



Wisconsin Traffic Operations Performance Management System (TOPMS)-Phase 1

Advisory Group Meeting-November 10, 2014



Project Approach


- **3-Phase, 3-Year Project to Design and Build TOPMS**
- Phase 1 – Planning/Design, Conceptual and Investigative Prototype
- Phase 2 – Prototype Refinement, Geographic Expansion and Interim Evaluation
- Phase 3 – Statewide TOPMS and Evaluation
- **Phase 1 Providers**
- Cambridge Systematics - National and International TOPMS Expertise
- TranSmart with partner TrafficCast - Wisconsin based Technology Companies with products to support project
- TOPS Laboratory - Traffic Data Assessment, Peer Exchange Coordination, Project Team Coordination



WisDOT Traffic Ops Web Resources

- TOPMS Project Site – www.topslab.wisc.edu/its/topms

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 Wisconsin Traffic Operations and Safety Laboratory

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Wisconsin DOT Traffic Operations Performance Management System (TOPMS)

TOPMS Project Materials

- Best Practices Memorandum (PDF 0.6 MB)
- WisDOT Organizational Mapping (PDF 1.4 MB)
- Wisconsin DOT Traffic Operations Data Inventory
- TOPMS Pilot Area Interactive Map

TOPMS Meeting Information

- 9/5/13 Advisory Group – Summary and Presentation (PDF 1.2 MB)
- 10/15/13 Regional Traffic Operations Performance Management Peer Exchange Web Meeting
Presentation slides (browsers may not display well, best viewed in Adobe):
 - Introduction (PDF 0.4 MB)
 - WisDOT Overview (PDF 0.2 MB)
 - National Framework (PDF 2.2 MB)
 - Michigan DOT (PDF 1.9 MB)
 - Illinois Tollway (PDF 3.0 MB)
 - Minnesota DOT (PDF 1.4 MB)
- 12/16/13 Traffic Operations Performance Management National Peer Exchange
Presentation slides (browsers may not display well, best viewed in Adobe):
 - Introduction and WisDOT Overview (PDF 1.1 MB)
 - National Framework and MAP-21 (PDF 2.2 MB)
 - Florida DOT (PDF 0.8 MB)
 - Las Vegas FAST (PDF 5.3 MB)
 - Private Sector (PDF 0.2 MB)
 - One-page meeting summary (PDF 0.1 MB)
- 1/23/14 Advisory Group – Summary and Presentation (PDF 2.9 MB)



WisDOT Traffic Ops Web Resources

- Data Source Inventory and Information = www.topslab.wisc.edu/its/topms/data

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[Back to TOPMS](#)

Wisconsin Traffic Data Inventory Summary

1. Introduction

An early task in the Wisconsin Department of Transportation (WisDOT) TOPMS project was to compile a summary scan of internal data sources that have at least some potential bearing on traffic operations performance management. The scope of this task does not include detail on the many and varied sources of data from other providers, although some are mentioned below for completeness. This data sources inventory is intended to be a living online resource not only for the TOPMS project but for use by others.

The organization of this begins with a summary table, followed by brief descriptions of each source within data type categories. Use the table of contents at right to skip down to a section of interest.

Chief among the resources available to obtain traffic operations data is the WisTransPortal transportation data hub. Hosted by the Wisconsin TOPS Lab, this is the central source for traffic operations, safety, and intelligent transportation systems (ITS) data, archiving, and real-time services for Wisconsin highways. Because of its prominent role in this performance management project, unfamiliar readers are encouraged to first familiarize themselves with some basics about the WisTransPortal by starting here: [About WisTransPortal](#).

Those interested in learning more about where ITS devices and communications are located through the state should start at [Wisconsin ITS Inventory](#).

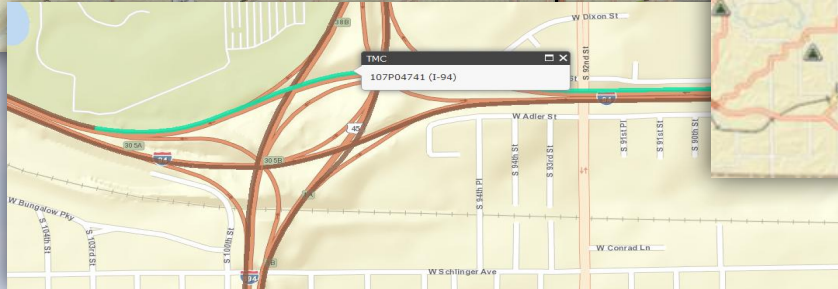
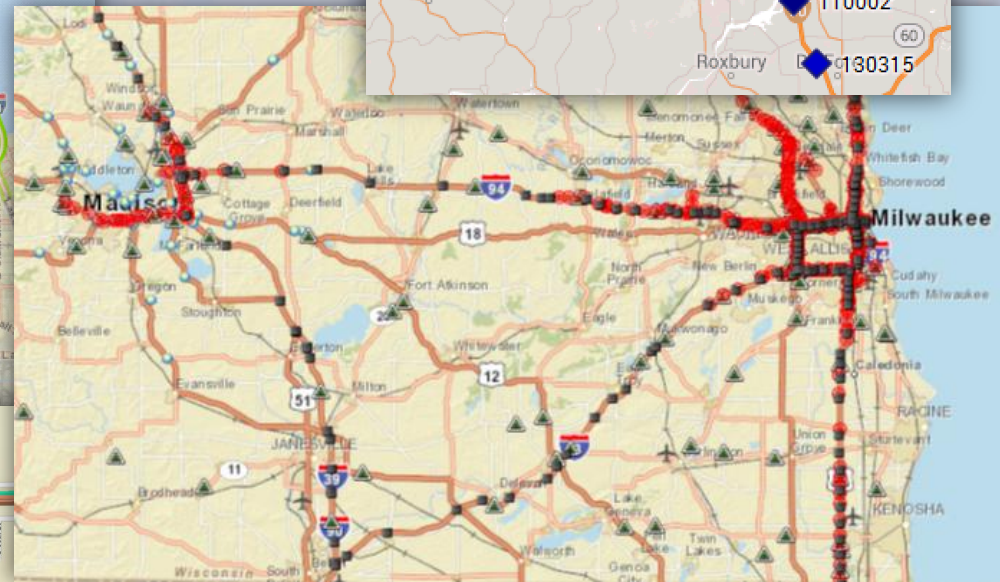
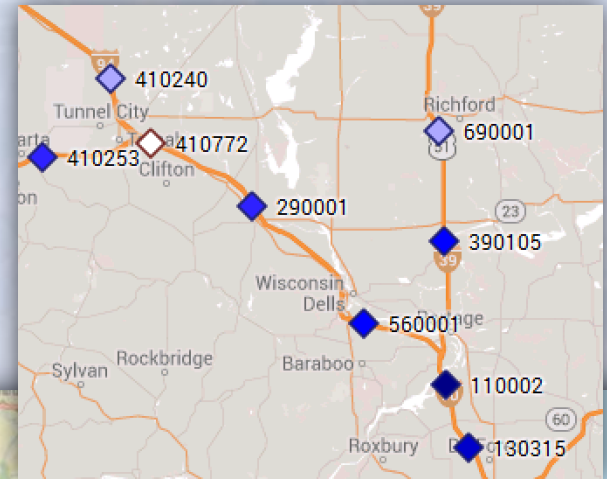
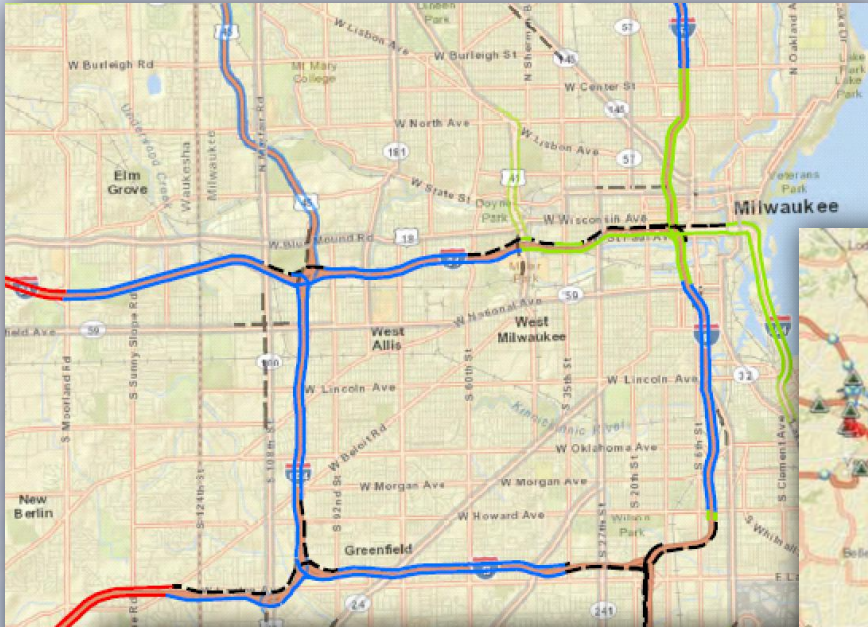
All questions, corrections, and suggestions related to this page should be directed to inventory@topslab.wisc.edu.

- 1. Introduction
- 2. Summary Table
- 3. Data Background
 - Data Standards
 - Data Geography
- 4. Data Sources
 - Traffic
 - FHWA NHS Probe Data
 - MetaManager
 - Private Data Providers
 - TRADAS
 - V-SPOC
 - Crashes
 - MetaManager (crashes)
 - MV4000 Crash Data
 - Safety Data Portal
 - Related Sources
 - Road Weather
 - Incidents and Closures
 - Real-Time XML
 - Specific Projects
 - Cameras
 - DMS
 - 5. Other Agencies
 - GTIS
 - Neighboring States
 - Illinois DOT
 - Illinois Tollway
 - Iowa DOT
 - Michigan DOT
 - Minnesota DOT
 - National Data



WisDOT Traffic Ops Web Resources

- Online Mapping Resources - www.topslab.wisc.edu/its/topms/map





BEST PRACTICES REVIEW



WisDOT Traffic Ops Peer Exchanges

Regional Peer Exchange

- **October 15, 2013**
- Web meeting
- Presenters
 - National Framework
 - Michigan DOT
 - Illinois Tollway
 - Minnesota DOT
- 25-30 participants

National Peer Exchange

- **December 16, 2013**
- Web meeting
- Presenters
 - National Framework
 - Florida DOT
 - Las Vegas
 - Private Sector
- 55-60 participants

MAP-21
Moving Ahead for Progress in the 21st Century

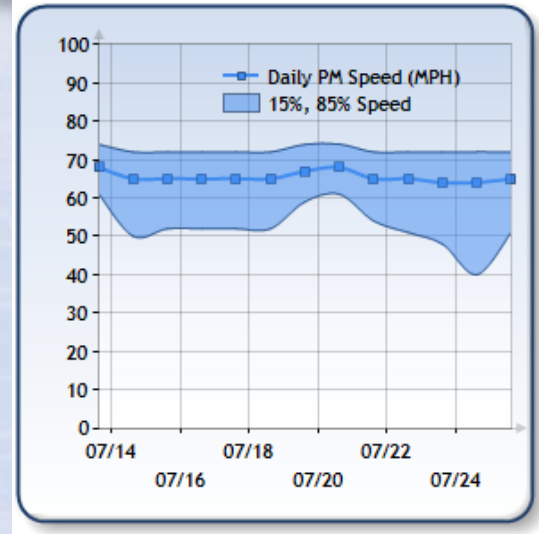




Best Practices



- Las Vegas RTC FAST System
 - Partnership of Regional Transportation Commission and Nevada DOT
 - NDOT owns facilities and RTC operates under joint funding agreement
 - Operates Freeway and Arterial systems in coordinated fashion
 - Member communities serve on policy and operating committees





State of the Art Investigation/State of the Practice Update

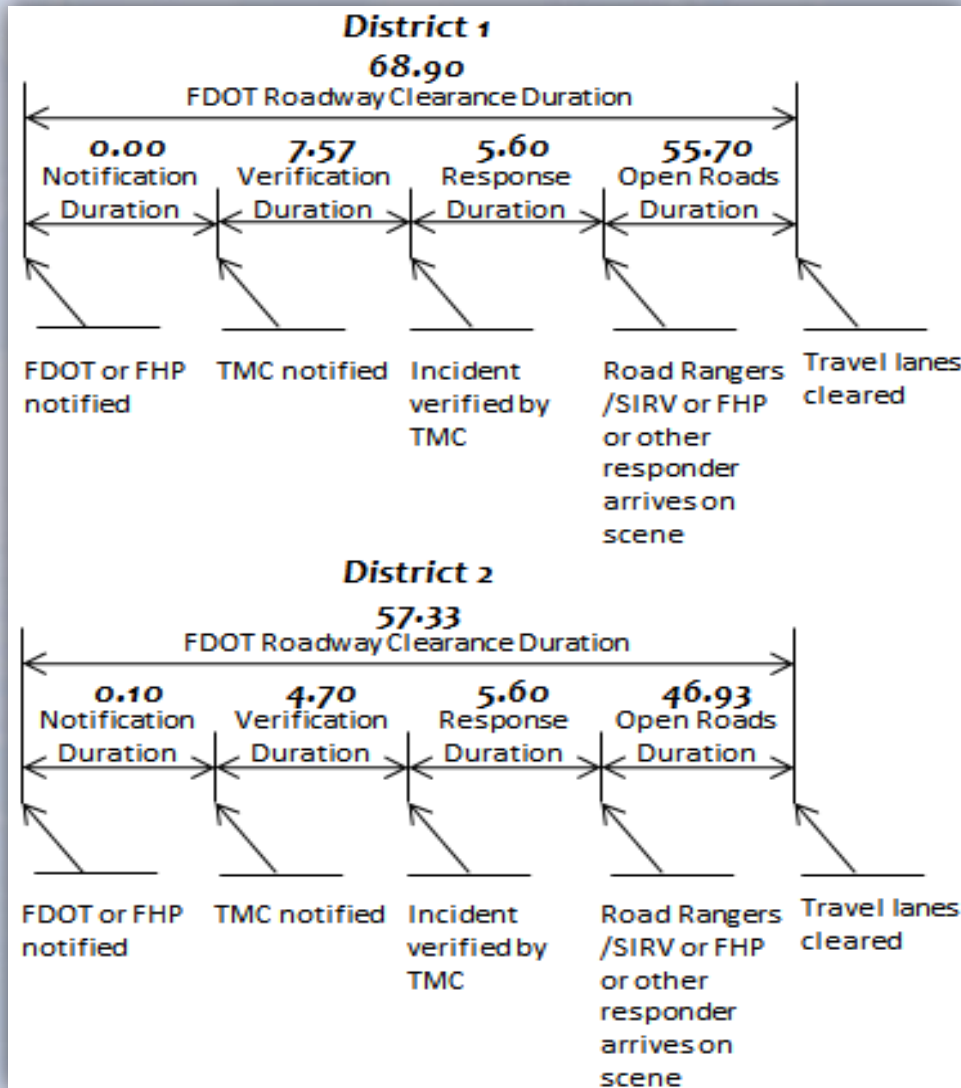
- Performance measures are being used for performance management and operational improvements
 - Michigan DOT Data Use and Processing (DUAP) Project
 - Provides real time mobile data on weather, pavement conditions, speeds
 - Potential to replace legacy data collection programs at lower cost
 - Florida DOT
 - Breakdown of incident response components (detection, clearance)
 - Comparisons allow areas for improvement to be identified
 - Utah DOT
 - Use reliability measures to develop targeted, targeted traveler information messages during adverse weather
- Some are waiting on MAP-21 rule making outcomes



State of the Art Investigation/State of the Practice Update

Florida DOT

- Incident Management Component Breakdown
 - Compare District performance and identify areas for improvement



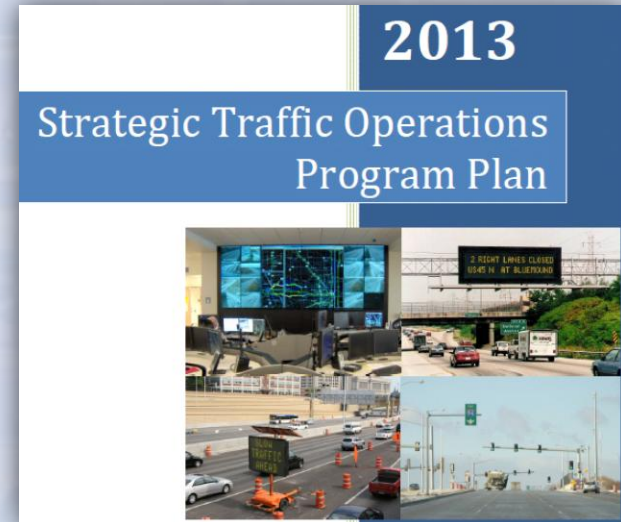


- Some Opportunities Identified
 - Improve efficiency of data collection and processing by exchanging data between bureaus
 - Groups working together to provide data in multiple formats
 - Exchange of data with other agencies for system operations
 - Variety of DOT internal functions (traffic data, asset management, construction)
 - Traffic management (real-time speed control, peak shoulder running, managing diversion routes, weather-related management, parking management)
 - Deployment of maintenance resources and contracting strategies
 - Commercial vehicle permit routing



ORGANIZATIONAL MAPPING

- Based on Objectives and Actions Identified in BTO Strategic Plan (STOPP Report)
 - Goals, objectives and strategies from STOPP Report were documented
 - Interviews used to identify needs
 - Measures identified for evaluating progress of meeting plan objectives
 - Identified where performance measures can be used as feedback to meet needs and improve process/performance
 - Barriers identified in both SWOT analysis and organizational mapping





5 Priority Opportunities

- MAP-21 Report Generation
- ***Work Zone Analysis Tool***
- Measurement of Incident Response Time Components
- Measurement of Diversion Route Impacts
- Life Cycle Cost Analysis for Field Equipment



Organizational Mapping

Feedback Opportunities

Performance Management Action	Primary Function Involved	Other BTO Function(s) Involved	Other DOT Functions
<p>Measurement of Work Zone delay</p> <ul style="list-style-type: none"> Feedback findings to traffic management plan development and general planning of construction activity 	<p>Work Zone Management and Operations</p>	<p>ITS Planning and Design</p> <p>STOC Control Room and IT Systems</p> <p>Traffic Engineering and Operational Analysis</p> <p>Traffic Engineering and Speed Management</p> <p>Traveler Information</p>	<p>Bureau of Project Development</p> <p>Regions</p> <p>DTIM Planning</p> <p>WSP</p>



Visualization Strawman Options

- Measurement of Work Zone Delay
 - Key objectives
 - Reduce work zone delay
 - Reduce impact on overall system
 - Enhance safety of both workers and traveling public
 - Optimize allowable work hours
 - Functions that can be enhanced through feedback
 - Work zone review
 - Construction
 - Traffic management/detours
 - Incident management resource deployment



MOBILITY PERFORMANCE MEASURES

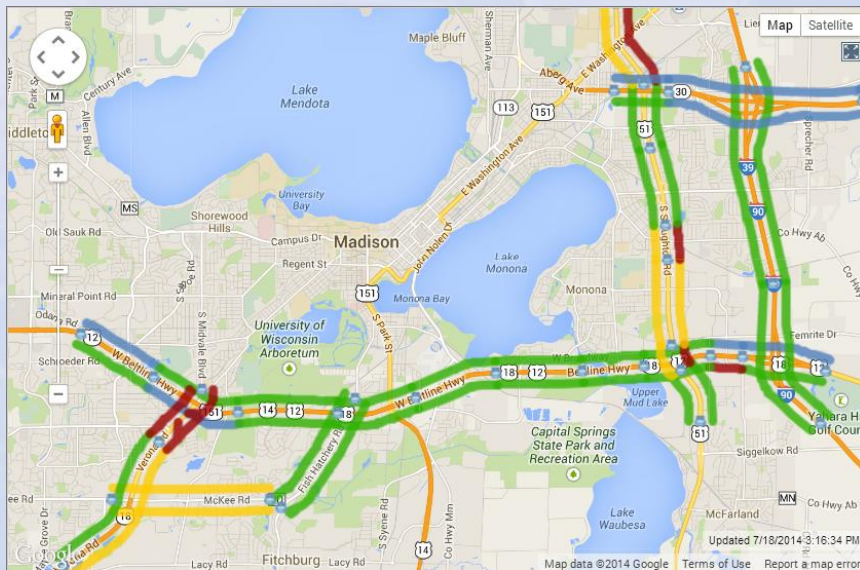
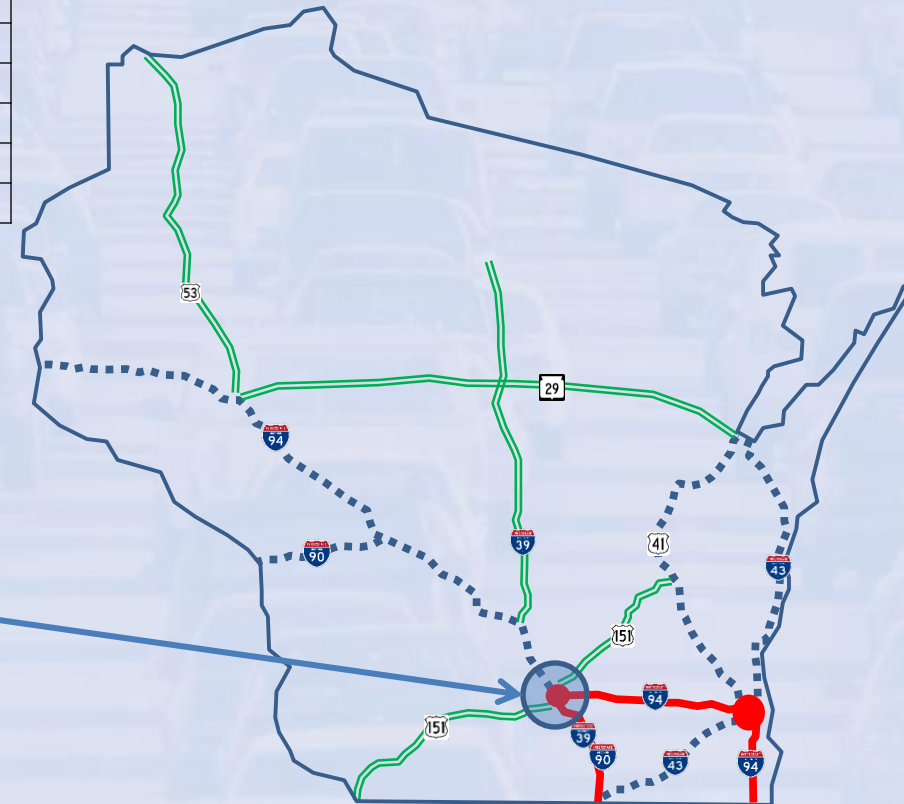


Performance Measures Development

Intended performance measures

Performance Measures	Pilot Area	Phase 2 Area	Phase 3 Area
Aggregate User Delay Hours	2013	2014	2014
Aggregate User Delay Costs	2014	2014	2015
Cause Specific User Delay Costs	2014	2015	2016
Event Specific Delay Costs	2015	2016	2016
Performance Goal Setting	2016	2016	2016

DRAFT - Traffic Operations Performance Management System (TOPMS) Implementation Plan

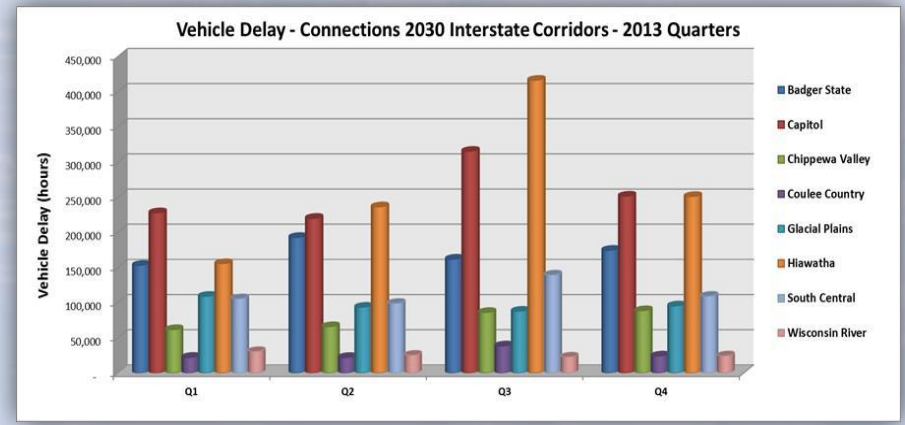


Bluetooth for alternate route travel behavior



Mobility Performance Measures

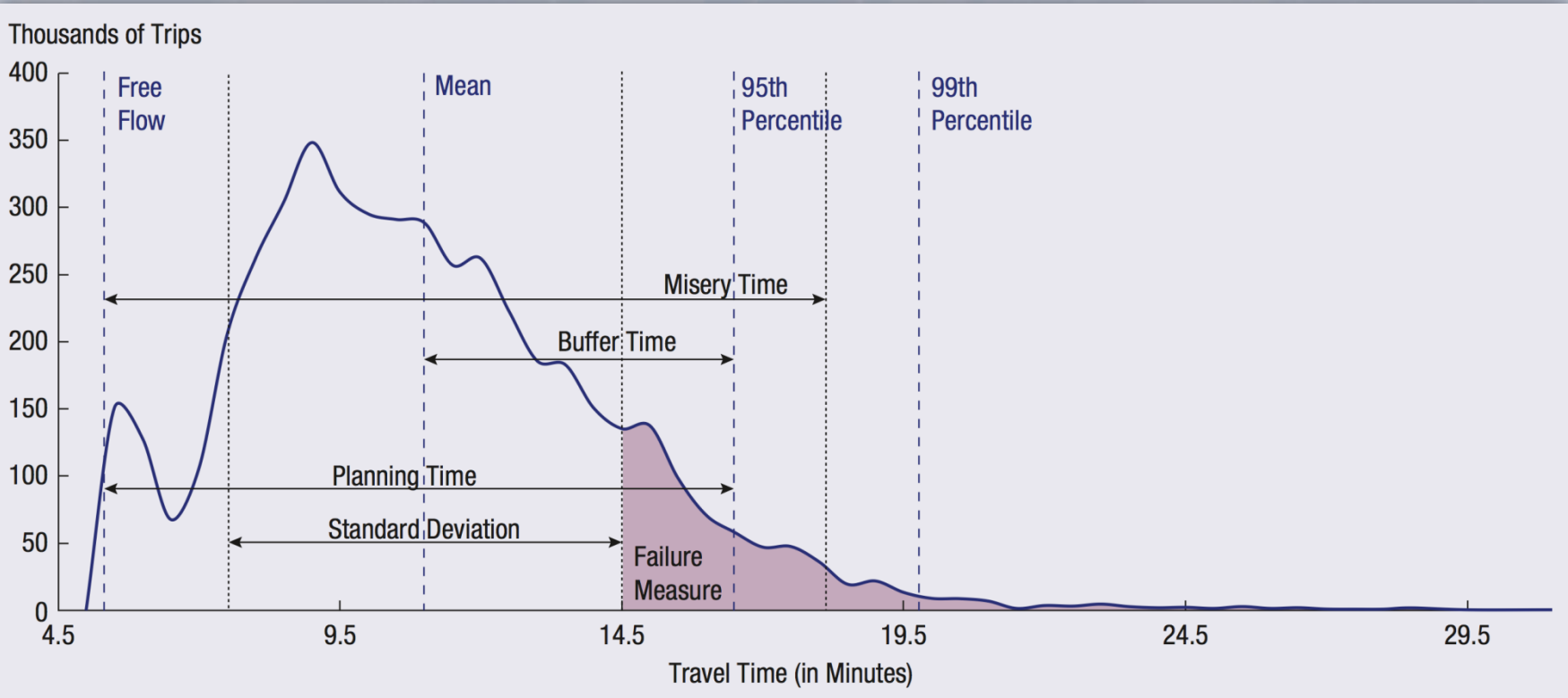
- MAP-21 Requirements
 - Rule making this year
- Reliability
 - Many ways to measure
 - Widespread travel time data (i.e., probe data)
 - See graphic on next slide
- Delay
 - Vehicle delay, user delay, user delay cost
 - Travel time data plus volume data (i.e., TRADAS)





Mobility Performance Measures

- Measuring Reliability...

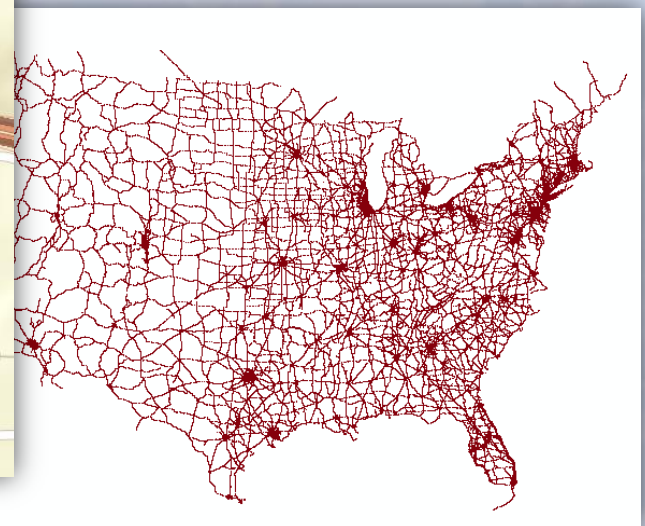
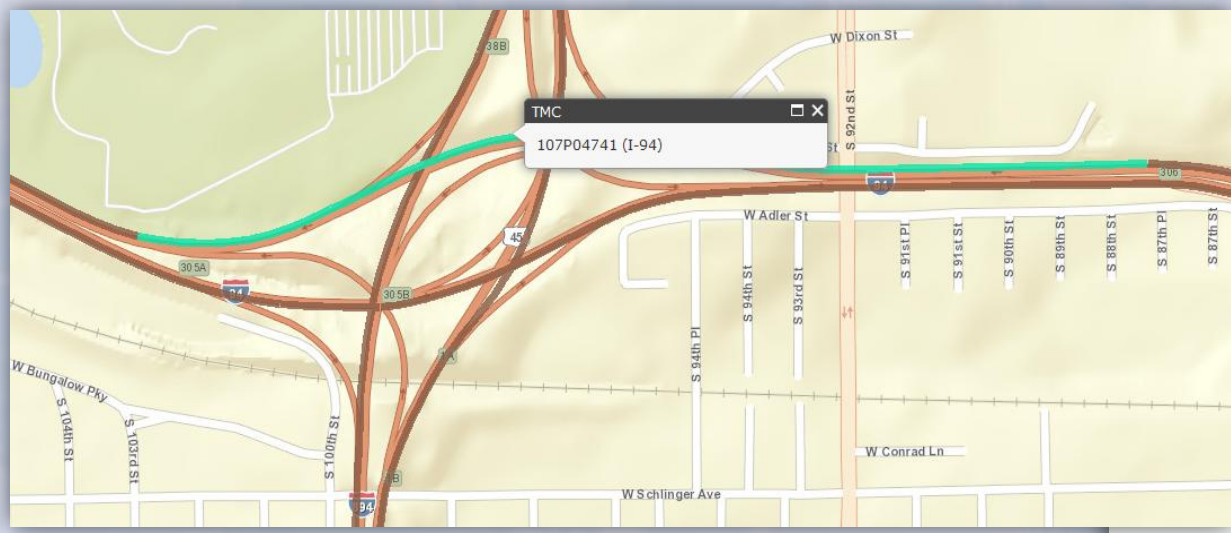


MEASURE	CALCULATION	DESCRIPTION
Planning Time Index* (PTI)	$\frac{95th\ Percentile\ of\ TT}{Free\ Flow\ TT}$	The extra time required to arrive at a destination “on time” 95 percent of the time. Can be calculated for trips, corridors, or segments. The PTI is the recommended measure because it gives intuitive and consistent results.



Mobility Performance Measures

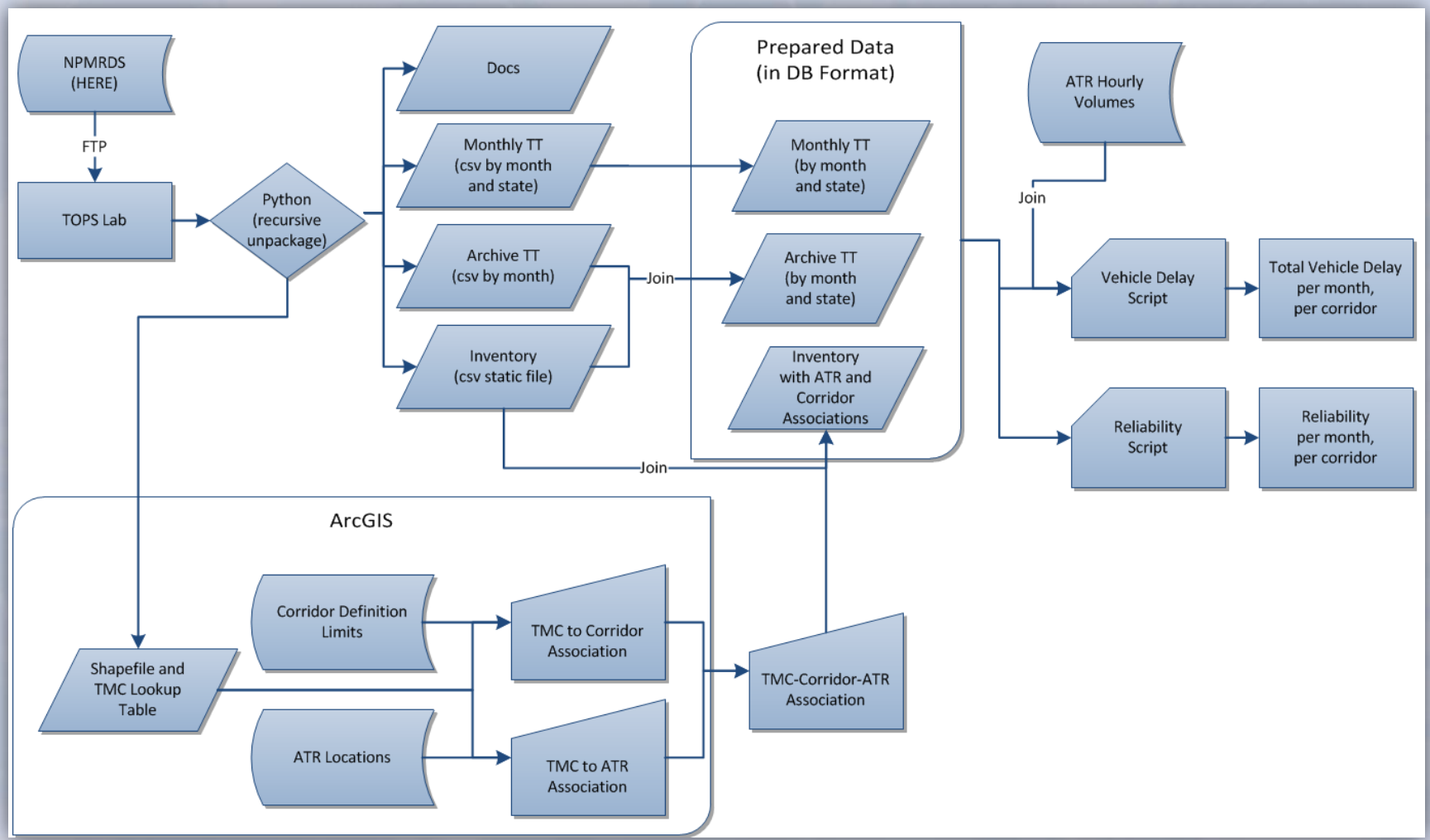
- National Performance Management Research Data Set (NPMRDS)
 - Made freely available to states as of October 2013
 - Probe data for complete National Highway System
 - By short segments (TMC), in 5-minute bins





Mobility Performance Measures

- MAPSS Mobility Measures – Process





Mobility Performance Measures

MAPSS Mobility Measures – Reporting

Wisconsin Department of Transportation
MAPSS Performance Improvement

Mobility: Delay (hours of vehicle delay)

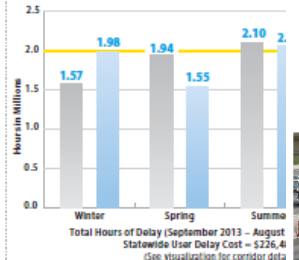
Report Date: October 2014 | Data Frequency: Quarterly (Seasonal Quarters) | Division: Transportation System Development

Why is it important? Reducing the annual total hours of vehicle delay and its resulting user delay cost on a corridor supports regional economic productivity and development.

Highway congestion occurs when traffic demand exceeds delay. Congestion results in slower speeds, longer trip time movements. Congestion is broken into two categories: rec

Performance measure target: The Wisconsin Departm 2014. The department's quarterly seasonal goal is to reduce

Figure: Hours of Vehicle Delay Statewide



How do we measure it? Delay is defined as the extra travel conditions. Delay is reported on the state's nine Int of vehicles on a corridor and then comparing actual travel that same corridor at the posted speed limit. User occupancy rates. User delay cost data is split into two cat from WisDOT-owned vehicle sensors and an FHWA-spon Transportation Investment Management.

How are we doing? This is a new performance measure Delay and User Delay Cost is reported quarterly and is base Highway System. Statewide hours of vehicle delay decreas summer quarter. Despite an aggressive construction season quarter compared to the 2013 summer quarter.

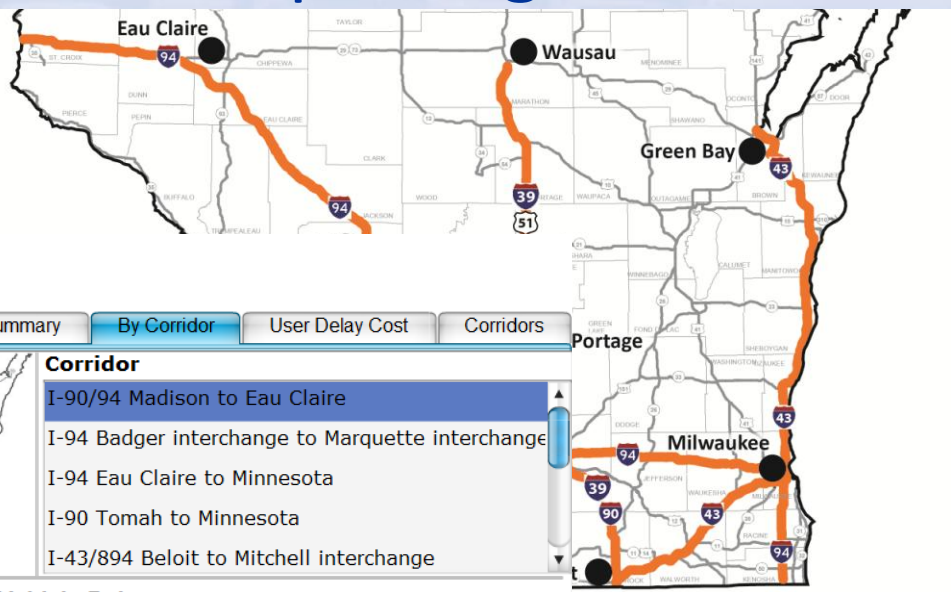
What factors affect results? Any interference (e.g., s increases traffic or restricts free-flow conditions will adv

What are we doing to improve? Data on corridor co the impact of changes, such as deploying more advance roadway space to match peak period demands, sharing it information services, clearing disabled vehicles more qui capacity through highway improvement projects. WisDO provide more real time travel information for drivers. The on quality assurance for new detection systems.

Delay (hours of vehicle delay)



Congestion in Downtown Milwaukee



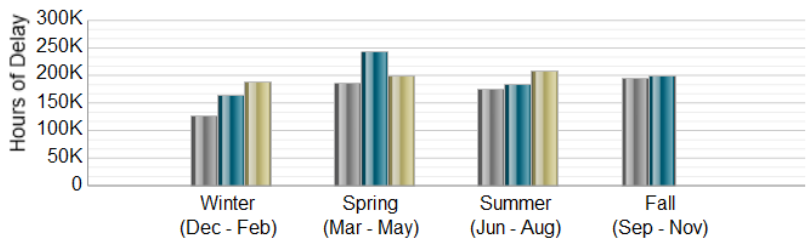
Summary | **By Corridor** | User Delay Cost | Corridors

Corridor

- I-90/94 Madison to Eau Claire
- I-94 Badger interchange to Marquette interchange
- I-94 Eau Claire to Minnesota
- I-90 Tomah to Minnesota
- I-43/894 Beloit to Mitchell interchange

Hours of Vehicle Delay

I-90/94 Madison to Eau Claire



*2014 Total Hours of Delay = 596,841 hours
2013 Total Hours of Delay = 790,921 hours
2012 Total Hours of Delay = 685,856 hours

2014*
2013
2012

*Year-to-date

<http://www.dot.wi.gov/about/performance/goalmobility.htm>



VISUALIZATION STRAWMAN

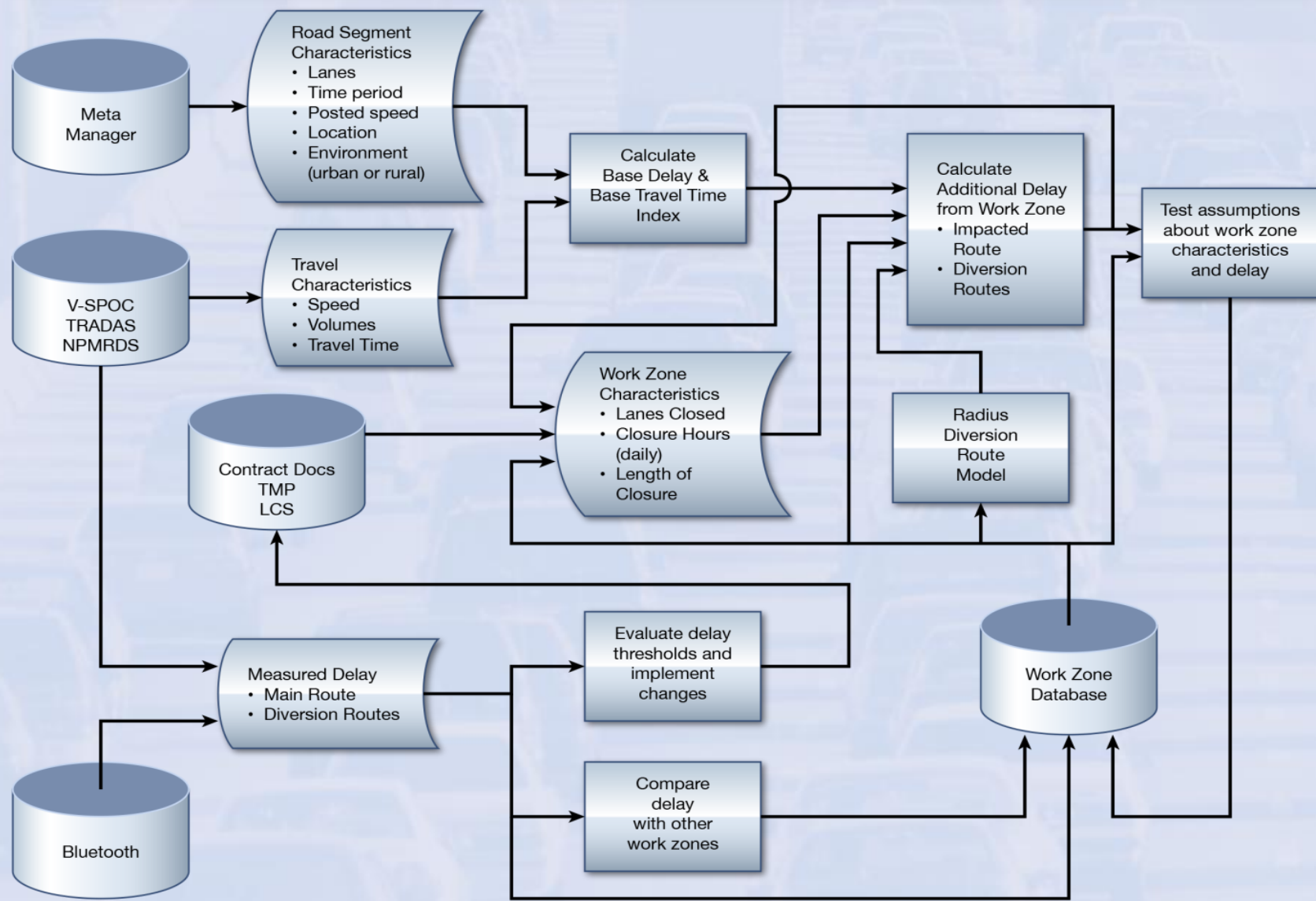


Visualization Strawman Options

- Measurement of Work Zone Delay
 - Key Data Sources
 - FHWA HERE Database
 - V-SPOC
 - BlueToad installations where available
 - TRADAS for volume and classification data
 - Feedback to identify specific improvement opportunities
 - Allowable lane closure times
 - Number of lanes closed
 - Length of work zones
 - Impact of shoulder/ramp closures
 - Diversion impacts
 - Deployment of Freeway Service Teams



Work Zone Tool Data Flow





Wisconsin Department of Transportation
Workzones

Data Help

Project ID	Name	Start Date	End Date	Route ID	Fr Measure	To Measure	Estimated Delay	Actual Delay	Estimated Index	Actual Index
1206-07-78	US 18 I/C Modification	5/1/2013	10/31/2013	US 18	10.3	10.8	XXX	XXX	XXX	XXX
1206-04-61	US 12 Yahara River Bridge	6/1/2013	6/30/2013	US 12	15.3	15.8	XXX	XXX	XXX	XXX
1206-01-84	US 21 / Fish Hatchery Rd I/C	7/1/2013	7/9/2014	US 12	7.2	7.6	XXX	XXX	XXX	XXX
1060-33-77	I 894 / S 59th St I/C	8/27/2013	12/1/2014	I 894	17.1	17.4	XXX	XXX	XXX	XXX

- Network
- Nodes
- Segments
- Routes



Workzones

Export



DASHBOARD DEVELOPMENT



Dashboard Development – Basic Layout

Traffic Operations Performance Management System *BTQ/STOC pilot*

Dashboard | Work Zone Tool | 54-Hour Closure | 511 WI | Madison Traffic Cam

Live Traffic Map | DynafLOW Madison | DynafLOW Milwaukee

1 Interactive Location Maps; Live Maps (Bluetooth and DynafLOW)

2 Customizable Bins tied to interactive links on location map

3 Historical Delay: WB Capitol Corridor Quarter 1 Delay by Day of Week

Day of Week	Mean of Vehicle Delay
Sunday	~5000
Monday	~15000
Tuesday	~14000
Wednesday	~12000
Thursday	~13000
Friday	~15000
Saturday	~7000

4 Device Status

Real Time: 41 mph

Average: 40 mph



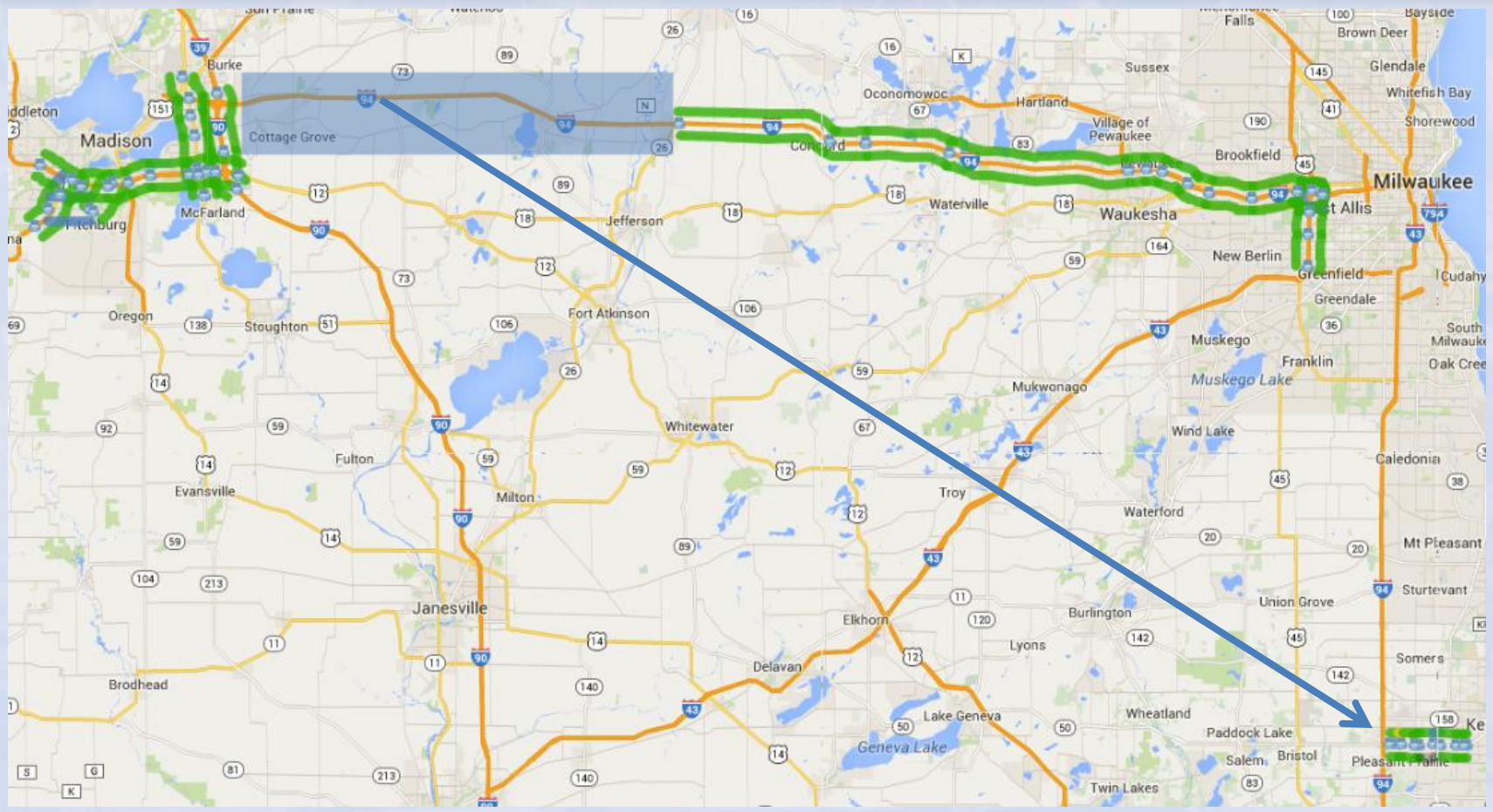
Dashboard Development - Live Map (Bluetooth devices)



- 52 total devices deployed in Madison, Milwaukee, and on the Capitol Corridor
- Key contribution in Rapid Response for Data Coverage of 54 hour closure of I-94 at Zoo Interchange weekend of July 18, 2014



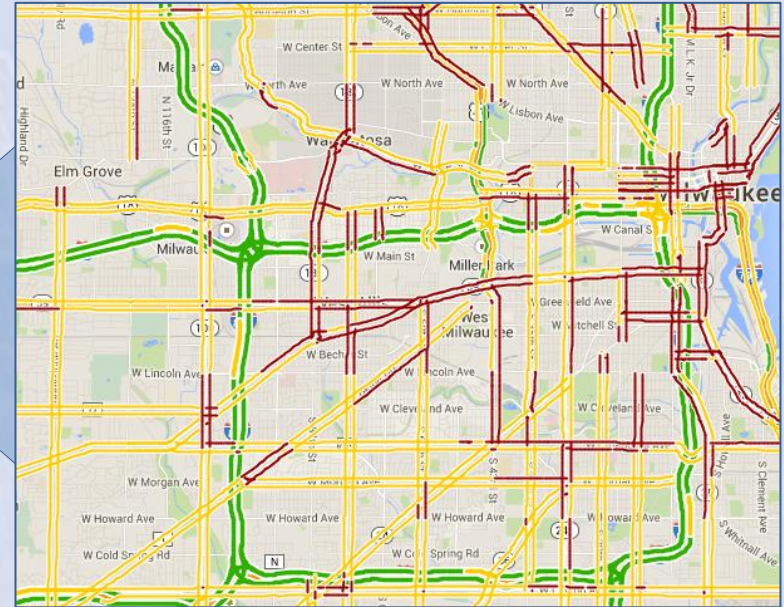
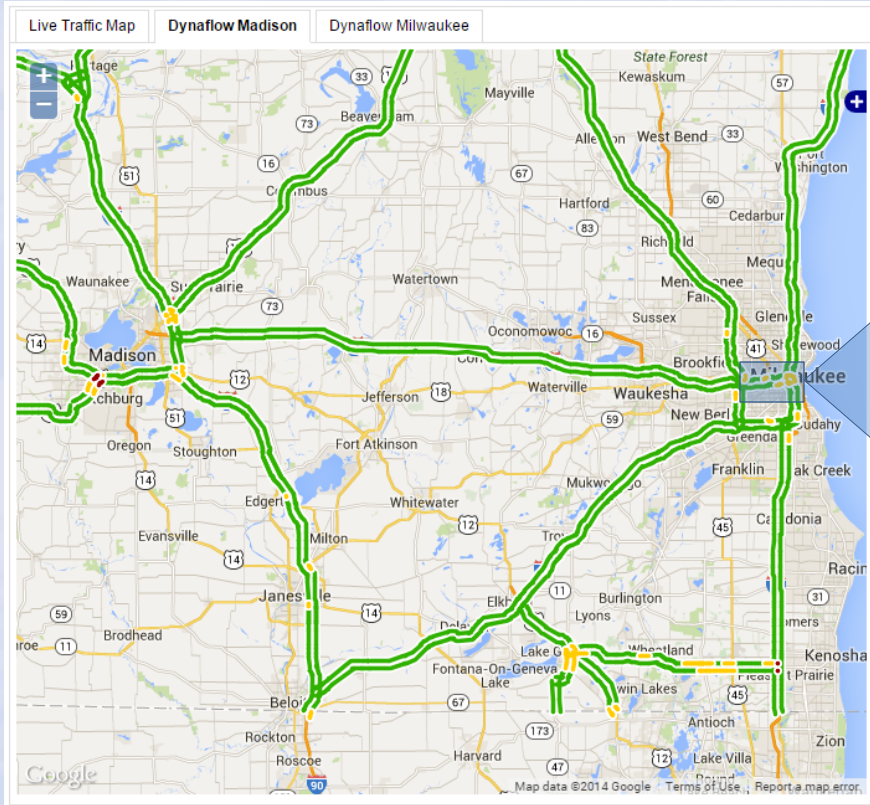
Dashboard Development (Rapid Redeployment of Devices)



- 11 Units relocated(8/28) and reporting within 24 hour period
- Key contribution to performance measure documentation along Wis 50



Dashboard Development - Live Map (Dynaflow data)



- Real time traffic data via GPS probe data sources
- Micro and Macro view of areas.



Dashboard Development – Freeway Closure Analysis

Capitol Corridor Performance Measures with Dynaflow:

Annual Hours of Delay (AHD) - Travel time above a congestion threshold (defined as speed limit) in units of vehicle- hours of delay on a corridor

Planning Time Index (PTI₉₅) – The ratio of the 95th percentile travel time to the agency-determined threshold travel time (travel time at posted speed limit)

Wisconsin Department of Transportation
MAPSS Performance Improvement

Proposed Performance Measure: Hours of Delay

Report Date: January 2014 | Data Frequency: Quarterly | Division: Transportation System Development

Why is it important? Traffic congestion can be recurring or caused by several other factors including accidents, weather, work zones, and special events. Congestion creates delays that affect travelers and increase costs for auto and freight movements. Reducing the hours of delay on a facility improves travel reliability and efficiency. Hours of delay is a widely accepted performance measure used to monitor congestion. Reporting periods are very flexible and allow for both macro and micro level analysis of delay. MAP-21 is requiring state DOTs to change how performance is measured, and hours of delay is one of the proposed performance measures.

Performance measure draft target: The department's goal is to reduce monthly delay within the Capitol Corridor to 20,000 hours.

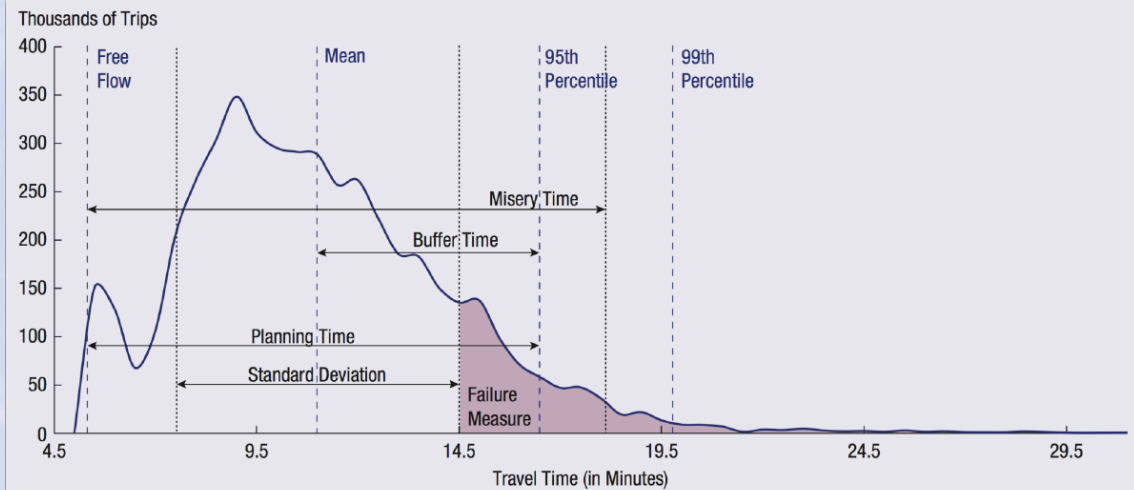
Figure: Capitol Corridor Monthly Hours of Delay*

How do we measure it? This performance measure is in development. It will be calculated by comparing travel times for segments of a route against the travel time at the posted speed. The threshold for delay is defined as when the actual speed drops below the posted speed. Data sources that will be used to calculate hours of delay include Dynaflow/IT, the FHWA's National Performance Management Research Data Set (NPMRD), ITRAMS, and WisDOT's SPoC data.

How are we doing it? The Capitol Corridor (between Madison and Milwaukee) has been identified as the sample corridor for this performance measure. We are currently identifying and integrating multiple data sources (see above) and developing methodology to validate the data and calculate the performance measure.

What factors affect results? As traffic volumes grow, there will be an increased travel demand and freeways will become more congested. The overall hours of delay can be improved by using a combination of strategies, which could include operational improvements made possible by implementing intelligent transportation system technologies or by expanding highway capacity through an increase in the number of travel lanes. Availability of funding, from both an improvement and operations perspective, is a significant controlling factor.

What are we doing to improve? The department is implementing improvements on two urban freeway segments in the southeast Wisconsin and was recently given approval by the Transportation Projects Commission to begin studying three additional urban freeway segments for potential construction as major highway projects. Completion of these projects will not occur for some time, but when complete they will significantly reduce the number of urban freeway miles with serious congestion and delay in Wisconsin. WisDOT's TOPUS project is focused on developing and implementing this performance measure. The department is also focusing on traffic incident management, signal system installation and optimization, ramp meter enhancements, and enhancing maintenance response in order to reduce user delay.

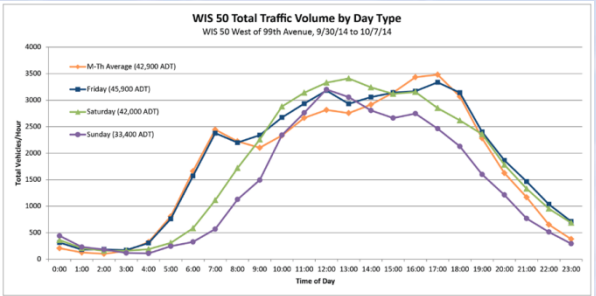
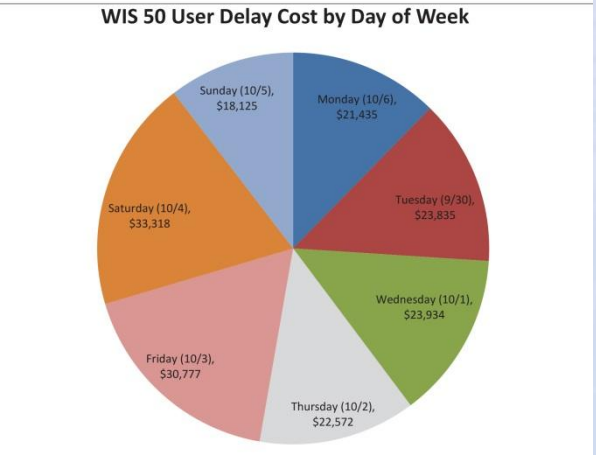
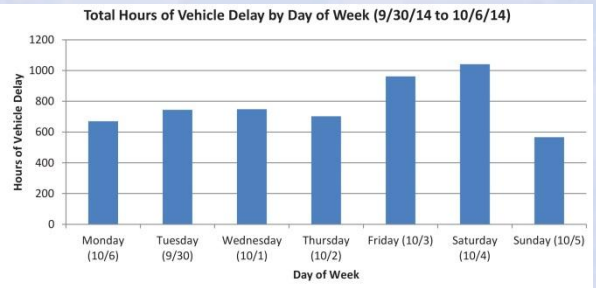


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Dashboard Development – Arterial Analysis (WIS 50)

Travel Time & Performance Measures Evaluation with BlueTOAD/BlueARGUS



AWIS 50 Travel Time and Performance Measure Evaluation Results

Kenosha County Between I-94 and 43rd Avenue

Summary Excerpts from report

Total Hours of Vehicle Delay and User Delay Cost, 9/30/14 to 10/6/14

Time Period	Total Hours of Vehicle Delay	Passenger Delay Cost	Freight Delay Cost	Total User Delay Cost
7-Day Data Collection Period	5438	\$162,611	\$11,384	\$173,995
Weekday AM Peak (6am - 9am)	295	\$8,818	\$611	\$9,429
Weekday PM Peak (3pm - 6pm)	1193	\$35,704	\$2,479	\$38,182

Travel Reliability Results, 9/30/14 to 10/6/14

Time Period	Reliability Index		95th Percentile Travel Time		Travel Time during 'light' or low flow traffic conditions (min)		Speed at 95th Percentile Travel Time (mph)		Average Speed during 'light' or low flow traffic conditions (mph)	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
7-Day Data Collection Period	1.18	1.38	10.02	9.53	8.46	6.91	26.7	28.1	38.7	31.6
Weekday AM Peak (6am - 9am)	1.09	1.16	9.18	7.99	8.46	6.91	29.1	33.5	38.7	31.6
Weekday PM Peak (3pm - 6pm)	1.26	1.39	10.70	9.60	8.46	6.91	25.0	27.9	38.7	31.6



Dashboard Development – Menu Choices

Dashboard **Work Zone Tool** **54-Hour Closure** **511 WI** **Madison Traffic Cam** *OSTOC pilot*

The dashboard displays a map of Madison, WI, with various traffic data overlays. Key features include:

- Map:** Shows Madison, WI, with major roads (US 151, US 90, US 51, US 12) and landmarks like Lake Monona and Lake Kegonsa. A red line indicates a specific route or closure.
- Speed Graph:** Titled "Smoothed (15 min) for Pair 12791: US 12 EB (970-980) from 2014-07-16 16:02 to 2014-07-18 16:02". It shows speed (mph) on the left y-axis (0-100) and Match counts on the right y-axis (0-50) over time for 07/17 and 07/18.
- Bar Chart:** Titled "WB Capitol Corridor Quarter 1 Delay by Day of Week". It shows mean of vehicle delay by day of week.

Day of Week	Mean of Vehicle Delay
Sunday	~5000
Monday	~15000
Tuesday	~13000
Wednesday	~11000
Thursday	~13000
Friday	~15000
Saturday	~7000
- Camera:** A live video feed titled "Camera" showing a multi-lane highway with traffic. The caption reads "US 12/18 @ RIMROCK RD Friday, July 18, 2014 3:57:16 PM".
- Speed Gauges:** Two circular gauges labeled "Pair Speed". The left one is "Real Time" with a needle pointing to approximately 24. The right one is "Average" with a needle pointing to approximately 35. Both gauges have a scale from 0 to 60.

Menu can be expanded and customized to allow a user to focus on their data and analysis needs.



Dashboard Development – Current Menu Choices



Prototype Menu Choices:

- Dashboard with Bluetooth or Dynaflow speed map
- Work Zone Tool
- 54-hr Zoo Interchange Freeway Closure
- Link to WI 511 website
- Link to Madison traffic camera website



Dashboard Development – Work Zone Module

Traffic Operations Performance Management System *BTO/STOC pilot*

Dashboard | Work Zone Tool | 54-Hour Closure | 511 WI | Madison Traffic Cam

Live Traffic Map | Dynaflo Madison | Dynaflo Milwaukee

Schematic: Stage 1A Peak Period Traffic Control

Analysis for Project ID: 1206-04-61

Start Date	End Date	Start Time	End Time	Filter	Base Speed	Actual Speed	Base Volume	Actual Volume	Hours of Delay	PTI Index
Westbound										
6/1/13	6/30/13	6:00 AM	9:00 AM	Weekdays	50	48	12,900	9,100	896	2.75
6/3/13	6/7/13	12:00 AM	11:59 PM	Weekdays	56	55	59,700	57,200	301	-
6/10/13	6/14/13	12:00 AM	11:59 PM	Weekdays	56	54	59,700	57,800	516	-
6/14/13	6/14/13	6:00 AM	9:00 AM	Incident	50	41	12,900	8,300	95	-
6/17/13	6/17/14	6:00 AM	9:00 AM	Incident	50	34	12,900	8,400	172	-
Eastbound										
6/1/13	6/30/13	12:00 AM	11:59 PM	Weekdays	58	57	60,200	52,800	1357	1.17
6/3/13	6/7/13	12:00 AM	11:59 PM	Weekdays	58	57	60,200	52,200	415	-
6/10/13	6/14/13	12:00 AM	11:59 PM	Weekdays	58	57	60,200	53,200	313	-
6/17/13	6/21/13	12:00 AM	11:59 PM	Weekdays	58	57	60,200	52,000	305	-

Work zone tool module with schematic and analysis bins



Dashboard Development – Work Zone Module

Traffic Operations Performance Management System *BRD/STOC pilot*

Dashboard Work Zone Tool 54-Hour Closure 511 WI Madison Traffic Cam

Live Traffic Map Dynafow Madison Dynafow Milwaukee

Schematic: Stage 1A Peak Period Traffic Control
Analysis for Project ID: 1206-04-61

VWZ Details Roadway Travel Lane Incident LCS

Search Edit Comment Delete New Save

Work Zone Details

Project ID	1206-04-61
Name	US 12 Yahara River Bridge
Start Date	5/6/2013
End Date	8/16/2013
Comments	Deck Overlay

Export

Incident Data

Date	6/14/2014
Incident ID	76690064
ITS_Code	520
Start Time	7:05:51 AM
End Time	7:20:52 AM
Route	US-12
Direction	WB
Cross From	BR Yahara Rive
Severity	3
Message	Lane Blocked
Description	US-12 WB (At BR Yahara River): Accident travel lanes or service ramp blocked at BR Yahara River.

Video Camera

Speed Volume Delay Speed & Volume

Yahara WB Workzone Speeds on 6/14/14

Time of Day	Speed (mp/h)	Base Speed (mp/h)
6:00	60	60
6:15	60	60
6:30	60	60
6:45	60	60
7:00	15	60
7:15	20	60
7:30	25	60
7:45	30	60
8:00	55	60
8:15	60	60
8:30	60	60
8:45	60	60

Work zone tool module with additional analysis bins

- Example of swapping out data elements for graphical content and camera images in Work Zone Module



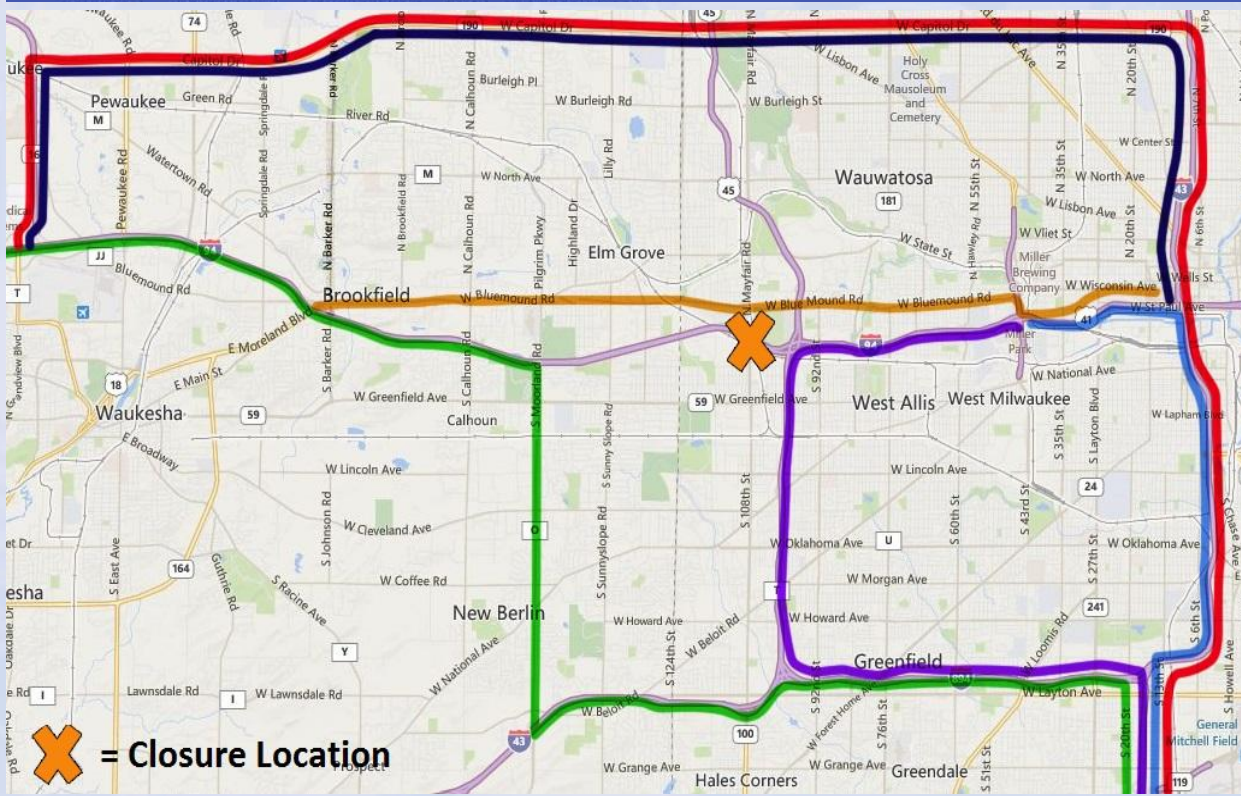
Dashboard Development – Freeway Closure Analysis



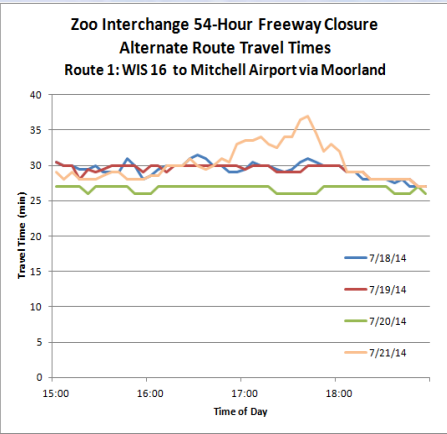
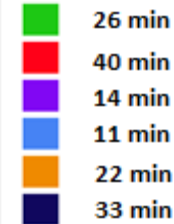
Traffic Operations Performance Management System

BTO/STOC pilot

Dashboard Work Zone Tool 54-Hour Closure 511 WI Madison Traffic Cam



EB/SB Routes 7/20, 5:45 PM



- 54 hour Zoo Interchange full freeway closure tab (7/18 – 7/20)
- Units/Closure tab operational within less than 72 hours



Dashboard Development - Interactive Map & Links

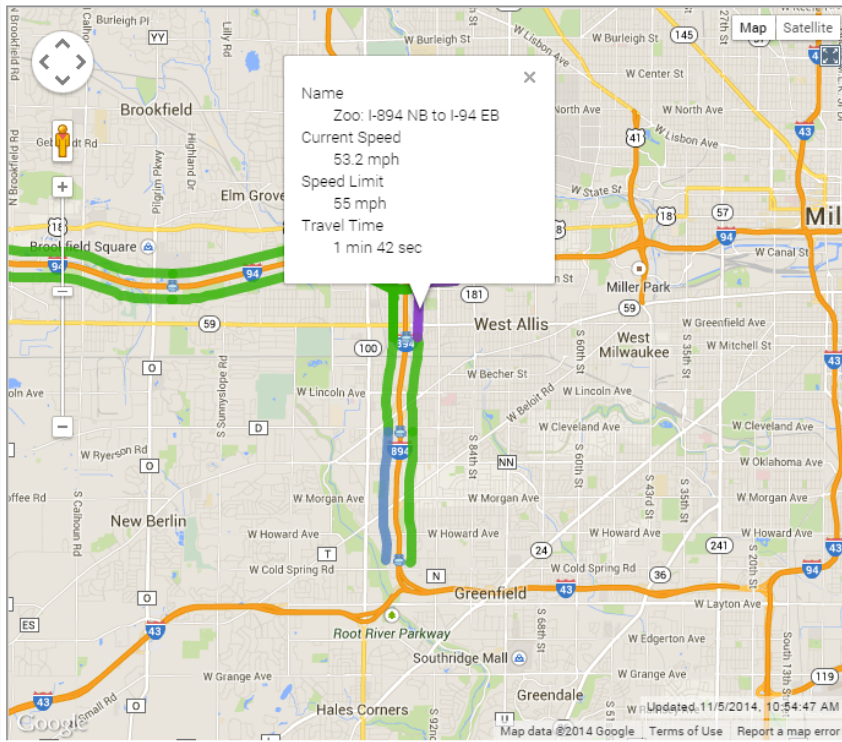


Traffic Operations Performance Management System

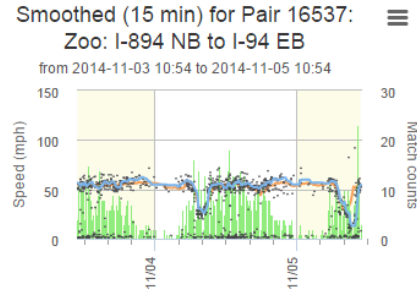
BTU/STOC pilot

Dashboard Work Zone Tool 54-Hour Closure 511 WI Madison Traffic Cam

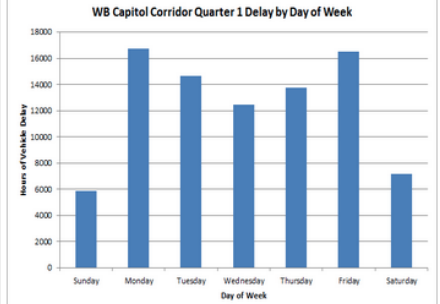
Live Traffic Map Dynaflow Madison Dynaflow Milwaukee



Pair Speed Graph



2013 Historical Delay



Camera

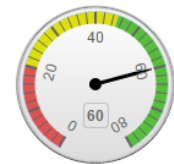
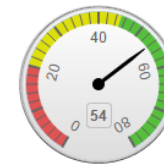


Pair Speed

Device Status

Real Time

Average

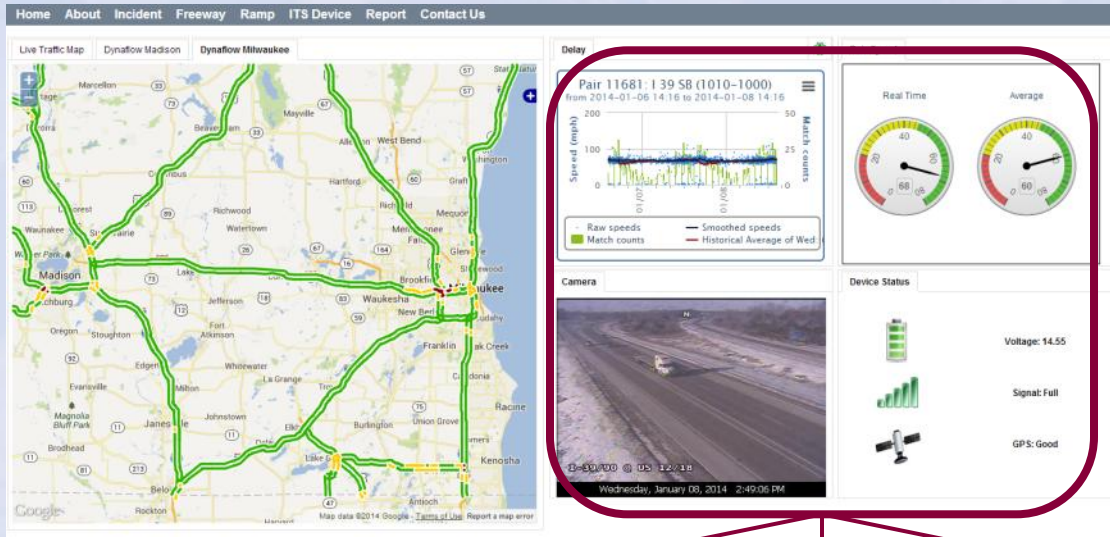


Interacting with links will populate bins with relevant data and analysis

[Live Demo](#)

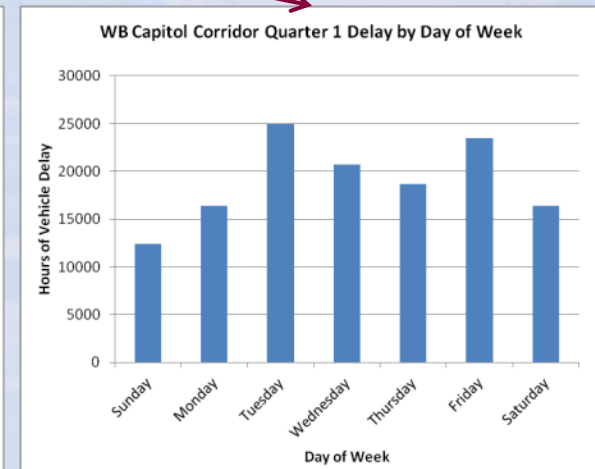
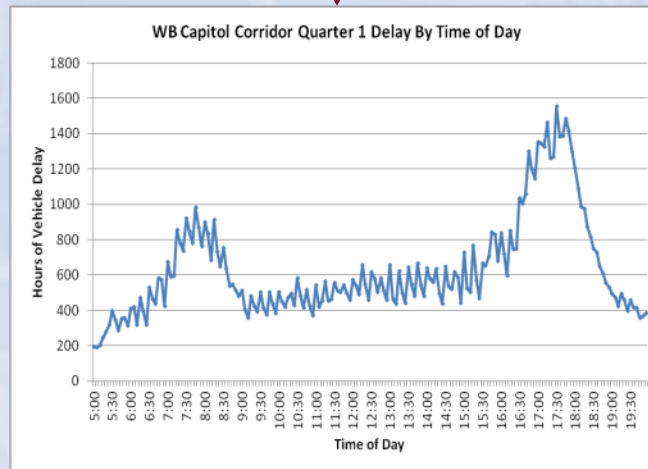
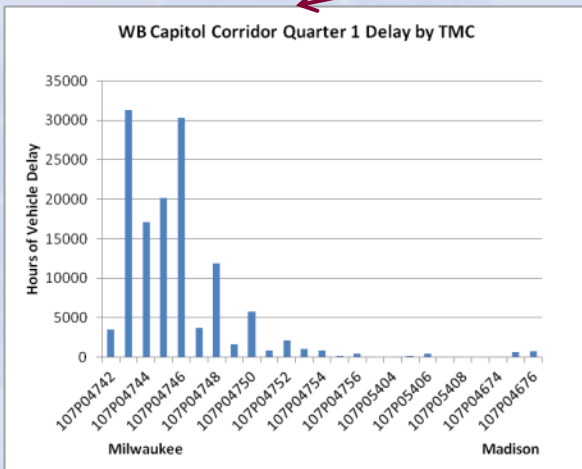


Dashboard Development – Bin Options



Bins allow information to be displayed in a easy to view form.

- Types of data to display:
- * Real-Time
 - * Historical
 - * Internal





Work Zone Tool Development Opportunities

Supplement mobility performance measures and provide operations tools

- Traveler information
- Support federal work zone safety and mobility rule
- Work zone safety
- Work zone management program area objectives to monitor work zones and create partnerships with regional & statewide bureau functions
- Contribute to consistent project mitigation efforts



Recommendation: TOPMS Phase 2

Develop a tool specific to WisDOT stakeholder needs that measures and reports work zone conditions in terms of delay and/or reliability. The recommended direction is towards real time performance of work zones as they are impacted by weather, incidents, special events and recurrent congestion.

**CONCLUDING REMARKS,
QUESTIONS, AND NEXT STEPS**



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