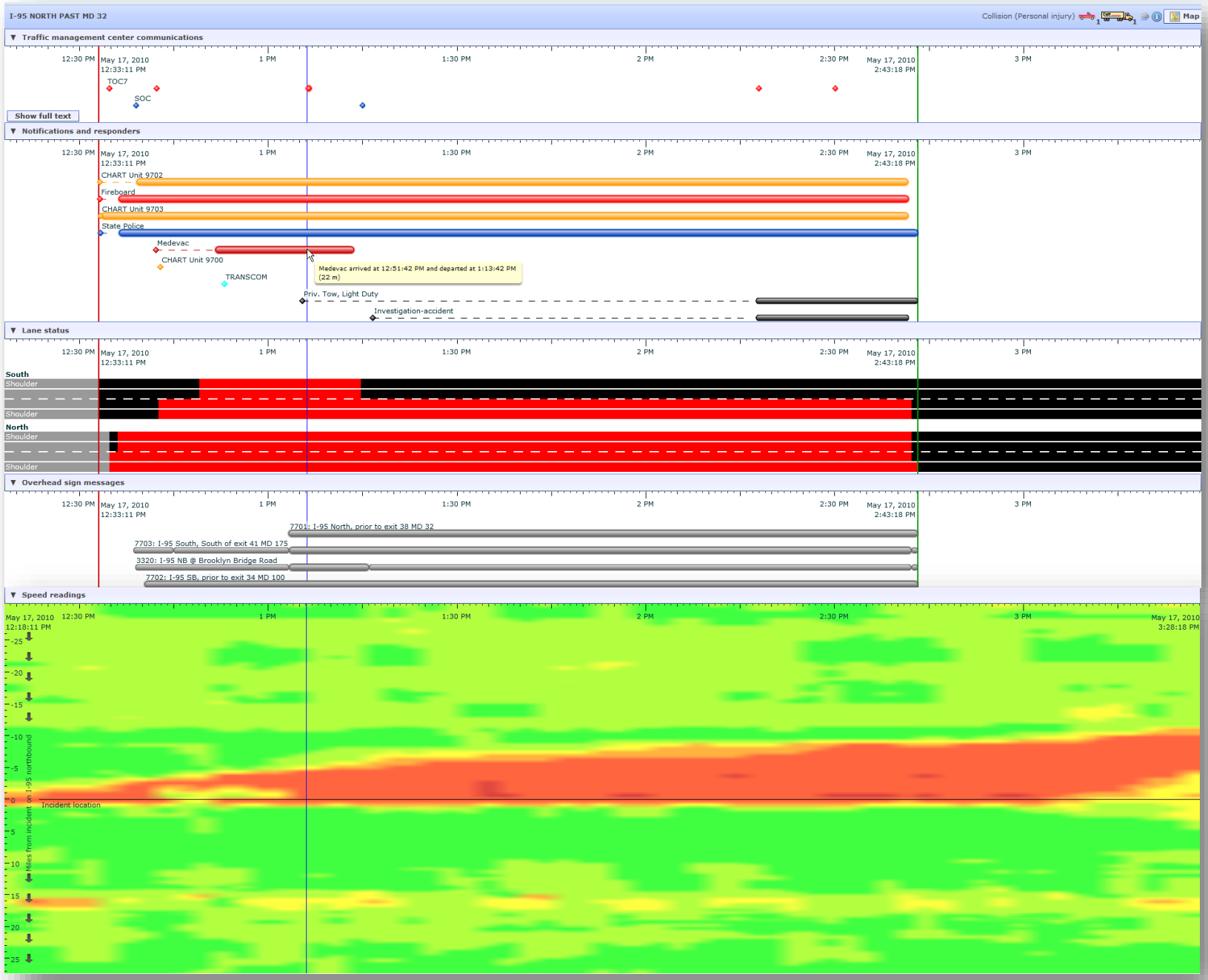


Incident Filtering

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

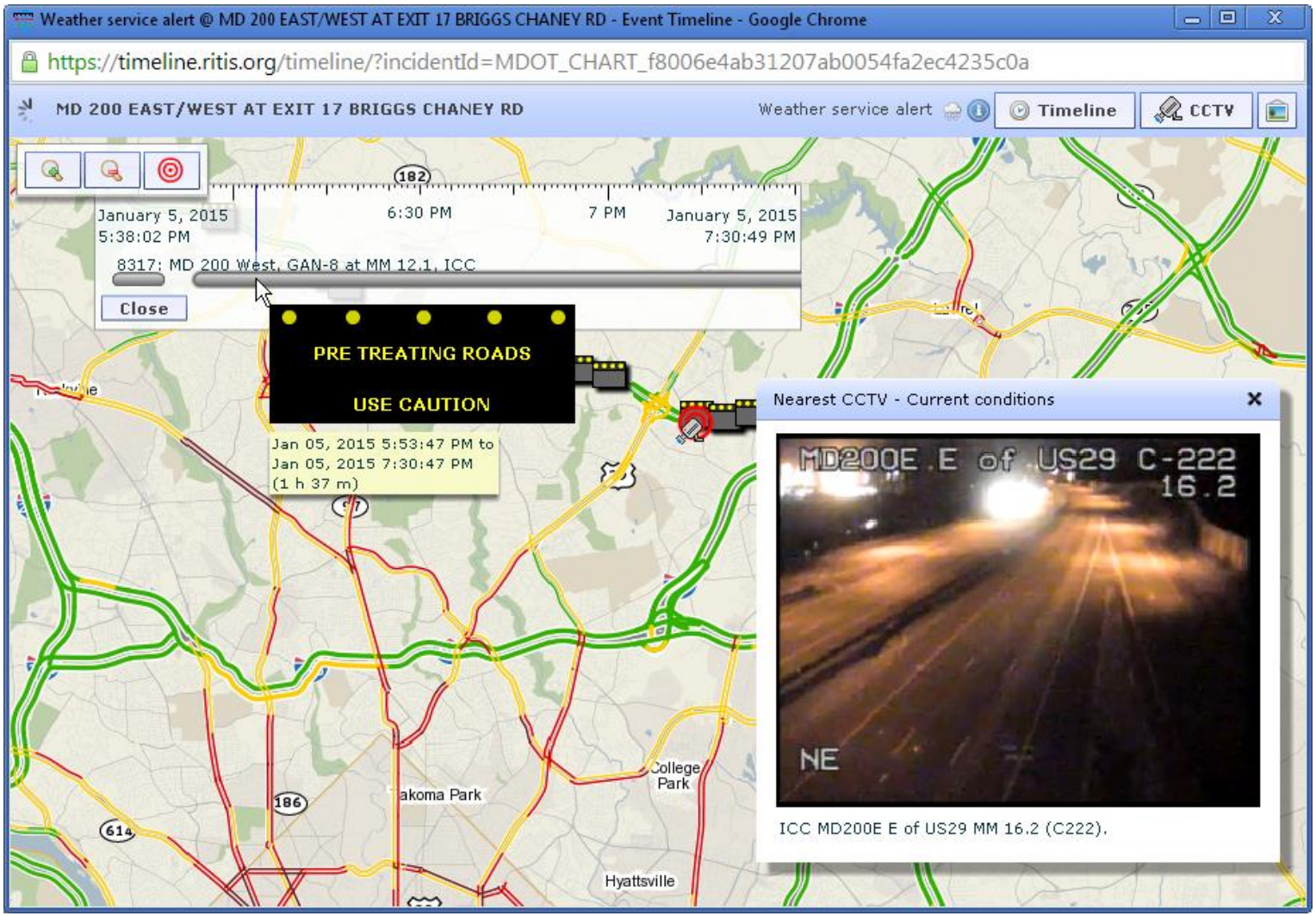
Interactive timelines quickly reveal how the incident is being managed while showing the relationships between responder notifications and arrival times, lane closures, traffic queues, clearance times, communication logs, CCTV, and dynamic message signs.



Real-time Visualizations for Operations

Incident Timeline

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

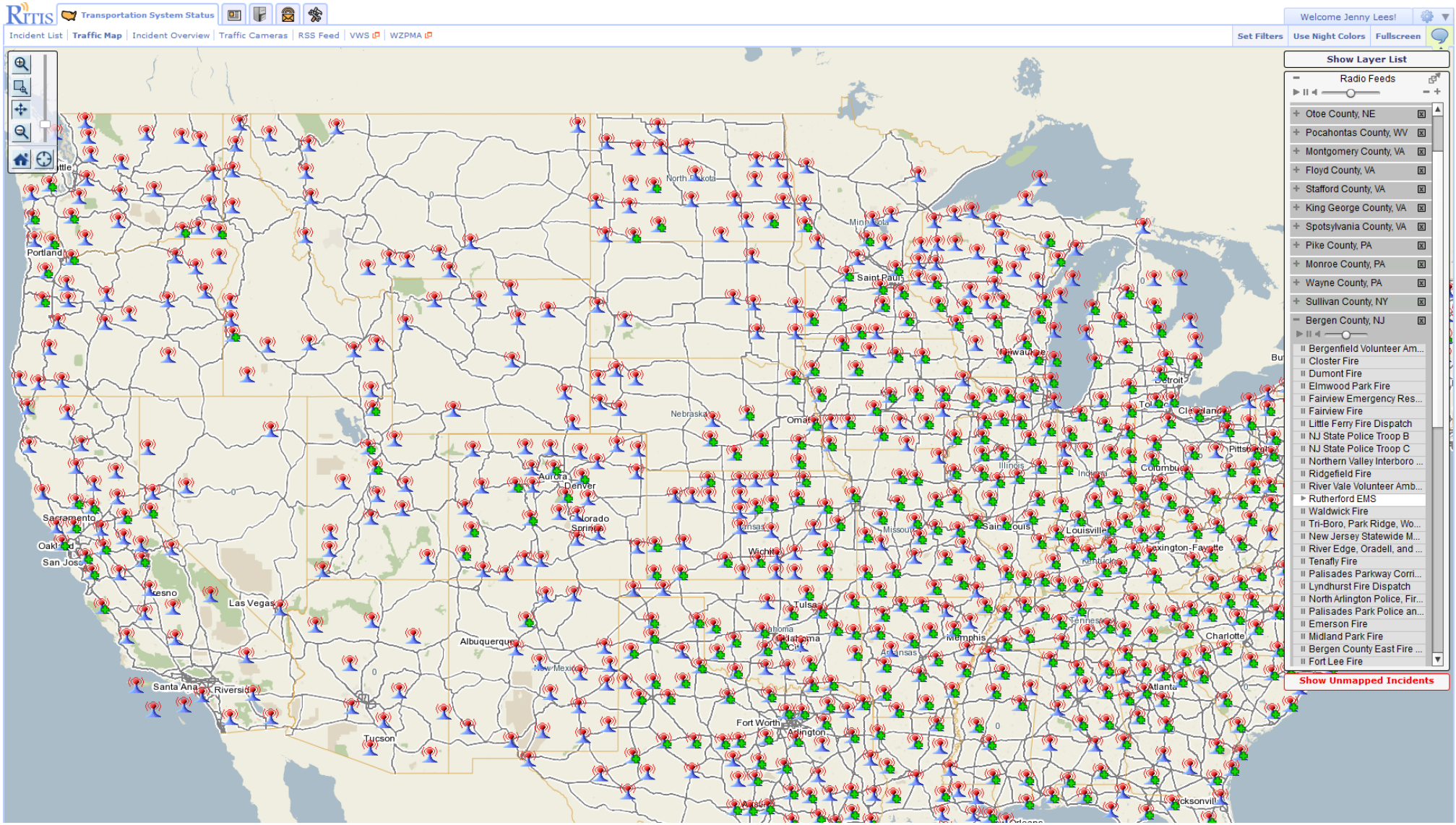


Dynamic Message Signs

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

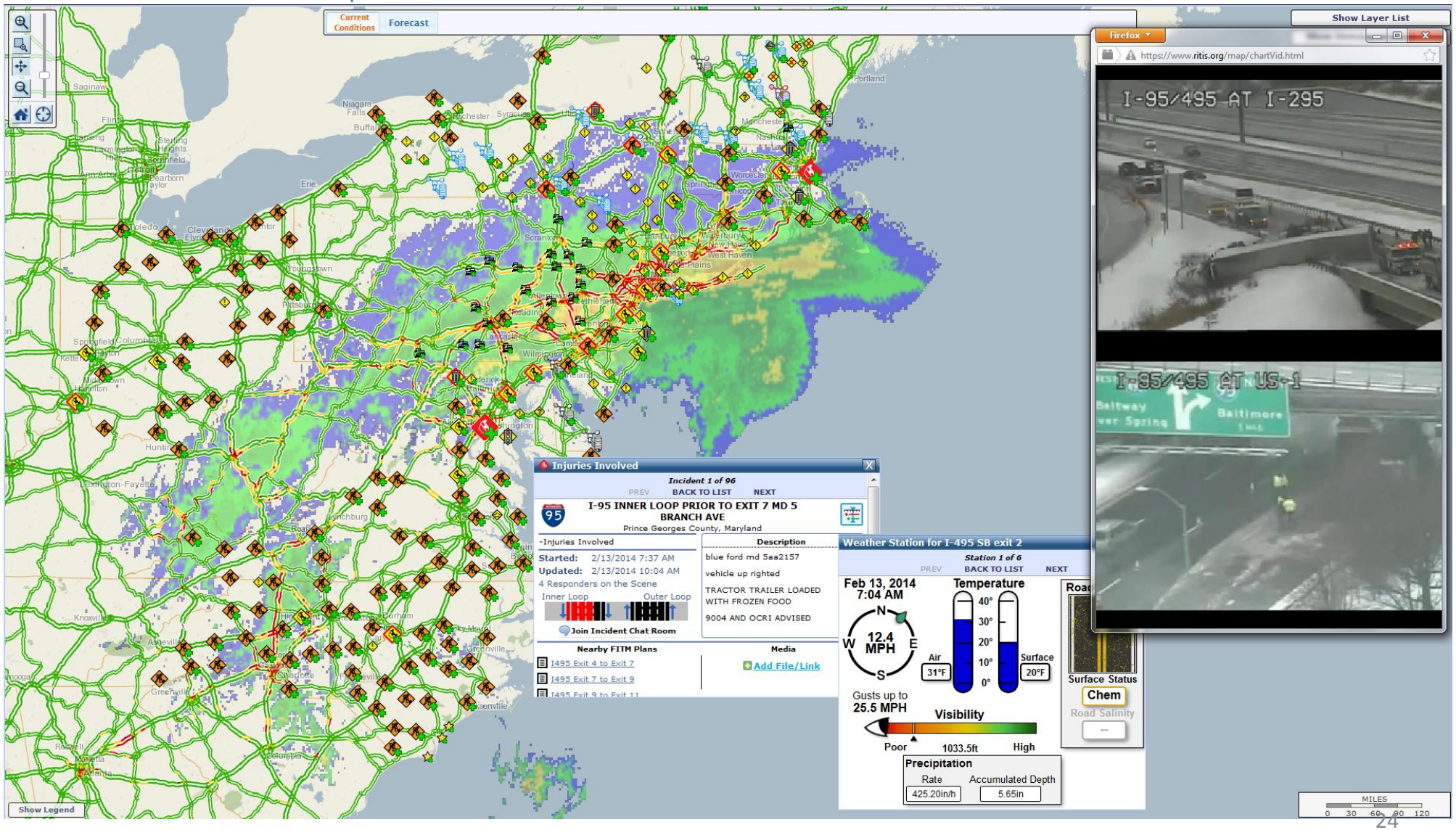
Listen to multiple police, fire, rescue, air traffic control, etc. simultaneously across the entire country.



Real-time Weather Radar

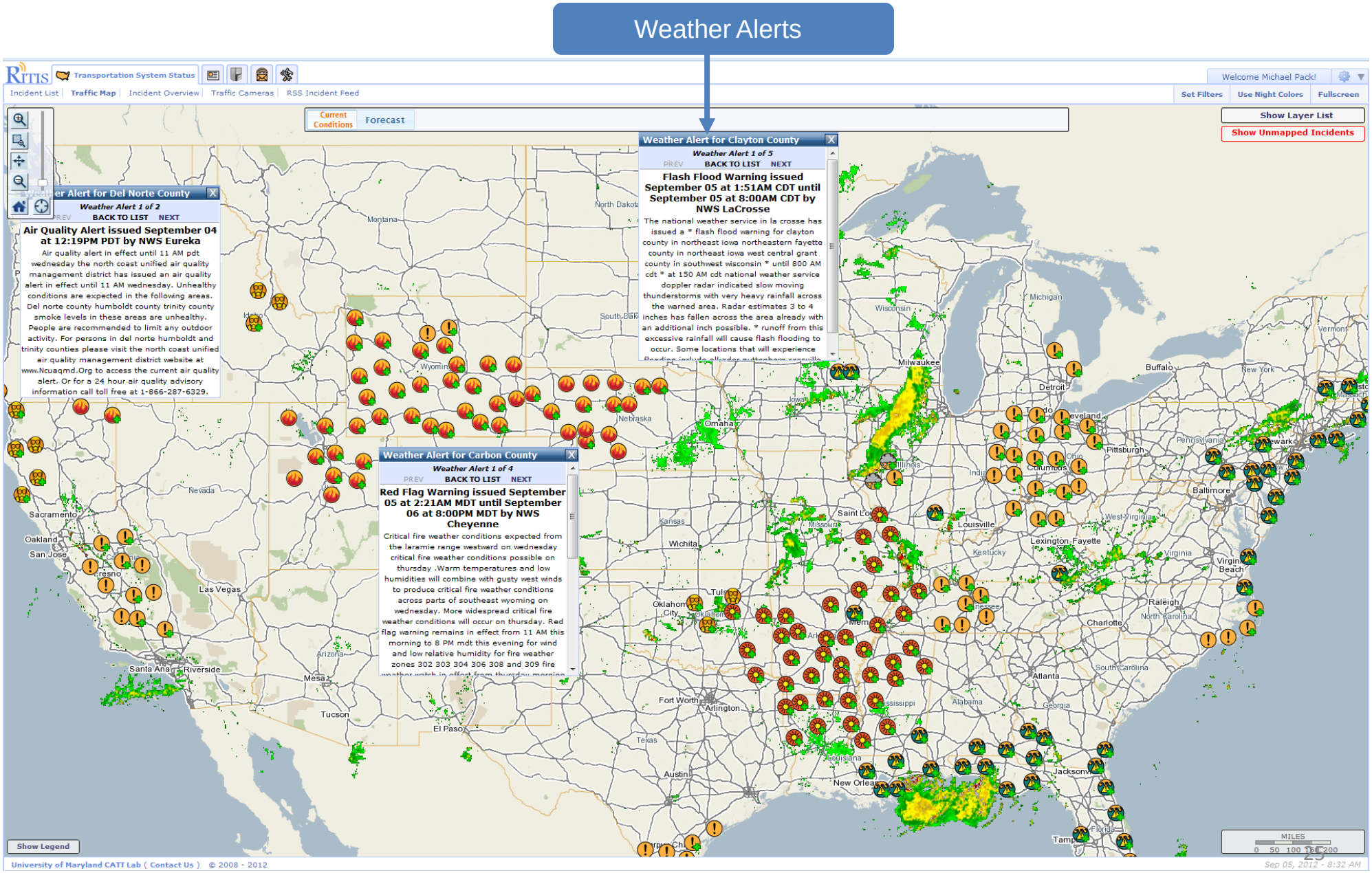
RITIS provides many options for displaying both real-time and predicted weather.

Real-Time Weather Radar



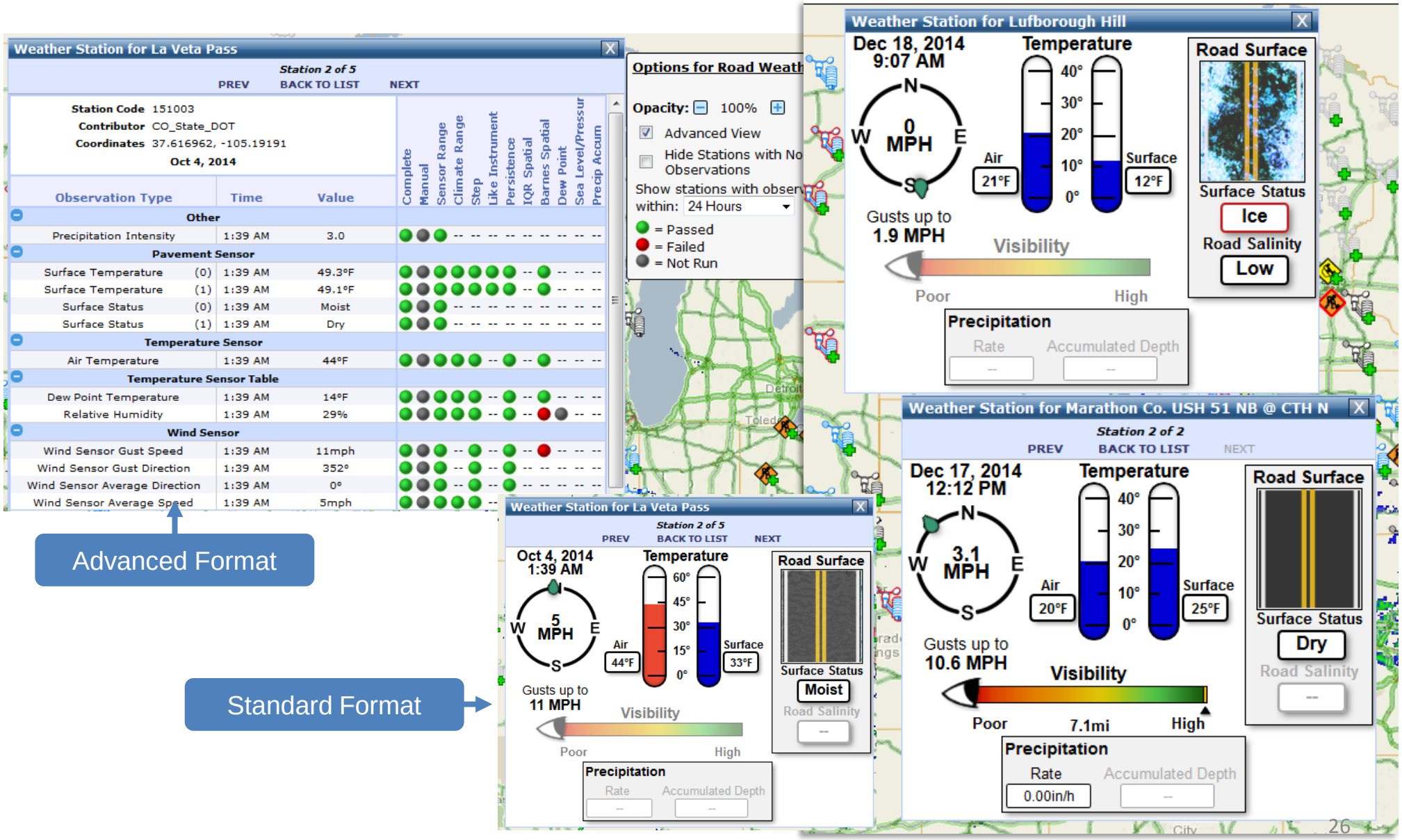
Real-time Weather Alerts

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



Real-time Ground Weather

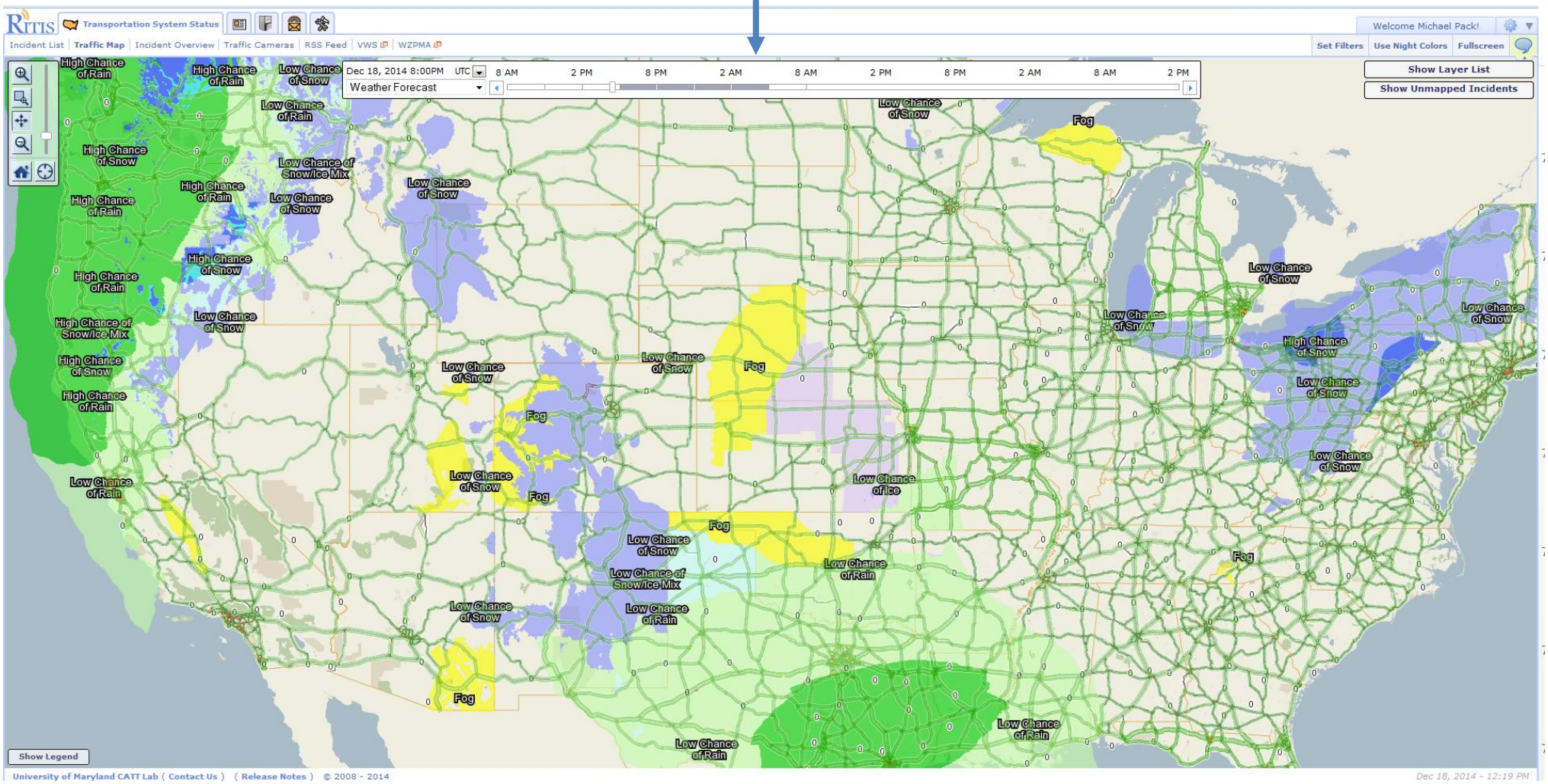
RWIS station data can be viewed by clicking on the weather station icons on the map. The data can be viewed in 'Standard' or 'Advanced' formats.



Weather Forecasts

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

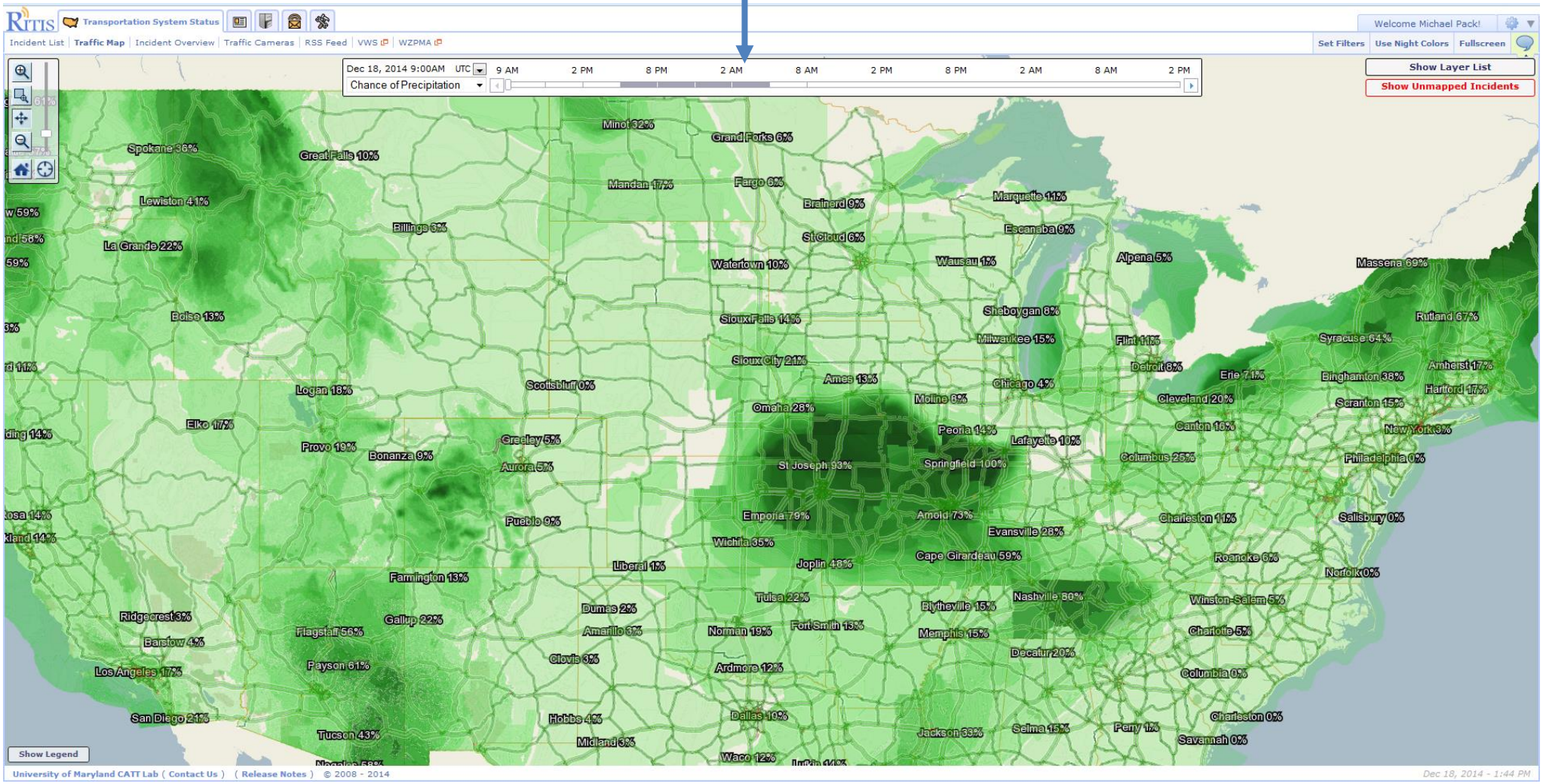
Weather Forecasts



Weather Forecasts

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

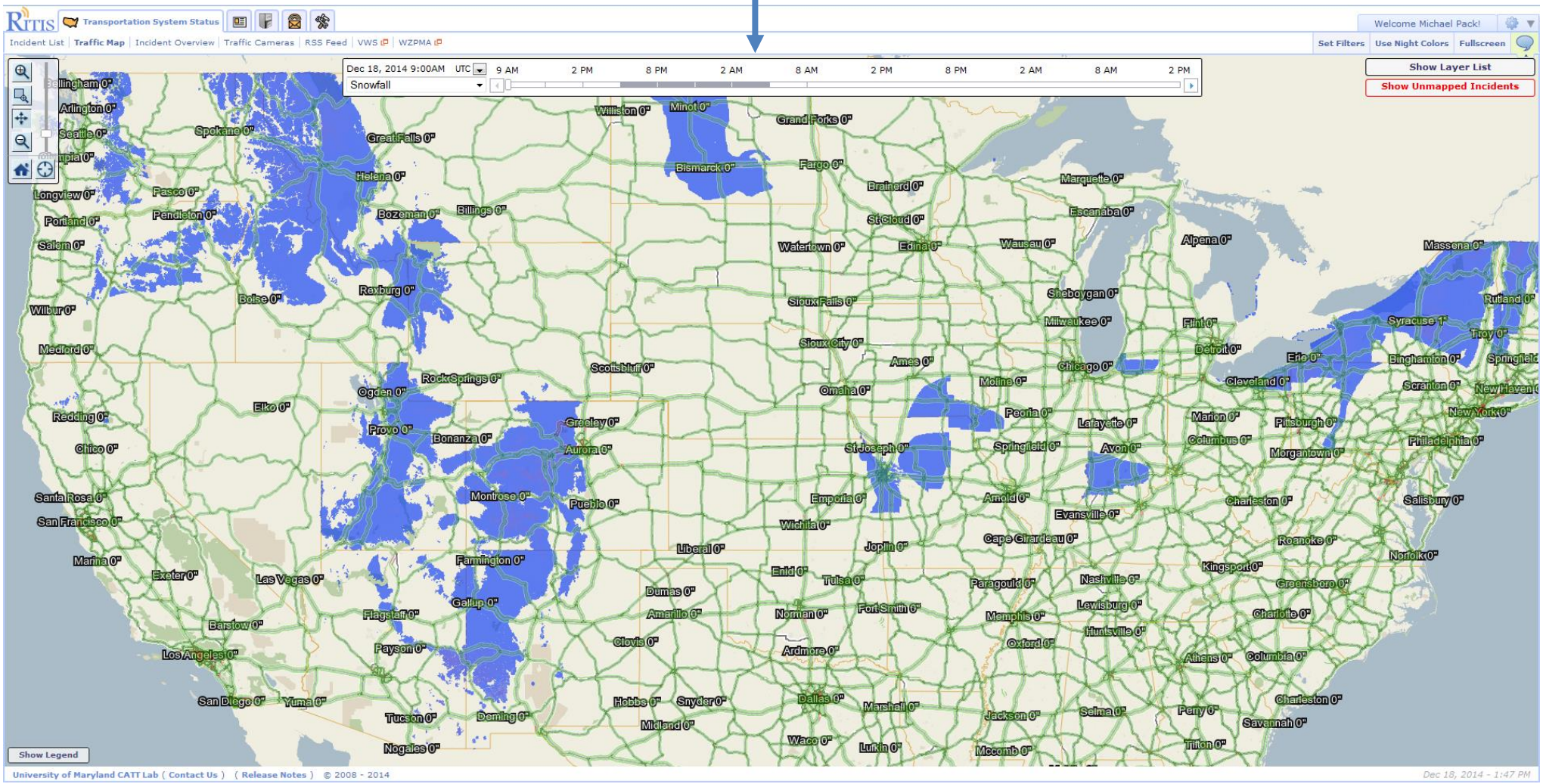
Precipitation Forecasts



Weather Forecasts

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

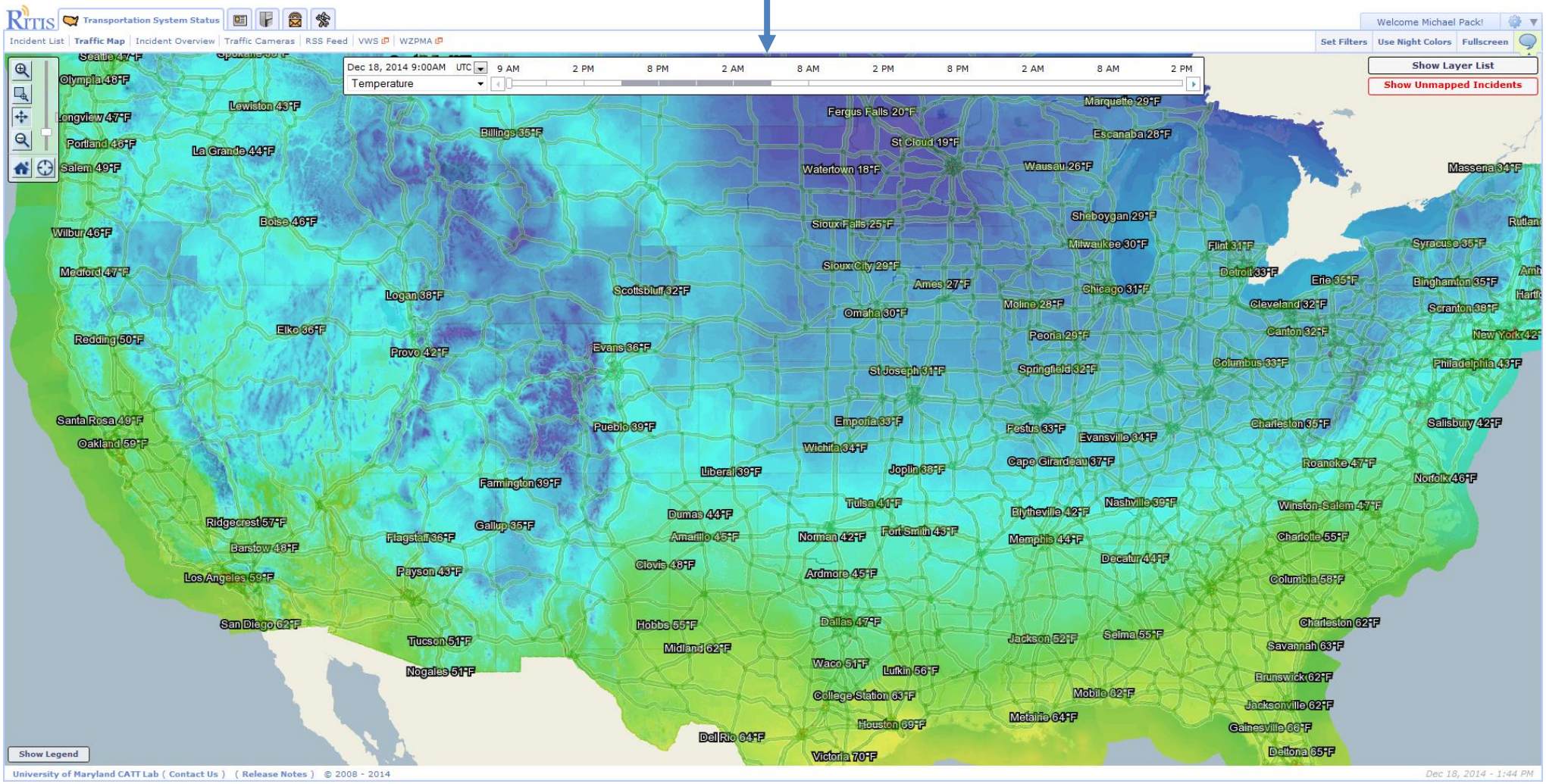
Snowfall/Accumulation Forecasts



Weather Forecasts

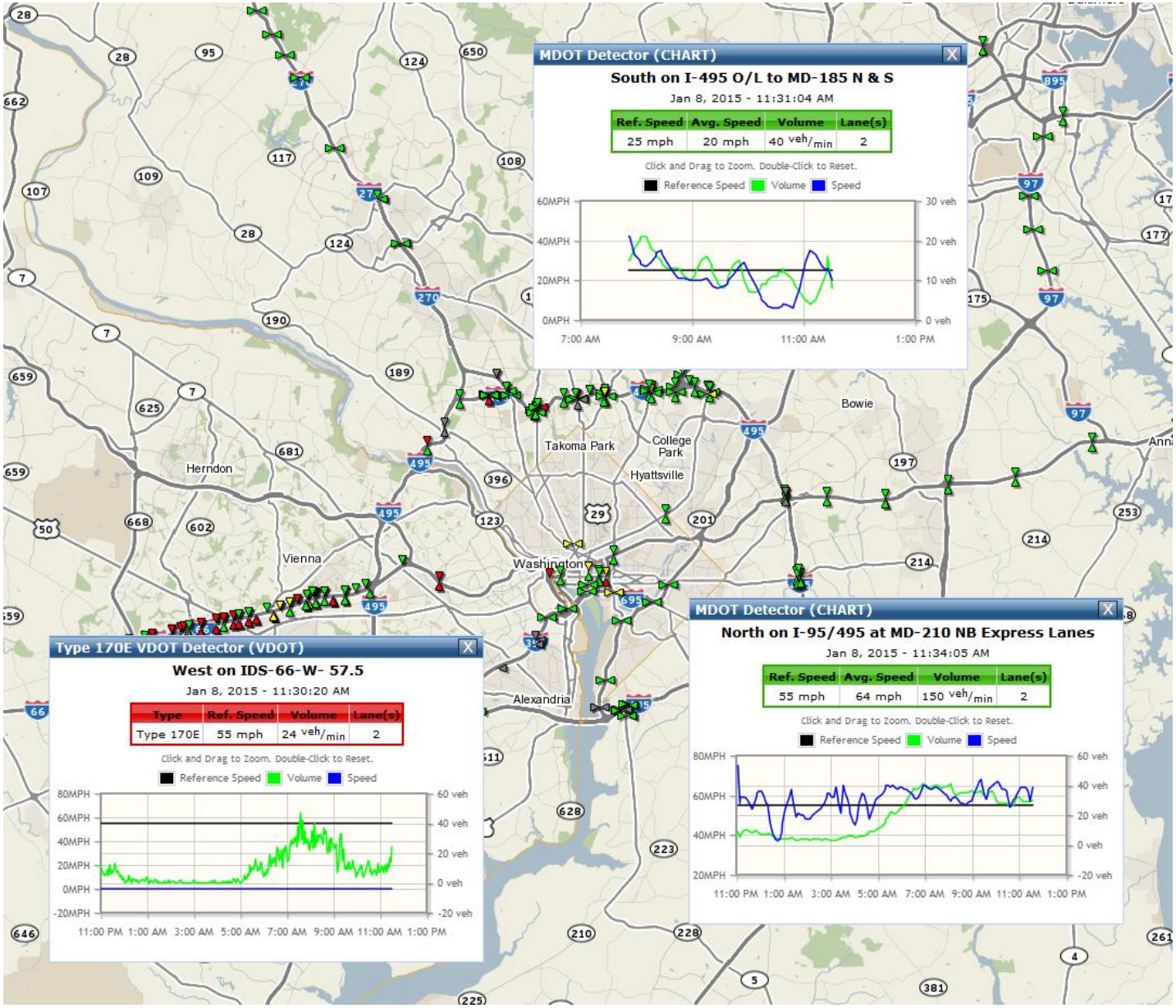
Using a time slider bar, users can move foreword and backwards in time to view predicted conditions anywhere in the country for various types of weather forecasts.

Temperature Forecasts



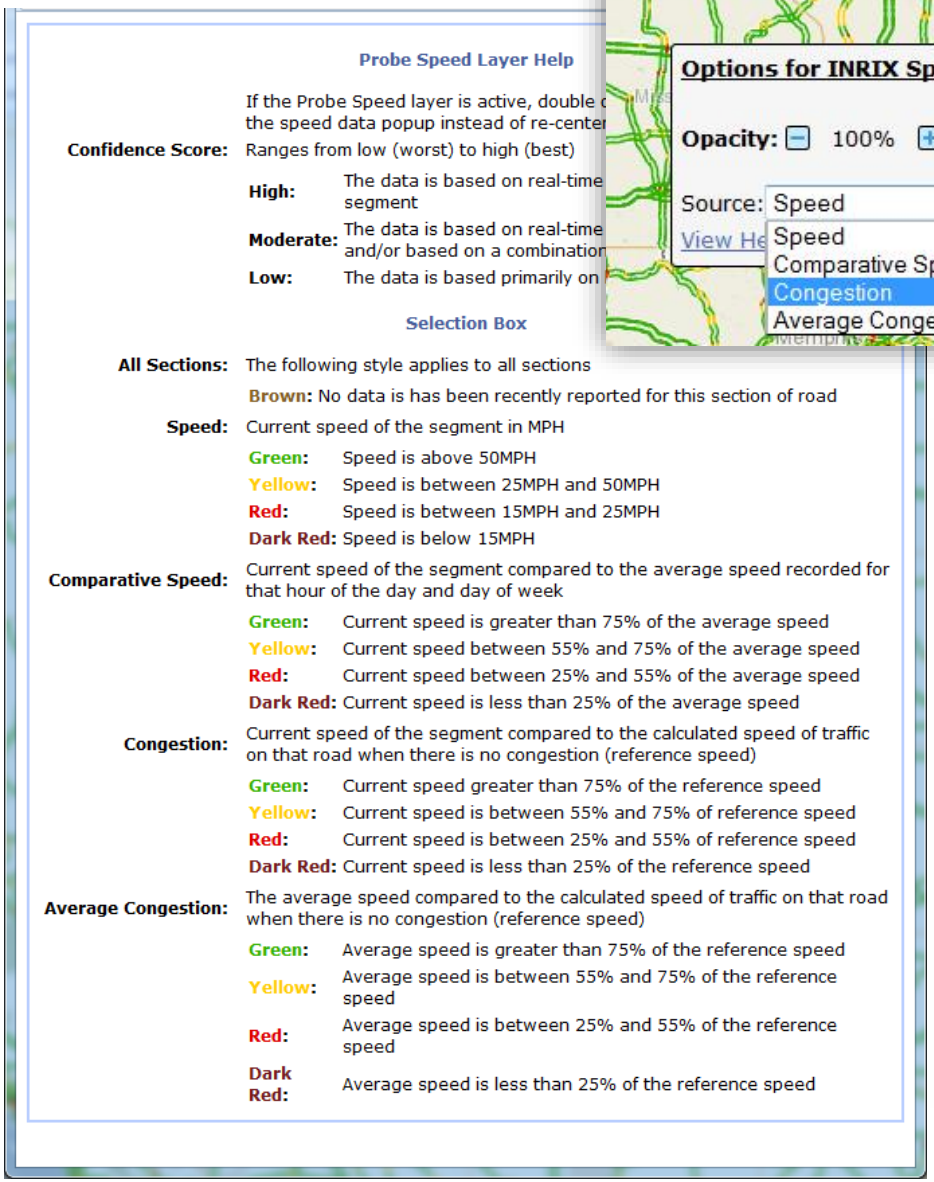
Speed and Volume Sensor Data

Interactive sensor station data from HERE, SpeedInfo, and sensor deployments from individual DOTs can be displayed. Details can be viewed in popup 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, & Avg. Congestion.



Probe Speed Layer Help

If the Probe Speed layer is active, double c
the speed data popup instead of re-center

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

- **High:** The data is based on real-time segment
- **Moderate:** The data is based on real-time and/or based on a combination
- **Low:** The data is based primarily on

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

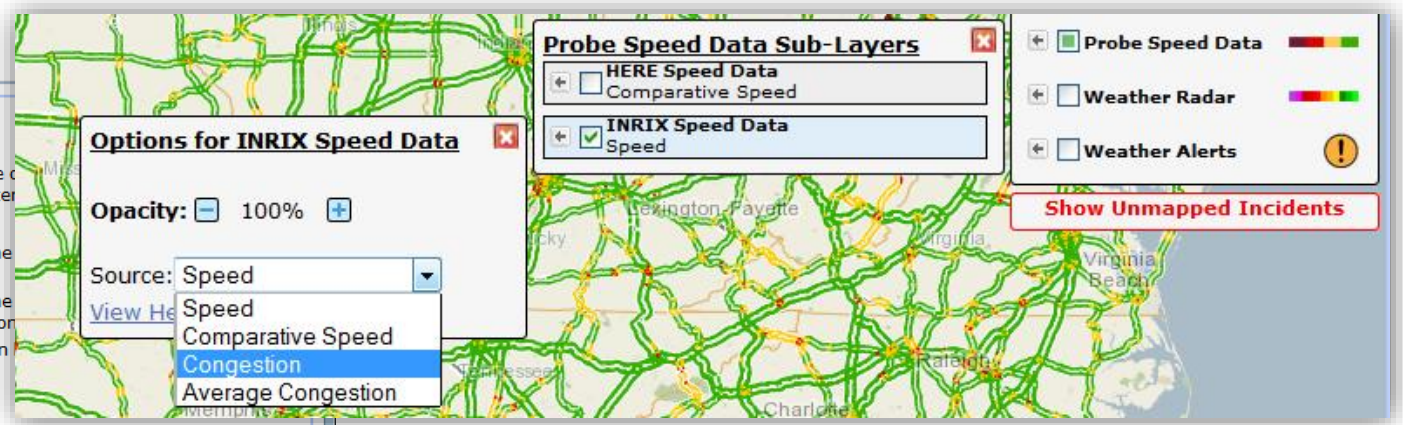
- **Green:** Current speed is greater than 75% of the average speed
- **Yellow:** Current speed between 55% and 75% of the average speed
- **Red:** Current speed between 25% and 55% of the average speed
- **Dark Red:** Current speed is less than 25% of the average speed

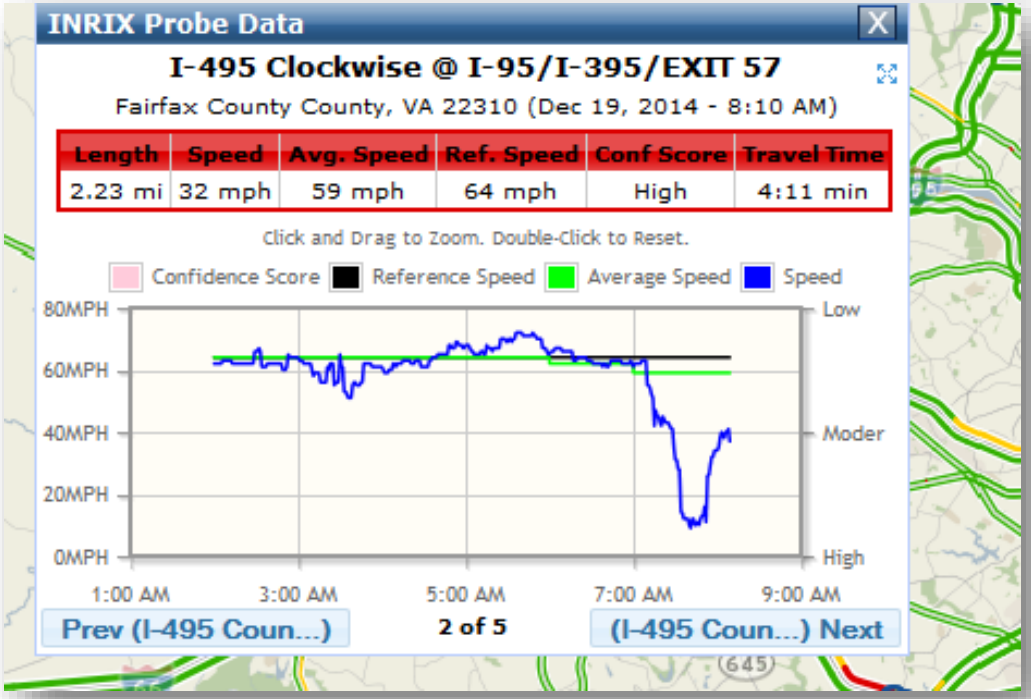
Congestion: Current speed of the segment compared to the calculated speed of traffic on that road when there is no congestion (reference speed)

- **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)

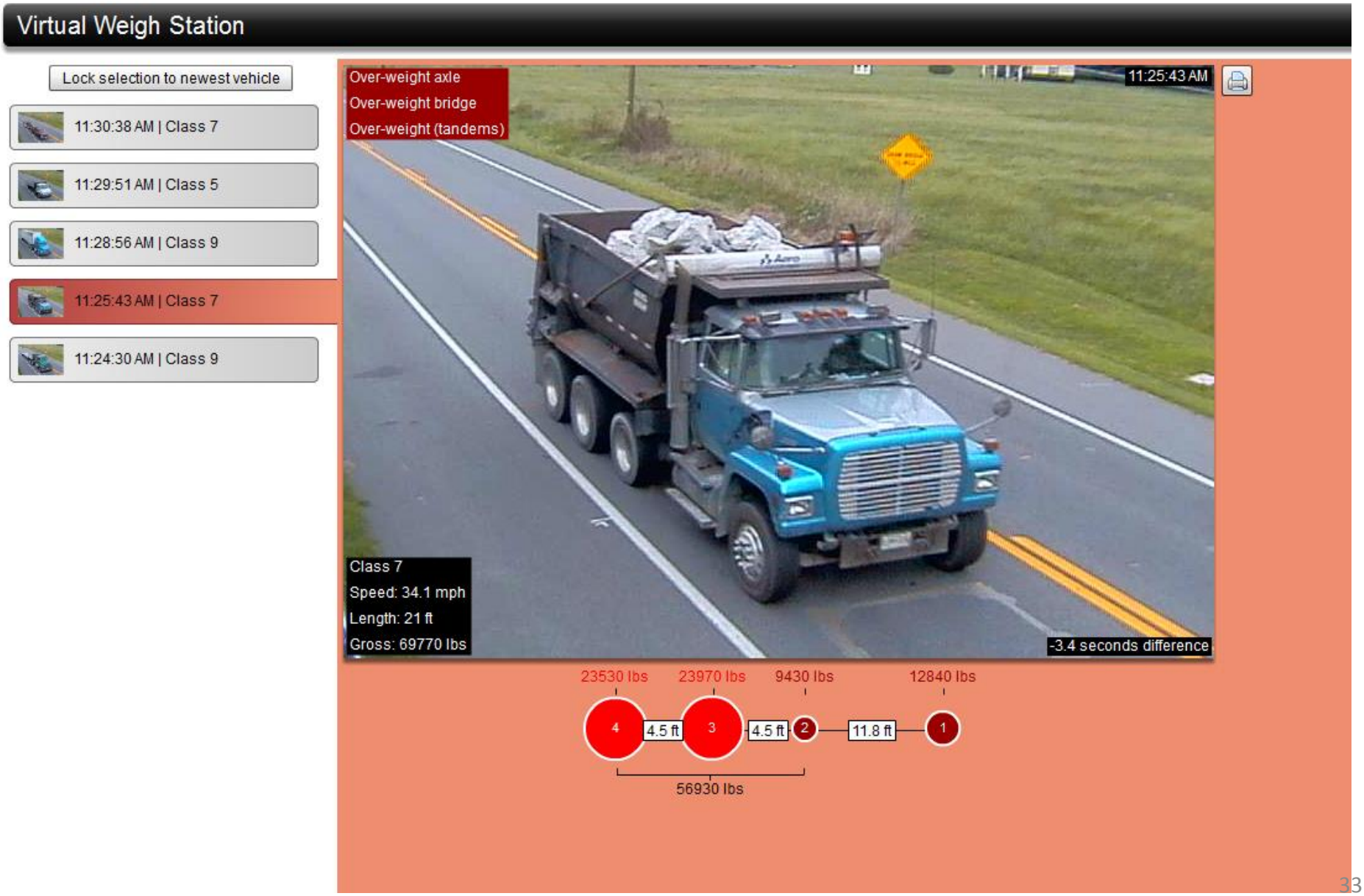
- **Green:** Average speed is greater than 75% of the reference speed
- **Yellow:** Average speed is between 55% and 75% of the reference speed
- **Red:** Average speed is between 25% and 55% of the reference speed
- **Dark Red:** Average speed is less than 25% of the reference speed





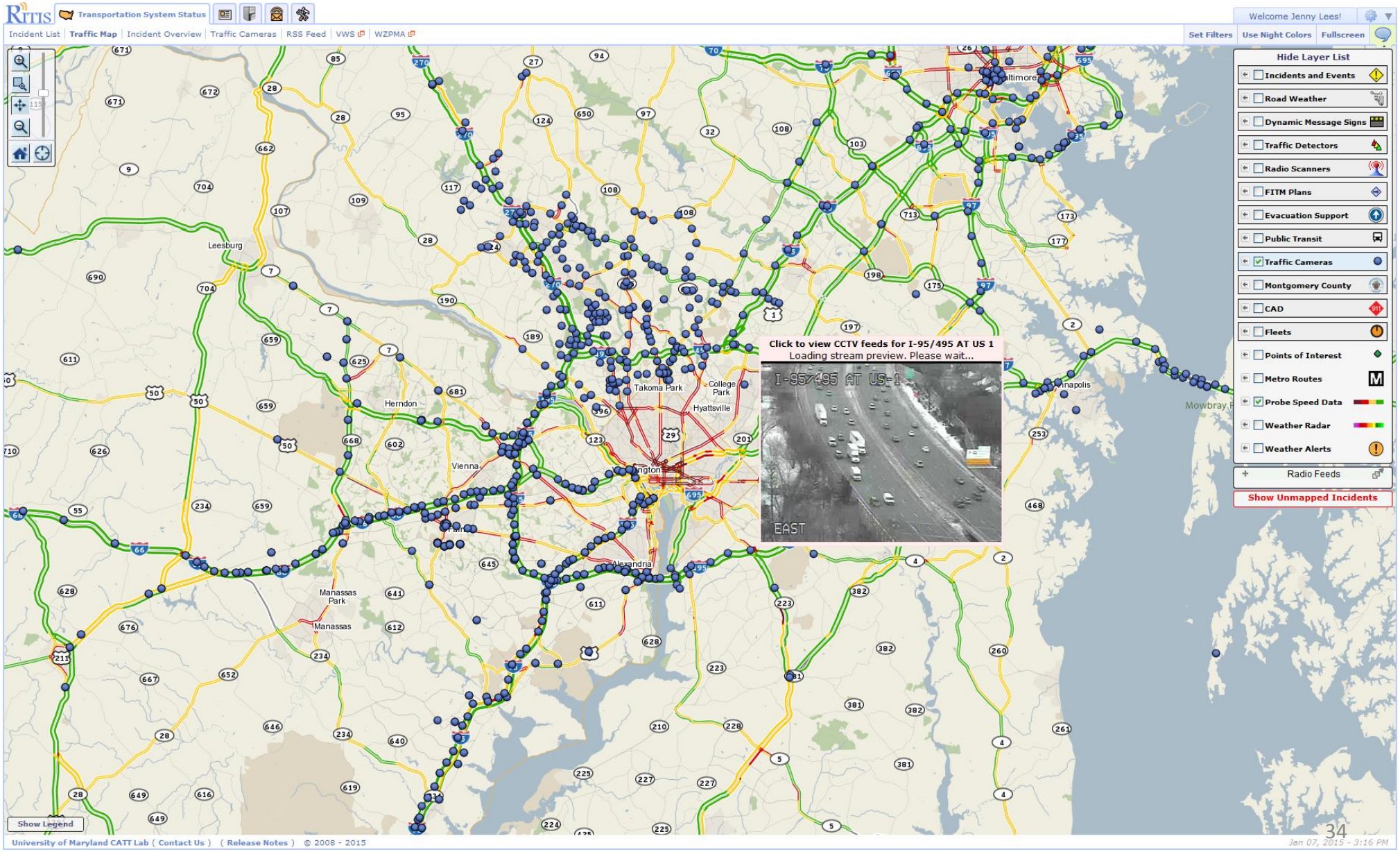
Virtual Weigh Stations

Virtual Weigh Station data is visible within RITIS. They are used primarily by law enforcement and are available on both the desktop and mobile version of RITIS. 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.



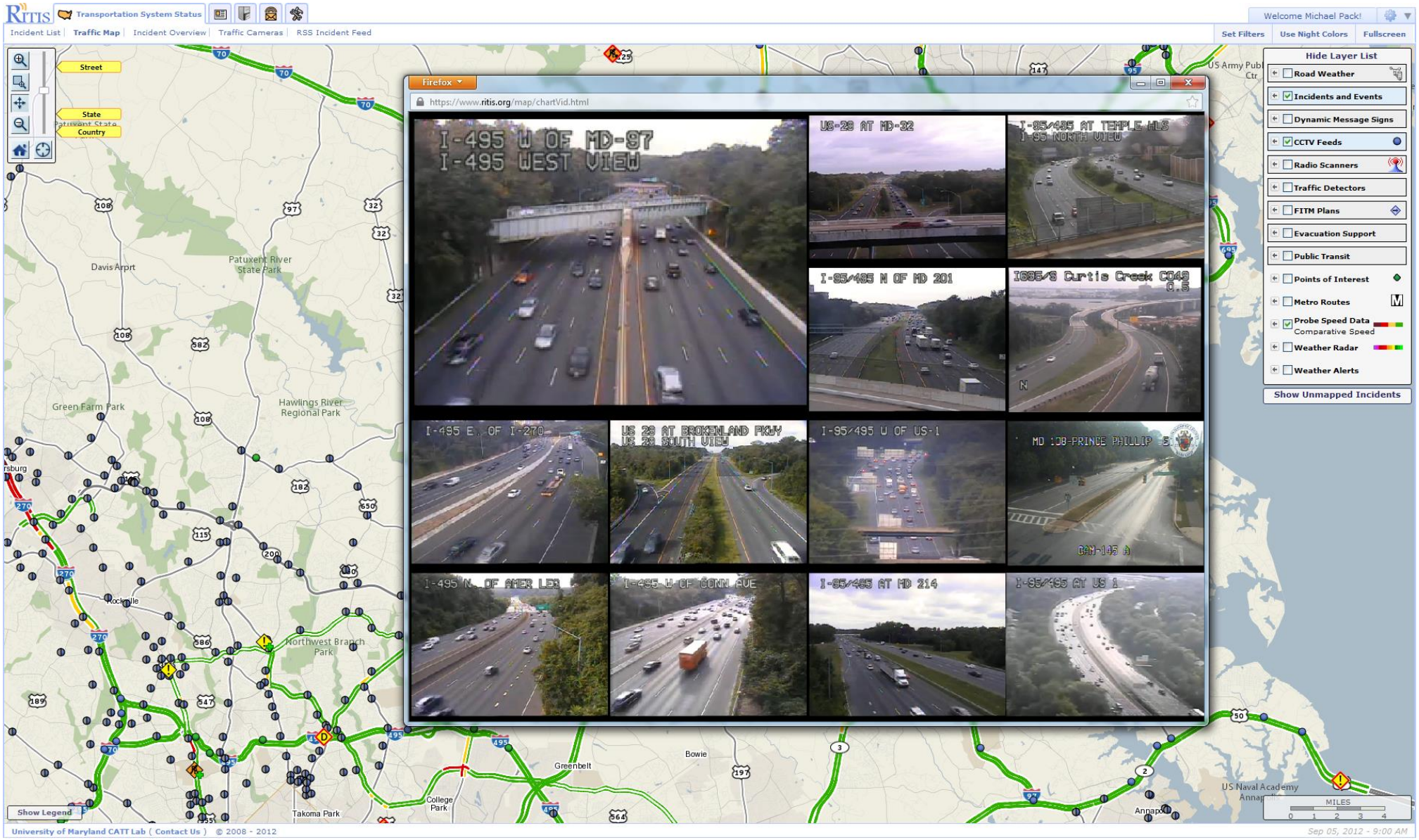
Live CCTV

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



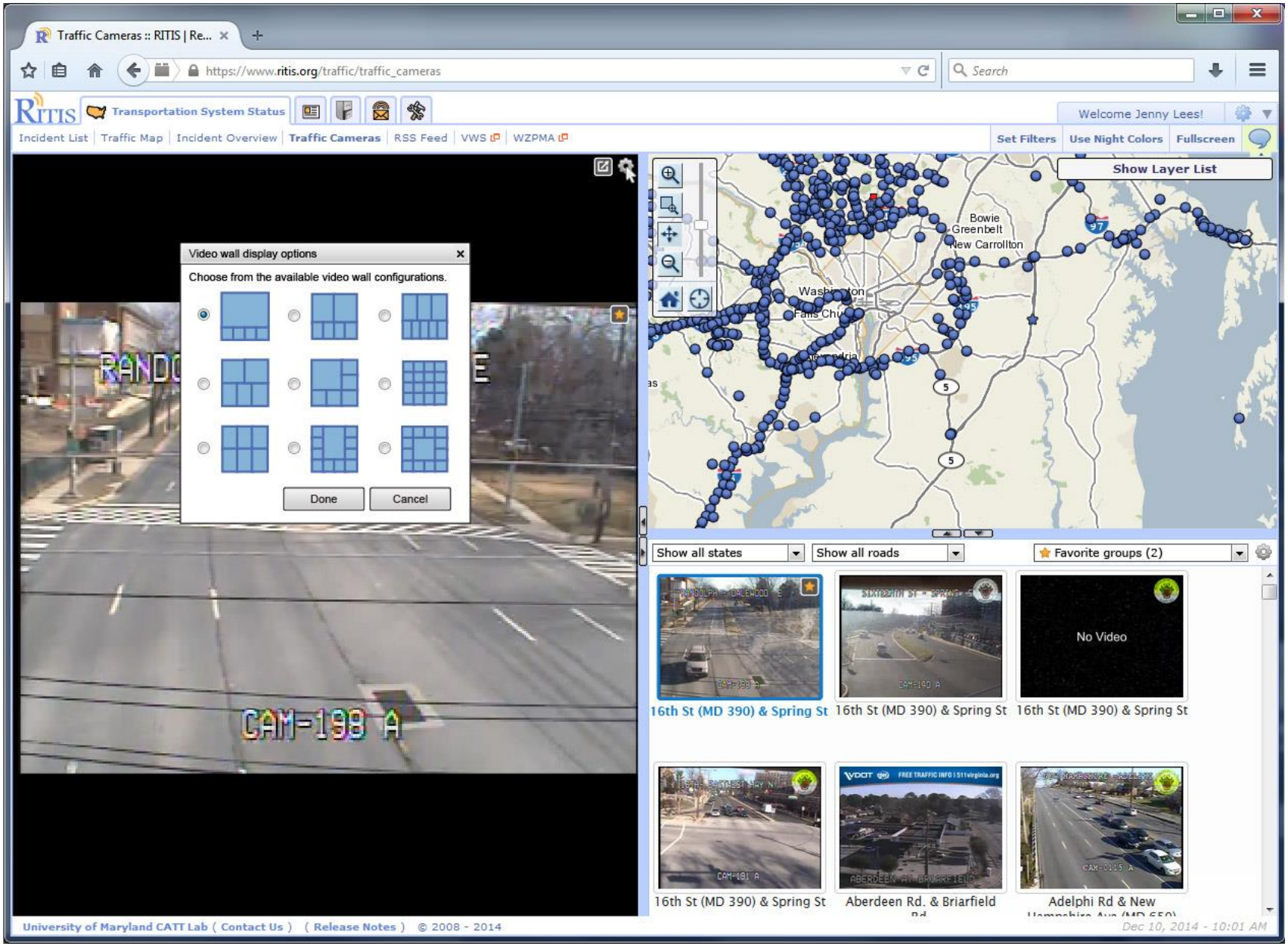
CCTV Media Wall

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



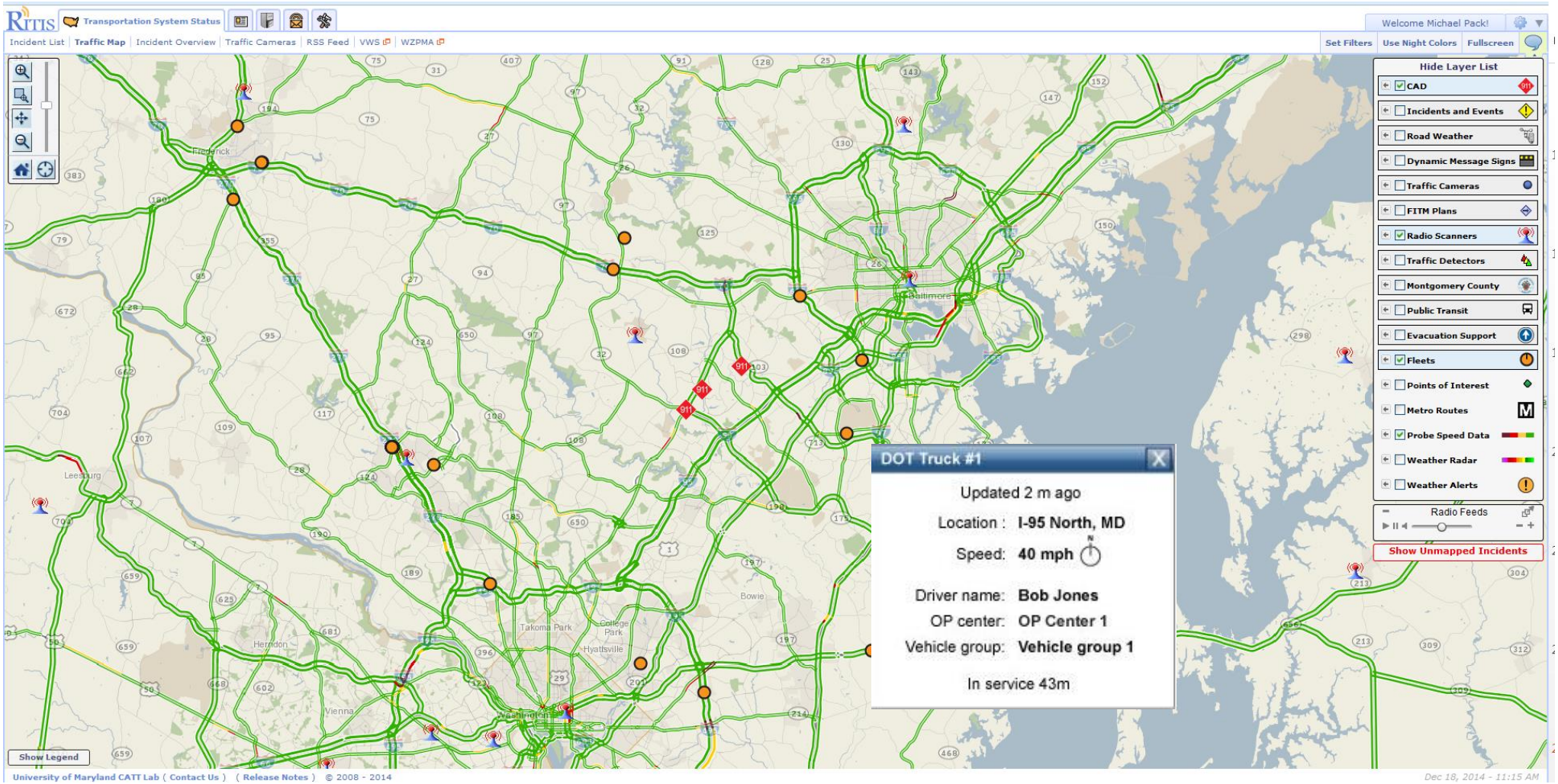
Customizing & Saving Media Walls

Through the Traffic camera page users can save favorite video streams & Media Wall Personalization.



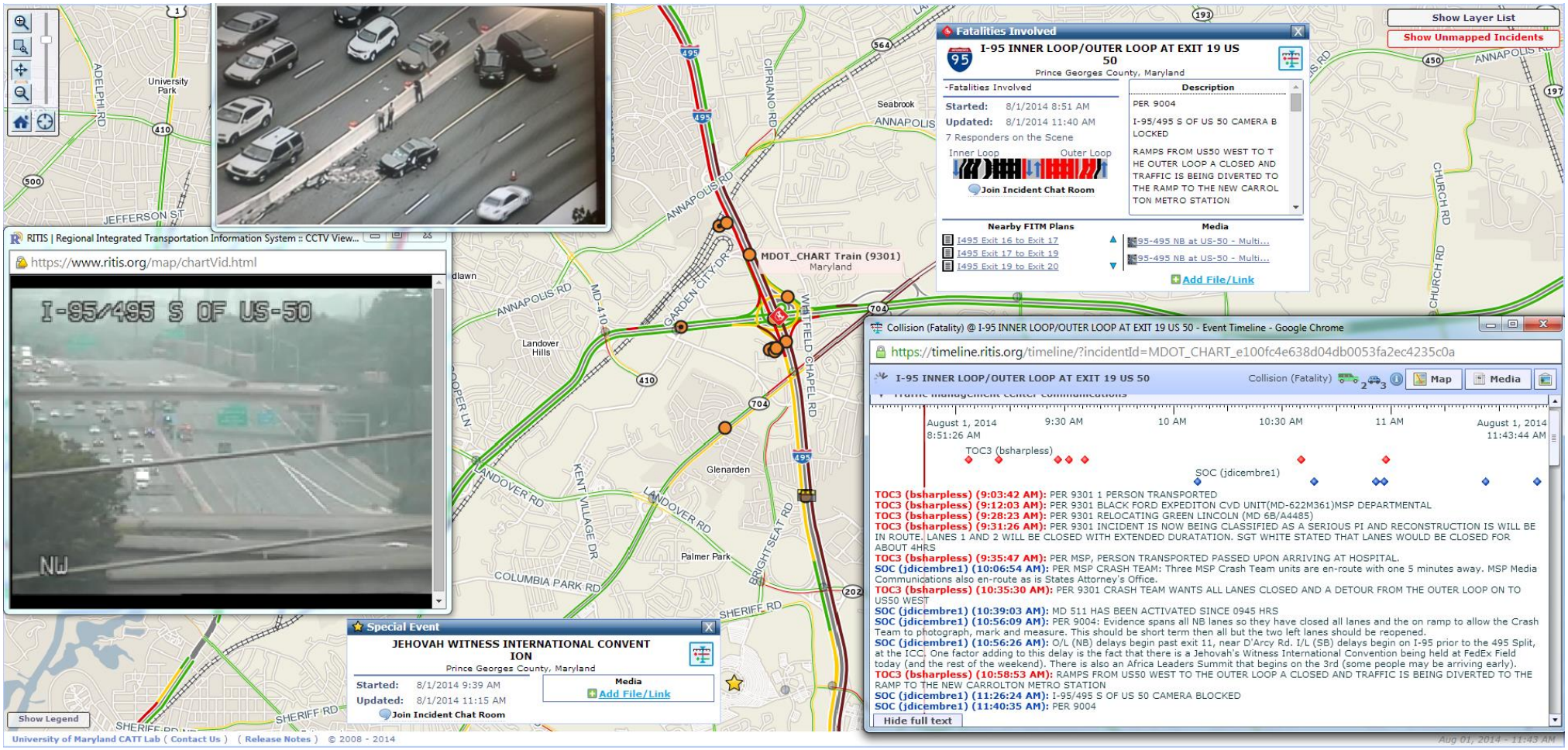
DOT and Public Safety Fleet Management

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.)



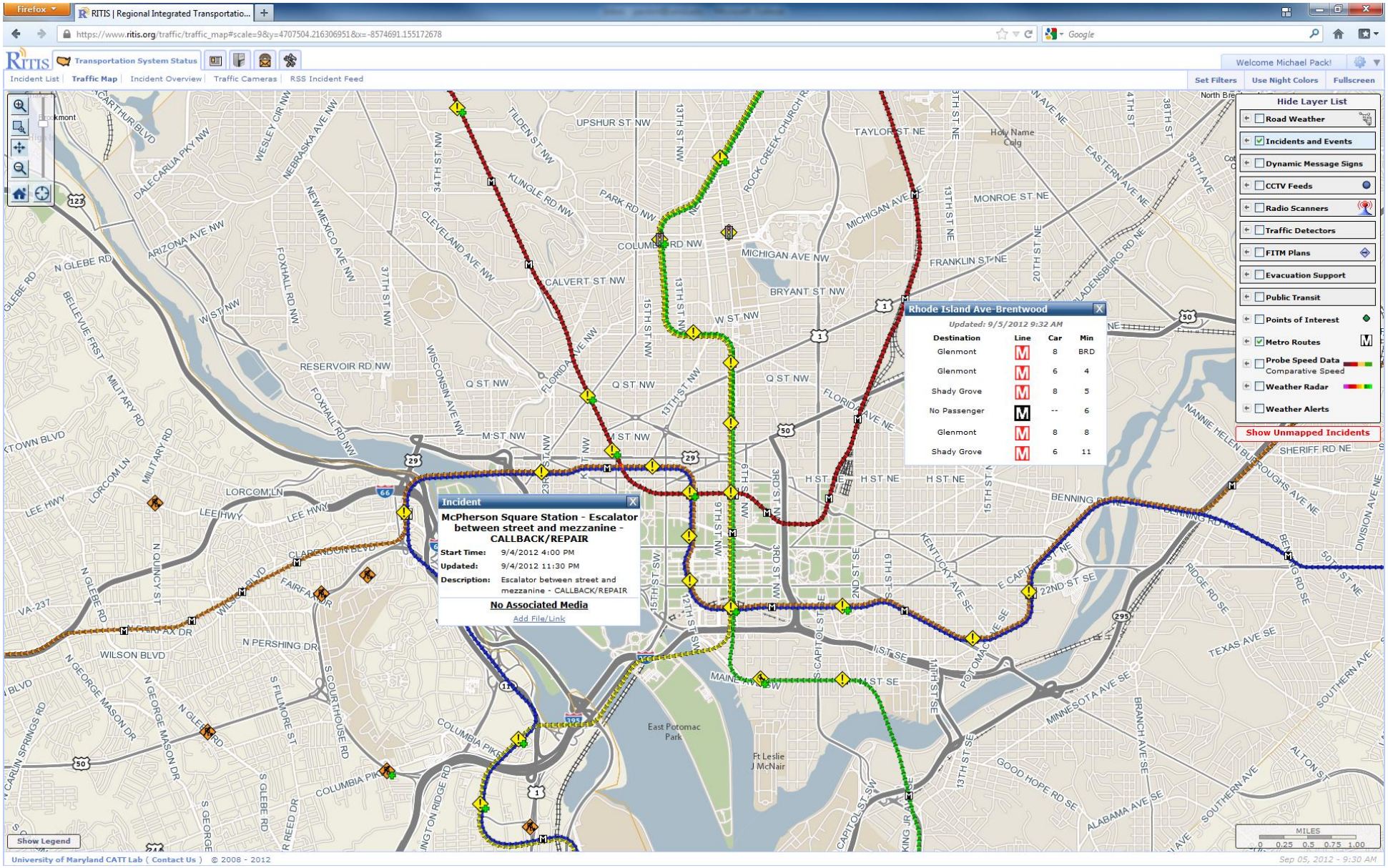
Real-time Fleet Data in Action

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.

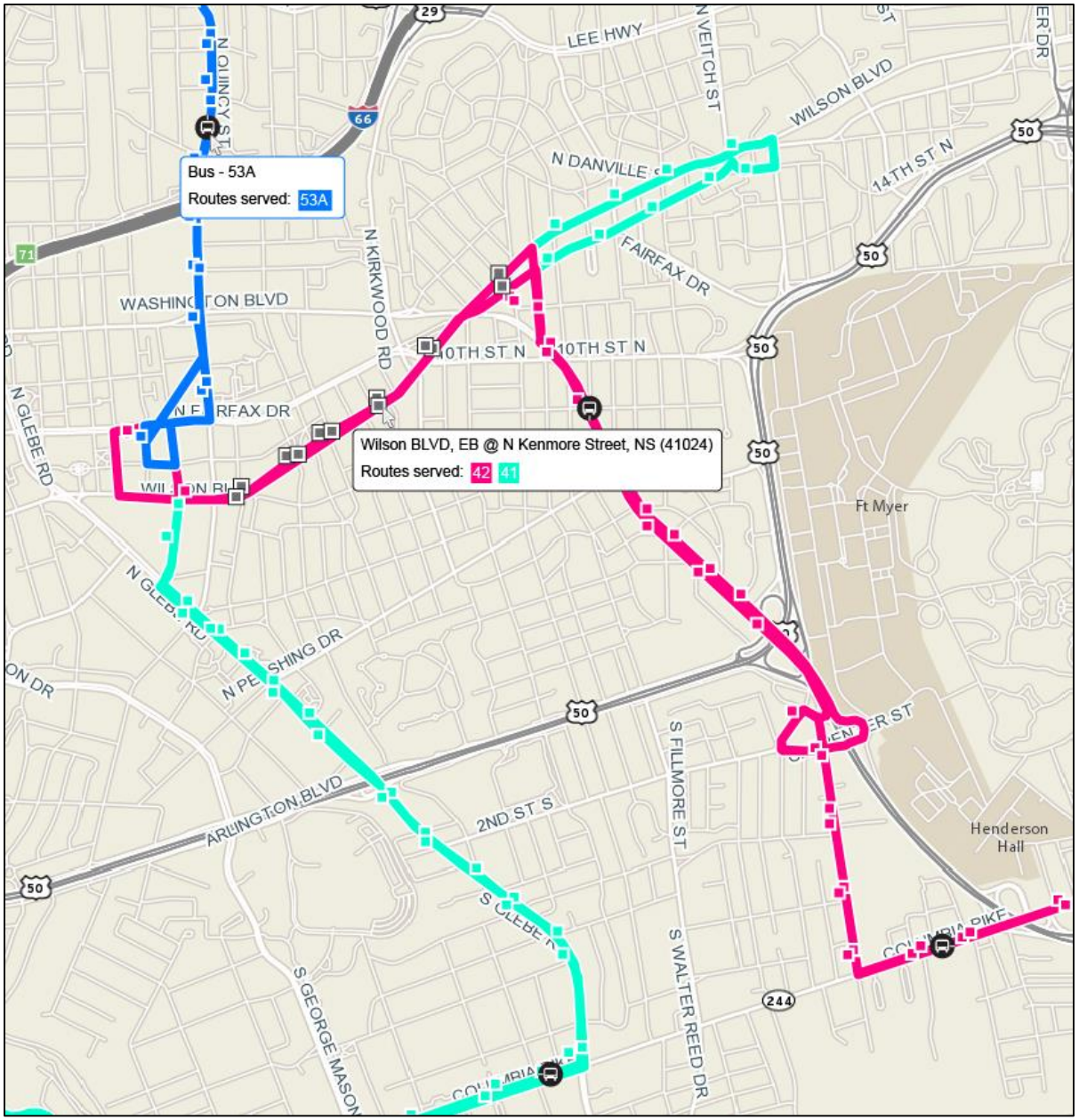


Rail Transit

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



Bus Stops and Bus AVL

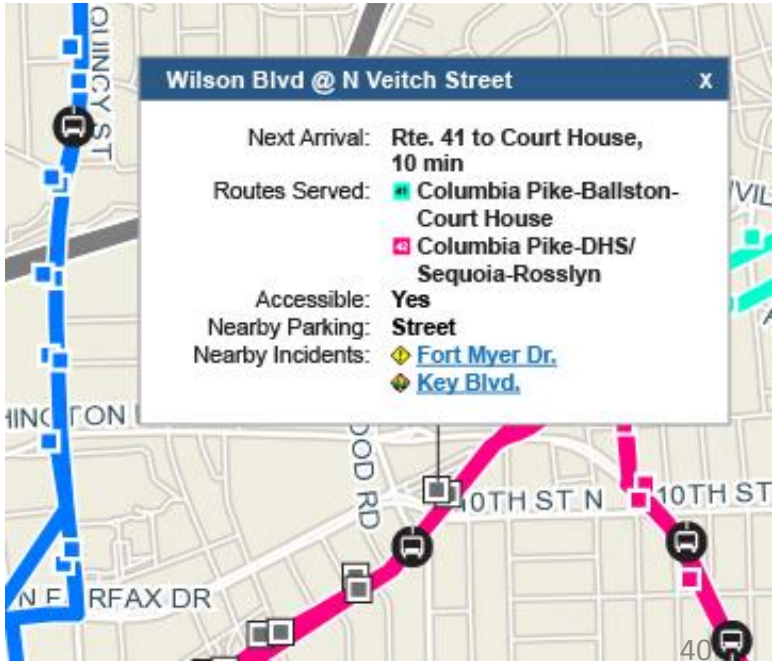


Bus #555 X

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



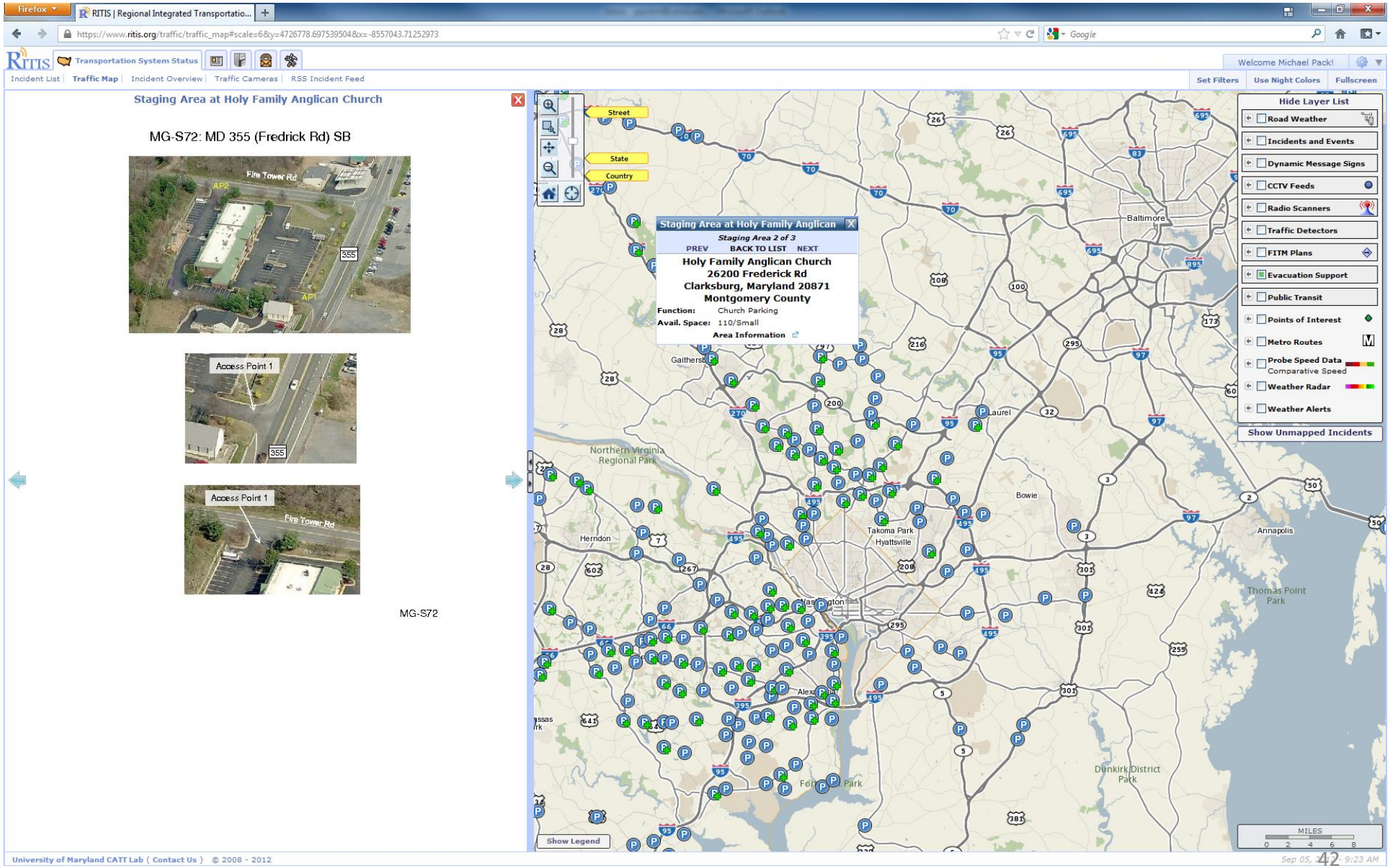
Evacuation Support Layers

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

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

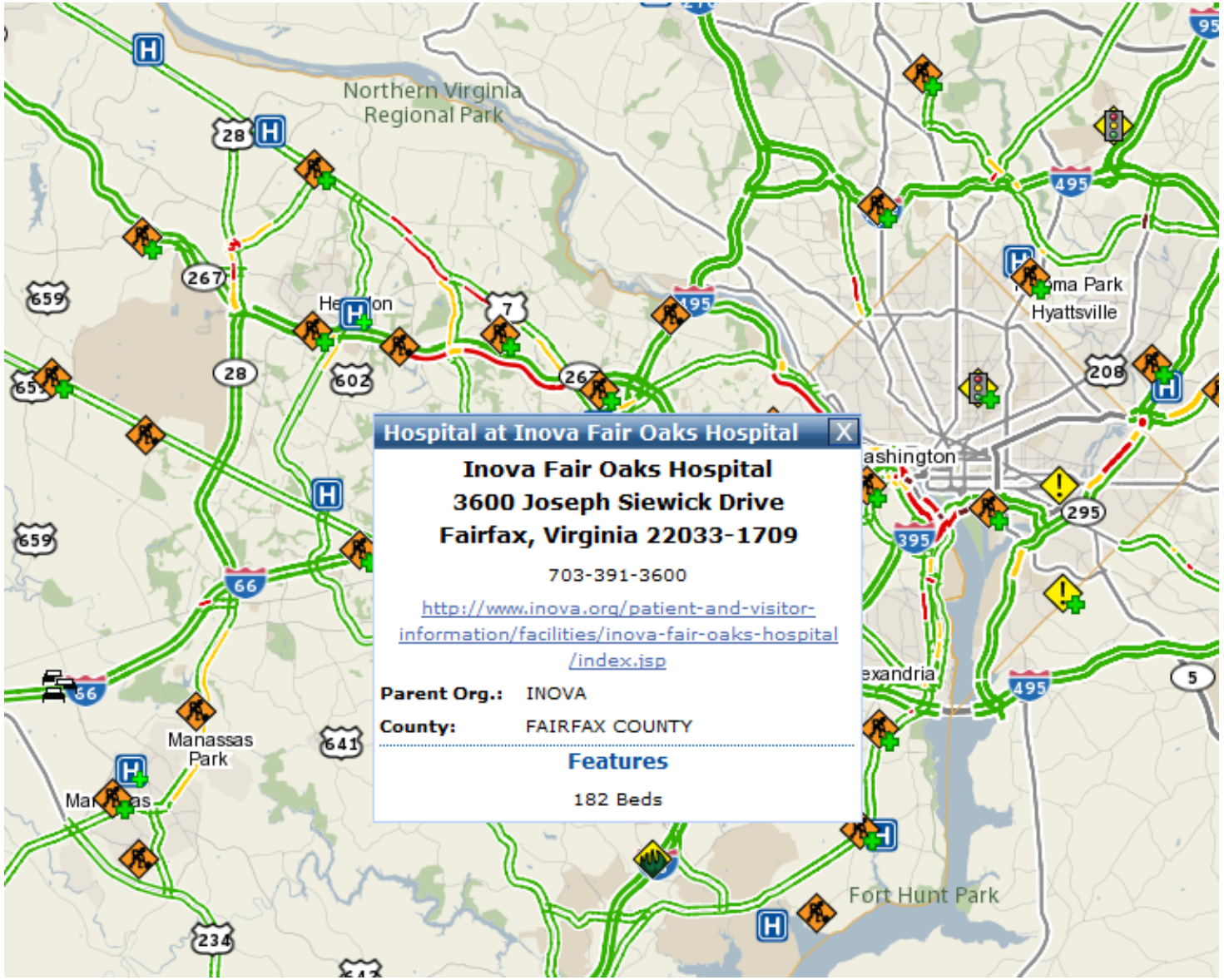
Staging Areas

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



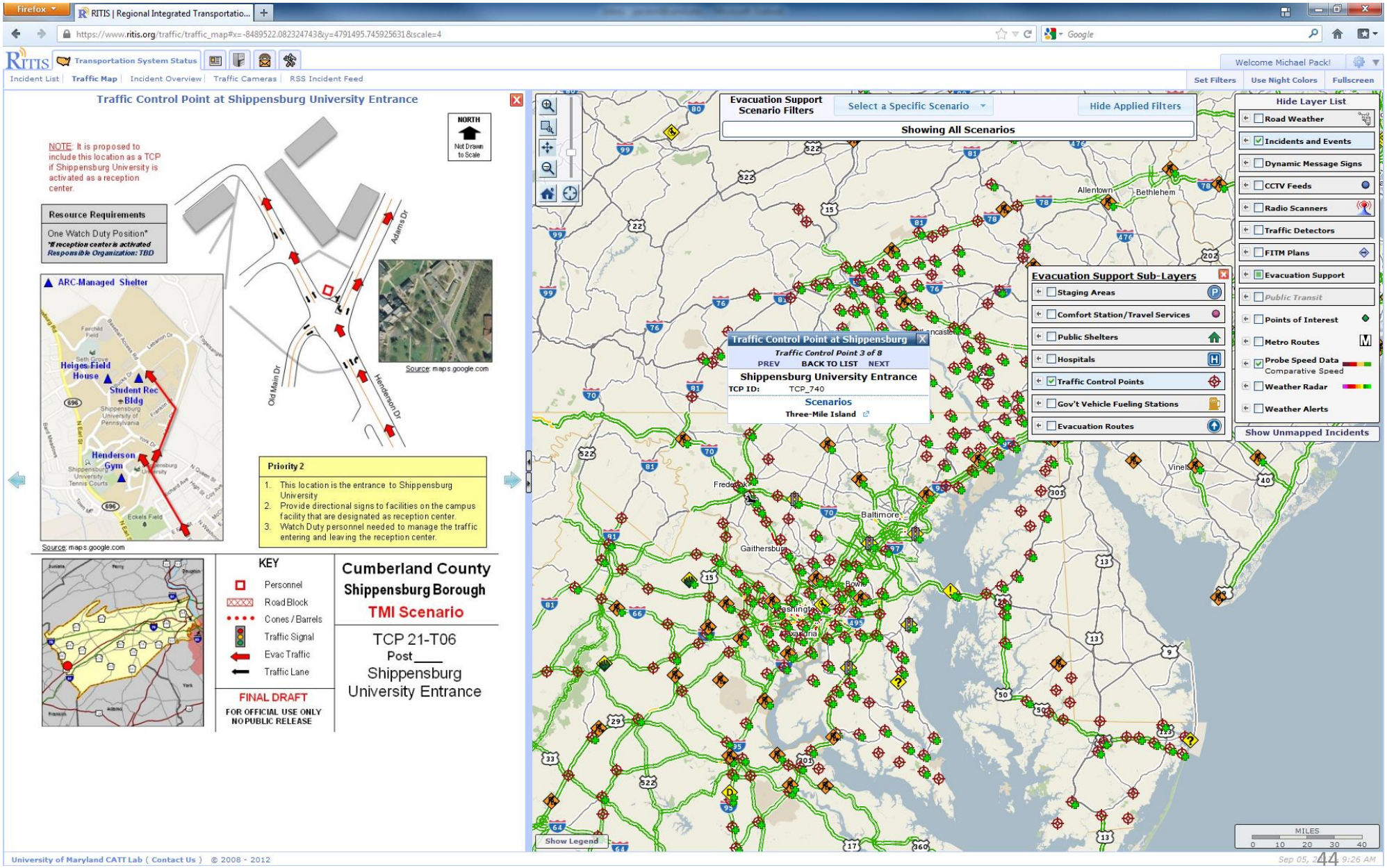
Hospitals and Beds

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



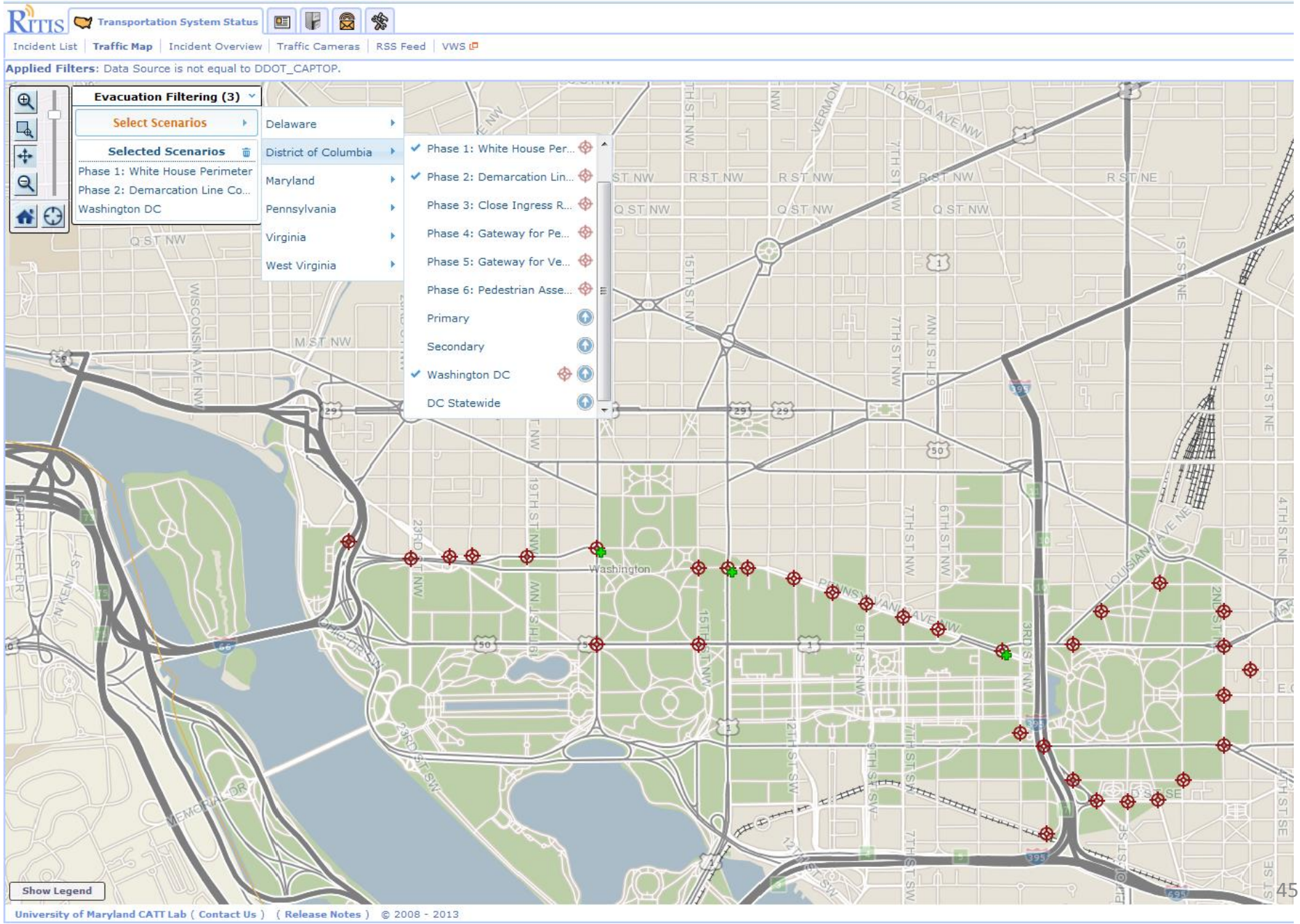
Traffic Control Points

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.



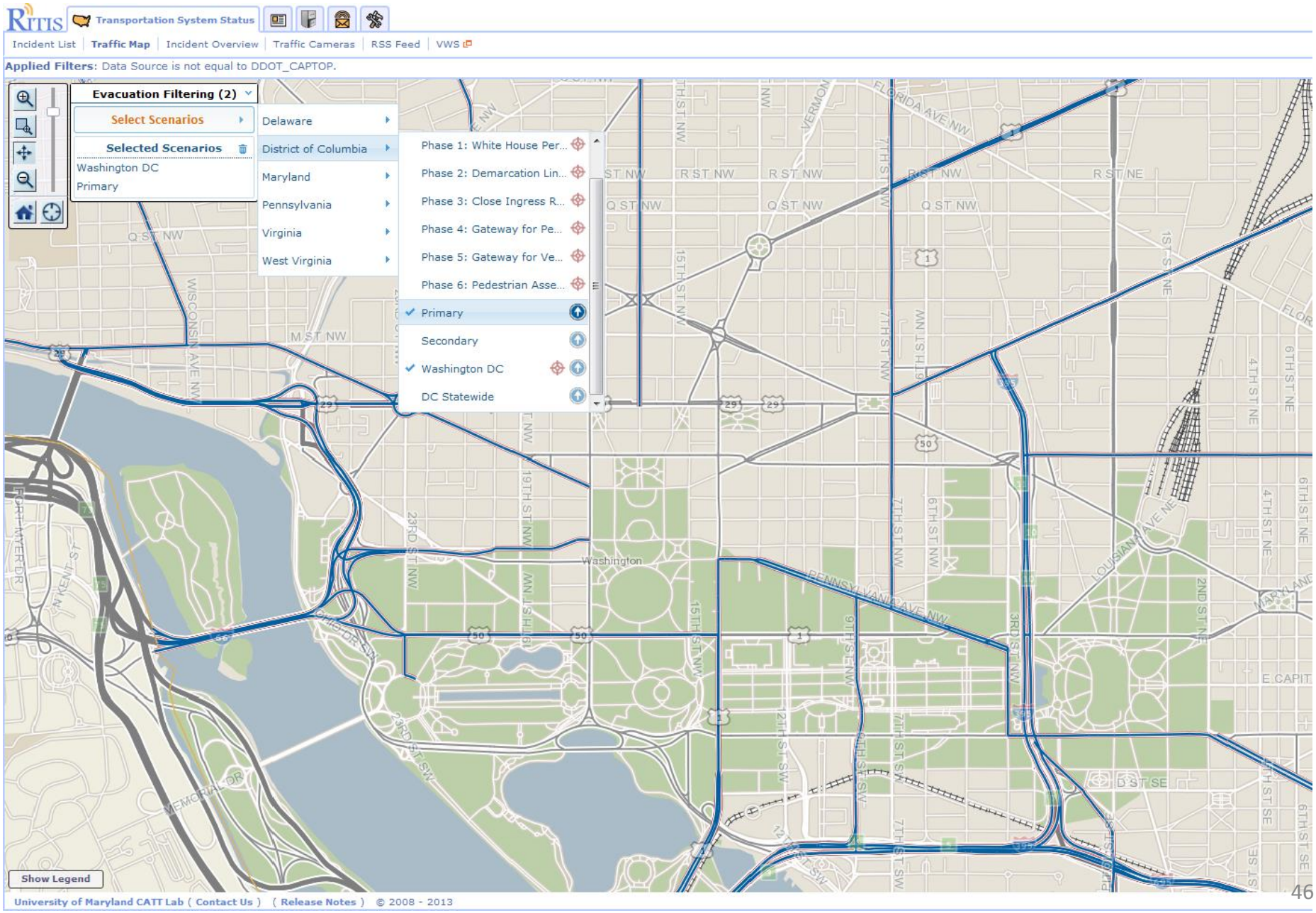
Evacuation Filtering

Evacuation layers can be filtered based on the event type, scenario, and location.



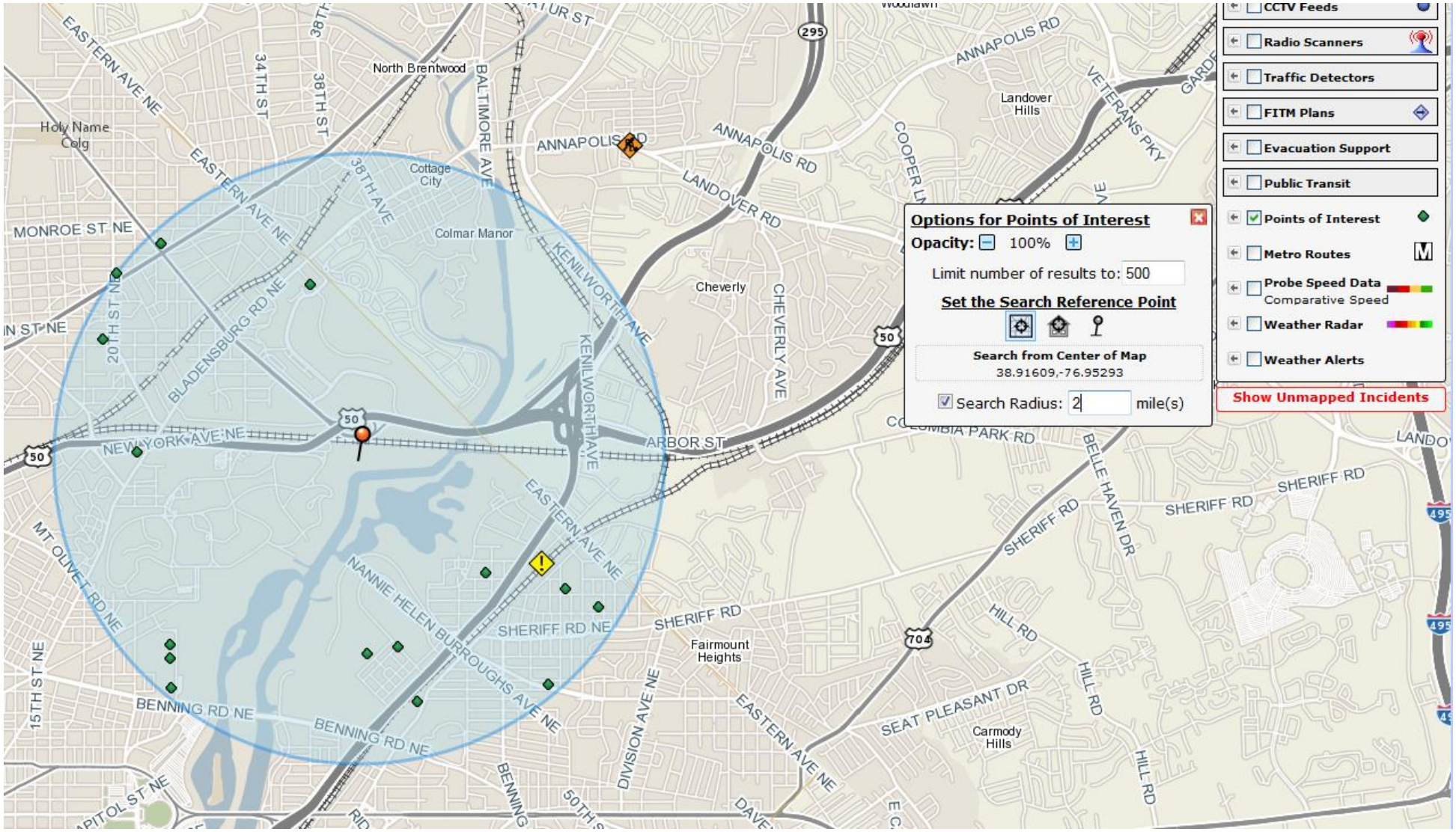
Evacuation Routes

Blue lines with slight red outlines represent scenario specific evacuation routes.



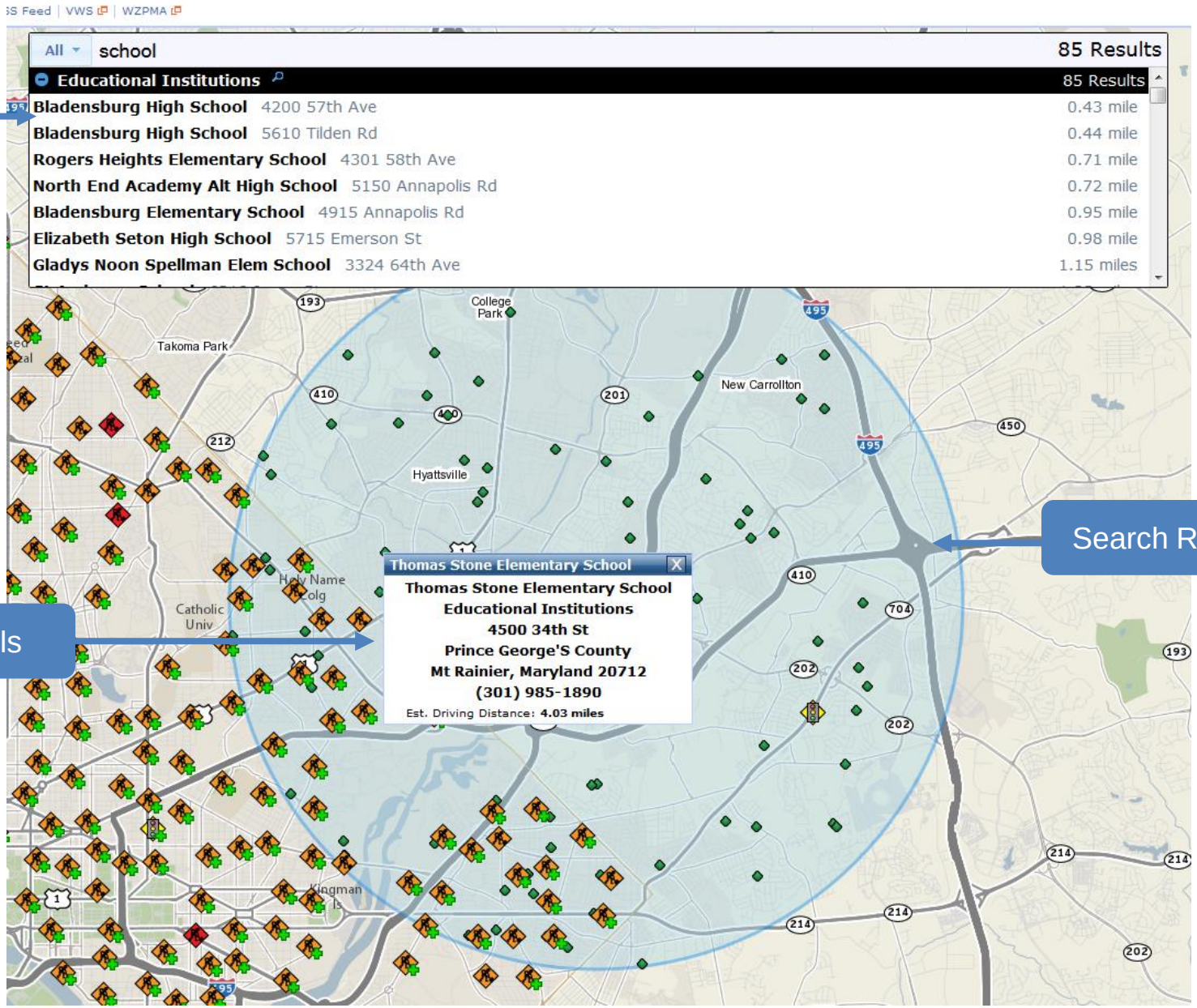
Points of Interest

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



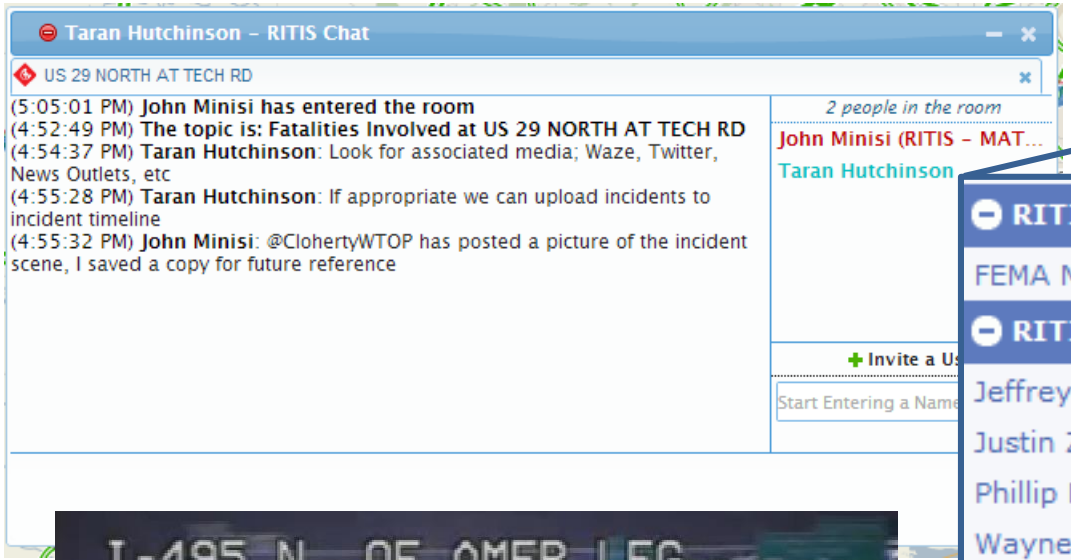
Points of Interest

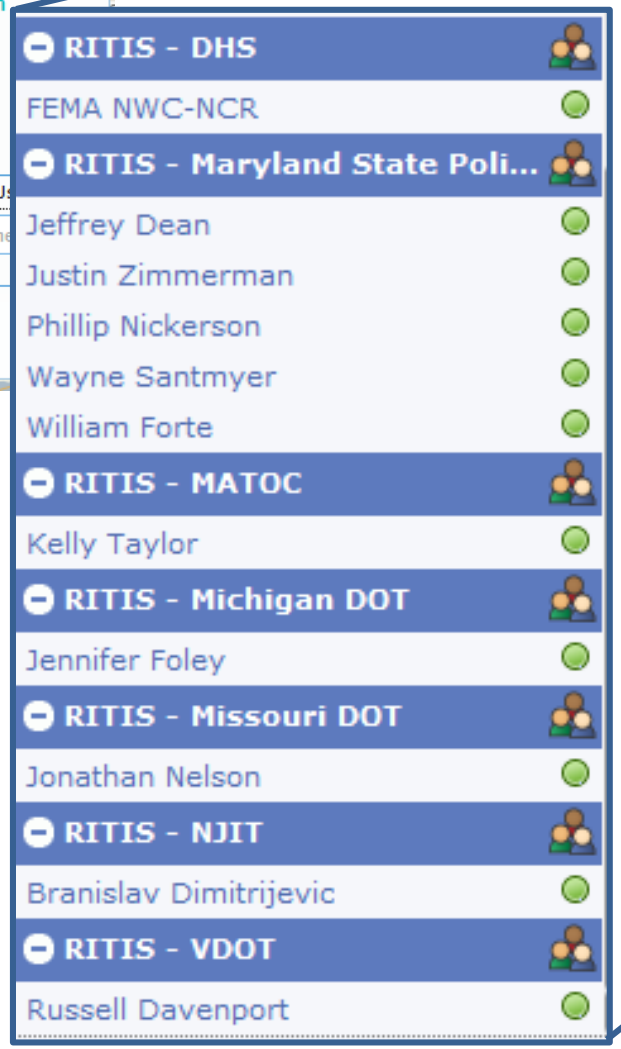
Search results are displayed directly on the map and in a list. Details can include names, addresses, and phone numbers.

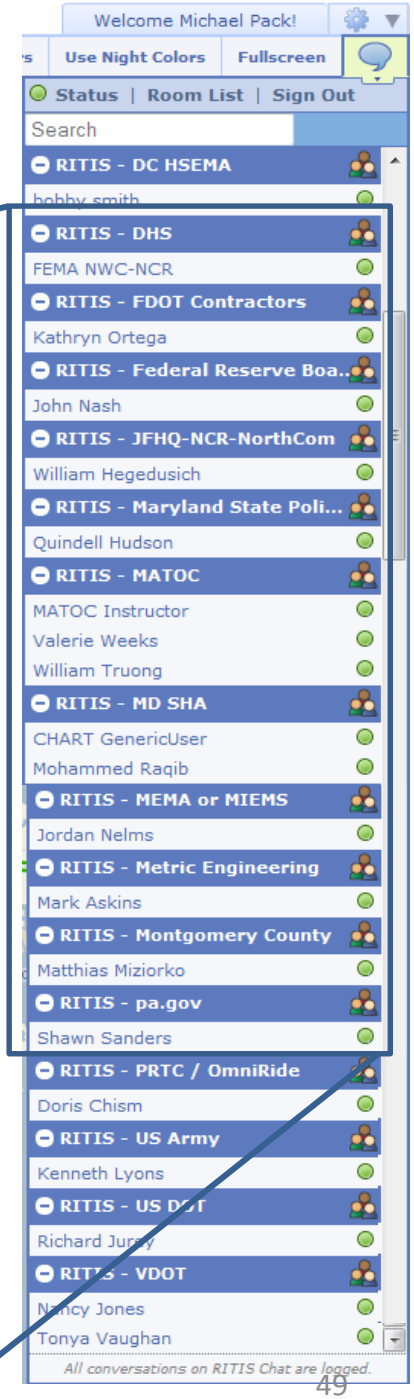


Chatroom & File Sharing

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.







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 contact.

RITIS | Address Book | Welcome Michael Pack!

Contact List | Use Night Colors

Sort By: Location | Category | Search: Begin typing to search the address book | 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
  - No Sub-Category
    - Amtrak
    - AMTRAK
    - CSX Transportation
    - Maryland Midland
    - Norfolk Southern Rail

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	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM
CLOSE	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM

Address

Primary

Street:

City:

State: Maryland

County:

Zip:

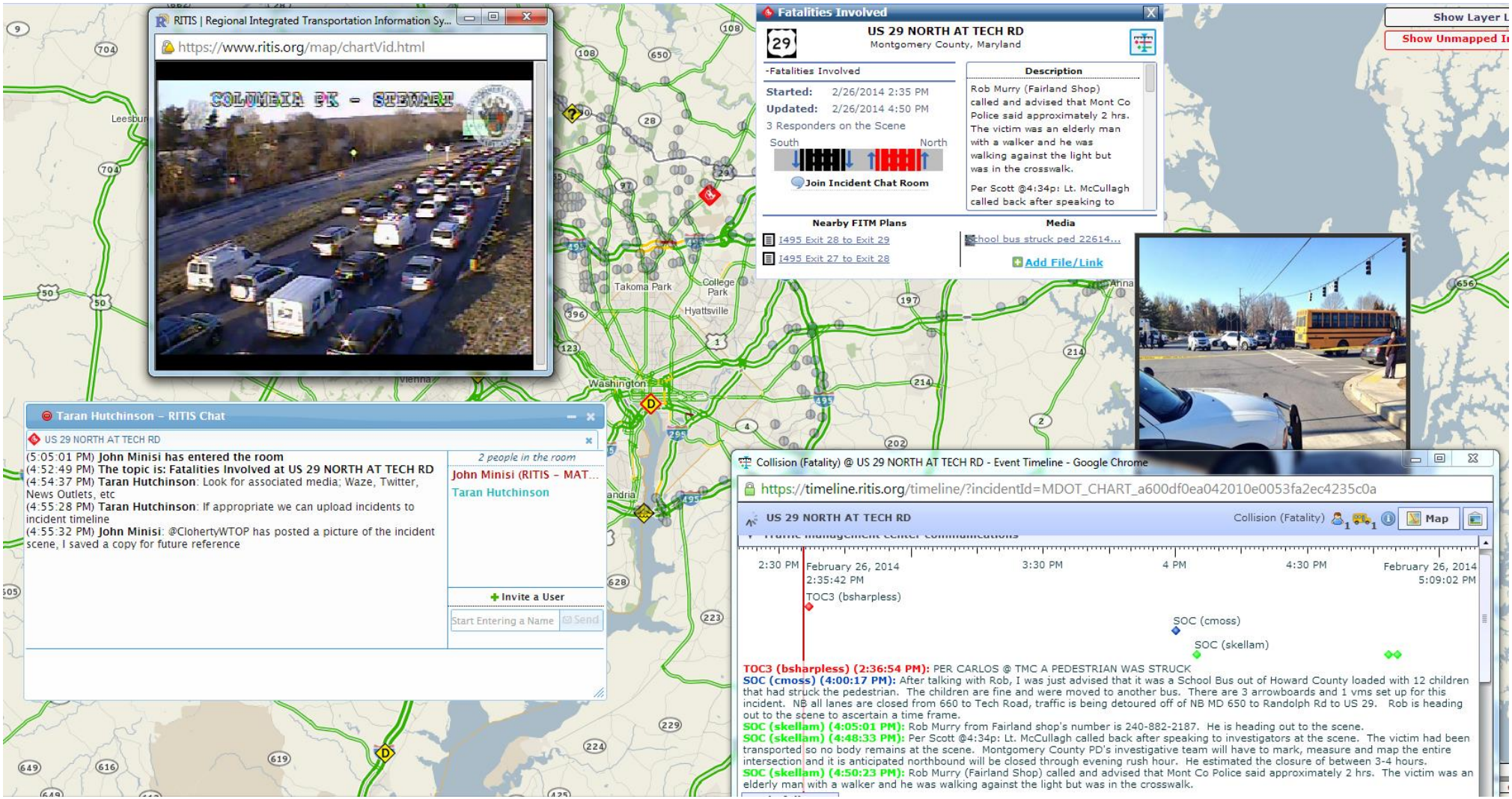
Contact Information

Primary Phone: 410-706-7814

University of Maryland CATT Lab (Contact Us) (Release Notes) © 2008 - 2014 Dec 19, 2014 - 9:42 AM

Real-time Visualizations for Operations

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.



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.

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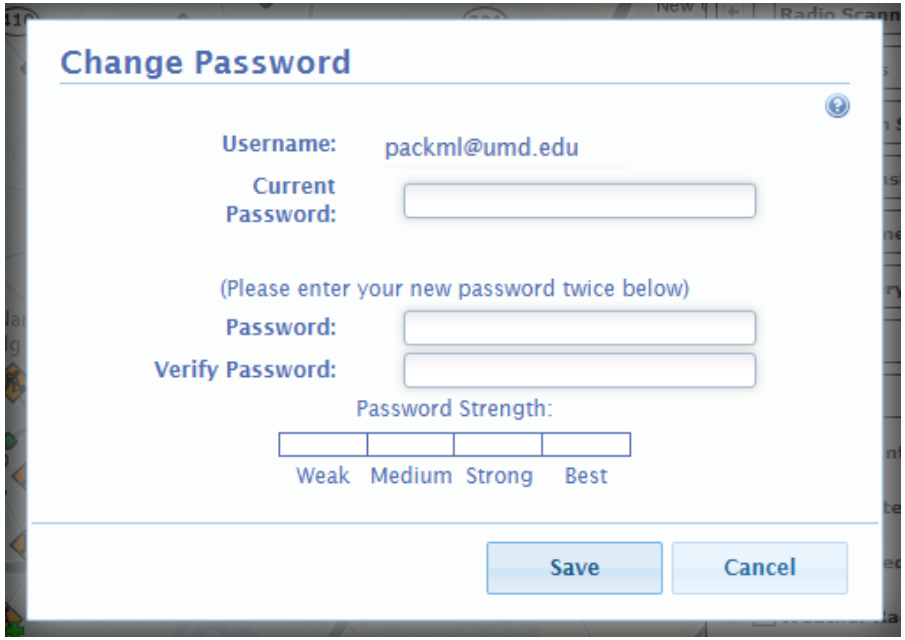
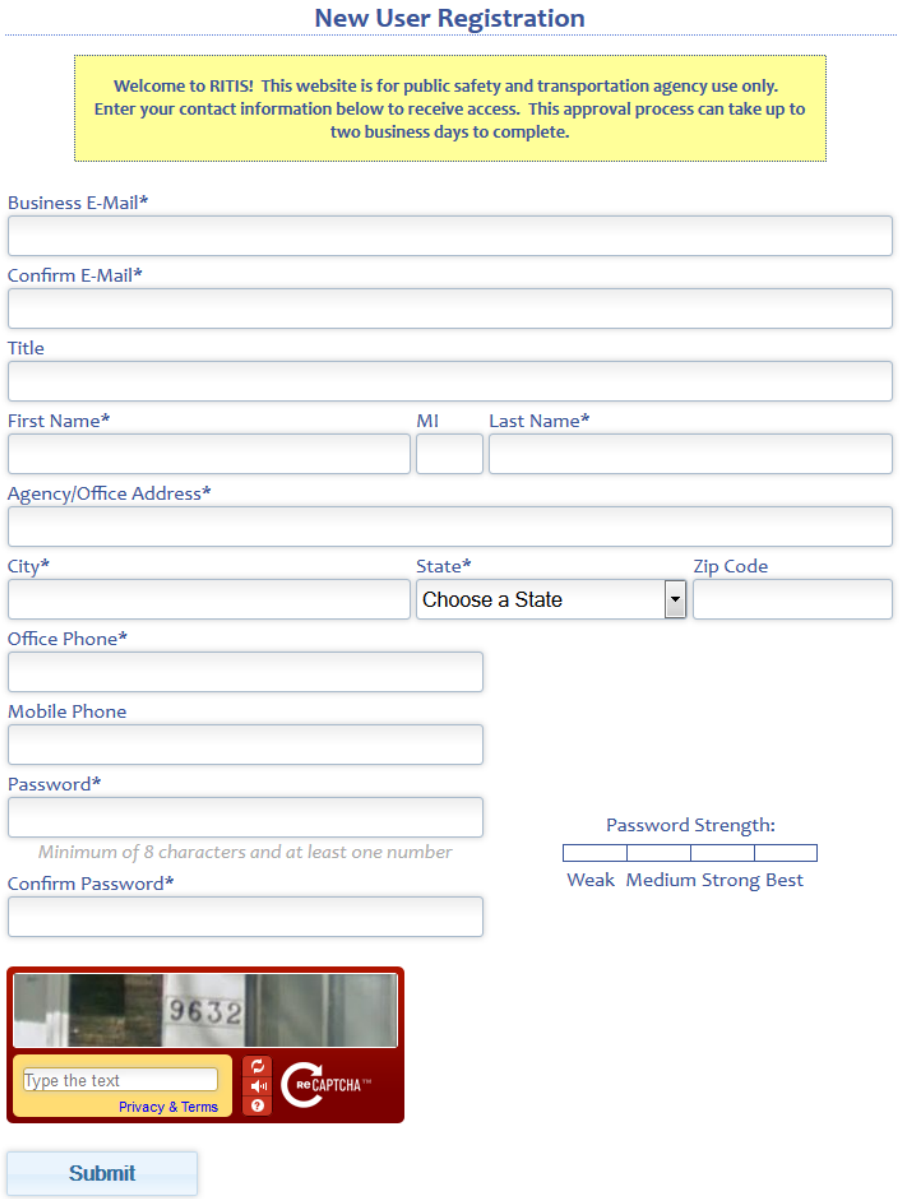
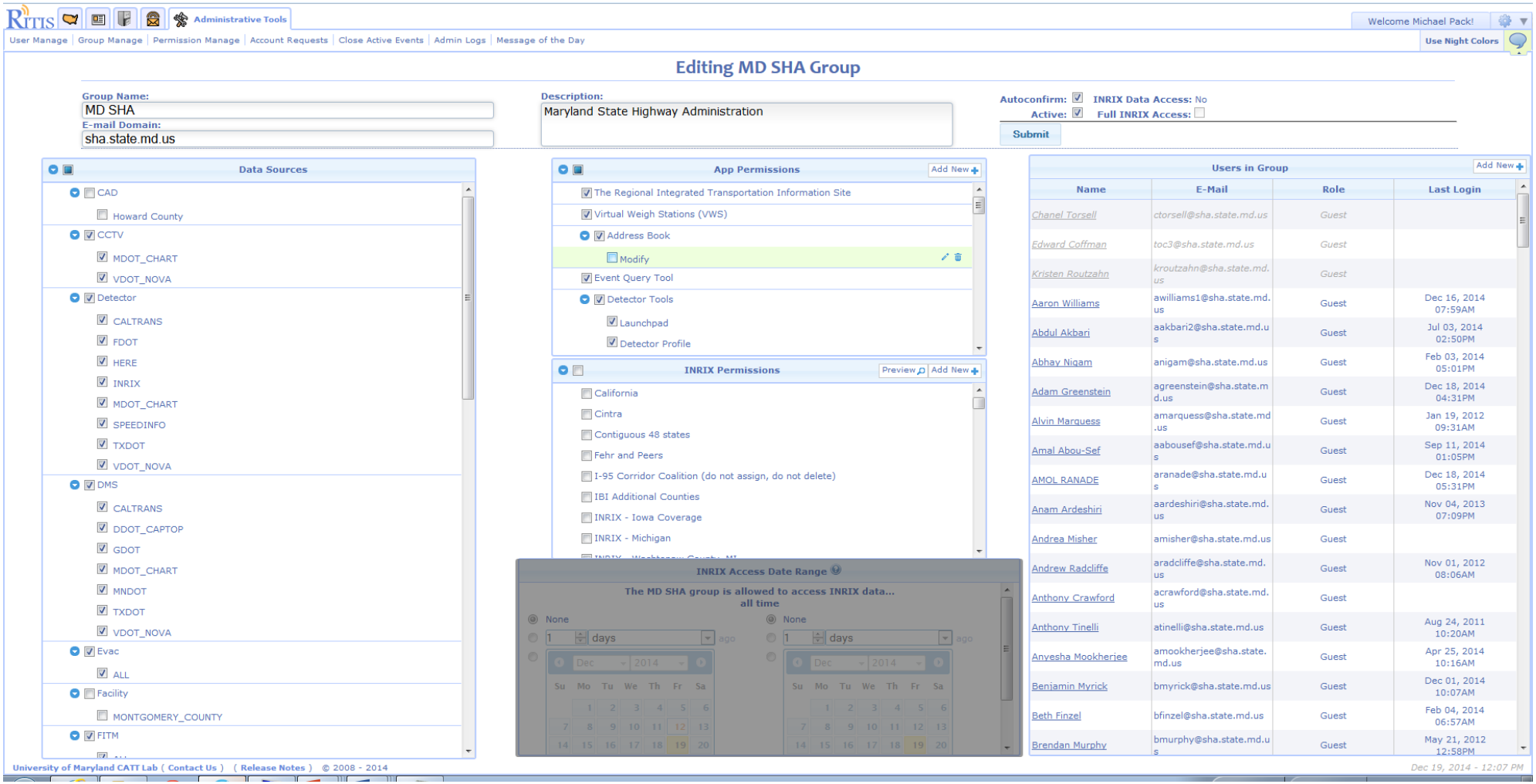




Administration: Data access controls

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



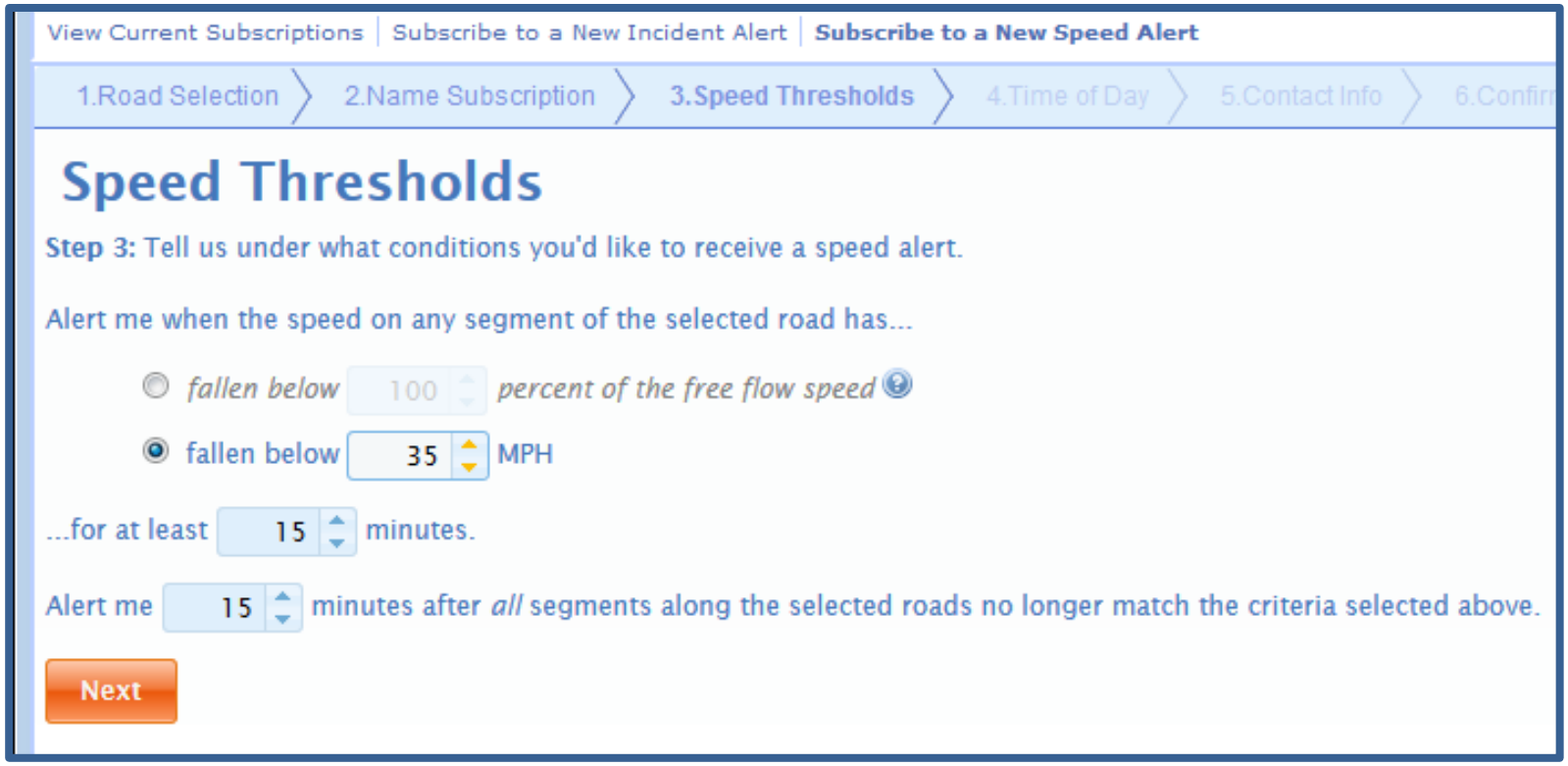
Custom Personal Alerting

Customize Alerts to be sent to your

- Cell phone
- Email

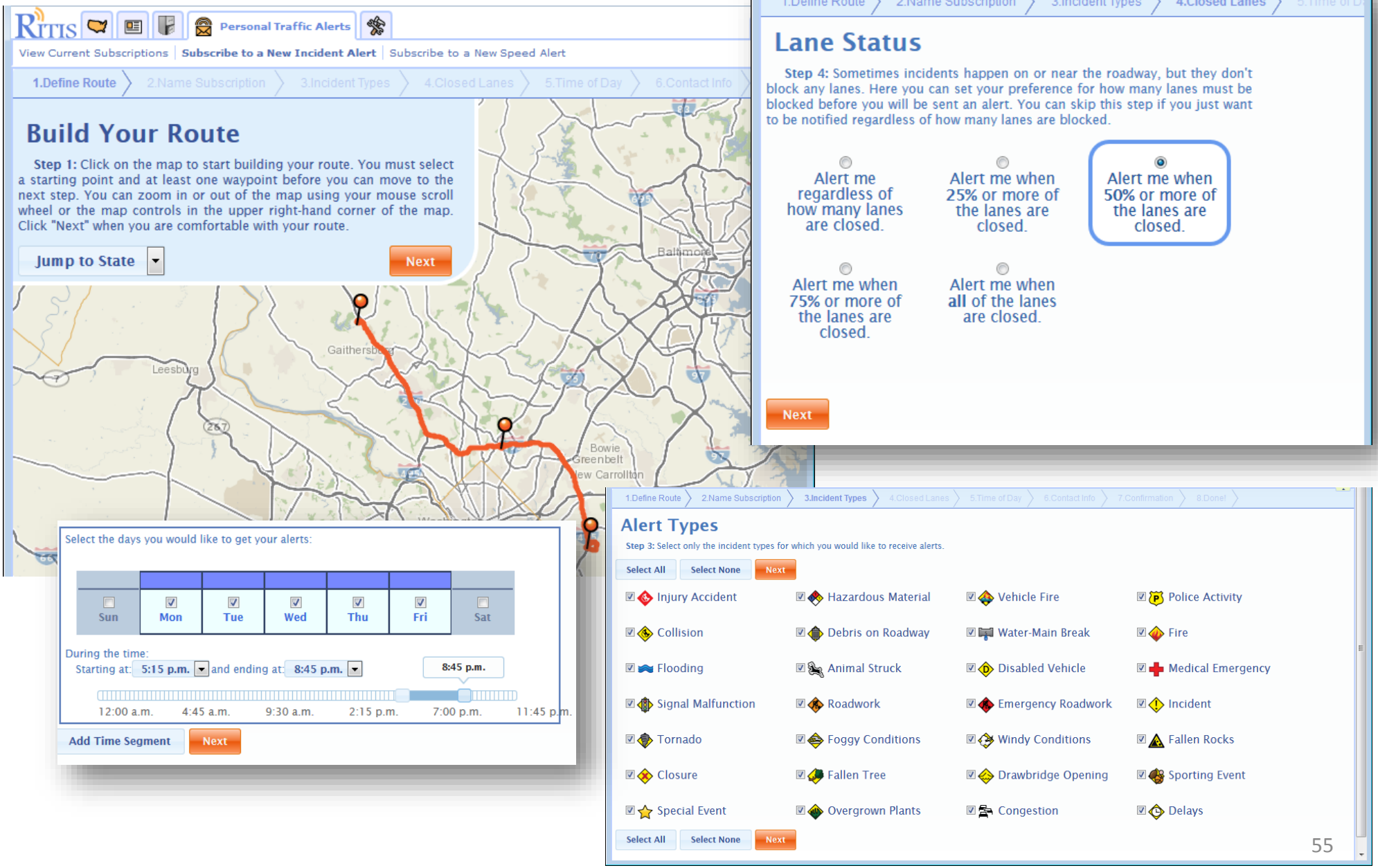
Alerts can be based off of:

- 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 & Day of Week
  - Single or multiple corridors



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 txt message to your cell phone.



Collaborative Decision Making Tools for Significant Event Coordination

RITIS has built-in "webinar" functionality that can be used to coordinate multi-agency, multi-user response to significant events like:

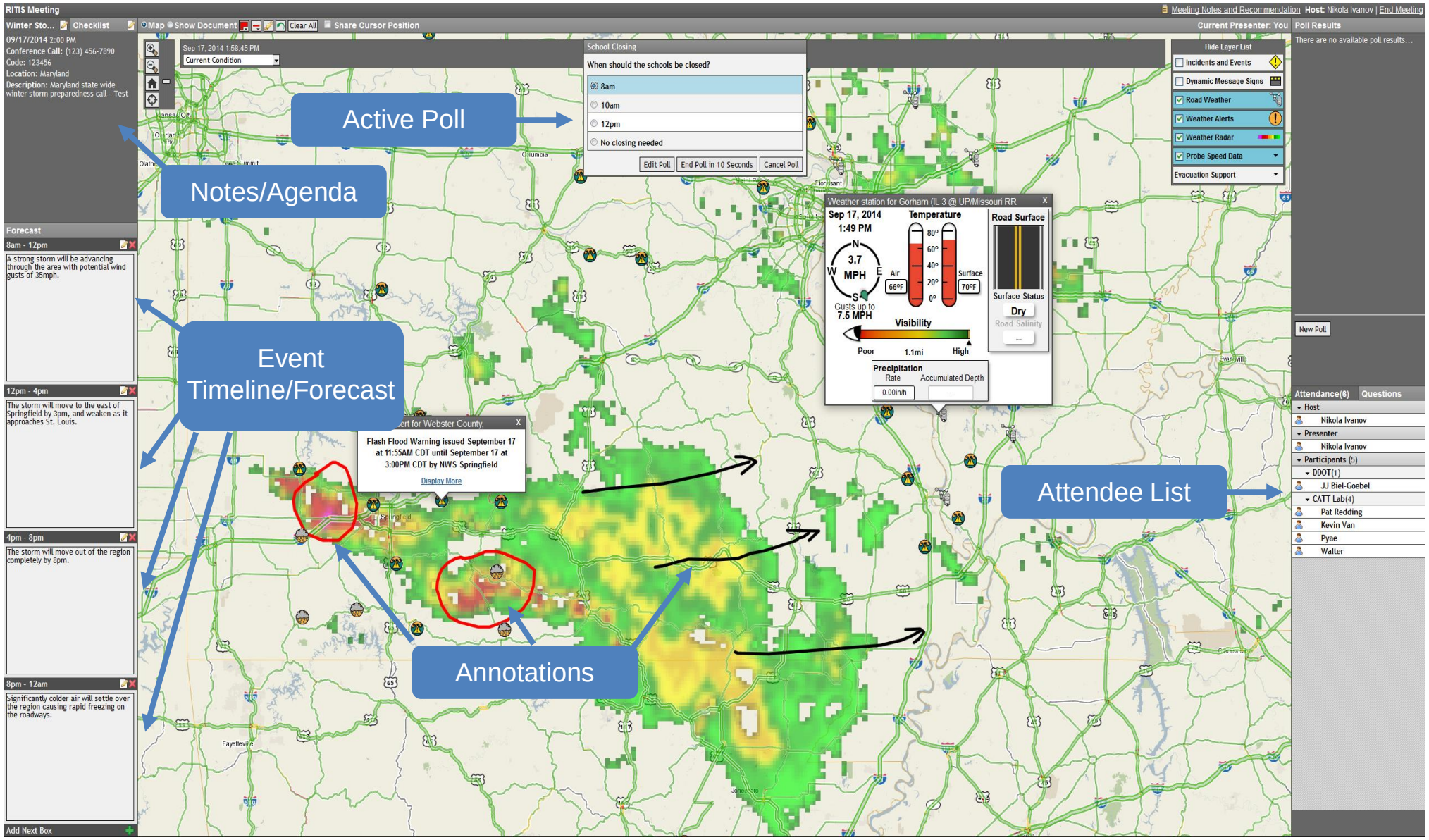
- Hurricanes
- Winter Weather Events
- Terrorism
- Etc.

The system does not require any specialized software/browser add-ons, and allows the sharing of screens, documents, event timelines, and attendee polling.

Meeting minutes, logs, list of attendees, etc. can be printed out and shared with all meeting attendees at the conclusion of a meeting.

Users can annotate/draw over the screen.

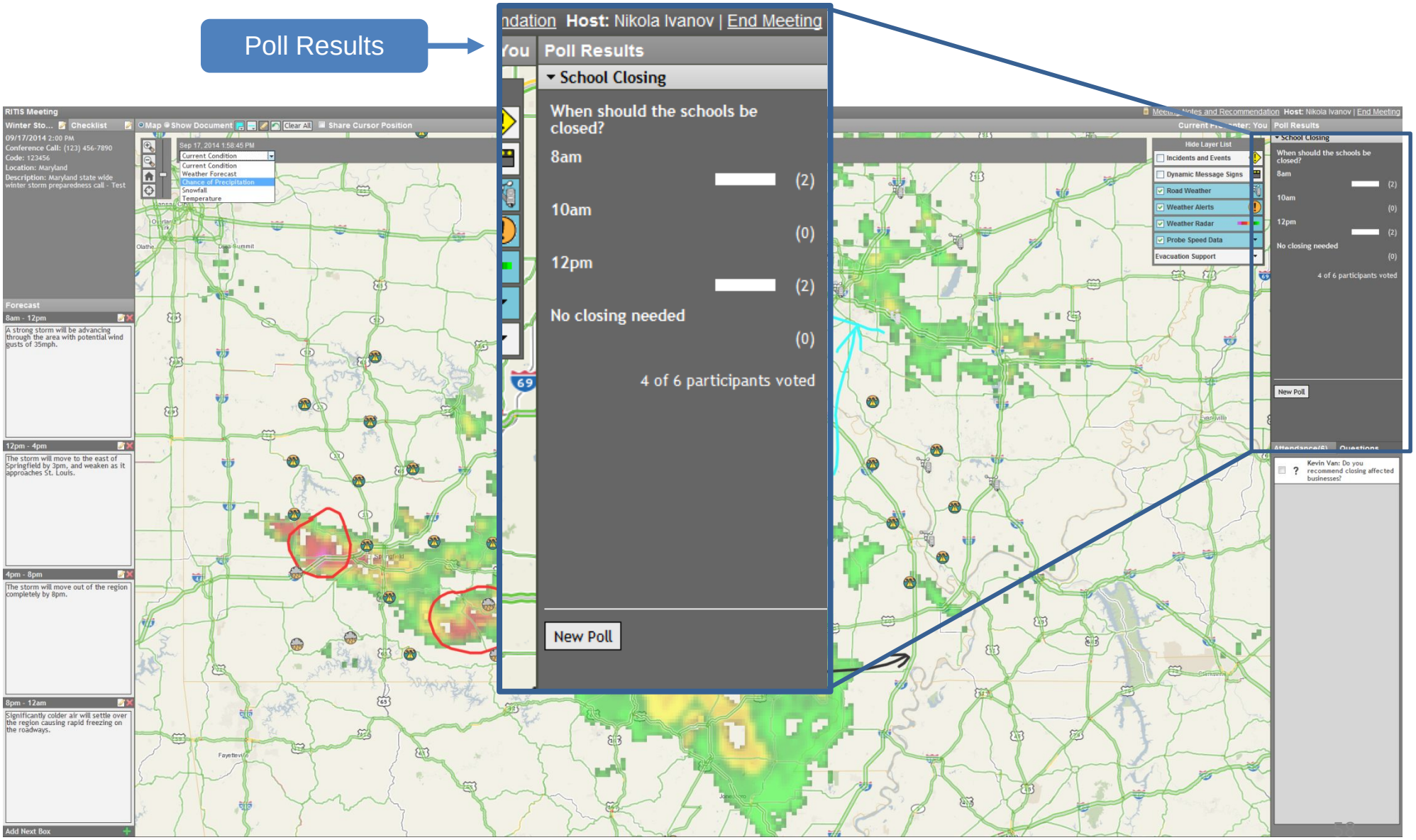
Collaborative Decision Making Tools: Meeting in Progress



Collaborative Decision Making Tools: Meeting in Progress

Running a Poll

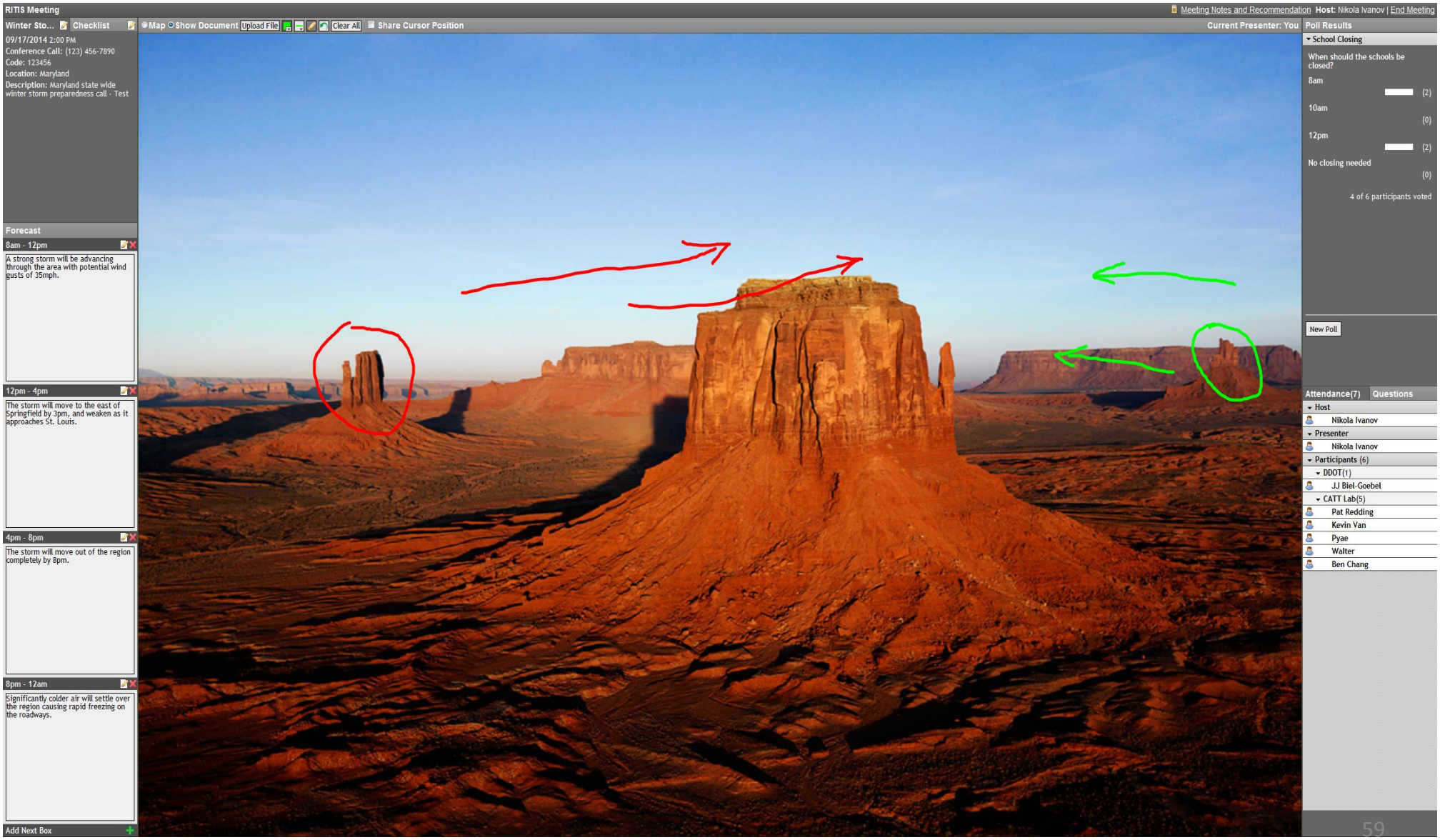
The host of a meeting has the ability to run polls and get the input of the meeting participants. Poll results are displayed in the top right panel.



Collaborative Decision Making Tools: Meeting in Progress

Running a Poll

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.



Collaborative Decision Making Tools: Meeting Log

A Meeting Log is generated after every meeting. This log keeps track of all of the information shared in the meeting and is sent out too all the participants after the meeting's end.

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 forcasted 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 *PIO templates*
Road Condition 5: IMPASSABLE/ DANGEROUS/ TREACHEROUS 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.		"treacherous","impassable", "dangerous" *Be where you need to be by <time>. Get where you need to be before the weather gets bad. Stay where you are.*
Road Condition 4: ICY/SNOW PACKED 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.		"unsafe", "impassable" "major delays" *Be where you need to be by <time>. Avoid or postpone travel for next <hours>. Stay at the office an extra <hour>, or leave early, to avoid travel during a winter storm.*
Road Condition 3: SNOW AND/OR SLUSH COVERED 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.		"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.*
Road Condition 2: SNOW / SLUSH COVERED W/ WHEEL TRACKS EXPOSED 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.*		"passable" *Avoid discretionary travel. Road crews engaged in clearing activities. Curtail "elective" travel. Avoid unnecessary travel.*
Road Condition 1: CLEAR WET/DRY 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.		"passable"

Work Zone Dashboard & Alerting

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

WZPM tool targets three different user groups:

- Project engineers and managers – Real time performance and alerting 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

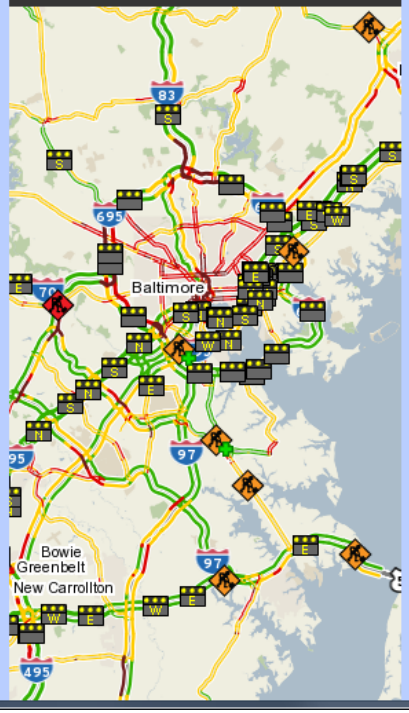
CURRENT WORK ZONES IN MARYLAND

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

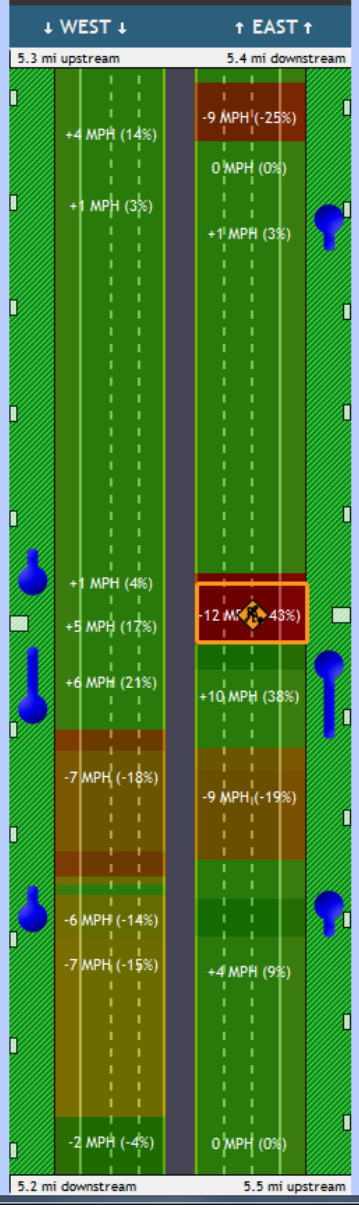
Data Type...
- Measured Speeds
- Comparison to Historical Average

Show...
- [x] Work Zone Bounds
- [x] *Posted Speeds (none)*
- [x] *Associated DMS (none)*
- [x] *Nearby Cameras (none)*
- [x] *Nearby Incidents (none)*
- [ ] Closed Lanes
- [x] Bottlenecks

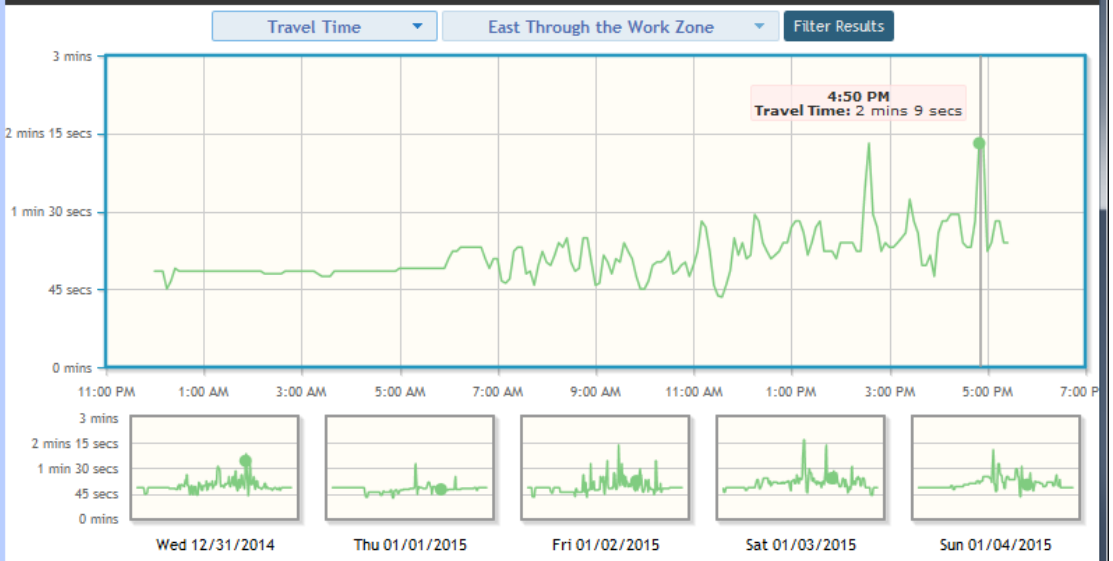
Current Conditions Bounds...
5 miles upstream
5 miles downstream

Configure Alerts

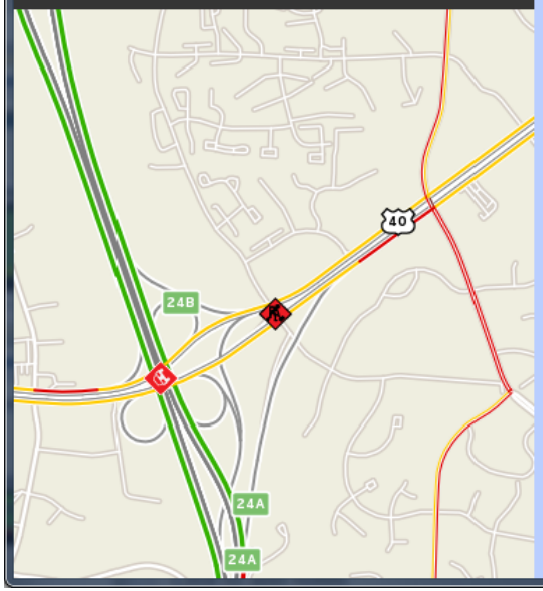
CURRENT CONDITIONS



TRAVEL TIME EAST THROUGH WORKZONE ONLY



WORK ZONE LOCATION



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

Weekend | Lowest → Highest | No Data

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...
- [x] Work Zone Bounds
- [x] *Posted Speeds (none)*
- [x] *Associated DMS (none)*
- [x] Nearby Cameras
- [x] *Nearby Incidents (none)*
- [ ] Closed Lanes
- [x] *Bottlenecks (none)*

Current Conditions Bounds...
5 miles upstream
5 miles downstream

Configure Alerts

CURRENT CONDITIONS

↓ SOUTH ↓ ↑ NORTH ↑

11.4 mi upstream
-2 MPH (-3%)
-2 MPH (-3%)
0 MPH (0%)
-4 MPH (-8%)
13.1 mi downstream
8 mi upstream

Graph Options

TRAVEL TIME SOUTH THROUGH WORKZONE ONLY

Travel Time | South Through the Work Zone | Filter Results

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

7 mins 30 secs
5 mins
2 mins 30 secs
0 mins
11:00 PM 1:00 AM 3:00 AM 5:00 AM 7:00 AM 9:00 AM 11:00 AM 1:00 PM 3:00 PM 5:00 PM 7:00 P

10 mins
7 mins 30 secs
5 mins
2 mins 30 secs
0 mins
Wed 12/31/2014 Thu 01/01/2015 Fri 01/02/2015 Sat 01/03/2015 Sun 01/04/2015

WORK ZONE LOCATION

Traffic Cameras

MD-4 AT THOS JOHNSON BR
EAST

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

Weekend | Lowest → Highest | No Data

Work Zone Alerting

Customizing Work Zone Alerts

Customized Work Zone Alerts to be sent via:

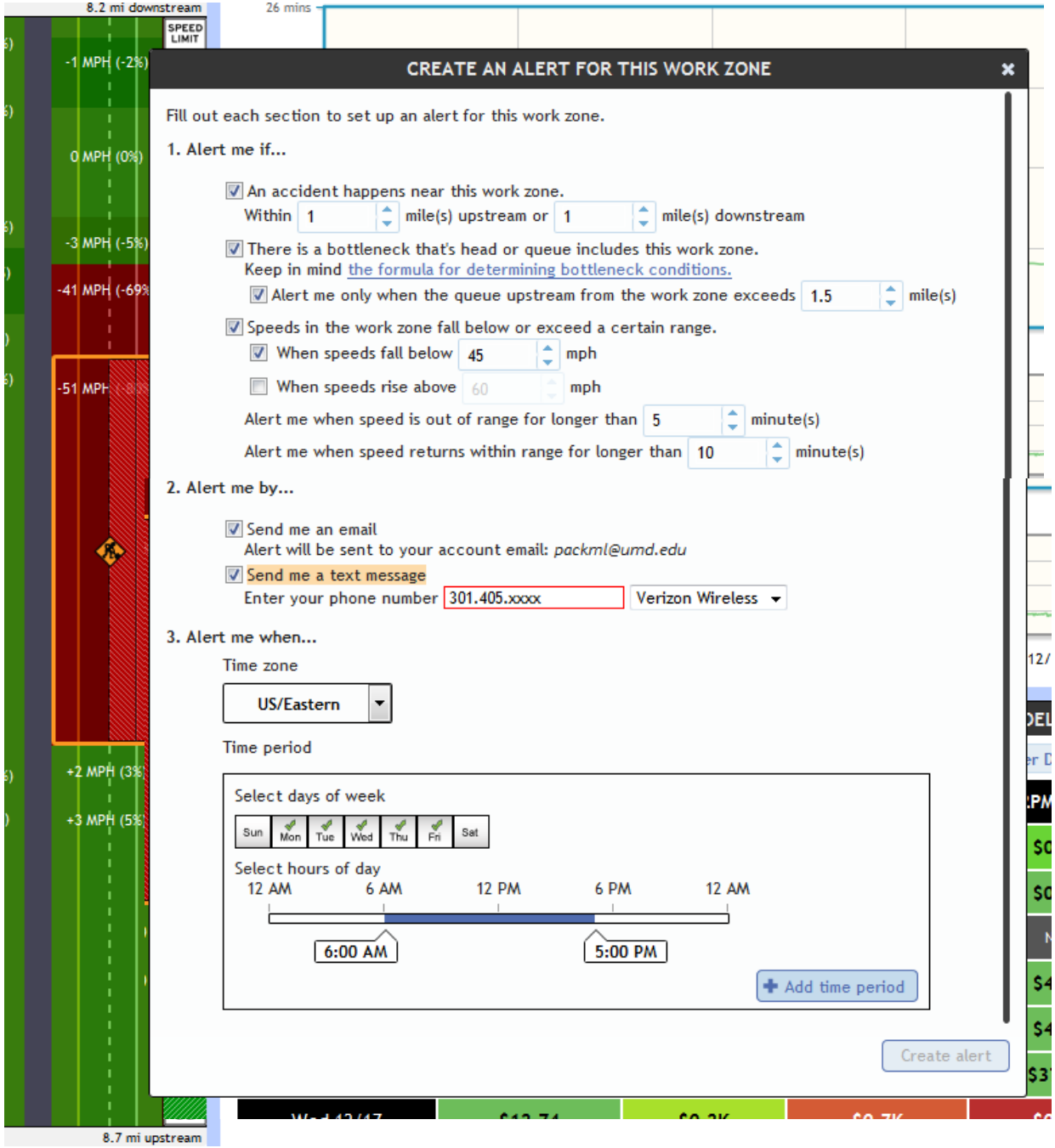
- Txt. Message
- Email

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



RITIS as an Input Tool for Incident Managers

- 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. Release to additional agencies is slated for late 2015.
- If your agency is interested in this feature, please contact us at PackML@umd.edu

RITIS Analytics Tools

- Probe Data Analytics
- Event Analytics Tools
- Detector Data Analytics
- Road Weather Data Analytics
- Virtual Weigh Station Analytics
- CHART Reporting
- Exploring and Visualizing Crashes
- Hierarchical Data Explorers (TreeVersity)
- Transit Data Analytics (In Development)

Probe Analytics

Detector Explorer

VWS
Virtual Weigh Station

CLARUS
History Explorer

CHART Reporting

TreeVersity

EVC
Explore and Visualize Crashes

University of Maryland's CATTLab
ICE
Incidents Clustering Explorer

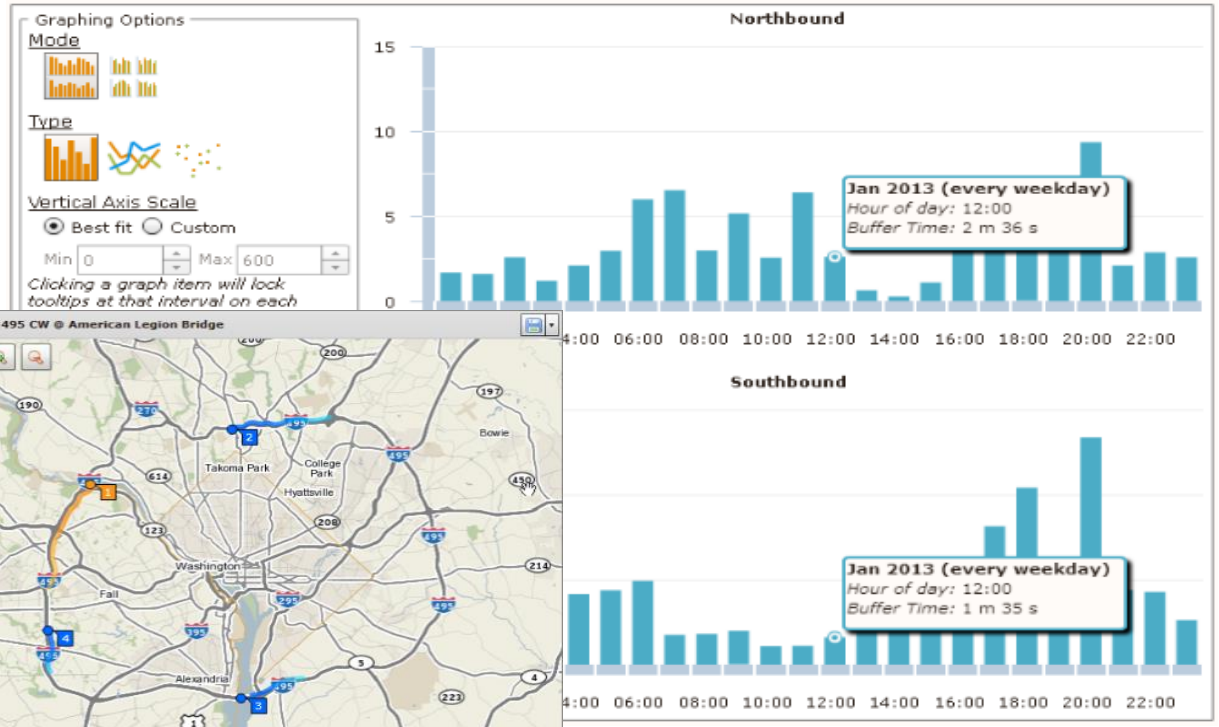
Overview

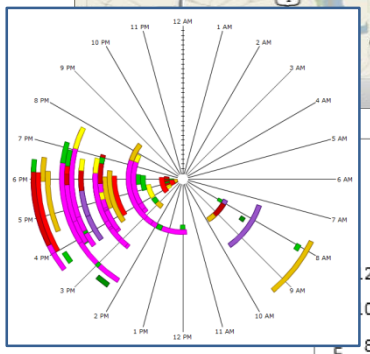
Probe analytics allow agencies to support operations, undertake planning activities, perform analysis and research activities, and develop performance measurement reports with lightning speed. The probe analytics tools make use of 3rd party probe data fused with with other agency transportation data in a true “big data” analytics platform.

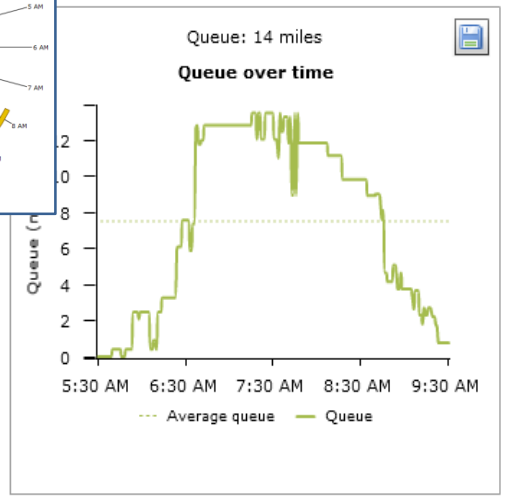
Probe Analytics

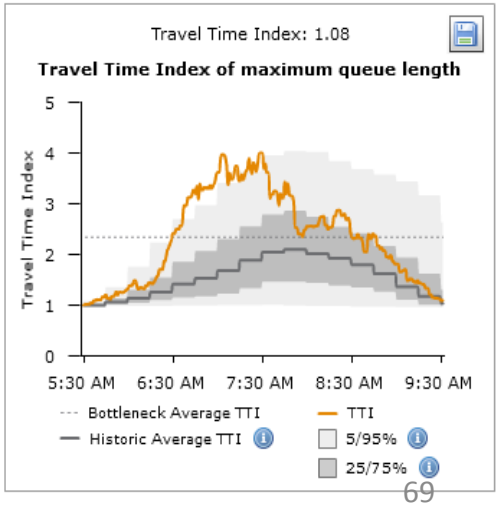
Probe Data Analytics Features

- Travel Time & Reliability Analysis
- Real-time & Historic Dashboards
- Vehicle & Person-hours of delay
- User Delay Costs
- Animated Historic maps
- Shareable reports for press releases
- Collaborative Analytics
- Region and state-wide Bottleneck Ranking
- Congestion Trend Analysis
- Performance Summary Tables
- Graphics and Data Exports
- Raw & aggregate Data Downloads
- Interactive & engaging



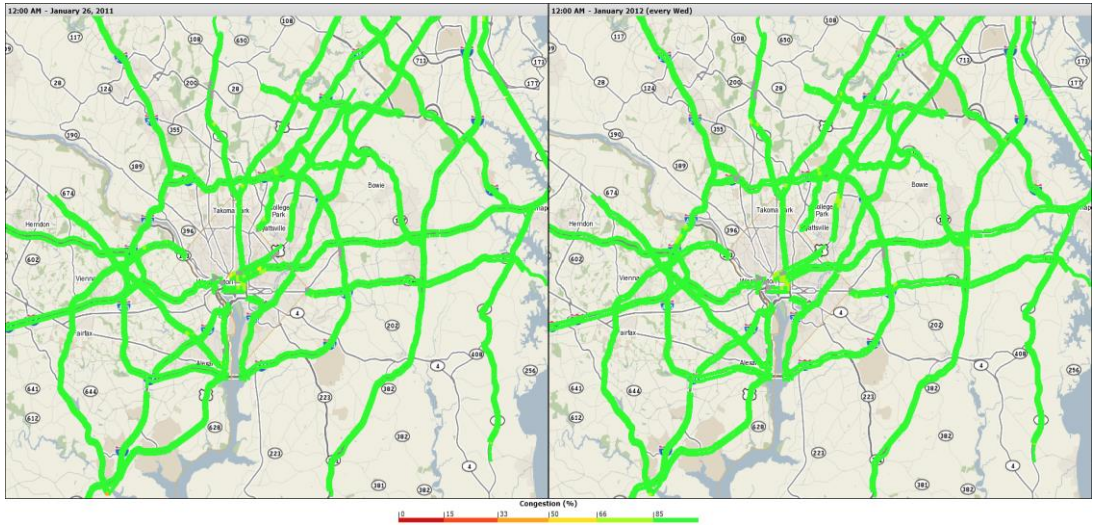


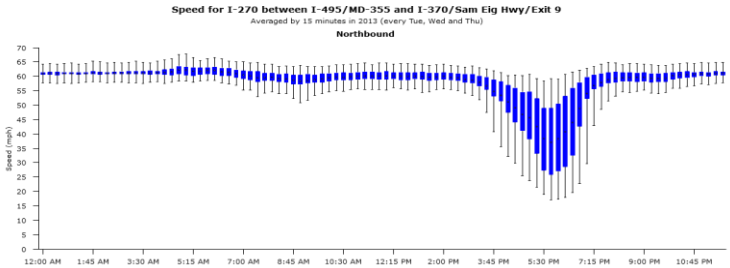




Common Uses of Probe Data Analytics

- Develop system performance reports
- Identify problems
- Prioritize projects
- Perform After Action Incident Review
- Conduct Before & 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							$14.8K	$0.9K	$0.1K	$0K	$0K	$0.6K	$0.1K	$51.3K
1/19/13	$0.1K	$0.1K	$0.2K	$0.1K	$0K	$0.1K	$0K	$0.1K	$0.1K	$0.2K	$0K							$0K	$0K	$0K	$0K	$0K	$0.1K	$0.1K	$2.2K
1/20/13	$0K	$0.1K	$0.1K	$0K	$0K	$0K	$0K	$0.1K	$0K	$0.1K	$0K							$0.1K	$0.1K	$0.1K	$0.2K	$0.1K	$0.1K	$0.1K	$1.7K
Hourly Totals	$0.5K	$0.5K	$0.6K	$0.3K	$0.4K	$0.2K	$1.1K	$58.4K	$70.2K	$8.8K	$0.8							$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

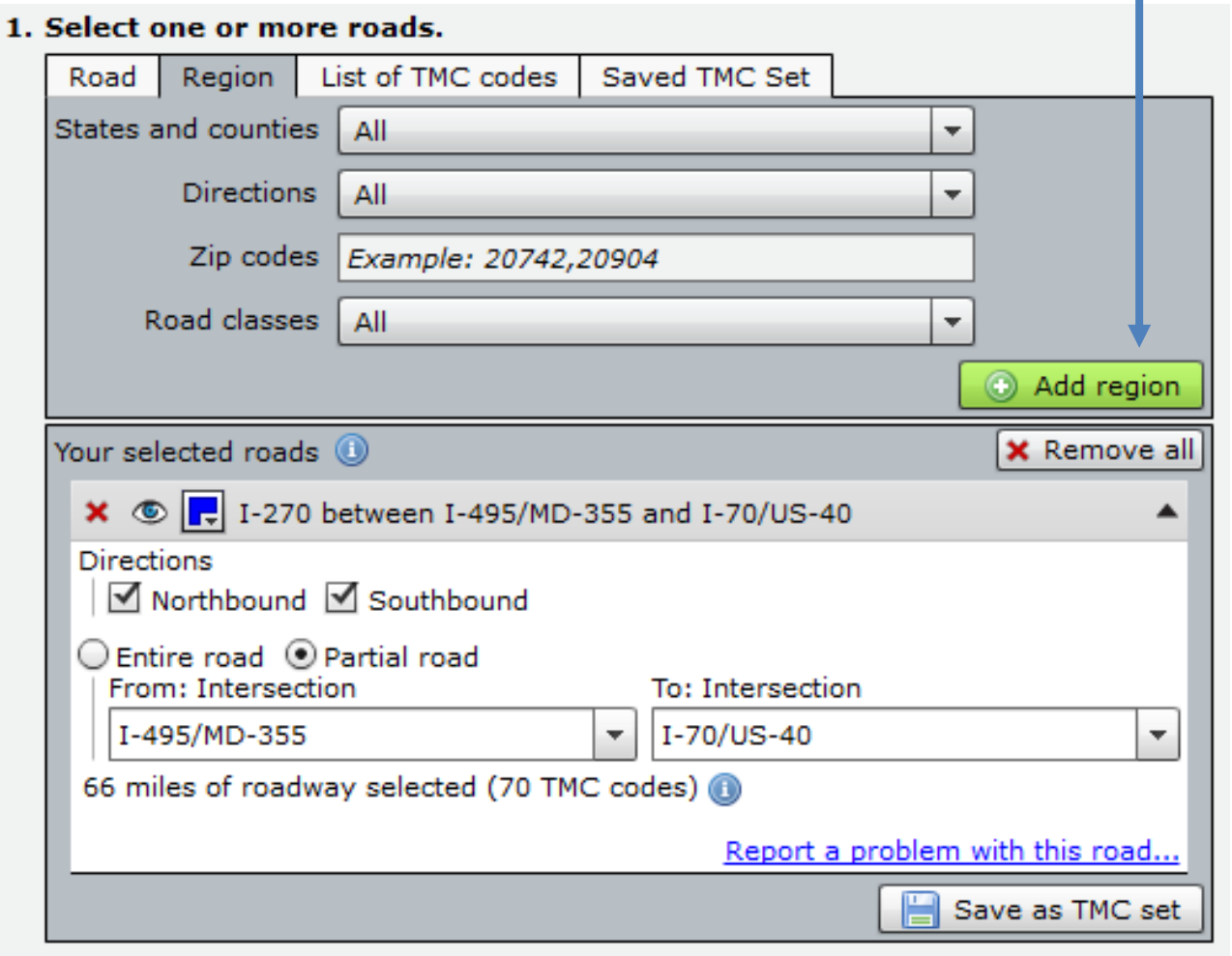
Data validity: 96.67%

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

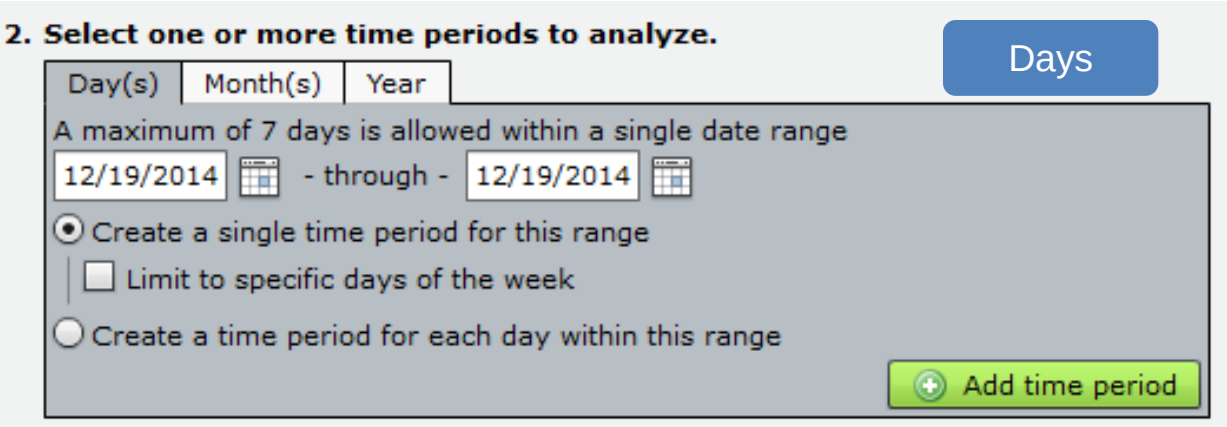
Add and compare multiple regions, roads or TMC sets.

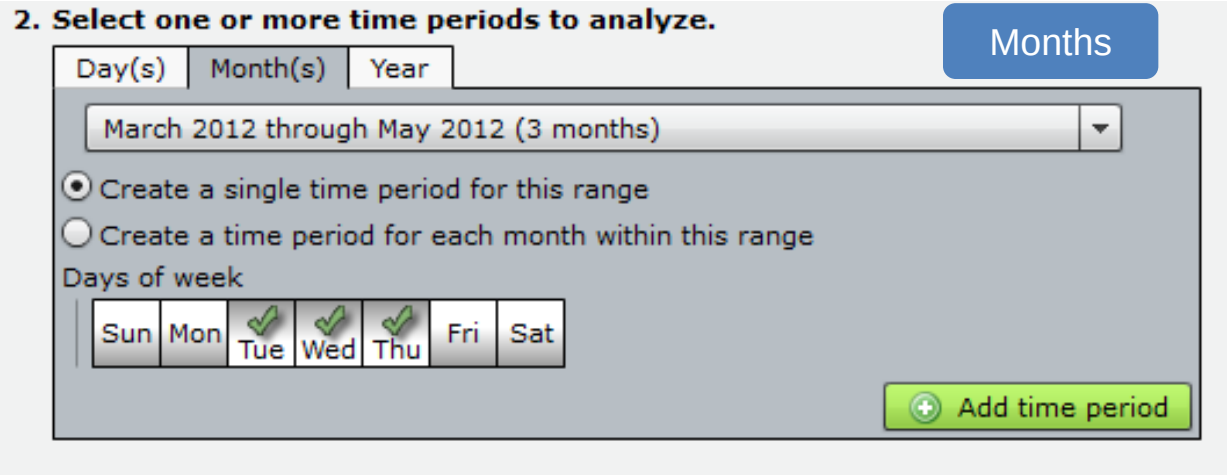


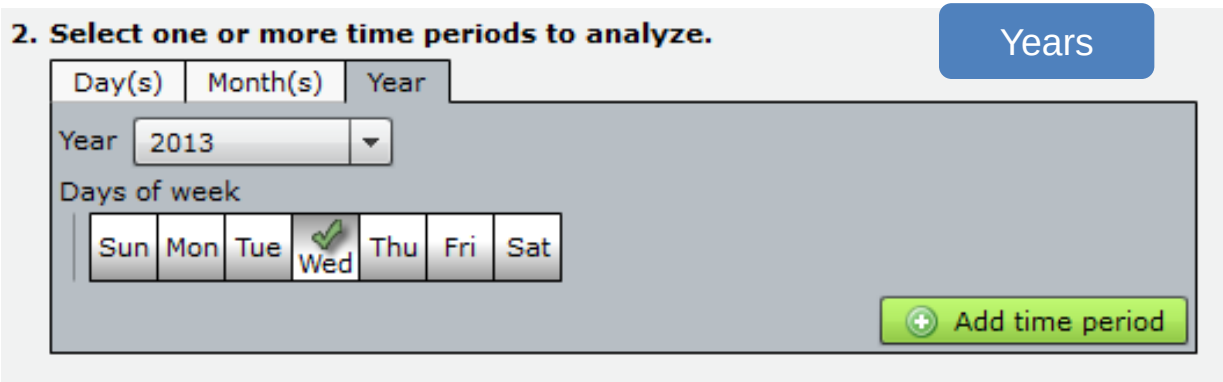
Time Based Queries

Select Time by

- Day or Days
- Month of Months
- Year or Years
- Date Range
- Filter by Day of Week
- Filter By Time of Day
- Average together date ranges
- Leave dates separate



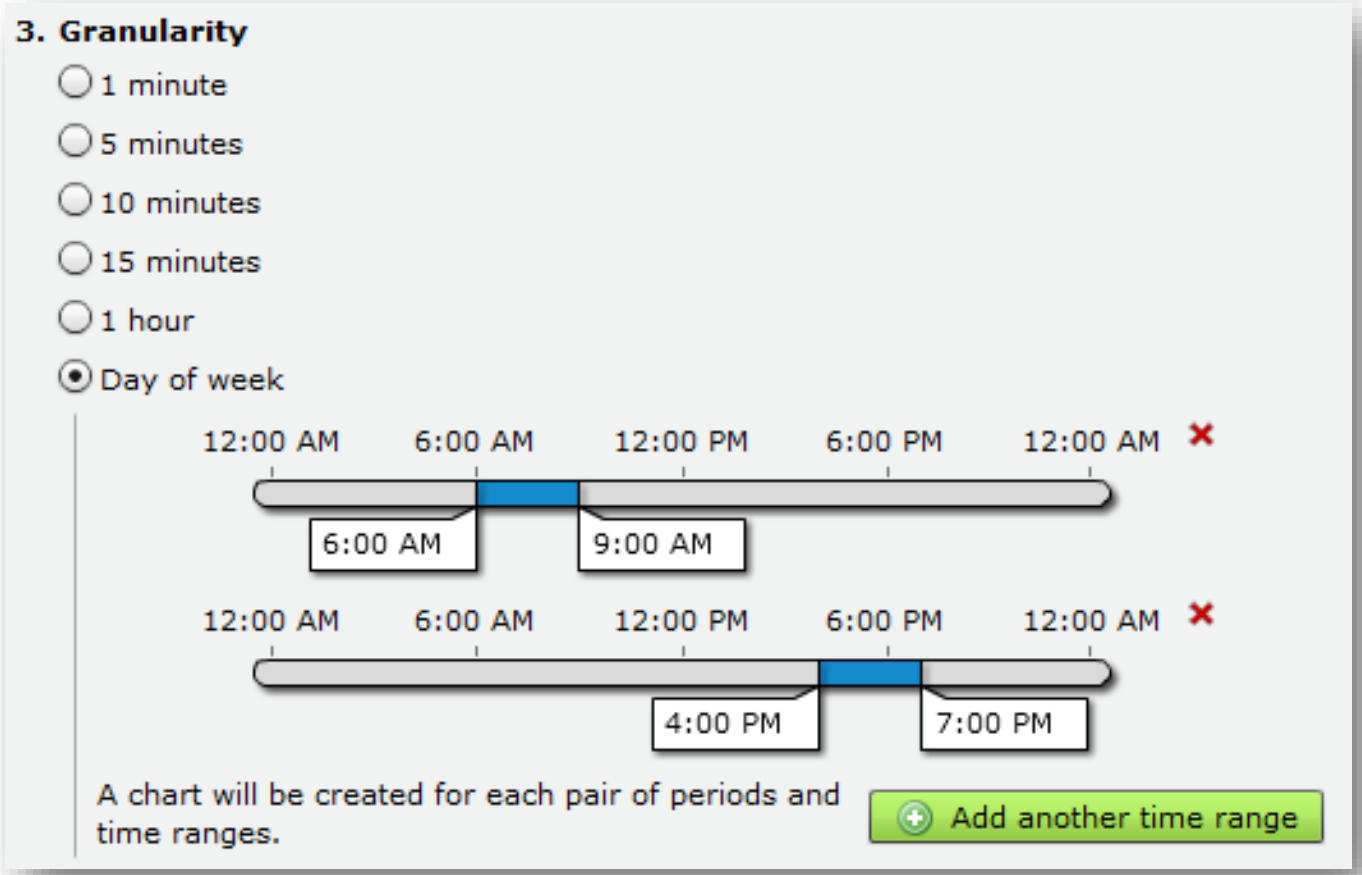




Data Granularity & Aggregation Options

Available Granularity

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



Customizable Dashboards

The "Dashboard" application will be launched the 1st 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

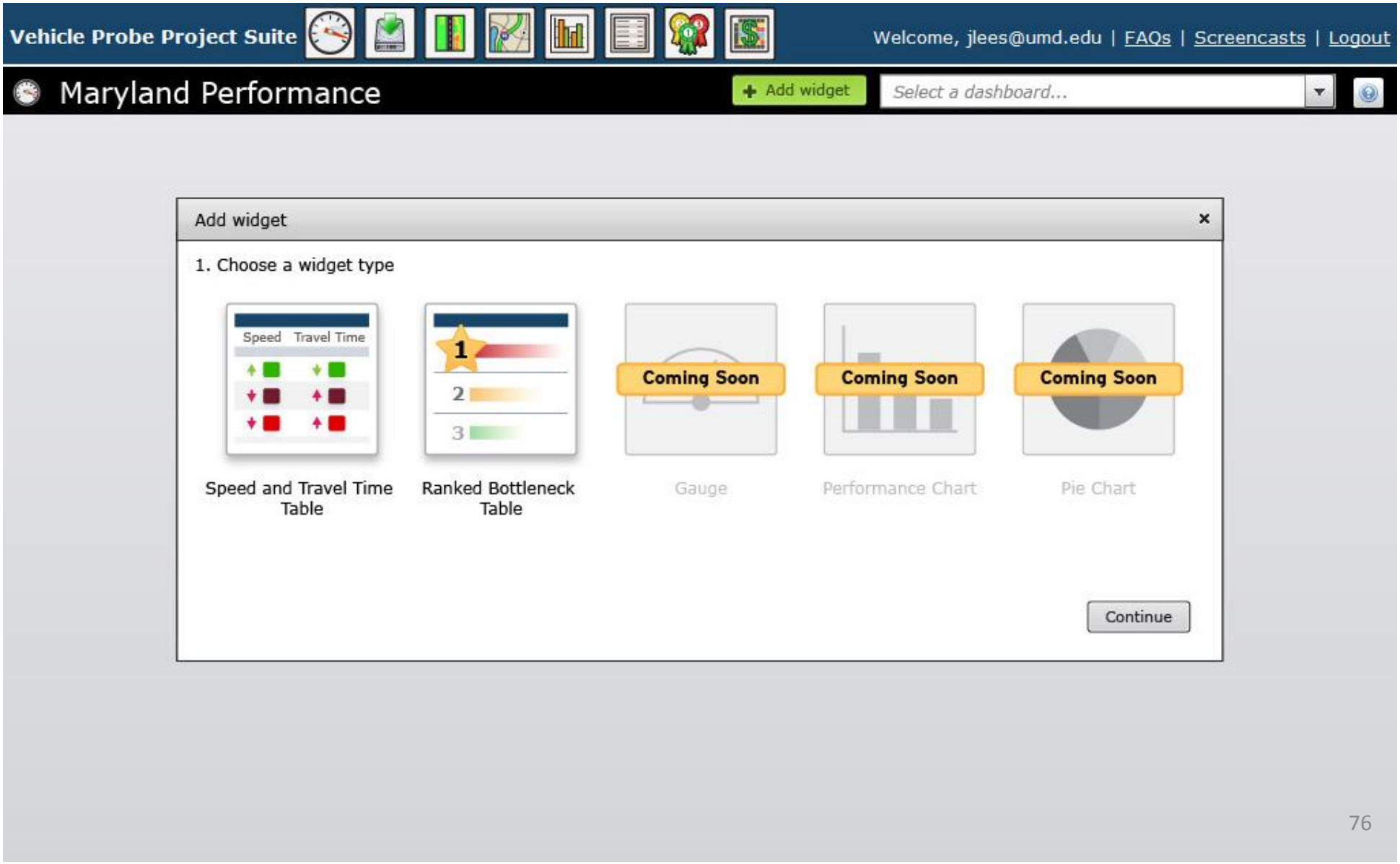
Building Your Dashboard

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

Customizable Dashboards

Adding & Customizing Widgets

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



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

PLANNING TIME INDEX

Montgomery County MD

Current	Last month	Last year
2.5	2.7	2.8
December 2014	November 2014	2013

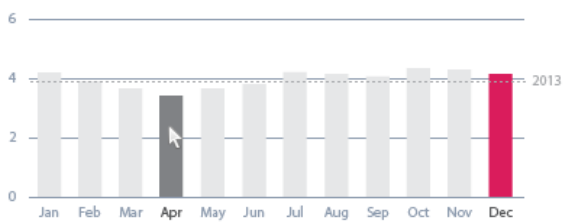
Updated Dec 5, 2014 9:55 AM (44s ago)

PLANNING TIME INDEX

3 Maryland Counties

Carroll, Calvert and Montgomery

Current	Past month	Last year
4.2	3.9	4.0
December 2014	April 2014	2013



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)

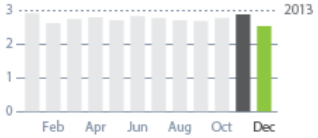
Maryland Performance

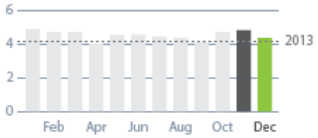
	Average Speed			Travel Time		
Corridor	Differential	Current	Historic	Differential	Current	Historic
I-270 Northbound Between MD-28/MONTG...	↑ 10	55 mph	45 mph	↓ 5	15 min	20 min
I-270 Southbound Between MD-28/MONTG...	↓ -2	45 mph	47 mph	↑ 3	22 min	19 min
I-495 Clockwise Between MD-295/MD-193...	↓ -18	24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

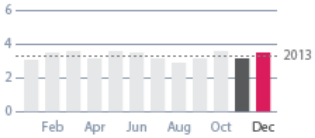
Updated Dec 5, 2014 9:55 AM (44s ago)

Regional performance table

	PLANNING TIME INDEX			BUFFER TIME INDEX			TRAVEL TIME INDEX		
Region	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



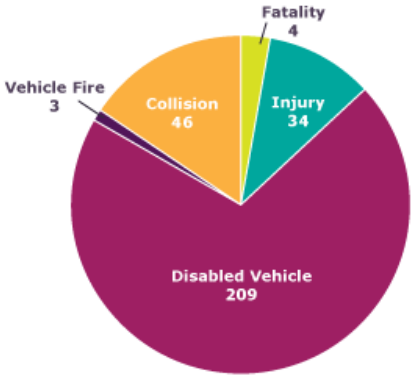




Updated Dec 5, 2014 9:55 AM (44s ago)

Pie Chart

Incidents along I-495



12/01/13 to 12/31/13

Customizable Dashboards

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 geographies to include.

Maryland Performance

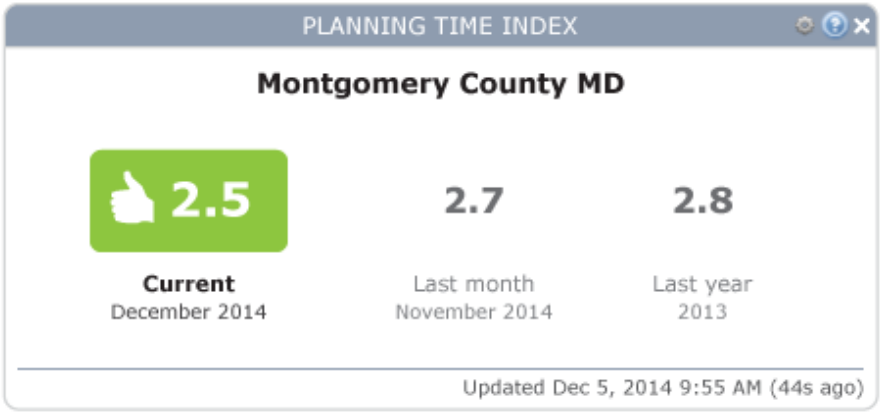
	Speed			Travel Time		
Corridor	Differential	Average	Historic average	Differential	Current	Historic
I-270 N Between MD-28/MONTGOMERY AVE/...	▲ 10	55 mph	45 mph	▼ 5	15 min	20 min
I-270 S Between MD-28/MONTGOMERY AVE/...	▼ 2	45 mph	47 mph	▲ 3	22 min	19 min
I-495 CW Between MD-295/MD-193/EXIT 22...	▼ 18	24 mph	42 mph	▲ 8	30 min	22 min
I-495 CCW Between MD-295/MD-193/EXIT 2...	▼ 37	10 mph	47 mph	▲ 9	28 min	19 min

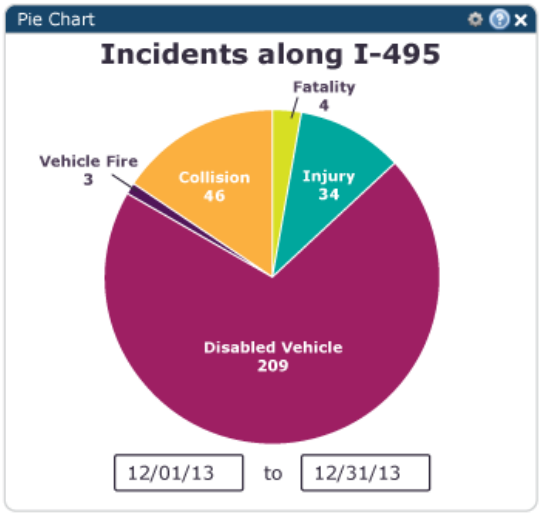
Top Bottlenecks

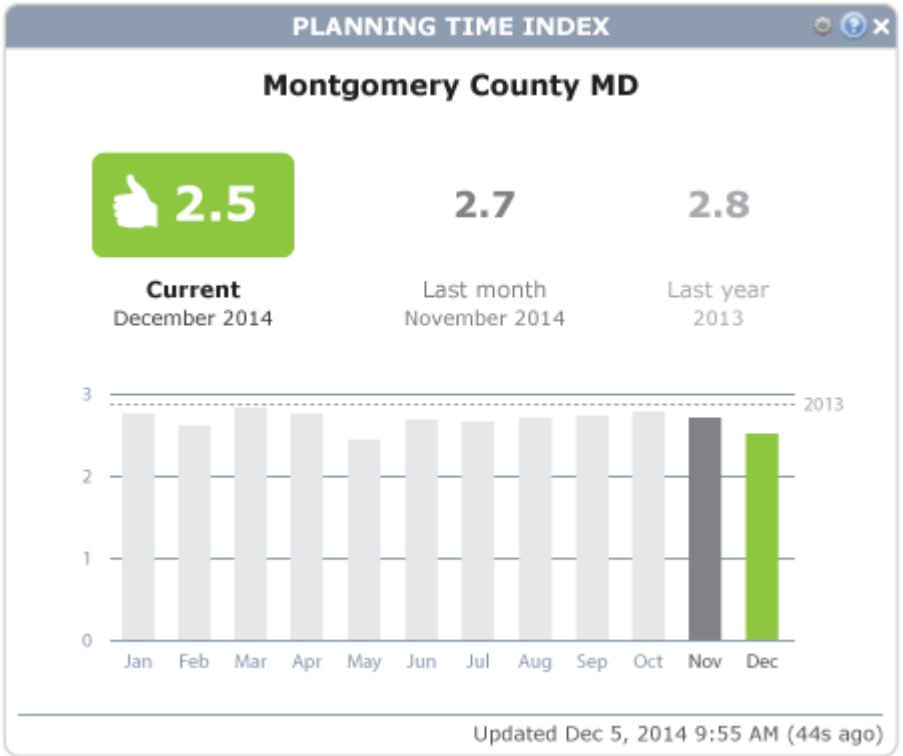
	State	Location	Length (miles)	Duration
1	NJ	NJ-35 N @ HERBERT ST	6.6	12 min
2	VA	I-95 N @ VA-7100/EXIT 166	5.4	25 min
3	MD	I-495 CW @ MD-4/PENNSYLVANIA AVE/EXIT 11	4.7	34 min
4	MD	MD-355 S @ MONTROSE RD/RANDALPH RD	3.3	12 min
5	VA	I-66 E @ VA-7/LEESBURG PIKE/EXIT 66	3.1	5 h 35 min
6	MD	MD-295 S @ I-195	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 2 min

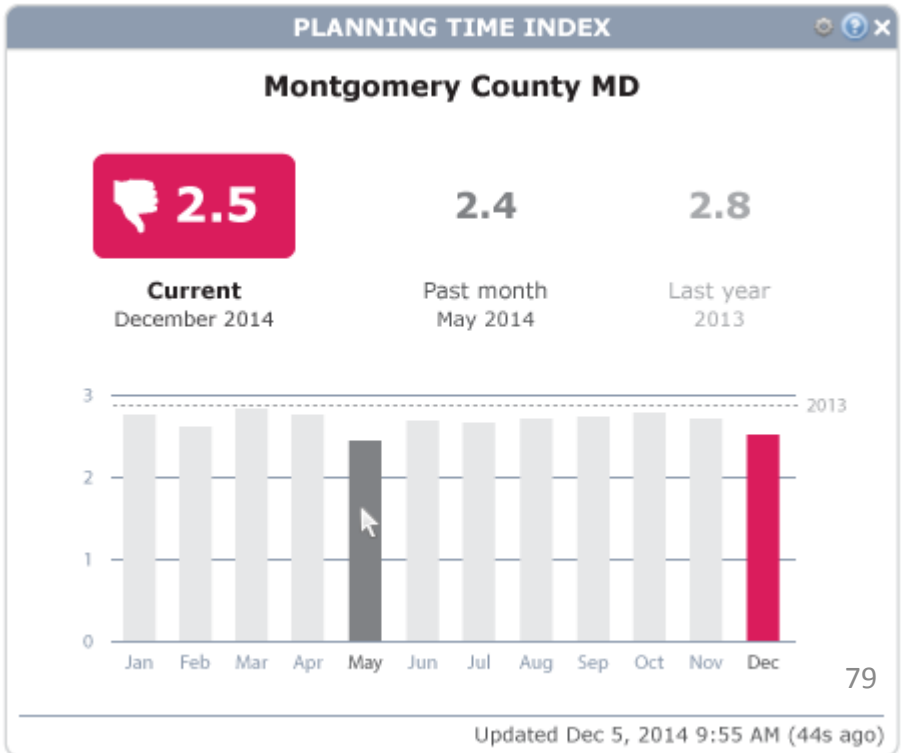
Customizable Dashboards

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







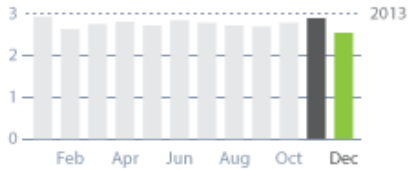


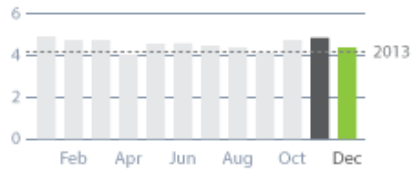
Customizable Dashboards

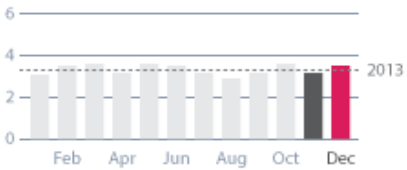
Any number of congestion and reliability measures can be displayed including planning time index, buffer time index, travel time index, etc. Users can choose to generate these measures for a single corridor, a group of corridors, a single county, multiple counties, a single state, or multiple states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

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 Calvert, Carroll and Montgomery	2.5	2.8	3.0	4.3	4.6	4.1	3.6	3.2	3.4
MD Prince George's and Baltimore County	2.5	2.8	3.0	4.3	4.6	4.1	3.6	3.2	3.4
MD Cecil and Charles	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



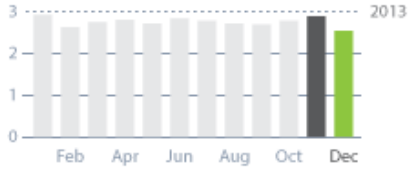


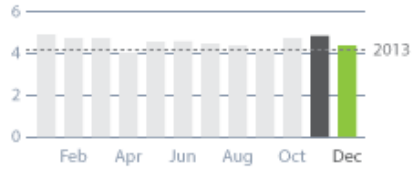


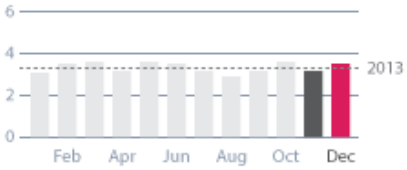
Updated Dec 5, 2014 9:55 AM (44s ago)

Maryland State Highway Administration Interstates

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
I-495	2.5	2.8	3.0	4.3	4.6	4.1	3.6	3.2	3.4
I-95	2.5	2.8	3.0	4.3	4.6	4.1	3.6	3.2	3.4
I-270	3.8	3.6	3.9	3.8	3.6	3.9	3.8	3.6	3.9
I-70	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

Close-up of 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.

Bottleneck ranking

			2014										
State	Location	Current	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan
MD	MD-4 N @ LYONS CREEK RD	9	3	5	7	3	5	8	5	7	3	5	5
MD	MD-198 E @ MD-32/PATUXENT FWY	5	6	8	9	7	8	5	8	9	7	8	8
MD	MD-355 S @ MONTROSE RD/RANDOLPH RD	1	4	2	3	4	3	4	2	3	4	3	3
MD	MD-32 E @ MD-108	3	10	9	10	8	10	10	9	10	8	10	10
MD	US-40 W @ RODGERS AVE	8	7	4	8	9	6	3	4	8	9	6	6
VA	VA-7 E @ TOWLSTON RD	7	5	3	4	5	4	6	3	4	5	4	4
VA	BRADDOCK RD @ BURKE STATION RD	6	8	10	6	10	7	7	10	6	10	7	7
VA	I-66 E @ SYCAMORE ST/EXIT 69	10	9	6	5	6	9	9	6	5	6	9	9
VA	I-95 N @ VA-7900/EXIT 169	2	1	1	2	1	1	1	1	2	1	1	1
VA	I-95 S @ VA-234/EXIT 152	4	2	7	1	2	2	2	7	1	2	2	2

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

Customizable Dashboards

Highlight the top x bottlenecks and see how their rank changes over time.

Bottleneck ranking

State	Location	Current	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan
			2014										
MD	MD-4 N @ LYONS CREEK RD	9	3	5	7	3	5	8	5	7	3	5	5
MD	MD-198 E @ MD-32/PATUXENT FWY	5	6	8	9	7	8	5	8	9	7	8	8
MD	MD-355 S @ MONTROSE RD/RANDOLPH RD	1	4	2	3	4	3	4	2	3	4	3	3
MD	MD-32 E @ MD-108	3	10	9	10	8	10	10	9	10	8	10	10
MD	US-40 W @ RODGERS AVE	8	7	4	8	9	6	3	4	8	9	6	6
VA	VA-7 E @ TOWLSTON RD	7	5	3	4	5	4	6	3	4	5	4	4
VA	BRADDOCK RD @ BURKE STATION RD	6	8	10	6	10	7	7	10	6	10	7	7
VA	I-66 E @ SYCAMORE ST/EXIT 69	10	9	6	5	6	9	9	6	5	6	9	9
VA	I-95 N @ VA-7900/EXIT 169	2	1	1	2	1	1	1	1	2	1	1	1
VA	I-95 S @ VA-234/EXIT 152	4	2	7	1	2	2	2	7	1	2	2	2

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

Customizable Dashboards

Mouse-over a single bottleneck number to highlight it's movement with in the list over time.

Bottleneck ranking

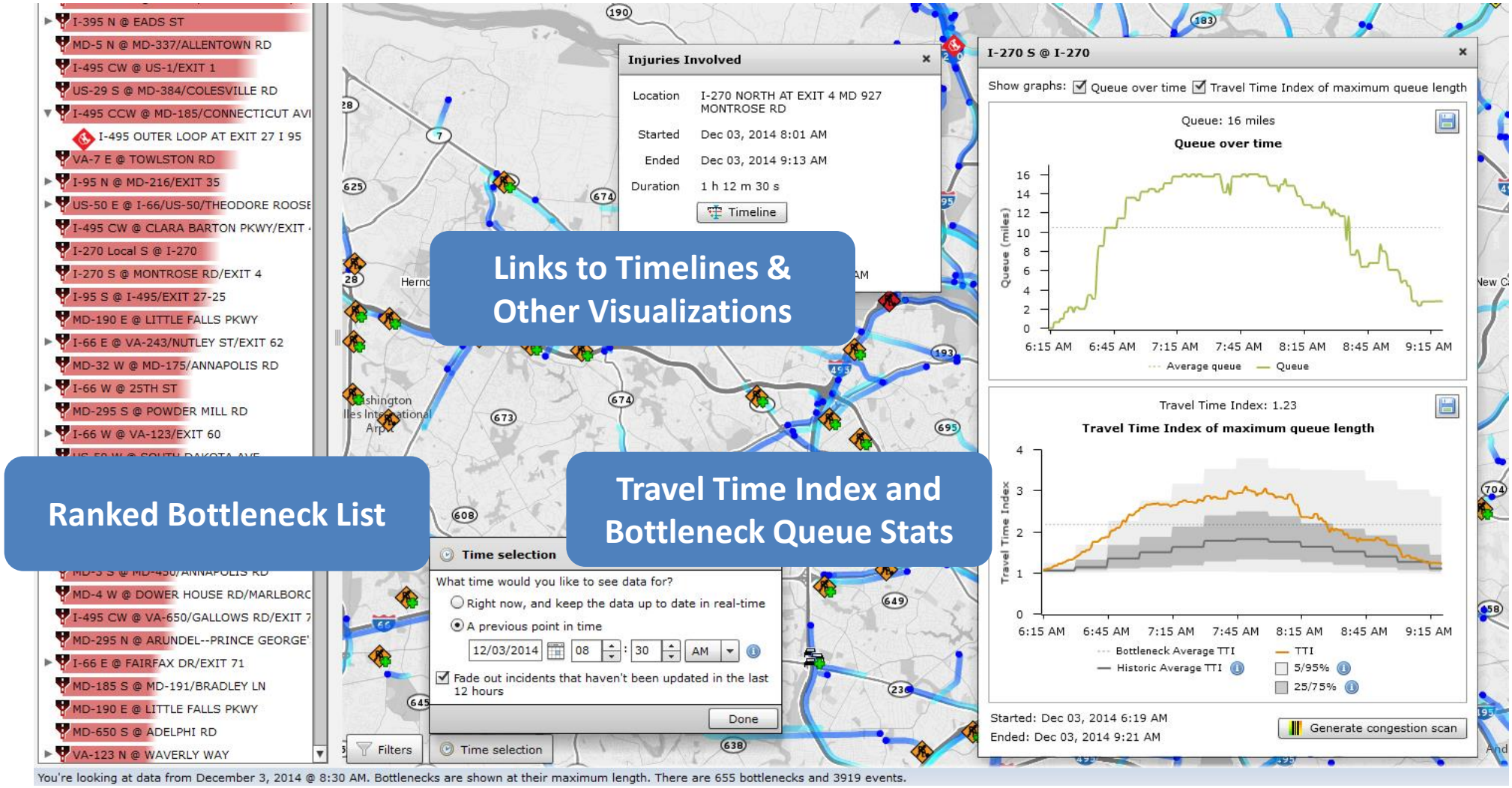
			2014										
State	Location	Current	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan
MD	MD-4 N @ LYONS CREEK RD	9	3	5	7	3	5	8	5	7	3	5	5
MD	MD-198 E @ MD-32/PATUXENT FWY	5	6	8	9	7	8	5	8	9	7	8	8
MD	MD-355 S @ MONTROSE RD/RANDOLPH RD	1	4	2	3	4	3	4	2	3	4	3	3
MD	MD-32 E @ MD-108	3	10	9	10	8	10	10	9	10	8	10	10
MD	US-40 W @ RODGERS AVE	8	7	4	8	9	6	3	4	8	9	6	6
VA	VA-7 E @ TOWLSTON RD	7	5	3	4	5	4	6	3	4	5	4	4
VA	BRADDOCK RD @ BURKE STATION RD	6	8	10	6	10	7	7	10	6	10	7	7
VA	I-66 E @ SYCAMORE ST/EXIT 69	10	9	6	5	6	9	9	6	5	6	9	9
VA	I-95 N @ VA-7900/EXIT 169	2	1	1	2	1	1	1	1	2	1	1	1
VA	I-95 S @ VA-234/EXIT 152	4	2	7	1	2	2	2	7	1	2	2	2

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

Probe Data Analytics

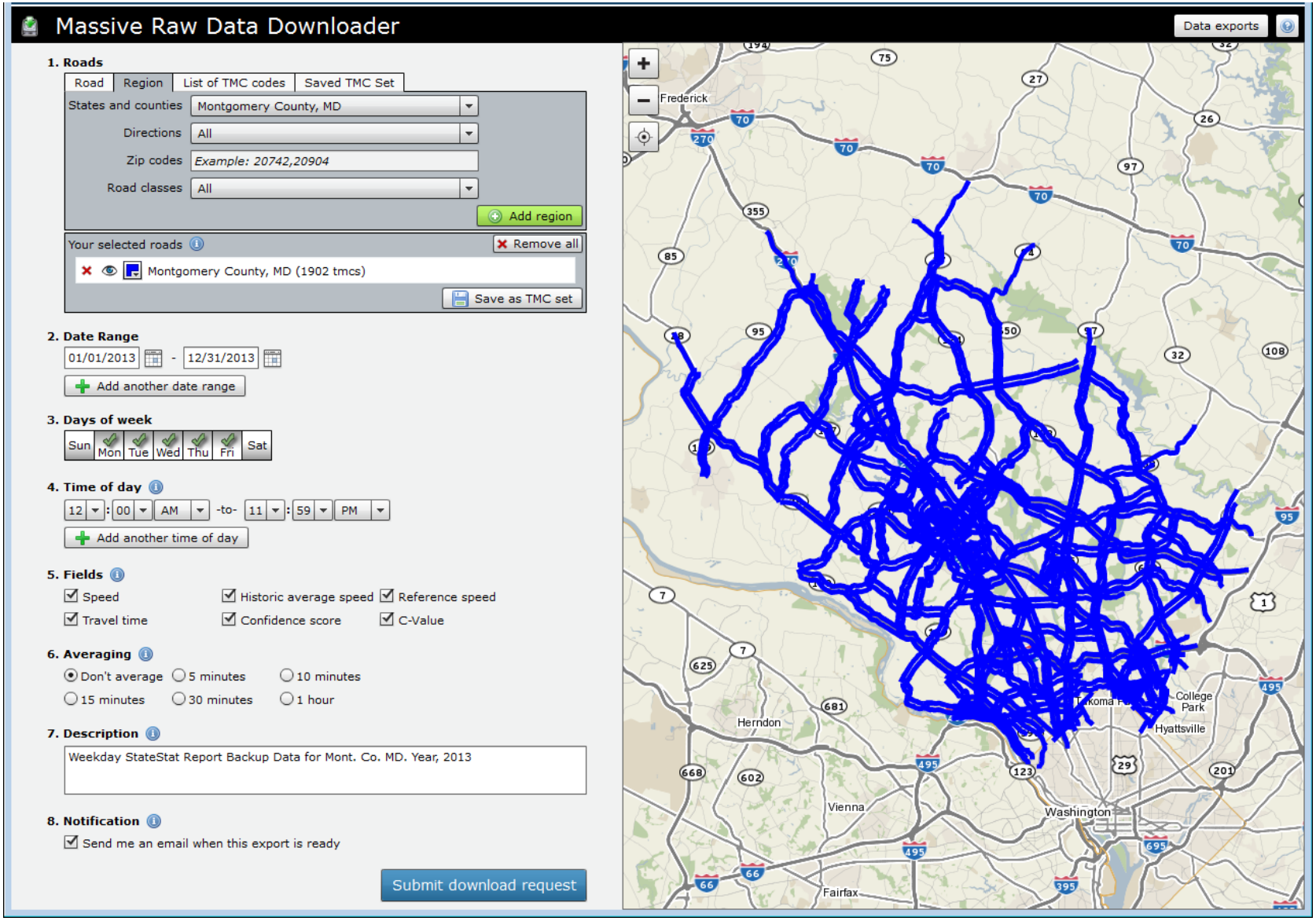
Regional History:

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



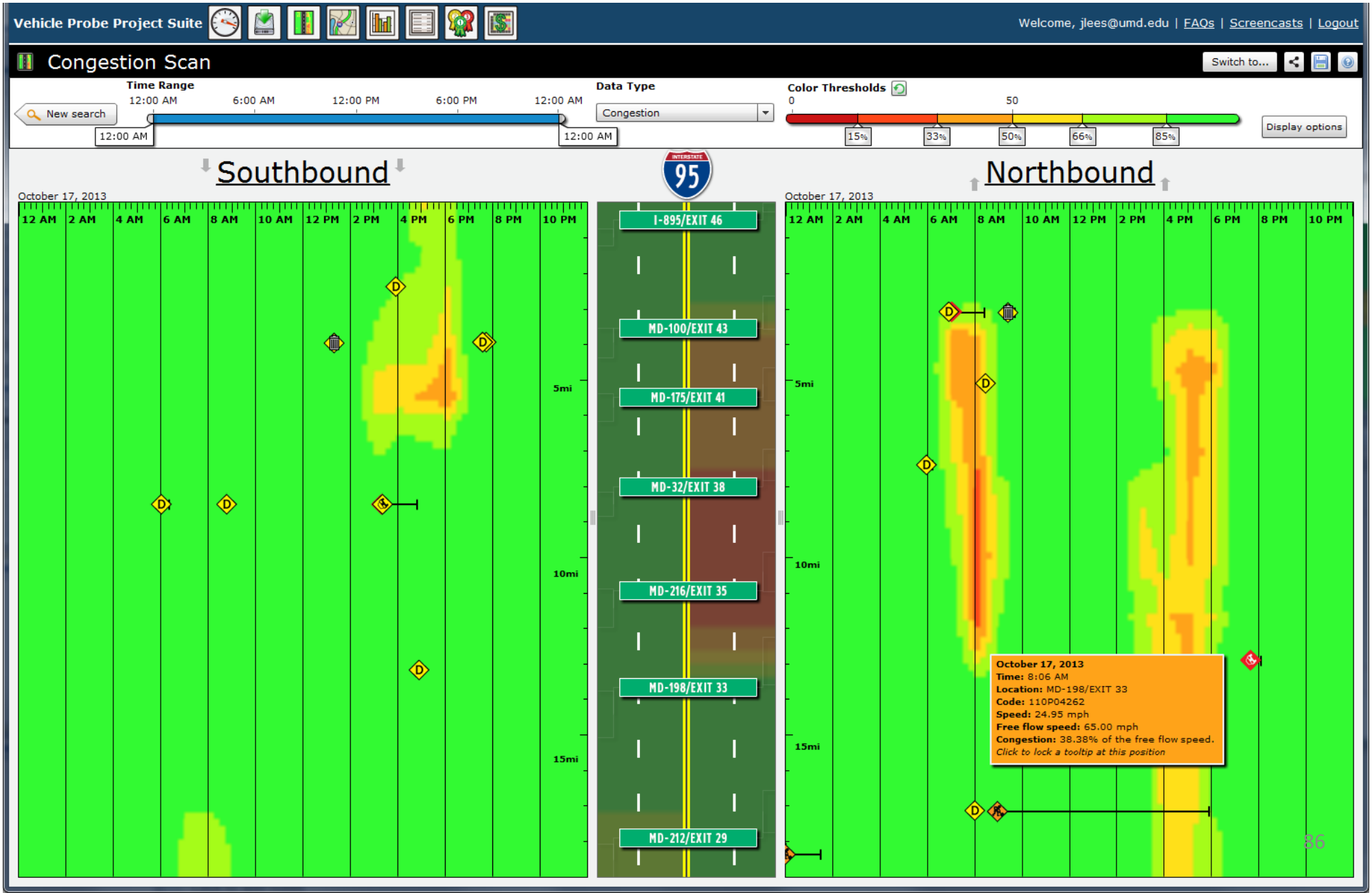
Raw Data Downloads

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.



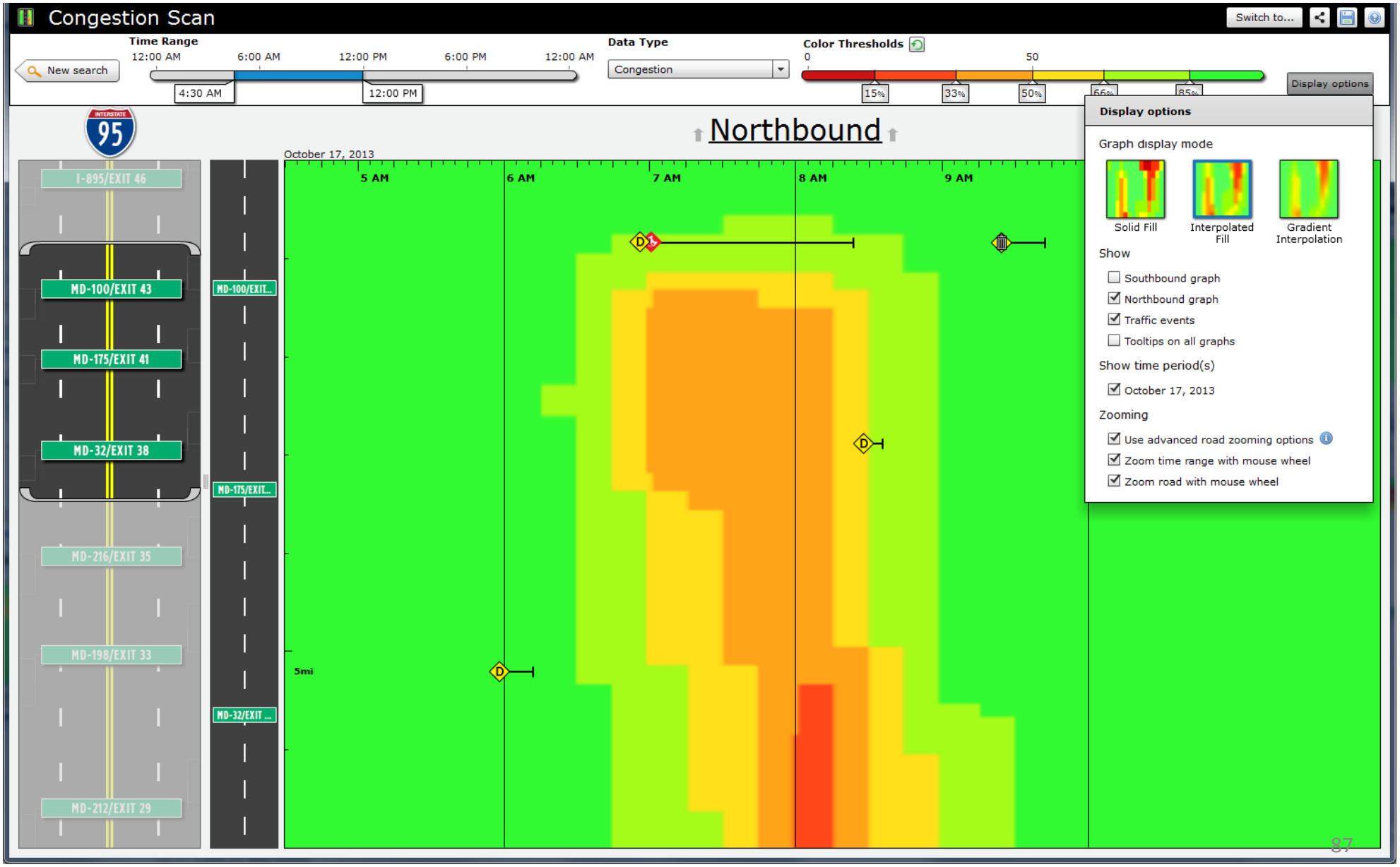
Congestion Scans

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.



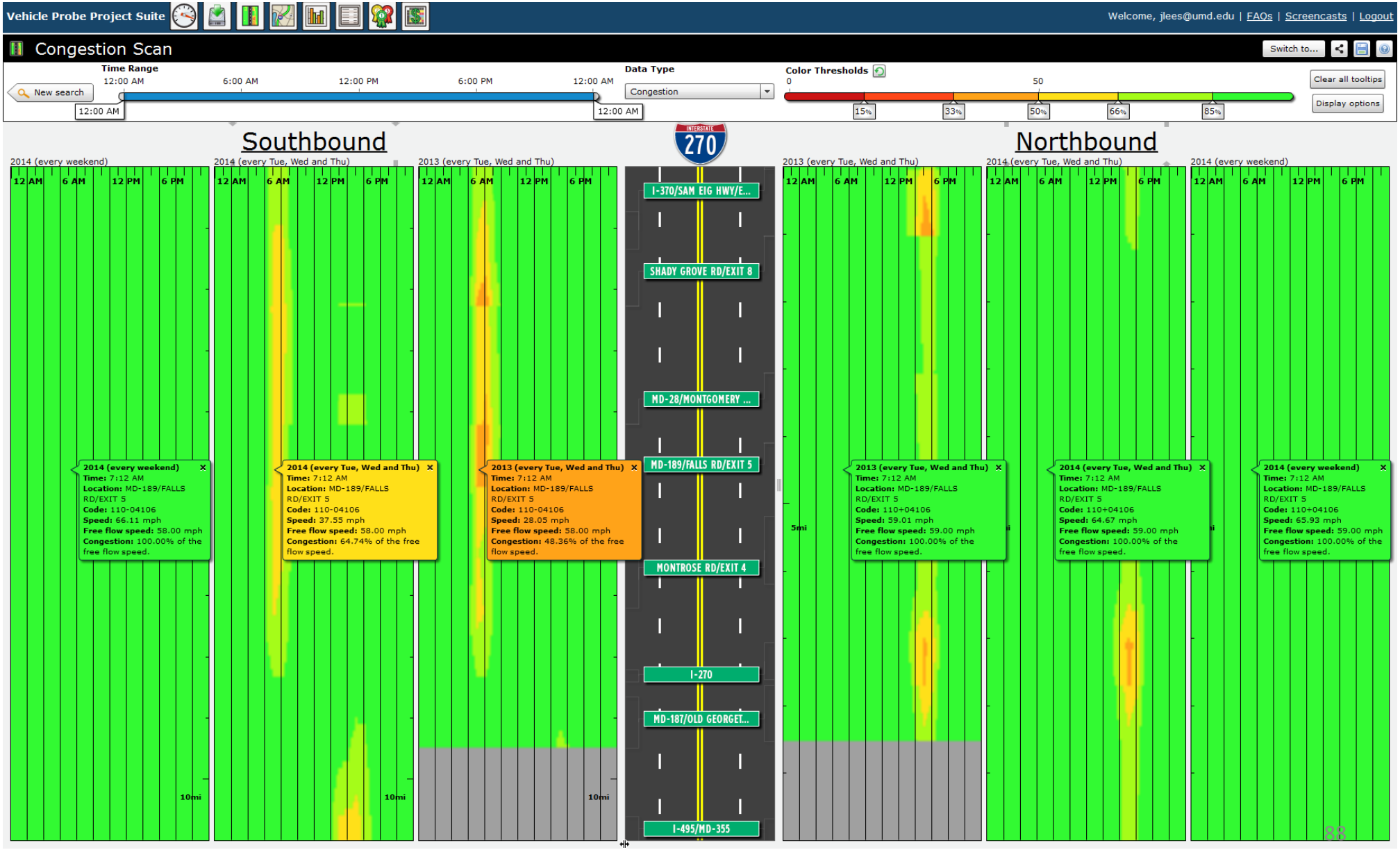
Congestion Scans

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



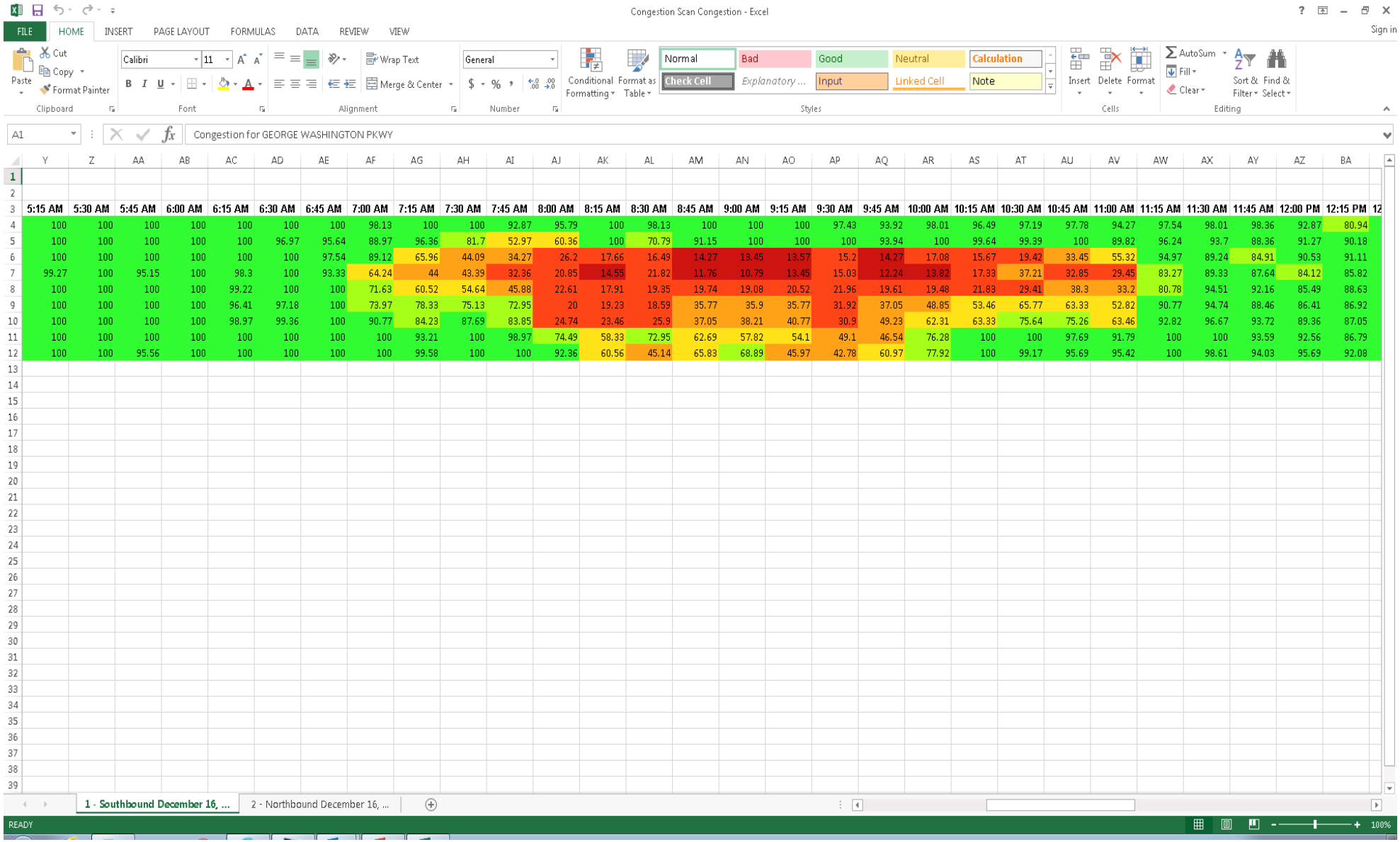
Congestion Scans

Display multiple date ranges on each scan. This is useful for before and after studies of the impacts of construction projects.



Congestion Scan Exports

Export All Congestion Scan Data to a preformatted Excel file.



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
100	100	100	100	100	100	100	98.13	100	100	92.87	95.79	100	98.13	100	100	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
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	100	93.94	100	99.64	99.39	100	89.82	96.24	93.7	88.36	91.27	90.18
100	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
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	12.24	13.82	17.33	37.21	32.85	29.45	83.27	89.33	87.64	84.12	85.82
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	21.96	19.61	19.48	21.83	29.41	38.3	33.2	80.78	94.51	92.16	85.49	88.63
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	31.92	37.05	48.85	53.46	65.77	63.33	52.82	90.77	94.74	88.46	86.41	86.92
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	30.9	49.23	62.31	63.33	75.64	75.26	63.46	92.82	96.67	93.72	89.36	87.05
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	49.1	46.54	76.28	100	100	97.69	91.79	100	100	93.59	92.56	86.79
100	100	95.56	100	100	100	100	100	99.58	100	100	92.36	60.56	45.14	65.83	68.89	45.97	42.78	60.97	77.92	100	99.17	95.69	95.42	100	98.61	94.03	95.69	92.08

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

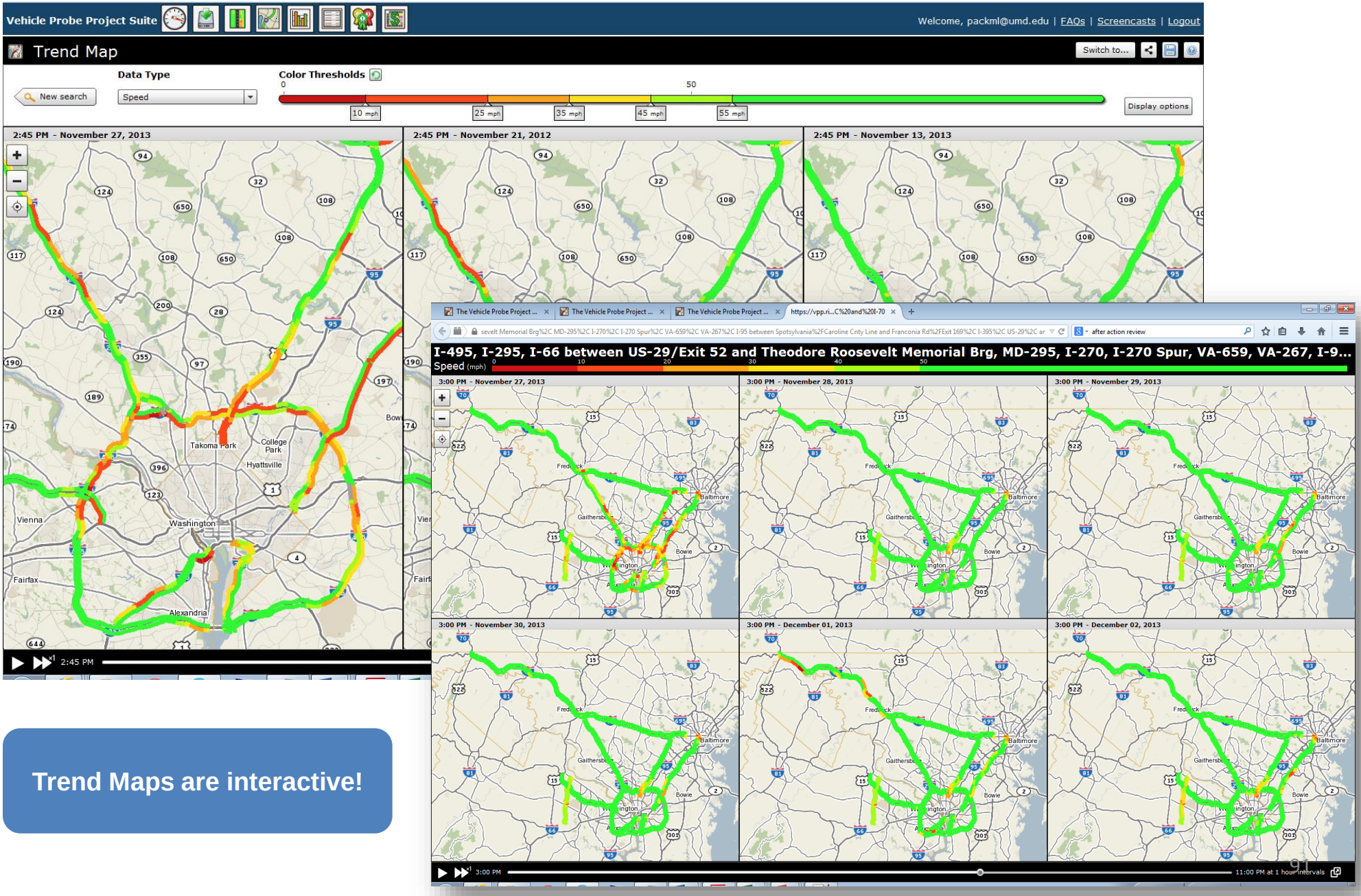
Collaborative Analysis

&

Public Press Releases

Trend Maps

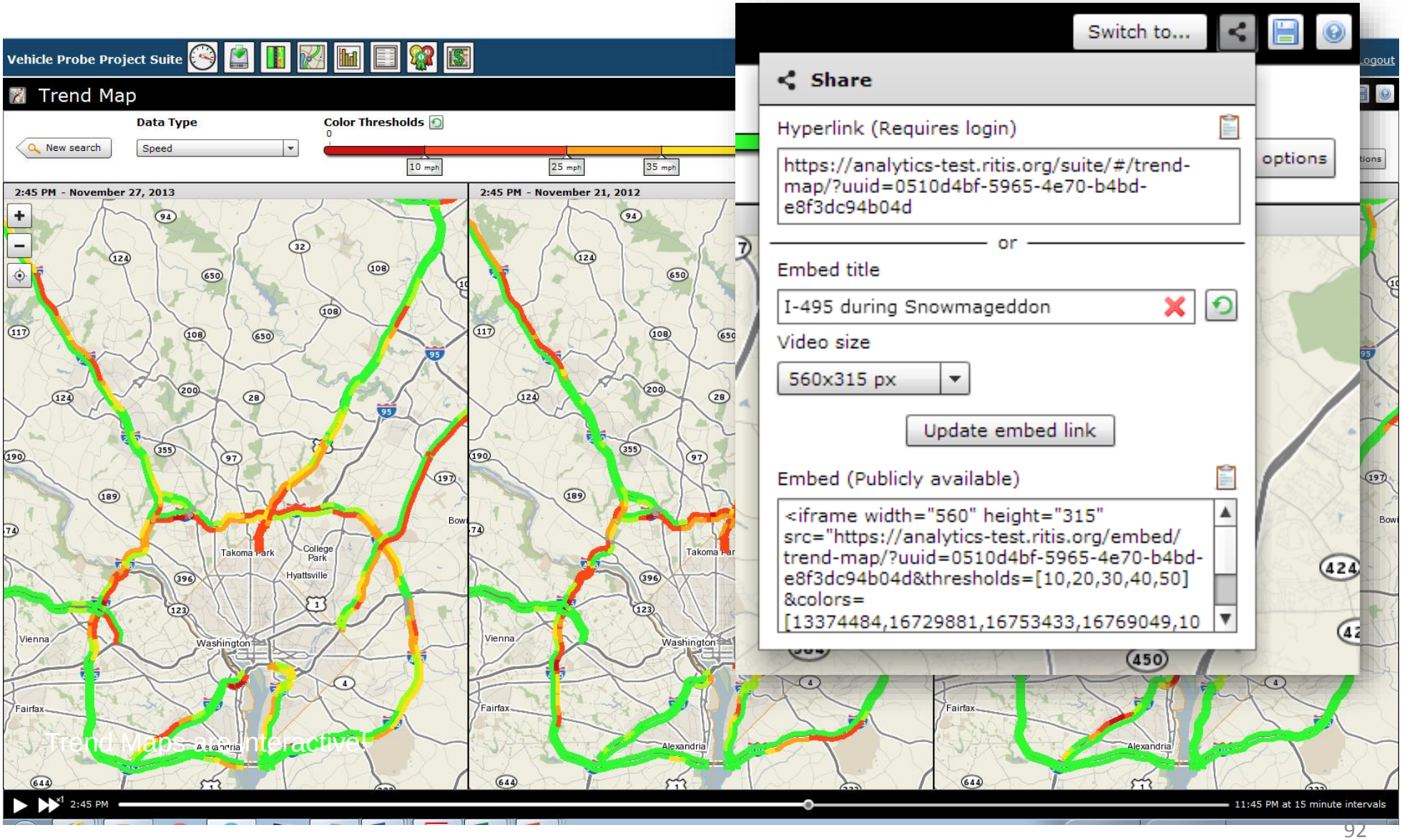
Up to seven maps can be drawn and animated simultaneously with the Trend map tool.



Trend Maps are interactive!

Trend Maps

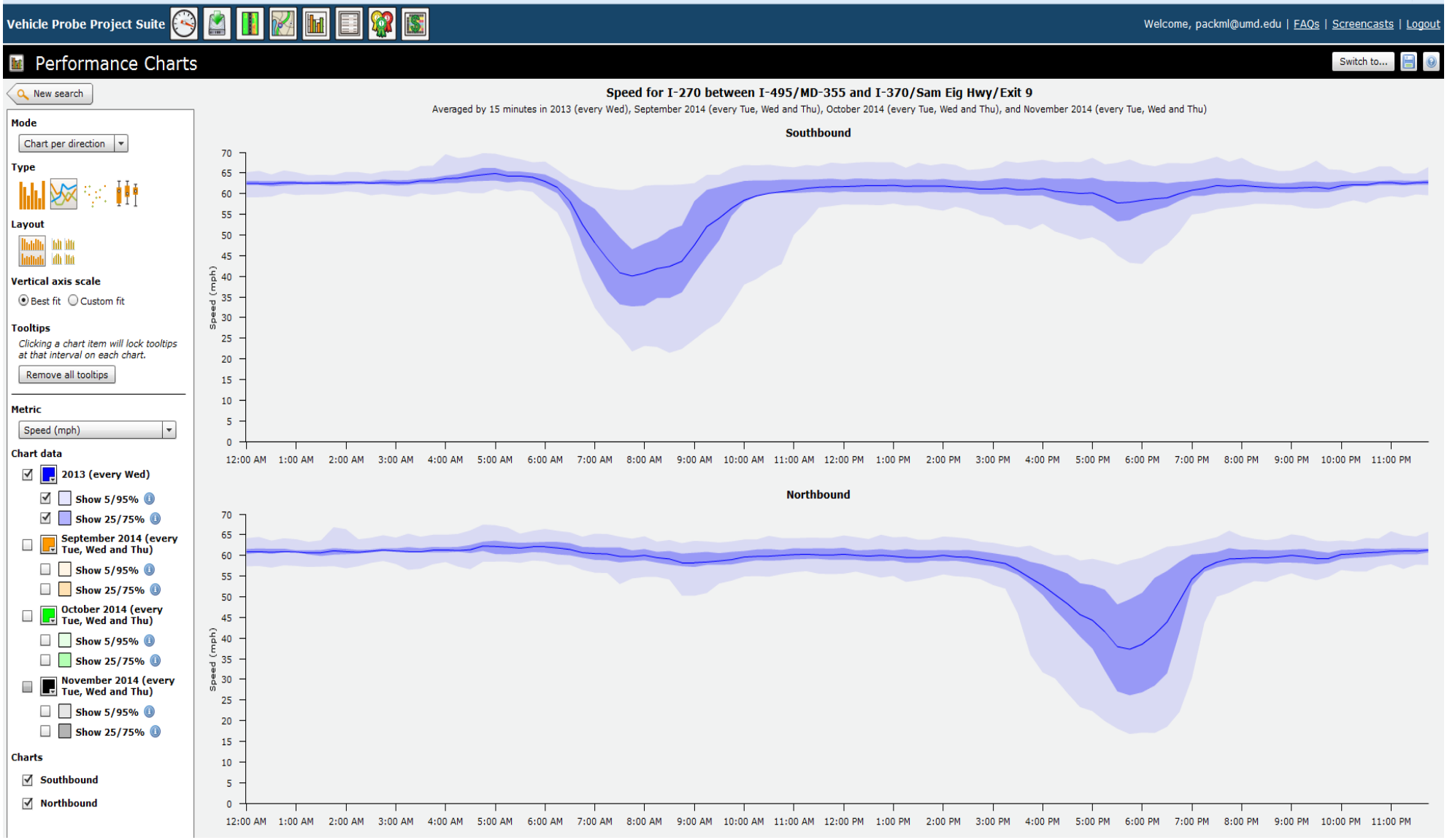
Trend maps can be can be shared as **Links**, **Movies**, **Animated GIFs** and **Interactive Embeds** on agency webpages.



Trend Maps are interactive!

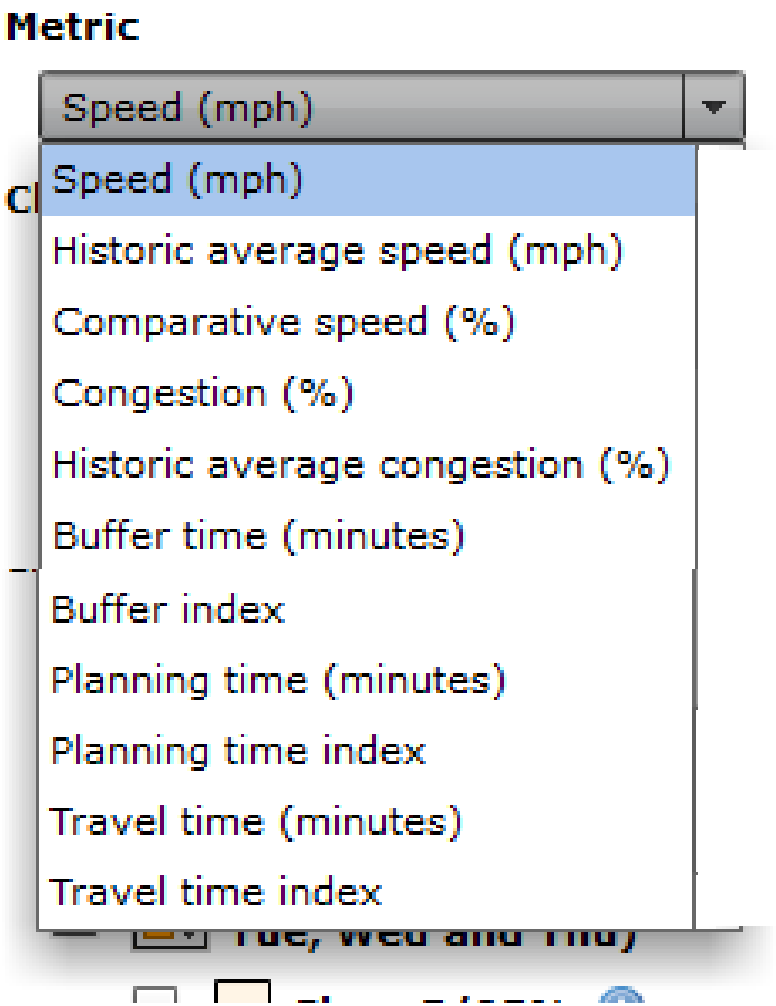
Performance Charts

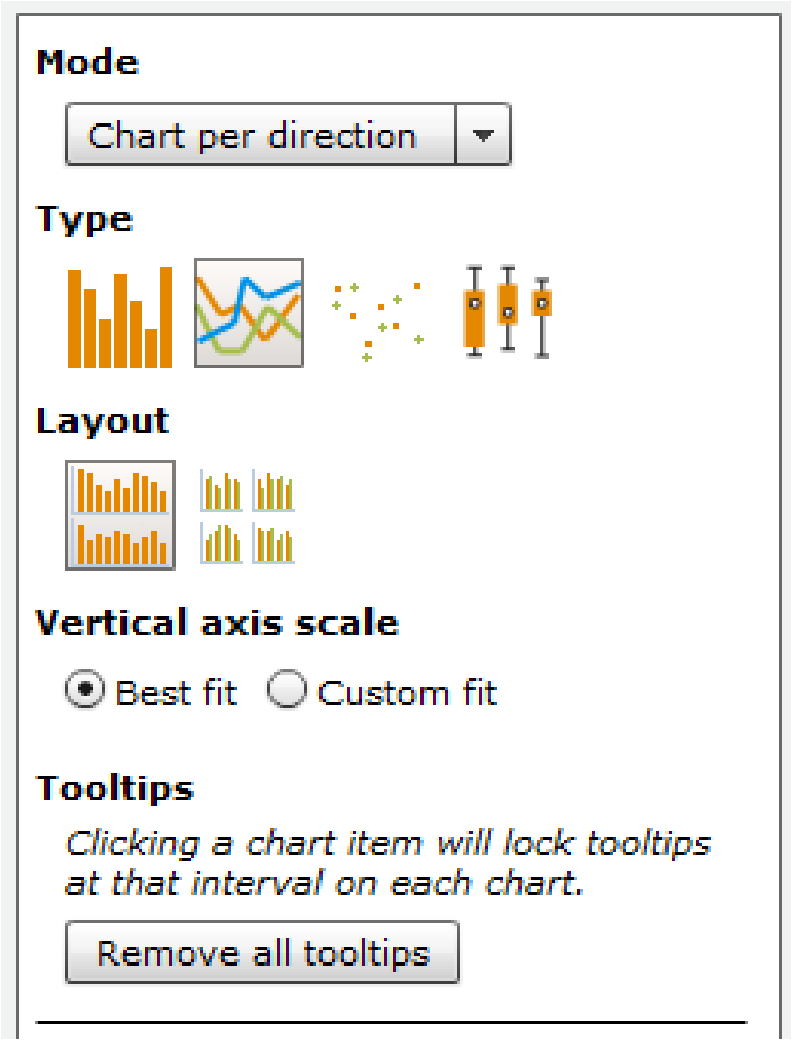
Line charts let users see average travel times, speeds, reliability measures, etc. and color bands depict the variability in the data over time. The dark blue band below represents the 25th/75th percentile, and the lighter blue bands represent the 5th/95th percentile.



Performance Charts

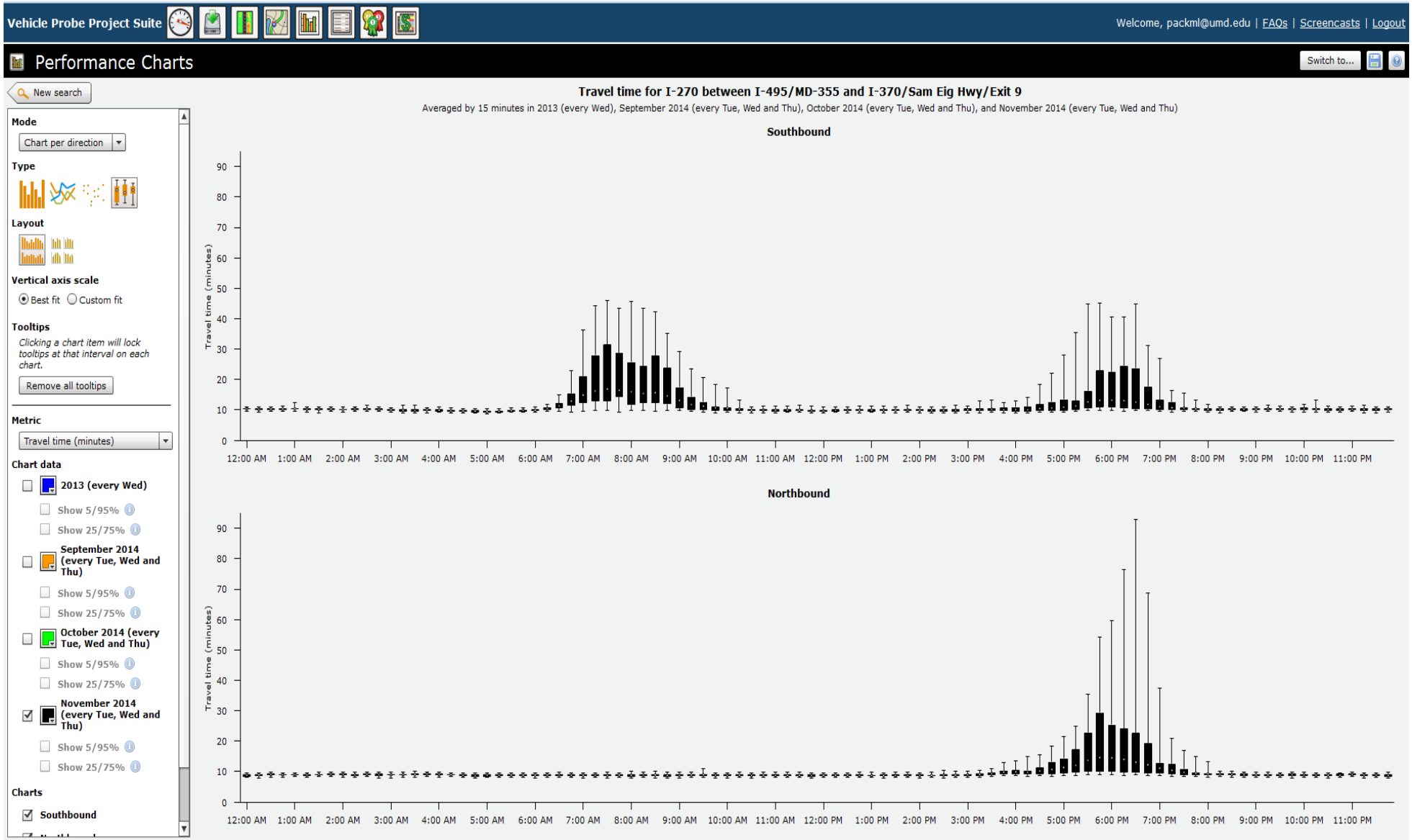
Performance Charts has a number of different Metrics and Display Modes available.





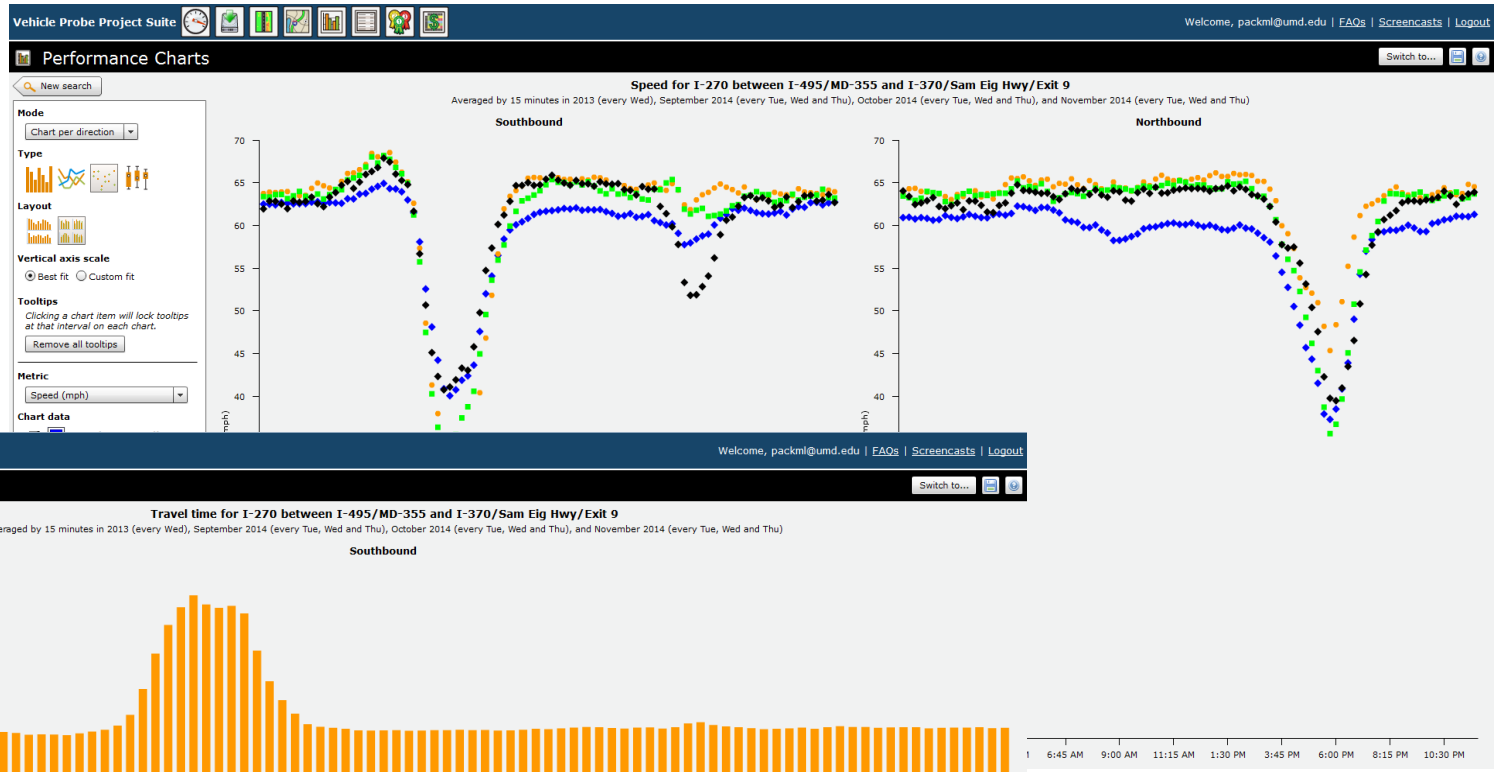
Performance Chart Modes

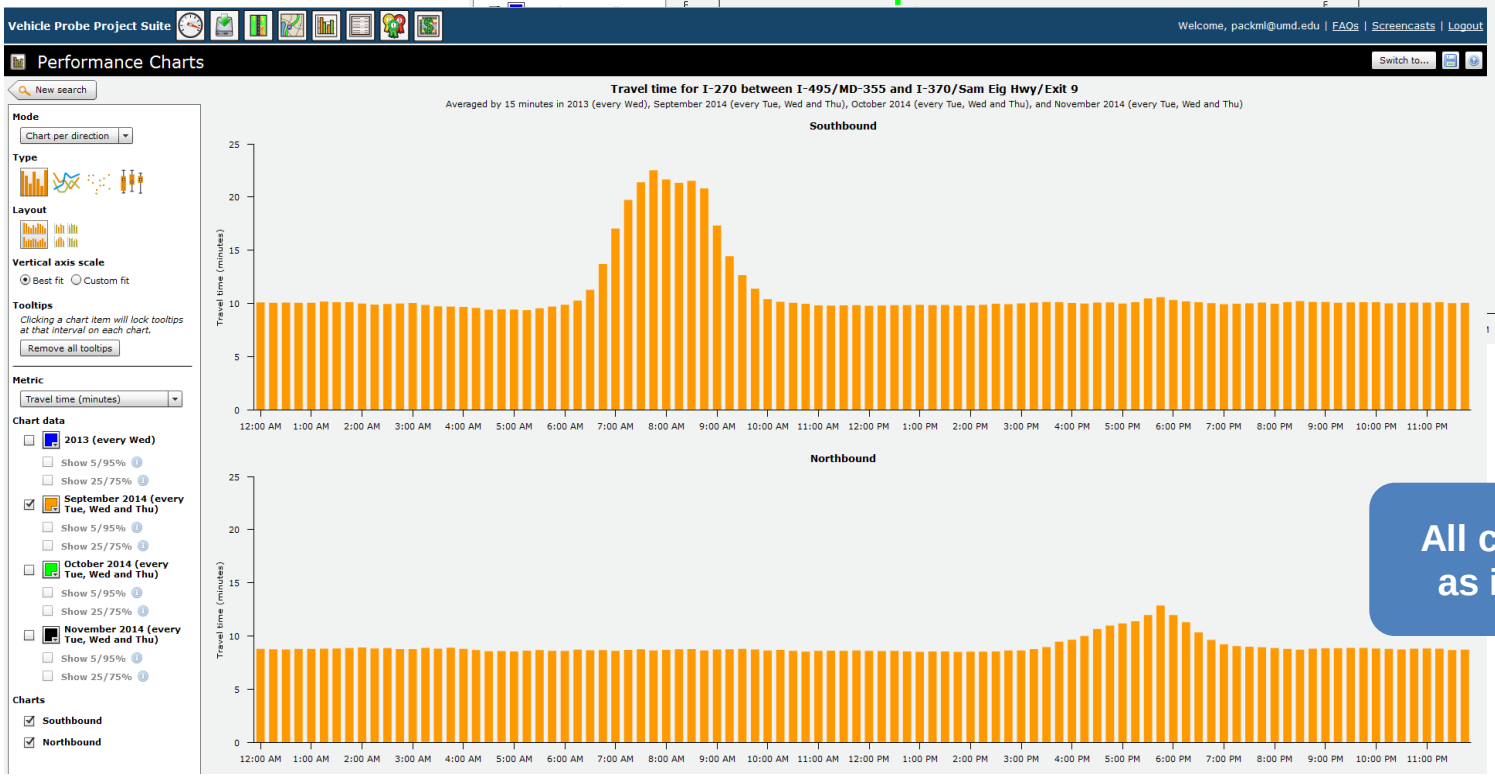
Box & Whiskers show average values along with 25th/75th percentile and 5th/95th percentile bands to give a sense of variability in travel times, reliability, and other metrics.



Performance Chart Modes

Bar, Scatter, Line, & Box and Whisker Plots are available options.

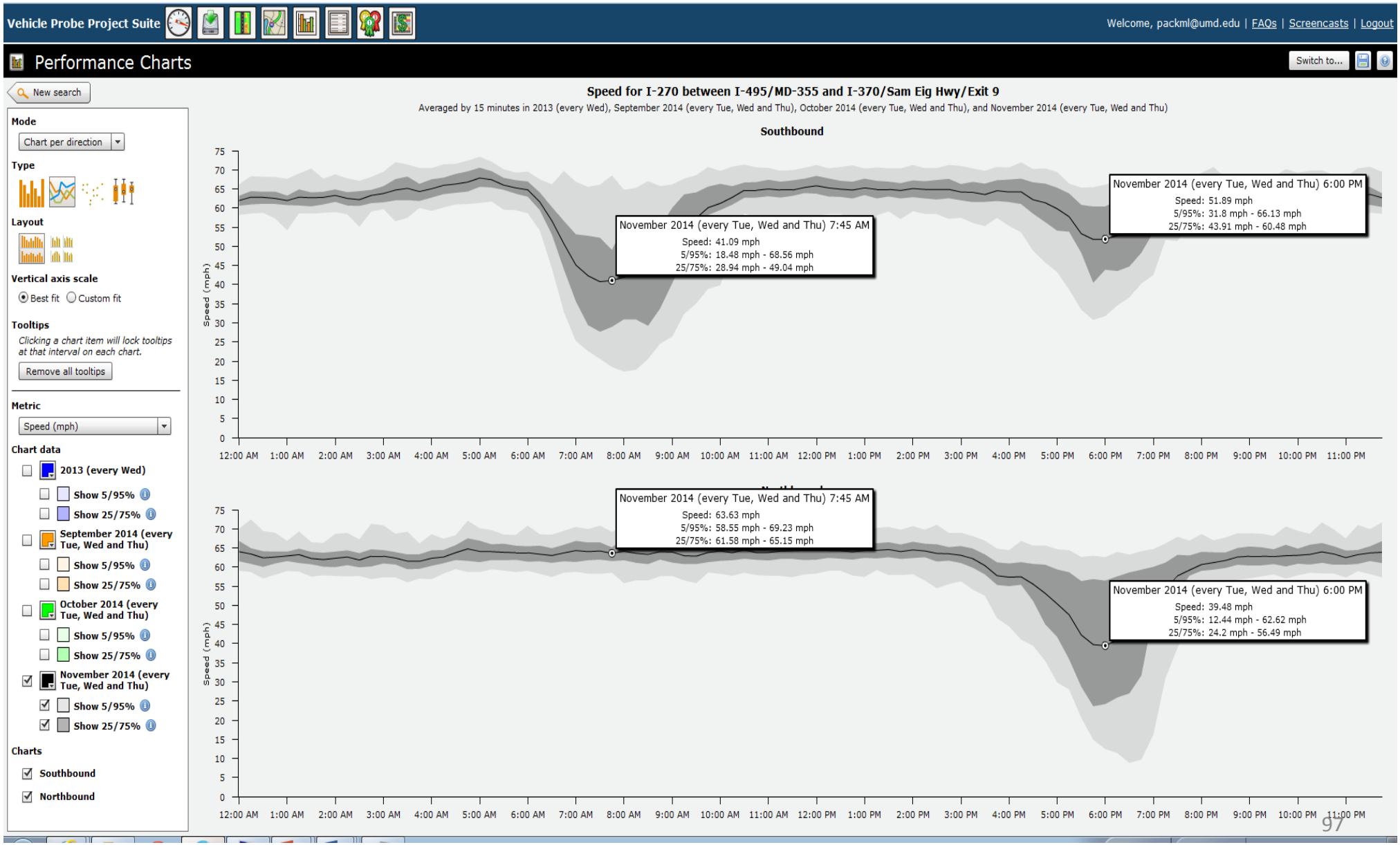




All charts can be exported as images or Excel files.

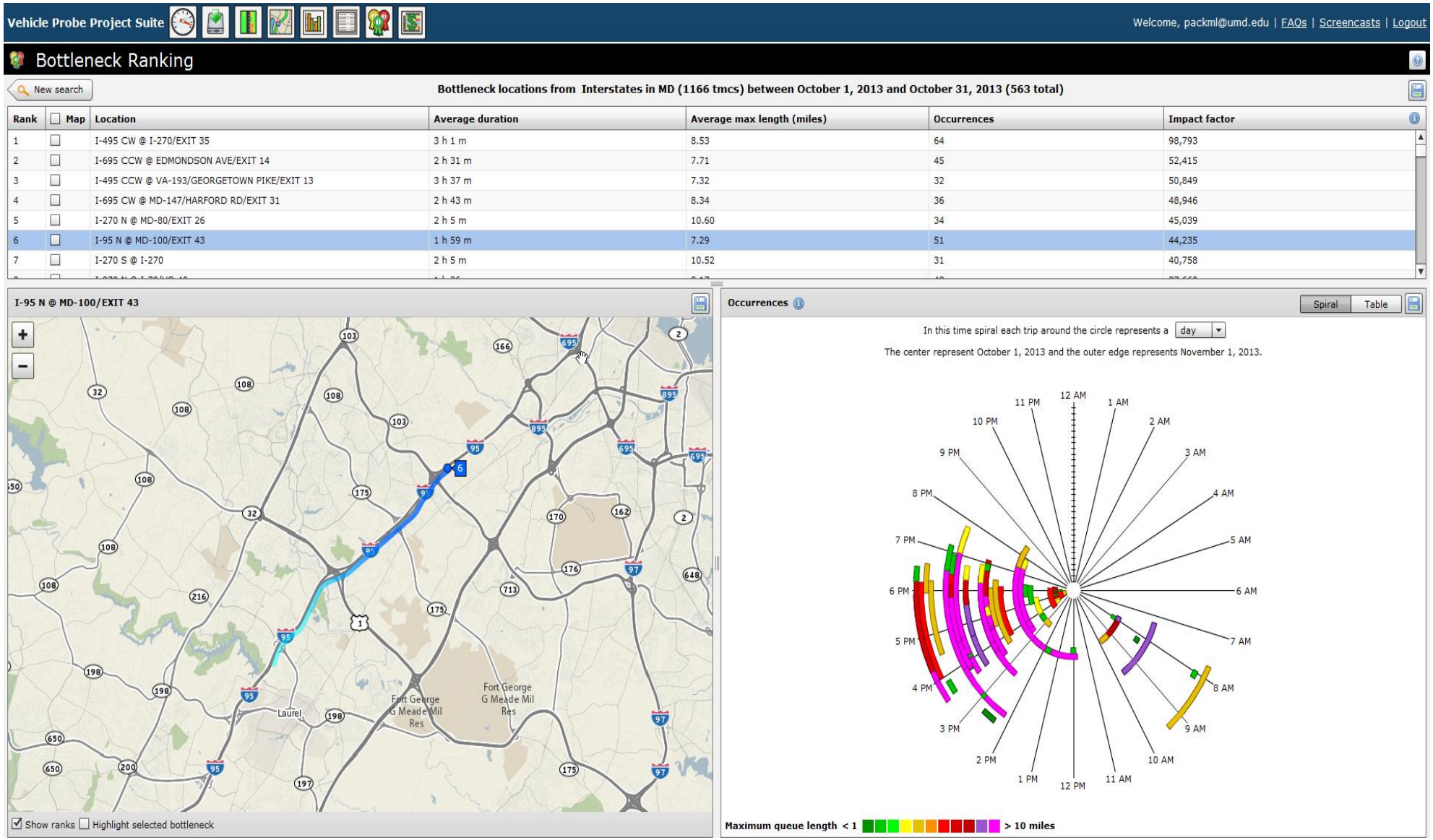
Performance Charts

The Performance Charts tool also has lockable tool tips.



Bottleneck Ranking

Useful for identifying problem locations, the bottleneck ranking tools allows a user to “rank” the worst the congested locations on a corridor, in 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.



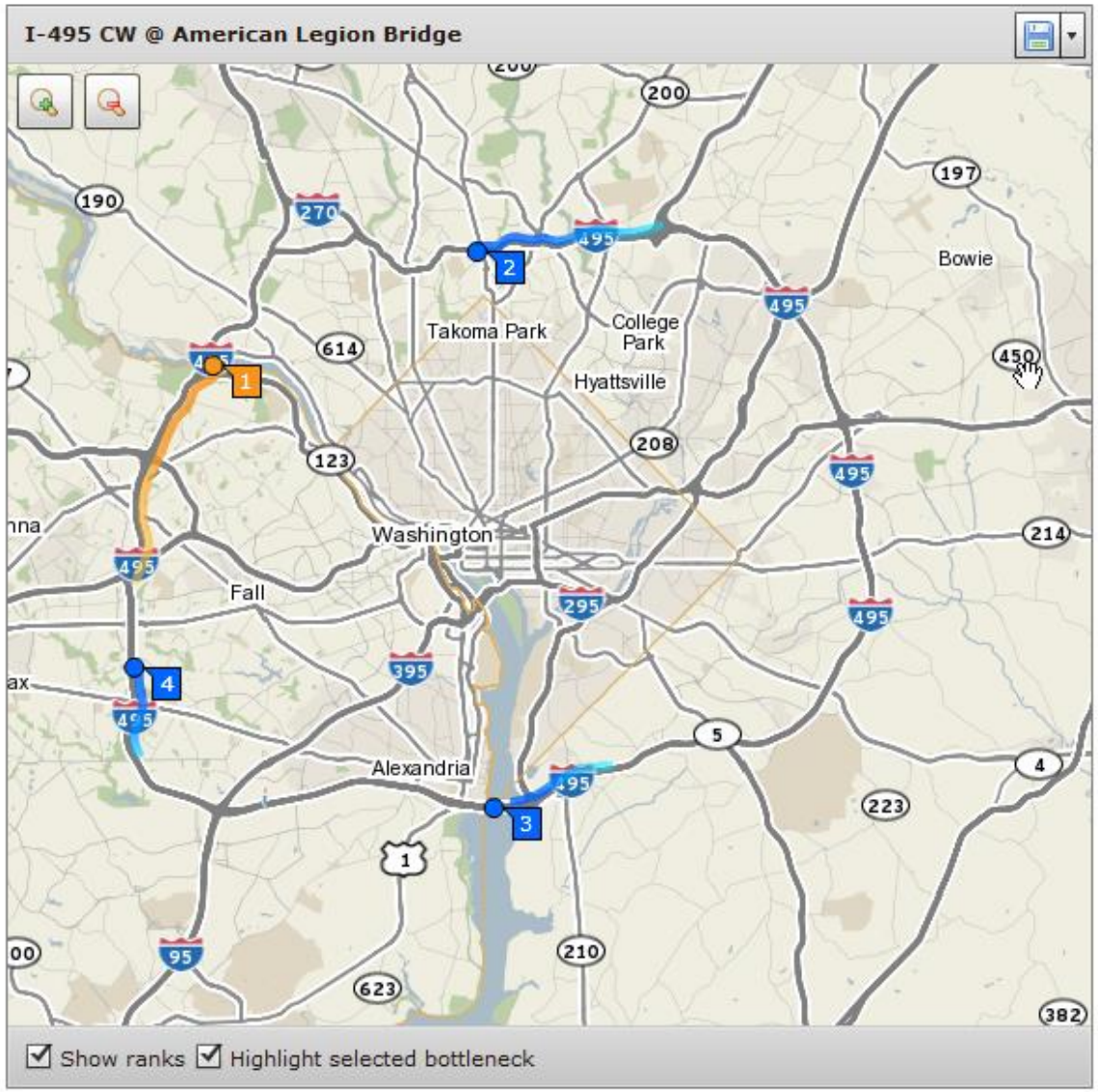
Rank	Map	Location	Average duration	Average max length (miles)	Occurrences	Impact factor
1	☐	I-495 CW @ I-270/EXIT 35	3 h 1 m	8.53	64	98,793
2	☐	I-695 CCW @ EDMONDSON AVE/EXIT 14	2 h 31 m	7.71	45	52,415
3	☐	I-495 CCW @ VA-193/GEORGETOWN PIKE/EXIT 13	3 h 37 m	7.32	32	50,849
4	☐	I-695 CW @ MD-147/HARFORD RD/EXIT 31	2 h 43 m	8.34	36	48,946
5	☐	I-270 N @ MD-80/EXIT 26	2 h 5 m	10.60	34	45,039
6	☐	I-95 N @ MD-100/EXIT 43	1 h 59 m	7.29	51	44,235
7	☐	I-270 S @ I-270	2 h 5 m	10.52	31	40,758

Bottleneck Ranking

Map multiple ranked bottlenecks:

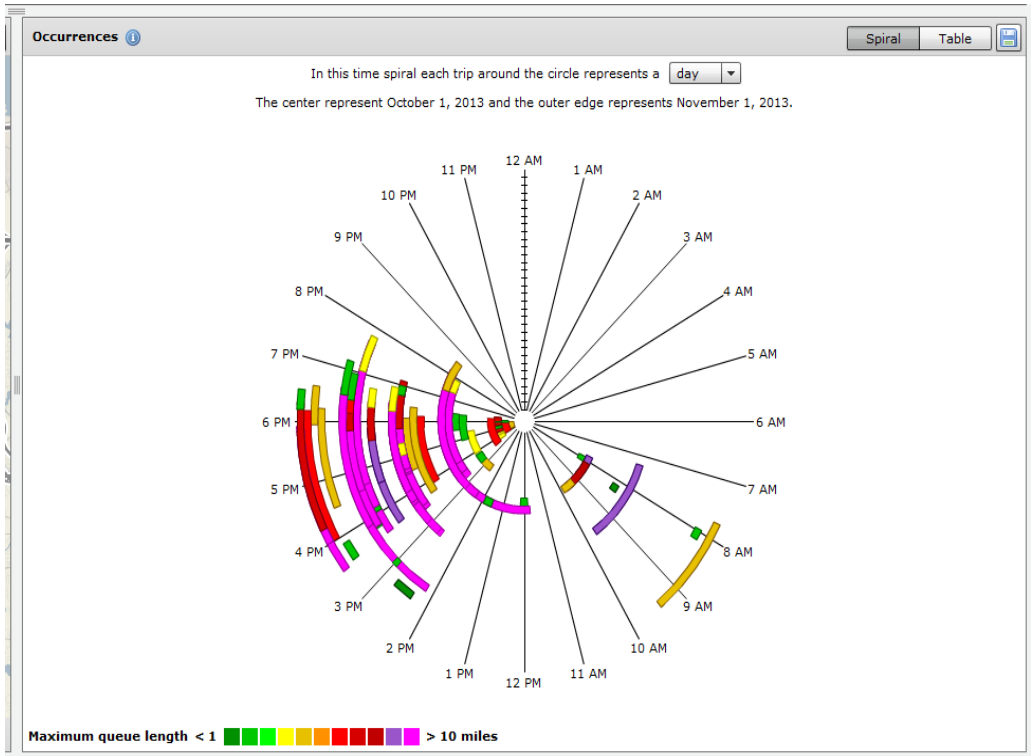
Each row in the table from the previous page includes a checkbox that controls whether or not the bottleneck shown in that row should be plotted on the map.

Checkboxes on the map panel allow you to disable the "highlighting" of the selected bottleneck and turn on or off the ranking numbers next to each map icon.



Bottleneck Ranking

The Bottleneck Ranking tool includes temporal charts & tables of bottleneck locations. Both are interactive.



Temporal Chart

Bottleneck Location Table

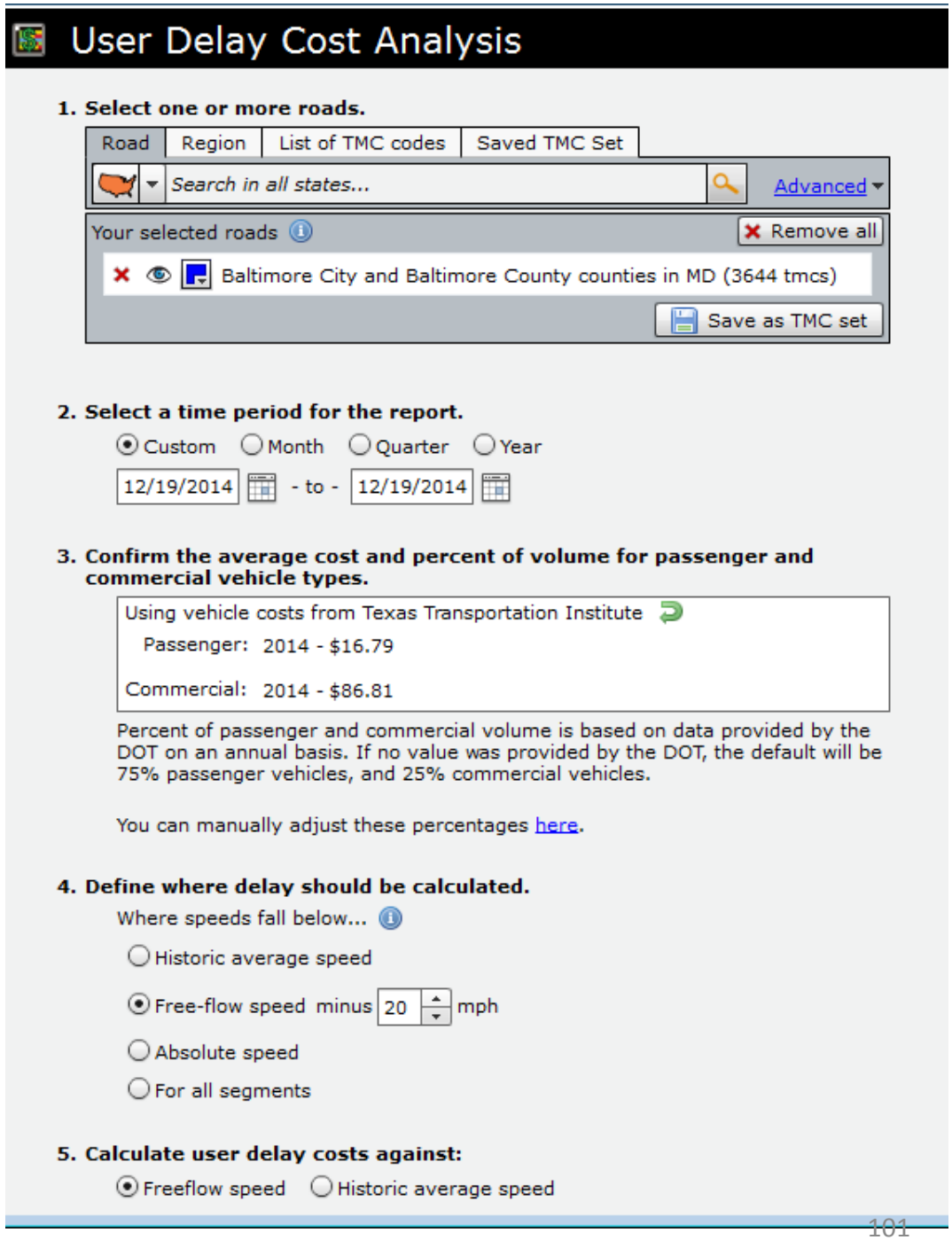
Spiral | Table

	Clear time	Duration	Max queue length (miles)
	Oct 1, 2013 5:59 PM	1 h 49 m	4.19
	Oct 2, 2013 5:58 PM	1 h 59 m	6.16
	Oct 2, 2013 6:03 PM	18 m	1.98
	Oct 3, 2013 5:06 PM	1 h 25 m	3.66
	Oct 3, 2013 5:06 PM	53 m	3.66
	Oct 3, 2013 6:30 PM	1 h 56 m	7.24
	Oct 3, 2013 5:21 PM	19 m	1.09
	Oct 3, 2013 6:30 PM	1 h 3 m	7.24
	Oct 3, 2013 5:59 PM	7 m	1.09
	Oct 4, 2013 6:16 PM	2 h 49 m	6.16
	Oct 7, 2013 3:13 PM	44 m	4.19
	Oct 7, 2013 3:48 PM	36 m	1.98
Oct 7, 2013 3:54 PM	Oct 7, 2013 5:23 PM	1 h 28 m	3.32
Oct 8, 2013 4:55 PM	Oct 8, 2013 6:20 PM	1 h 25 m	1.98
Oct 9, 2013 7:51 AM	Oct 9, 2013 8:07 AM	16 m	1.05
Oct 9, 2013 5:32 PM	Oct 9, 2013 6:22 PM	50 m	1.98
Oct 10, 2013 7:44 AM	Oct 10, 2013 9:40 AM	1 h 56 m	9.41
Oct 10, 2013 8:05 AM	Oct 10, 2013 9:40 AM	1 h 35 m	8.49
Oct 10, 2013 9:14 AM	Oct 10, 2013 9:53 AM	39 m	4.23
Oct 10, 2013 11:49 AM	Oct 10, 2013 12:11 PM	22 m	1.98
Oct 10, 2013 3:11 PM	Oct 10, 2013 7:39 PM	4 h 27 m	16.80
Oct 10, 2013 3:30 PM	Oct 10, 2013 7:39 PM	4 h 8 m	16.80
Oct 10, 2013 3:59 PM	Oct 10, 2013 7:39 PM	3 h 39 m	16.80
Oct 10, 2013 7:19 PM	Oct 10, 2013 7:55 PM	35 m	3.32
Oct 11, 2013 11:43 AM	Oct 11, 2013 8:10 PM	8 h 27 m	16.80

User Delay Cost Analysis

Tool allows users to:

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



User Delay Cost Analysis

Here is an example of UDC estimates broken 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, per vehicle, person hours of delay, Volumes, Data Availability, etc. Tables can be exported to Excel.

Vehicle Type All

Display Total cost

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									Daily Totals
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									$289.6K
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									$389K
12/03/14	$0.1K	$0K	$0K	$0K	$0.1K	$1K	$20.4K	$40.6K	$33.3K	$16.1K	$2.8K	$0.6K	$0.5K	$1.4K	$4.5K	$12.1K		$56.7K	$27.3K	$3.5K	$0.7K	$0.5K	$0.2K	$0.1K	$256.1K
12/04/14	$0K	$0K	$0K	$0.1K	$0K	$0.5K	$17.6K	$35K	$29K	$8.4K	$1.2K	$0.7K	$0.5K	$0.5K	$8.1K	$18.7K		$58.8K	$41.4K	$1.8K	$0.6K	$0.4K	$0.2K		$256.4K
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	$2.1K	$0.5K	$0.5K		$296K
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		$7.5K	$2.6K	$1.4K	$1.7K	$1.1K	$0.8K	$80.7K
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		$1.4K	$2.2K	$0.4K	$0.3K	$0.2K	$0.2K	$27.5K
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							$0.1K	$150.9K
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						$0K	$354.3K
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						$0.1K	$297.9K
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						$0K	$256K
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						$0.2K	$256K
12/13/14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$2K	$11.1K	$9K	$9.2K	$8.1K						$0.6K	$50.9K
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						$0.3K	$9.1K
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						$0.1K	$283.2K
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						$0.1K	$301.7K
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						$0.1K	$303.8K
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	$15.9K	$9K	$9.2K	$4K	Grand Total $3,859,177.94

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

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Commercial: 42,080 vph
Data validity: 100%
Click the table cell to see links to congestion scans

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.

Legend

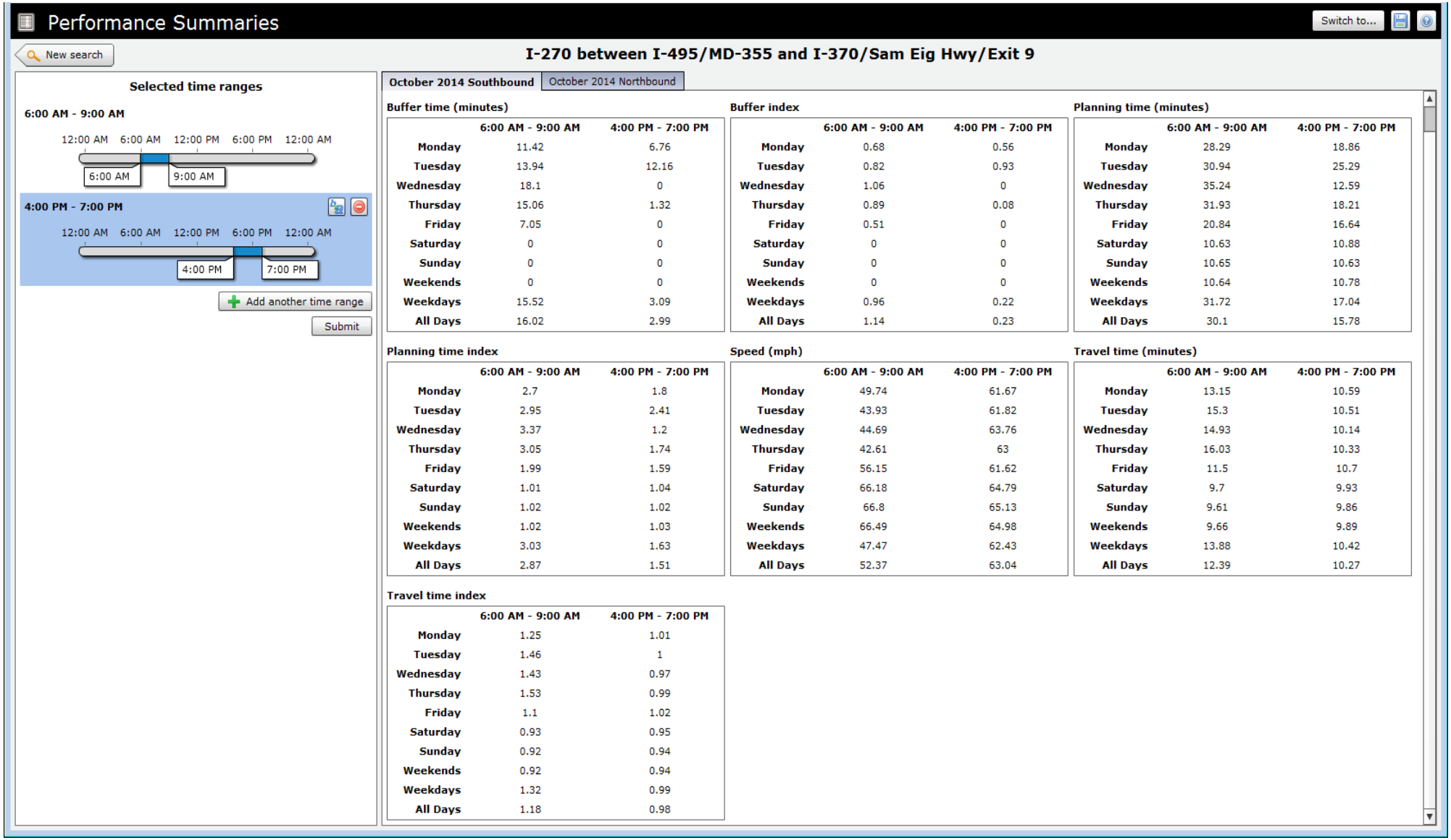
Weekdays: Lowest – Highest

Weekends: Lowest – Highest

No data

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.



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

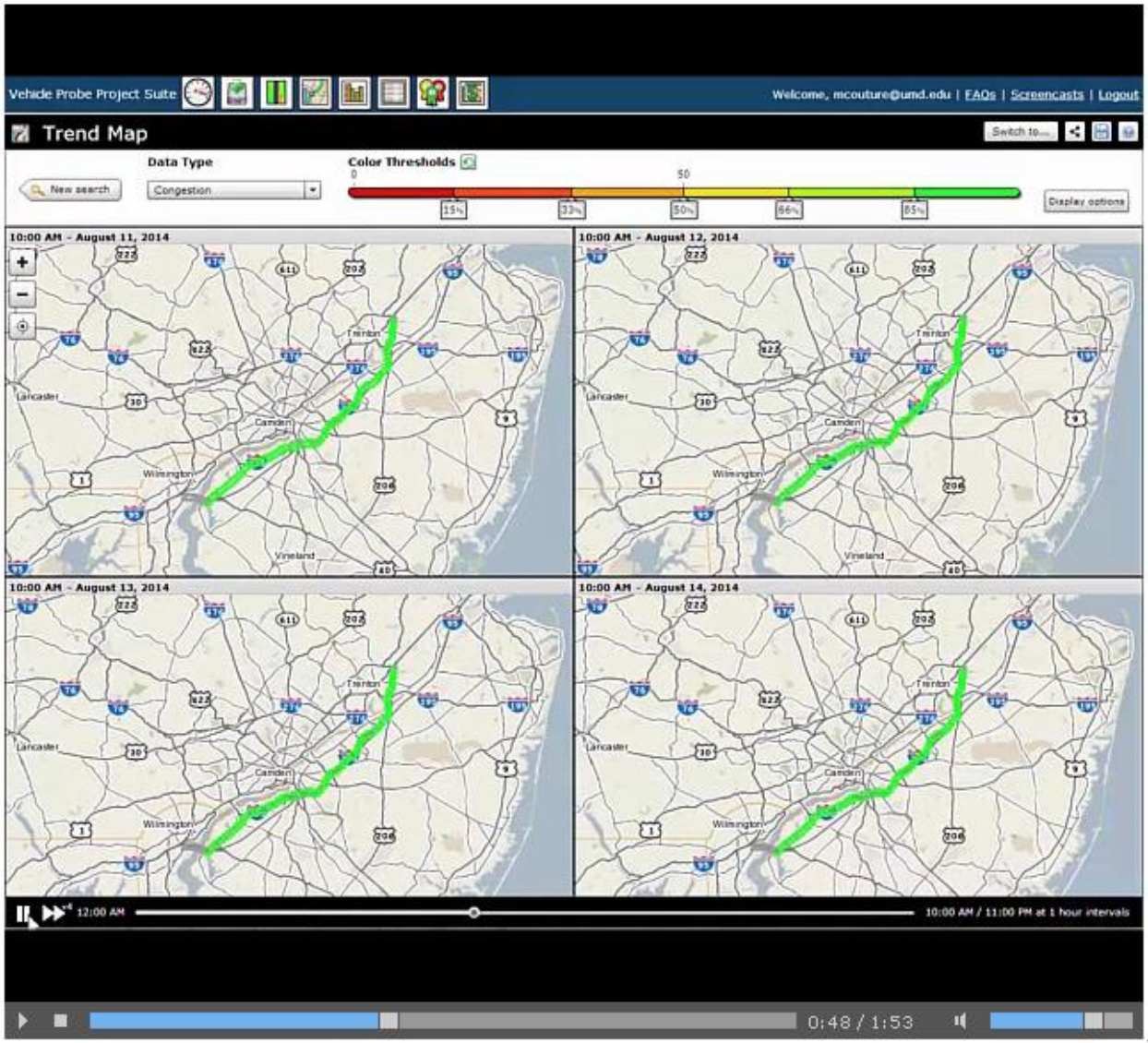
	6:00 AM - 9:00 AM	4:00 PM - 7:00 PM
Monday	1.25	1.01
Tuesday	1.46	1
Wednesday	1.43	0.97
Thursday	1.53	0.99
Friday	1.1	1.02
Saturday	0.93	0.95
Sunday	0.92	0.94
Weekends	0.92	0.94
Weekdays	1.32	0.99
All Days	1.18	0.98

Online Video Tutorial

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

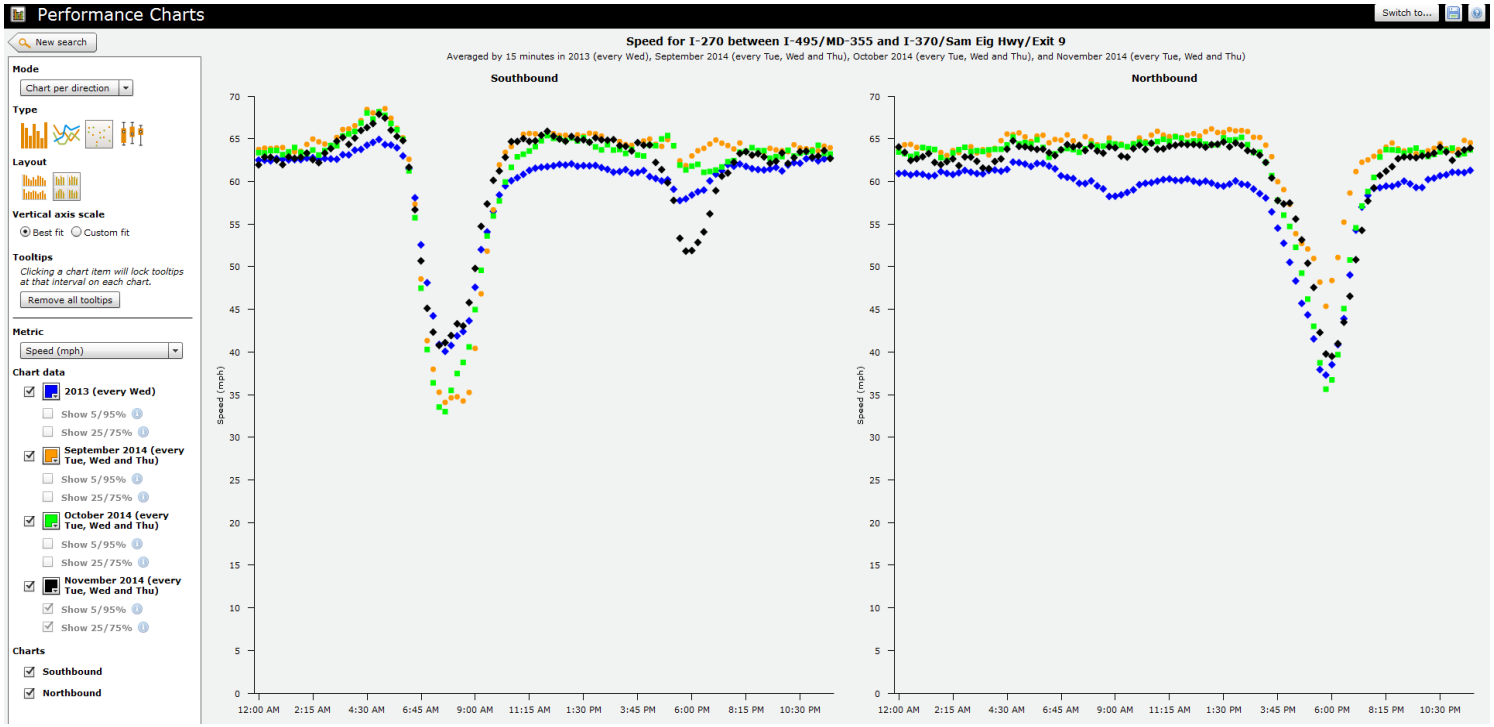
Vehicle Probe Project Suite Tutorials

- Getting Access
- The Tools Available
- Road Selection
- Time Period Selection
- The Bottleneck and Incident Dashboard
- The Massive Data Downloader
- Retrieving Exports
- Congestion Scan
- **Trend Map**
- Performance Charts
- Performance Summaries
- Bottleneck Ranking
- User Delay Cost Analysis



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



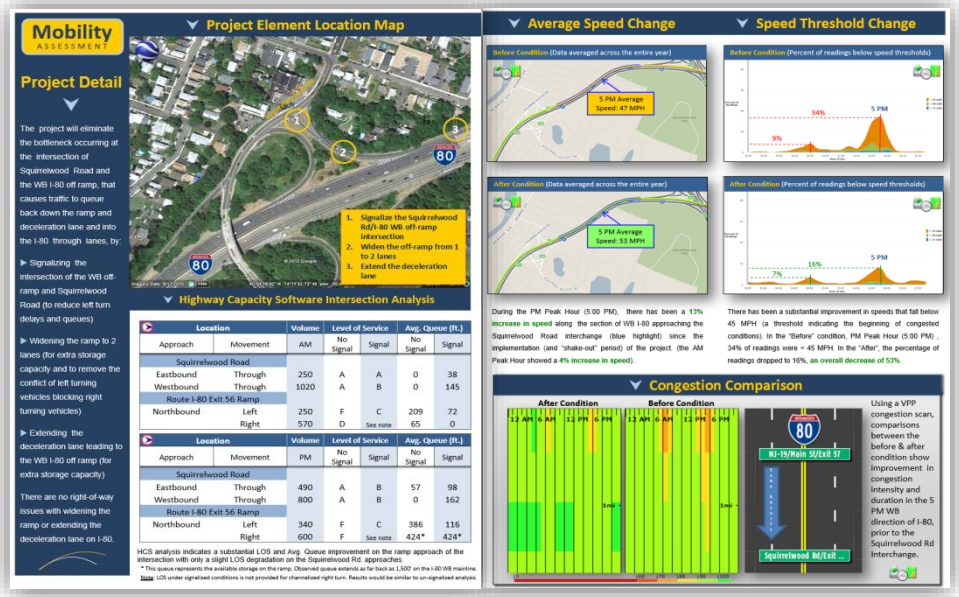
Reporting Templates for Before & After Studies

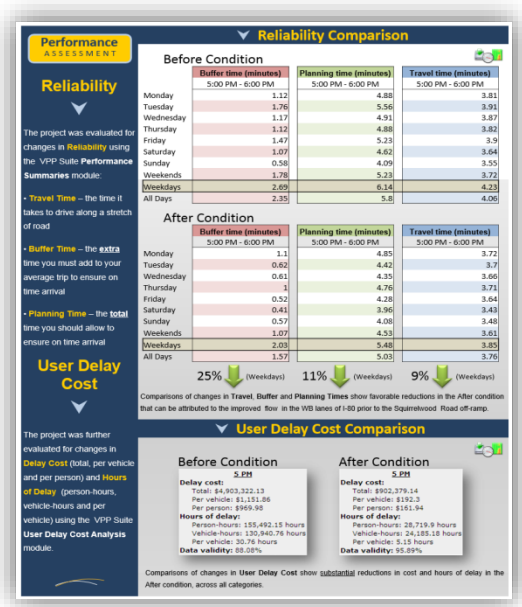
Multiple PPT and Word templates have been developed to help agencies quickly produce:

- Project justification documents
- 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 descriptive).

I-95 Corridor Coalition Members in partnership with the CATT Lab have aided in the development of these templates.





Reporting Templates for Before & After Studies

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

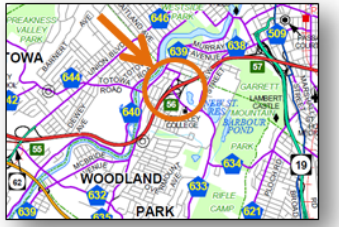
Completion Date: March 3, 2008

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 Area Location Map

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.

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

1. Signalize the Squirrelwood Rd/I-80 WB off-ramp intersection
2. Widen the off-ramp from 1 to 2 lanes
3. Extend the deceleration lane

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.

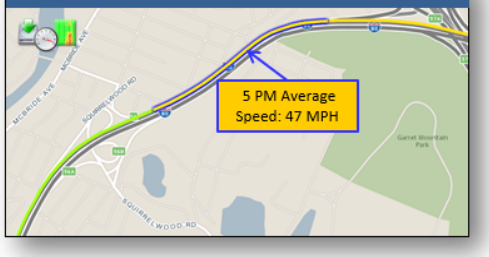
* This queue represents the available storage on the ramp. Observed queue extends as far back as 1,500' on the I-80 WB mainline.

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

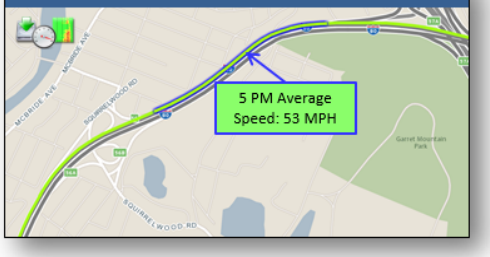
Reporting Templates for Before & After Studies

Average Speed Change

Before Condition (Data averaged across the entire year)



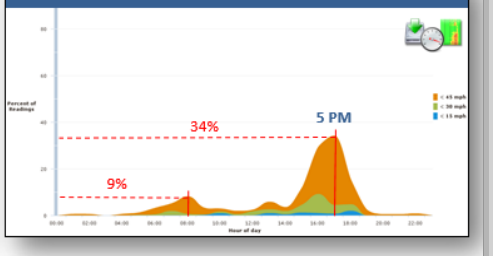
After Condition (Data averaged across the entire year)



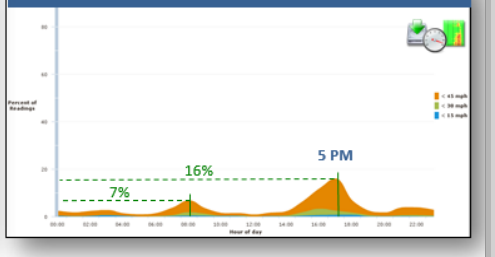
During the PM Peak Hour (5:00 PM), there has been a **13% increase in speed** along the section of WB I-80 approaching the Squirrelwood Road interchange (blue highlight) since the implementation (and "shake-out" period) of the project. (the AM Peak Hour showed a **4% increase in speed**).

Speed Threshold Change

Before Condition (Percent of readings below speed thresholds)

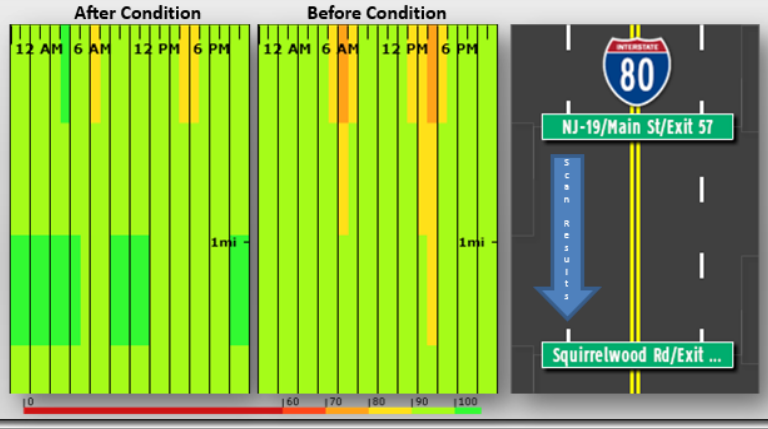


After Condition (Percent of readings below speed thresholds)



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)	Planning time (minutes)	Travel time (minutes)
	5:00 PM - 6:00 PM	5:00 PM - 6:00 PM	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)	Planning time (minutes)	Travel time (minutes)
	5:00 PM - 6:00 PM	5:00 PM - 6:00 PM	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

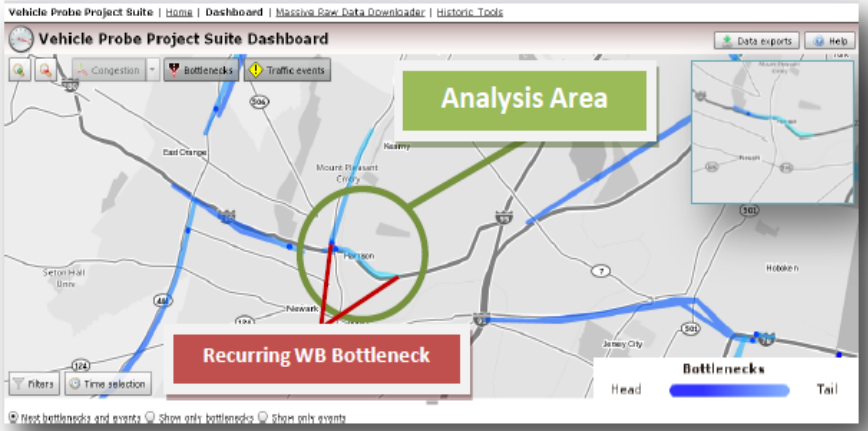
Data validity: 95.89%

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

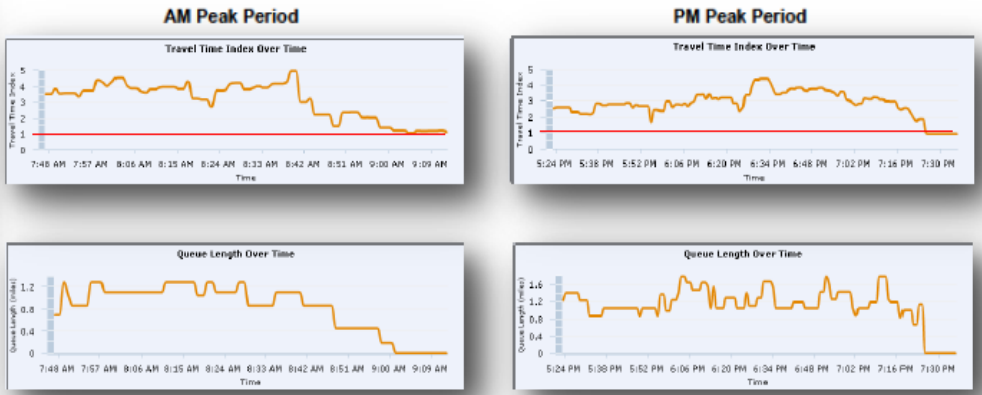
Reporting Templates for Before & After Studies

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)



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

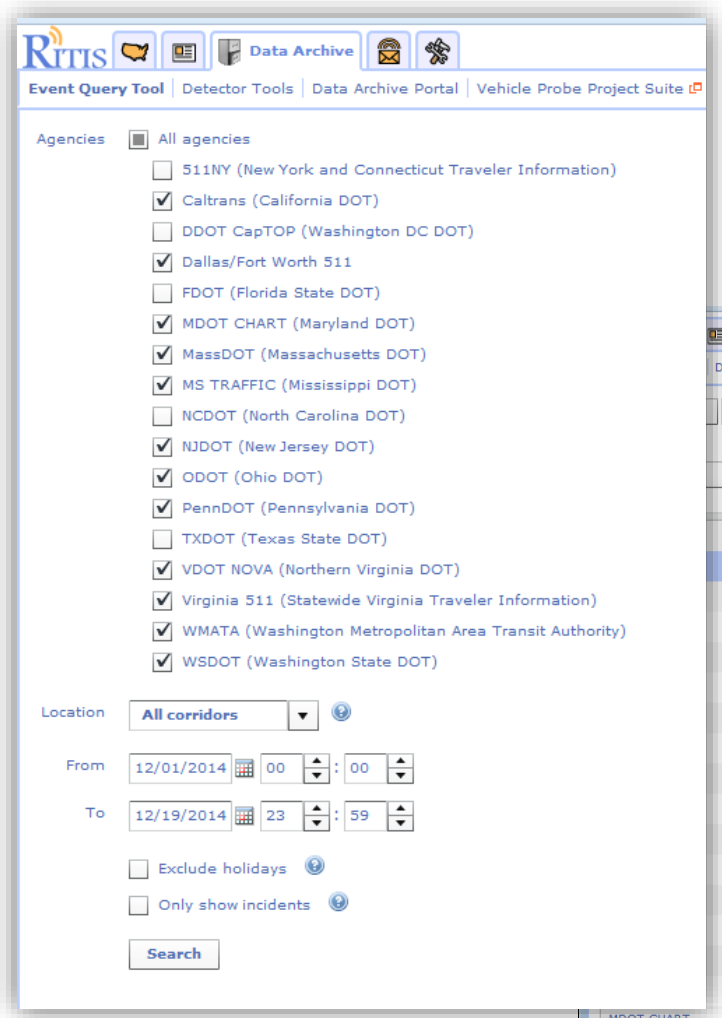
Assessment

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

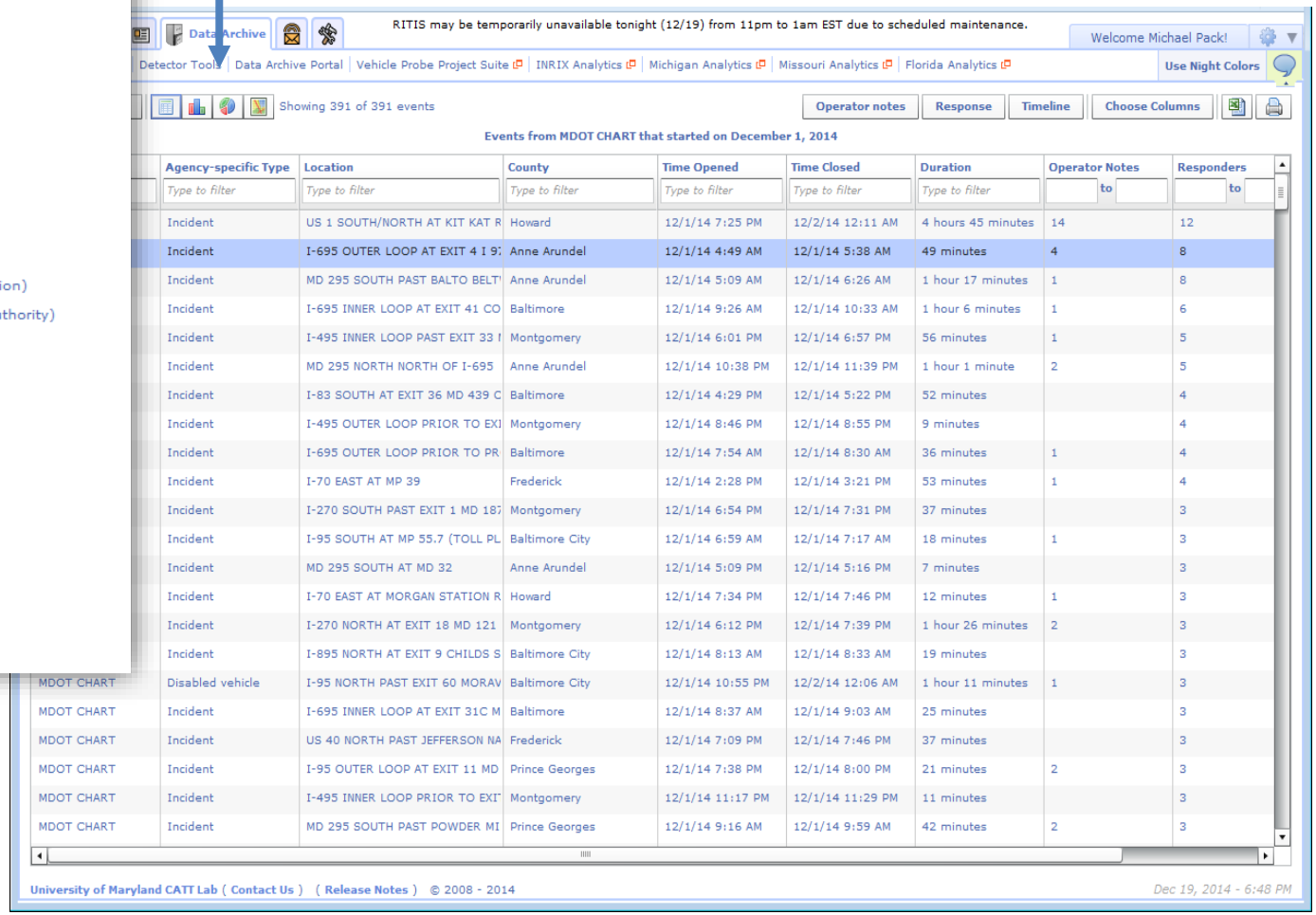
- ▶ **Travel Time Indices** show TTIs of 2-5 for most of the AM peak period, and 2-4 for the PM peak period, indicating that travel within this section is taking 2 to 5 times longer than under free-flow conditions during these periods
- ▶ **Queue Lengths** generally range between 1.0 and 1.2 miles during 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

Created on 07.08.11
Technical Analysis Unit, Bureau of Systems Planning

Analyzing Incidents and Events from Agency Traffic Management Systems



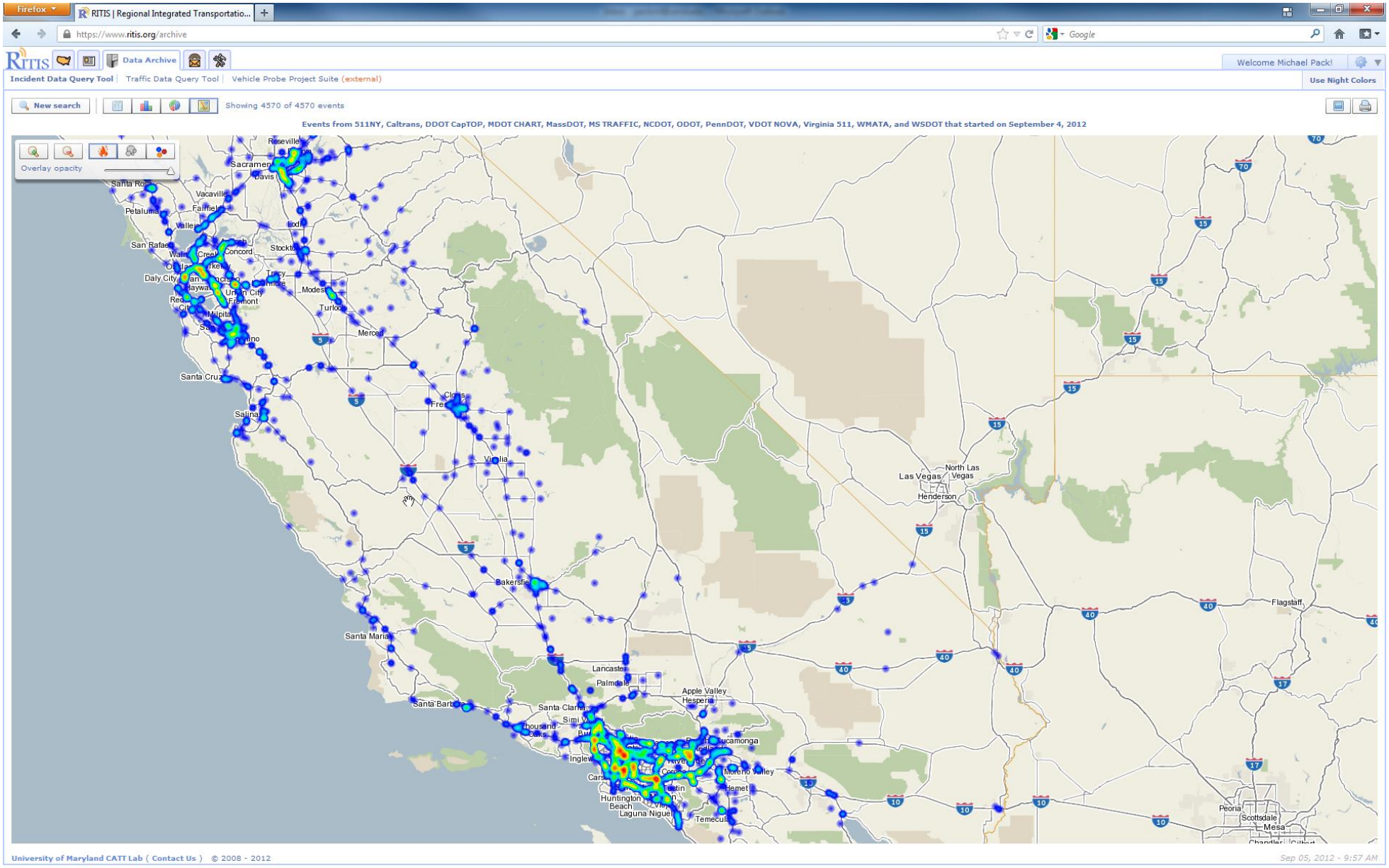
Different styles of Maps and Charts are shown on the next few pages



	Agency-specific Type	Location	County	Time Opened	Time Closed	Duration	Operator Notes	Responders
	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
	Incident	I-695 OUTER LOOP AT EXIT 4 I 97	Anne Arundel	12/1/14 4:49 AM	12/1/14 5:38 AM	49 minutes	4	8
	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
	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
	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
	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
	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
	Incident	I-495 OUTER LOOP PRIOR TO EXI	Montgomery	12/1/14 8:46 PM	12/1/14 8:55 PM	9 minutes		4
	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
	Incident	I-70 EAST AT MP 39	Frederick	12/1/14 2:28 PM	12/1/14 3:21 PM	53 minutes	1	4
	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
	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
	Incident	MD 295 SOUTH AT MD 32	Anne Arundel	12/1/14 5:09 PM	12/1/14 5:16 PM	7 minutes		3
	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
	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
	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 MORAV	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 EXIT	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

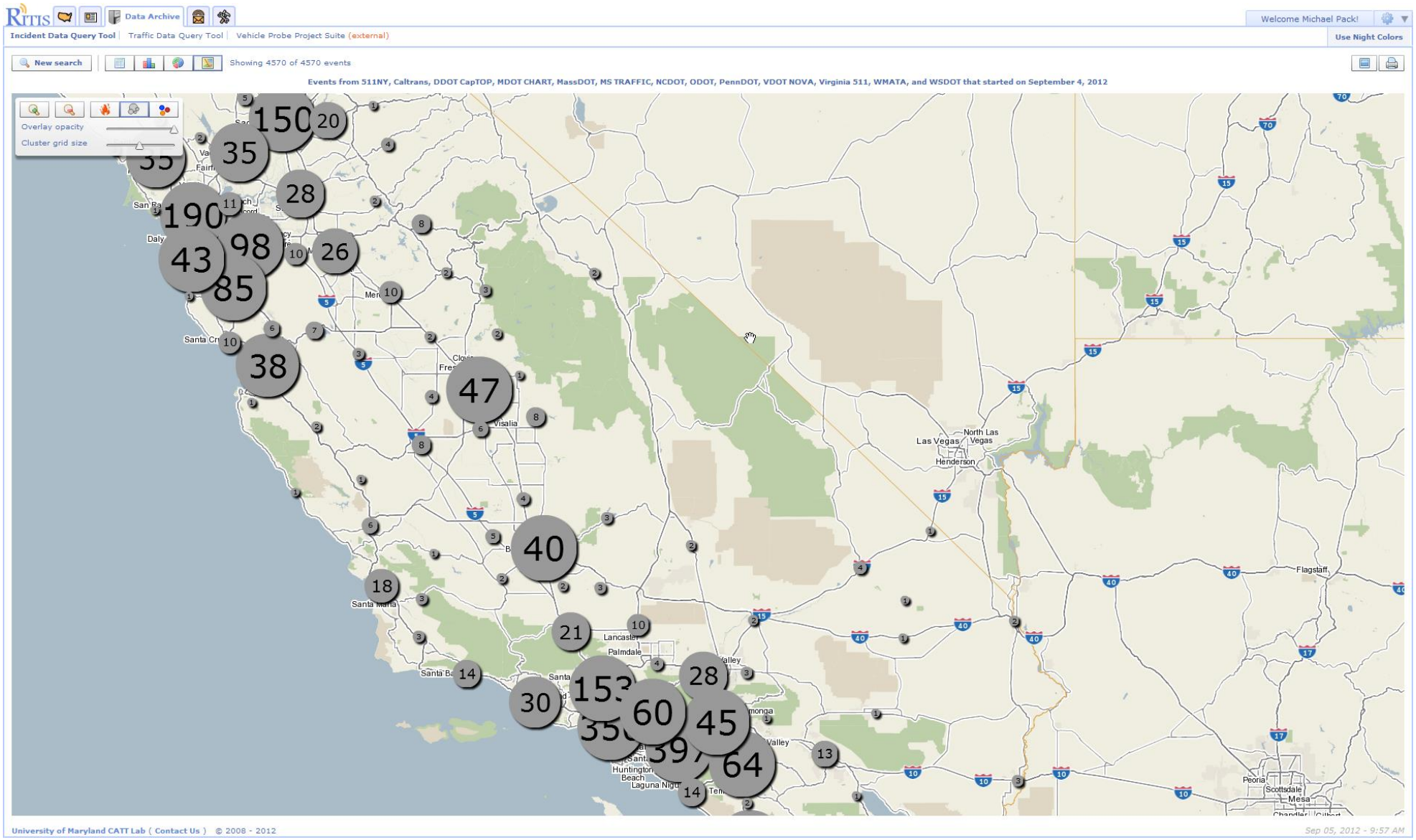
Accident and Event Analytics

Event Heat Map



Accident and Event Analytics

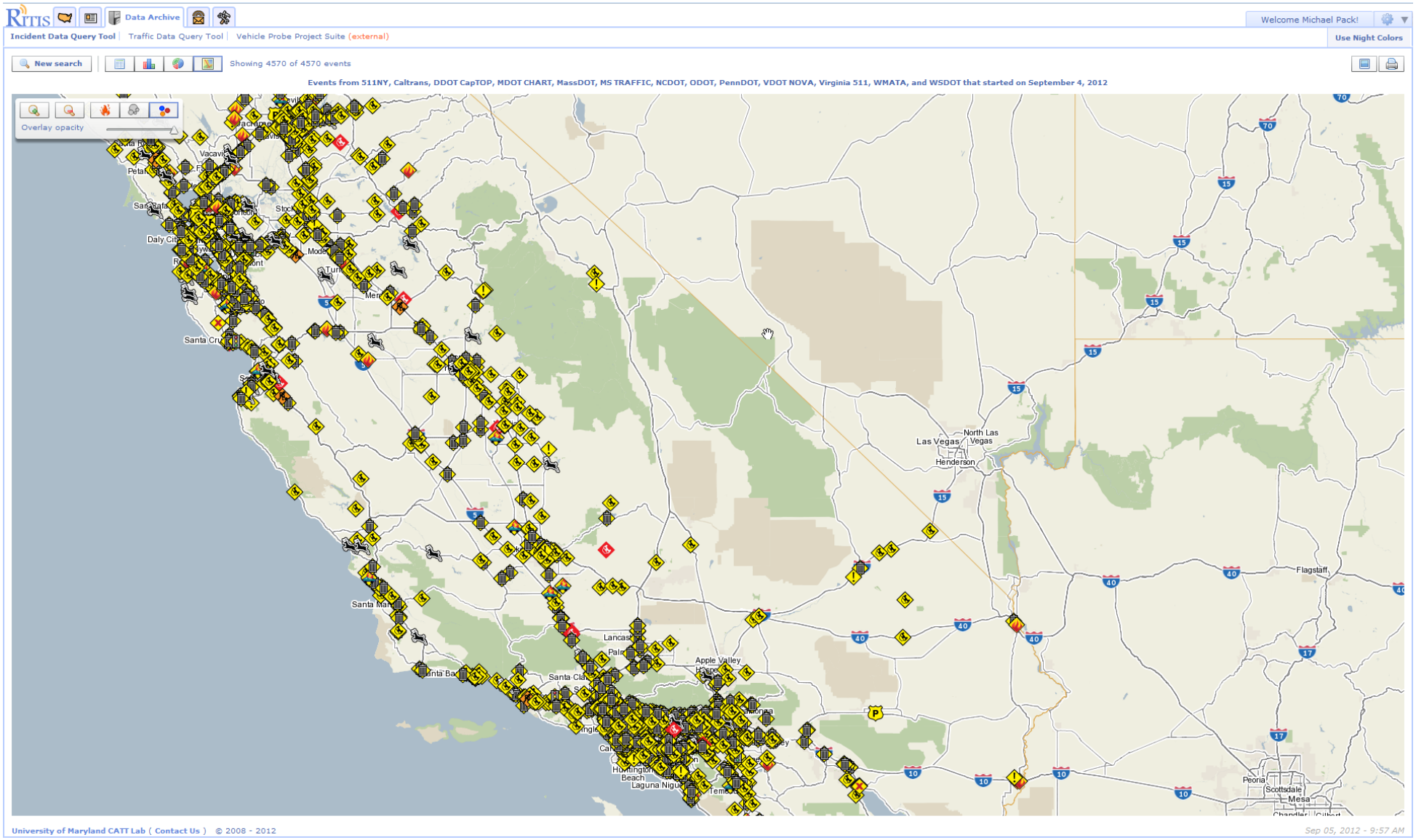
Event Cluster Diagram



Accident and Event Analytics

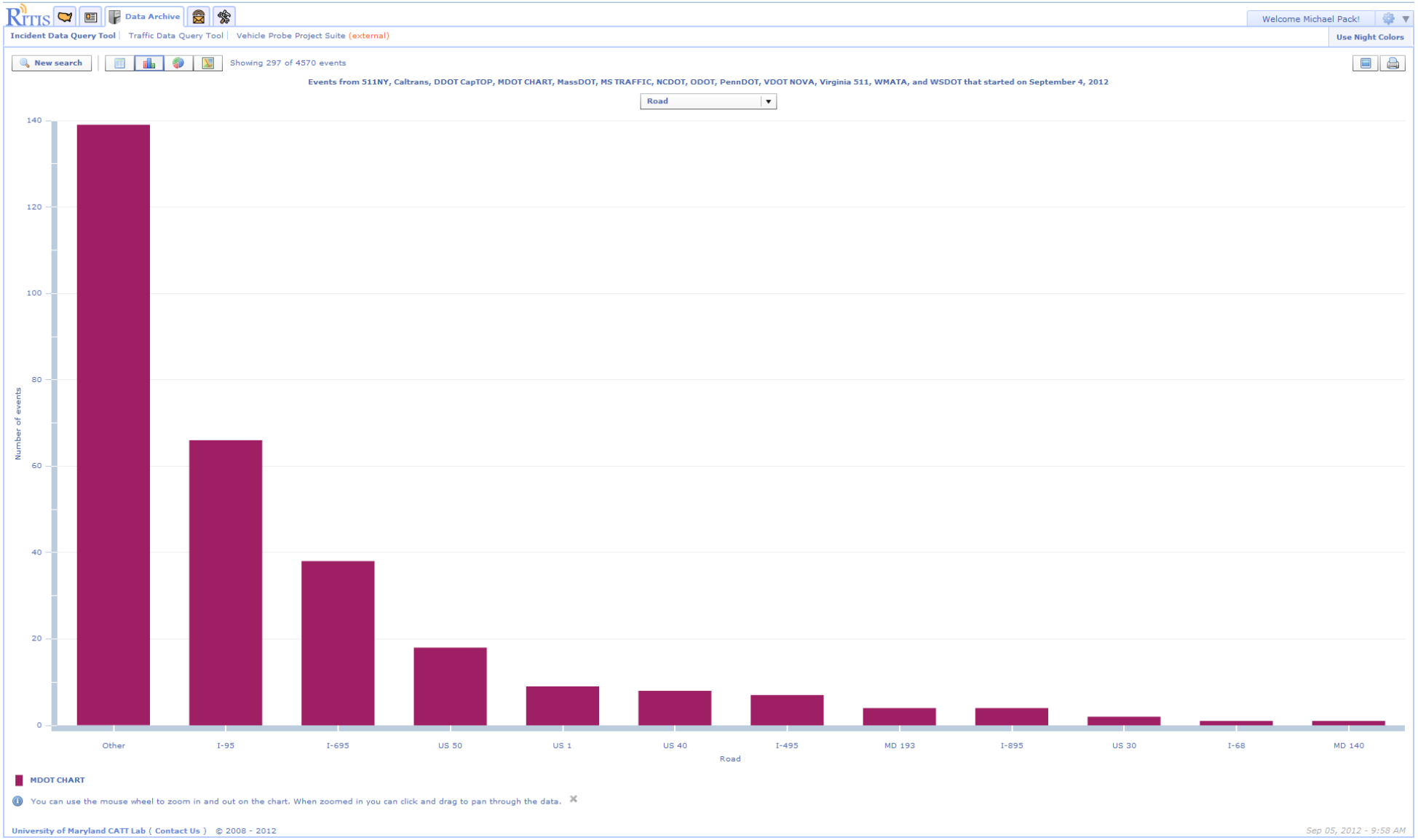
Event Icon Map

Event Icon maps are filterable by type and other characteristics.



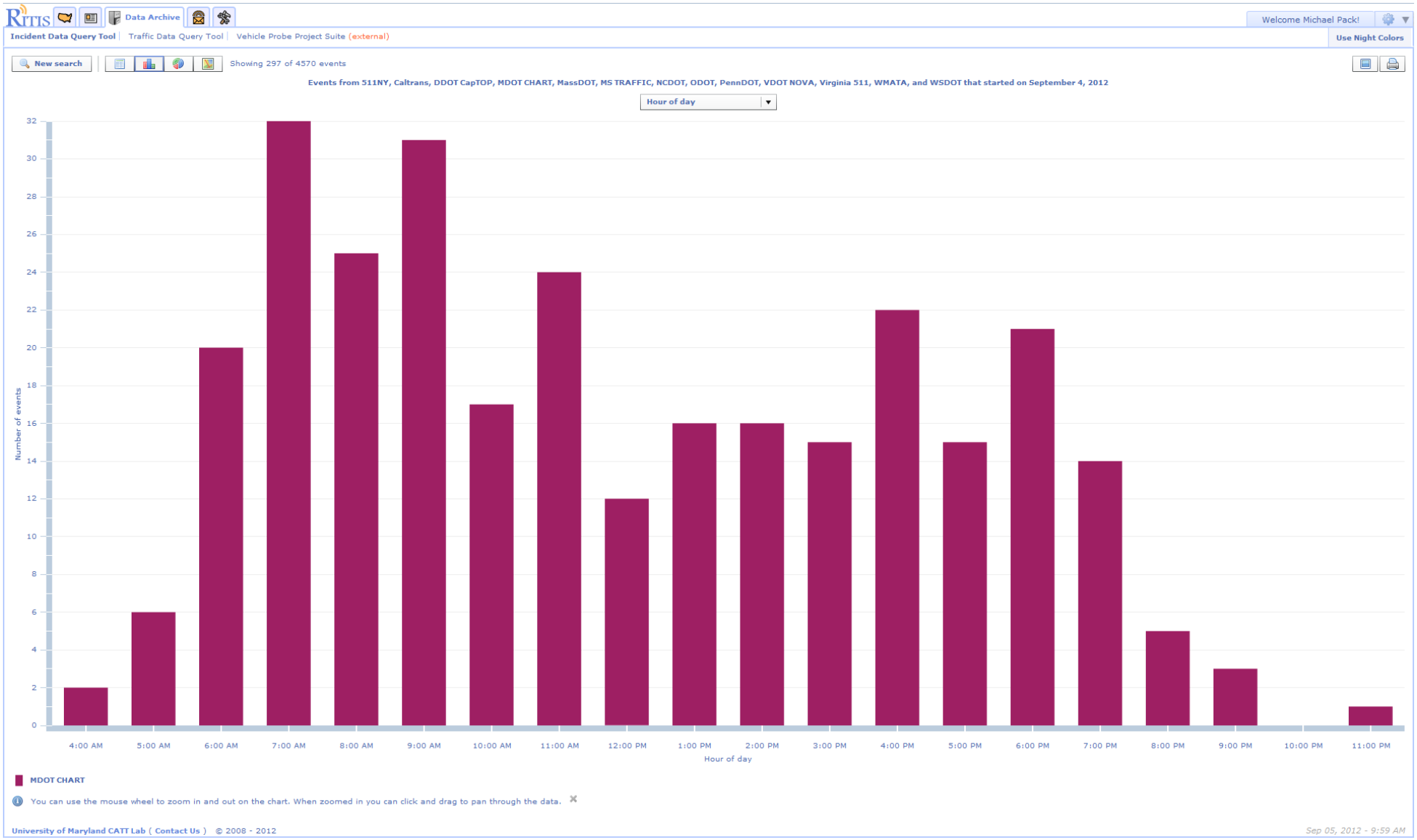
Incident and Event Analytics

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



Incident and Event Analytics

Events aggregated by time-of-day

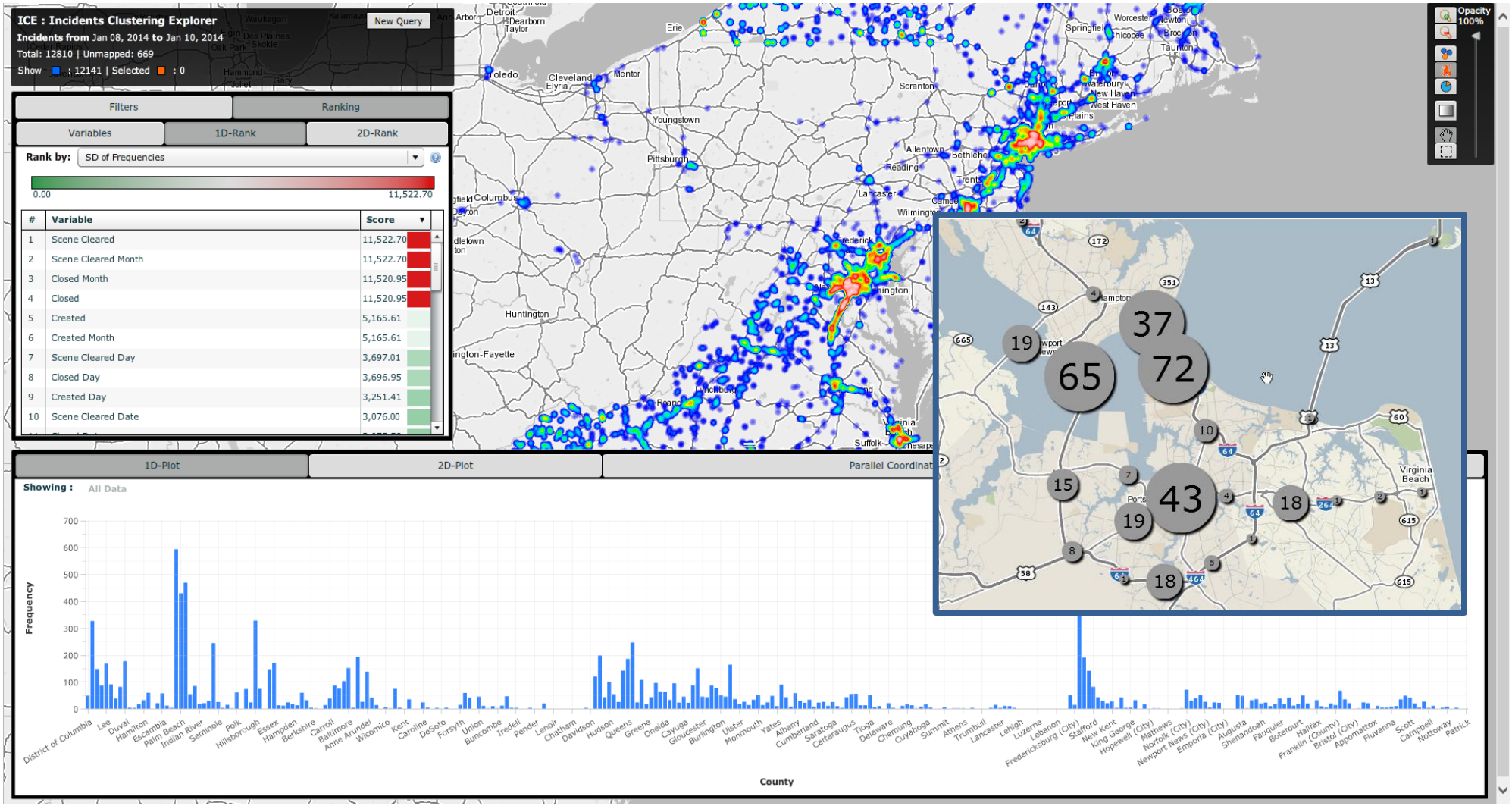


Accidents by Ops Center (and other options)

Other graphing options include things like: incident duration by type of incident, incident detection source, number of incidents managed by each ops 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. 1 and 2-dimensional histograms, parallel coordinates 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 (like precipitation rates, visibility, wind speed, etc.) on speeds, volumes, and accident rates.

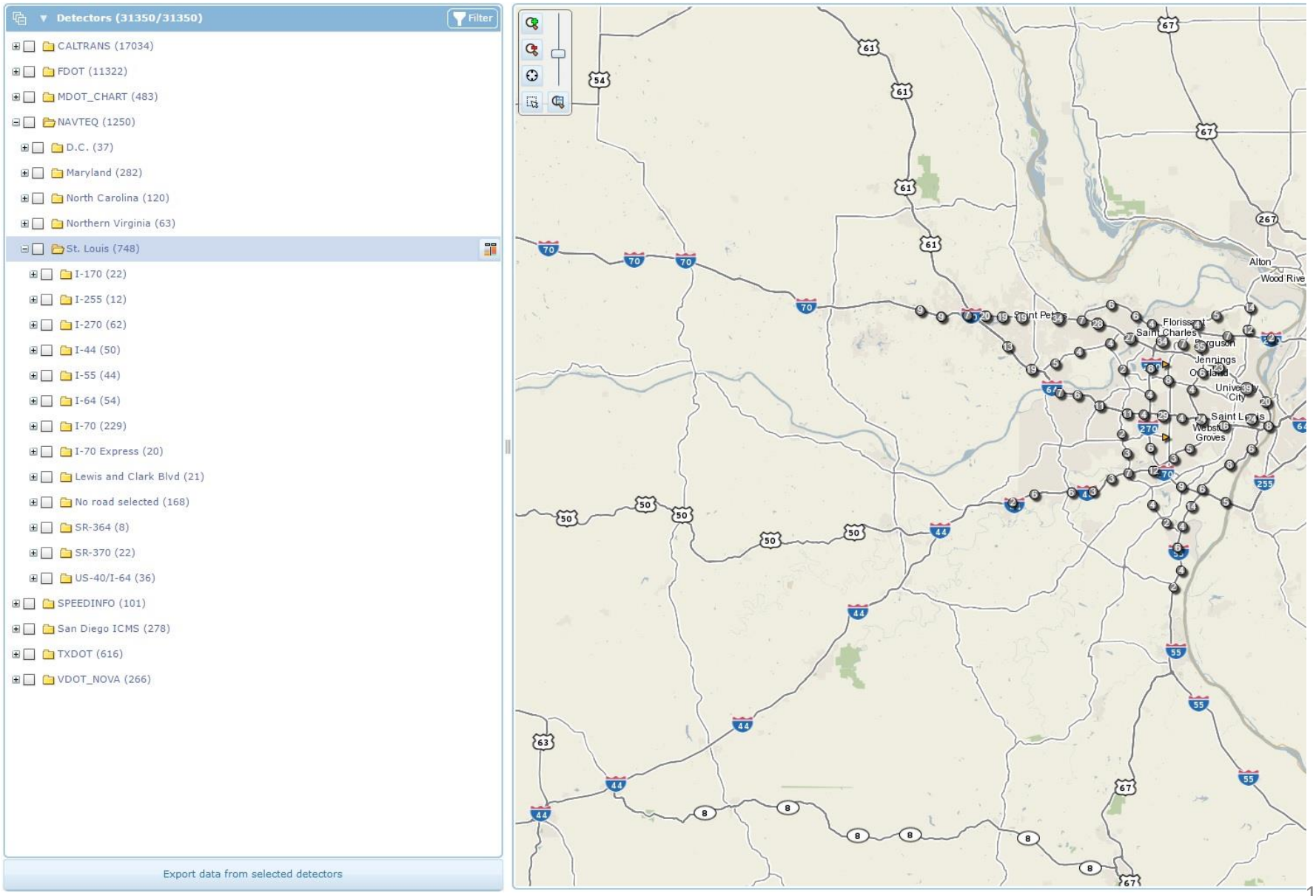
Detector Explorer

The following pages showcase the visualizations and query capabilities of the RITIS Detector Explorer. They allow users to download raw or aggregated detector data. They also allow for data graphing (speeds, volumes, occupancy, etc.), the analysis of the health of detectors, and the development of reliability, travel time, and other metrics. All tools are interactive and allow for the saving and exporting of graphs and background data.

Detector Explorer

Detector Explorer

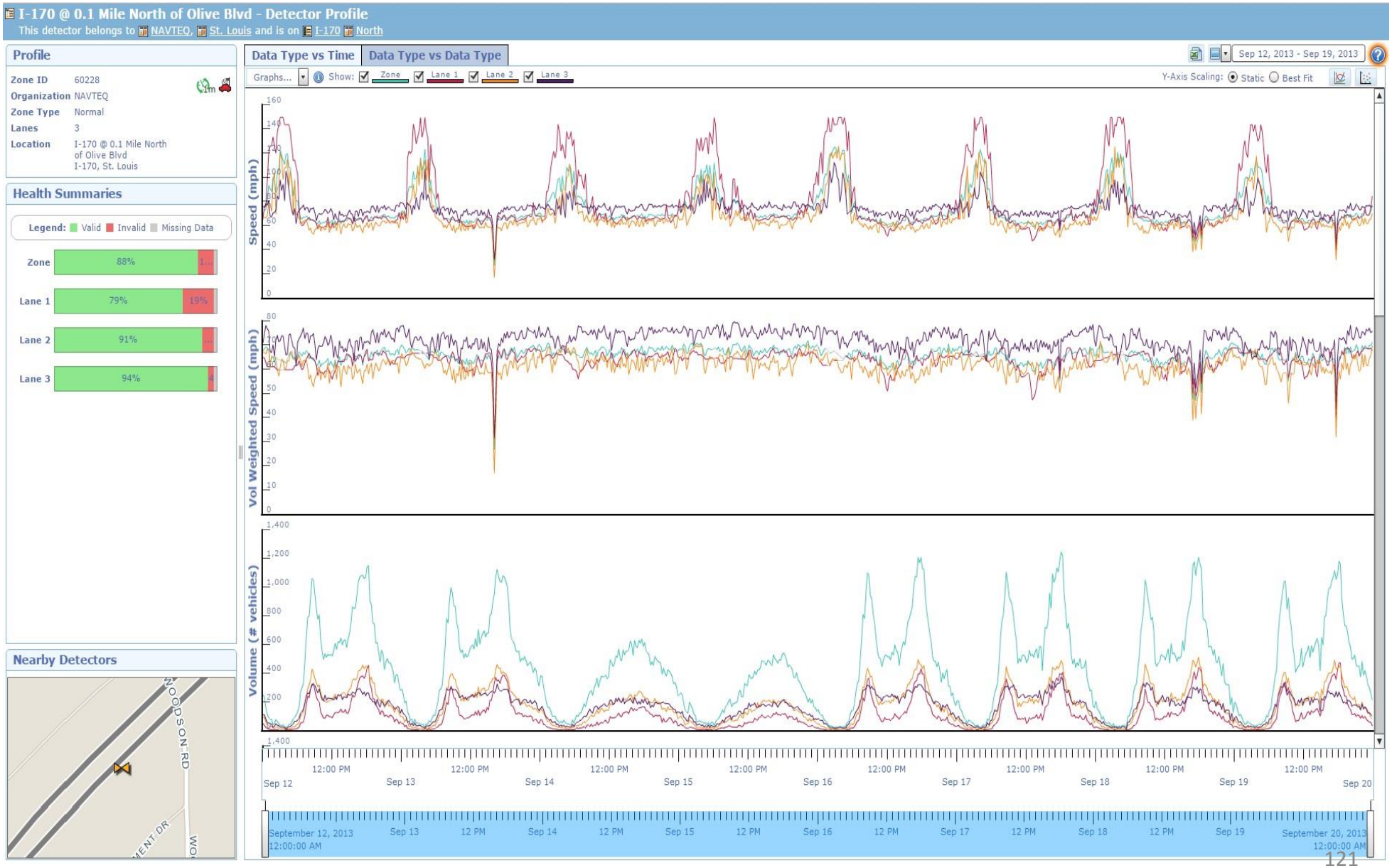
The Detector Explorer application allows users to select one or more detectors from a hierarchical list or a map.



Detector Explorer

Graphing & Quality Tools

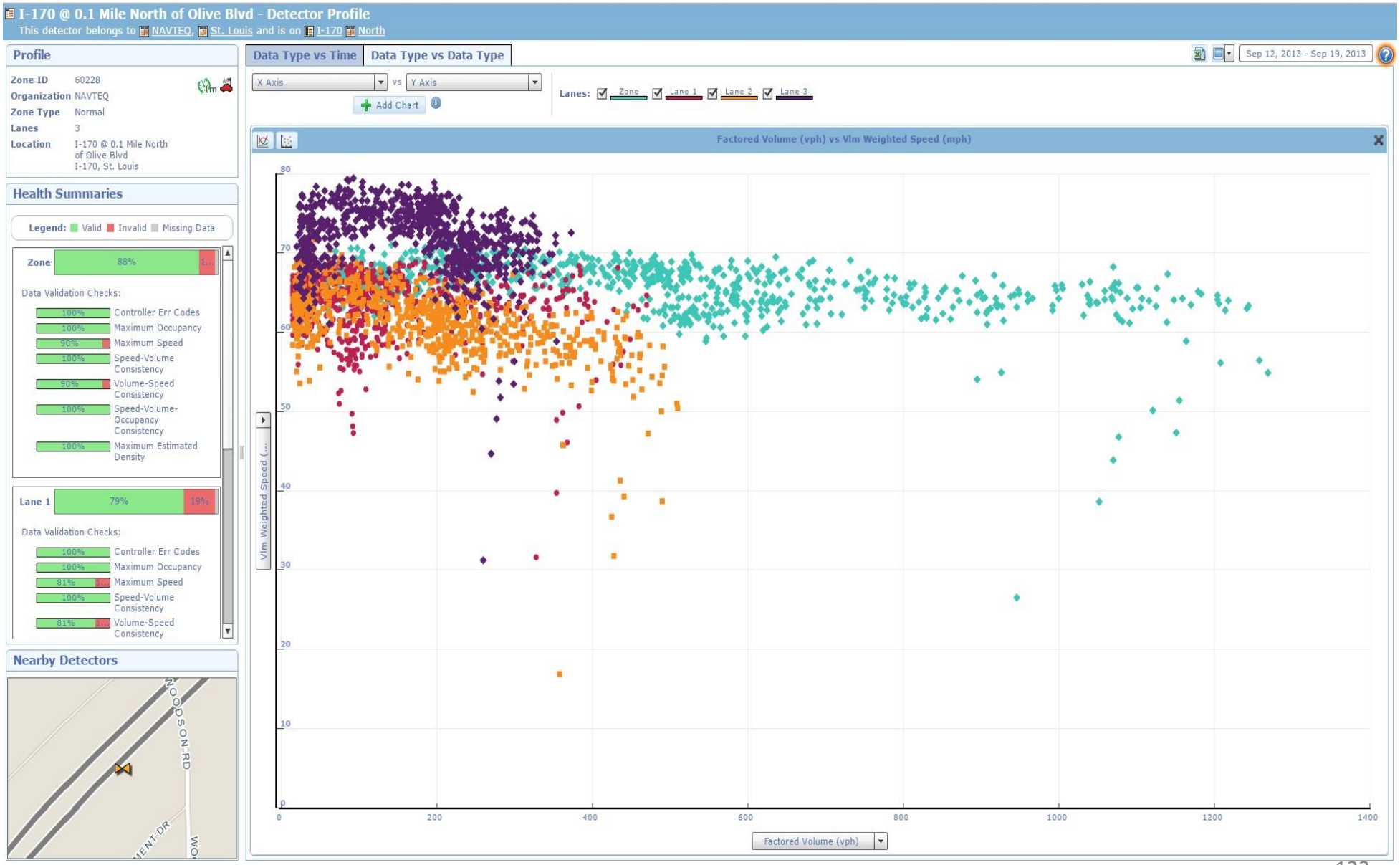
The interactive tools also allow users to analyze the profile of detectors, roadways, and quality.



Detector Explorer

User-defined graphs

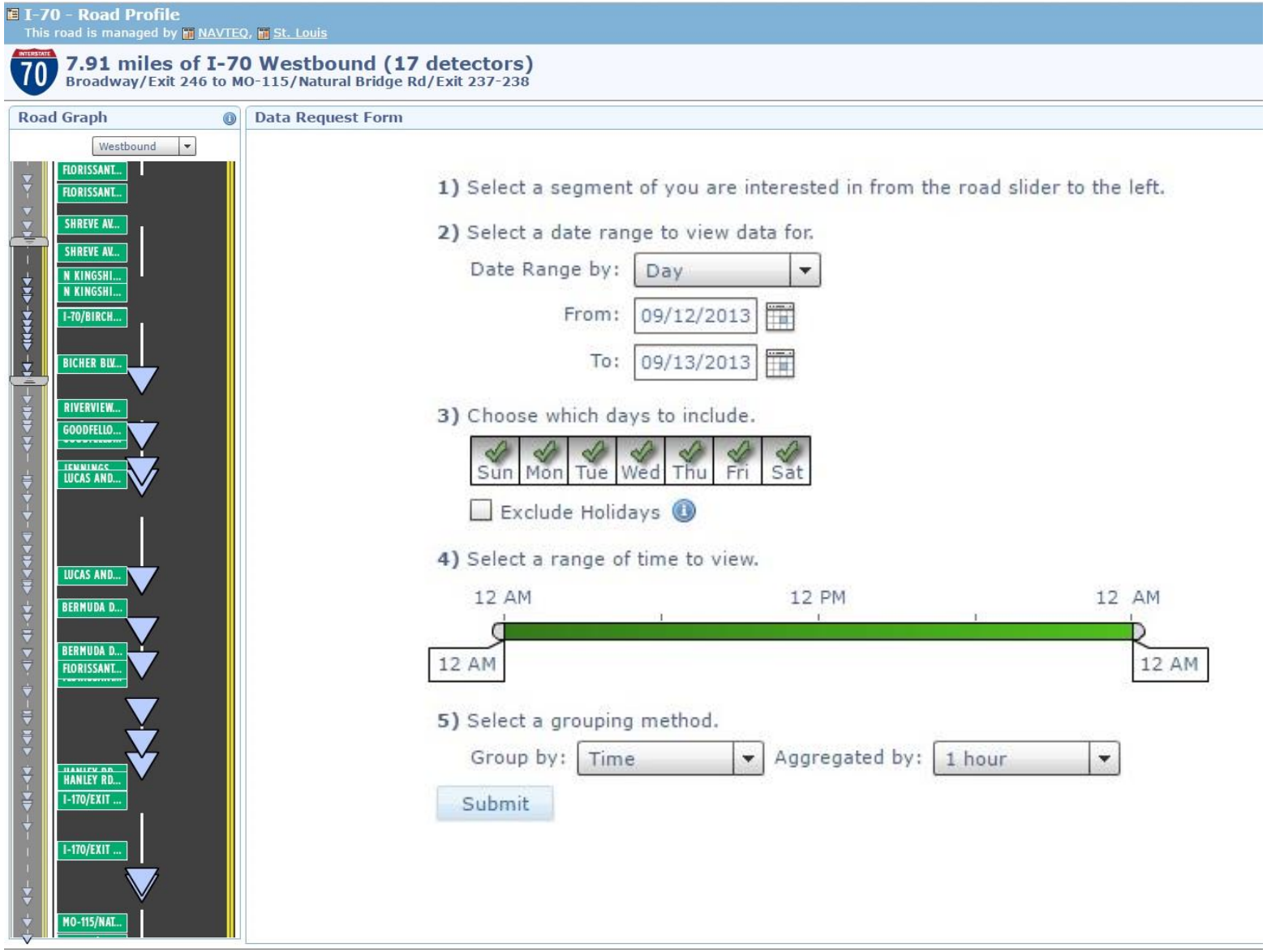
With Detector Tools users can graph any pair of variables and date ranges.



Detector Explorer

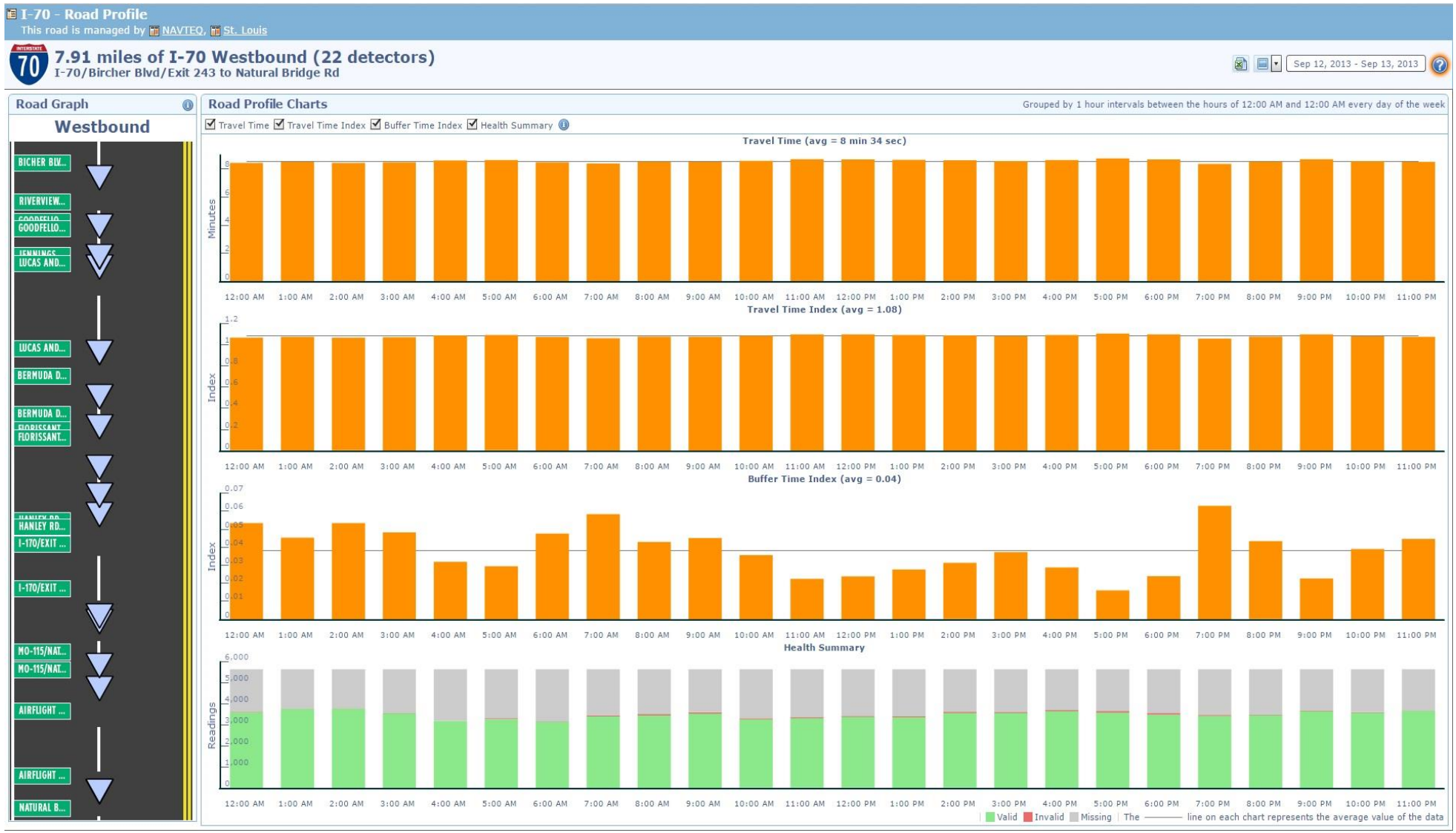
Congestion and Reliability Metrics

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.



Detector Explorer

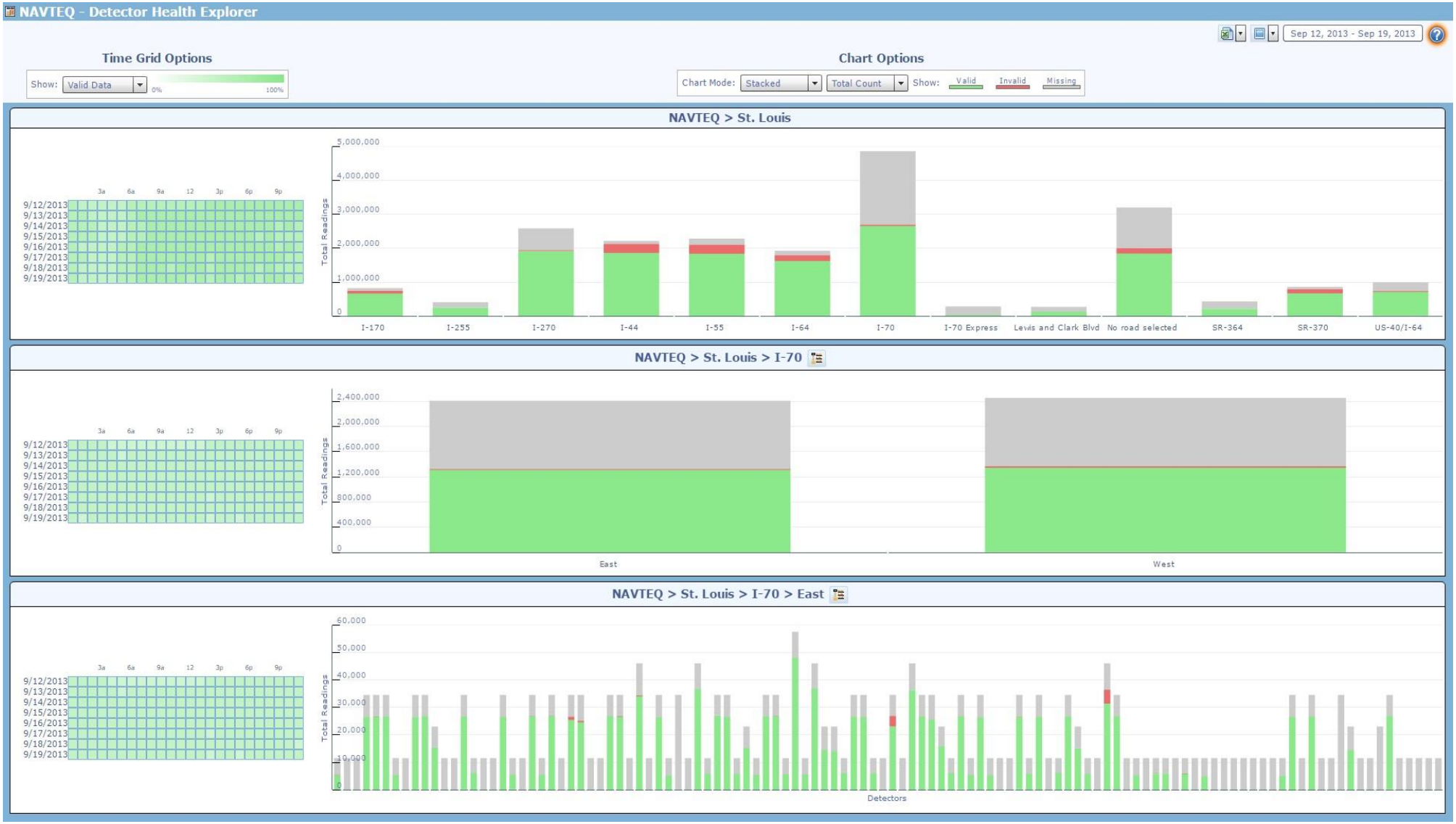
The results of a query to analyze speeds, travel times, and reliability along a corridor.



Detector Explorer

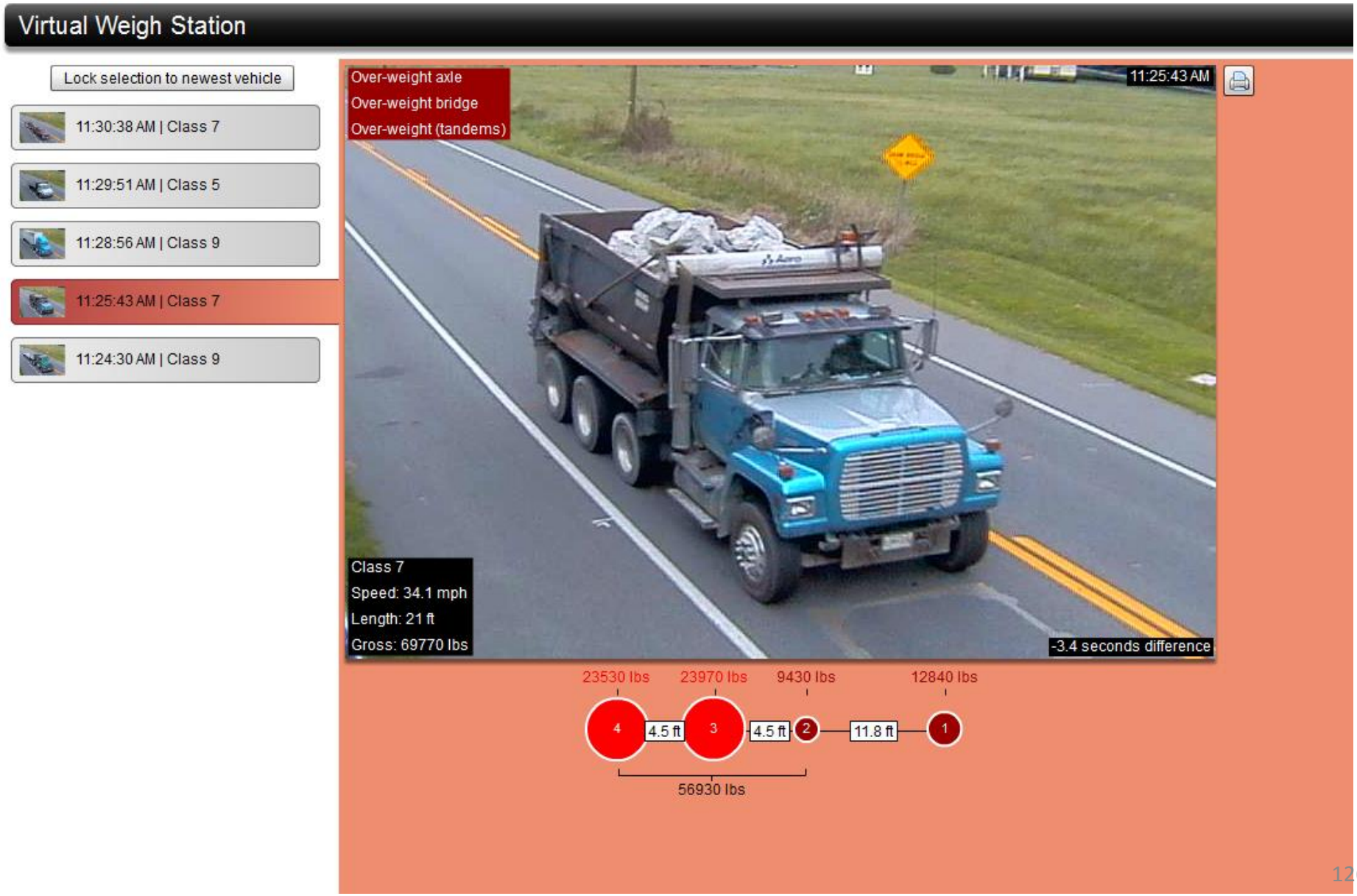
Health of Sensors

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



Virtual Weigh Station Analytics

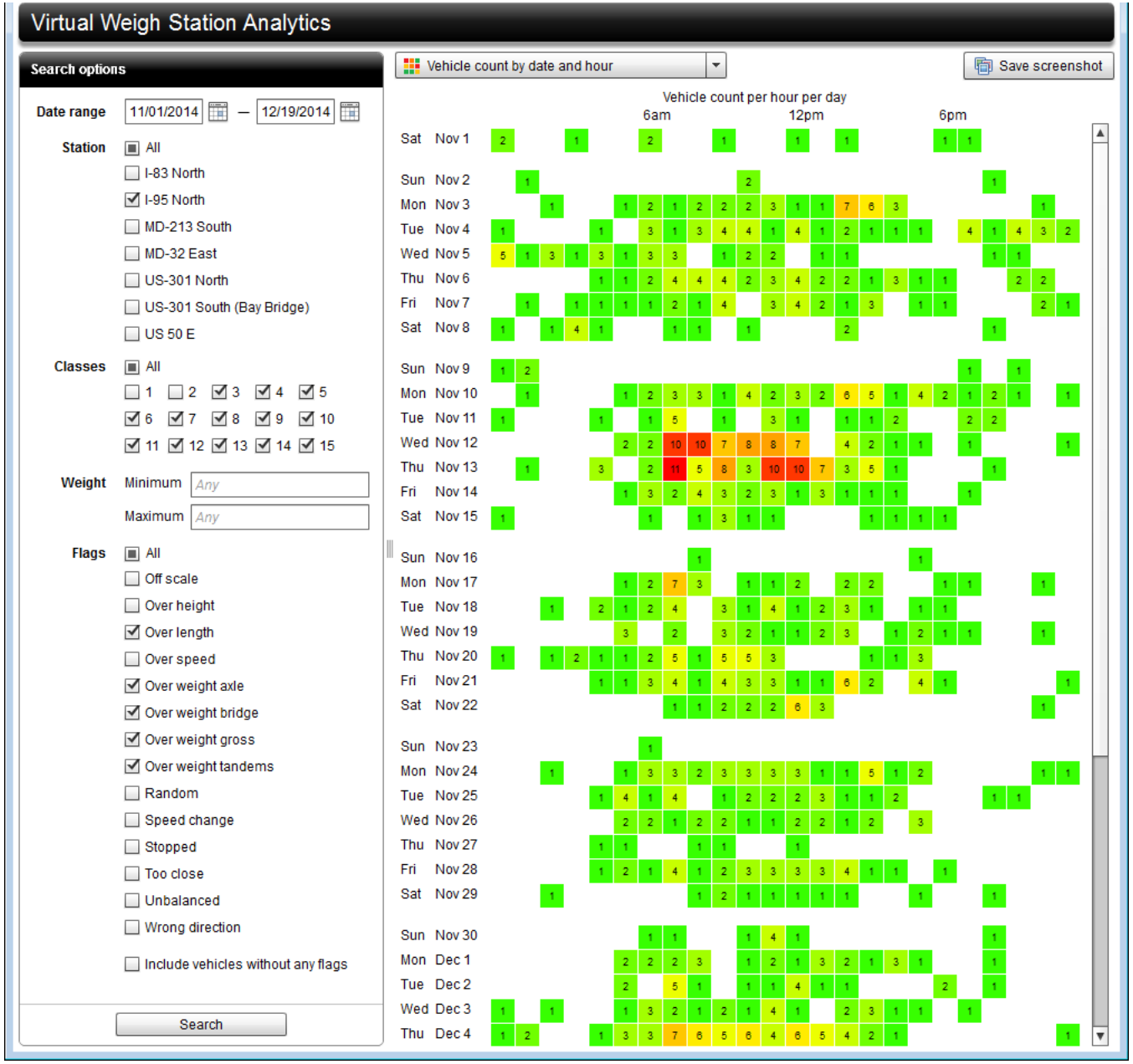
Users can monitor, analyze and print violations directly from within RITIS. Officers are also provided with an analytics tools to help identify dates and times of day when the most significant violations are likely to occur. Reports can be generated, emailed, and printed..



Virtual Weigh Station Analytics

The analytics tools help:

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



Virtual Weigh Station Analytics

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:

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

Spacing: 4.6 12.8
Axles:
Wt: 16.2 15.9 13.1

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

Spacing: 23.5
Axles:
Wt: 21.9 9.5

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

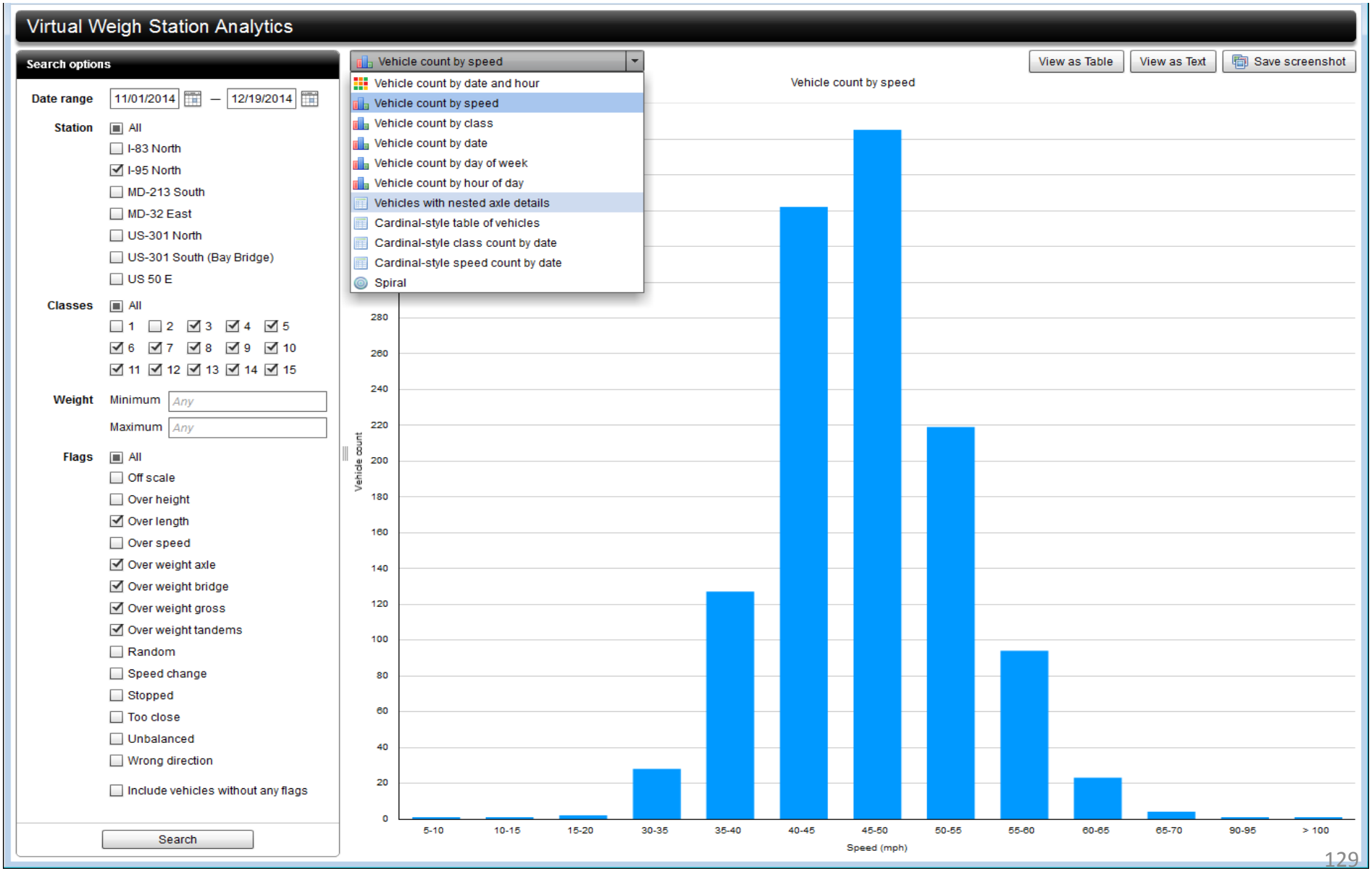
Spacing: 4.6 4.6 11.4
Axles:
Wt: 19.3 18.0 12.4 11.4

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

Spacing: 4.6 16
Axles:
Wt: 24.0 23.7 19.5

Virtual Weigh Station Analytics

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



TreeVersity2

Hierarchical Data Explorer

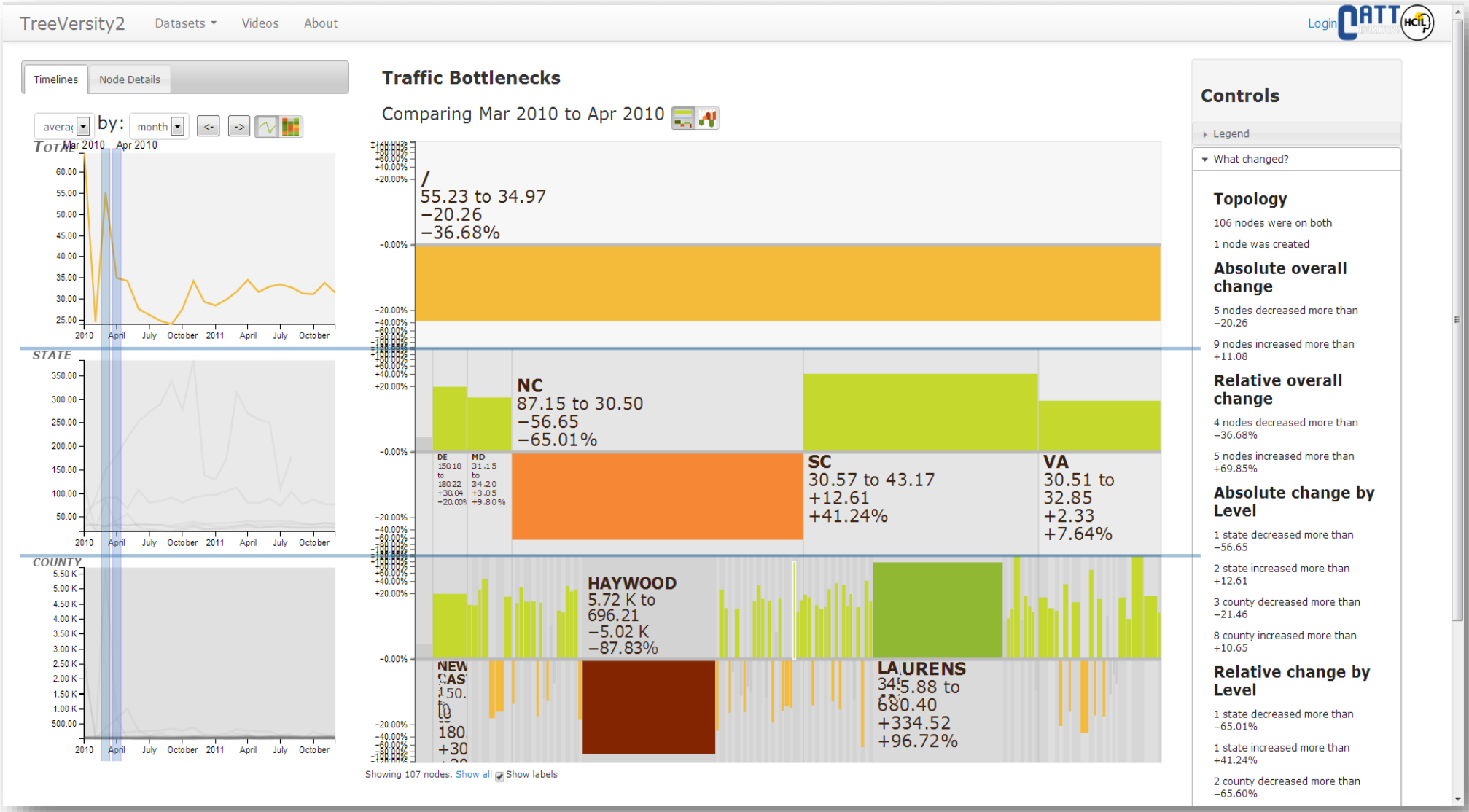
The following pages contain screenshots from the "TreeVersity2" application for exploring changes in hierarchical (tree structure) data sets. The tool can be used to explore the changes in traffic bottlenecks over time and is being integrated for use with certain RITIS data sets.

Two YouTube videos are available 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

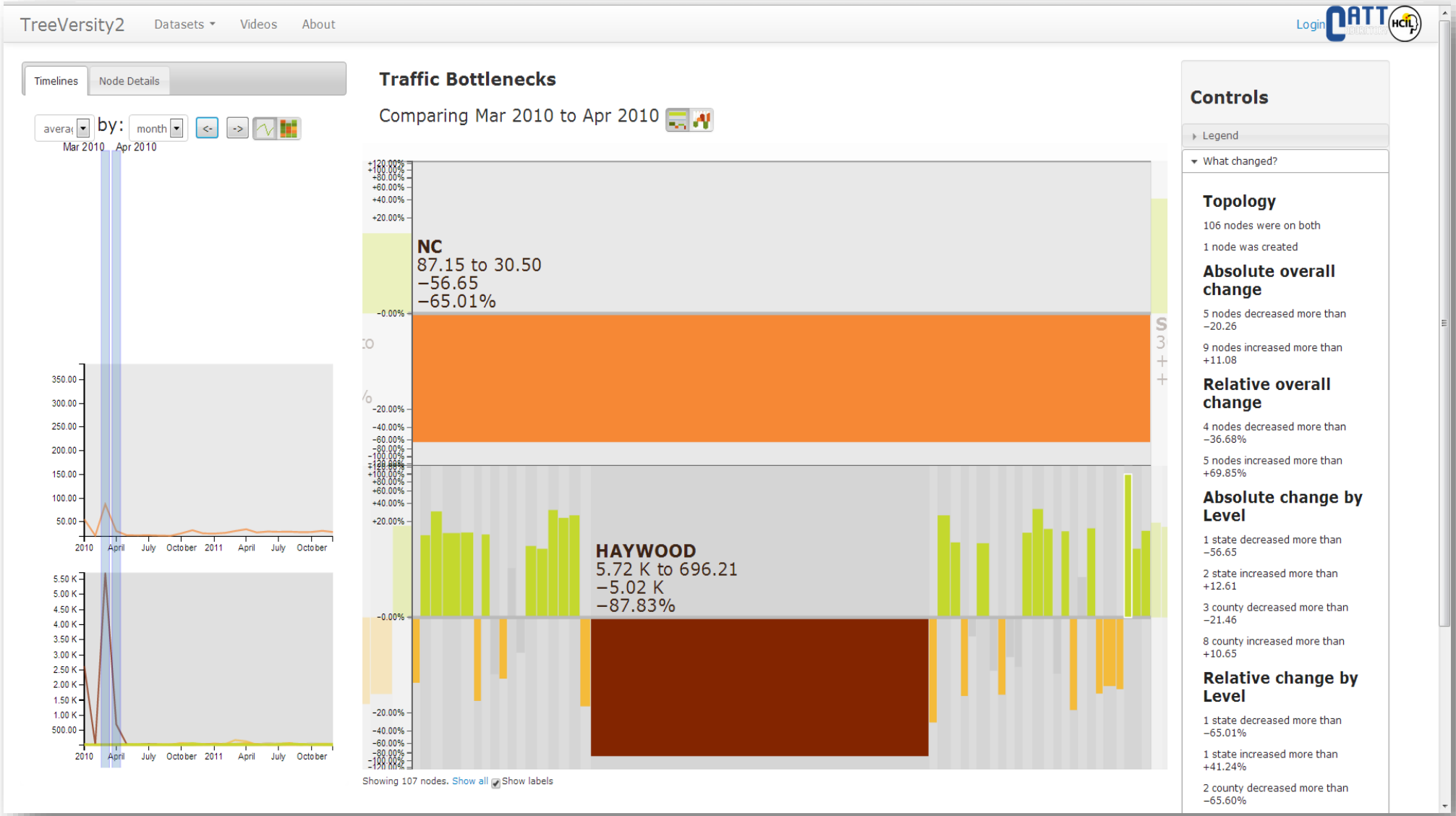
Hierarchical Data Analytics

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



Hierarchical Data Analytics

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



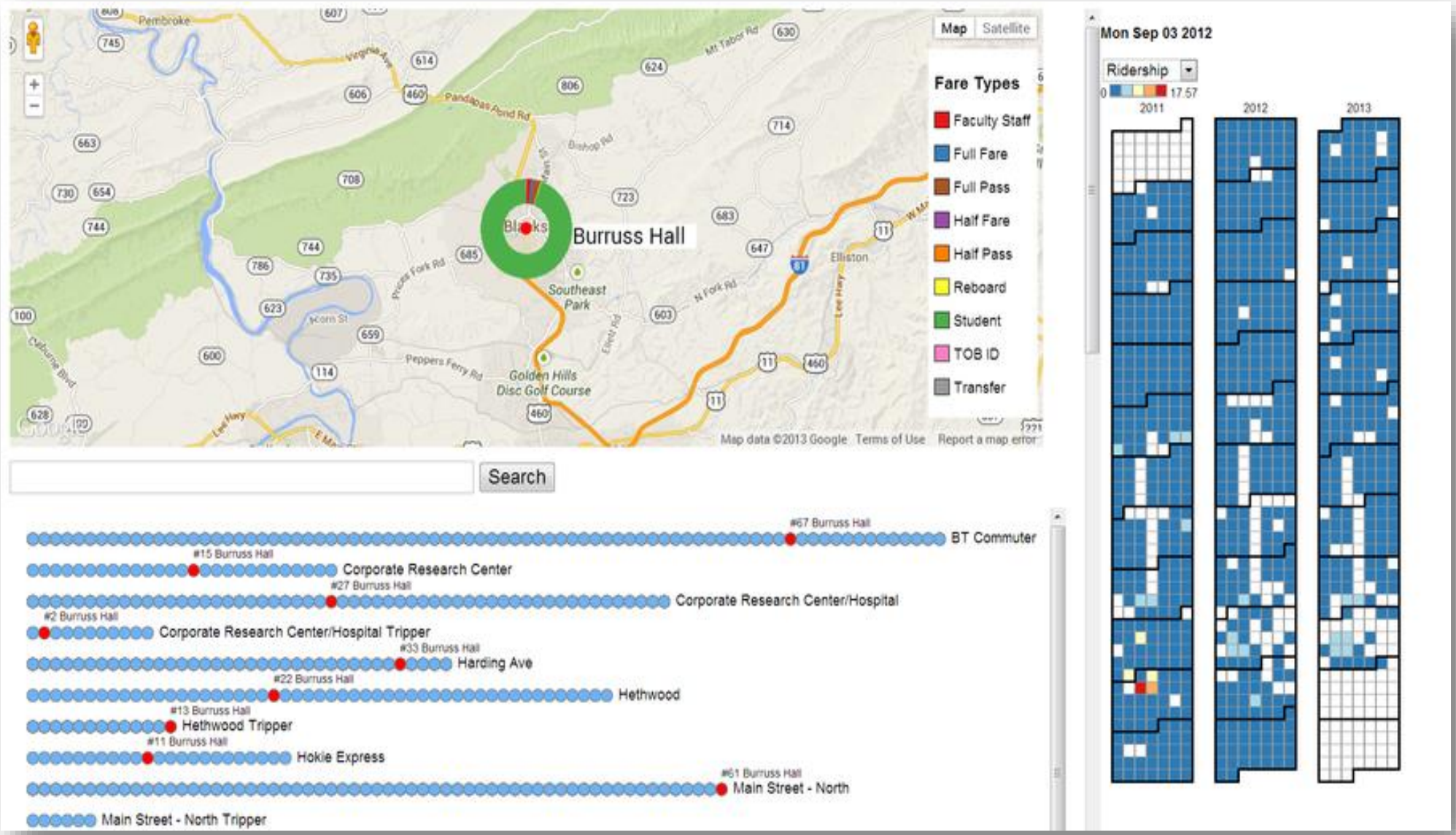
Transit Analytics

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 that is expected to be deployed to RITIS in the future for transit agencies.

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 change other graphs and reports to help the user identify trends and issues.



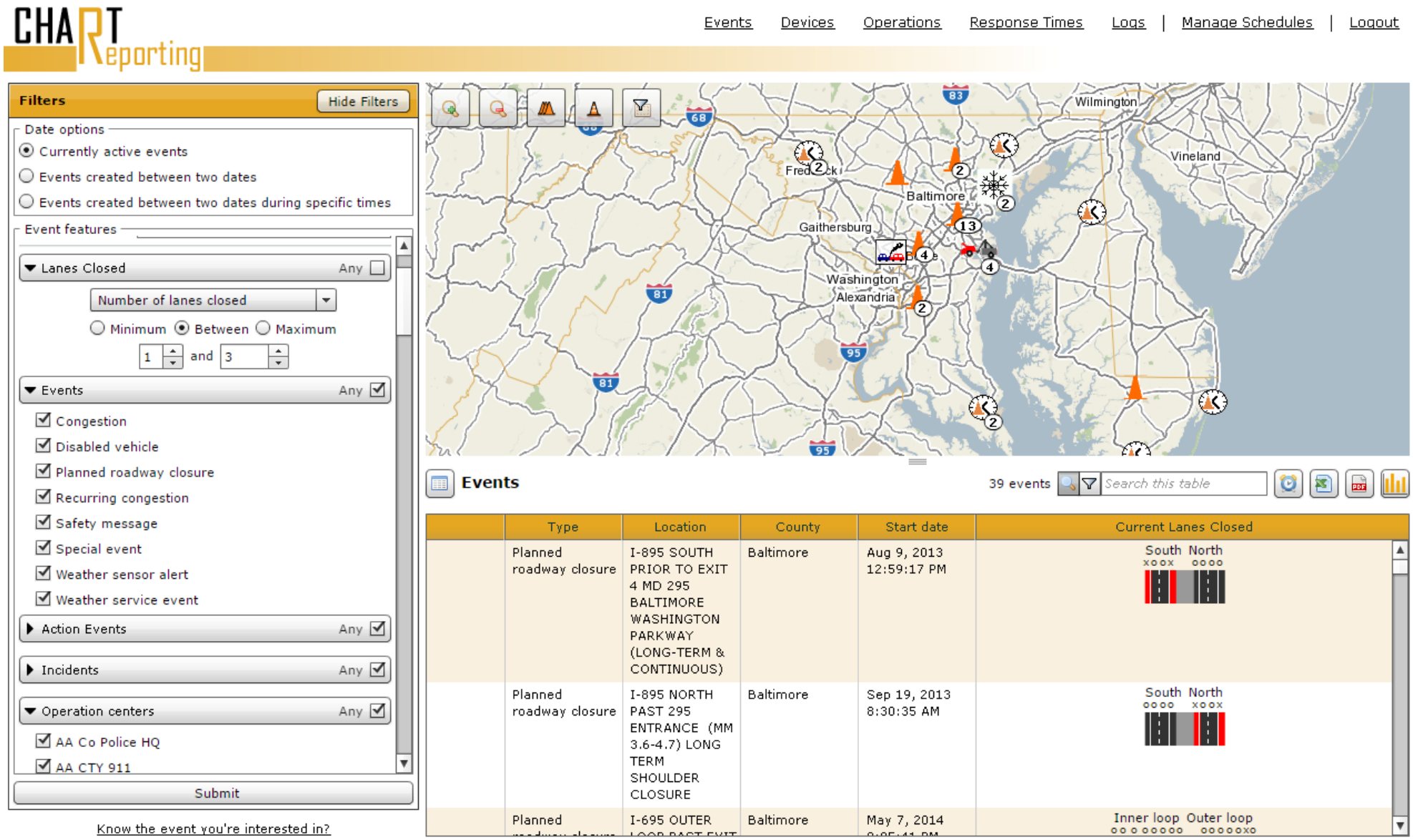
Custom Reporting for Agency & 3rd Party ATMS Data

Case study: CHART Reporting

Customized Reporting Tools can be integrated into RITIS for use by individual agencies who have specialized reporting needs.

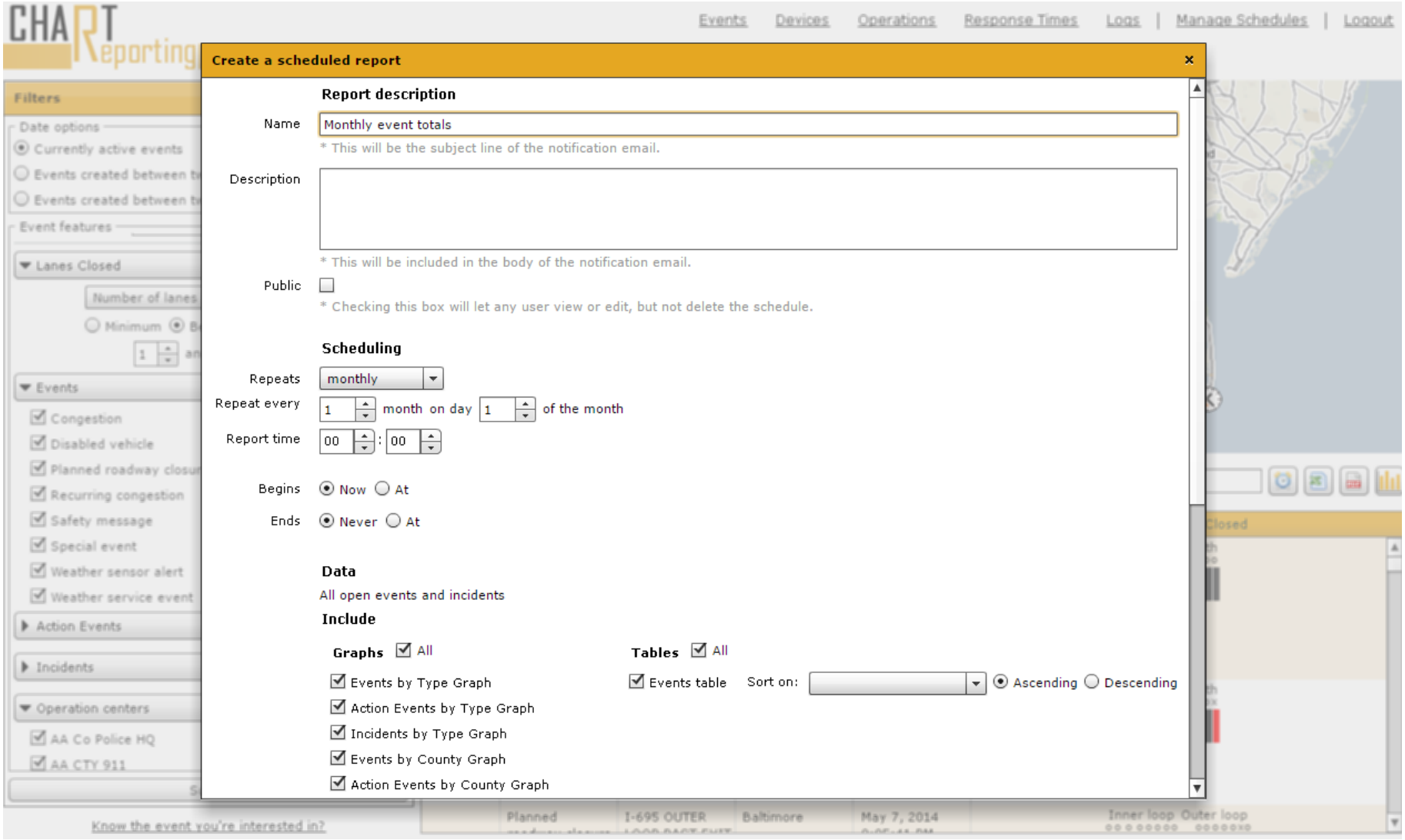
The following screen shots show an example of the Maryland State Highway Administration's ATMS data integrated into a specialized operations log reporting tool. The reports take into account the detailed nature of the operations logs from their ATMS platform.

Filtering by agency-specific attributes



Scheduling automatic report delivery

All reports can be “scheduled” to run at a certain time interval. During major snow events or catastrophes, it is not uncommon to have these situational reports run every 30-minutes. The resulting reports are automatically emailed to various user groups that 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

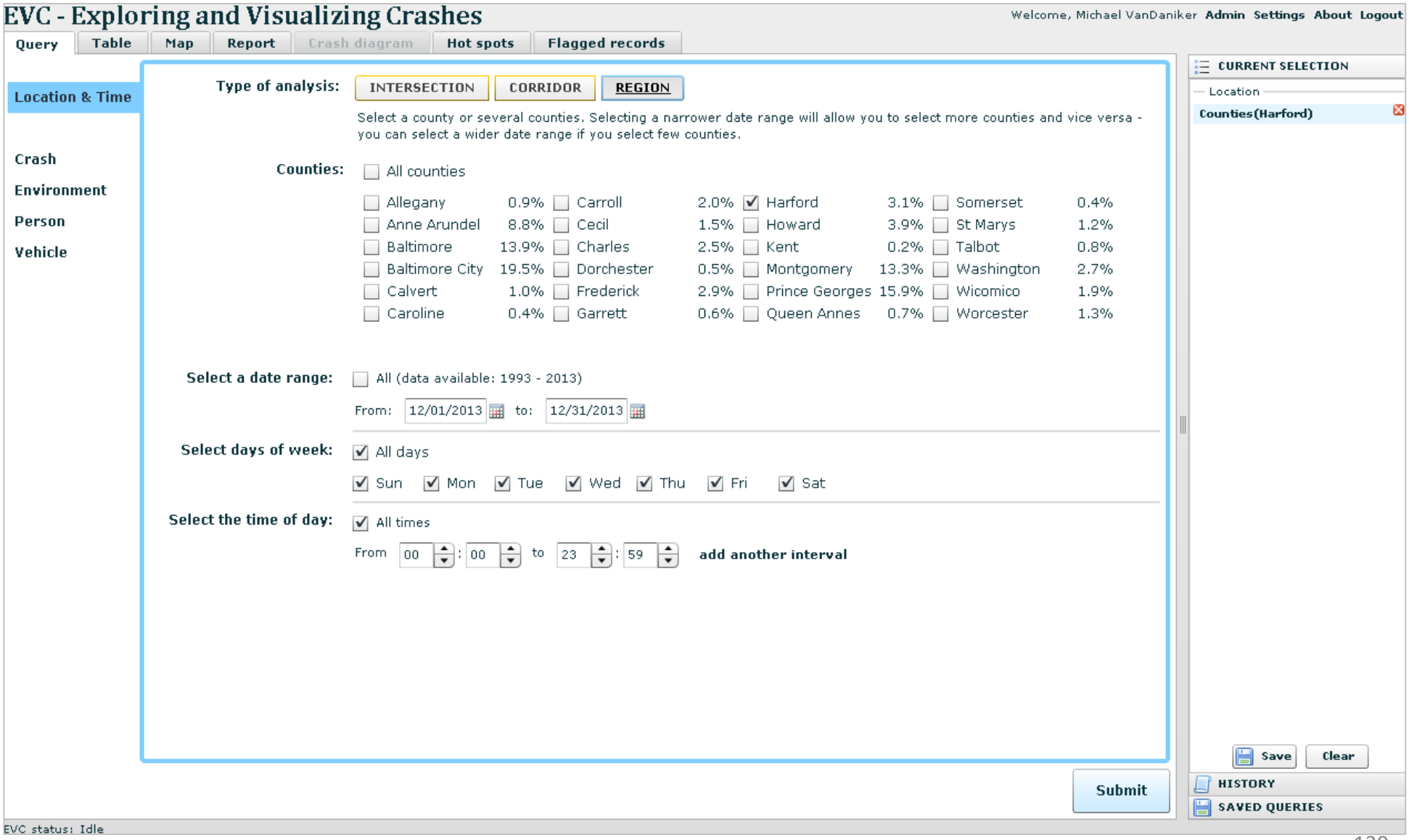
Add a filter

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 9 s
Total (225)	11522	9177	10.422222222222222	62%	57 m 18 s

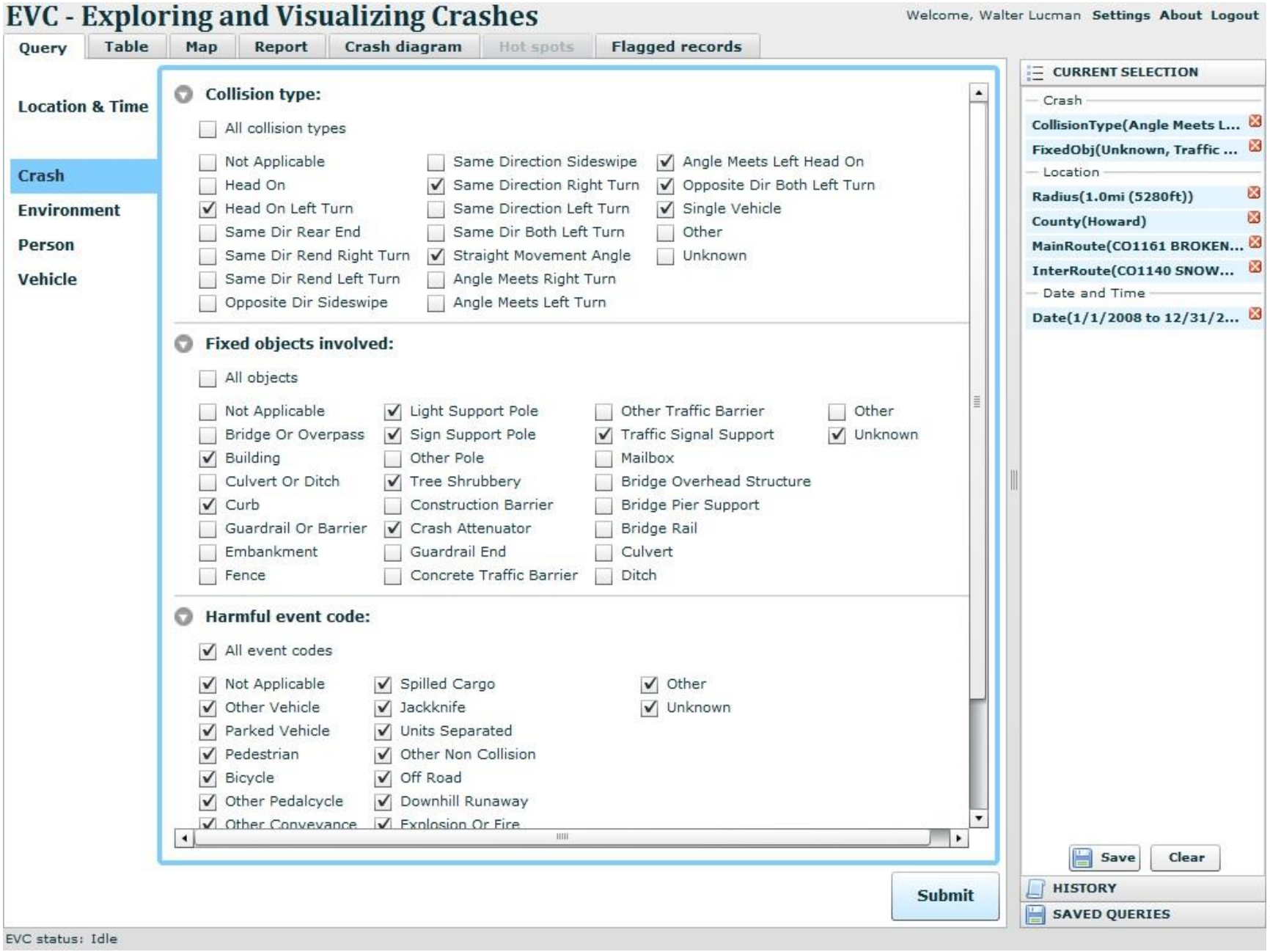
Analysis of Detailed Police Accident Reports

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 analytics. 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.



Analysis of Detailed Police Accident Reports

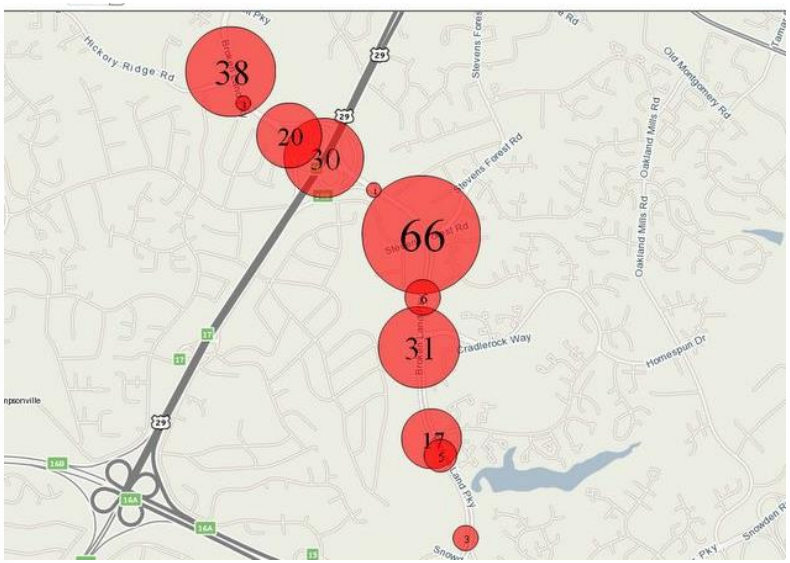
The Detailed Query Builder within EVC makes it extremely quick and easy for users to generate complex queries based on location, date range, crash type, damage received, causality, lighting conditions, vehicle type, age, gender, type of injury received, and drug/alcohol involvement.

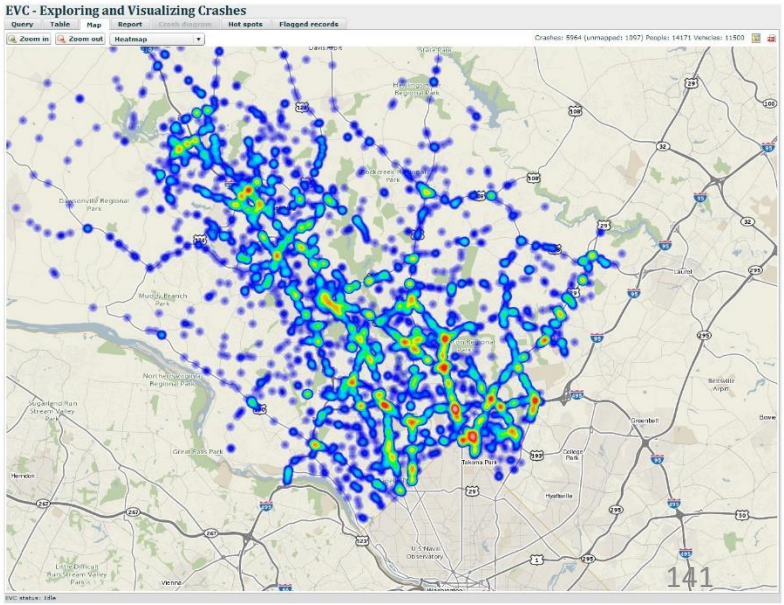


Analysis of Detailed Police Accident Reports

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

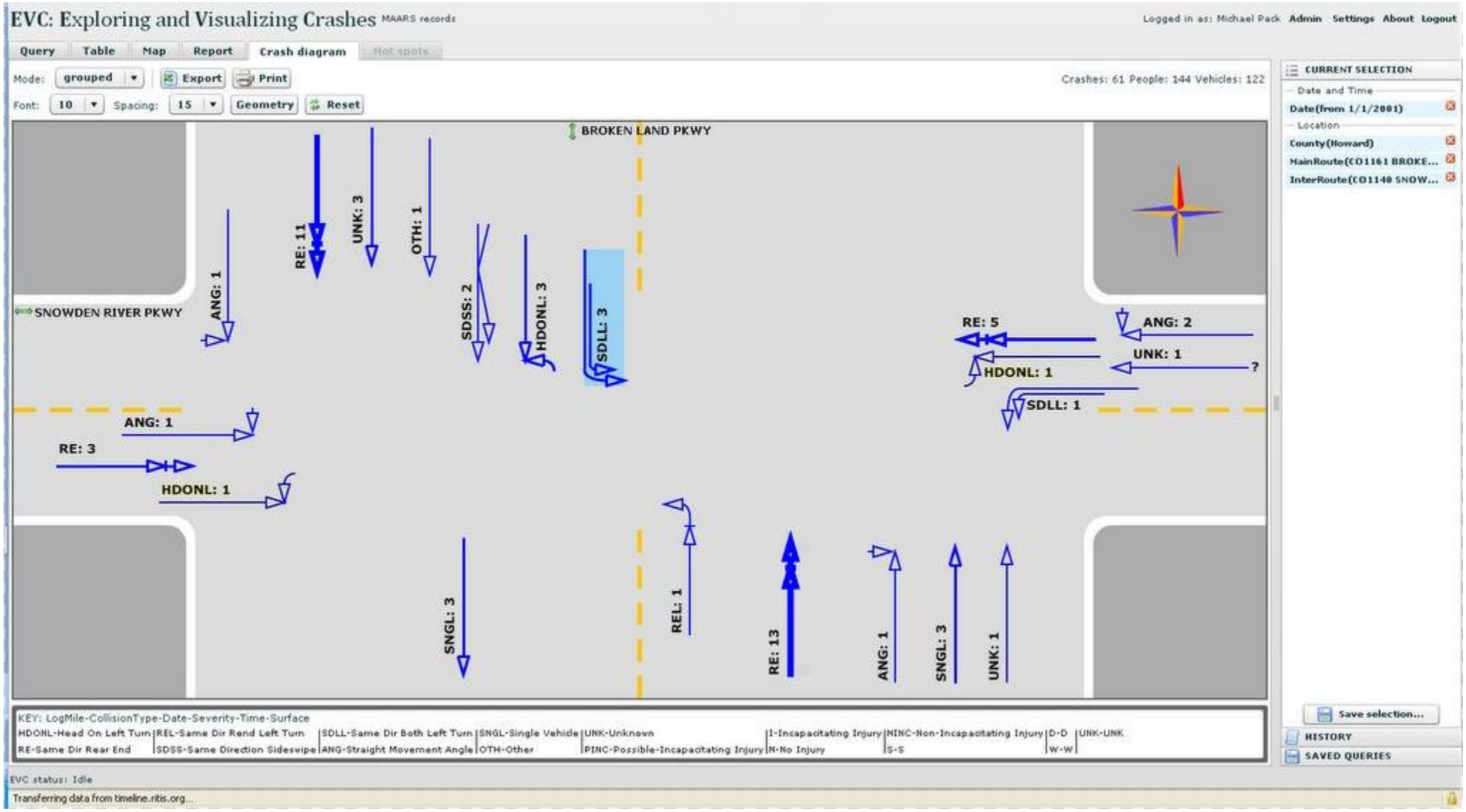
Hot Spot Diagrams

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

Crash count	Start at mile marker	End at mile marker
135	2.60	3.60
133	3.10	4.10
126	3.00	4.00
122	2.90	3.90
119	0.30	1.30
119	1.70	2.70
119	2.80	3.80
119	2.70	3.70
118	1.80	2.80
117	0.90	1.90
115	1.00	2.00
115	0.40	1.40
110	1.10	2.10
105	1.20	2.20

Crash count	Route type	Route number	Mile marker
62	CO	800	1.81
43	MD	32	3.57
31	CO	1140	3.21
29	CO	1457	0.76
26	CO	794	0.41
26	US	29	1.27
23	CO	1160	2.23
19	CO	1160	2.67
10	CO	1832	3.21
9	CO	1834	4.04
2	CO	753	0.13
0	OP	915	0.21
0	CO	9001	0.76

Intersection Crash Diagrams



Reduces agency costs & increases abilities:

"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

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.

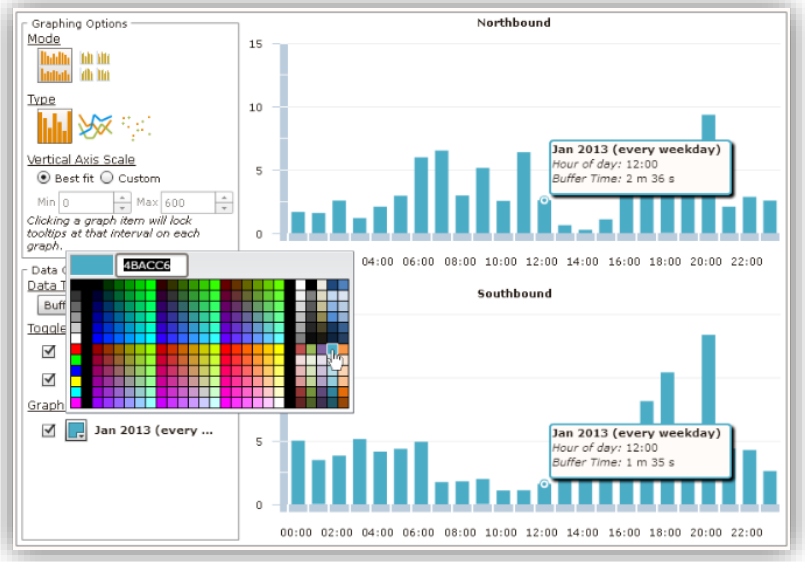
- Want to know how we calculate BTI, TTI, bottlenecks, and UDC? All of our formulas are open to the public, and your members helped us define, review, and approve them.

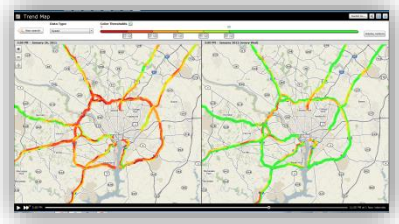
We can do more as a team than as individual agencies.

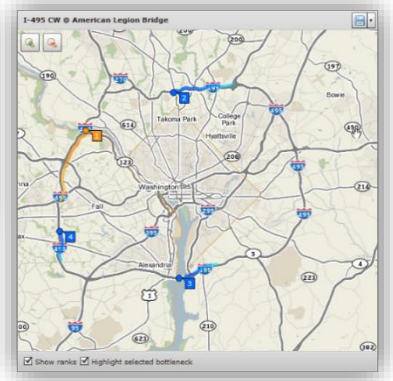
- There is great value to "seeing" across our jurisdictional boundaries.
- Working together as dozens of states and MPOs means we can ultimately accomplish more—pooling our resources and our knowledge to ensure success.

Agencies provide guidance on and prioritize features.

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







Data Agnostic

- RITIS works with all agency data plus 3rd party data from ATMS vendors, ITS device manufacturers, and data providers like HERE, INRIX, and TomTom data. 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 doing 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.

Reduces agency costs & increases abilities:

"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!"

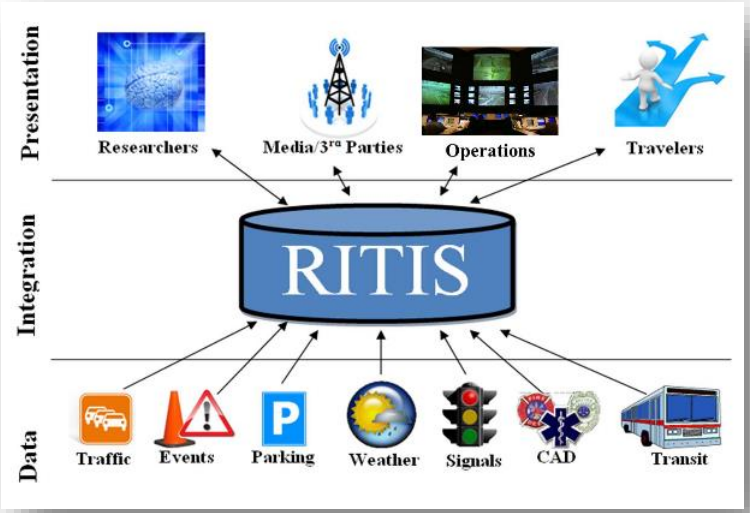
~Center Operations Engineer

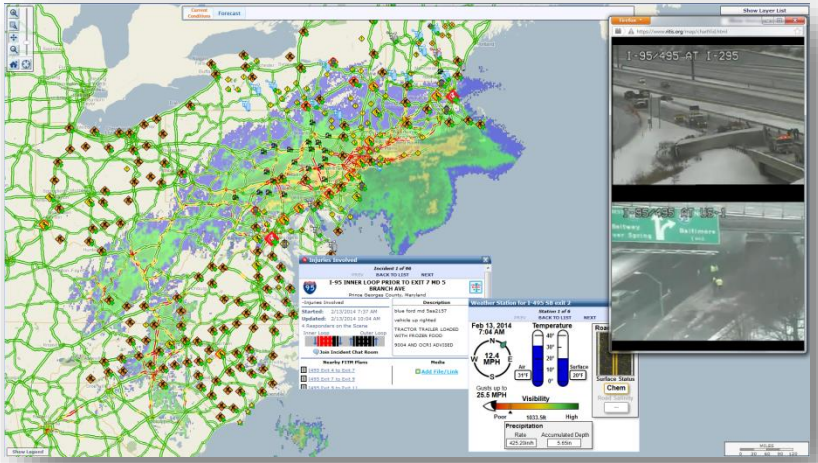
"This is amazing! We can tell some really compelling stories to the public about our impact, and it's so easy!"

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

Why 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 3rd parties—relieving the agency of needing to worry about responding to data inquiries.
- Because our system is hosted outside of any DOT network, our system can dramatically reduce an agency's bandwidth needs for sharing data with the public and other agencies.





Why RITIS?

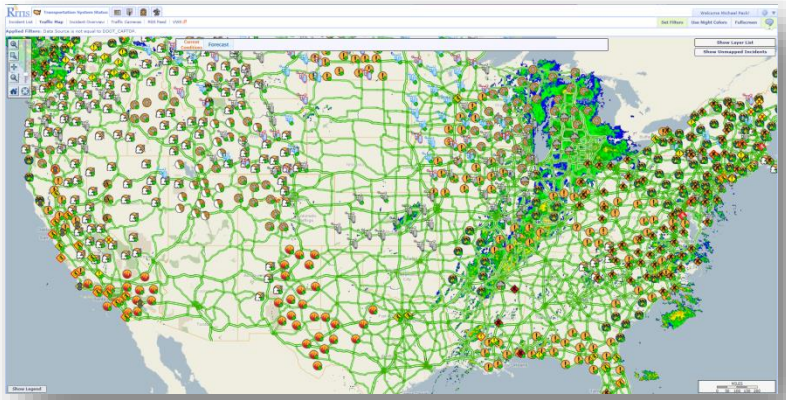
- RITIS provides for cross-agency, cross-border collaboration. No other system in the U.S. covers as many states and systems.

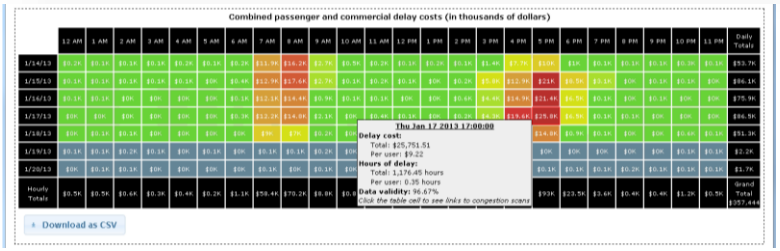
- We understand the complexities of dealing with multiple states, MPOs, local officials, etc. when it comes to MOUs, legal agreements, and consensus building.

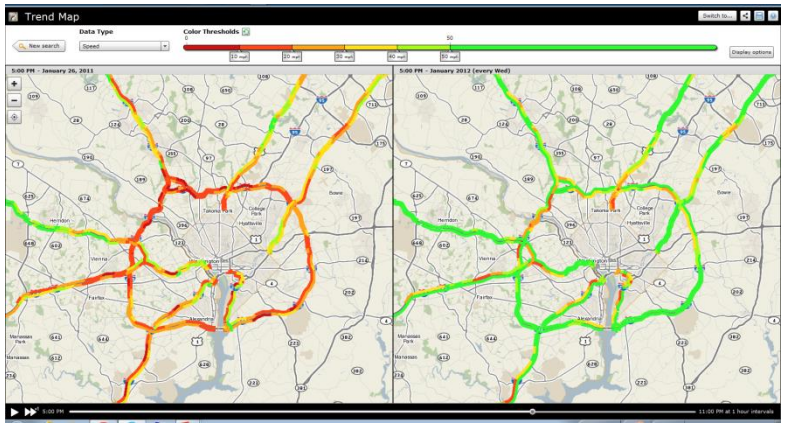
- We understand (and are bridging the gaps between) the operations, planning, and research communities and how they relate to decision making, public interaction, and the media.

- New features are constantly being developed and are deployed no less than once every quarter (but usually once per month).

- As government employees, all CATT Lab staff are public servants. We pride ourselves on the quality of our work, and remain open and unbiased towards other providers and services. We work well with vendors, and typically remain contractually open and non-exclusive when bidding on work. As a non-profit, we can only charge for our actual expended hours and equipment.







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