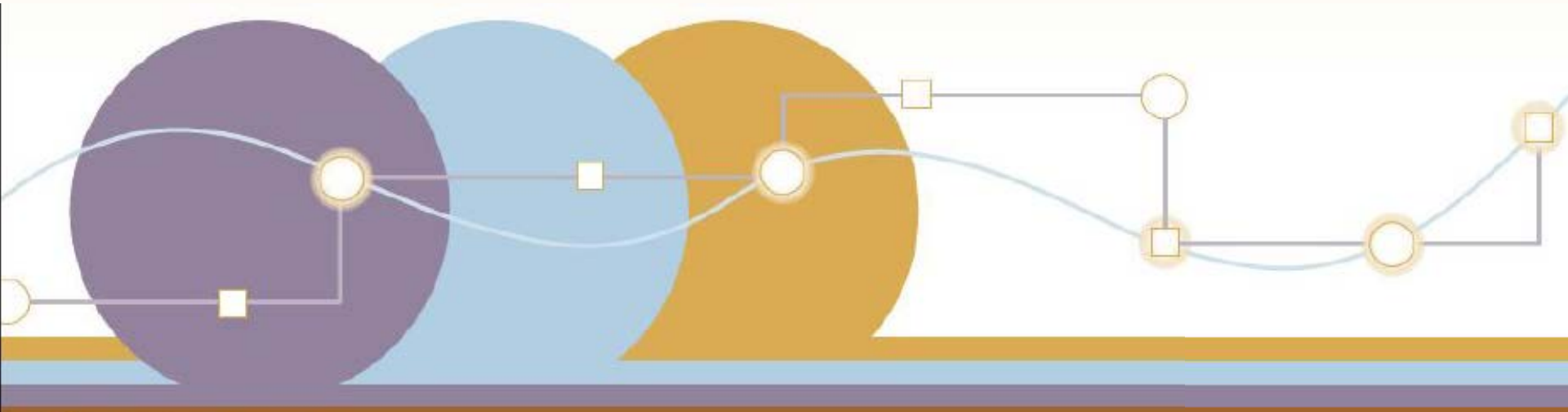
Let's Talk Performance: Best Practices for Collaborating on Data Sharing and Data Analytics

March 6, 2014
1:00-3:00 PM EST
https://connectdot.connectsolutions.com/sr500aletstalkperformance/



Let's Talk Performance: Best Practices for Collaborating on Data Sharing and Data Analytics

FHWA MAP-21 Updates and Announcements, Michael Nesbitt, FHWA

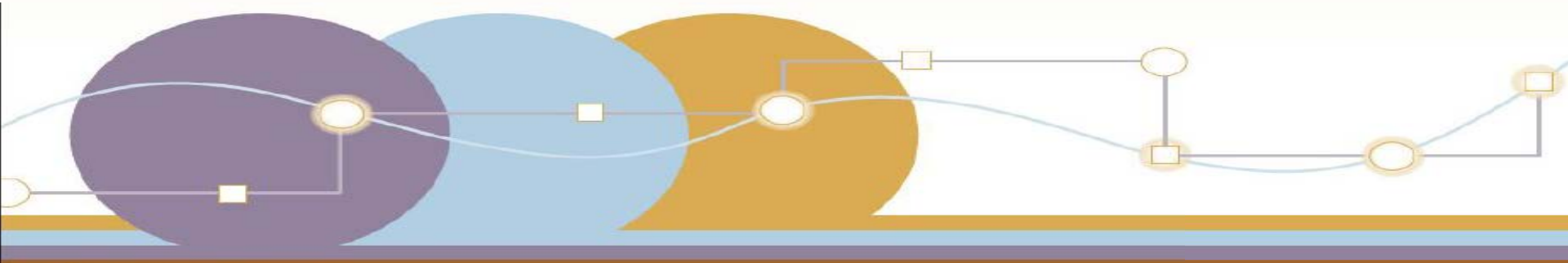
Report out on Texas State-specific Workshop, Kirk Fauver, FHWA TX Division

Common Data Sourcing: Texas Transportation Performance Data Management & Analysis, Tonia Norman, TxDOT, and Tim Lomax, TTI

Report out on California State-specific Workshop, Jermaine Hannon, FHWA, CA Division

State collaboration with local partners and data challenges with implementation of MAP-21, Curt Davis and Mark Samuelson, Caltrans

Driving Decision Making: Web-based Visualization & Training for Empowering Analysts, Michael Pack, University of Maryland CATT LAB

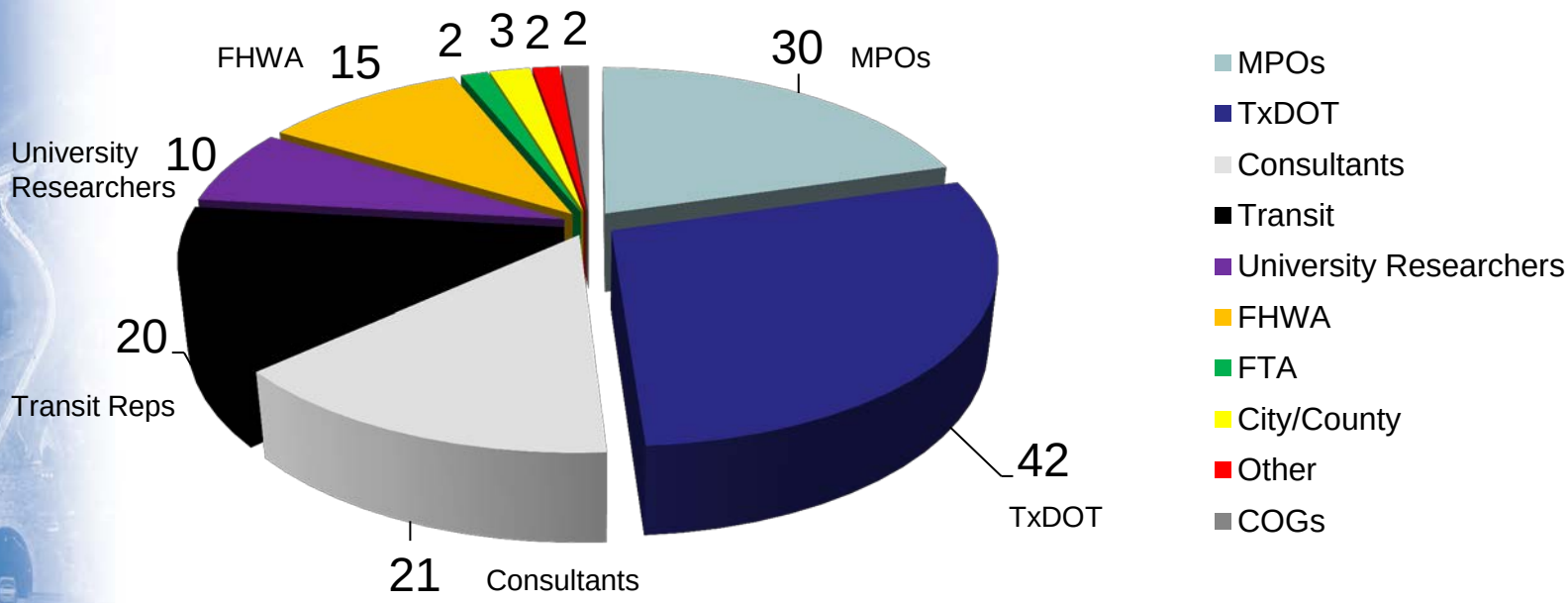


MAP-21 TPM Rulemaking Schedule

Performance Area/Element	NPRM Target
FHWA:	
Safety Performance Measures	March 2014
Highway Safety Improvement Program	March 2014
Statewide and Metro Planning; Non-Metro Planning	April 2014
Pavement and Bridge Performance Measures	May 2014
Highway Asset Management Plan	May 2014
System Performance Measures	July 2014
NHTSA: Highway Safety Grants Programs, Interim Final Rule issued on 1/23/2013	
FTA: Public Transportation Advanced NPRM closed on 1/2/2014 *(Transit Asset Management, National Transit Safety Program, and Transit Agency Safety Plan)*	

Participants at the PBPP Workshop Austin, Texas – November 13, 2013

Number of Registered Attendees by Agency/Type



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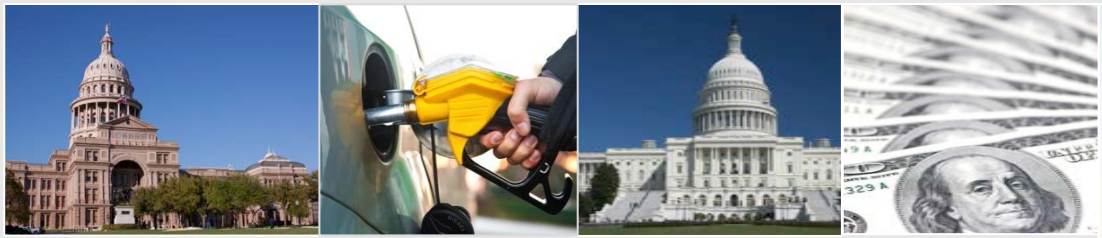

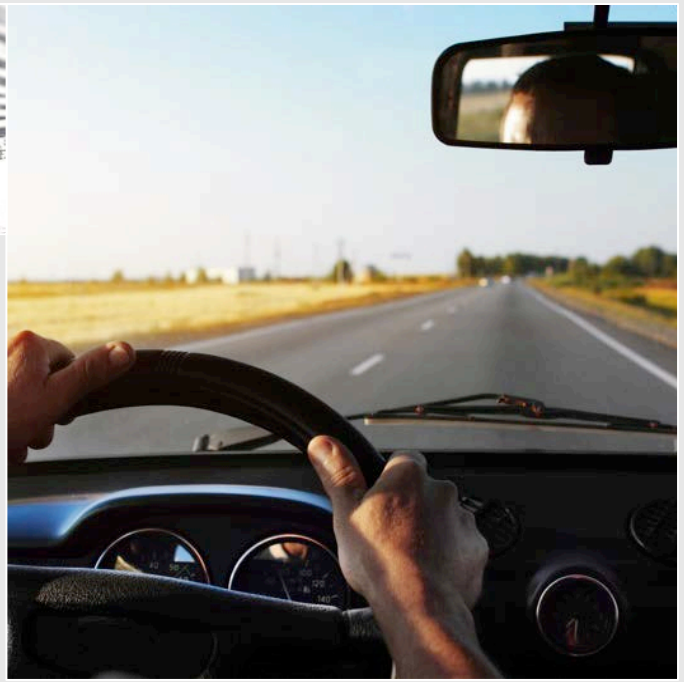

COMMON DATA SOURCING

Texas Transportation Performance Data Management & Analysis

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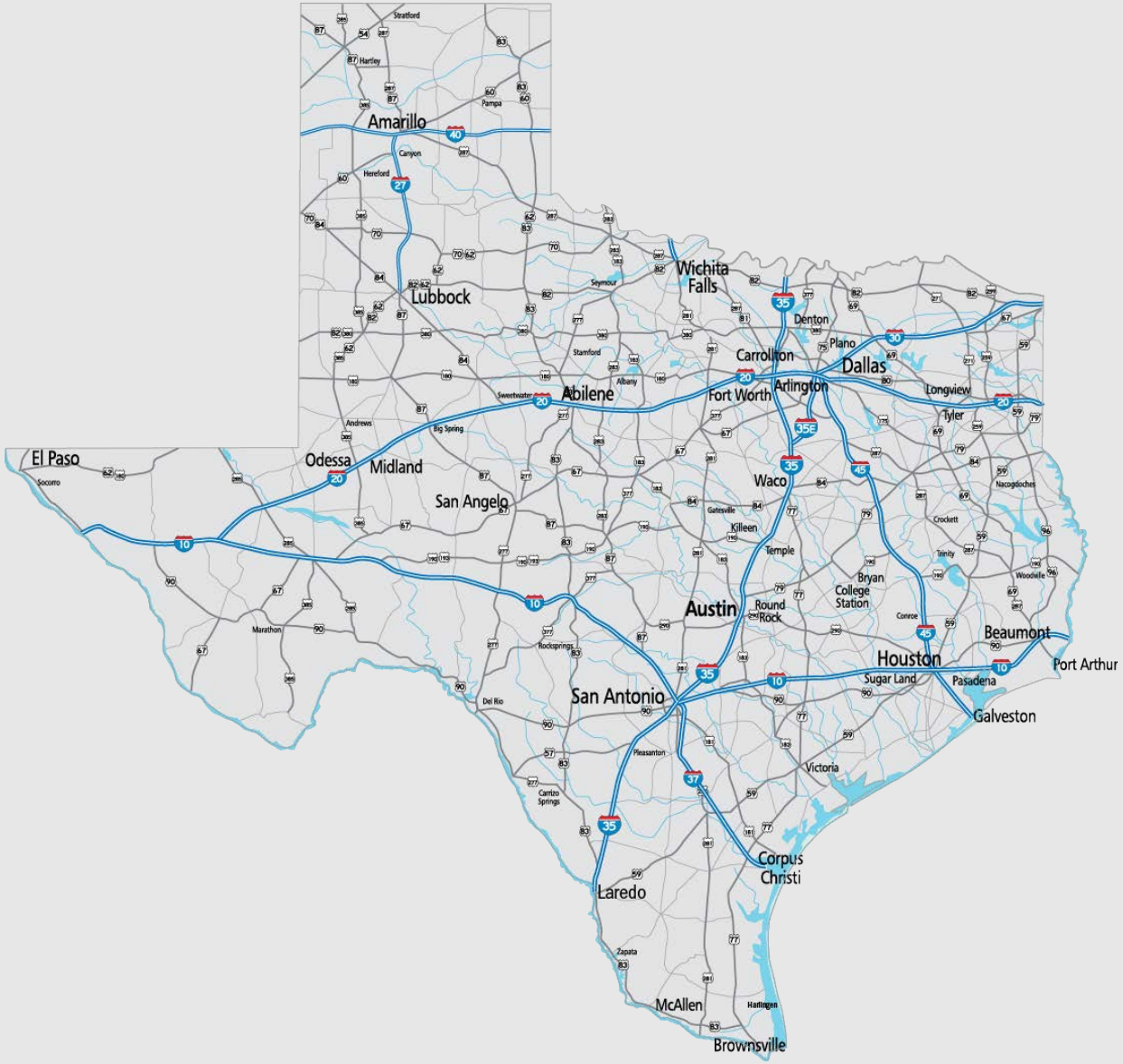
Texas – Highway System and Major Population Centers



Key Texas Factors

- Texas population is expected to increase by nearly 75% over the next 27 years: from 26 million in 2013 to projected 45 million in 2040.
- Texas has the largest highway system and the largest bridge inventory in the country, serving a diverse set of population and activity centers.
  - 237.5 billion average annual VMT on all state roadways
    - 73.8 percent occurs on state-maintained highways.
  - 11 Ports, connected by the 423 miles of the GIWW
  - 27 International border crossings between Mexico and Texas

Overview of Texas Approach

- Texas Department of Transportation (TxDOT) and Texas Metropolitan Planning Organizations (MPOs) agree on set of recommended national performance measures for Texas.
  - And then adjust as the NPRM and Final Rules are published
- TxDOT and MPOs should use the same data.
- TxDOT will be responsible for condition and safety performance target setting.
- TxDOT and MPOs will work collaboratively on target setting for system performance areas.
- TxDOT and MPOs will collaborate on MPO region targets in advance of statewide target setting.

Texas Recommended National Performance Measures

- Safety
  - Fatality Rate (5-year moving average)
  - Number of Fatalities (5-year moving average)
  - Serious Injury Rate (5-year moving average)
  - Number of Serious Injuries (5-year moving average)
- Pavement Condition
  - Interstate Pavement in Good Condition (IRI <95)
  - Interstate Pavement in Fair Condition (IRI 95 - 170)
  - Interstate Pavement in Poor Condition (IRI >170)
  - Non-Interstate NHS Pavement in Good Condition (IRI <95)
  - Non-Interstate NHS Pavement in Fair Condition (IRI 95 - 170)
  - Non-Interstate NHS Pavement in Poor Condition (IRI > 170)
- Bridge Condition
  - % Structurally Deficient Deck Area on NHS Bridges - Percent based on total NHS Deck Area
  - % Structurally Deficient Deck Area on non-NHS Bridges - Percent based on total non-NHS Deck Area
  - Count of Bridges (Entire Inventory) with Cyclic Maintenance Needs
  - % Bridges (Entire Inventory) by Deck Area with Cyclic Maintenance Needs
  - Count of Bridges (Entire Inventory) with Preventative Maintenance Needs
  - % Bridges (Entire Inventory) by Deck Area with Preventative Maintenance Needs
  - Count of Bridges (Entire Inventory) with Rehabilitation or Replacement Needs
  - % Bridges (Entire Inventory) by Deck Area with Rehabilitation or Replacement Needs
- Transit Condition
  - State of Good Repair (SGR) Average Condition Rating

Texas Recommended National Performance Measures

- Freight
  - Annual Hours of Truck Delay - Interstates (millions)
  - Truck Reliability Index
- NHS Performance
  - Annual Hours of Delay - NHS (millions)
  - Annual Hours of Delay - Interstates (millions)
  - Annual Hours of Delay - Non-Interstate NHS
  - Reliability Index - NHS
  - Reliability Index - Interstates
  - Reliability Index - Non-Interstate NHS
- CMAQ Program Performance
  - Daily kilograms of VOC reduced by the latest annual program of CMAQ projects in areas with 1 million pop or more (5-year average)
  - Daily kilograms of NOx reduced by the latest annual program of CMAQ projects in areas with 1 million pop or more (5-year average)
  - Daily kilograms of CO reduced by the latest annual program of CMAQ projects in areas with 1 million pop or more (5-year average)
  - Annual Hours of Delay (AHD) Reduced by CMAQ Projects in areas with 1 million pop or more (1000 of hours) ***(Note: Discussions continue on feasibility of this measure.)***

Common Data Sourcing

- TxDOT and Texas MPOs should use the same data.
  - TxDOT will provide performance data at the statewide and MPO levels.
    - TxDOT data systems produce condition and safety results.
    - Texas A&M Transportation Institute (TTI) analyzes TxDOT and other data systems to produce system performance results.
  - Texas non-attainment MPOs over 1 million population produce CMAQ performance results.

Texas Condition and Safety Performance Data

- TxDOT and Texas MPOs should use the same data.
  - TxDOT will provide performance data at the statewide and MPO levels.
    - Statewide data
    - At least county-level data
    - MPO boundary data, if available
    - Exception: transit condition data
      - TxDOT will provide small urban, rural, and elderly and disabled program fleet condition data; MTAs will provide condition data on their own transit fleets (using the National Transit Database).
  - TxDOT data systems produce condition and safety results.
    - National Bridge Inventory – bridge condition measures
    - Pavement Management Information System – NHS pavement condition measures
    - Public Transportation Management System – fleet condition measure
    - Crash Records Information System – fatality and serious injury measures

Texas National Highway System Performance Data

- TxDOT and Texas MPOs should use the same data.
  - TxDOT will provide performance data at the statewide and MPO levels.
    - Statewide data
    - At least county-level data
    - MPO boundary data, if available
  - TTI analyzes TxDOT and other data systems to produce system performance results.
    - TxDOT Road-Highway Inventory Network (RHiNo) and a commercially available GPS-based speed dataset (INRIX in FY 2013): Hours of Delay, Reliability Index (NHS overall)
    - TxDOT Road-Highway Inventory Network (RHiNo) and a commercially available GPS-based speed dataset (INRIX in FY 2013): Hours of Delay, Reliability Index (truck only on NHS)

Texas CMAQ Program Performance Data

- TxDOT and Texas MPOs should use the same data.
  - TxDOT will provide performance data at the statewide and MPO levels.
    - Statewide data
    - At least county-level data
    - MPO boundary data, if available
  - Texas non-attainment MPOs over 1 million population produce CMAQ performance results.
    - FHWA CMAQ System database : Daily Kilograms of VOC Reduced
    - FHWA CMAQ System database : Daily Kilograms of NOx Reduced
    - FHWA CMAQ System database : Daily Kilograms of CO Reduced
  - TxDOT and TTI will work with the Texas non-attainment MPOs over 1 million population on delay reduction measures.
    - TxDOT Road-Highway Inventory Network (RHiNo) and a commercially available GPS-based speed dataset (INRIX in FY 2013): Annual Hours of Delay Reduced
    - *Note: Discussions continue on the feasibility of this measure.*

Target Setting Led by Primary Areas of Influence

- TxDOT will be responsible for condition and safety performance target setting.
  - These results are largely managed by statewide decision making.
- TxDOT and Texas MPOs will work collaboratively on target setting for system performance areas.
  - Regional data make up the largest inputs to system performance.
  - Therefore, MPO input in target setting will be important.
- TxDOT and Texas MPOs will collaborate on MPO region targets in advance of statewide target setting.
  - Especially on system performance

Texas Next Steps

- TxDOT is compiling FY 2013 performance results for our set of recommended national performance measures. We will post them online soon.
  - Exception: Challenges with developing CMAQ Program performance results
- TxDOT and Texas MPOs will work collaboratively to review Notices of Proposed Rulemaking on national transportation performance management process and, where appropriate, submit joint comments.
- TxDOT, TTI, and Texas MPOs will continue evaluating our collective readiness for national transportation performance reporting and work collaboratively to be ready to use performance-based processes in Texas.
- Practicing the calculations, the collaboration, and the use of the measures serves a variety of purposes.

Texas Contacts

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    Research Specialist, State Legislative Affairs Office,
    Texas Department of Transportation
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- Tim Lomax, Ph.D., P.E.
  - Senior Research Engineer and Regents Fellow,
    Mobility Analysis Program, Texas A&M Transportation Institute
  - Phone: (979) 845-9960
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  - Website: http://mobility.tamu.edu

State Collaboration with Local Partners and Data Challenges with Implementation of MAP-21

Lets Talk Performance Webinar Presentation
March 2014

What has Caltrans done

- February Road-show
- November Workshop
- January Tribal Workshop

Action Plans

Identified Teams to address:

- **NPRMs**
- **Target Setting**
- **Implementation**

Challenges

- Urban v Rural
- Statewide Targets
- Data Collection & Storage

State Collaboration with Local Partners and Data Challenges with Implementation of MAP-21

Lets Talk Performance Webinar Presentation
March 2014

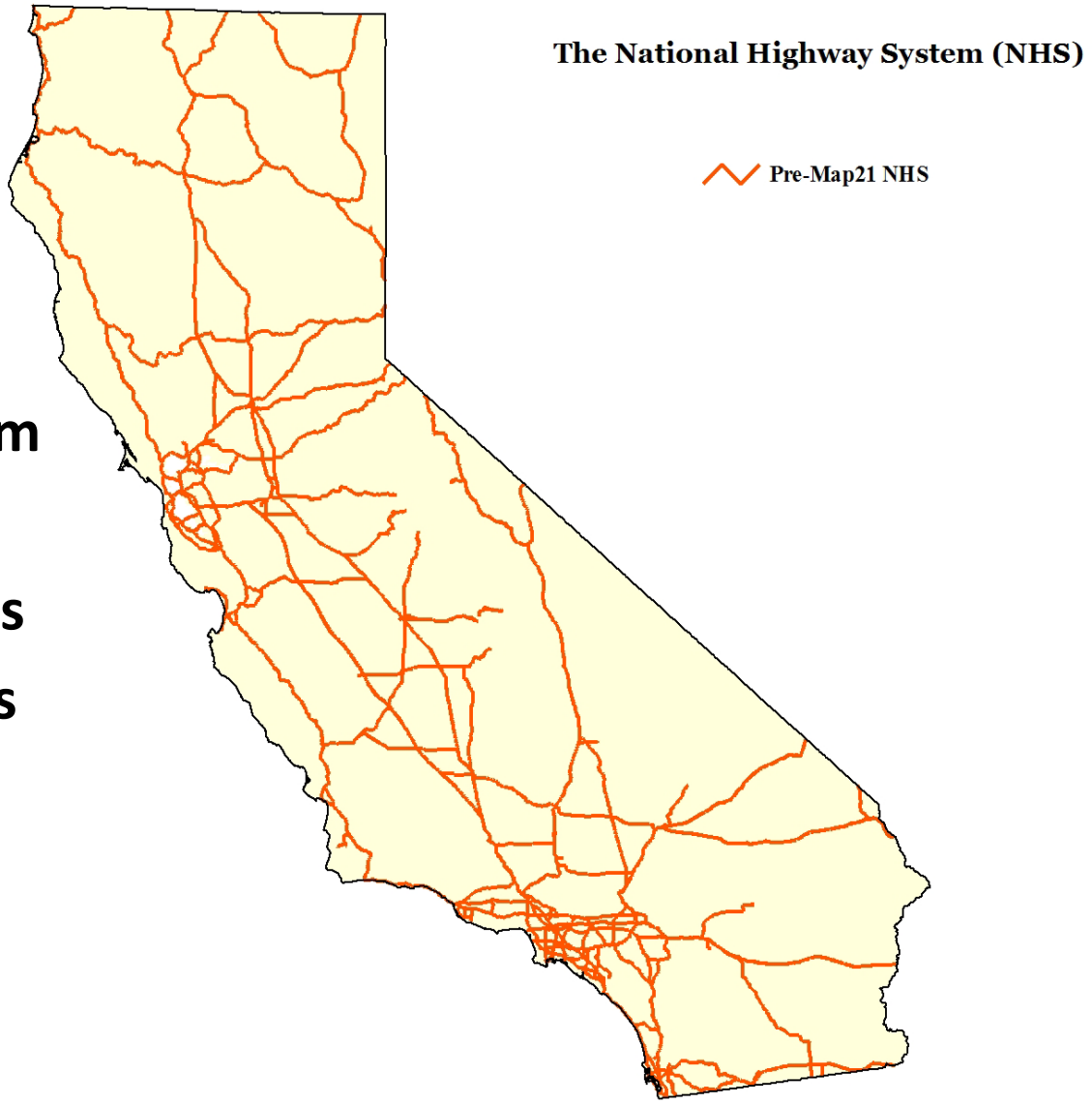
Challenges

Scope

National Highway System

State System 7,100 miles

Local System 200 miles



Challenges

Scope

National Highway System

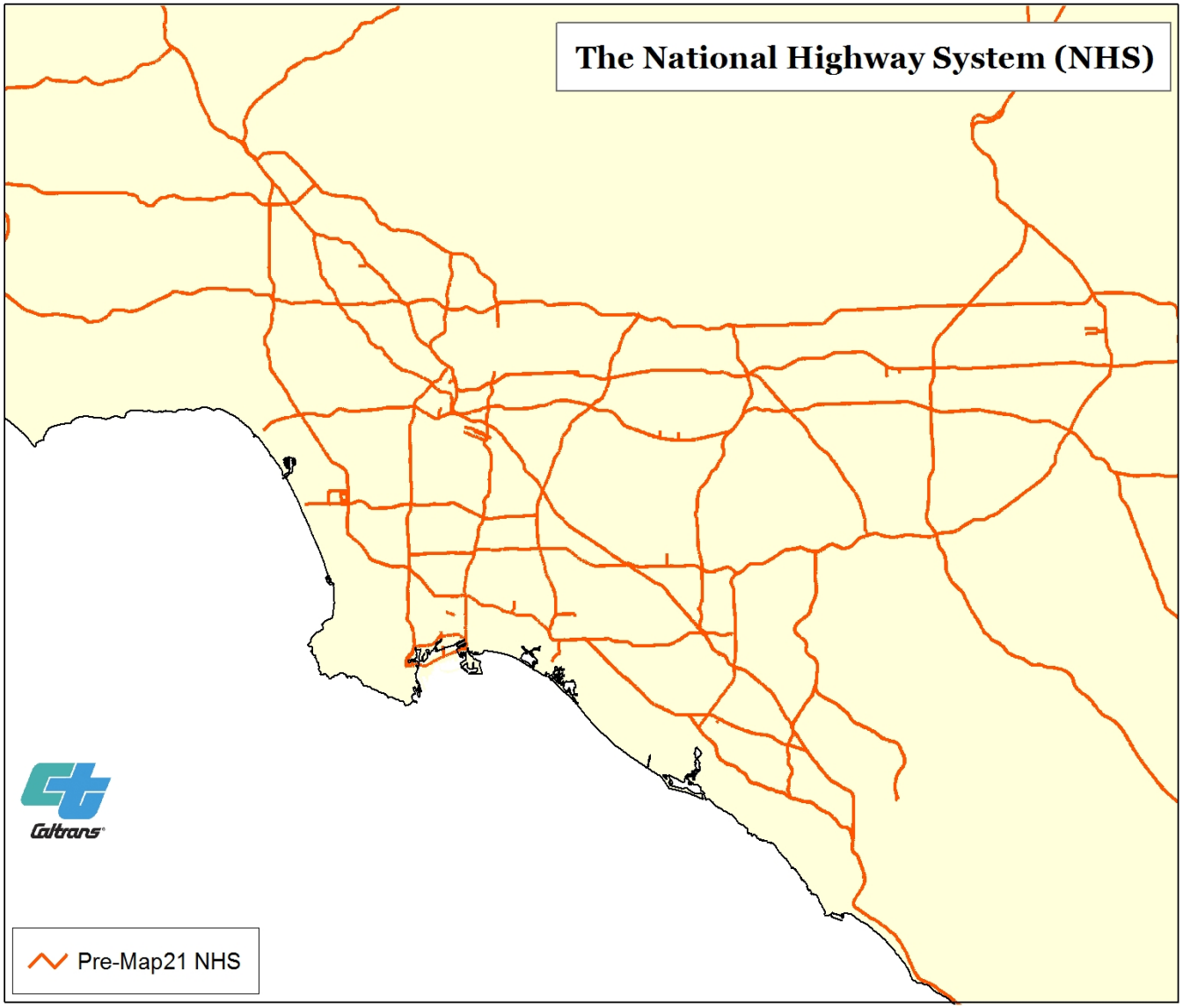
State System 8,600 miles

Local System 5,700 miles

Challenges

Scope

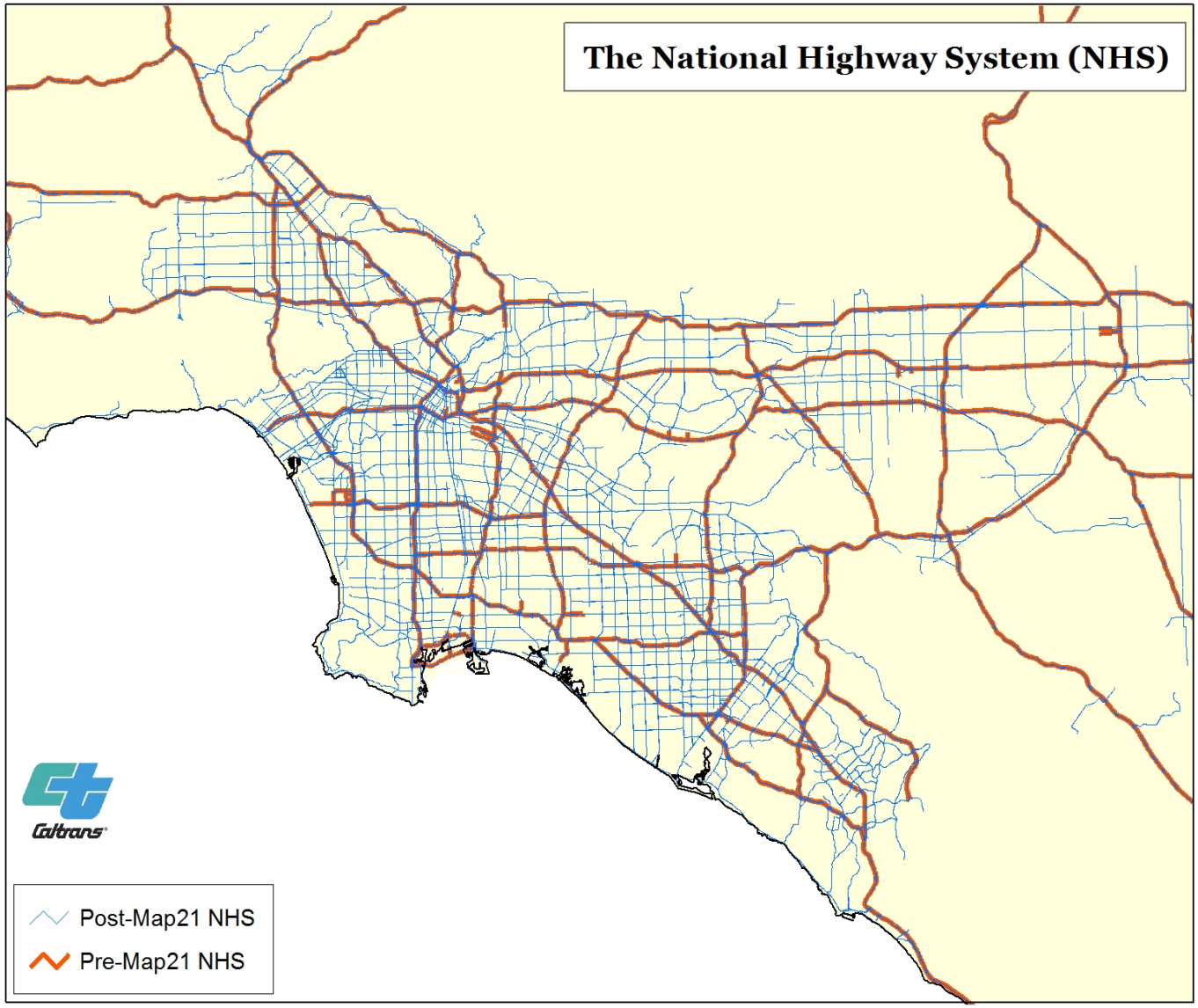
Los Angeles



Challenges

Scope

Los Angeles



Performance Data Gap

Goal Area - Safety

Possible Measure	Data Item	Statewide Availability	
		State NHS	Local NHS
Number of Fatalities	Number of Fatalities		
Fatality Rate	Number of Fatalities & VMT		
Number of Serious Injuries	Number of Serious Injuries		
Serious Injury Rate	Number of Serious Injuries & VMT		

Performance Data Gap

Goal Area - Pavement

Possible Measure	Data Item	Statewide Availability	
		State NHS	Local NHS
IRI, Percent below 170	International Roughness Index (IRI)		

Performance Data Gap

Goal Area - Bridge

Possible Measure	Data Item	Statewide Availability	
		State NHS	Local NHS
Structurally Deficient Deck Area	Bridge Deck Area		
NHS Bridges in Good, Fair, Poor Condition	Bridge Deck Area		

Performance Data Gap

Goal Area - Freight

Possible Measure	Data Item	Statewide Availability	
		State NHS	Local NHS
Annual Hours of Truck Delay	Truck Travel Time		
Truck Reliability Index	Truck Travel Time		

Performance Data Gap

Goal Area – System Performance

Possible Measure	Data Item	Statewide Availability	
		State NHS	Local NHS
Annual Hours of Delay	Travel Time (Vehicle Hours of Delay)		
Reliability Index	Travel Time (Vehicle Hours of Delay)		

Performance Data Gap

Goal Area – Congestion Mitigation & Air Quality

Possible Measure	Data Item	Statewide Availability	
		State NHS	Local NHS
Criteria Pollutant Emissions	On-Road, Mobile Source Criteria Air Pollutants		
Annual Hours of Delay	Travel Time (Vehicle Hours of Delay)		

State Collaboration with Local Partners and Data Challenges with Implementation of MAP-21

Lets Talk Performance Webinar Presentation
March 2014

All Public Roads LRS

Moving Forward

- **Complete Remaining Local LRS**
  - Northern California, California State University, Chico
  - Southern California, California State University, Northridge
  - Schedule Completion June, 2014
- **Combine State and Local LRS**

Contact Information

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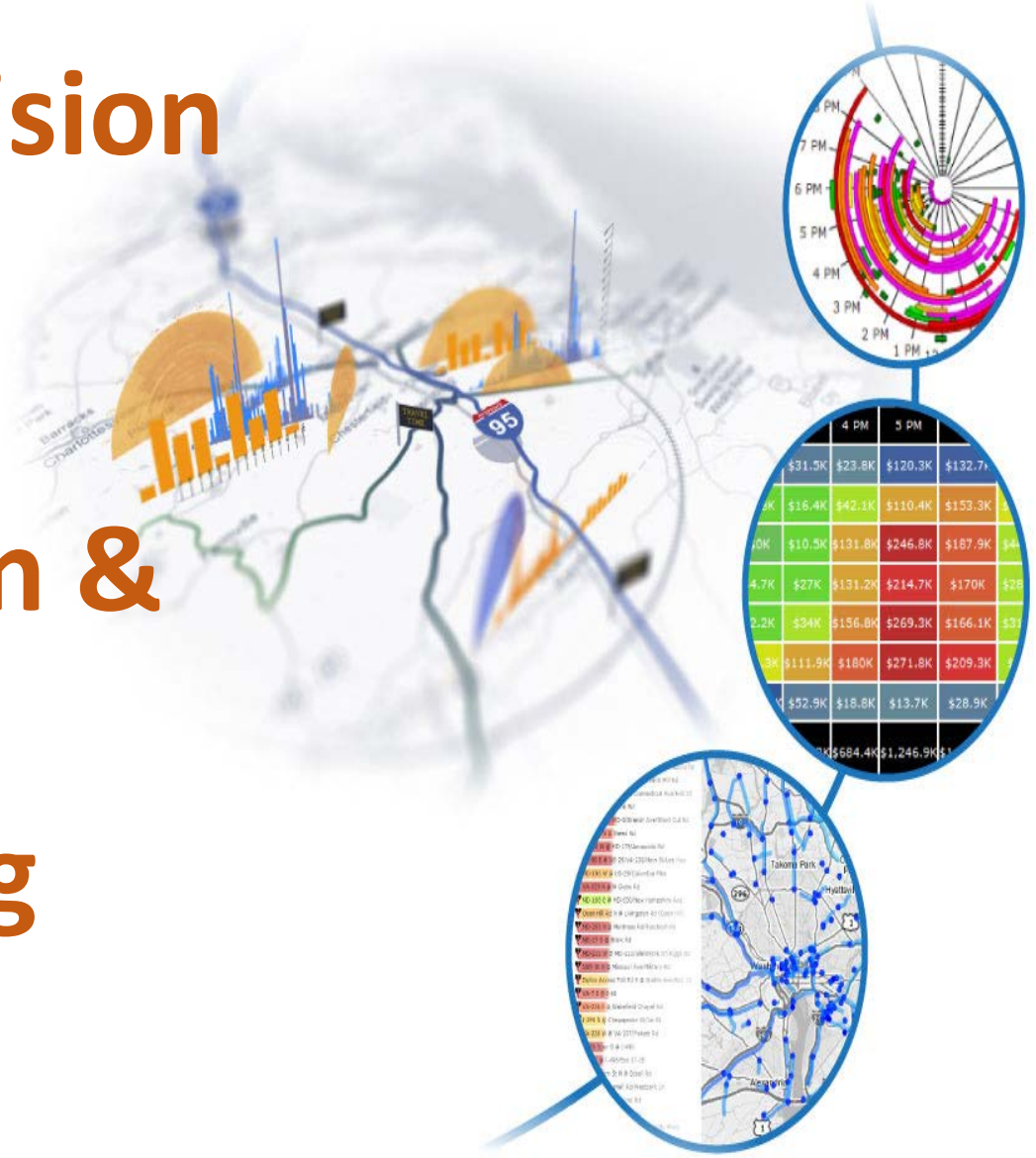
Questions

Driving Decision Making: Web-based Visualization & Training for Empowering Analysts



Michael L. Pack, University of Maryland
CATT Laboratory

Transportation Data

- Transportation agency emphasis on data collection, hardware/sensors, and building things…

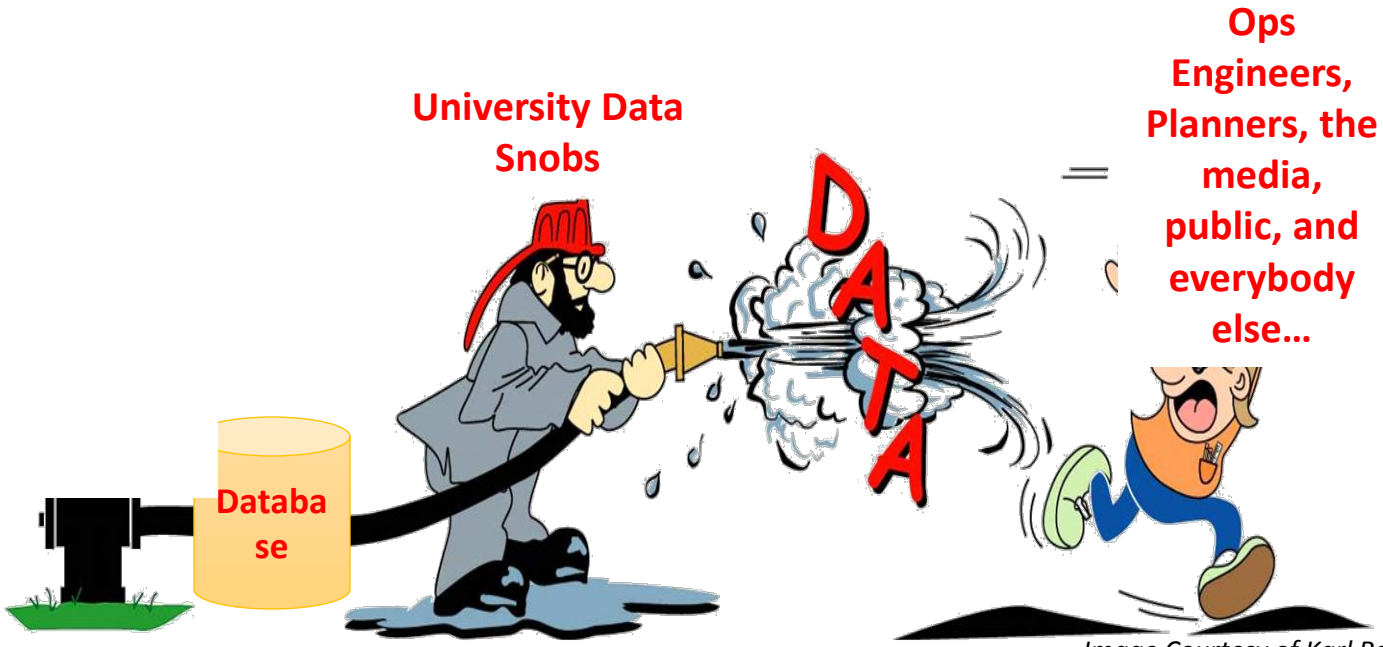


Image Courtesy of Karl Petty, BTS

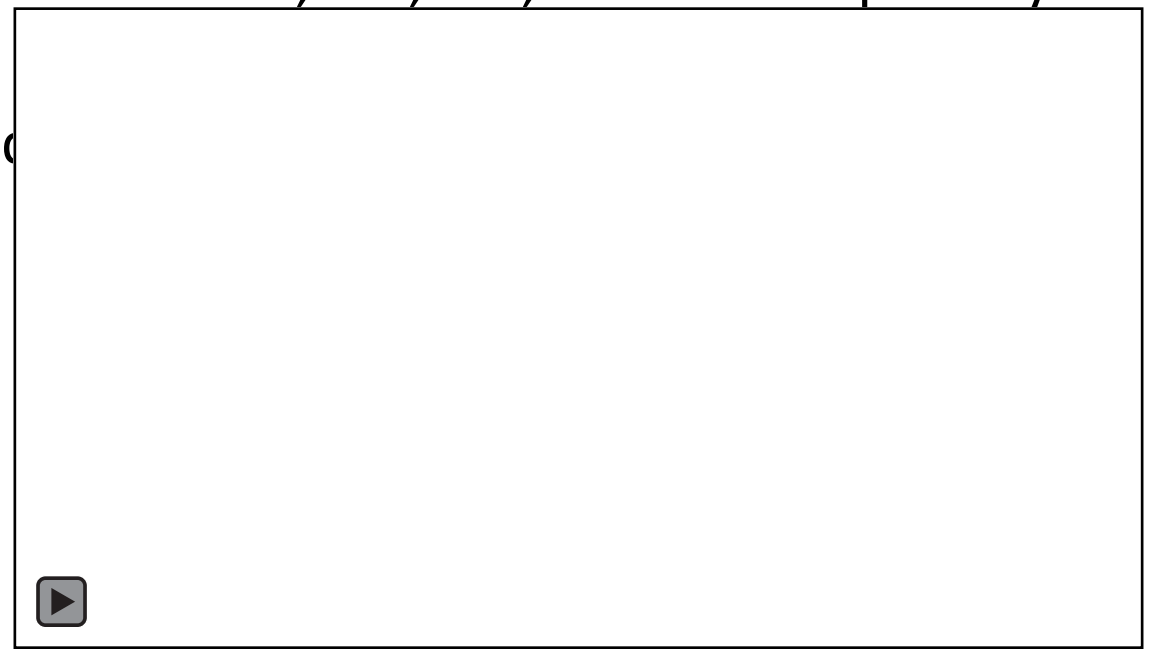
- Significantly less emphasis has been given to:
  - ✓ Ease of access
  - ✓ Tools for exploring the data
  - ✓ How to represent the data for
  - ✓ differing users including
    - ✓ Engineers, decision makers, the public
  - ✓ Training

Visualization & Usability

How much data?

- CATT Lab Daily Data Activities
  - Traffic events: 10,000 records per day:
    0.001 Gb/day
  - Traffic detectors: 35,000,000 records per day:
    5 Gb/day
  - Probe vehicle data: 4,200,000,000 records per day:
    550 Gb/day
  - CCTV, Weather, Rad
    ?,??? Gb/day

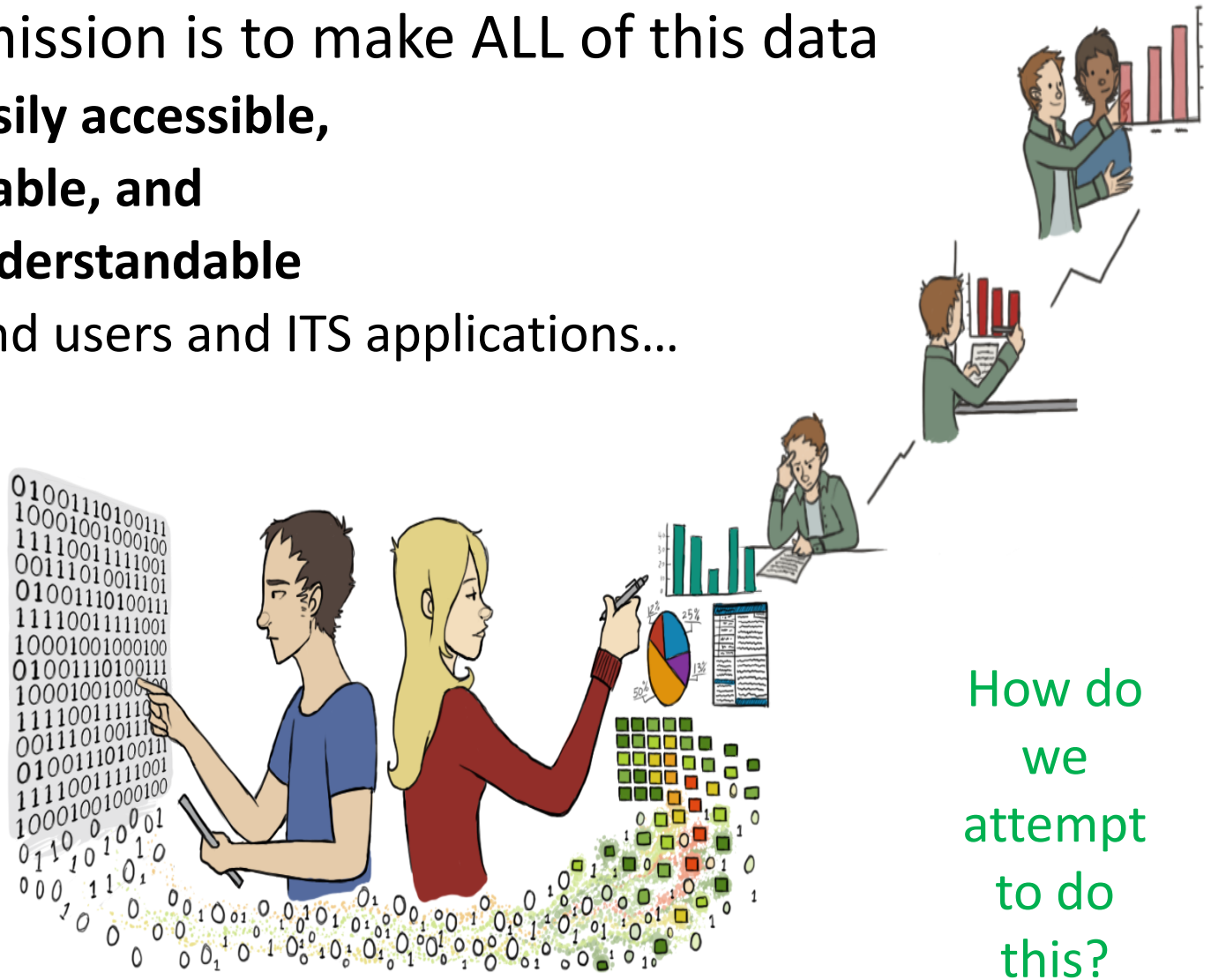
An agency's capacity to process, store, analyze, and report on this data is usually **VERY**



Our Challenge

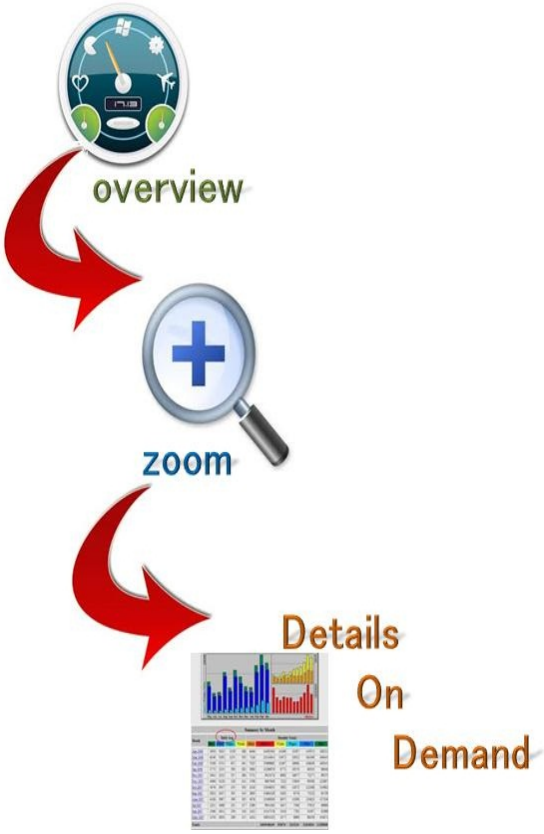
- Our mission is to make ALL of this data
  - **easily accessible,**
  - **usable, and**
  - **understandable**

  to end users and ITS applications…



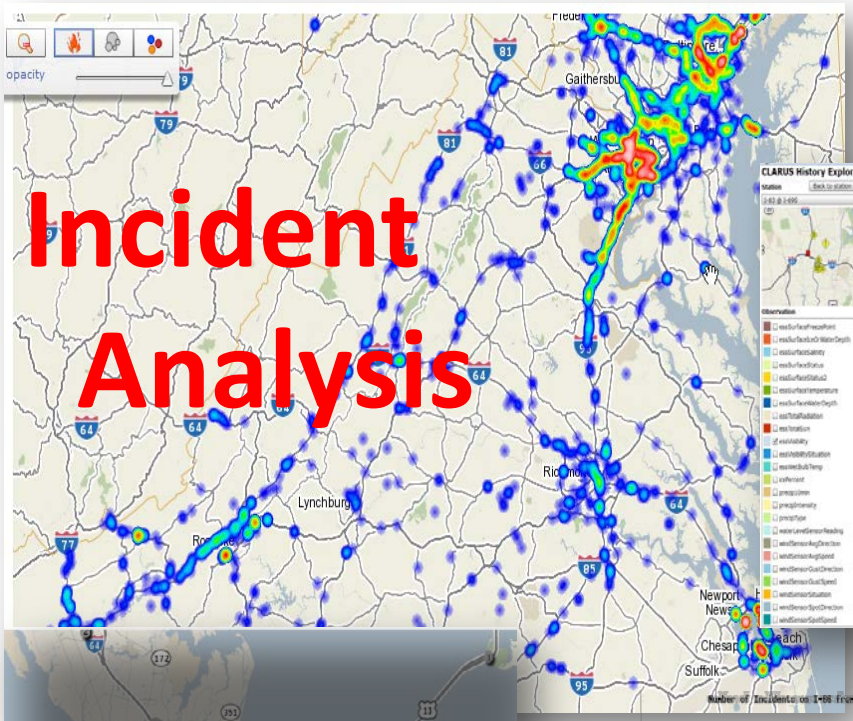
How do we attempt to do this?

Focus on Visual Analytics & Decision Support Tools

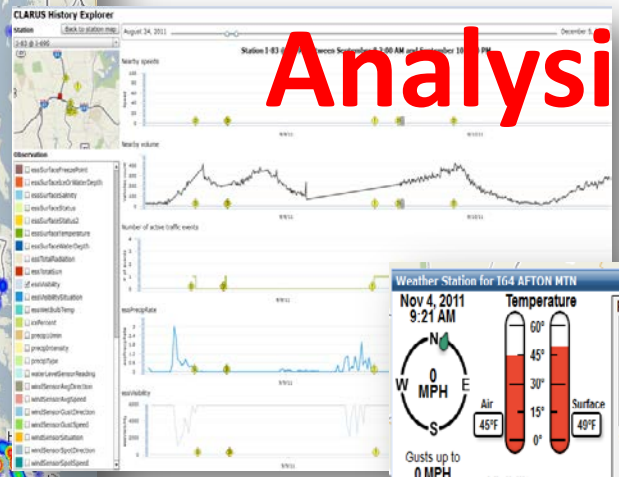


- **Visual bandwidth is enormous**
  - Human perceptual skills are remarkable
    - Trend, cluster, gap, outlier...
    - Color, size, shape, proximity...
  - Human image storage is fast and vast

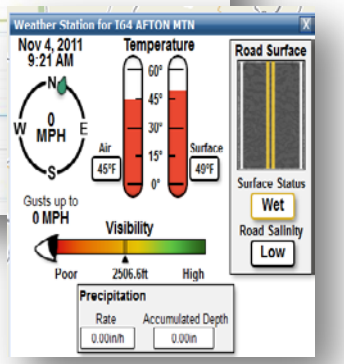
Suite of Historic Analytics Tools

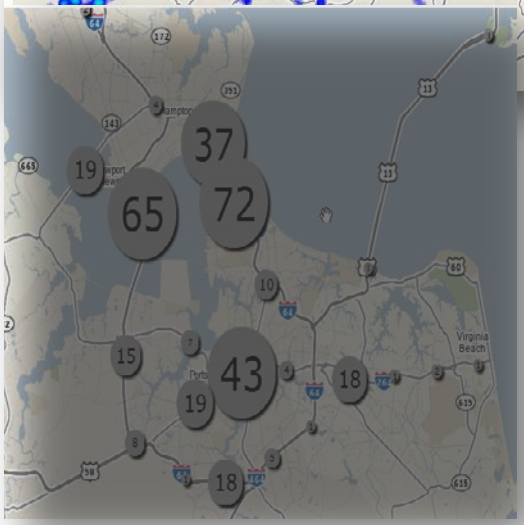


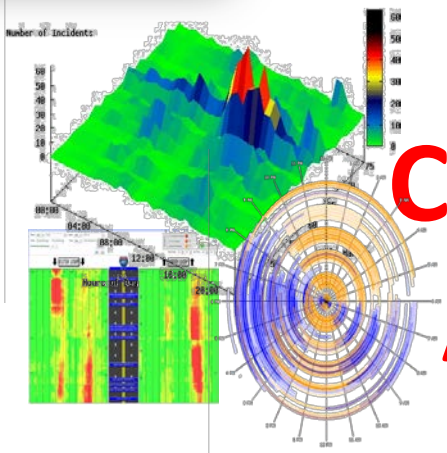
Incident Analysis



Weather Analysis





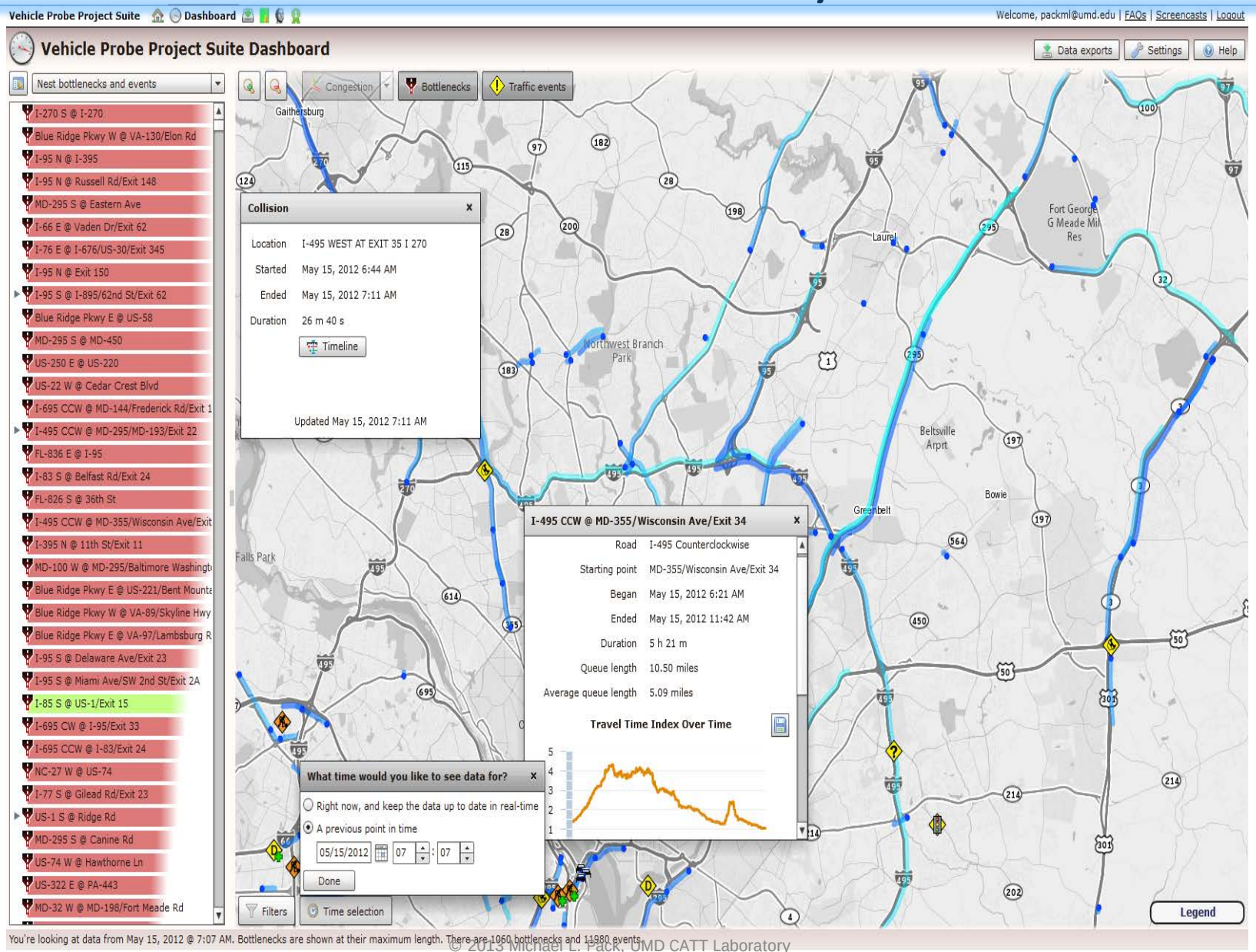


Congestion Analysis

Congestion & Safety Performance Measures

- System Performance Reporting
- Problem Identification
- Project Prioritization
- After Action Incident Review
- Before & After Studies
- Operations
- Travel Time Analysis
- Work Zone Monitoring

Historic Analysis



Examples

The following slides have real-world examples the types of questions our users are asked, along with examples of how the VPP Suite is helping to answer them.

View video demos of these tools at
www.vpp.ritis.org/suite/screencast

Statewide Reporting

- You've been asked to provide a monthly state-wide congestion report to the Secretary. This report only needs to cover the interstates, but it needs to highlight where the worst congestion occurred (top 10 locations) and some basic stats about the severity of the congestion at each of these locations. You also need to let the Secretary know if the congestion is about the same, better, or worse than the previous 2-weeks. What do you do?

Bottleneck Ranking Maps

Analytics Staging

Welcome, packml@umd.edu | FAQs | Screencasts | Logout

Bottleneck Ranking

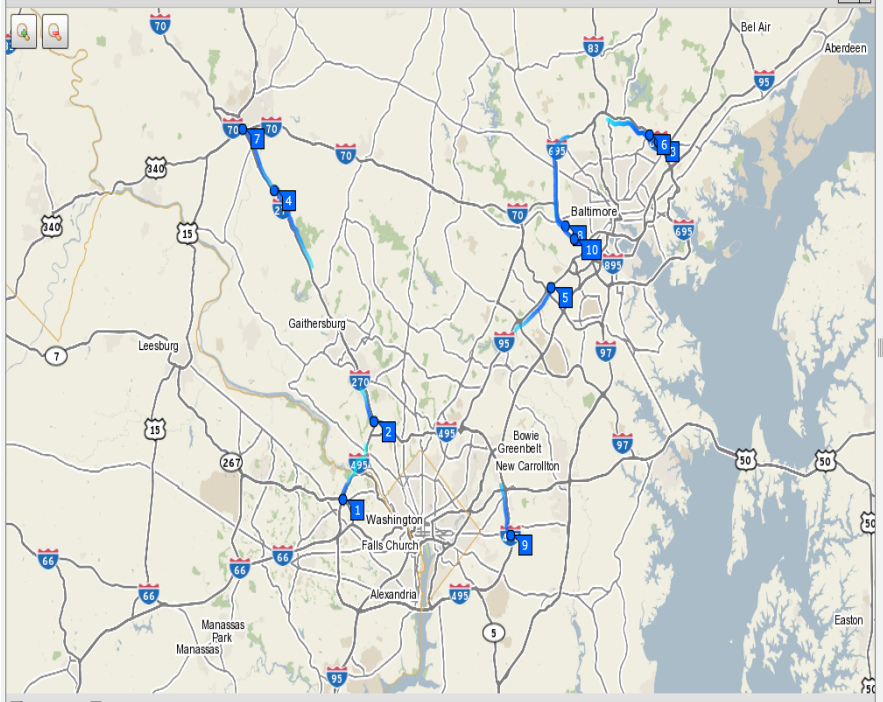
New search

Bottleneck locations from Interstates and US routes in MD (2793 tmcs) between October 1, 2013 and October 31, 2013 (1391 total)

Export to CSV

Rank	Map	Location	Average duration	Average max length (miles)	Occurrences	Impact factor
1	☑	I-495 CCW @ VA-267/Exit 12	3 h 39 m	7.57	33	54,716
2	☑	I-270 Spur S @ I-270	1 h 35 m	6.07	91	52,503
3	☑	I-695 CW @ MD-147/Harford Rd/Exit 31	2 h 43 m	8.34	36	48,942
4	☑	I-270 N @ MD-80/Exit 26	2 h 5 m	10.52	34	44,706
5	☑	I-95 N @ MD-100/Exit 43	1 h 59 m	7.29	51	44,231
6	☑	I-695 CW @ MD-41/Perring Pkwy/Exit 30	2 h 5 m	7.04	41	36,062
7	☑	I-270 N @ I-70/US-40	1 h 32 m	7.83	50	36,018
8	☑	I-695 CCW @ Edmondson Ave/Exit 14	2 h 19 m	6.03	40	33,510
9	☑	I-495 CW @ MD-214/Central Ave/Exit 15	1 h 53 m	6.03	45	30,656
10	☑	I-695 CCW @ MD-372/Wilkens Ave/Exit 12	1 h 54 m	13.93	19	30,180
11	☐	I-695 CCW @ MD-144/Frederick Rd/Exit 13	4 h 18 m	7.28	16	30,046
12	☐	I-270 Local N @ I-270/Washington National Pike	2 h 5 m	3.72	55	25,567
13	☐	I-495 CW @ I-270/Exit 35	1 h 46 m	4.31	47	21,457

I-270 Spur S @ I-270



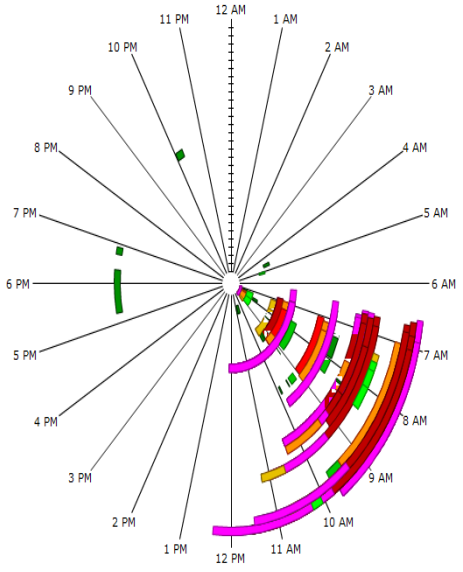
☑ Show ranks ☐ Highlight selected bottleneck

Occurrences

Spiral | Table | Export to CSV

In this time spiral each trip around the circle represents a day

The center represent October 1, 2013 and the outer edge represents November 1, 2013.



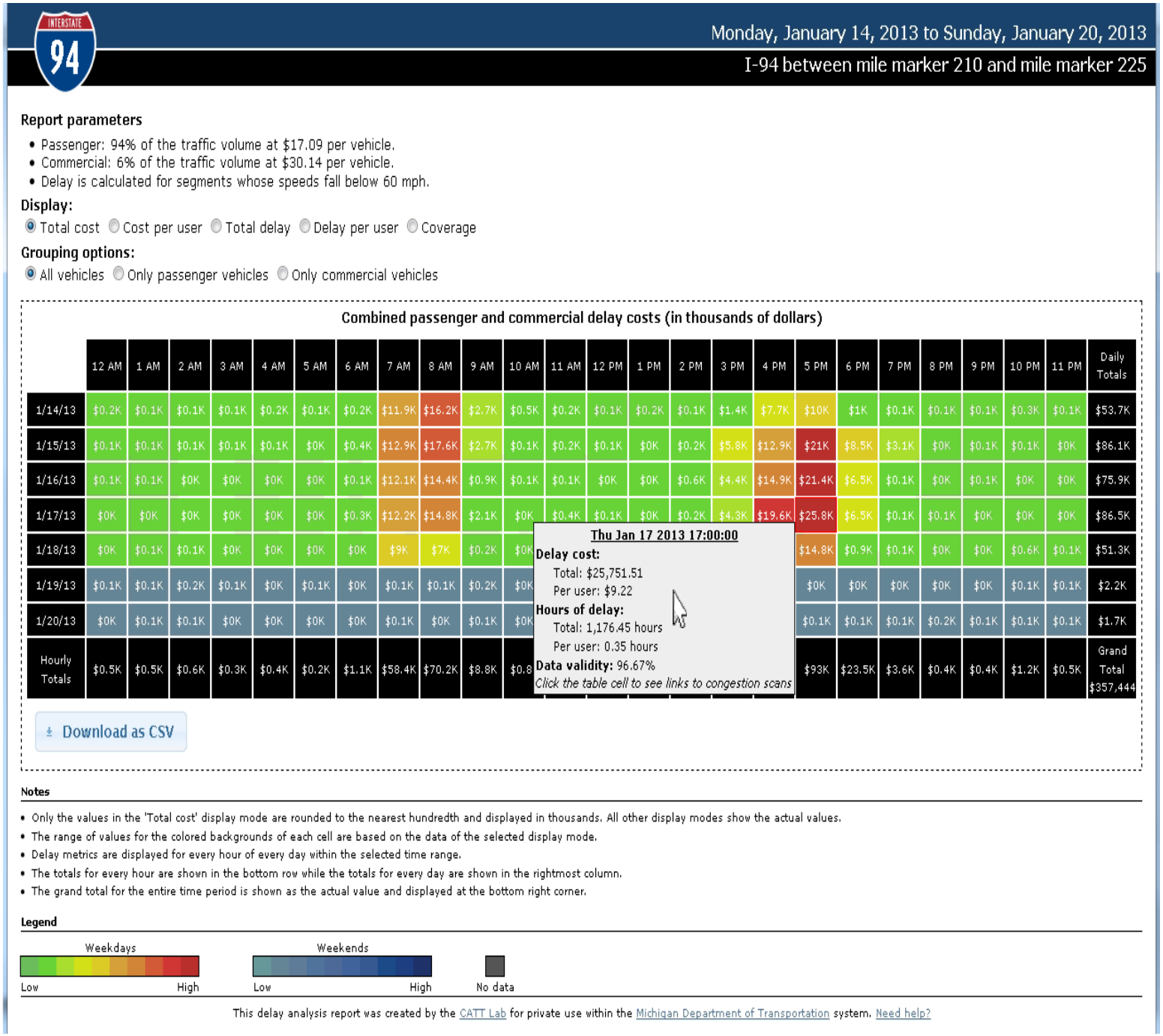
Maximum queue length < 1 > 10 miles

I just spent $200M, and all I got was this…

- You just spent $200M on a 6-month major road widening project along that corridor you (and everybody else) hate. Some commuters are now complaining that things haven't improved---in fact, they claim things have gotten worse. You can see the headlines now: "$200M fattens road, shrinks commuter patience!"
- What can you produce to show the true impact of this recent investment (positive or negative).

Answer #1: better or worse?

What was the cost of congestion?



Monday, January 14, 2013 to Sunday, January 20, 2013

I-94 between mile marker 210 and mile marker 225

Report parameters

- Passenger: 94% of the traffic volume at $17.09 per vehicle.
- Commercial: 6% of the traffic volume at $30.14 per vehicle.
- Delay is calculated for segments whose speeds fall below 60 mph.

Display:

(•) Total cost ( ) Cost per user ( ) Total delay ( ) Delay per user ( ) Coverage

Grouping options:

(•) All vehicles ( ) Only passenger vehicles ( ) Only commercial vehicles

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

Download as CSV

Notes

- Only the values in the 'Total cost' display mode are rounded to the nearest hundredth and displayed in thousands. All other display modes show the actual values.
- 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.

Legend

Weekdays: Low — High

Weekends: Low — High

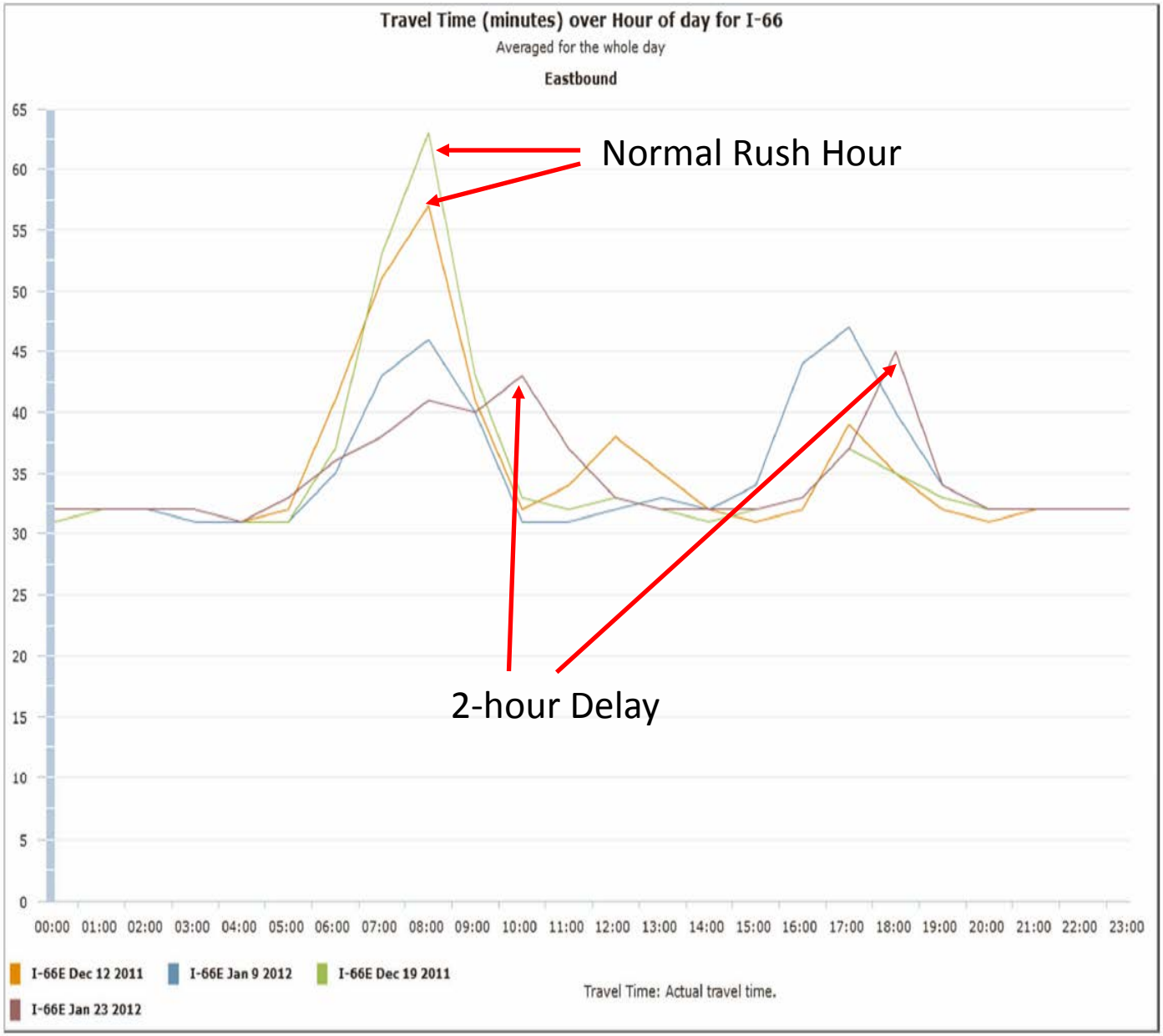
No data

This delay analysis report was created by the CATT Lab for private use within the Michigan Department of Transportation system. Need help?

2-hour delayed Opening

- It's winter. Yesterday there was concern about icy roads in the morning. As a precautionary measure, the federal government (and most of the schools in the area) decided to open 2-hours late. Traffic seemed better than usual in the AM, and there weren't many accidents. Traffic even seemed better in the PM. Several politicians (and the media) are calling to ask for some stats on how the commute compared to normal. What are you going to tell them?

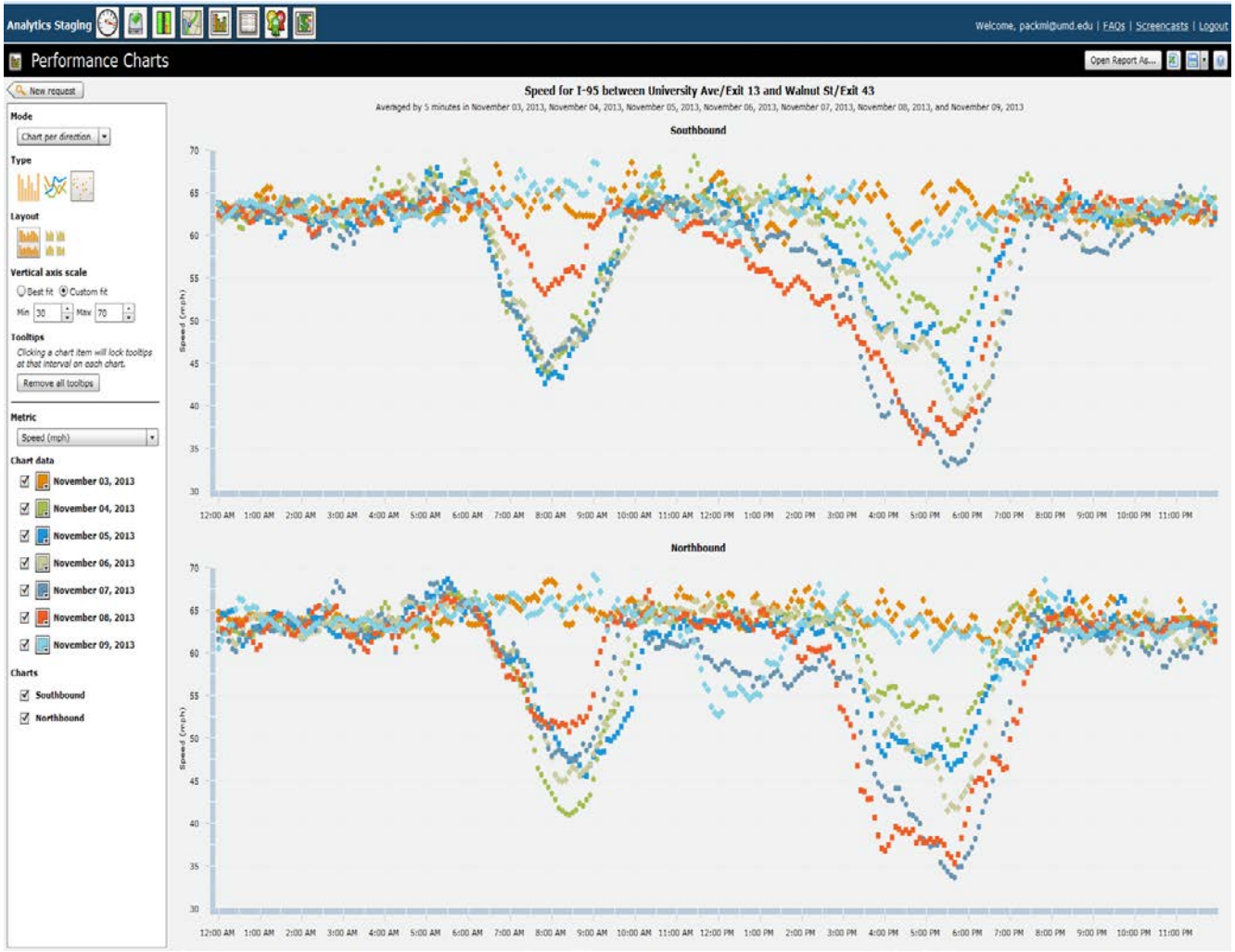
Trav
el
Time



Data Provided by the I-95 Corridor Coalition Vehicle Probe Project Suite / RITIS / MATOC

Other Performance Charts

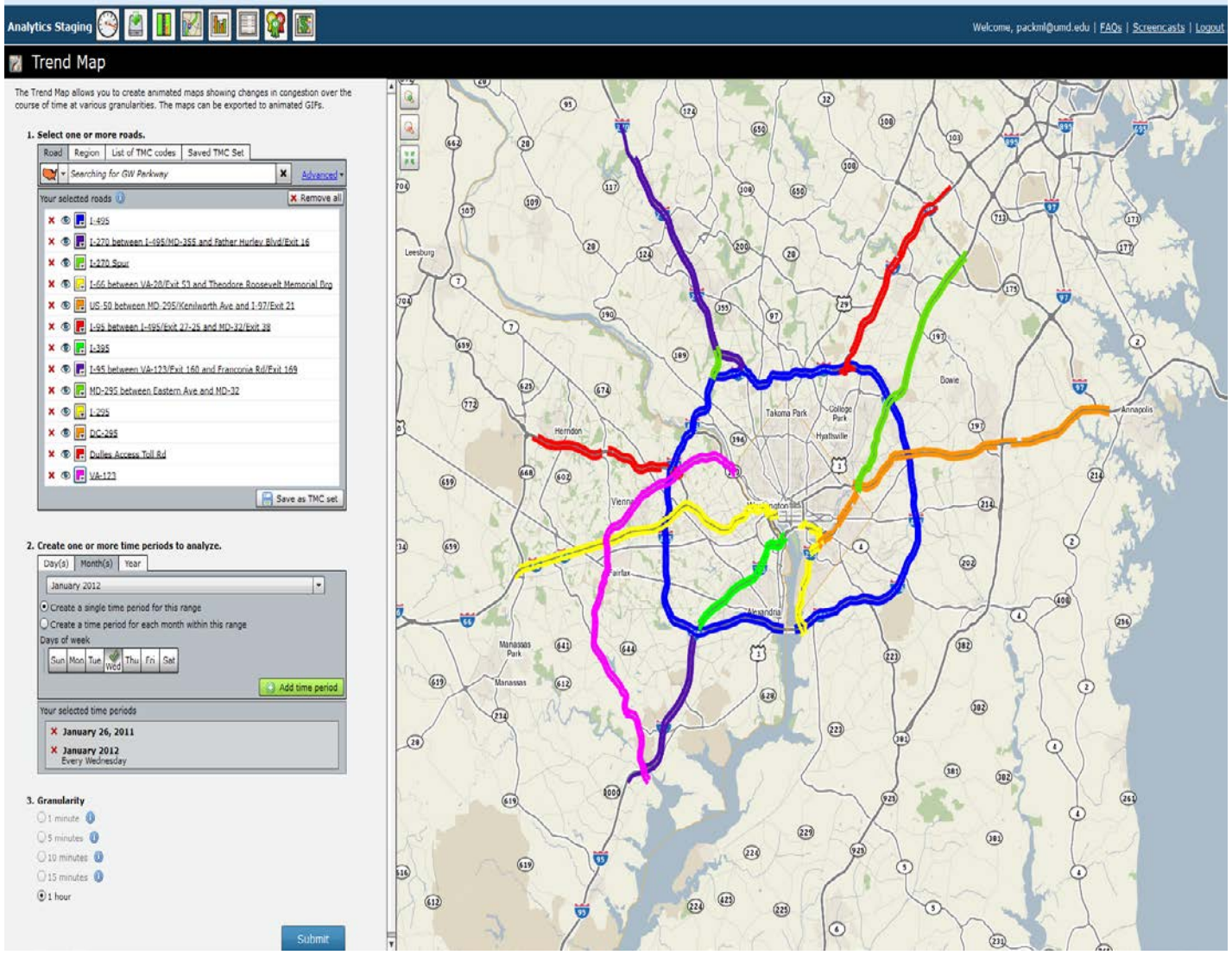
- Speeds
- Travel times
- Buffer Time Index
- Planning Time Index
- Etc.



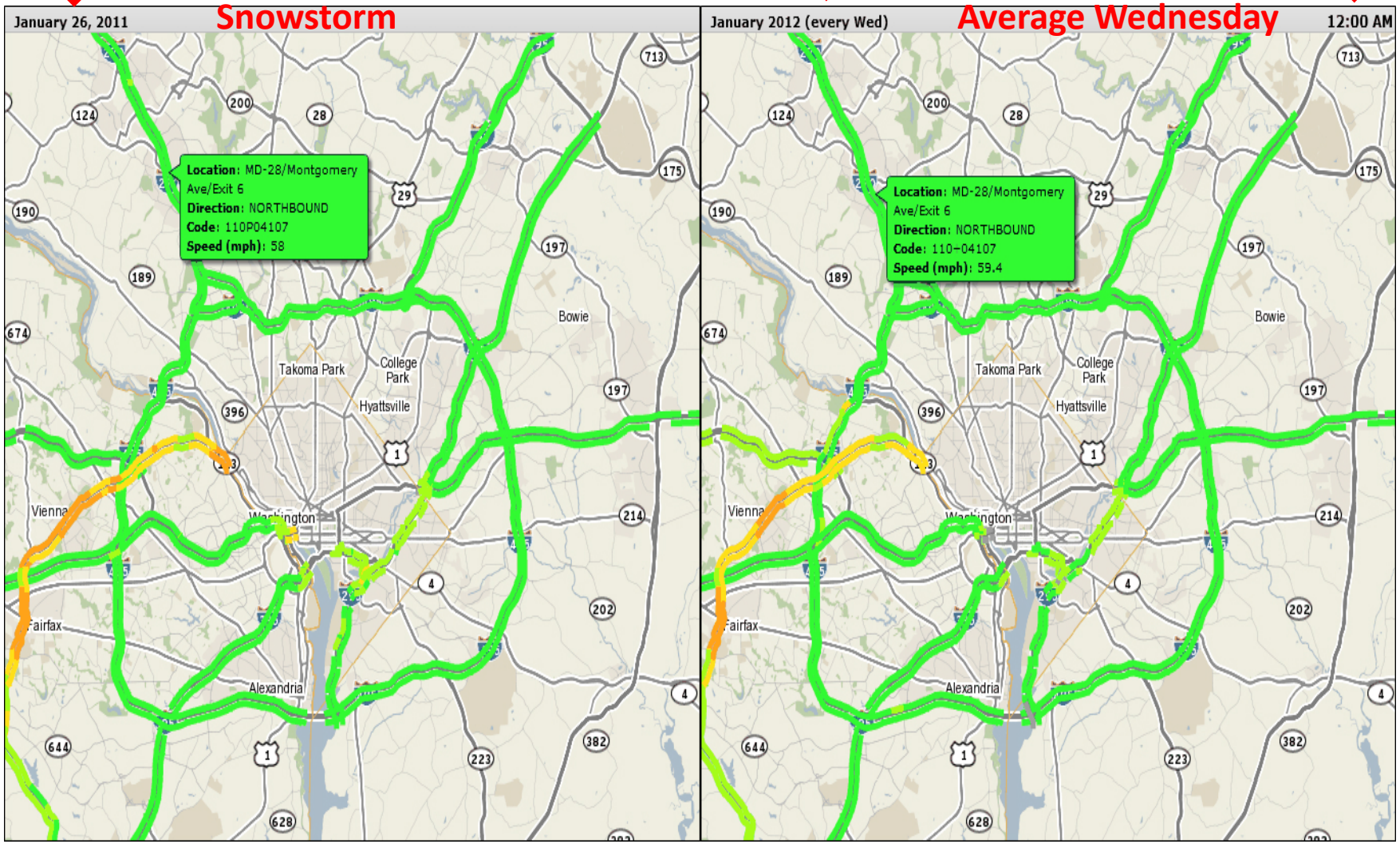
Winter Weather Worries

- Snowmageddon 2011. There's been a request from the Governor's office to produce some examples that depict how bad traffic was during the January 26th, 2011 snow storm compared to normal weekday traffic. What can you show in just a few minutes?

Trend Maps

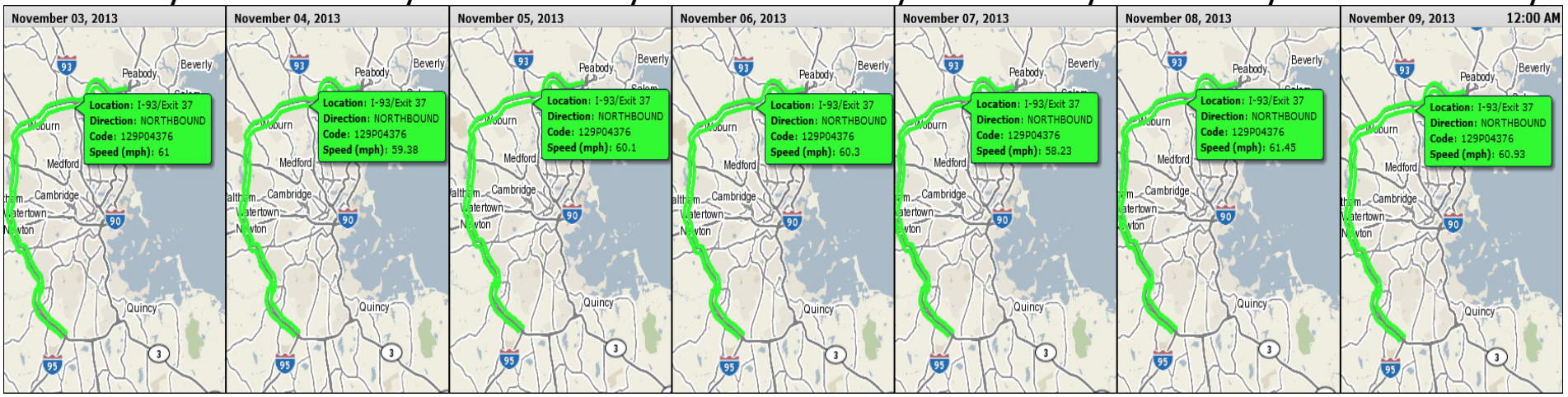

Analytics Staging
Welcome, packml@umd.edu | FAQs | Screencasts | Logout
Trend Map
The Trend Map allows you to create animated maps showing changes in congestion over the course of time at various granularities. The maps can be exported to animated GIFs.
1. Select one or more roads.
Road
Region
List of TMC codes
Saved TMC Set
Searching for GW Parkway
Advanced
Your selected roads
Remove all
I-495
I-270 between I-495/MD-355 and Father Hurley Blvd/Exit 16
I-270 Spur
I-66 between VA-28/Exit 53 and Theodore Roosevelt Memorial Brg
US-50 between MD-295/Kenilworth Ave and I-97/Exit 21
I-95 between I-495/Exit 27-25 and MD-32/Exit 38
I-395
I-95 between VA-123/Exit 160 and Franconia Rd/Exit 169
MD-295 between Eastern Ave and MD-32
I-295
DC-295
Dulles Access Toll Rd
VA-123
Save as TMC set
2. Create one or more time periods to analyze.
Day(s)
Month(s)
Year
January 2012
Create a single time period for this range
Create a time period for each month within this range
Days of week
Sun
Mon
Tue
Wed
Thu
Fri
Sat
Add time period
Your selected time periods
January 26, 2011
January 2012
Every Wednesday
3. Granularity
1 minute
5 minutes
10 minutes
15 minutes
1 hour
Submit
Leesburg
Herndon
Vienna
Fairfax
Takoma Park
College Park
Hyattsville
Bowie
Annapolis
Alexandria
Manassas Park
Manassas

Trend Maps: exporting as animated GIF
(snow starts around 3PM)



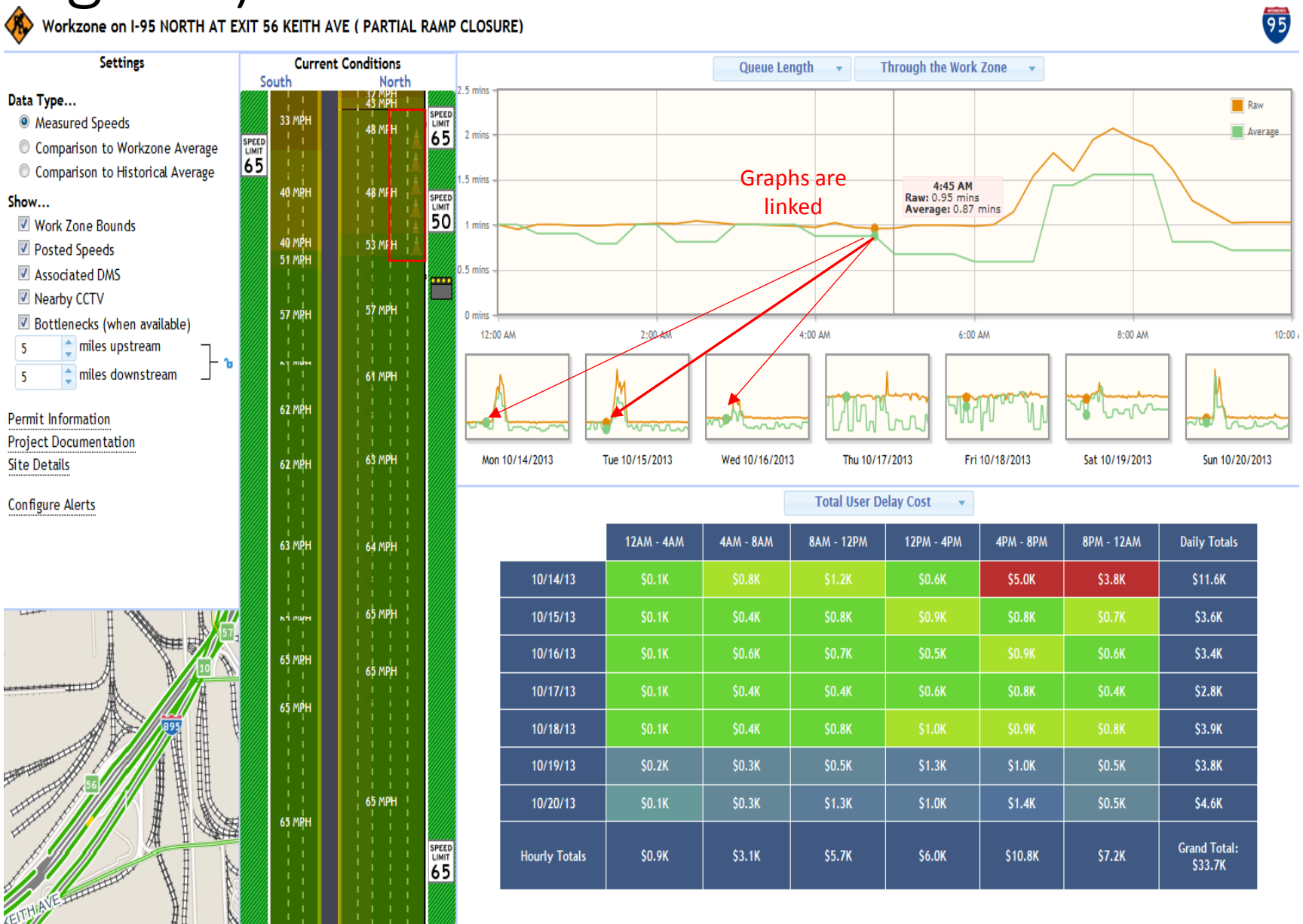
Massachusetts Trend Map Example

Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday



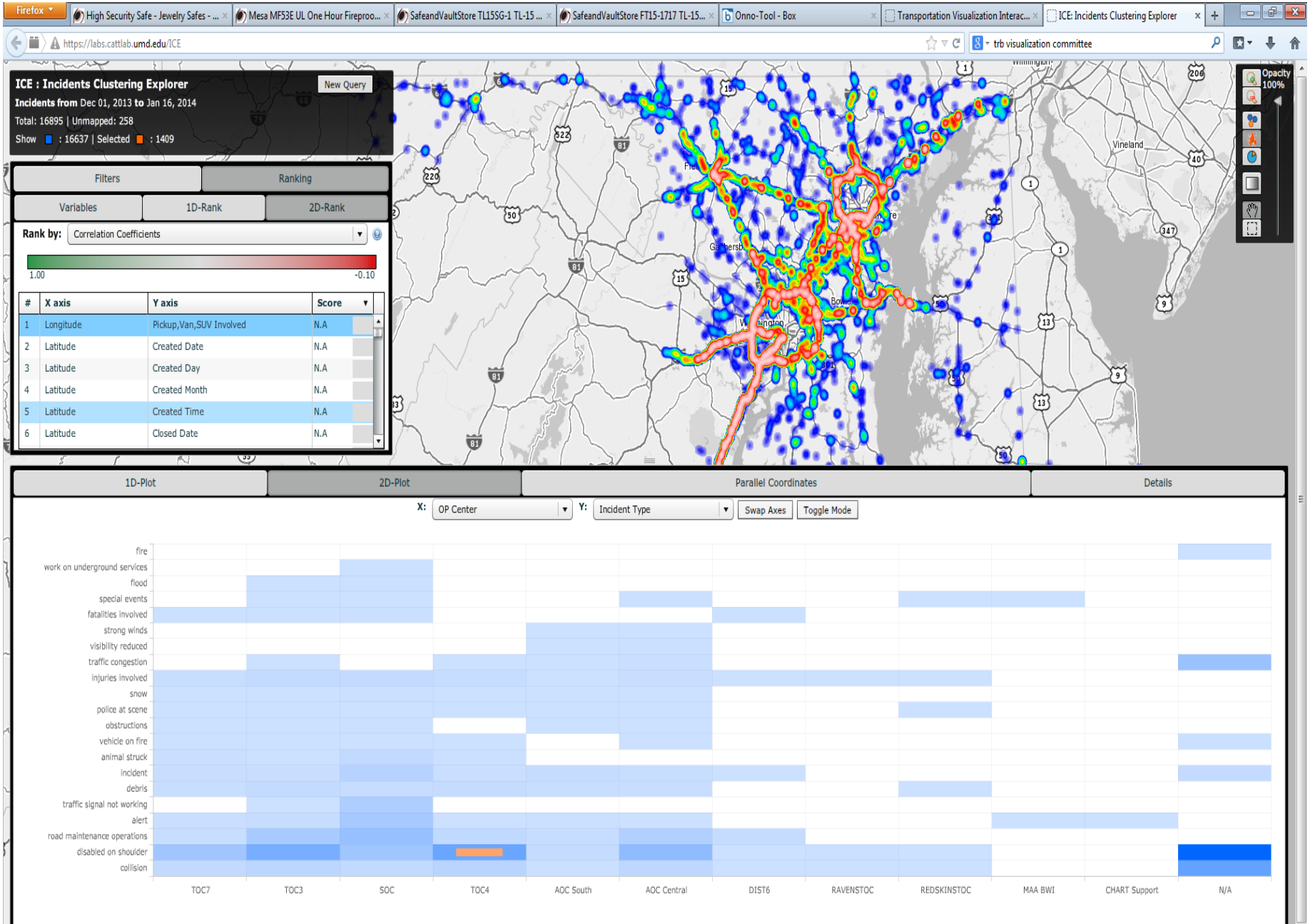
Abnormal Weekend Emergency Roadwork Between 11AM

Work Zone Analysis (in progress)

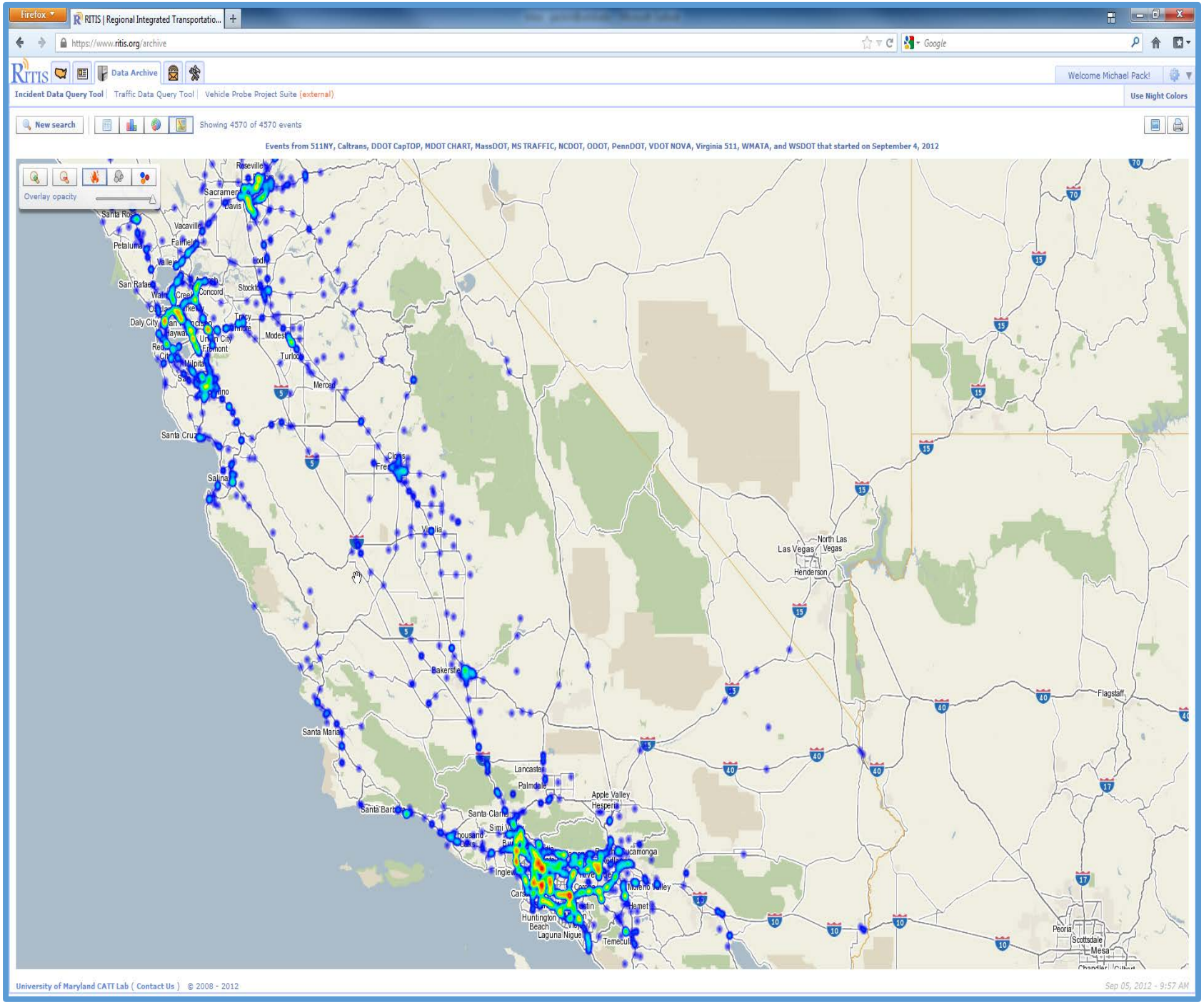


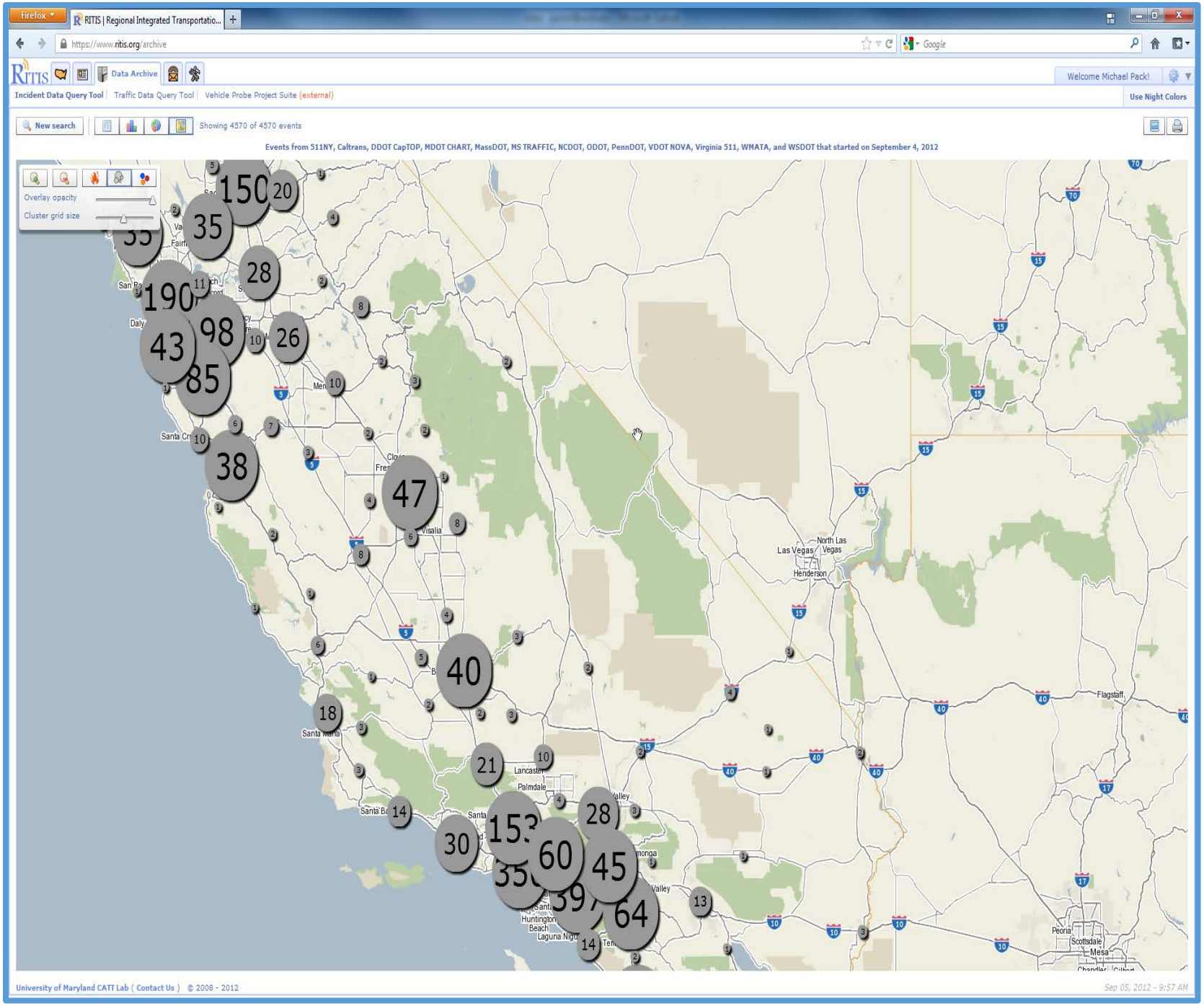
	12AM - 4AM	4AM - 8AM	8AM - 12PM	12PM - 4PM	4PM - 8PM	8PM - 12AM	Daily Totals
10/14/13	$0.1K	$0.8K	$1.2K	$0.6K	$5.0K	$3.8K	$11.6K
10/15/13	$0.1K	$0.4K	$0.8K	$0.9K	$0.8K	$0.7K	$3.6K
10/16/13	$0.1K	$0.6K	$0.7K	$0.5K	$0.9K	$0.6K	$3.4K
10/17/13	$0.1K	$0.4K	$0.4K	$0.6K	$0.8K	$0.4K	$2.8K
10/18/13	$0.1K	$0.4K	$0.8K	$1.0K	$0.9K	$0.8K	$3.9K
10/19/13	$0.2K	$0.3K	$0.5K	$1.3K	$1.0K	$0.5K	$3.8K
10/20/13	$0.1K	$0.3K	$1.3K	$1.0K	$1.4K	$0.5K	$4.6K
Hourly Totals	$0.9K	$3.1K	$5.7K	$6.0K	$10.8K	$7.2K	Grand Total: $33.7K

Incident Data Analysis




https://labs.cattlab.umd.edu/ICE
trb visualization committee
ICE : Incidents Clustering Explorer
New Query
Incidents from Dec 01, 2013 to Jan 16, 2014
Total: 16895 | Unmapped: 258
Show : 16637 | Selected : 2110
Filters
Ranking
Variables
1D-Rank
2D-Rank
Rank by: Correlation Coefficients
1.00
-0.10
X axis Y axis Score
1 Longitude Pickup,Van,SUV Involved N.A
2 Latitude Created Date N.A
3 Latitude Created Day N.A
4 Latitude Created Month N.A
5 Latitude Created Time N.A
6 Latitude Closed Date N.A
Opacity 100%
1D-Plot
2D-Plot
Parallel Coordinates
Details
Showing : All Data
Variable : Incident Type
Frequency
Incident Type: road maintenance operations
Frequency: 2110
collision
disabled on shoulder
road maintenance operations
alert
traffic signal not working
debris
incident
animal struck
vehicle on fire
obstructions
police at scene
snow
injuries involved
traffic congestion
visibility reduced
strong winds
fatalities involved
special events
flood
work on underground services
fire
Incident Type


Firefox
RITIS | Regional Integrated Transportatio...
https://www.ritis.org/archive
Google
RITIS
Data Archive
Welcome Michael Pack!
Incident Data Query Tool | Traffic Data Query Tool | Vehicle Probe Project Suite (external)
Use Night Colors
New search
Showing 4570 of 4570 events
Events from 511NY, Caltrans, DDOT CapTOP, MDOT CHART, MassDOT, MS TRAFFIC, NCDOT, ODOT, PennDOT, VDOT NOVA, Virginia 511, WMATA, and WSDOT that started on September 4, 2012
Overlay opacity
Roseville
Sacramento
Davis
Vacaville
Fairfield
Petaluma
Santa Rosa
San Rafael
Concord
Stockton
Daly City
Tracy
Modesto
Fremont
Union City
Turlock
Merced
Santa Cruz
Salinas
Visalia
Las Vegas
North Las Vegas
Henderson
Bakersfield
Flagstaff
Santa Maria
Lancaster
Palmdale
Apple Valley
Hesperia
Santa Barbara
Santa Clarita
Simi Valley
Thousand Oaks
Rancho Cucamonga
Inglewood
Moreno Valley
Hemet
Huntington Beach
Laguna Niguel
Temecula
Peoria
Scottsdale
Mesa
University of Maryland CATT Lab (Contact Us) © 2008 - 2012
Sep 05, 2012 - 9:57 AM


Firefox
RITIS | Regional Integrated Transportatio...
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Overlay opacity
Cluster grid size
150
20
35
28
190
98
26
43
85
38
47
40
18
21
14
30
153
60
45
28
64
13
Las Vegas
North Las Vegas
Henderson
Flagstaff
Visalia
Lancaster
Palmdale
Huntington Beach
Peoria
Scottsdale
Mesa
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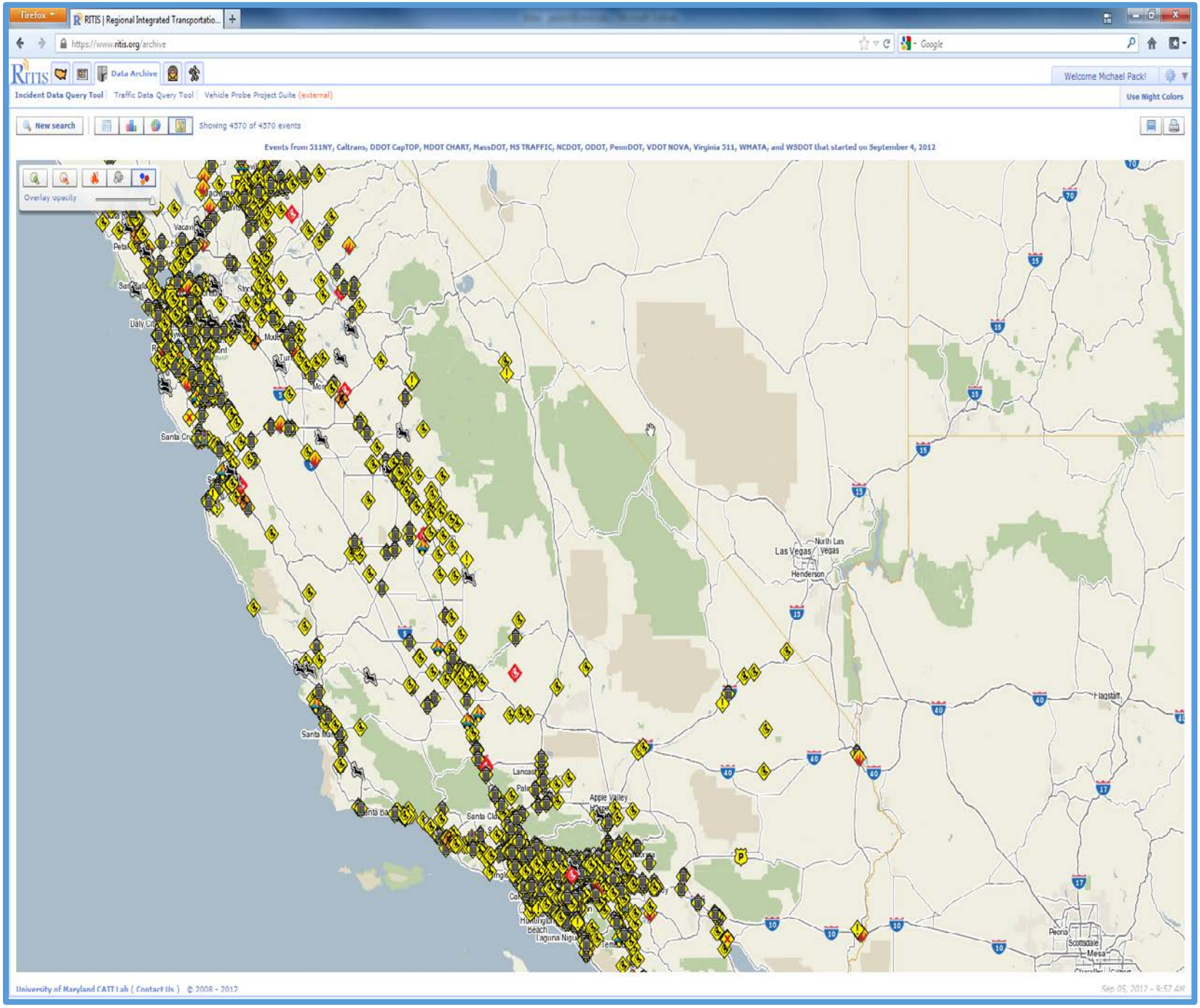
Firefox
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Overlay opacity
Las Vegas
North Las Vegas
Henderson
Flagstaff
Apple Valley
Peoria
Scottsdale
Mesa
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Sep 05, 2012 - 9:57 AM

Who is your audience?

- Federal/State/Local Agencies
- User Groups

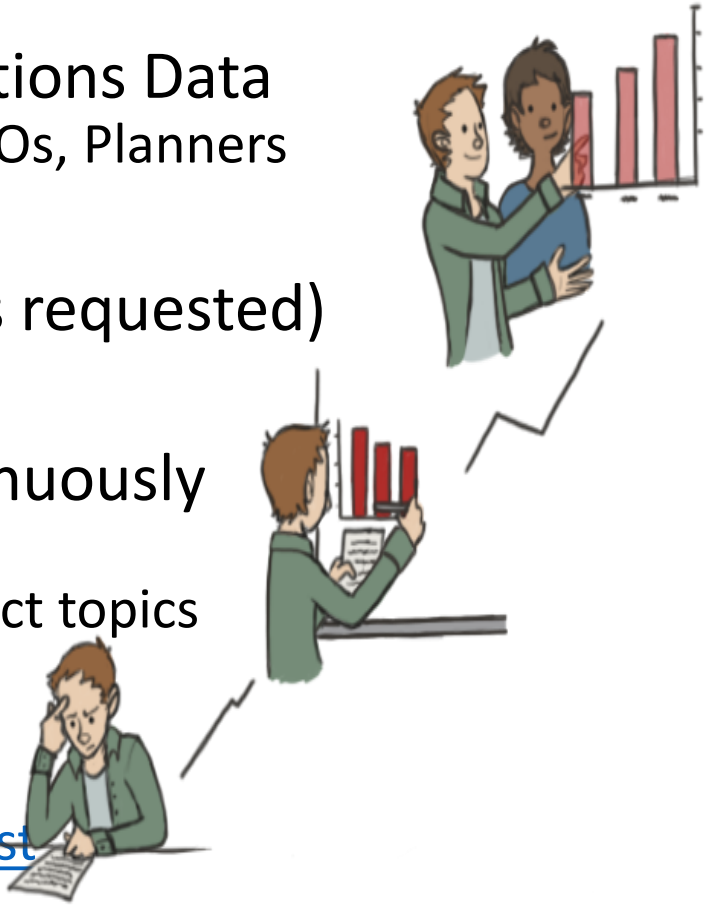
- Engineers
- Planners

Vs.

- Legislators
- Media
- Decision Makers
- Public

Spreading the Word & Training

- Partners in Using Archived Operations Data
  - East Coast group of State DOTs, MPOs, Planners
- In-Person Training & Outreach (as requested)
- Bi-monthly Training offered continuously
  - 1st week = High Level overview
  - 3rd week = In-depth training on select topics
- Online Videos
  - https://vpp.ritis.org/suite/screencast



User Stats (as of Feb, 2014)

- 3,200+ Registered Website Users
- Thousands of users via 3rd party applications

Users Include:

- DOTs (Federal, State, and Local)
- Transit Providers
- Metropolitan Planning Organizations
- Emergency Management Agencies
- FEMA
- US Army, Air Force, Navy, Coast Guard
- NorthCom
- U.S. Secret Service
- U.S. Capitol & Park Police
- Fire & Rescue
- Law Enforcement (state & local)
- U.S. Joint Forces Headquarters
- NSA
- US Office of Personnel Management
- 3rd Party Trav Info Providers
- University Researchers
- Consultants working on projects for the DOTs
- Social Security
- Pentagon Force Protection
- Etc.

Thank you!

- Michael L. Pack

  PackML@umd.edu

  301.405.0722

Contact Information

Michael D. Nesbitt
Federal Highway Administration
(202)366-1179
michael.nesbitt@dot.gov

Apply for Peer-to-Peer Technical Assistance:
http://www.fhwa.dot.gov/tpm/p2p/