I - 95 CORRIDOR COALITION

BUILDING TSMO PERFORMANCE MEASURES: FOR INTERNAL PERFORMANCE REPORTING & FOR PUBLIC DASHBOARD USE

August 30, 2018

Gannett Fleming

Excellence Delivered As Promised

New Hampshire DOT
Department of Transportation

odot

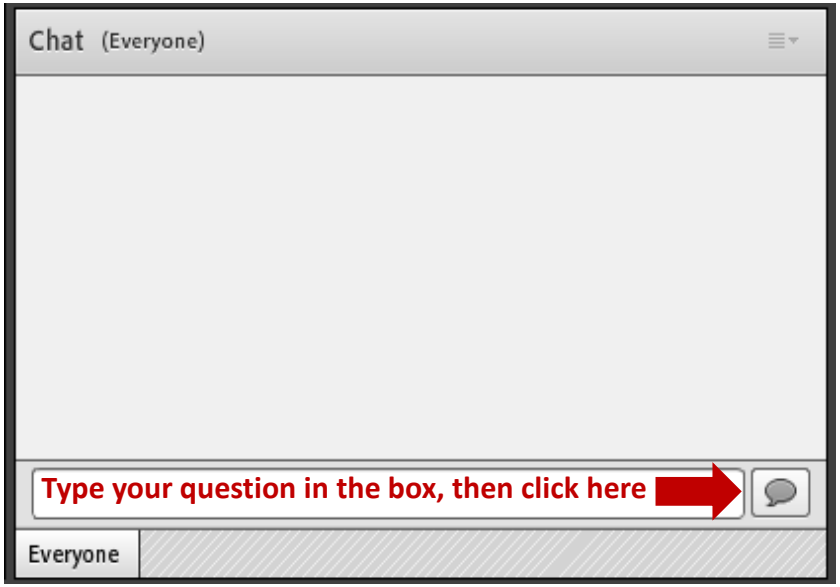
Call Number: 1-719-867-1571 - Enter 7254375# at the prompt

Webinar & Audio Information

- The call-in phone number is: **1-719-867-1571 & enter 7254375# at the prompt**
- **Participants will be in "Listen Only" mode throughout the webinar**
- Please press *0 to speak to an operator for questions regarding audio
- Please call Wayne Gibson at 609-970-2584 for difficulties with the web or audio application
- This webinar will be recorded
- Presentations will be posted to the I-95 Corridor Coalition website. Participants will receive a link to the presentations after they are posted.

Asking Questions

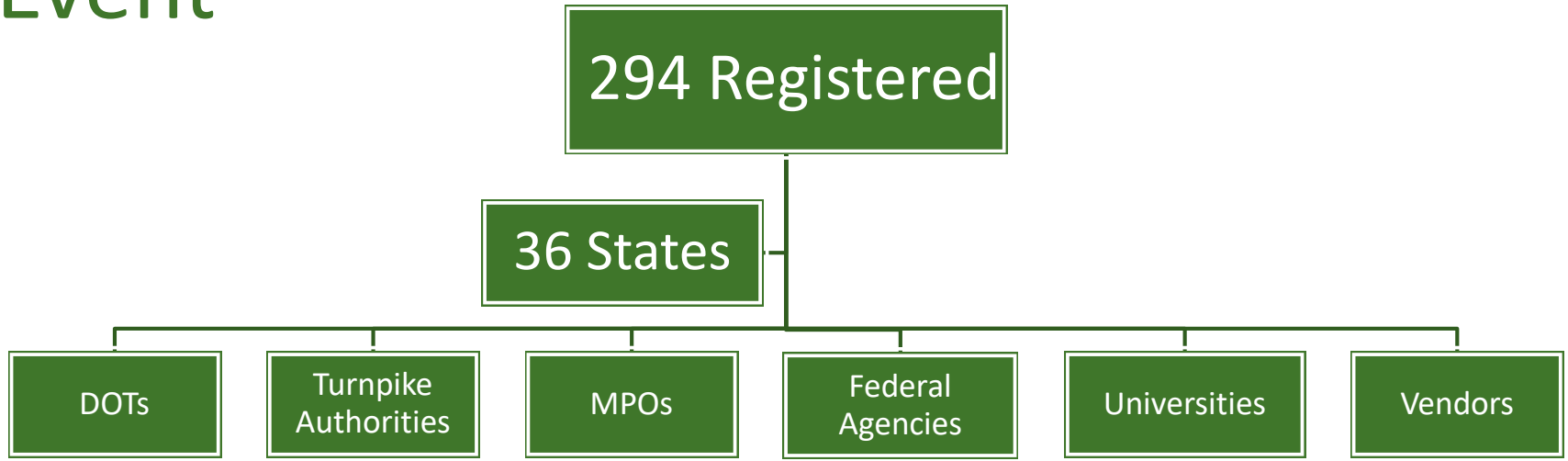
- Please pose your questions using the **chat box**
- Questions will be monitored then answered by the speakers at the end of the webinar



Welcome

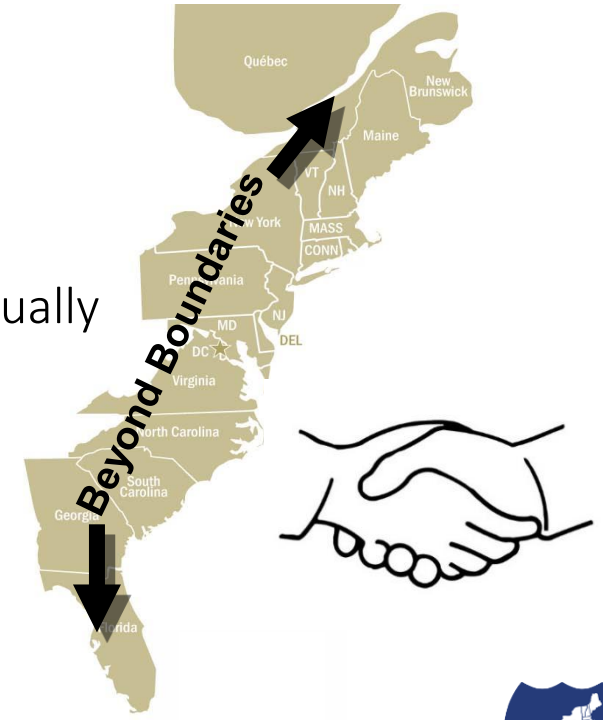
Welcome & Overview	Denise Markow, PE I-95 Corridor Coalition
Performance Management	Eric Rensel Gannett Fleming
Building TSMO Performance Measures	Susan Klasen New Hampshire DOT
Measuring ODOT's TSMO Performance	John MacAdam Ohio DOT
Wrap Up	Denise Markow, PE I-95 Corridor Coalition

I-95 Corridor Coalition Sponsored Event



Who is the I-95 Corridor Coalition?

- 16 States and the District of Columbia
- 35% of nation's VMT (21% of road miles)
- 565 million long-distance (>100 miles) trips annually
- Corridor = third largest economy in world



How can we better message TSMO strategies Regionally?

…a partnership of multi-state, multi-modal public agencies working together to create a seamless and efficient transportation system

Introductions

Denise Markow, PE

I-95 Corridor Coalition

TSMO Director

Eric Rensel

Gannett Fleming

Vice President

Susan Klasen

New Hampshire DOT

Transportation Operations

John MacAdam

Ohio DOT

Administrator, Office of Traffic Management

PERFORMANCE MANAGEMENT

Eric Rensel
Gannett Fleming

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Why Do We Report?

- For “Corporate”
  - Accountability
  - Efficiency
  - Motivation

- For the “User”
  - Confidence
  - Value
  - Justification

Gannett Fleming

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- Explored the idea of corporate versus public domain performance reporting
- Realization that sometimes activity performance measures are OK
  - Especially in the corporate domain (e.g. number of DMS, number of TMC calls)
- In other cases outcomes are needed
  - Especially in the public domain (e.g. travel time reliability, incident duration)
- Don’t succumb to performance shaming!!

An Example

Here is an Example

- To be the best hitter in the history of professional baseball you have to be better than Ty Cobb
- Ty Cobb's career lasted from 1905 – 1928. In 1905 he hit an unimpressive .240 getting 36 hits from 150 at bats

Year	At bats	Hits	%
1905	150	36	.240

Chart of Ty Cobb's Batting Average

Here is an Example

- 1911 was Ty Cobb's Best Year, he hit .420 with 248 hits on 591 at bats. He also had a slugging percentage of .621
- Looking at these two data points does create a metric but it does not help understand what changes took place to make such a dramatic change in a 6 year time period

Year	At bats	Hits	%
1905	150	36	.240
1911	591	248	.420

Chart of Ty Cobb's Batting Average

Here is an Example

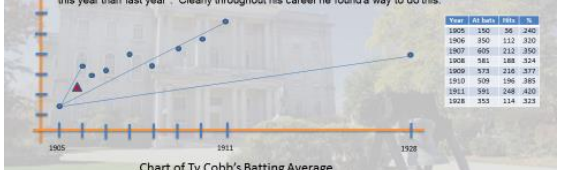
- During the first 7 years of his career his best on base percentage was also in 1911 when he achieved .467
- The greatest change in batting average occurred between year 1 and year 2. You could argue that whatever short-term changes were implemented, changed the trajectory of his career.

Year	At bats	Hits	%
1905	150	36	.240
1906	350	112	.320
1907	605	212	.350
1908	581	188	.324
1909	573	216	.377
1910	509	196	.385
1911	591	248	.420

Chart of Ty Cobb's Batting Average

Here is an Example

- After his rookie season, Ty Cobb never hit below .320 for the rest of his 23 year career with a total of 11,429 at bats and 5859 hits
- As part of a total quality management strategy, Ty Cobb's approach might have been "be better this year than last year". Clearly throughout his career he found a way to do this.



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1911	591	248	.420
1928	353	114	.323

Chart of Ty Cobb's Batting Average

…So

- If your desire is to be better than Ty Cobb what is your key performance indicator?
  - Slugging percentage?
  - On base percentage?
  - Batting Average?
- What measures will you use to get there?
  - Is it simply at bats?
  - Is it simply hits?
  - Is it a combination of at bats and hits?

…So

- Is looking at a small sample of metrics good enough?
  - Was a two year sample of Ty Cobb's 23 year career enough to say that he was the best ever?
  - Was it simply the number of years that he played?

Table 1: Dynamic Message Signs Monthly Activity				
Goal	**TSM&O Smart Objective**	**TSM&O Measure(s)**	**Balanced Investment Smart Objective**	**Balanced Investment Measure(s)**
Improve roadway safety and balance investment through the use of DMS	Reduce the number of crashes per 100 million vehicle miles traveled for 10 miles past the DMS location	Based on the temporal relationship of time stamp and duration that messages are displayed: - # Weather Related Crashes - # Secondary Crashes (based on a displayed message of incident) - # of crashes in a work zone - # of crashes based on PSA type - # of crashes in congestion queues	Achieve at least 90 percent (18 years) of the life expectancy of a DMS[1] as pro-rated due to uptime percentage, including 50,000 hours of LED service	- Pro-rated DMS total life span - Total LED service hours

- Converting activity measures into corporate and public domain outcome measures.

Table 2: Converting DMS Activity Measures into Outcomes		
Domain and Role	**Report Item**	**Potential Actions**
Corporate – Technical Analyst	DMS "W" was activated for "X" hours last month. The trend is "Y" hours over the past "Z" months.	- Comparison to manufacturer suggested or warrantied usage - Comparison to other installed DMS - Comparison to historical usage data
Corporate – ITS Maintenance Analyst	DMS "W" should be scheduled for LED replacement in "A" months. To extend the life of the LED bulbs, the usage should be reduced by "B" percent per month.	- Recommend adjustments in usage - Schedule routine maintenance activities
Corporate – Safety Engineer	DMS "W" contributed to improved roadway safety by achieving a crash rate of "C" per 100 million vehicles traveled for "D" miles past the DMS location, as compared to the statewide average crash rate of "E." OR DMS "W" is experiencing less effectiveness than other DMS in crash reduction.	- If positive result, calculate benefit/cost ratio of DMS and document for annual report - If negative result, select additional countermeasures for the road segment that is influenced by the DMS
Corporate – Program Manager	The capital, operating, and maintenance costs for DMS for this period are "F," as compared to a documented safety benefit of "G." "H" devices are within 25 percent of their expected end of life and need to be replaced.	- Prioritize the devices that should be replaced - Document justification for the expansion of the total number of devices
Public and Executive	**In 2014, NHDOT spent "F" on ITS technology, which helped us move Toward Zero Deaths by reducing the statewide crash rate by "C" percent.**	- **Positive image of NHDOT and value of investment justification**

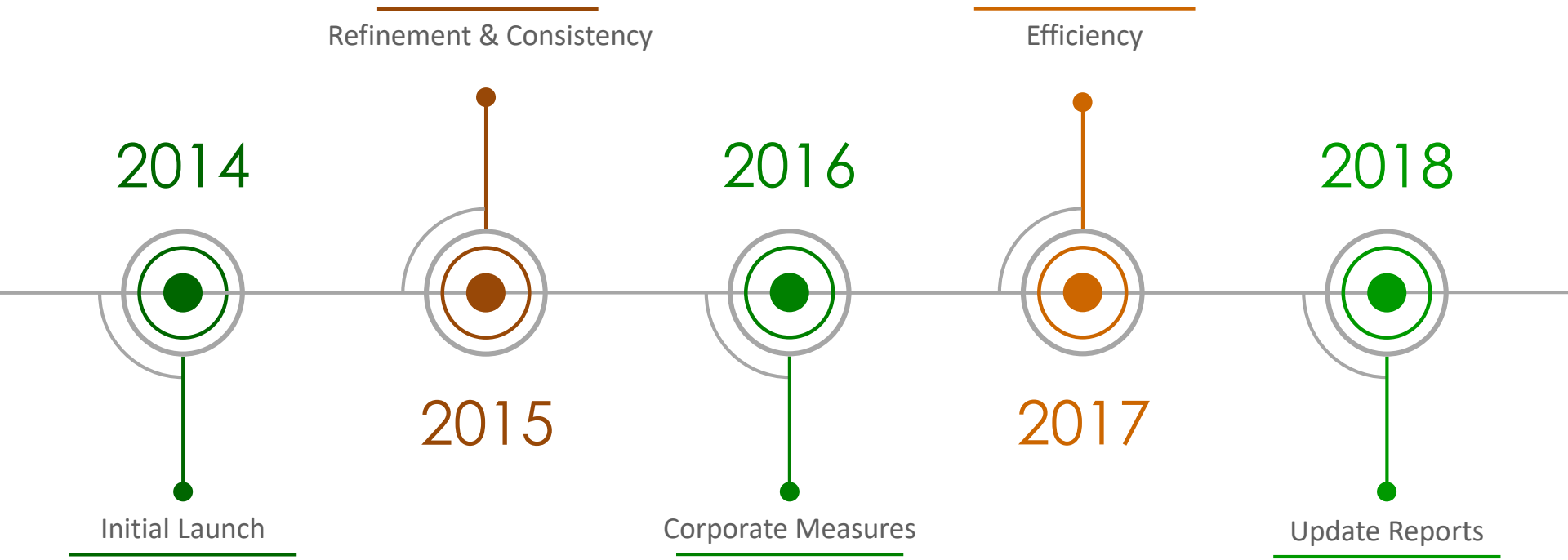
BUILDING TSMO PERFORMANCE MEASURES: NEW HAMPSHIRE

Susan Klasen, PE
New Hampshire DOT

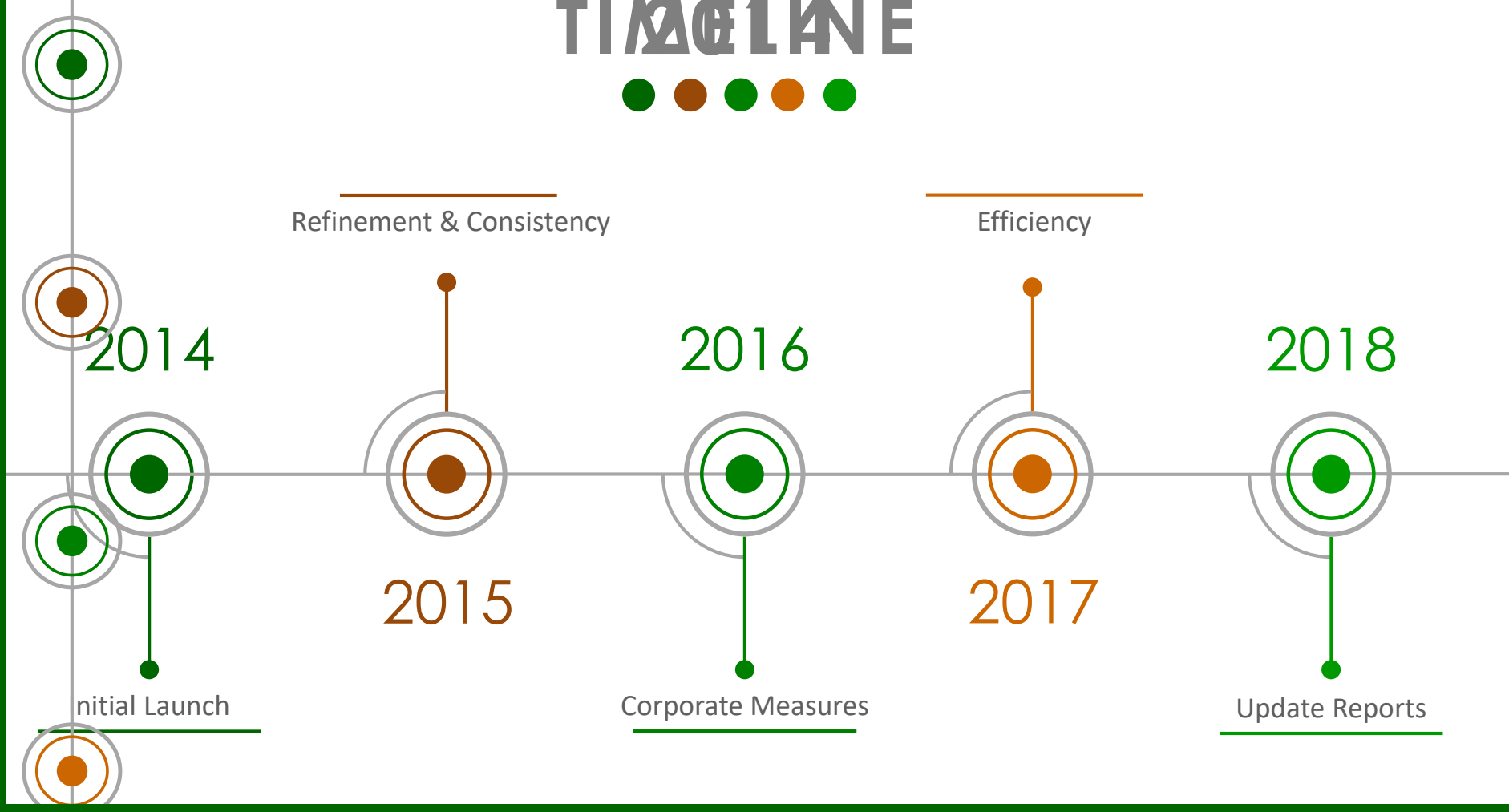
Building TSMO Performance Measures: New Hampshire

Susan Klasen, PE, TSMO Administrator

TIMELINE


Refinement & Consistency
Efficiency
2014
2015
2016
2017
2018
Initial Launch
Corporate Measures
Update Reports

TIMELINE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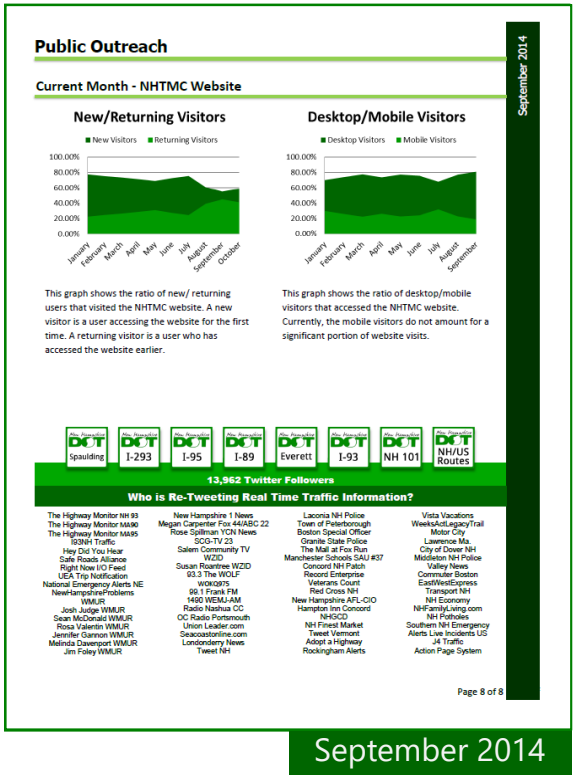
2014



September 2014

First Monthly Report Included:

- Total DMS Posted Messages by Type
- Incoming/Outgoing Calls by Type
- Outgoing Weather Notifications by Type
- Incident Totals by Type

Completed Redesign and Deployed every month

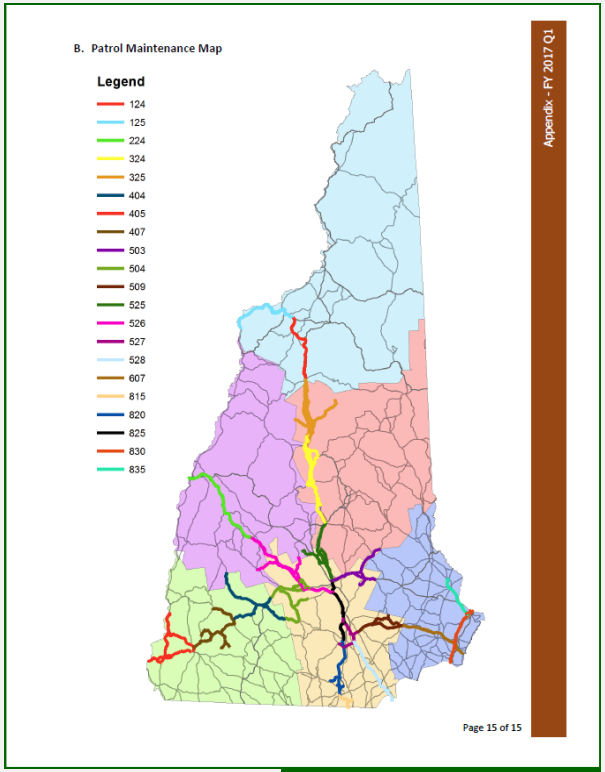
- Started transitioning some measures from activity measures to actual performance measures

2015

Consistency

https://www.nhtmc.com/Dashboard/TMC_Operations/

2016



Corporate Q1 2017

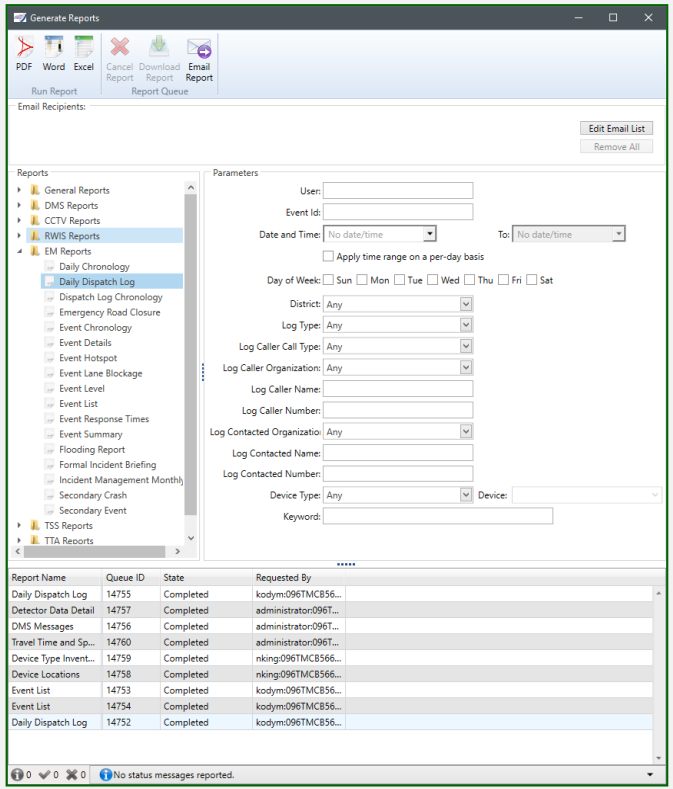
Monthly Report

- Continued with little change

Corporate Quarterly Report

- Started after the first quarter of the 2017 state fiscal year (July, August, September)
- Similar look as the monthly report
- Modified the Q2 report after the Q1 report so that it was reporting based on the Federal Fiscal Year

2017



Reporting Tool in ATMS

Started to look at performance measures that could be pulled from our new ATMS

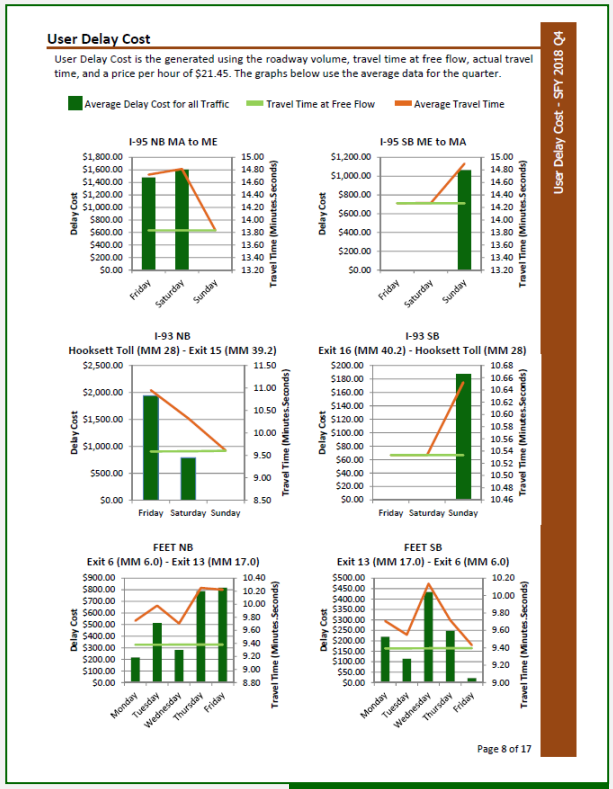
Monthly Report

- Some of the data is now pulled from the ATMS.

Corporate Quarterly Report

- Modified the Q3 report so that it was reporting based on the State Fiscal Year
- Modified the Q1 2018 SFY to report some measures by the SFY and FFY

2018



User Delay Cost

Made changes to the ATMS so that data collection is easier/quicker for the TMC Operators

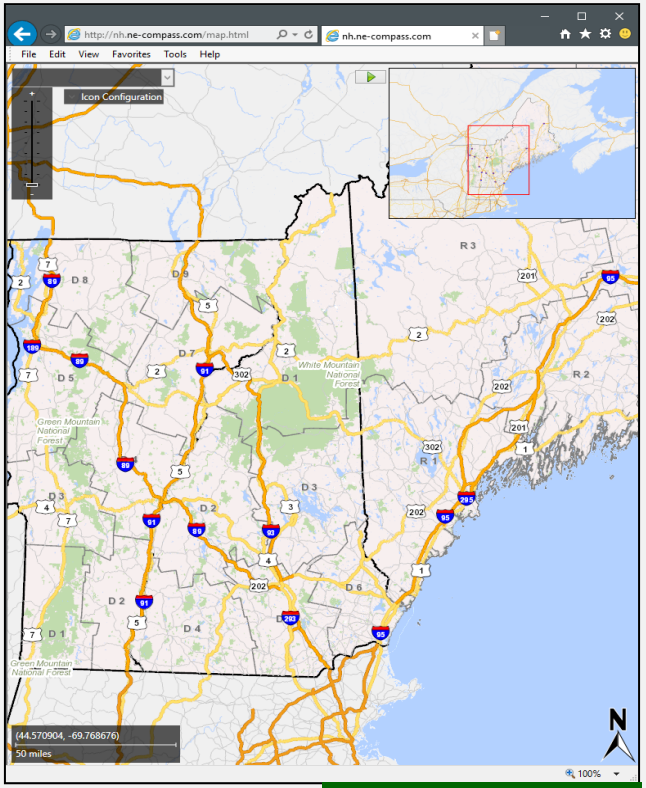
Monthly Report

- A majority of the data is be pulled from ATMS

Corporate Quarterly Report

- Added User Delay Cost for areas of congestion on interstates/turnpikes

FUTURE



ATMS (Compass)

ATMS

- Improve communication between devices
- State Police CAD integration
- Secondary crashes
- Automation

Reporting

- Refine reports to better identify how to meet goals
- Report on costs of contractors vs state employees
- Automation

MEASURING OHIO DOT'S TSMO PERFORMANCE

John MacAdam
Ohio DOT

MEASURING ODOT'S TSMO PERFORMANCE

John MacAdam, PE

PRESENTATION OUTLINE

1. ODOT's TSMO Plan
2. Existing Performance Measures
3. Data Warehouse Project
4. TSMO Dashboard

ODOT'S TSMO PLAN

- 20 recommended performance measures

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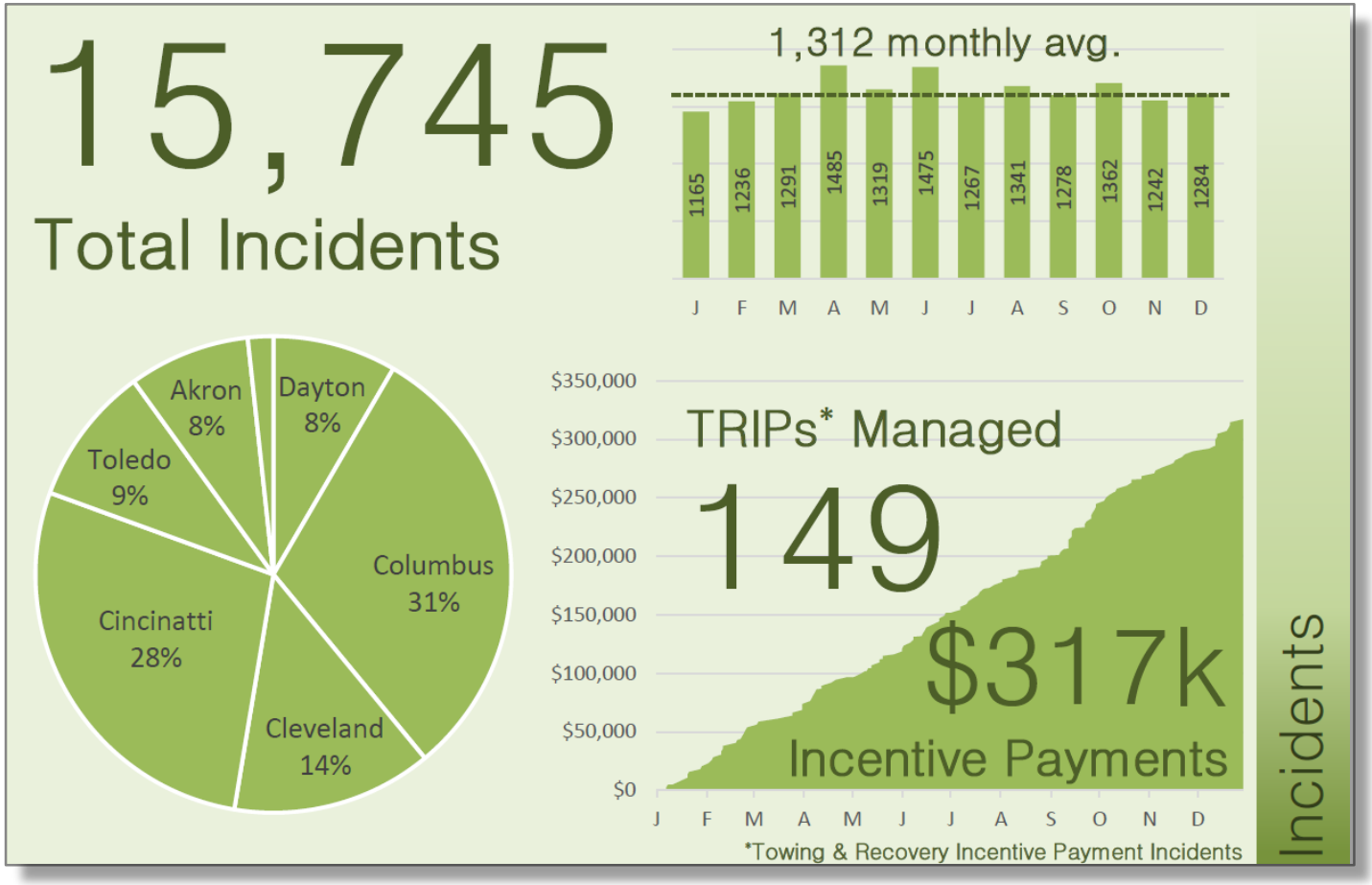
TMC MEASURES



FSP MEASURES

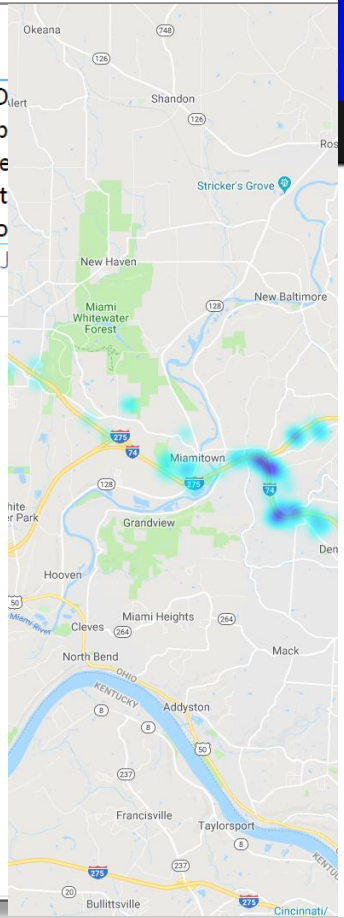
Total responses this month:

Total responses YTD
Most frequent incident typ
Accident-Related Reponse
Hottest region this mont
Avg. stop duratio

*YTD Totals represent Fiscal Year (J

TOP STOP CATEGORIES

- Disabled Vehicle
- Abandoned Vehicle
- Other
- Motor Vehicle Accident
- Provided Traffic Control
- Remaining Stop Types

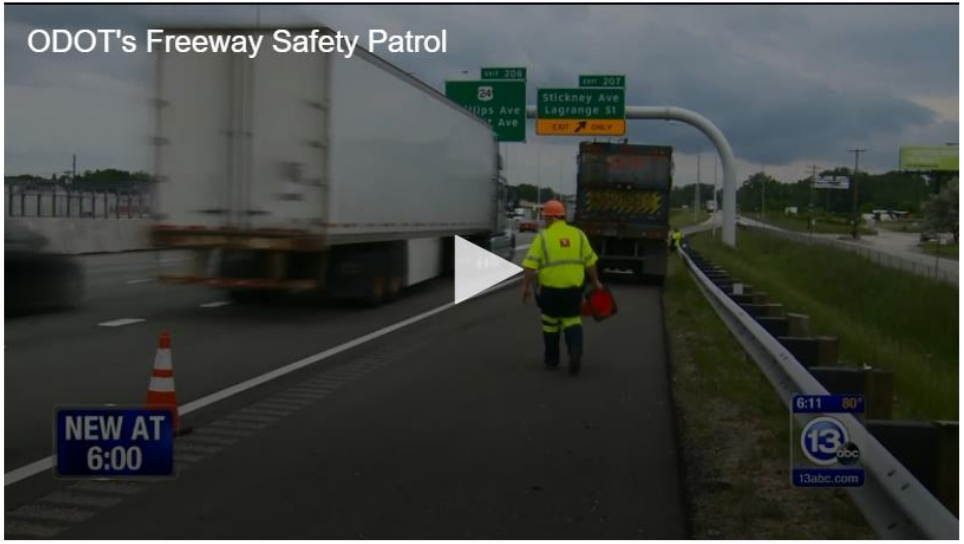


13abc THIS IS HOME

News Weather Sports Special Reports Live Live Newscasts

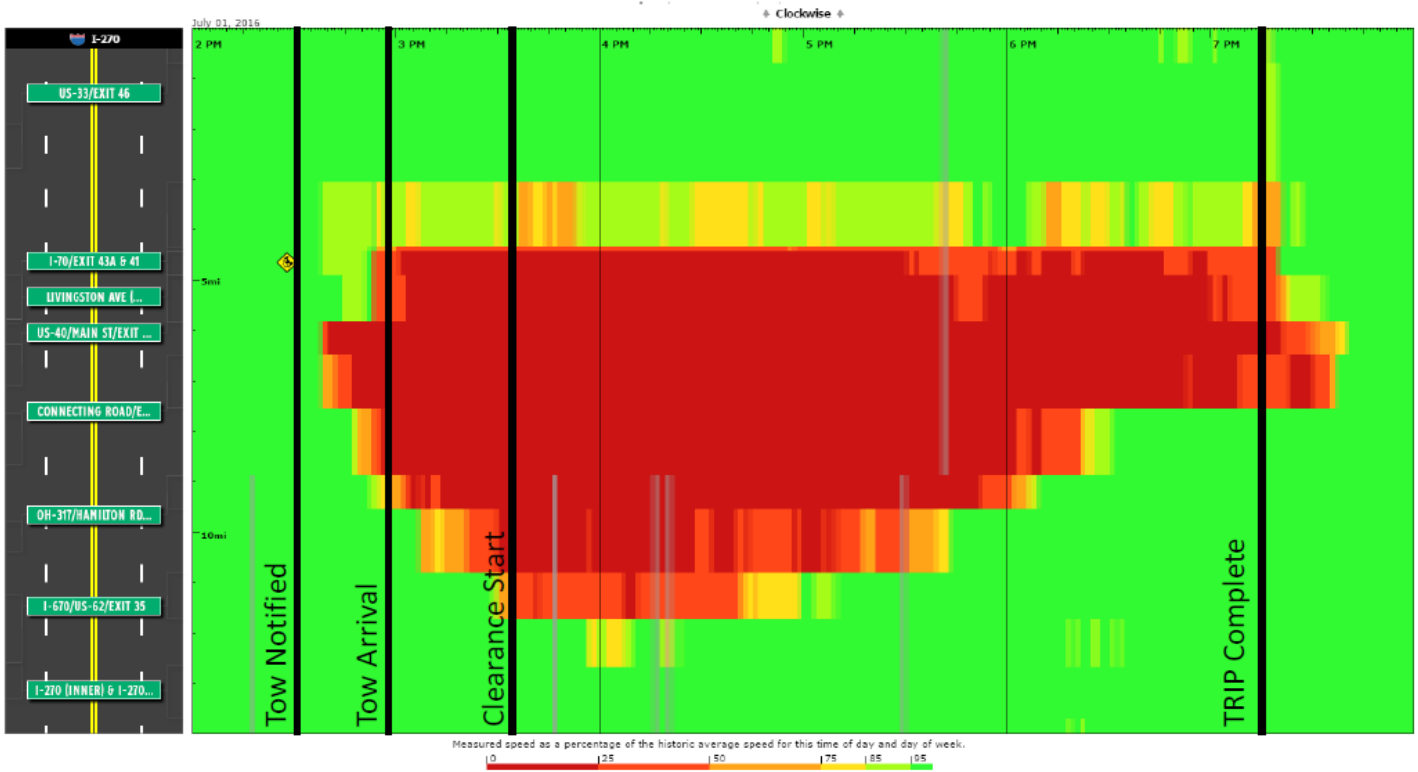
Home / Traffic / Article

ODOT service helps more than half a million Ohio drivers

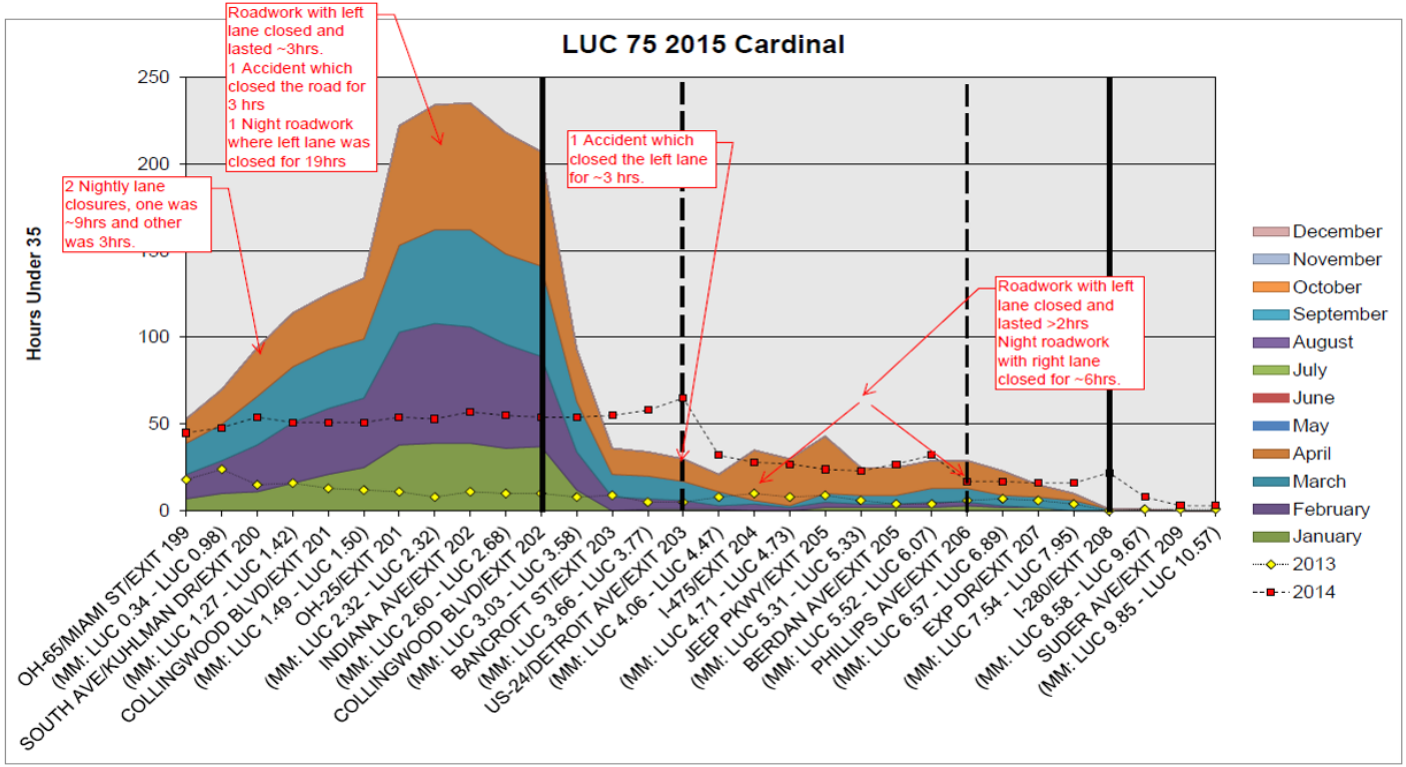


TRIP IMPACT MEASURE

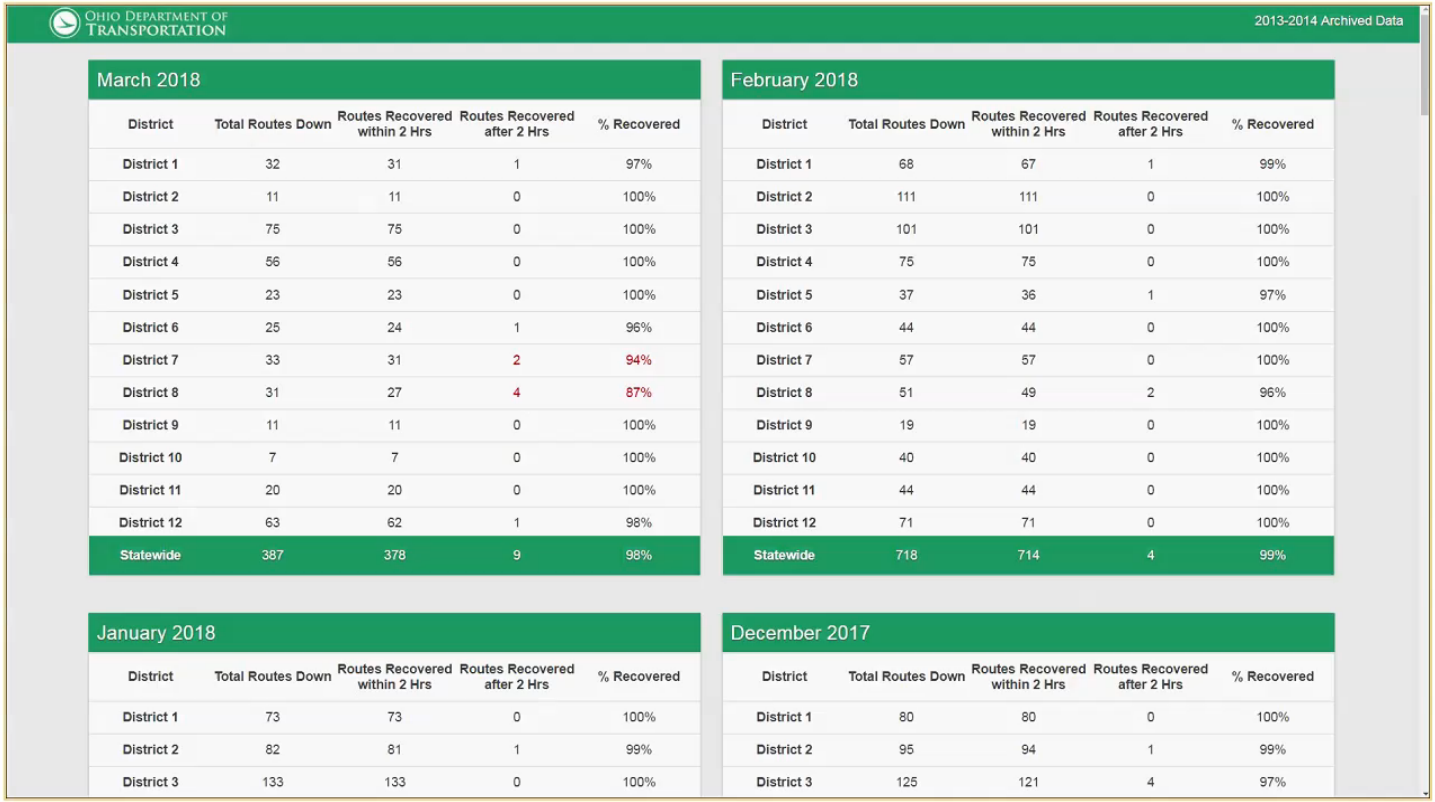
July 1 – FRA-270-42 SB



WORK ZONE MOBILITY



SNOW & ICE DASHBOARD "OUTCOME"



OHIO DEPARTMENT OF TRANSPORTATION

2013-2014 Archived Data

March 2018

District	Total Routes Down	Routes Recovered within 2 Hrs	Routes Recovered after 2 Hrs	% Recovered
District 1	32	31	1	97%
District 2	11	11	0	100%
District 3	75	75	0	100%
District 4	56	56	0	100%
District 5	23	23	0	100%
District 6	25	24	1	96%
District 7	33	31	2	94%
District 8	31	27	4	87%
District 9	11	11	0	100%
District 10	7	7	0	100%
District 11	20	20	0	100%
District 12	63	62	1	98%
Statewide	387	378	9	98%

February 2018

District	Total Routes Down	Routes Recovered within 2 Hrs	Routes Recovered after 2 Hrs	% Recovered
District 1	68	67	1	99%
District 2	111	111	0	100%
District 3	101	101	0	100%
District 4	75	75	0	100%
District 5	37	36	1	97%
District 6	44	44	0	100%
District 7	57	57	0	100%
District 8	51	49	2	96%
District 9	19	19	0	100%
District 10	40	40	0	100%
District 11	44	44	0	100%
District 12	71	71	0	100%
Statewide	718	714	4	99%

January 2018

District	Total Routes Down	Routes Recovered within 2 Hrs	Routes Recovered after 2 Hrs	% Recovered
District 1	73	73	0	100%
District 2	82	81	1	99%
District 3	133	133	0	100%

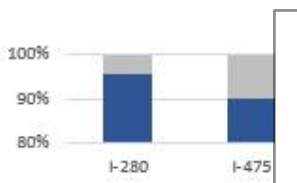
December 2017

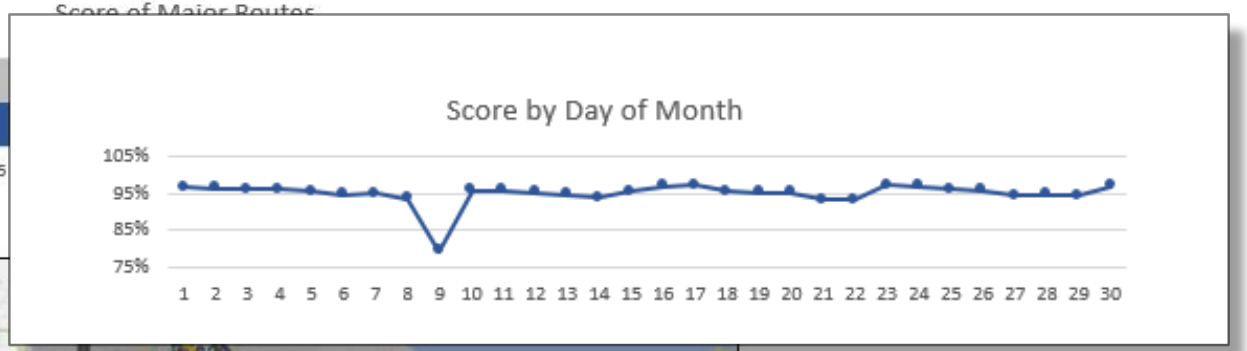
District	Total Routes Down	Routes Recovered within 2 Hrs	Routes Recovered after 2 Hrs	% Recovered
District 1	80	80	0	100%
District 2	95	94	1	99%
District 3	125	121	4	97%

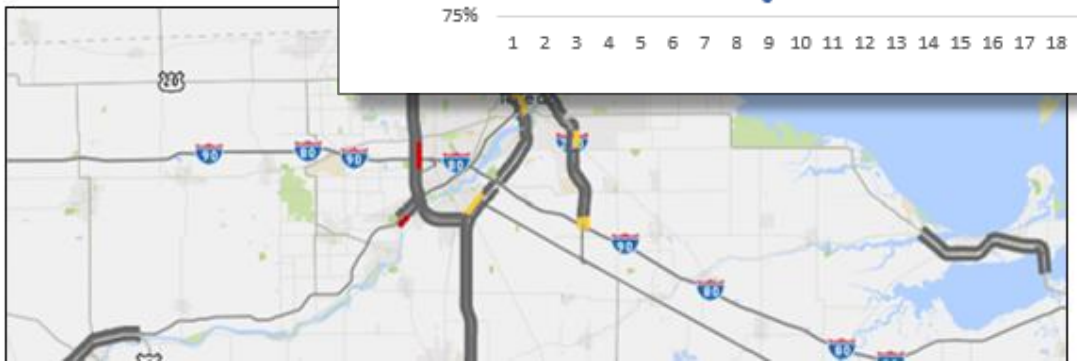
TRAVEL TIME PERFORMANCE "OUTCOME"

95%

District 2
Travel Time Performance
April 2016







LESSONS LEARNED FROM EXISTING MEASURES

- They take time
- Computer savvy employees enjoy them
- They help us make decisions
- They create a business case
- Automation is nice

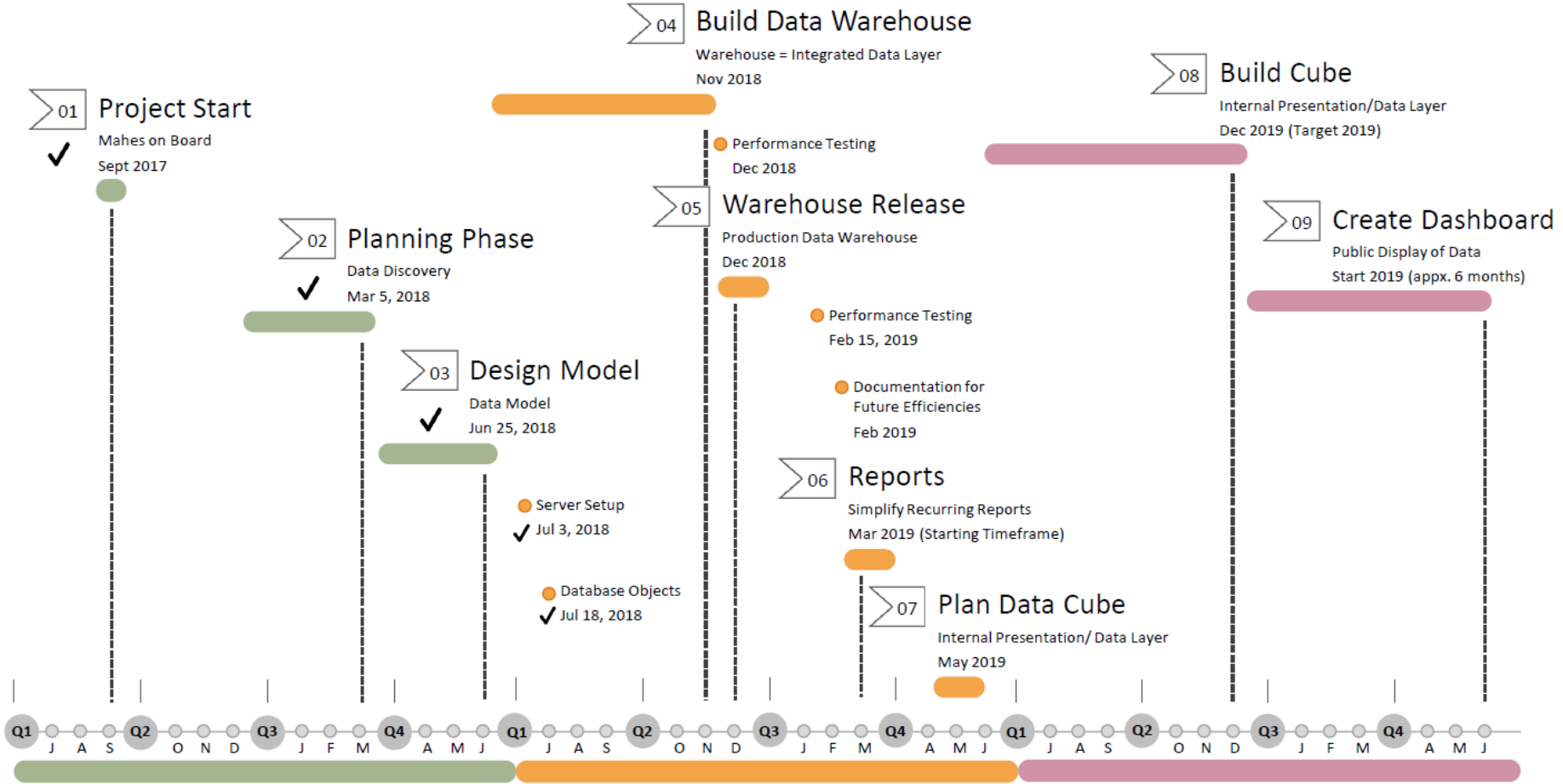
TOAST TOOL

Like Safety priority routes for TSMO/Operations.

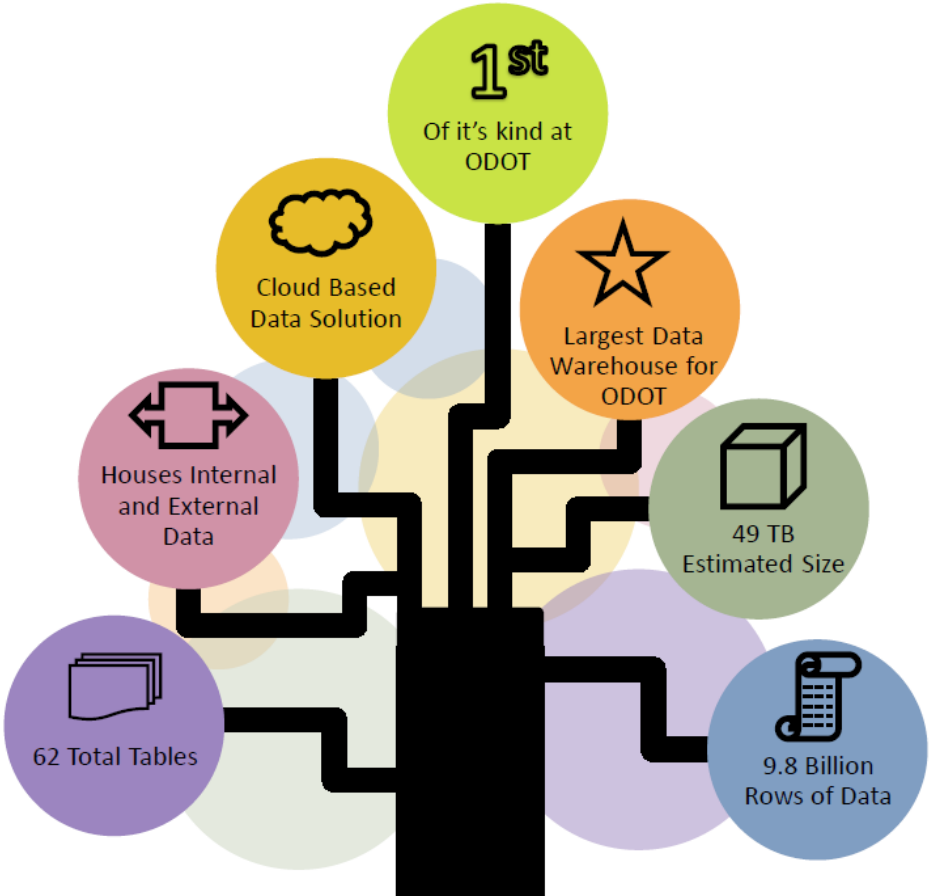
- Travel Time
- Bottlenecks
- Clearance times
- Secondary Crashes
- Volume
- Crash Frequency
- Freight Corridors

Weighting %	Criteria	Calculated by	Value Range	Range		Normalized Value
				Min	Max	
25.0%	☑ Travel Time Performance	Score (%)	0-100%	0%	50%	0
				50%	55%	1
				55%	60%	2
				60%	65%	3
				65%	70%	4
				70%	75%	5
				75%	80%	6
				80%	85%	7
				85%	90%	8
				90%	95%	9
				95%	100%	10
18.8%	☑ Volume per Lane	Number Vehicles	0 - 110,000+	0	2,200	10
				2,200	2,700	9
				2,700	3,300	8
				3,300	3,900	7
				3,900	4,400	6
				4,400	5,400	5
				5,400	6,600	4
				6,600	9,700	3
				9,700	15,300	2
				15,300	30,500	1
				30,500		0
0.0%	☐ Winter Weather Resiliency	Snow & Ice Recovery Score (%)	0-100%	0%	50%	0
				50%	75%	1
				75%	80%	2
				80%	83%	3
				83%	86%	4
				86%	89%	5
				89%	91%	6
				91%	94%	7
				94%	96%	8
				96%	98%	9
				98%	100%	10

TSMO DATA WAREHOUSE



DATA WAREHOUSE STATS



TSMO DASHBOARD

- Interactive
- Comparative
- Real time data
- Built on Data Warehouse

MEASURING ODOT'S TSMO PERFORMANCE

John MacAdam, PE
614.752.9695

Questions?

- Remaining Questions from the CHAT Box

Wrap Up

Contact Information

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- John MacAdam, Ohio DOT, Administrator, Office of Traffic Management

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Thank You!