

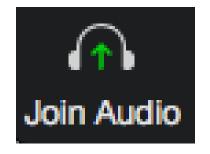
# RITIS User Group

Web Meeting | September 30, 2021



#### Welcome!

- We are using Zoom Webinar
- AUDIO (Computer): Use your computer speakers and microphone by clicking the "Join Audio" button at the bottom left of the screen. You will be muted.
- Alternate Audio (Phone): Call into the meeting by dialing the phone number based on your location (provided in the confirmation email) and enter the Meeting ID at the prompt. You will be muted.
- This web meeting is being recorded.
- Questions with the audio or web? Please contact Esther directly via the chat box or email (<u>ekleit@kmjinc.com</u>)
- The **Chatbox** is not available to participants. Please use the **Q&A box** for questions to the presenters





## Asking Questions in the Q&A Box

?

Click on the Q&A icon at the bottom of your screen



- The questions in the Q&A box will be monitored and answered either between presentations or at the end of the meeting
- You can keep track of your questions in the "My Questions" tab in the Q&A box



# Asking Questions Verbally



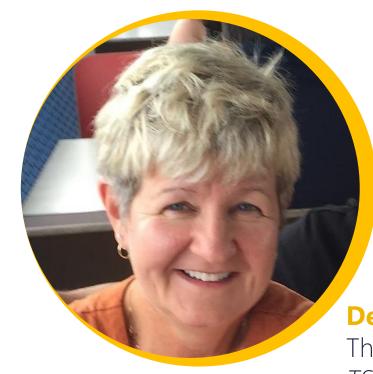
• Please raise your hand (click on the hand icon at the bottom of the screen) and a host will unmute you.



- Please give your name and agency before asking your question
- Please mute yourself when you are finished asking a question



# **Coalition Update**





**Denise Markow**The Eastern Transportation Coalition *TSMO Director* 

#### Coalition Update

#### RECENT

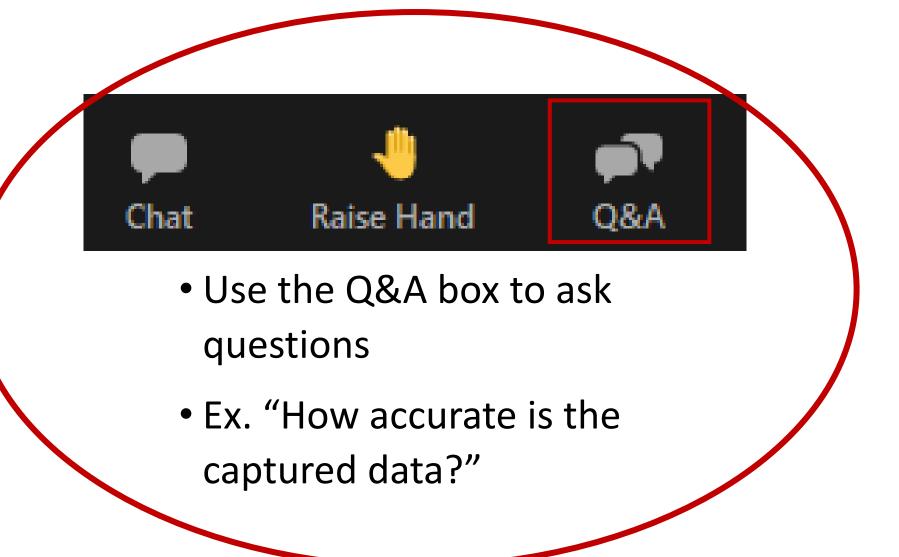
- ✓ RITIS User Group Web Meeting July 15, 2021
- ✓ The ABC's of Conflation: TMC, LRS, OSM What Happens When You Muck It Up August 19, 2021
- ✓ Traffic Data Marketplace RFP Evaluation Meetings Aug, Sep 2021 (member invite only)
- ✓ Meet the Work Zone Data Exchange (WZDx) Project How to Get Better Work Zone Data Out to the Traveler - September 9, 2021

#### **UPCOMING**

- > Traffic Data Marketplace RFP Evaluation Meetings Oct 2021 (member invite only)
- Coalition Mapping Workshop October 7, 2021 (member invite only)
- New Signal Technology, New Maintenance Needs Webinar November 4, 2021
- > TDADS National Webinar November 10, 2021
- > WAZE Technical Bi-Annual Working Group November 18, 2021 (member invite only)
- ➤ NE HOGS Exchange A Fresh Start December 2, 2021
- VPP-Traffic Data Marketplace State POC Meeting December 7, 2021 (member invite only)



## Just a reminder: Use the Q&A box for question



#### Welcome & Introductions





**Jesse Buerk** 

Manager, Capital Project Development, DVRPC RITIS User Group Co-chair

# Today's Meeting

Welcome and Introductions	Denise Markow, TETC & Jesse Buerk, DVRPC
Spotlight Presentation: <i>Use of PDA Suite in Support of Transportation Planning for Maricopa Association of Governments</i>	Wang Zhang, Maricopa Association of Governments
Spotlight Presentation: RITIS Signal Analytics Tools: Recent Updates and Use Cases	Charles Lattimer, UMD CATT Lab
RITIS Product Enhancement Working Group Update	Matt Glasser, Georgia DOT
PDA Suite Performance Measures Working Group Update	John Allen, UMD CATT Lab
New RITIS Tools and Recent Enhancements	John Allen for Michael Pack
Agency Input Session	John Allen and Jesse Buerk
Wrap Up and Remaining Questions	Jesse Buerk

# Today's Speakers



Wang Zhang
Maricopa Association of Governments
Transportation Data Program Manager



Matt Glasser
Georgia DOT
Assistant State Traffic Engineer



Charles Lattimer
UMD CATT Lab
Senior Faculty Specialist



John Allen
UMD CATT Lab
Faculty Assistant, Outreach & Education



# Meeting Participants

			Agencies			
Arapahoe County	City of Franklin, TN	Greater Hickory MPO	Lehigh Valley Planning Commission	MWCOG	Pennsylvania DOT	Tennessee DOT
Atlanta Regional Commission	City of Memphis, TN	Greater Nashville Regional Council	Louisiana DOTD	MWVCOG	Pioneer Valley Planning Commission	Texas A&M Transportation Institute
AutoReturn	City of Sandy Springs, GA	Gresham Smith	Maricopa Association of Governments	New Jersey DOT	PlanRVA	TRANSCOM
Baltimore Metropolitan Council	District DOT	НМТВ	Maryland DOT-SHA	New Jersey Sports & Exposition Authority	Potomac and Rappahannock Transportation Commission	Tri-Cities Area MPO
Cabarrus-Rowan MPO	Durham-Chapel Hill-Carrboro MPO	IBTTA	Maryland Transportation Authority	New York State DOT	Regional Transportation Commission of Southern Nevada	University of Maryland CATT Lab
Capital Area MPO (CAMPO- Raleigh)	DVRPC	Illinois DOT	Massachusetts DOT	NJTPA	Rhode Island Division of Statewide Planning	Vermont AOT
Capital Region Planning Commission	East Central Intergovernmental Association	Imperial Calcasieu Regional Planning ad Development Commission	Mead & Hunt	North Carolina DOT	Rhode Island DOT	VHB
Charlotte Regional TPO	Federal Highway Administration	INRIX	Michigan DOT	North Central PA Regional Planning & Development Commission	Rockingham Planning Commission	Virginia DOT
Chattanooga-Hamilton County/North Georgia TPO	Florida DOT	Jacobs	Middlesex County	Northern Virginia Transportation Authority	Sonoma County Transportation Authority	
Chicago Metropolitan Agency for Planning	Gannett Fleming	KISNN Assoc	Minnesota DOT	Ohio DOT	South Jersey Transportation Planning Organization	
City of Alexandria, VA	Georgia DOT	Knoxville Regional TPO	Montgomery County Planning Commission	Oregon DOT	Southwestern Pennsylvania Commission	





# Use of PDA Suite in Support of Transportation Planning for Maricopa Association of Governments

Wang Zhang

Transportation Data Program Manager

Maricopa Association of Governments



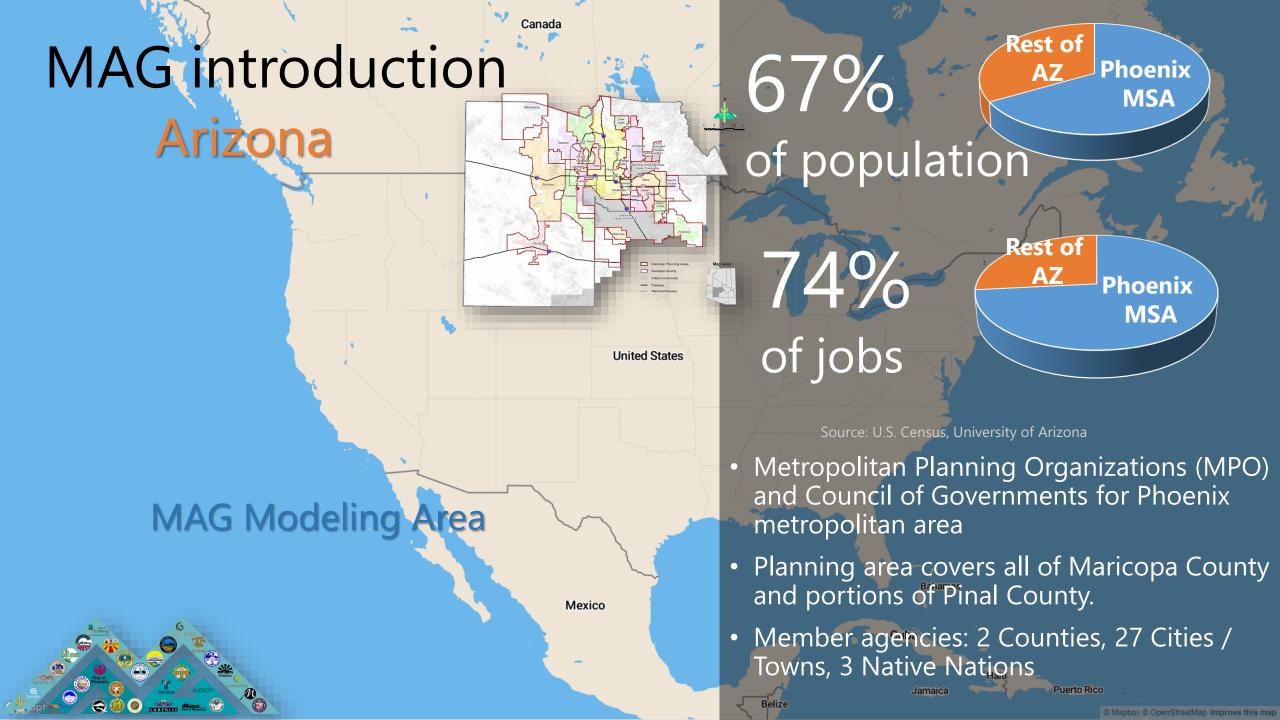
# Use of PDA Suite in Support of Transportation Planning for Maricopa Association of Governments (MAG) RITIS User Group Web Meeting September, 2021



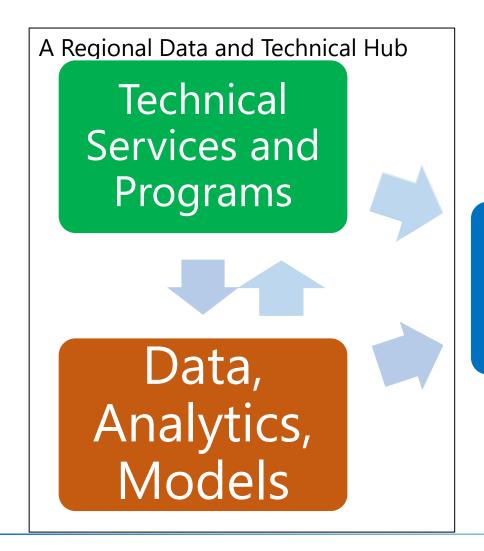


#### Outline

- Maricopa Association of Governments (MAG) introduction
- How MAG uses PDA Suite
- Two examples
  - Before and after study
  - Regional traffic trend



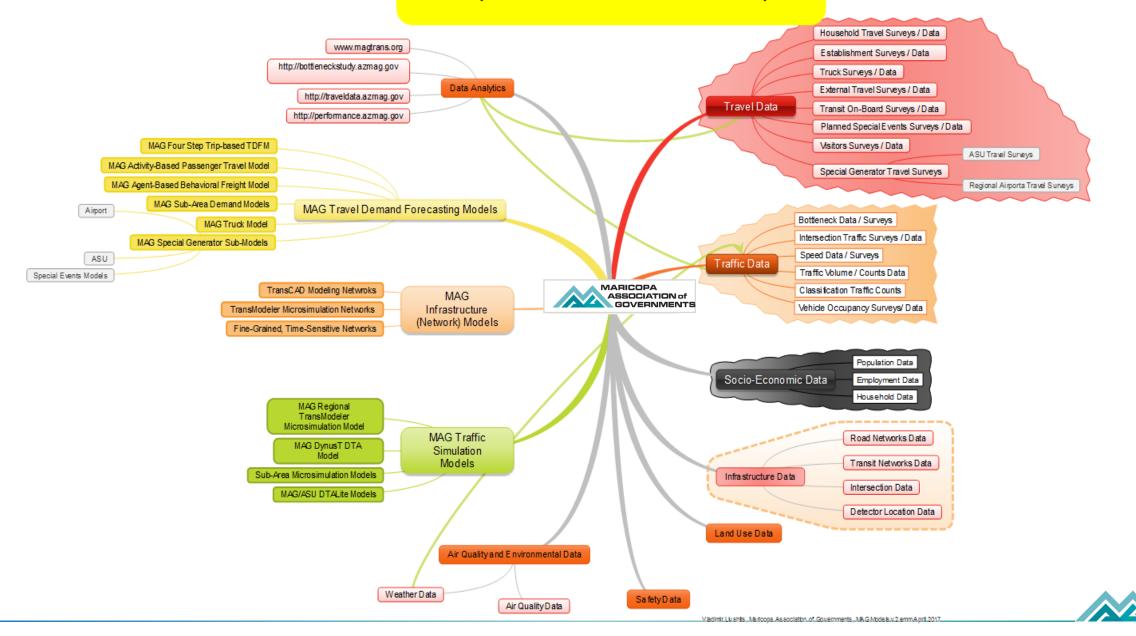
# Informed Transportation Planning and Investment Decisions: Where Policies Meet Data



Programming of Funds, Planning and Investment Decisions

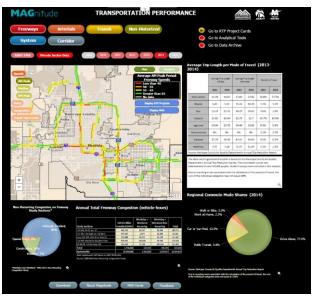


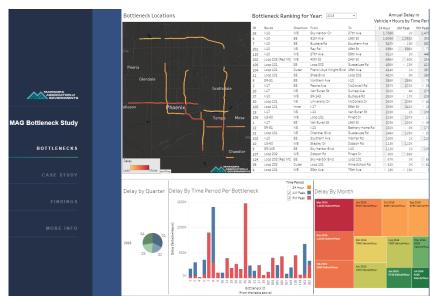
#### Transportation Data and Models: MAG Example



## How MAG uses Speed data and PDA Suite

- System monitoring and quantitative analysis
  - System scanning, bottleneck identification...
- Project evaluation
  - Before and after study, cost/benefit evaluation...
- Model calibration and validation
- Performance measurement
- Trend analysis







#### Example #1:

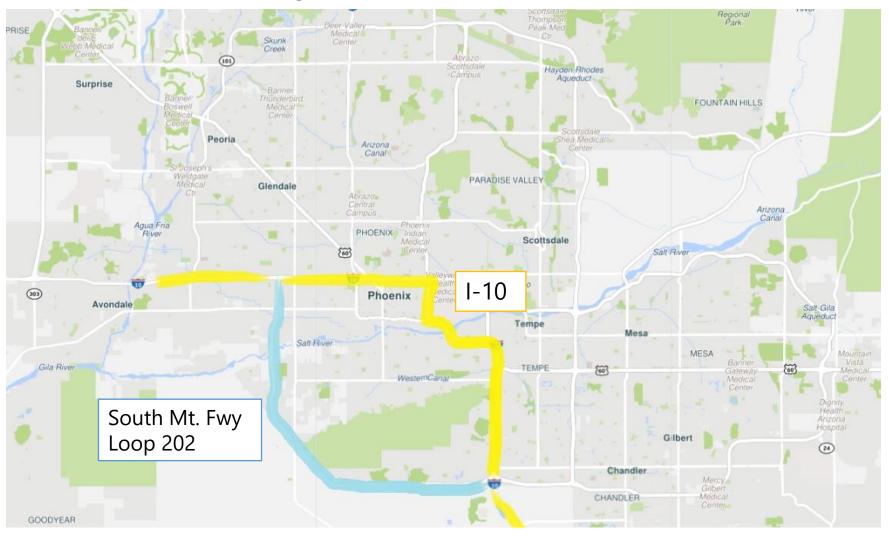
Monitoring Congestion on I-10 before and after South Mountain Freeway Opening

March, 2020





# Case study introduction

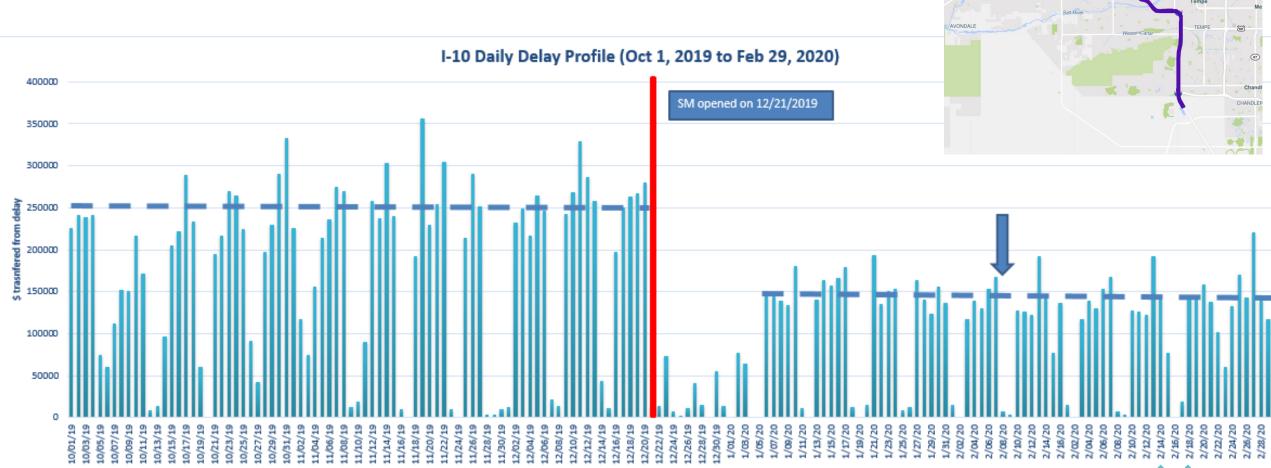


- I-10 trespasses Phoenix region serving as a main freeway corridor;
- A new freeway (South Mountain freeway, Loop 202) opened to traffic in December 2019 (relieve traffic congestion on I-10);
- Monitor and evaluate new freeway's impact to I-10 traffic (continuous monitoring and evaluation interrupted by COVID);





# Congestion profile before and after: I-10 both directions (35% delay reduction)



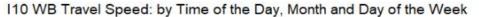
## I-10 WB average speed

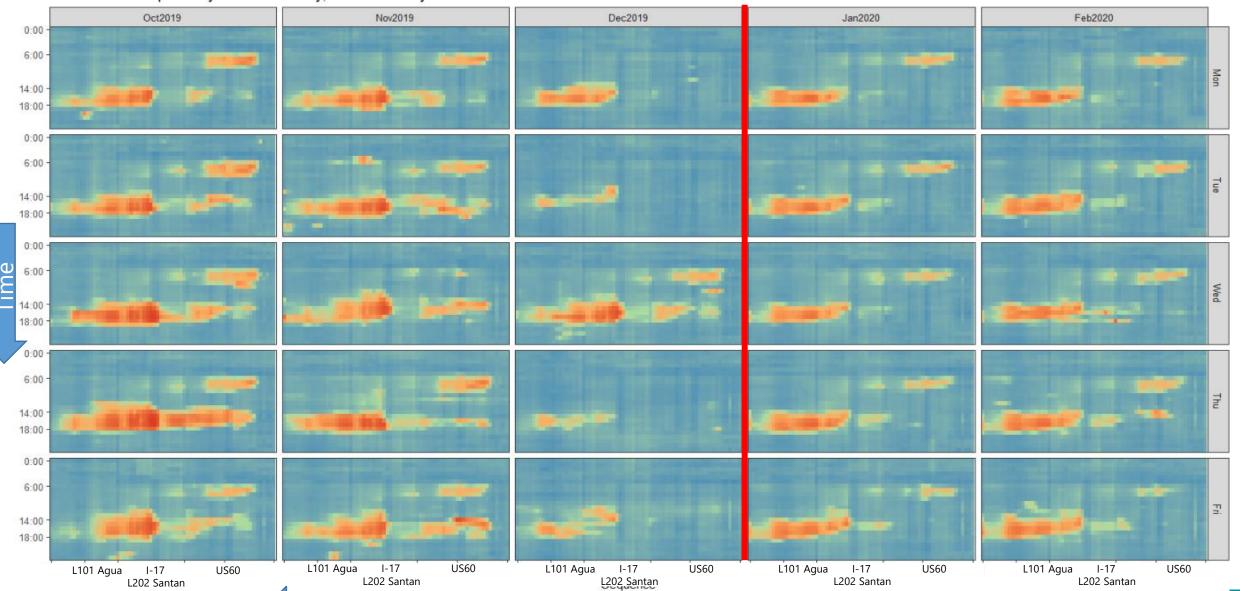
### before



																			_																											
				Bofa	ro Spood																																									
Averag																																														
Reu -1				4 63	62 61	60 5	9 5#	57 56	55	54 53	52	_		4# 47		45 4	4 43	42	41 40							0 29 21		26 25	24	23 2	21	20 1	9 1#	17	16 15	14	13 12	: 11	10	9 1	: 7	6		3 2		
0:00		69 70	71 71	70	71 71	72 72	71	70 69	68 (	68 68	68 6	68 68	**	71 68	**	68 70	70	69	9 70	68 6	8 69	69 67	66 6	5 68	68 67	66 68	68 (	69 70	70	70 70	70	71 70	70	70 1	70 71	71	70 70	70	69	69 69	68	69 61	9 68	68 68		
1:00	70	69 69	69 70	69	69 69	70 70	69	69 68	68 (	67 68	68 6	68 68	٧.	70 68	***	68 69			9 69	68 6	7 69	68 67	67 6	6 67	67 67	66 68	69 (	69 70	70	71 71	70	70 70	70	70 1	70 70	70	70 70	69	69	68 69	68	69 6:	8 67	68 68		
2:00	70	69 69	69 69	69	69 69	70 70	69	68 68	68 (	67 68	68 6	68 68	67	70 68	67	69 70	70	69	70 70	69 6	9 70	70 69	69 6	8 69	69 69	68 69	69 1	70 70	70	71 71	70	71 70	70	70 1	70 71	70	70 70	70	69	69 69	69	69 6	9 69	69 69		
3:00	10	69 69	69 69	69	70 70	71 71	70	70 69	69 (	68 69	69 6	69 69	68	71 69	70	69 71	71	71	11 71	70 7	0 71	71 70	70 6	9 70	69 69	68 70	70	70 71	71	72 72	71	72 71	71	71 7	71 72	72	71 71	71	71	71 71	70	70 7		69 69	**	
4:00 5:00	71 71	70 70	70 70	70	70 71	71 72	71	71 70	69 (	69 70	70 7	70 70	69	73 71	72	71 72	73	72	12 72	71 7	2 73	72 71	71 7	0 71	71 71	69 71	71 1	72 72	73	73 73	73	74 72	72	72 1	73 74	74	73 73	73	73	73 73	72	73 73		73 73 73 73		
6:00	70	69 70	70 70	, 69	70 70	70 70	m	71 70	68 (	68 69	70 6	69 70	69	73 70	70	69 70	n (2	70	n n	70 7	2 73	73 71	70 7	0 70	70 70	68 71	70	n n	- m	72 71	71	72 70	70	68 6	45 40	47	72 72	72	12	71 72	11	73 7	4 72	73 73		
7:00	71		60 60		60 07	74 74	70	70 60	67	60 61	60 6		60	70 67	67	65 66	. 61	40	4 62	60 6	o 10	10 61	64 6	2 64	62 62 64 60	. 54 44	66	00 01 44 44	46	65 64	46	26 20	40	20 1	99 42	22	20 20	24	27	26 27	25	50 6	7 60		69	
8:00	70	68 68	69 69	69	69 70	71 71	70	69 68	67	67 68	69 6	68 68	67	70 66	66	65 65	64	64	3 61	59 6	5 62	68 64	63 6	0 57	55 52	49 57	63	64 65	65	63 50	44	35 38	34	38 3	32 32	34	32 33	34	35	37 42	51	63 7	0 70	71 72		
9:00		68 68	69 69	69	69 70	70 71	70	69 68	66	67 67	68 6	68 67	66	70 66	66	64 65	63	62	0 59	54 6	d 69	69 67	65 6	a 6a	63 62	61 65	67	66 67	66	64 62	54	51 54	54	53	47 46	48	52 54	56	56	58 62	67	70 7	1 69		70	
10:00	71	69 69	69 69	69	69 70	70 71	70	69 68	65	67 67	68 6	68 67	66	70 66	66	64 65	65	65	4 63	60 6	7 70	70 68	67 6	6 67	66 66	65 68	69	69 69	69	68 68	67	69 68	68	67 6	66 69	69	67 67	68	67	67 67	69	70 7	1 69		69	
11:00	71	68 68	69 69	69	69 69	70 70	70	69 67	65 (	66 67	68 6	68 67	66	69 65	64	62 62	62	63	4 63	62 6	8 70	70 68	67 6	6 66	66 65	64 67	69	68 68	69	68 68	68	70 69	68	68 (	69 72	71	68 68	69	67	67 67	67	69 7	0 69	70 70	69	
12:00	70	68 68	68 69	68	68 69	70 70	69	68 66	63 (	64 64	65 6	66 65	64	67 63	62	58 54	54	56	7 56	51 6	1 68	70 68	67 6	7 67	66 66	65 68	68 (	67 67	68	68 68	68	70 69	68	67 6	68 72	71	68 67	68	67	66 67	68	70 7	1 69	71 71	69	
13:00	70	68 68	68 68	68	67 68	69 69	68	66 64	61 (	60 58	59 6	61 60	59	62 60	59	56 47	47	49	0 46	40 5	1 64	67 67	66 6	6 67	66 65	64 66	64 6	63 64	65	65 64	63	65 66	65	64 6	64 67	67	66 65	66	65	65 66	67	70 7	1 69	71 71	69	
14:00	70	67 67	66 67	7 66	65 66	68 68	67	65 62	58 9	52 44	39 3	39 39	38	42 47	48	44 33	32	32 :	1 25	20 2	5 44	55 63	63 6	3 62	62 61	60 62	53 4	49 53	56	57 54	48	47 51	52	52 5	52 56	58	59 57	58	58	59 60	63	68 7	1 69		69	
15:00	66	64 63	61 60	58	53 49	55 59	59	56 54	50 4	45 39	31 2	26 24	24	24 28	29	26 20	23	21 (	1 16	13 1	4 33	44 56	56 5	5 55	53 52	49 53	44 3	39 36	39	42 40	36	35 43	46	49 5	50 53	56	57 54	53	53	52 53	60	68 7	1 69	72 72		
16:00		60 59	55 52	49	40 33	38 49	45	42 40	36 3	33 29	24 1	19 18	18	19 24	25	20 14	17	15	9 15	13 1	6 33	44 52	53 5	3 54	53 52	51 54	44 :	39 34	35	39 39	39	44 52	54	57 5	59 62	63	60 58	57	56	54 55	62	69 7	1 69		69	
17:00	57	56 54	49 43	40	33 26	28 33	32	30 29	27 2	26 24	20 1	16 15	15	16 22	24	20 14	16	16 7	1 18	18 2	7 45	51 56	55 5	5 56	55 54	53 55	44 4	40 36	41	46 46	45	49 55	57	58 (	62 66	66	62 59	60	61	60 62	66	70 7	1 69	71 71		
18:00	**	58 56	53 49	47	39 32	37 41	40	38 37	36 3	34 29	27 2	25 25	25	26 32	33	31 25	29	30	3 30	30 4	3 58	61 62	60 5	9 60	59 58	56 58	52 5	51 52	57	58 58	58	61 63	63	63 6	65 68	67	64 63	63	64	63 65	67	70 7	1 69	71 71	69	
19:00 20:00	66	66 66	66 65	65	64 63	66 67	66	65 63	61 !	57 51	51 5	52 53	53	56 56	56	55 49	52	54	6 55	54 6	1 66	67 66	66 6	5 67	66 66	65 67	67 6	68 68	69	69 69	68	70 69	69	69 7	70 71	70	67 68	68	68	67 69	68	70 7	70	71 71	69	
20:00 21:00	70 71	69 70	70 70	70	70 71	71 71	69	69 69	67 (	67 67	67 6	66 67	66	69 66 68 65		65 66 64 66		66	6 67	66 6	7 69 4 70	69 67	67 6	6 68	68 68	67 69	69 1	70 70	71	71 71	71	72 71	71	70 1	71 72	71	69 69	69	69	68 69	68	70 7	1 70	71 70	69	
21:00 22:00		69 70 70 70	70 70	70	71 71	72 71	70	69 69	67 (	65 65	66 6	66 66	45	68 65		64 66		67	8 68	67 6	, ,,	70 68	67 6	6 69	68 68	67 69	69	70 70	71	71 71	71	72 70	70	70 1	71 72	71	69 69	69	69	68 69	69	70 7	1 70		69	
23:00		70 70	71 70	70	71 71	72 72	70	69 68 69 69	68	69 69 67 67	66 6	v v.	63	** **				68	9 69	62 6		10 00	67 6	5 62	69 68	67 69	69 1	70 71	70	71 71	70	72 71	70	70 7	71 72	71	70 70 70 70	70	70	69 70	69	69 61	0 70 9 69	69 69		
		el Aqua				SH	59th Ave	** **						-17 Stack		**	**	**		Daustau		** **			**	** **	**	14			1.0			U	5-60				1.4	** **	**	** *			Lunp 26	2 SH
																								i											1											
												į															ft								- [											
												- 1												1											- 1											
												- 1												1											- 1											
																													-	· ·																
DOW	(d =	н																																												
			lolidayz ar	o exclued																				1																						
Averag			lolidayz ar		r Spood																									$\top$																
Reu -1				Afta	r Speed																																									
			65 6	Afta	rSpood 62 61	60 5	9 5\$	57 56	55	54 53	52	51 50	49	41 47	7 46	45 4	4 43	42	41 40	39	3# 37	36 3!	5 34 3	32	31 36	• 29 21				23 2:	21	20 1	9 12	17	16 15	14	13 12	2 11	10	, ,	: 7		5 4	3 2		
0:00	6# 71			Afta	62 61 70 70	60 5 71 71	9 5:	57 56 72 71	55 71	54 53 70 70	52 70 6	51 5 <b>0</b>	69	4 <b>\$</b> 47	7 46	<b>45 4</b> 69 70	70	<b>42</b>	41 40	69 6	8 69	36 3! 69 67	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 17 70 74 70 74 70 74 70 70 70 70 70 70 70 70 70 70 70 70 70	70	17 70 1	16 15 70 70	14 70	13 12	69	10	9 4 68 70	68	69 6:	5 4	68 68	67	
1:00	71 71			Afta	62 61 70 70 69 70	60 5 71 71 71 70 71 71	72 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71	55 71 1	<b>54 53</b> 70 70 70 69	52 70 6	51 50 69 69 69 69	49 69 68	4 <b>8</b> 47 71 68 71 69		<b>45 4</b> 69 70 69 70	70		41 40 70 70 70 71	39 69 6 69 6	8 69	36 31 69 67 69 67	5 34 3 66 6 67 6	5 68	31 36 68 68 67 67	67 68	69 (		70	23 2: 70 70 70 71	70	20 1: 71 70 71 70	70	17 70 1	16 15 70 70 70 70	14 70 70	13 12 69 69 68 68	69	10	9 4 68 70 68 69	68 68	69 6:	5 4	68 68	67 67	
1:00 2:00	6# 71			Afta	62 61 70 70 69 70 70 70 70 70	60 5 71 71 71 70 71 71 71 71	9 5 <b>\$</b> 72 71 71 71 71 71	57 56 72 71 71 71 71 70 71 71	55 71 70 7 69 69	<b>54 53</b> 70 70 70 69 68 67 69 60	52 70 6 69 6 68 6	<b>51 50</b> 69 69 69 68 68 68	49 69 68 67 67	4\$ 47 71 68 71 69 71 68			70 70 70	**		69 6	8 69	36 39 69 67 69 67 69 68	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1 70 70 70 69 71 74 74	9 1 <b>*</b> 70 70 69 71	17 70 1 70 1 70 6	16 15 70 70 70 70 69 70 71 72	14 70 70 69	13 12 69 69 68 68 69 69 71 74	2 <b>11</b> 69 69 69 71	10 68 69 69	9 4 68 70 68 69 68 69 70 74	68 68 68	69 69 69 69 69 69 69 69 69 69 69 69 69 6	5 4 8 68 8 68 9 69	68 68	67 67 68	
1:00 2:00 3:00	71 71 70			Afta	62 61 70 70 69 70 70 70 70 70 70 71 71 71	60 5 71 71 71 70 71 71 71 71 72 70	9 5 <b>\$</b> 1 72 2 71 1 71 1 71 2 72	57 56 72 71 71 71 71 70 71 71 72 71	55 71 70 69 69 69	54 53 70 70 70 69 68 67 69 68	52 70 6 69 6 68 6 69 6	51 50 69 69 69 69 68 68 68 68	69 68 67 67	4 <b>2</b> 47 71 68 71 69 71 68 71 69 72 70			4 43 70 70 70 70	**		69 6	8 69	36 39 69 67 69 67 69 68 70 69 71 70	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 10 71 70 71 70 70 69 71 71 73 72	9 18 70 70 69 71 72	17 70 1 70 1 70 6 71 1	16 15 70 70 70 70 69 70 71 72 73 74	70 70 70 69 71	13 12 69 69 68 68 69 69 71 71 73 73	69 69 69 71	10 68 69 69 71	68 70 68 69 68 69 70 71 72 72	68 68 68 70	69 6: 68 6: 69 6: 70 7: 72 7:	5 4 8 68 8 68 9 69 1 70 3 72	68 68 68 68 68 69	67 67 68 70	
1:00 2:00	6# 71 71 70 71			Afta	62 61 70 70 69 70 70 70 70 71 71 71 70 70	60 5 71 71 71 70 71 71 71 71 72 72 71 71	9 5 <b>\$</b>   72   71   71   71   71   72   72   71	57 56 72 71 71 71 71 70 71 71 72 71 72 72	55 71 70 69 69 69 70	54 53 70 70 70 69 68 67 69 68 69 69	52 70 6 69 6 68 6 69 6 70 6	51 50 69 69 69 69 68 68 68 68 69 69 67 69	67 67 68	4\$ 47 71 68 71 69 71 68 71 69 72 70 72 70			4 43 70 70 70 70 71 72 71	**		69 6	8 69	36 39 69 67 69 67 69 68 70 69 71 70 72 70	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	2 1 70 70 70 69 71 71 73 72 73 71	9 1# 70 70 69 71 72	17 70 1 70 6 71 1 72 1 70 1	16 15 70 70 70 70 69 70 71 72 73 74 71 73	14 70 70 70 69 71 74	13 12 69 69 68 68 69 69 71 71 73 73 73 73	69 69 69 71 73	10 68 69 69 71 73	68 70 68 69 68 69 70 71 72 73 72 73	68 68 68 70 72 72	69 69 69 69 69 69 69 70 70 70 72 73 70 70 70 70 70 70 70 70 70 70 70 70 70	5 4 8 68 8 68 9 69 11 70 3 72 4 72	68 68 68 68 68 69 70 70 72 72	67 67 68 70	
1:00 2:00 3:00 4:00 5:00	71 71 70 71 71 71			Afta	62 61 70 70 69 70 70 70 70 71 71 71 70 70 64 65	60 5 71 71 71 70 71 71 71 71 72 72 71 71 67 69	72 71 71 71 71 72 72 71 71 71 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69	55 71 1 70 1 69 6 69 6 70 6	54 53 70 70 70 69 68 67 69 68 69 69 69 68	52 70 6 69 6 68 6 69 6 70 6 68 6 67 6	51 50 69 69 69 69 68 68 68 68 69 69 67 69 67 67	67 67 68	71 68 71 69 72 70			70 70 70 70 71 72 71	**		69 6	8 69	36 39 69 67 69 67 69 68 70 69 71 70 72 70	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 10 71 70 70 69 71 71 73 72 73 71 66 66	70 70 70 69 71 72 71	17 70 1 70 6 71 1 72 1 70 6 62 9	16 15 70 70 70 70 70 70 69 70 71 72 73 74 71 73 54 51	14 70 70 69 71 74 73	13 12 69 69 69 68 68 69 69 71 71 73 73 73 73 61 61	2 11 69 69 69 71 73 73	10 68 69 69 71 73 72 59	68 70 68 69 68 69 70 71 72 73 72 73 57 57	68 68 68 70 72 72 72	69 6: 69 6: 69 6: 70 7: 72 7: 73 7: 68 7:	5 4 8 68 8 68 9 69 1 70 3 72 4 72 1 69	68 68 68 68 68 69 70 70 72 72 73 73	67 67 68 70 71	
1:00 2:00 3:00 4:00 5:00 6:00	71 71 70 71 71 71 71 68	67 66 70 70 69 70 69 70 69 70 70 70 69 69		Afta	62 61 70 70 69 70 70 70 70 71 71 71 70 70 64 65 65 65	60 5 71 71 71 76 71 71 71 71 72 72 71 71 67 66	72 71 71 71 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69	55 71 1 70 1 69 6 69 70 70 68 68 67	54 53 70 70 70 69 68 67 69 68 69 69 69 68 67 67 67 67	52 70 6 69 6 68 6 69 6 70 6 68 6 67 6 67 6	51 50 69 69 69 68 68 68 68 69 69 67 69 67 67 67 67 67	67 67 68 68 67	71 68 71 69 72 70	69 69 70 70 67		70 71 72 71 66	69 70 71 70 65		69 6	8 69	36 39 69 67 69 67 69 68 70 69 71 70 72 70 67 68 65 65	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1 71 70 70 69 71 71 73 72 73 71 66 66 642 46	70 70 69 71 72 71 65	17 70 1 70 1 70 6 71 1 72 1 70 1 62 9	16 15 70 70 70 70 69 70 71 72 73 74 71 73 54 51 38 35	14 70 70 69 71 74 73 56	13 12 69 69 68 68 69 69 71 71 73 73 73 73 61 61 35 38	2 11 69 69 69 71 73 73 60 38	10 68 69 69 71 73 72 59	9 4 68 70 68 69 68 69 70 71 72 73 72 73 57 57 37 41	68 68 68 70 72 72 62	69 6: 68 6: 69 6: 70 7: 72 7: 73 7: 68 7: 64 7:	5 4 8 68 8 68 9 69 1 70 3 72 4 72 1 69 0 67	68 68 68 68 68 69 70 70 72 72 73 73 71 71	67 67 68 70 71 72	
1:00 2:00 3:00 4:00 5:00 6:00 7:00	71 71 70 71 71 71 71 68 67	67 66 70 70 69 70 69 70 69 70 70 70 69 69 66 66		Afta	62 61 70 70 69 70 70 70 70 71 71 71 70 70 64 65 65 65 68 69	60 5 71 71 71 70 71 71 71 71 72 72 71 71 67 69 66 67 69 69	72 71 71 71 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69	55 71 1 70 1 69 6 69 70 70 6 68 6 67 68	54 53 70 70 70 69 68 67 69 68 69 69 69 68 67 67 67 67 68 69	52 70 6 69 6 68 6 69 6 70 6 68 6 67 6 67 6 68 6	51 50 69 69 69 69 68 68 68 68 69 69 67 69 67 67 67 67	67 67 68 68 67	71 68 71 69 72 70 72 70 70 68	69 69 70 70 67	68 70 69 70 70 72 70 71 66 67	70 71 72 71 66	69 70 71 70 65	59 70 70 71 71 72 70 71 55 64	69 6	8 69	36 39 69 67 69 68 70 69 71 70 72 70 70 67 68 65 69 65	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1 71 70 70 69 71 71 73 72 73 71 66 66 66 42 46 40 44	70 70 69 71 72 71 65 47	17 70 1 70 1 70 6 71 1 72 1 70 1 62 9 47 2 46 3	70 70 70 70 70 70 70 70 70 71 72 73 74 71 73 54 51 38 35 37 35	14 70 70 69 71 74 73 56 35	13 12 69 69 68 68 69 69 71 71 73 73 73 73 73 73 61 61 61 61 35 38 38 43	69 69 69 71 73 73 60 38 45	10 68 69 69 71 73 72 59 36	68 70 68 69 68 69 70 71 72 73 72 73 72 73 57 57 57 57 57 57	68 68 68 70 72 72 62 52 64	69 6: 68 6: 69 6: 70 7: 72 7: 73 7: 68 7: 64 7:	5 4 8 68 8 68 9 69 1 70 3 72 4 72 1 69 0 67 1 68	68 68 68 68 68 69 70 70 72 72 73 73 71 71	67 67 68 70 71 72 70 68	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00	71 71 70 71 71 71 71 68 67 70	67 66 70 70 69 70 69 70 69 70 70 70 69 69 66 66		Afta	62 61 70 70 69 70 70 70 70 71 71 71 70 70 64 65 65 65 68 69 69 69	60 5 71 71 71 74 71 71 71 71 72 72 71 71 67 66 66 61 69 69	9 5# 72 71 71 71 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71 71 71 70 71 71 71 72 71 72 72 70 69 69 69 69 69 69 69	55 71 1 70 1 69 6 69 70 70 6 68 6 67 68 6	54 53 70 70 70 69 68 67 69 68 69 69 69 68 67 67 67 67 68 69 69 68	52 70 69 68 66 69 66 67 66 67 66 68 69 69 69 69 69 69 69 69 69 69 69 69 69	51 50 69 69 69 68 68 68 68 69 69 67 67 67 67 67 68 68 68 68 68 68 68 68 68 68 68 68 68	67 67 68 68 67	71 68 71 69 72 70 72 70 70 68	69 69 70 70 67	68 70 69 70 70 72 70 71 66 67	70 71 72 71 66	69 70 71 70 65	59 70 70 71 71 72 70 71 55 64	69 6	8 69	36 39 69 67 69 68 68 70 69 71 70 67 68 65 69 65 70 67	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1 70 70 70 69 71 71 73 72 73 71 66 66 42 46 40 44 61 64	70 70 69 71 72 71 65 47 46 63	17 70 1 70 6 71 1 72 1 70 6 62 9 47 3 46 3	70 70 70 70 70 70 70 70 70 70 70 71 72 74 71 73 54 51 38 35 37 35 56 57	70 70 69 71 74 73 56 35 37 61	13 12 69 69 68 68 69 69 71 71 73 73 73 73 61 61 61 61 35 38 43 65 67	2 11 69 69 69 71 73 73 60 38 45	10 68 69 69 71 73 72 59 36 47	9 4 68 70 68 69 68 69 70 71 72 73 72 73 57 57 37 41 52 59 67 68	68 68 68 70 72 72 62 52 64 69	69 6: 68 6: 69 6: 70 7: 72 7: 73 7: 68 7: 64 7: 68 7: 70 7:	5 4 8 68 9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68	68 68 68 68 68 69 70 70 72 72 73 73 71 71 70 70 71 71 71 71	67 67 68 70 71 72 70 68 69	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00	71 71 70 71 71 71 71 68 67 70 70	67 66 70 70 69 70 69 70 69 70 70 70 69 69 66 66		Afta	62 61 70 70 69 70 70 70 70 71 71 71 70 70 64 65 65 65 68 69 69 69 68 69	60 5 71 71 71 74 71 71 71 71 72 72 71 71 67 66 66 61 69 69 70 71 71 71	9 58 72 71 71 71 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69 69 69 69 69	55 71 1 70 1 69 6 69 6 70 70 6 68 6 67 6 68 6	54 53 70 70 69 68 67 69 68 69 69 69 68 67 67 67 67 68 69 68 69 68 68	52 70 69 6 69 6 69 6 70 68 6 67 6 67 6 68 6 69 6	51 50 69 69 69 68 68 68 68 69 69 67 67 67 67 67 67 68 68 68 68 68 68 68 67	67 67 68 68 67	71 68 71 69 72 70 72 70 70 68	69 69 70 70 67	68 70 69 70 70 72 70 71 66 67	70 71 72 71 66	69 70 71 70 65	59 70 70 71 71 72 70 71 55 64	69 6	8 69	36 3! 69 67 69 67 69 68 70 69 71 70 72 70 70 67 68 65 69 65 70 67 71 68	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1: 71 70 70 69 71 71 73 72 73 71 66 66 66 42 46 40 44 61 64 71 70	70 70 69 71 72 71 65 47 46 63 69	17 70 1 70 6 71 1 72 1 70 1 62 9 47 2 46 2 68 68	16 15 70 70 70 70 70 70 69 70 71 72 73 74 71 73 54 51 38 35 37 35 56 57 69 72	70 70 69 71 74 73 56 35 37 61 71	13 12 69 69 69 68 68 69 69 71 71 73 73 73 73 74 61 61 61 61 65 67 69 69	2 11 69 69 69 71 73 73 60 38 45 68 70	10 68 69 69 71 73 72 59 36 47 67	9 4 68 70 68 69 70 71 72 73 72 73 57 57 57 57 57 68 68 69 69	68 68 68 70 72 72 62 52 64 69	6 69 61 69 61 70 71 72 73 74 68 71 68 71 70 71 70 71 70 71	5 4 8 68 8 68 9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68	68 68 68 69 70 70 72 72 73 73 71 71 70 70 71 71 71 71 71 71 71 71 71 71 71	67 67 68 70 71 72 70 68 69 69	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00	71 71 70 71 71 71 71 68 67 70 70 71 70	67 66 70 70 69 70 69 70 69 70 70 70 69 69 66 66		Afta	**************************************	60 571 771 771 771 771 771 771 771 771 771	9 58 72 71 71 71 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69 69 69 71 70 71 70	55 71 1 70 1 69 6 69 6 70 70 6 68 6 67 6 68 6 68 6	54 53 70 70 70 69 68 67 69 68 69 68 67 67 67 67 67 67 68 69 69 68 69 68	52 70 69 6 69 6 69 6 70 68 6 67 6 68 6 69 6 68 6 67 6	51 50 69 69 69 69 69 69 69 69 69 69 69 69 67 67 67 67 67 67 68 68 69 68 68 67 68 67 68 67 68 67 68	67 67 68 68 67	71 68 71 69 72 70 72 70 70 68	69 69 70 70 67	68 70 69 70 70 72 70 71 66 67	70 71 72 71 66	69 70 71 70 65	59 70 70 71 71 72 70 71 55 64	69 6	8 69	36 3! 69 67 69 67 69 68 70 69 71 70 72 70 70 67 68 65 69 65 70 67 71 68	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1: 71 70 70 69 71 71 73 72 73 71 66 66 66 42 46 40 44 61 64 71 70 71 70 70 71 70	70 70 69 71 72 71 65 47 46 63 69 69	V	16 15 70 70 70 70 70 70 69 70 71 72 73 74 71 73 54 51 38 35 37 35 56 57 69 72 69 73	14 70 70 69 71 74 73 56 35 37 61 71	13 12 69 69 69 68 68 69 69 71 71 73 73 73 73 73 73 73 73 61 61 61 61 65 67 69 69 68 67	2 11 69 69 69 71 73 73 60 38 45 68 70 69	10 68 69 69 71 73 72 59 36 47 67 69 68	9 4 68 70 68 69 70 71 72 73 72 73 57 57 57 57 68 69 68 69 68 68	68 68 68 70 72 72 62 52 64 69 69	69 6: 68 6: 69 6: 70 7: 72 7: 73 7: 68 7: 68 7: 70 7: 70 7: 70 7:	5 4 8 8 68 8 68 9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68	68 68 68 69 70 70 72 72 73 73 71 71 71 71 71 71 70 70	67 67 68 70 71 72 70 68 69 69	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00	71 71 70 71 71 71 71 68 67 70 70 71 70	67 66 70 70 69 70 69 70 70 70 70 70 69 69 66 66 66 66 68 68 68 68 68 68 68 68		Afta	**************************************	60 571 771 771 771 771 771 771 771 771 771	9 5\$ 172 171 171 171 171 171 171 171 171	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69 69 69 71 70 71 70 71 70	55 71 1 70 70 69 69 69 70 68 68 68 68 68 68 69 69 69	54 53 70 70 70 69 68 67 69 68 69 69 68 67 67 67 68 69 68 69 68 69 68 69 68	52 70 69 68 69 69 69 69 69 69 69 69 69 69 69 69 69	51 50 69 69 69 69 69 69 69 69 69 69 67 67 67 67 67 67 68 68 69 68 67 68 67 68 67 68 65 65	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68 70 66 70 67 70 67 69 67 70 66 67 64	69 69 70 70 67 66 67 66 66 65	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 65 66 64 65 66 64 65	70 71 72 71 66 64 64 65 65 65 66	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	70 71 72 70 71 72 70 71 65 64 62 61 63 63 65 65 64 65 63 62	69 6	8 69	36 39 67 69 67 69 68 70 69 71 70 72 70 70 67 69 65 69 65 70 67 71 68 71 68 71 68 71 68	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	24 1 70 70 71 70 70 69 71 71 73 72 73 71 66 66 66 64 42 46 61 64 71 70 71 70 71 70 71 70	9 12 70 70 69 71 72 71 65 46 63 69 69 69	68 (	16 15 70 70 70 70 70 69 70 71 72 72 74 71 73 54 51 38 35 37 35 56 57 69 72 69 73	14 70 70 69 71 74 73 56 35 37 61 71 71	13 12 69 69 69 68 68 69 69 71 71 71 73 73 73 73 73 73 61 61 61 61 35 38 38 43 65 67 69 69 68 67 69 67	2 11 69 69 69 71 73 73 60 38 45 68 70 69 67	10 68 69 69 71 73 72 59 36 47 67 69 68 65	9 4 68 70 68 69 68 69 70 71 72 73 73 74 152 59 67 68 69 68 68 68 64 65	68 68 68 70 72 72 62 52 64 69 69	69 6: 68 6: 69 6: 70 7: 72 7: 73 7: 68 7: 68 7: 70 7: 70 7: 70 7: 70 7:	5 4 8 68 8 68 9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68	68 68 68 68 68 69 70 70 72 72 73 73 71 71 70 70 71 71 71 71 71 71 71 70 71 71	67 67 68 70 71 72 70 68 69 69 69	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00	71 71 70 71 71 71 71 68 67 70 70 71 70 70	67 66 70 70 69 70 69 70 69 70 70 70 69 69 66 66		Afta	62 61 70 70 69 70 70 70 70 71 71 71 70 70 64 65 65 65 68 69 69 69 68 69 68 69 67 68 65 65	60 5 71 71 71 71 71 71 71 71 71 71 71 72 72 71 71 67 69 69 69 69 70 71 71 71 71 71 70 71 68 70	9 5\$ 1 72 2 71 1 71 2 72 2 72 1 71 2 70 7 68 6 69 1 70 7 68 1 71 1 71 1 71 1 71 1 71 1 71 1 71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69 71 70 71 70 71 70 70 70	55 71 1 70 1 69 69 69 70 68 68 68 68 68 68 69 69 68 68 68 68 68 68 68 68 68 68 68 68 68	54 53 70 70 70 69 68 67 69 68 69 69 68 67 67 67 67 68 69 68 69 68 69 68 69 68 69 68	52 70 6 69 6 69 6 70 6 68 6 67 6 68 6 69 6 60 68 6 60 68 6	51 50 69 69 69 68 68 68 69 69 67 67 67 68 68 67 68 67 68 67 68 67 68 67 68 65 64	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68	69 69 70 70 67 66 67 66 66 65	68 70 69 70 70 72 70 71 66 67	70 71 72 71 66 64 64 65 65 65 66	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	59 70 70 71 71 72 70 71 55 64	69 6	8 69	36 3:1 69 67 69 68 70 69 71 70 72 70 68 65 69 65 70 67 71 68 71 68 71 68	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 11 70 70 71 70 72 73 71 76 66 66 66 42 46 40 44 61 64 71 70 71 70 71 70 71 70 71 70 71 70 71 70	9 18 70 70 69 71 72 71 65 46 63 69 69 69 69	V	16 15 70 70 70 70 70 69 70 71 72 73 74 71 73 54 51 387 35 387 35 56 57 69 72 69 73 69 72	14 70 70 69 71 74 73 56 35 37 61 71 71 71	13 12 69 69 68 68 69 69 71 71 73 73 73 73 61 61 61 61 35 38 43 65 67 69 69 68 67 69 67 68 67	2 11 69 69 69 71 73 73 60 28 45 68 70 69 67 68	10 68 69 69 71 73 72 59 36 47 67 69 68 65 66	9 4 68 70 68 69 68 69 70 71 72 73 75 75 75 75 75 75 75 68 69 68 68 68 64 65 64 66	68 68 68 70 72 72 62 52 64 69 69 69 67 68	69 6: 69 6: 70 7: 72 7: 73 7: 68 7: 70 7: 70 7: 69 7: 70 7:	9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68 1 68 1 68 1 68 1	68 68 68 68 68 69 70 70 72 72 73 73 71 71 70 70 71 71 71 71 71 71 71 71 71 71 71 71	67 67 68 70 71 72 70 68 69 69 69 69 68	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 14:00	71 71 70 71 71 71 71 68 67 70 70 71 70 68 63	67 66 70 70 69 70 69 70 70 70 70 70 69 69 66 66 66 66 68 68 68 68 68 68 68 68		Afta	62 61 70 70 69 70 70 70 70 71 71 71 71 70 70 64 65 65 66 69 69 69 69 68 69 67 68 69 67 68 68 69 67 68	60 5 71 71 71 71 71 71 71 72 72 71 71 67 69 66 66 66 66 67 71 71 71 71 71 71 71 71 70 71 68 76	72 71 71 71 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71 71 70 71 71 72 72 73 72 70 69 69 69 69 69 69 69 71 70 71 70 71 70 71 70 70 70 58 62	55 71 70 70 69 69 69 69 68 68 69 69 68 68 69 69 68 68 68 68 68 69 69 68 68 68 68 68 68 68 68 68 68 68 68 68	54 53 70 70 70 69 68 67 69 68 69 69 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68	52 70 69 68 6 69 6 70 6 68 6 67 6 68 6 69 6 69 6 69 6 69 6 69 6 69 6 69	51 50 69 69 69 68 68 68 68 69 69 67 67 67 67 68 68 68 67 68 67 68 65 66 65 66 65	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68 70 66 70 67 70 67 69 67 70 66 67 64	69 69 70 70 67 66 67 66 66 65	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 65 66 64 65 66 64 65	70 71 72 71 66 64 64 65 65 65 66	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	70 71 72 70 71 72 70 71 65 64 62 61 63 63 65 65 64 65 63 62	69 6	8 69	36 3: 69 67 69 68 70 69 71 70 72 70 70 67 71 68 65 65 70 67 71 68 71 68 71 68 65 66	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1 70 70 70 69 69 69 70 70 70 70 70 70 70 70 70 70 70 70 70	70 70 69 71 71 65 47 46 63 69 69 69 69 69 69	68 (	16 15 70 70 70 70 70 70 70 70 70 70 70 70 71 72 73 74 71 73 35 35 37 35 56 57 69 73 69 73 69 73 69 73 69 73	14 70 70 69 71 74 73 56 35 37 61 71 71 71 71	13 12 69 69 68 68 69 69 71 71 73 73 73 73 73 73 61 61 61 61 35 38 43 65 67 69 69 68 67 69 67 68 67 67 67	2 11 69 69 69 71 73 73 60 38 45 68 70 69 67 68	10 68 69 69 71 73 72 59 36 47 67 69 68 65 66	9 4 68 70 68 69 68 69 77 71 72 73 77 71 72 73 77 72 73 68 69 68 68 64 65 64 66 67 68	68 68 68 70 72 72 62 52 64 69 69 69	69 6: 69 6: 70 7: 72 7: 73 7: 68 7: 70 7:	9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68 1 68 1 68 1 68 1	68 68 68 69 70 70 70 72 72 73 73 73 74 74 74 74 74 74 74 74 74 74 74 74 74	67 67 68 70 71 72 70 68 69 69 69 69 68 68	
1:00 2:00 3:00 4:00 5:00 5:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00	71 71 70 71 71 71 71 68 67 70 70 71 70 70 68 63	67 66 70 70 69 70 69 70 70 70 69 69 66 66 68 68 68 68		Afta	**************************************	60 5 71 71 71 71 71 71 71 72 73 71 71 71 72 73 71 71 71 70 71 71 71 71 71 70 71 71 70 71 46 45	9 58 72 71 71 71 71 71 71 71 71 71 71 71 71 71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69 69 69 71 70 71 70 71 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 7	55 71 70 70 69 69 69 68 68 68 69 69 69 68 61 62 22 23	54 53 70 70 70 69 68 67 69 68 69 69 69 69 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68	52 70 69 68 66 69 67 70 66 68 66 67 66 68 66 67 66 68 67 67 66 66 68 67 68 68 68 68 68 68 68 68 68 68 68 68	51 50 69 69 69 68 68 68 68 68 68 67 67 67 67 67 68 68 67 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 68 68 68 68 68 68 68 68 68 68 68	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68 70 66 70 67 70 67 69 67 70 66 67 64	69 69 70 70 67 66 67 66 66 65	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 65 66 64 65 66 64 65	70 71 72 71 66 64 64 65 65 65 66	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	70 71 72 70 71 72 70 71 65 64 62 61 63 63 65 65 64 65 63 62	69 6	8 69	36 39 69 67 69 67 69 68 70 69 71 70 72 70 70 67 69 65 69 65 70 67 71 68 71 68 71 68 66 64 58 66 64 58	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 11 70 70 71 70 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 70 70 70 70 70 70 70 70 70 70 70 70	70 70 69 71 71 65 47 46 63 69 69 69 68 68 69 70	68 (	16 15 70 70 70 70 70 70 70 70 70 70 70 70 70	70 70 69 71 74 73 56 35 37 61 71 71 71 71 70 69	13 12 69 69 69 68 68 69 69 71 71 73 73 73 73 61 61 61 61 35 38 43 65 67 69 69 68 67 68 67 67 67 66 67	2 11 69 69 69 71 73 73 60 38 45 68 70 69 67 68 68	10 68 69 69 71 73 72 59 36 47 67 69 68 65 66 67 66	9 4 68 70 68 69 68 69 70 71 72 73 77 72 73 77 41 52 59 67 68 69 68 68 64 66 67 68 66 67 68 68 68 68 68 68 68 68 68 68 68 68 68	68 68 68 70 72 72 62 52 64 69 69 69 69	69 6: 68 6: 69 6: 70 7: 72 7: 73 7: 73 7: 68 7: 68 7: 70 7: 70 7: 70 7: 70 7: 70 7: 70 7: 71 7:	9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68 1 68 1 68 1 68 1	68 68 68 68 69 70 70 70 72 72 73 73 73 74 74 74 74 74 74 74 74 74 74 74 74 74	67 67 68 70 71 72 70 68 69 69 69 69 69 68 68 68	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 14:00 16:00	71 71 70 71 71 71 71 68 67 70 70 71 70 70 68 63 49	67 66 70 70 69 70 69 70 70 70 70 70 69 69 66 66 66 66 68 68 68 68 68 68 68 68		Afta	**************************************	60 5 71 71 71 71 71 71 71 71 71 71 71 71 72 72 72 71 71 71 66 67 66 69 66 70 71 71 71 70 71 71 68 76 68 76 68 76 68 76	9 58 72 72 71 71 71 70 70 70 70 70 70 70 70 70 70 70 70 70	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69 69 69 71 70 71 70 7	55 71 70 7 70 7 69 69 7 70 68 68 68 68 68 68 68 68 68 68 68 68 68	54 53 70 70 70 69 68 67 69 68 69 68 69 68 67 67 67 67 68 69 68 69 68 69 68 69 68 69 68 69 68 60 68	52 70 69 68 66 69 68 66 68 66 66 66 66 66 66 66 67 27 27 28 18 146	51 50 69 69 69 69 69 67 67 67 67 68 67 67 68 67 69 68 67 69 68 67 69 68 67 69 68 67 69 68 67 68 67 68 67 68 67 68 67 68 67 68 68 67 68 68 68 68 68 68 68 68 68 68 68 68 68	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68 70 66 70 67 70 67 69 67 70 66 67 64	69 69 70 70 67 66 67 66 66 65	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 65 66 64 65 66 64 65	70 71 72 71 66 64 64 65 65 65 66	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	70 71 72 70 71 72 70 71 65 64 62 61 63 63 65 65 64 65 63 62	69 6	8 69	36 3! 69 67 69 68 70 69 71 70 67 68 65 65 70 67 71 68 65 66 64 58 66 64 58 66 64 58 62 65 65 65 65 65 65 65 65 65 65 65 65 65	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1 71 70 70 69 71 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 71 70 72 70 72 70 70 70 70 70 70 70 70 70 70 70 70 70	70 70 70 71 72 71 46 63 69 69 69 69 69 69 69 69 69 70 70 70	68 (	16 15 70 70 70 70 70 70 70 71 72 73 74 71 72 73 74 71 73 54 51 35 37 35 37 35 37 35 37 35 37 35 37 35 37 35	70 70 70 69 71 73 56 35 37 61 71 71 71 71 70 69 71	13 12 69 69 69 69 69 69 69 69 69 69 69 69 69	2 11 69 69 69 71 73 73 60 38 45 68 70 69 67 68 68 68	10 68 69 69 71 73 72 59 36 47 67 69 68 65 66 67 66	9 4 68 70 68 69 68 69 77 77 71 72 73 72 73 75 57 57 57 68 69 68 68 69 68 68 64 65 64 66 67 68 68 67 68 67 68 67 68	68 68 68 70 72 72 62 52 64 69 69 69 69 69	69 6: 69 6: 69 6: 70 7: 72 7: 73 7: 73 7: 68 7: 68 7: 70 7: 70 7: 70 7: 70 7: 71 7: 71 7: 71 7:	9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68 1 68 1 68 1 68 1	68 68 68 69 70 70 72 72 73 73 73 71 71 71 71 71 71 71 71 71 71 71 71 71	67 67 68 70 71 72 70 68 69 69 69 69 68 68 68 68	
1:00 2:00 3:00 4:00 6:00 7:00 8:00 9:00 10:00 12:00 14:00 15:00 16:00	71 71 70 71 71 71 71 68 67 70 70 70 70 70 68 63 49 37	67 66 70 70 69 70 69 70 70 70 69 69 66 66 68 68 68 68		Afta	62 61 70 70 69 70 70 70 70 71 71 71 70 70 64 65 65 65 68 69 69 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69	60 5 71 71 71 71 71 71 71 71 72 72 71 71 71 71 71 71 71 71 71 71 70 71 71 71 70 71 7	58   72   71   71   71   71   71   71   71	57 56 72 71 71 71 71 71 71 71 71 71 72 72 72 72 70 69 69 69 69 69 69 69 69 69 69 69 69 69 69 69 60 69 60 69 61 70 71 70 71 70 71 70 71 70 71 70 72 72 72 72 73 72 74 70 75 72 75 72 76 70 77 70 70 71 70 71 70 72 72 73 72 74 70 75 72 75	55 71 1 70 1 69 69 70 70 70 68 68 68 68 69 69 68 69 69 68 69 69 69 68 61 61 62 22 23 22 23 22 24 28 28 28 28 28 28 28 28 28 28 28 28 28	54 53 70 70 70 69 68 67 69 69 69 69 69 69 69 69 69 68 69 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68 69 68	52 70 6 69 6 68 6 69 6 70 6 67 6 68 6 69 6 68 6 69 6 70 6 68 68 6 69 60 68 60	51 50 69 69 69 69 68 68 68 68 67 67 67 67 67 68 68 68 68 68 68 68 68 68 68 68 68 68	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68 70 66 70 67 70 67 69 67 70 66 67 64	69 69 70 70 67 66 67 66 66 65	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 65 66 64 65 66 64 65	70 71 72 71 66 64 64 65 65 65 66	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	70 71 72 70 71 72 70 71 65 64 62 61 63 63 65 65 64 65 63 62	69 6	8 69	36 3: 69 67 69 67 69 68 70 69 67 70 67 70 67 71 68 65 69 65 71 68 65 66 64 58 52 65 56 66 64 58 69 67 67 67 71 68 67 68 66 64 58 52 65 56 66 64 58 69 69 69 69 69 69 69 69 69 69 69 69 69	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1: 71 70 70 70 70 70 70 71 70 70 71 71 70 71 71 70 71 71 71 71 71 71 71 71 71 71 71 71 71	70 70 70 70 71 72 71 65 47 46 63 69 69 69 69 69 69 69 69 69 69 69 69 69	68 (	16 15 70 70 70 70 70 70 70 70 71 72 73 74 71 73 75 75 76 77 77 70 73	14 70 70 69 71 74 73 56 35 37 61 71 71 71 71 71 71 71 70 69 71 70	13 12 69 69 69 68 68 69 69 71 71 73 73 73 73 73 73 61 61 61 35 38 43 65 67 69 69 68 67 67 66 66 66 67 68 67	2 11 69 69 69 71 73 73 60 63 65 65 65 65 65 65 67 67 67 67 67 67 68 68 68 68 67 67 67 67 67 67 68 68 68 68 68 67 67 67 67 67 67 68 68 68 68 68 68 68 67 67 67 67 67 67 68 68 68 68 68 68 68 68 67 67 67 67 67 67 68 68 68 68 68 68 68 68 68 68 68 67 67 67 67 67 67 67 67 67 68 68 68 68 68 68 68 68 68 68 68 68 68	10 68 69 69 71 73 72 59 36 47 67 68 68 65 66 67 66	9 4 68 70 68 69 68 69 70 71 72 73 73 741 52 59 67 68 69 68 64 65 64 65 67 68 67 68 67 68 67 68 66 67 68 66 67 68 66 67 68 66 67 68 67 67 68 67 67 68 67 67 68 67 67 68 67 67 67 67 67 67 67 67 67 67 67 67 67	68 68 68 68 70 72 72 62 52 64 69 69 69 69 69 69	69 6: 68 6: 69 6: 70 7: 72 7: 73 7: 68 7: 70 7: 70 7: 70 7: 71 7: 71 7: 71 7: 71 7:	9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68 1 68 1 68 1 68 1	68 68 68 69 70 70 72 72 72 73 73 74 74 74 74 74 74 74 74 74 74 74 74 74	67 67 68 70 71 72 70 68 69 69 69 69 68 68 68 68	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 14:00 15:00 16:00 17:00 18:00	71 71 70 71 71 71 71 71 68 67 70 70 71 70 68 63 49 37 31 36	67 66 70 70 70 70 69 70 70 69 70 70 70 69 66 66 66 66 66 66 66 68 68 68 68 68 68		Afta	7 Speed  62 61  70 70  70 70  70 70  71 71  71 71  70 70  64 65  65 65  66 69  69 69  68 69  68 69  69 69  68 69  68 69  63 69  63 69  63 69  64 69  63 69  64 69  65 66	60 5 71 71 71 71 71 71 71 71 72 72 73 71 71 67 64 68 67 70 71 71 71 71 71 71 71 71 72 72 73 74 74 75 76 70 71 71 71 72 72 73 74 75 76 70 71 71 71 72 72 73 74 75 75 76 76 76 76 77 77 77 78 78 78 78 78 78 78 78 78 78	58   72   71   71   71   71   71   71   71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 72 73 76 69 69 69 69 69 69 70 70 71 70 71 70 71 70 71 70 72 72 72 72 72 72 73 72 74 70 75 62 75 20 76 21 76 22 76 64 65	55 71 1 70 1 69 6 69 70 70 70 6 68 6 68 6 68 6 69 69 6 69 69 62 23 2 21 22 25 5 55 65 65	54 53 70 70 70 69 68 67 69 69 69 69 69 69 69 69 69 68 69 68 69 68 69 68 69 62 22 21 20 18 22 26	52 70 6 69 6 68 6 69 6 70 6 67 6 68 6 69 6 60 6 60 6 70 6 60 60 6 60 60 60 60 60 60 60 60 60 60 60 60 60 6	51 50 69 69 69 69 69 69 69 69 69 69 69 69 69	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68 70 66 70 67 70 67 69 67 70 66 67 64	69 69 70 70 67 66 67 66 66 65	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 65 66 64 65 66 64 65	70 71 72 71 66 64 64 65 65 65 66	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	70 71 72 70 71 72 70 71 65 64 62 61 63 63 65 65 64 65 63 62	69 6	8 69	36 3: 69 67 69 67 69 67 70 69 77 77 77 68 65 69 65 77 11 68 77 68 66 64 58 65 56 69 66 55 56 69 66 70 67 70 70 70 70 70 70 70 70 70 70 70	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1 70 70 70 70 70 70 70 70 70 70 70 70 70	70 70 70 69 71 72 71 46 63 69 69 69 69 69 69 69	68 (	16 15 70 70 70 70 70 70 69 70 71 72 73 74 71 73 55 51 56 57 69 73 69 72 69 72 69 73 69 73 69 73 69 73 70 73 70 73	14 70 70 69 71 74 73 56 35 37 61 71 71 71 71 71 70 69 71 71	13 12 69 69 69 68 68 68 69 69 71 71 73 73 73 73 73 73 73 73 61 61 61 61 61 61 65 67 68 67 68 67 67 67 67 68 67 68 67 68	2 11 69 69 69 69 69 71 73 73 60 28 45 66 66 68 68 68 67 69 69 67 69 67 69 67 68 68 68 68 68 69 69 69 69 69 69 69 69 69 69 69 69 69	10 68 69 69 71 72 59 36 47 67 68 65 66 67 68	9 4 68 70 68 69 70 71 72 73 73 74 15 52 59 67 68 69 68 64 65 64 66 67 68 67 67 68 67 67 67 67 67 67 67 67 67 67 67 67 67	60 60 60 60 60 60 60 60 60 60 60 60 60 6	6 69 64 69 69 69 69 69 69 69 70 70 70 70 70 70 70 70 70 70 70 70 70	9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68 1 68 1 68 1 68 1	68 68 68 69 70 70 72 72 72 73 73 74 74 74 74 74 74 74 74 74 74 74 74 74	67 67 68 70 71 72 70 68 69 69 69 69 68 68 68 68	
1:00 2:00 3:00 4:00 6:00 7:00 8:00 9:00 10:00 12:00 14:00 15:00 16:00	71 71 70 71 71 71 71 71 70 70 70 70 70 68 63 49 37 31 36 61	67 66 70 70 70 69 70 69 70 70 70 70 70 69 69 66 66 66 66 66 66 66 68 68 68 68 68 68		Afta	F Speed  62 61  70 70  70 70  70 71  71 71  71 71  70 70  64 65  65 65  68 69  69 68 69  68 69  68 69  68 69  68 69  63 69  63 69  63 69  63 69  64 63 69  65 66  67 68  69 69  68 69  69 68 69  68 69  69 68 69  69 68 69  68 69  68 69  68 69  68 69  68 69  69 68 69  68 69  69 68 69  68 69  69 68 69  60 68 69  60 68 69  60 68 69  60 68 69  60 68 69  60 68 69  60 68 69  60 68 69  60 68 69  60 68 69  60 69  60 68 69	60 5 71 71 71 71 71 71 71 71 72 72 73 67 69 66 67 70 71 71 71 71 71 71 71 71 71 72 72 72 72 72 73 74 75 75 76 76 77 77 78 78 78 78 78 78 78 78 78 78 78	58	57 56 72 71 71 71 71 71 71 71 72 72 72 72 70 69 69 69 69 69 69 69 71 70 71 70 71 70 7	55 71 70 70 69 69 70 70 68 68 68 68 69 69 68 61 32 3 32 32 32 32 32 32 32 32 32 32 32 3	54 53 70 70 70 70 69 68 67 69 68 69 69 69 68 69 68 69 68 69 68 69 68 69 68 61 58 32 30 22 21 120 18 22 26 63 60 69 69	52 70 6 69 6 68 6 69 6 67 6 68 6 69 6 67 6 68 6 69 6 61 60 6 62 6 63 6 64 66 66 66 66 66 66 66 66 66 66 66 66 6	55	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68 70 66 70 67 70 67 69 67 70 66 67 64	69 69 70 70 67 66 67 66 66 65 63 61 56 33 26 25 44	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 65 66 64 65 66 64 65	70 71 72 71 66 64 65 65 64 61 54 38 27 22 27 54 64	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	70 71 72 70 71 72 70 71 65 64 62 61 63 63 65 65 64 65 63 62	69 6	8 69	36 39 69 67 69 67 69 68 70 69 71 70 70 69 71 68 65 69 65 71 68 68 66 64 58 65 56 69 66 70 67 70 68	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1: 71 70 70 70 70 70 70 70 70 70 70 70 70 70	9 18 70 70 69 71 65 69 69 69 69 69 69 69 69 70 70 71	68 (	16 15 70 70 70 70 70 70 71 72 73 74 71 72 73 74 75 69 72 69 72 69 72 69 72 69 73 69 72 70 73 70 73 70 73 70 73 70 73 71 72 71 73	14 70 70 70 69 71 74 73 56 61 71 71 71 70 69 71 71 70	13 12 12 69 69 69 69 69 69 77 77 73 73 73 73 73 73 73 73 73 73 73	2 11 69 69 69 69 77 73 73 60 38 45 66 66 68 68 67 69 69 69 69 69 69 69 69 69 69 69 69 69	10 68 69 69 71 73 72 59 36 47 67 68 65 66 67 66 67 68 67 68 67 68 69 69 69 69 69 69 69 69 69 69 69 69 69	9 4 68 70 68 69 68 69 70 71 72 73 73 741 55 59 67 68 68 69 68 68 64 65 64 66 67 68 67 68 67 68 67 68 67 68 67 68 67 68 67 68 67 68 67 68 68 68 68 68 68 68 68 68 68 68 68 68	68 68 68 70 72 72 62 64 69 69 69 69 69 69 68 68 69 69 69 69 68 69 69 69 69 69 69 69 69 69 69 69 69 69	69 64 69 66 69 66 69 66 69 66 67 70 77 72 73 77 68 77 70 77 77 77 77 77 77 77 77 77 77 77	9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68 1 68 1 68 1 68 1	68 68 69 70 70 70 72 72 73 73 71 71 71 71 71 71 71 71 71 71 71 71 71	67 67 68 70 71 72 70 68 69 69 69 69 68 68 68 68 68	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 10:00 11:00 12:00 12:00 15:00 17:00 18:00	71 71 70 71 71 71 71 71 68 67 70 70 70 70 70 68 63 49 37 31 36 61	67 66 70 70 69 70 69 70 69 70 70 70 69 69 66 66 68 68 68 68 68 68 68 68 68 68 68 67 66 66 66 65 57 58 57 58		Afta	62 61 70 70 70 70 70 71 71 71 71 70 70 64 65 65 66 69 69 68 69 67 68 68 69 67 68 68 69 67 68 68 69 67 68 68 69 67 68 65 66 65 66 65 66 65 66 65 66 69 67 68 65 66 65 66 65 66 67 68 65 66 65 66 65 66 67 68 65 66 65 65	60 5 71 71 71 71 71 71 71 71 71 71 71 71 71	5	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69 69 69 71 70 71 70 70 70 70 70 70 70 71 70 72 25 30 21 24 19 21 22 25 30 27 24 55 46 65 77 72 72	55 71 : 70 : 69 : 69 : 69 : 67 : 68 : 68 : 68 : 68 : 69 : 69 : 67 : 68 : 69 : 69 : 69 : 69 : 69 : 69 : 69	54 53 53 69 68 69 69 68 67 67 67 67 67 67 67 69 68 69 69 69 69 69 69 69 69 69 69 69 69 69	52 70 6 69 6 69 6 69 6 69 6 69 6 69 6 60 6 66 66 66 66 66 66 66 66 66 66 66	51 59 69 69 69 69 69 69 69 69 69 69 69 69 69	67 67 68 68 67 67 67 67 66 66	71 68 71 69 72 70 72 70 70 68 70 66 70 67 70 67 69 67 70 66 67 64	69 69 70 70 67 66 67 66 66 65 63 61 56 33 26 25 44	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 65 64 65 64 65 61 61 58 54 51 39 31 25 22 18 22 21 45 47 62 63	70 71 72 71 66 64 65 65 64 61 54 38 27 22 27 54 64	69 170 171 170 170 165 163 164 165 166 165 162 162 162 162 162 162 162 162 162 163 164 165 165 165 165 165 165 165 165 165 165	70 71 72 70 71 72 70 71 65 64 62 61 63 63 65 65 64 65 63 62	69 6	8 69	36 39 69 67 69 67 69 68 70 69 71 70 67 71 68 65 69 66 64 58 52 65 66 66 66 66 67 67 70 67 70 68 70 67 70 68 70 67 70 68 70 67 70 68 70 67 70 68 70 67 70 68 70 70 68 70 70 68 70 68 70 70 70 68 70 70 70 70 70 70 70 70 70 70 70 70 70	66 6	5 68	68 68	67 68	69 (	69 69	70	70 70	70	20 1: 71 70 71 70 70 69 71 71 70 71 70 72 71 70 71 71 70 71 71 70 71 71 71 71 71 71 71 71 71 71 71 71 71	9 18 70 70 70 70 71 46 63 69 69 69 68 68 69 70 70 71 71	68 (	16 15 15 170 70 70 70 70 70 71 72 73 74 71 73 75 55 69 72 73 74 71 75 75 75 75 75 75 75 75 75 75 75 75 75	14 70 70 69 71 74 72 56 35 37 71 71 71 70 69 71 70 71 70 71 71 70 71 71 71 71 71 71 71 71 71 71 71 71 71	13 12 12 13 12 12 13 12 12 13 13 12 12 13 13 13 13 13 13 13 13 13 13 13 13 13	2 11 69 69 69 69 71 73 73 60 62 62 63 65 65 65 65 65 65 65 65 65 65 65 65 65	10 68 69 69 71 72 72 59 36 47 67 68 68 65 66 67 68 67 68 67 68 67 68 69 69 69 69 69 69 69 69 69 69 69 69 69	9 4 68 70 66 69 70 71 72 73 73 77 72 73 73 74 15 52 59 68 68 68 66 66 67 68 66 67 68 66 67 67 68 66 67 67 68 66 67 67 68 66 67 67 68 66 67 67 68 66 67 67 68 66 67 67 68 66 67 67 68 68 70 68 70 68 70 68 70 68 70 68 70 68 70 70 68 70 70 68 70 70 68 70 70 68 70 70 70 70 70 70 70 70 70 70 70 70 70	68 68 68 68 67 70 72 72 62 55 64 69 69 69 69 69 69 69 69 69 68 68 69 69 69 69 69 69 69 69 69 69 69 69 69	69 66 66 66 66 67 70 77 72 77 77 70 77 70 77 77 77 77 77 77 77 77	9 69 1 70 3 72 4 72 1 69 0 67 1 68 1 68 1 68 1 68 1 68 1 68 1 68 1	68 68 69 70 70 70 72 72 73 73 71 71 71 71 71 71 71 71 71 71 71 71 71	67 67 68 70 71 72 70 68 69 69 69 69 69 68 68 68 68 68 68	
1:00 2:00 3:00 5:00 6:00 5:00 8:00 9:00 10:00 11:00 12:00 12:00 14:00 17:00 17:00 19:00 20:00 21:00 21:00	71 71 71 68 67 70 70 68 63 49 37 31 36 61 71 72 72 72	67 66 70 70 69 70 69 70 69 70 69 69 66 66 68 68 68 68 68 68 68 67 66 66 65 63 67 57 58 50 51 50 70 70 70	65 6.7 70 70 70 70 70 70 70 70 70 70 70 70 70	Afta	62 61 70 70 70 70 70 71 71 71 71 72 70 65 65 65 66 65 66 65 65 66 65 65	66 5 71 70 71 71 71 71 70 71 68 70 68 40 49 40 25 22 21 20 19 22 21 23 22 25 72 72 72 72 72 72 72 72 72 72 72 72	58   72   71   71   71   71   71   71   71	57 56 72 71 71 71 71 70 71 71 72 71 72 72 70 69 69 69 69 69 69 69 69 69 71 70 71 70 71 70 71 70 71 70 72 25 30 21 24 19 21 22 22 27 71 72 72 72 71 72 72	55 71 1 70 1 69 1 69 1 69 1 69 1 69 1 68 1 68 1 68	54 53 53 60 60 60 60 60 60 60 60 60 60 60 60 60	52 70 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	51 59 59 60 60 60 60 60 60 60 60 60 60 60 60 60	67 67 68 68 67 67 67 67 66 64 63 52 24 16 14 31 62 67 67	71 68 71 69 72 70 72 70 70 66 77 66 67 64 65 63 55 57 72 69 64 70 66 64 70 66 64 70 66 70 66 70 66 70 66 70 66 70 66 70 66 70 66 70 66 71 67	69 69 70 70 67 66 67 66 65 63 61 56 25 44 64 66	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 64 65 61 61 51 39 31 25 32 21 45 47 62 63 65 67 66 68 67 69	70 71 72 71 64 64 65 65 65 65 65 67 22 27 66 64 66 66 66 66 66 66 66 66 66 66 66	69 70 71 70 65 65 66 65 66 65 62 62 62 63 63 64 65 66 65 65 65 66 65 65 66 65 65 66 65 65	199 70 71 71 72 71 71 72 71 73 74 75 64 73 63 63 65 65 65 75 66 75 76 76 76 76 76 76 76 77 76 77 76 77 77	69 6	8 69	36 3: 69 67 69 67 69 68 70 67 71 68 68 66 64 58 52 65 56 69 65 67 07 67 70 68	66 6	5 68	68 68	67 68	69 (	69 69	70 70 70 70 72 72 67 64 64 67 69 69 68 67 65 67 67 71 71	70 70 70 71 71 71 71 71 71 72 72 72 72 72 72 72 72	70 70 70 70 71 72 72 63 48 47 61 69 69 68 67 68 71 71 71	71 70 71 70 71 70 70 69 71 71 73 72 73 71 76 66 66 40 44 40 71 70 71 70 71 70 71 70 71 70 72 70 71 70 72 70 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71	9 12 70 70 69 71 65 65 69 69 69 69 69 70 70 71 71 71 71	68 (	16 15 15 16 17 17 17 17 17 17 17 17 17 17 17 17 17	14 70 70 69 71 74 56 35 37 71 71 71 71 70 69 71 71 70 71 71 71 71 71 71 71 71 71 71 71 71 71	13 12 12 12 13 12 12 13 12 13 13 13 13 13 13 13 13 13 13 13 13 13	69 69 69 71 73 73 60 60 69 67 68 68 68 68 69 69 70 69 69 70 69 69 70 69 69 69 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 70 70 69 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 70 70 69 69 69 69 70 69 69 69 69 69 70 69 69 69 69 69 69 69 69 69 69 69 69 69	10 68 69 71 73 72 36 47 69 68 65 66 67 66 67 68 69 70	9 8 68 70 68 69 69 69 69 69 69 69 69 69 69 69 69 69	68 68 68 70 72 72 64 69 69 69 69 69 69 69 69 69 69 69 69 69	69 64 66 66 66 67 70 77 72 72 73 74 77 70 70	9 69 69 1 70 3 72 4 72 1 69 1 68 1 68 1 68 1 68 1 68 1 68 1 68	68 68 68 69 70 70 70 70 70 70 70 70 71 71 71 71 71 71 71 71 71 71 71 71 71	67 67 68 70 71 72 70 68 69 69 69 68 68 68 68 68 68 68 68	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 9:00 10:00 12:00 12:00 14:00 15:00 16:00 17:00 16:00 17:00 20:00 21:00 22:00 22:00 22:00	71 71 71 68 67 70 70 68 63 69 37 31 36 61 71 72 72 71	67 66 70 70 69 70 69 70 70 70 69 70 70 70 69 69 66 66 66 66 68 60 67 60 70 70 70 70 70	65 6.7 70 70 70 70 70 70 70 70 70 70 70 70 70	Afta 4 63 1 70 1 69 1 69 1 70 2 69 2 70 3 69 3 69 5 64 6 68 6 68 6 68 6 68 6 68 6 68 6 68 6	62 61 70 70 70 70 70 70 70 71 71 71 70 70 64 65 65 65 66 69 69 69 68 69 67 68 65 66 65 65 55 46 44 30 39 27 33 24 61 55 70 71 71 72	60 5 71 71 71 71 71 71 71 71 72 72 73 74 66 67 66 67 70 71 71 71 71 71 71 71 71 72 72 72 72 72 72 72 72 71 71 72 72 73 74 77 77 77 77 77 77 77 77 77 77 77 77		57 56 72 71 71 71 71 70 71 71 72 72 72 72 70 69 69 69 69 69 69 69 71 70 71 70 71 70 71 70 72 72 72 72 72 72 73 70 74 70 75 70 76 70 77 70 70 70 70 70 70 70 70 70 70 70 70 70 7	55 71 17 70 70 70 70 70 70 70 70 70 70 70 70 70	54 53 53 70 70 70 70 70 70 70 70 70 70 70 70 70	52 70 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	67 67 68 68 67 67 67 67 66 66 64 63 52 24 16 14 31 62 67 67 67 67	71 68 71 69 72 70 72 70 72 70 66 77 64 65 63 32 17 24 15 22 34 43 66 64 70 66 70 66 70 66 70 66 70 66 71 67 71 68	69 69 70 70 67 66 67 66 65 63 61 56 33 26 25 44 66 66 66	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 64 65 61 61 51 39 31 25 32 21 45 47 62 63 65 67 66 68 67 69	70 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 72 72 72 72 72 72 72 72 72 72 72 72	69 70 71 70 65 65 66 65 66 65 62 62 62 63 63 64 65 66 65 65 65 66 65 65 66 65 65 66 65 65	99 70 70 71 71 72 70 71 71 75 64 72 61 73 61 73 62 75 63 75 65 76 65 76 65 77 68 70 70	69 69 69 69 69 69 69 69 69 69 69 69 69 6	\$ 69 \$ 69 \$ 69 \$ 69 \$ 70 0 72 1 73 7 70 5 66 6 69 7 70 9 70 8 70 4 70 8 65 4 67 4 69 7 70 8 71 8 70 8 71 8 70 8 70 8 71	36 3: 69 67 69 67 69 67 70 67 69 65 70 67 11 68 71 68 65 66 66 69 65 70 67 70 68 68 69 65 70 67 70 68 69 65 69 66 69 66 69 66 69 66 69 66 69 66 69 68 68 69 69 69 69 68 69 69 69 69 69 69 69 69 69 69 69 69 69	66 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	5 68 68 68 68 68 68 68 68 68 68 68 68 68	68 68	67 68 68 68 68 68 68 70 68 71 68 68 71 68 68 68 68 68 68 68 68 68 68 68 68 68	69 68 68 69 70 70 70 66 64 68 69 69 69 69 69 69 69 69 69 69 69 69 69	69 69	70	70 70 70 71 71 71 71 71 71 72 72 72 72 72 72 72 72	70 70 70 70 71 72 72 63 48 47 61 69 69 68 67 68 71 71 71	20 1 70 70 70 69 71 70 70 70 69 69 69 70 70 71 71 71 71 71 71 71 71 71 71 71 71 71	9 1# 70 70 69 71 65 69 69 69 69 69 70 70 69 70 71 71 71 70 70 71 71 70 70 71 71 70 70 70 71 71 70 70 70 71 71 70 70 70 70 71 71 70 70 70 70 71 71 70 70 70 70 70 71 71 70 70 70 70 71 71 70 70 70 70 71 71 70 70 70 70 71 71 70 70 70 70 70 70 70 70 70 70 70 70 70	68 68 68 67 67 68 70 70 70 71 77 70 71 77 70 71 77 70 71	16 15 15 15 16 17 17 17 17 17 17 17 17 17 17 17 17 17	14 70 70 69 71 74 56 35 57 61 71 71 71 70 69 71 71 70 71 71 71 71 71 71 71 71 71 71 71 71 71	13 12 12 12 13 12 12 13 12 13 12 13 13 12 13 13 13 13 13 13 13 13 13 13 13 13 13	2 11 69 69 69 71 73 73 45 68 66 68 68 68 69 69 69 69 70 70 70 70 70	10 68 69 71 73 72 36 47 67 68 65 66 67 66 67 68 69 69 69	9 16 68 70 70 71 72 73 37 45 57 57 57 57 57 64 68 69 69 69 69 69 69 69 69 69 69 69 69 69	68 68 69 69 69 69 68 68 68 68 68 68 68 68 68 68 68 68 68	6 69 66 67 70 77 77 77 77 77 77 77 77 77 77 77 77	9 69 69 1 70 3 72 4 72 1 69 1 68 1 68 1 68 1 68 1 68 1 68 1 68	68 68 68 69 69 69 69 69 69 69 69 69 69	67 67 68 70 71 72 70 68 69 69 69 69 68 68 68 68 68 68 68 68 68 68 68 68 68	
1:00 2:00 3:00 4:00 5:00 6:00 7:00 9:00 10:00 12:00 12:00 14:00 15:00 16:00 17:00 16:00 17:00 20:00 21:00 22:00 22:00 22:00	71 71 71 68 67 70 70 68 63 69 37 31 36 61 71 72 72 71	67 66 70 70 69 70 69 70 69 70 69 69 66 66 68 68 68 68 68 68 68 67 66 66 65 63 67 57 58 50 51 50 70 70 70	65 6.7 70 70 70 70 70 70 70 70 70 70 70 70 70	Afta 4 63 1 70 1 69 1 69 1 70 2 69 2 70 3 69 3 69 5 64 6 68 6 68 6 68 6 68 6 68 6 68 6 68 6	62 61 70 70 70 70 70 70 70 71 71 71 70 70 64 65 65 65 66 69 69 69 68 69 67 68 65 66 65 65 55 46 44 30 39 27 33 24 61 55 70 71 71 72		58 72 72 74 75 76 76 76 76 76 76 76 76 76 76 76 76 76	57 56 72 71 71 71 71 70 71 71 72 72 72 72 70 69 69 69 69 69 69 69 69 69 69 69 71 70	55 71 1 70 1 69 69 69 69 68 68 68 69 69 69 69 67 70 70 70 70 71 71 71 71 71 71 71 71 71 71 71 71 71	54 53 53 69 69 68 69 68 69 68 66 66 68 66 68 66 69 68 69 68 68 69 69 68 69 69 69 69 69 69 69 69 69 69 69 69 69	52 70 6 69 6 69 6 69 6 67 6 68 6 68 6 66 6 66 6 66 6 67 70 6 67 70 6	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	67 67 68 68 67 67 67 67 66 66 64 63 52 24 16 14 31 62 67 67 67 67	71 68 71 69 72 70 72 70 70 66 77 66 67 64 65 63 55 57 72 69 64 70 66 64 70 66 64 70 66 70 66 70 66 70 66 70 66 70 66 70 66 70 66 70 66 71 67	69 69 70 70 67 66 67 66 65 63 61 56 33 26 25 44 66 66 66	68 70 69 70 70 72 70 71 66 67 64 65 65 65 65 66 64 65 61 61 51 39 31 25 32 21 45 47 62 63 65 67 66 68 67 69	70 71 72 71 64 64 65 65 65 65 65 67 22 27 66 64 66 66 66 66 66 66 66 66 66 66 66	69 70 71 70 65 65 66 65 66 65 62 62 62 63 63 64 65 66 65 65 65 66 65 65 66 65 65 66 65 65	99 70 70 71 71 72 70 71 71 75 64 72 61 73 61 73 62 75 63 75 65 76 65 76 65 77 68 70 70	69 69 69 69 69 69 69 69 69 69 69 69 69 6	\$ 69 \$ 69 \$ 69 \$ 69 \$ 70 0 72 1 73 7 70 5 66 6 69 7 70 9 70 8 70 4 70 8 65 4 67 4 69 7 70 8 71 8 70 8 71 8 70 8 70 8 71	69 67 69 68 70 69 71 70 69 71 70 67 68 65 69 65 70 67 71 68 71 68 71 68 63 52 65 66 64 58 65 56 66 66 70 67 70 68 70 68 70 68	66 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	5 68 68 68 68 68 68 68 68 68 68 68 68 68	68 68 68 68 68 68 68 68 68 68 68 68 68 6	67 68 68 68 68 68 68 70 68 71 68 68 71 68 68 68 68 68 68 68 68 68 68 68 68 68	69 (	69 69 69 70 70 70 70 70 70 70 70 70 70 70 70 70	70 70 70 70 72 72 67 64 64 67 69 69 68 67 65 67 67 71 71	70 70 70 71 71 71 71 71 71 72 72 72 72 72 72 72 72	70 70 70 70 71 72 72 63 48 47 61 69 69 68 67 68 71 71 71	71 70 71 70 71 70 70 69 71 71 73 72 73 71 76 66 66 40 44 40 71 70 71 70 71 70 71 70 71 70 72 70 71 70 72 70 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71 72 71	70 70 70 70 70 70 70 70 70 70 70 70 70 7	68 68 68 67 67 68 70 70 70 71 77 70 71 77 70 71 77 70 71	16 15 15 16 15 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17	14 70 70 69 71 74 72 56 35 71 71 71 70 69 71 71 70 71 71 72 71 71 72 71 71 72 71 71 71 71 71 71 71 71 71 71 71 71 71	13 12 12 12 12 12 12 12 12 12 12 12 12 12	2 11 69 69 69 71 73 60 28 45 66 62 65 69 69 70 70	10 68 69 69 71 72 59 36 47 67 69 68 67 66 67 66 67 68 67 69 69 70	9 68 70 68 70 70 71 72 73 77 27 73 77 41 45 68 69 69 68 68 68 68 68 66 67 68 68 67 68 67 68 67 68 67 68 67 68 67 68 67 68 67 68 67 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 67 68 68 69 69 69 69 69 69 69	68 68 68 70 72 62 52 64 69 69 69 69 68 68 68 68	69 66 67 70 77 72 77 70 77 77 77 77 77 77 77 77 77 77 77	9 69 69 1 70 3 72 4 72 1 69 1 68 1 68 1 68 1 68 1 68 1 68 1 68	68 68 68 69 69 69 69 69 69 69 69 69 69	67 67 68 70 71 72 70 68 69 69 69 68 68 68 68 68 68 68 68	2 SM

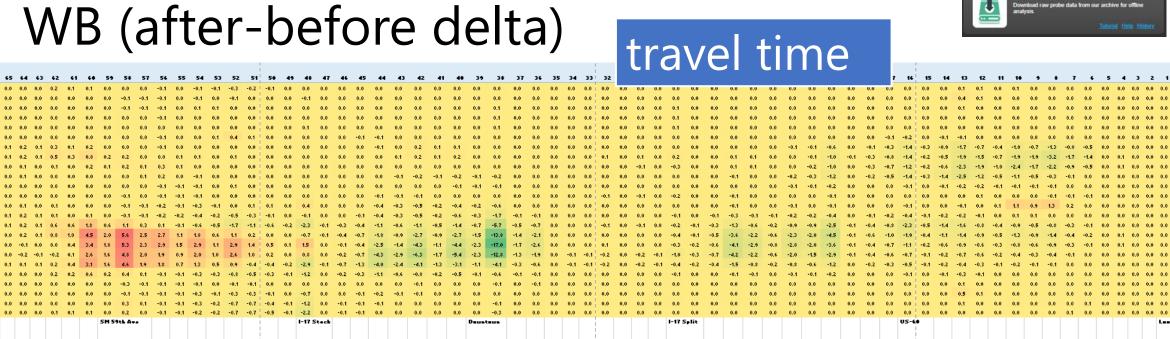
#### **SM** opened





Traffic direction

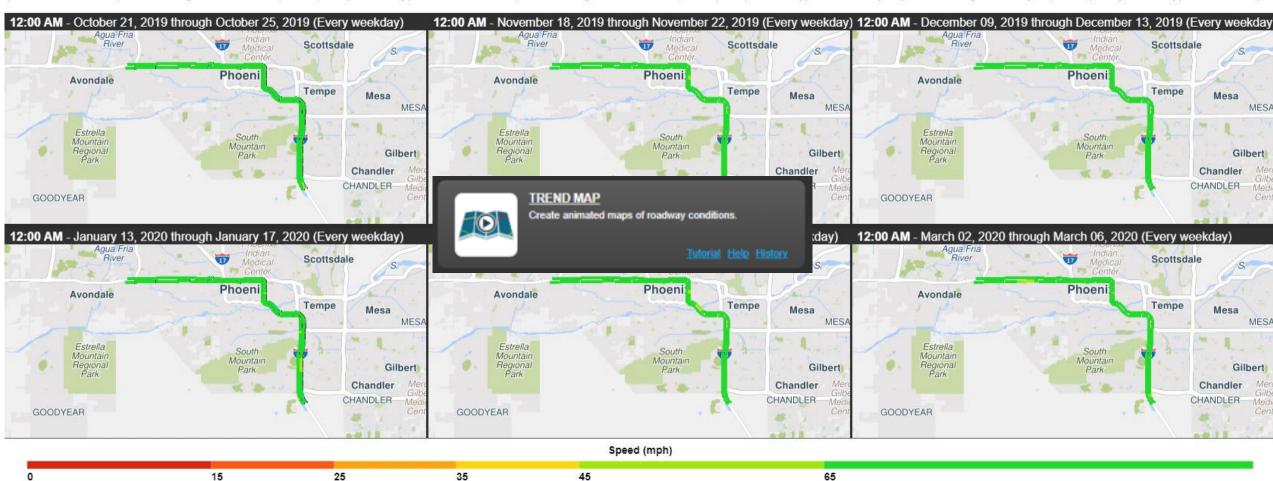




14:00	0.0	v.v ,	v.,	v.,	0.2 0	0.0	0.0	1.0	0.0	1.1	.5 0.1	-0.1	-0.0	-0.5	-1.1	0.	0 -0.2	-2.3	-0.1 -0	.5 -0.4	-1.1	-0.0	-1.1	0.5 -1.	4 -0.1	-9.1	-0.5	-0.1	0.0 0.	.0 0.0	-0.1	0.0	-0.1	0.0 -0.2	-0.1	-0.3	-1.5 -0.	6 -0.2	-0.9	-0.9	2.5	-0.4	-0.0	-2.3 -0.	5 -1.4	-1.0	-0.0	-0.4 -0	.9 -0.9	-0.0	-0.5	70.1 0.	0.0	0.0 0.0	0.0	
15:00	2.5	0.0	0.0	0.0	0.2 0	.1 0.8	1.0	4.5	2.0 5	5.6 2.	.5 2.7	7 1.1	1.8	0.6	1.1 0	.2 0.0	0.0	-0.7	-0.1 -0	4 -0.7	-1.8	-0.9	-2.7 -4	0.9 -2.	7 -1.5	-13.8	-1.4	-2.1	0.0 0.	.0 0.0	0.0	0.0	0.0	0.0 -0.4	-0.1	-0.5	-3.6 -2.	2 -0.6	-2.3	-2.0 -4	4.5 -0	.1 -0.6	-1.0	-1.9 -0	4 -1.1	-1.4	-0.9	-0.5 -1	.3 -0.9	-1.4	-0.4	-0.2 0	.0 0.1	0.0 0.0	0.0	
16:00	5.1	0.0	0.0											4.4				4.5					4.5		4 -23	47.4	-17				1													7				/						00 00		
	2.1		v.v .	0.0 -	-0.1 0.	.0 0.0	0.4	3.4	1.8	5.5 2.	.5 2.9	9 1.5	2.9	1.1	2.9 1.	.4 0.5	0.1	1.5	0.0 -0	1.1 -0.4	-2.5	-1.4	-4.5 -	1.1 -4.	4 -2.3	-17.0	-1.7	-2.6	0.0 0.	.0 0.0	0.1	0.0	0.0 (	0.0 -0.3	-0.2	-0.6	-4.1 -2.	9 -0.8	-2.8	-2.0 -3	3.6 -0	.1 -0.4	-0.7	-1.1 -0.	.2 -0.6	-0.9	-0.6	-0.3 -0	.8 -0.6	-0.9	-0.3	0.1 0.	0 0.1	0.0 0.0	0.0	
17:00	6.2	0.1 (	0.2	0.0	-0.2 -0	0.1 -0.2	2 0.1	2.6	1.6	4.8 2.	.0 1.9	0.9	2.0	1.0	2.6 1.	.0 0.2	0.0	0.8	0.0 -0	.2 -0.7	-4.3	-2.9	-6.3 -	1.7 -5.	4 -2.3	-12.8	-1.3	-1.9	0.0 -0.	0.1 -0.1	-0.2	0.0	-0.2 -	0.1 -1.0	-0.3	-0.7	-4.2 -2.	2 -0.6	-2.0	-1.5 -2	2.9 -0	.1 -0.4	-0.6	-0.7 -0	.1 -0.2	-0.7	-0.6	-0.2 -0	.4 -0.3	-0.4	-0.1	0.0 0.	0.0	0.0 0.0	0.0	
18:00	4.6	0.1	0.1	0.1	0.1 0	.1 0.2	0.4	3.1	1.6	4.6 1.	9 1.8	0.7	1.3	0.5	0.9 -0	.4 -0.4	4 -0.2	-2.9	-0.1 -0	.7 -1.3	-4.0	-2.4	-4.1 -	1.3 -3.	.1 -1.1	-4.1	-0.3	-0.6	0.0 -0.	0.1 -0.1	-0.2	0.0	-0.2 -	0.1 -0.4	-0.2	-0.4	-1.5 -0.	8 -0.2	-0.8	-0.6 -1	1.2 0.	.0 -0.2	-0.3	-0.5	.1 -0.2	-0.4	-0.3	-0.1 -6	.2 -0.1	-0.1	0.0	0.0 0	0.0	0.0 0.0	0.0	
19:00	0.1																								_						1													7.1				111 1		11.7		7	4 117		0 00	
			0.0	0.0	0.0 0.	.0 0.2	0.2	0.6	0.2	0.4 0.	.1 -0.1	.1 -0.1	-0.3	-0.3	-0.8 -0	1.5 -0.1	3 -0.1	-1.2	0.0 -0	.2 -0.3	-1.1	-0.6	-0.8 -1	0.Z -0.	5 -0.1	-0.6	-0.1	-0.1	0.0 0.	.0 0.0	0.0	0.0	0.0	0.0 -0.1	0.0	0.0	-0.1 -0.	.1 0.0	-0.1	-0.1 -0	0.Z 0.	.0 0.0	0.0	-0.1 0.9	0 -0.1	-0.3	-0.1	0.0 0	.0 0.0	0.0	0.0	0.0 0.	0.0	0.0 0.0	0.0	
20:00	-0.1	0.0	0.0	0.0	0.0 0.	.0 0.0	0.0	0.0	0.0	0.3 -0	.1 -0.1	.1 -0.1	-0.1	0.0	-0.1 -0	0.1	0.0	0.0	0.0 0.	0.0	0.0	0.0	-0.1	0.0 0.0	0.0	-0.1	0.0	-0.1	0.0 0.	.0 0.0	0.0	0.0	0.0	0.0 0.0	0.0	0.0	0.0 0.	0.0	0.0	0.0 0	0.0	0.0	0.0	0.0 0.	0.0	0.1	0.0	0.0 0	0.0	0.0	0.0	0.0 0.	0.0	0.0 0.0	0.0	
21:00	-0.1	0.0	0.0	0.0	0.0 0.	.0 0.0	0.0	0.0	0.0 -	0.1 -0	.1 -0.1	1 -0.1	-0.3	-0.1	-0.3 -0	.3 -0.	1 0.0	-0.7	0.0 0.	.0 -0.1	-0.2	-0.1	-0.1	0.0 0.0	0.0	0.0	0.0	0.0	0.0 0.	.0 0.0	0.0	0.0	0.0	0.0 0.0	0.0	0.0	0.0 0.	0.0	0.0	0.0 0	0.0 0.	0.0	0.0	0.0 0	0.0	0.5	0.1	0.0 0	.0 0.0	0.0	0.0	0.0 0	.0 0.0	0.0 0.0	0.0	
22:00	0.0														0.7			4.5													1																	/						0.0 0.0		
				0.0	0.0 0.	.0 0.0	0.0	0.0	0.0	0.3 0.	.1 -0.1	.1 -0.1	-0.3	-0.2	-0.7 -0	.r -0.	4 -0.1	-1.2	0.0 -0	-0.1	-0.1	0.0	0.0	0.0 0.	0 0.0	-0.1	0.0	0.0	0.0 0.	.0 0.0	0.0	0.0	0.0	0.0 0.0	0.0	0.0	0.0 0.	0.0	0.0	0.0 0	0.	.0 0.0	0.0	0.0 0.0	0.0	0.1	0.0	0.0 0.	.0 0.0	0.0	0.0	0.1 0.0				
23:00	0.0			0.0	0.0 0.	.0 0.1	0.1	0.1	0.0	0.2 0.	.0 -0.1	.1 -0.1	-0.2	-0.2	-0.7 -0	0.7 -0.9	5 -0.1	-2.2	0.0 -0	0.1 -0.1	0.0	0.0	0.0	0.0 0.0	0.0	-0.3	0.0	0.0	0.0 0.	.0 0.0	0.0	0.0	0.0	0.0 0.0	0.0	0.0	0.0 0.	0.0	0.0	0.0 0	).0 0.	.0 0.0	0.0	0.0 0.	0.0	0.0	0.0	0.0 0	.0 0.0	0.0	0.1	0.0 0.0	0.0	0.0 0.0		
	Lump 10	01 Aq	**						SM 59t	L Ave						i		I-17 St	eck						Deu	nteus					i			1-17	Split									US-60											Leep	202 SM
																1															i																									
																															1																									
																- 1																																								
																i															i													i												
																1															1													. !												
				_	_	_	_										-									_			_	_			_										$\rightarrow$			$\perp$				$\perp$			$\perp$		-	
																i																				VA							$\perp$	. i.												
DOW	G =		Hel	didaye	areexc	luad																									1																									
20.11							TravelSp			_		_				-										_			_				-			)E			4	_			_		+	+		-		+	$\rightarrow$	-	+			
				- 0	(Bofaro	-Altor)	IravelS	pood																																																
Averag																															1																									
Reu -l	68	67	66	65	64 6	3 62	61	60	59	5# !	57 5	6 55	54	53	52	51 5	• 49	48	47 4	46 45	44	43	42	41 4	10 3	9 3#	37	36	35 3	34 33	32	31	30	29 21	27	26	25 2	23	22	21	20	19 18	17	16 1	15 14	4 13	12	11	10 9		7	6	5 4	3 2	2 1	
0:00	0.1	02 (		-02 -	-0 E -0	4 -42	-46	-0.0	-0.1	0.7 2	0 22		2.5	2.4	10 1	2 42		0.4	0.4 0	2 02	0.4	0.0	0.4	0.4 0.1	E 02	0.5	0.4	04 (	0.0 -0	2 -04	0.2	0.2	02 (	04 04	0.1	0.1	-0.2 -0	2 00	0.4	-0.1 0	1 0		0.1	-0 E -0	9 -09	9 -0.8	-42	-10 -1	a .o.c	0.2	0.2	0.0 -0	2 00	-0.1 0.1	4 04	
						1.2	-1.0	-0.9	-0.1	0.1 2.	.0 2.2	2.3	2.5	2.4	1.7 1.	.3 1.3	0.6	0.4	0.4 0.	.2 0.3	0.1	0.0	0.4	0.4 0.5	9 0.3	0.5	0.4	0.1	v.v v.		0.3		0.2	0.4 0.1	0.1	0.1	-0.3 -0.	3 0.0	0.1	-0.1 0	).1 U.	.0 0.1	0.1	-0.5 -0.			-1.2	-1.0 -0	.9 -0.9	0.3	0.3	0.0 -0.				
1:00	0.5	0.1	0.3	0.5	0.2 0.	.4 0.6	0.5	0.5	0.7 1	1.4 2.	.3 2.4	4 2.2	2.2	1.7	1.2 0	.9 1.2	1.2	1.0	0.9 0.	.8 0.6	0.6	0.6	0.8	1.1 1.1	1 0.6	0.4	0.5	0.2	0.0 -0.	.2 -0.7	-0.2	0.0	0.1	0.1 -0.1	-0.4	-0.2 -	-0.3 -0.	3 -0.2	0.0	0.0 0	).2 0.	.1 0.2	0.4	0.0 -0.	0.1 -0.5	5 -1.9	-1.6 -	-0.5 -0	.2 -0.4	-0.2	-0.4 -	0.3 0.7	2 0.6	-0.3 0.1	1 0.2	
2:00	0.3	0.4 (	0.4	0.6	0.5 0.	.8 0.6	0.7	1.0	1.1 1	1.6 2.	.2 2.2	2 1.9	0.2	-0.2	0.3 0	.3   0.4	0.1	0.2	0.0 0.	0.0	-0.1	-0.2	-0.1 -0	0.2 0.0	0 -0.5	-1.1	-1.1	-1.2 -	-1.1 -1.	.2 -1.6	-1.5	-1.5	-1.5 -	1.6 -1.2	-1.0	-0.7	-0.4 -0.	6 -0.5	-0.6	-0.7 -0	0.8 -0.	.9 -0.8	-0.6	-0.7   -0.	.5 -0.9	9 -1.2	-1.1	-0.8 -0	.8 -1.2	-0.6	-0.8 -	-0.7 -0	.5 0.2	-0.5 -0.	.1 -0.1	
3:00	0.8	0.9	0.7	0.7	04 0	5 06	0.6	0.3	0.3	10 1	5 14	1 10	0.4	-0.6	-0 d -0	18 -0	d -0.9	-0.6	-0.5 -0	6 -0.5	-0.6	-0 d	-0.7 -1	0.7 -0	d -0.9	-11	-11	-11 -	0.9 -1	14 -43	43	-13	-13 -	46 -43	-0.7	-0.7	-0.8 -0	9 -0.7	-0.8	-0.8 -0	0.6 -0	2 -0.3	-0.1	-0.2 -0.	.2 -0.4	4 -n 4	-0.5	-06 -6	5 -0.4	0.0	-0.2	03 0	7 10	0.5 0.7	7 0.9	
					0.1 0.		***						***					***				***									1								***				***	7.		7.7				- T.T.	Y	7				
4:00							0.4	0.2	0.0 (	0.3 0.	.9 0.9	9 1.0	-0.2	-0.9	-0.7 -1	1.2   -0.5	8 -1.1	-0.9	-1.1 -1	.2 -0.8	-0.7	-0.8	-0.5 -1	0.7 -0.	5 -0.7	-1.2	-1.1	-1.0	0.8 -1.	1.0 -1.3	-1.4	-1.3	-1.3 -	1.2 -1.2	-0.8	-0.7	-0.7 -0.	5 -0.4	-0.3	-0.4 -0	0.4 -0.	.3 -0.3	-0.1	-0.2 0.0	0 -0.2	-0.4	-0.3	-0.4 -0	.4 -0.6	-0.5	-0.7	0.7 -0.		-0.5 -0.		
5:00	0.0	-0.1 (	0.0 -	-0.3 -	-0.6 -0	0.0	-0.1	0.1	-0.1	0.3 1.	2 1.6	1.6	0.6	-0.8	-1.5 -1	1.9   -0.3	8 -0.9	-0.2	-0.2 -0	0.7	0.6	-0.1	0.1 -	0.2 0.0	0 -0.2	-0.6	-0.5	-0.5 -	0.1 -0.	.2 -0.3	0.0	0.1	0.2 -	0.2 -0.1	0.3	0.4	0.3 0.3	2 0.2	0.5	0.6 0	).8 0.	.8 1.1	1.7	2.9   2.9	.8 1.9	0.8	0.9	0.7 0	.5 0.4	0.6	0.4	0.0 -0	.1 0.3	-0.2 0.0	0 -0.2	
6:00	-1.5	-2.0 -	2.3 -	-2.8 -	-3.2 -3	.9 -4.1	1 -3.5	-2.3	-1.1 (	0.1 1.	3 1.7	2.0	1.0	0.0	-0.6 -0	.6 -0.0	6 -0.4	0.3	0.3 0.	3 0.7	0.7	-0.5	-0.6 -	1.0 -1.	5 -1.8	-0.7	-0.2	0.1	0.7 0.	.5 0.3	0.0	0.0	-0.2 -	0.4 -0.2	-0.4	-0.3	-0.2 0.1	2 0.6	1.3	3.3 7	1.2 6.	.0 5.9	6.1	9.2 9.1	6 9.6	9.9	9.3 1	10.4 1	.9 12.6	16.3	17.9	9.8 2	2 -0.7	0.8 -0.	1 -0.6	
					-3.6 -4									4.5	4.			-0.5				4.2	4.5								-21	-2.3		3.9 -3.2			45 4	1 -0.8		1.8 5				6.5 4.3	3 3.5	5.7		7		444				0.9 -0.		
7:00							8 -4.6	-4.4	-3.6 -	2.1 -0	.5 0.3	3 0.2	-0.6	-1.2	-1.5 -1	1.2 -1.	2 -1.0		-0.5 -0	.6 -0.6	-0.8	-1.6	-L.C -	1.8 -1.	8 -1.4	-0.3	-0.3	-0.4 -	0.8 -1.	1.1 -1.4	+		-3.0			-1.4	-1.2 -1.		0.2			.2 (.6	8.6				8.5	8.4 8	.8 11.0	14.1	16.5 1	0.5 3.				
8:00	0.5	-0.3 -	0.6	-1.1 -	-1.5 -1	.5 -1.4	-1.3	-1.7	-1.8 -	1.4 -0	.2 0.5	5 1.1	0.6	0.2	-0.4 -0	.2   -0.	1 0.1	0.5	0.5 0.	.3 0.2	0.3	0.0	0.1 -	0.2 -0.	.1 0.5	0.8	0.8	0.8	0.6 0.	.5 0.9	1.3	2.1	2.6	3.1 3.2	0.6	0.4	-0.6 -0.	6 -0.1	0.8	2.4 4	1.8 6.	.4 6.9	8.1	5.2 3.0	,6 3.8	6.5	9.9 1	10.8 12	.2 15.1	16.2	12.8	5.3 1.0	.0 -1.9	0.2 -0.	.3 -0.8	
9:00	0.6	-0.1 -	0.6	-1.4 -	-1.2 -0	.9 -0.1	7 -0.4	0.0	0.2	0.0 0.	.4 1.3	2.4	2.5	1.1	0.2 0	.3 0.4	0.6	0.7	0.6 0.	.5 0.5	1.0	1.4	2.3 2	2.9 4.0	0 6.5	3.0	0.8	0.8	0.7 0.	.7 0.9	0.8	1.1	0.9	0.6 0.6	1.2	0.9	0.9 1.3	1.6	3.1	6.6 10	0.6 9.	9.2	8.9	9.4 11	1.4 12.8	8 13.2	12.5 1	12.3 19	.2 9.0	5.7	1.9	0.3 0.	.0 -1.0	0.0 -0.	2 -0.6	
10:00	-0.5	-0.6	0.6	-0.9	-0.8 -0	0.5 -0.5	5 -0.2	0.4	0.7	1.1 1	6 22	2 2.8	2.2	0.5	-0.8 -0	.6 -0.3	3 -0.1	-0.2	0.2 0.	2 06	0.7	0.5	0.9 1	1.3 2	3 3 %	1.6	0.5	0.6	0.6 0.	.6 0.6	0.6	0.7	0.6	0.4 -0.1	0.2	0.1	0.3	6 0.4	1.3	2.2 2	.6 1	7 14	1.4	2.4 3	4 24	1.9	2.2	2.0 1	9 1.5	1.3	0.7	0.0 -0	.1 -0.5	0.1 0.1	1 -0.6	
11:00								***						***																	1				4.4	4.5																				
	-0.5							0.5	0.6	1.2 2.	.1 3.1	3.8	2.8	0.9	-0.5 -0	0.1	0.3	0.6	0.8 0.	.8 1.2	2.6	2.4	1.5 (	0.8 1.2	1.9	0.8	0.3	0.4 (	0.3 0.	.5 1.1	1.5	1.7	1.8 1	1.8 1.9	1.6	1.2	0.9 0.	6 0.7	0.8	1.1 1	1.1 0.	r 0.6	0.6	0.8 1.7	2 0.7	0.3	-0.3	-0.1 0.	.5 0.8	1.6	1.8	1.5 0.		0.2 0.1		
12:00	-0.2	-0.7 -	0.9	-1.4 -	-1.7 -1	.2 -1.2	-0.9	0.2	0.8 1	1.7 3.	.1 4.4	4 5.7	4.8	3.1	0.6 -0	.2 -0.3	3 -0.1	0.4	0.8 1.	0 2.2	6.9	7.0	6.0 5	5.6 6.9	5 8.5	6.5	2.4	1.4	0.6 0.	.5 0.4	0.6	0.8	0.9 (	0.9 1.1	2.1	1.8	1.3 1.	1 1.1	1.3	1.3 1.	.0 0.	.0.8	0.9	1.1 1.	3 0.8	0.7	-0.3	-1.1 -1	.7 -2.0	-2.1	-1.7	0.4 0.	1 -0.8	0.1 -0.	.1 -0.7	
13:00	-1.1	-1.8 -	-1.9 -	-2.3 -	-2.4 -1	.9 -2.0	0 -1.9	-0.8	0.5	2.1 4.	.0 5.6	6 7.4	7.8	8.4	7.4 5	.3 3.9	3.4	3.1	2.0 1.	9 2.5	6.8	7.3	6.7	7.7 9.	9 13.3	12.7	6.0	3.3	1.2 1.0	0 1.0	1.2	1.4	1.5 1	1.6 1.9	4.7	4.7	3.8 3.	3 3.2	3.8	5.0 5	.8 4.	.0 3.8	3.9	4.6 4.9	.9 3.3	2.2	2.4	1.8 0	.8 -0.4	0.1	1.1	0.4 0.3	2 -0.4	0.2 0.1	1 -0.4	
14:00		-14	.17	-24			-205	-22.2	-18.8 -1	13.0 -6	1 -0.2	2 24		13.5	15 4 15	2 14	2 13 7	13.6		0 60	6.2	E 7	72		6 44.7	23.7	20.0	42.6	3.0 21	E 22	20	2.8	2 8 1	20 44	44.5	12.4	12.7 40	. 10.0	42.6	17.4 22	2 5 40	0 46.5	14.7	15 4 45	E 454		40.4	10.0	2 00	2.4		24 0	0 =	0.4 0.2	2 -0.7	
											··· v	2 3.9	0.0	15.5	15.4			13.6	7.1 8.	.0 0.8	0.2	9.1	1.2 3	v.v 10.	· 11.1	25.1	20.9				2.0			J.V 4.1	11.2	15.4	16.1 10.	0 10.0	12.0	11		.0 16.5	14.1	15.0 15.	12.1	*.2	10.1	10.0 9.	0.6	0.4	5.5	2.7 0.0				
15:00	-16.9	-1.1 -	0.6 -	-0.9 -	-2.6 -3	3.7 -8.5	-19.2	-30.3	-35.3 -3	5.5 -3	1.3 -24.	.6 -18.6	-13.5	-8.8	-3.9 -1	1.2 -0.	1 0.5	1.7	3.7 4.	.4 4.7	4.5	4.5	6.8 7	7.0 8.3	2 11.9	30.2	31.3	19.7	2.1 -0.	.2 -0.6	0.0	0.0	0.1 -	0.1 3.0	10.0	17.3	25.1 26	.6 23.5	25.7	31.2 35	5.6 26	.1 23.2	17.7	17.3 18	.6 13.8	9.0	11.8 1	12.8 13	.6 14.0	15.0	8.5	2.9 0.	3 -1.8	-0.1 -0.	.5 -1.4	
16:00	-25.8	-2.9 -	1.0	0.2	0.8 0.	.0 -0.1	7 -5.7	-15.6	-23.4 -2	3.9 -20	0.8 -16.	.7 -13.1	-10.6	-8.8	-6.1 -3	.5 -2.5	5 -2.0	-1.8	0.0 0.	.8 1.7	3.4	4.8	8.0 9	9.2 15.	9 25.0	41.6	33.6	19.9	0.2 -3.	.0 -2.8	-2.3	-2.7	-1.9 -	0.5 3.5	12.4	19.9	28.3 31.	5 27.4	28.0	28.7 27	7.3 17.	.8 15.6	11.8	11.0 11	.1 8.3	7.0	9.7 1	10.5 19	.3 12.5	13.2	6.6	2.1 0.	4 -2.0	0.0 -0.	2 -1.5	
17:00	-26.0	-65 -	30 -	-0.7	17 0	9 07	-15	-8.0	-13.8 -1	14 0 -11	14 -8	1 -62	-5.7	-6.0	-42 -2	0 -1	1 -0.7	-0.8	01 0	9 26	6.6	10.9	16.0 2	0.9 29	7 36.2	37.6	23.6	14.2	00 -0	6 16	41	4.8	63 7	73 10.8	24.4	28.6 3	32.1 28	3 218	22.4	23.6 22	22 15	3 133	10.1	77 6	4 43	5.8	8.2	75 6	8 62	6.2	3.0	0.8 0	3 -0.9	0.2 0.0	0 -0.8	
																					2.0						22.0		*.* *.		1 2				24.4										1 77	2.0										
18:00		-4.2 -	2.4	-1.6 -	-1.5 -2	1.0 -1.8	-5.6	-13.5	-19.1 -1	18.7 -19	5.0 -10.	.4 -7.8	-5.9	-3.6	-2.2 2	.2 4.8	6.2	8.4	10.8 10	.7 14.2	21.8	25.1	27.3 2	6.9 29.	.5 29.6	23.6	11.2	7.9	4.4 4.	.3 4.4	5.8	6.0	6.4	6.8 6.9	17.1	17.5 1	14.8 11.	3 9.2	9.6	10.0 10	0.1 7.	.1 6.4	5.1	4.5 4.	1 3.0	3.4	4.5	3.9 3	.4 2.8	2.0	0.8	0.4 0.3	2 -0.4	-0.1 -0.	.1 -0.6	
19:00	-4.2	-0.4 -	0.3 -	-0.4 -	-0.6 -1	.2 -3.0	-7.5	-9.0	-7.7 -	5.4 -1	.0 2.0	0 3.9	5.8	8.8	9.0 9	.7 10.0	9.6	9.6	7.3 7.	.2 7.6	13.4	12.7	10.2 8	8.3 8.9	9 8.3	6.3	3.9	2.6	1.0 0.	.9 0.9	1.3	1.5	1.6 1	1.7 1.5	1.5	1.4	1.4 1.3	1.4	2.0	2.5 2	1.3	.1 1.0	0.8	0.9 1.	4 1.8	1.6	1.2	0.6 0	.4 0.2	0.3	0.1	0.1 0.	2.0-	0.1 0.2	2 -0.4	
20:00	0.7	-0.3 -	0.2 -	-0.3 -	-0.5 -0	0.3 -0.2	2 0.0	0.4	0.9	2.6 3.	2 27	7 2.6	2.1	1.2	1.0 1	3 12	1.0	0.5	0.1 0	1 03	0.1	0.3	0.9	0.6 0.1	7 02	1.0	1.5	1.2	0.5 0	.3 0.2	0.2	0.4	0.4	0.6 0.2	0.0	0.2	0.2 0	0.0	0.1	0.2 0	0.2	0 01	0.2	0.3 0	3 02	-0.7	-0.5	0.1 0	2 0.3	0.6	0.5	0.6 0	7 0.1	0.4 0.3	3 -0.2	
21:00	0.5												4.5																																		4.5									
				0.0	-0.3 -0	7.2 0.1	0.4	0.6	1.0	2.5 3.	.2 2.9	3.3	4.5	3.8	2.6 2	.1 2.4	2.2	2.6	1.2 1.	.1 1.5	2.0	1.4	1.1 (	0.3 0	s 0.1	-0.1	0.0	-0.1	0.1 0.	.0 -0.2	-0.2	-0.2	-0.2 -	0.1 -0.3	-0.1	0.0	0.2 0.	1 0.2	0.4	0.4 0	1.5 0.	.2 0.3	0.3	0.3 0.	4 0.2	-1.6	-1.2	0.1 0.	.5 0.3	0.6	0.5	0.2 0.3		0.2 0.5		
22:00	0.3				-0.3 0	.1 0.3	0.1	0.2	0.1	0.4 2.	.0 2.9	9 4.4	5.0	4.7	3.4 1.	.9 2.0	1.8	2.8	2.6 2.	.7 3.0	2.0	0.7	0.6	0.5 0.1	7 0.6	1.1	0.6	0.3	0.2 0.	.0 -0.1	0.0	0.1	0.1	0.1 0.5	0.3	0.2	0.1 0.	2 0.3	0.4	0.2 0	0.3 -0	.1 0.0	0.1	0.0 0.	.0 -0.4	-0.7	0.1	0.2 0	.2 -0.1	0.2	-0.6	-1.5 -0.		-0.5 -0.		
23:00	-0.1	0.1 -	0.1	0.1	0.0 0.	.0 -0.7	7 -1.0	-0.2	0.2	0.4 1.	8 2.6	6 3.1	3.6	3.7	3.6 4	.4 5.3	5.4	6.2	3.1 2.	.8 2.3	1.0	0.5	0.6	0.6 0.0	8 0.8	1.6	1.0	0.4 (	0.1 -0.	0.1 -0.3	0.1	0.1	0.1	0.3 0.1	0.0	0.1	0.1 0.1	1 0.3	0.5	0.5 0	0.6	0.0	0.2	0.3   0.5	.5 0.0	-0.3	0.0	0.1 0.	.1 0.0	-0.5	-1.1	-0.1 0.	.4 0.7	0.3 0.3	3 0.4	
	Lunp 1	01 A-							SH 59t	L Ave								I-17 St	ack						Deu	ateus								J-17	Split									US-60											Lage	202 SM
																									-						!			1										1												
																															1																									

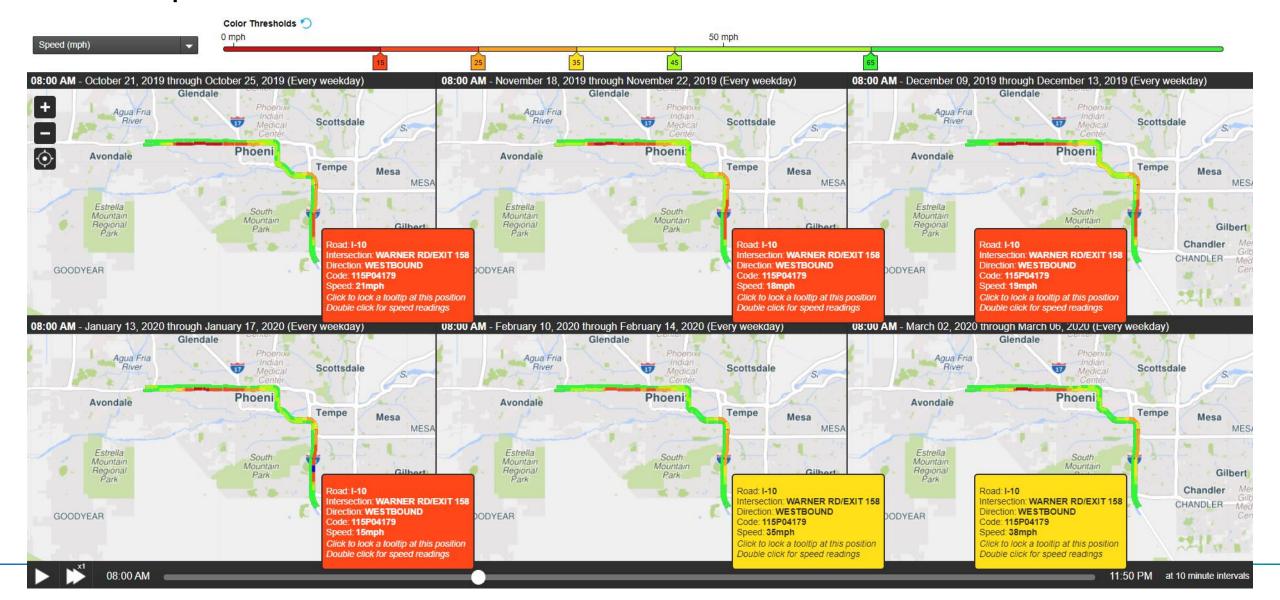
# Trend Comparison (Average weekday, Oct 2019 to March 2020)

/) and November 18, 2019 through November 22, 2019 (Every weekday) and December 09, 2019 through December 13, 2019 (Every weekday) and January 13, 2020 through January 17, 2020 (Every weekday) and February 1



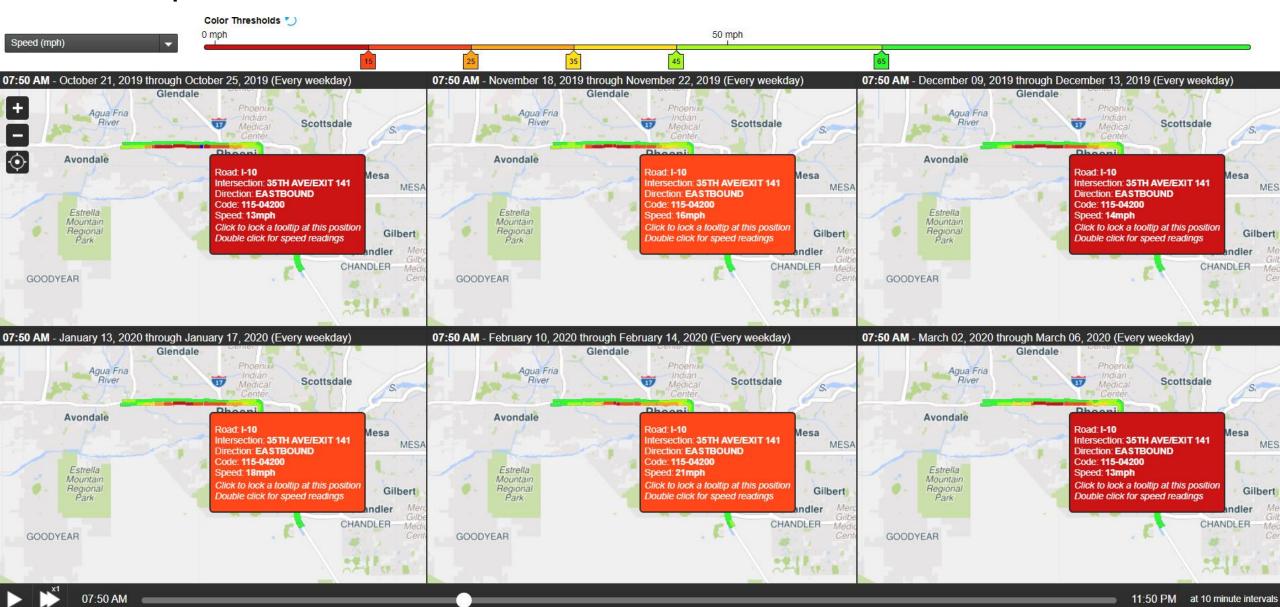


#### AM peak – I-10 WB at Warner (better)



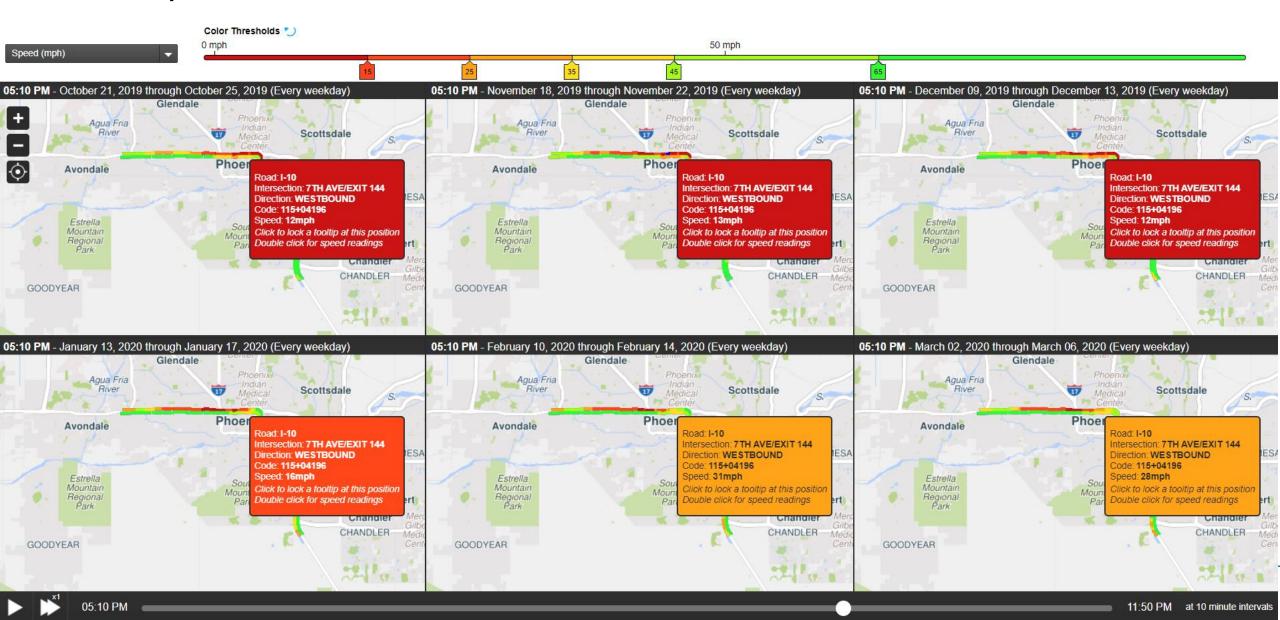


#### AM peak – I-10 EB at 35<sup>th</sup> Ave (same)



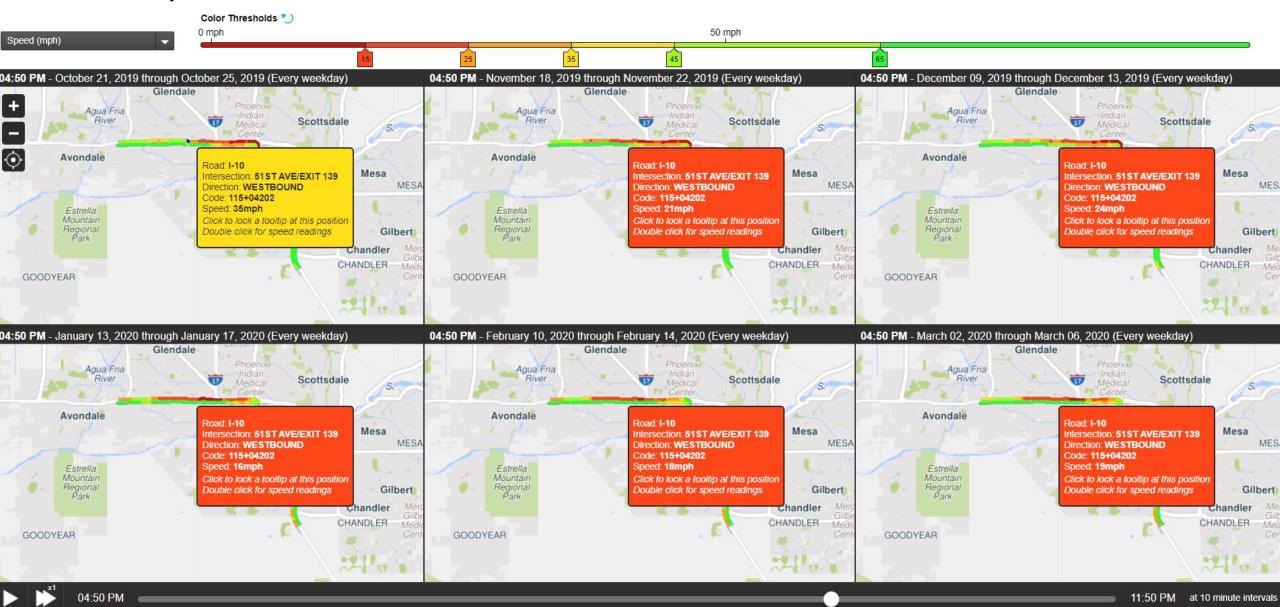


#### PM peak – I-10 WB at 7<sup>th</sup> Ave (better)





#### PM peak – I-10 WB at 51st Ave (worse)



#### Example #2:

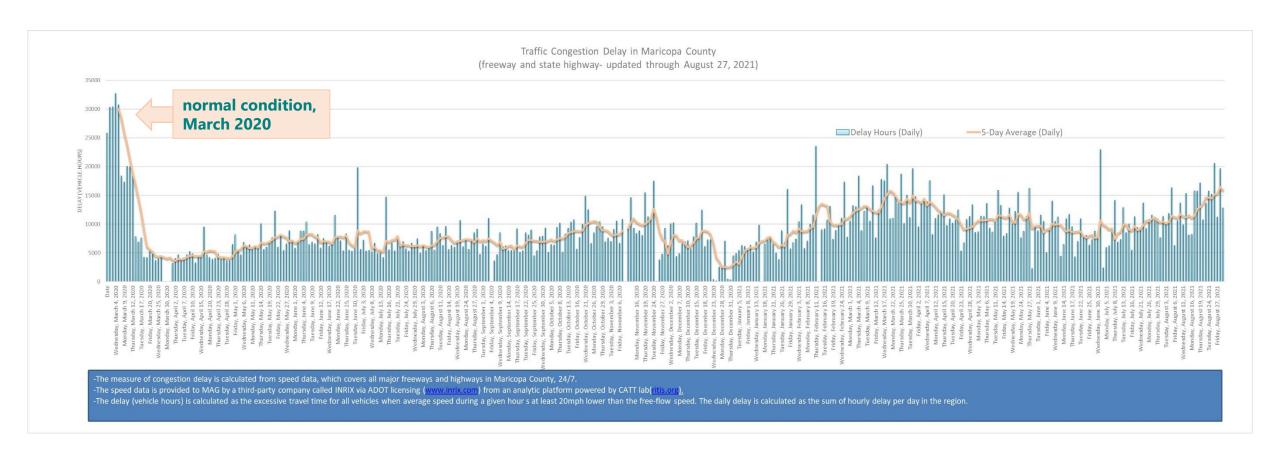
Using INRIX speed data and User Delay Cost Analysis to monitor congestion through COVID







#### Day-to-day congestion delay compared to normal (freeway only)

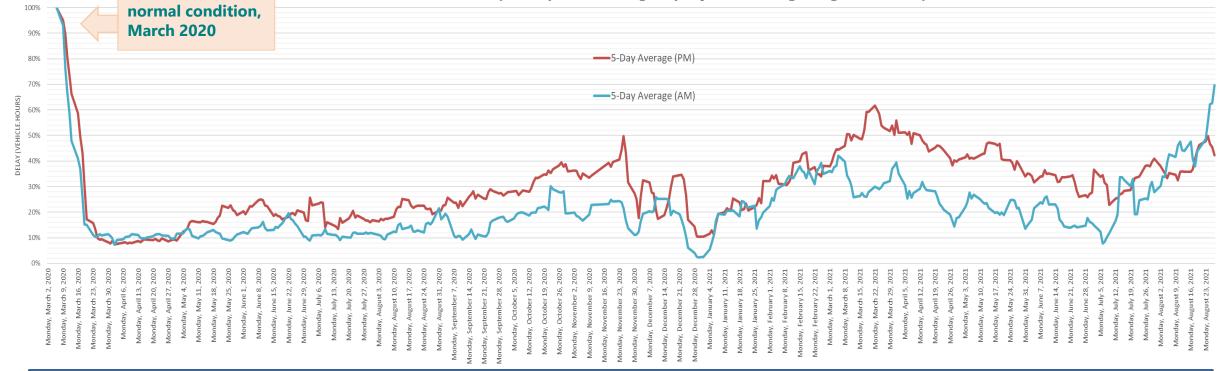




# USER DELAY COST ANALYSIS Put a dollar amount on how much a road's performance impacts its users. Tutorial Help History.

### Freeway congestion trend AM vs. PM

Traffic Congestion Delay Compared to Normal during AM (6am-9am) and PM (2pm-6pm) in Maricopa County (freeway and state highway- updated through August 27, 2021)



-The measure of congestion delay is calculated from speed data, which covers all major freeways and highways in Maricopa County, 24/7.

-The speed data is provided to MAG by a third-party company called INRIX via ADOT licensing (www.inrix.com) from an analytic platform powered by CATT lab(ritis.org)

-The delay (vehicle hours) is calculated as the excessive travel time for all vehicles when average speed during a given hour s at least 20mph lower than the free-flow speed. The daily delay is calculated as the sum of hourly delay per day in the region.

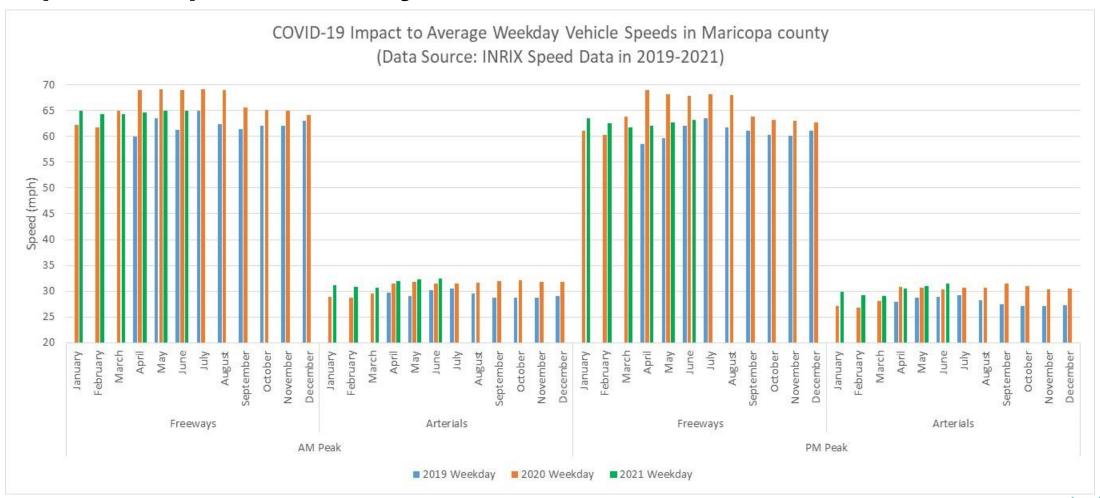








# Speed profile by functional class



# Summary

- RITIS tools help MAG conduct mobility analysis efficiently
- Sustainable platform
  - easy to use even for beginners
  - quick data preparation
  - short latency in data availability
  - great customer service
- Serves as critical information/analytics/infographics to stakeholders in transportation planning and modeling process.

# Thank you!

Wang Zhang, Ph.D.
Transportation Data Program Manager
Maricopa Association of Governments (<u>www.azmag.gov</u>)
Phoenix, AZ
<u>wzhang@azmag.gov</u>





# RITIS Signal Analytics Tools: Recent Updates and Use Cases

Charles Lattimer

Senior Faculty Specialist

University of Maryland CATT Lab





## RITIS Signal Analytics

Recent Updates and Use Cases

**Charles R. Lattimer, CATT Lab** 



RITIS User Group Meeting September 30, 2021

### **Today's Presentation**

- A brief introduction to signal analytics
- Use cases: what can Signal Analytics do for you?
- Updates: what's new and coming soon
- Time for questions



## Improving Operations with Traffic Signal Performance Measures

#### **Benefits**

- Issues can be identified quickly
- Proactive instead of reactive response
- More efficient traffic signal operations
- Data to communicate outcomes



## Improving Operations with Traffic Signal Performance Measures

#### **Barriers**

- Roadside detection infrastructure
- Signal controller upgrades
- Data storage and servers
- Software expertise



## Intersection Performance Metrics from 3<sup>rd</sup> Party Connected Vehicle Data

Based on high ping rate GPS probe vehicle data

- No roadside infrastructure required
- No server and IT resources required
- Scalable anywhere in the nation













#### Use Case 1: How are the signals in my county performing?

Washington County, OR

"Is there a way that I can rank the performance of my traffic signals across my entire county?"

"Can I see how much conditions change month by month?

Solution: Use the Signal Analytics Ranked Intersection Table

Consider ranking by weekday split failures



#### What is a split failure?

"The occurrence of one or more stopped vehicles that cannot proceed through a signalized intersection on a green indication."

--Signal Timing Manual, Second Edition (NCHRP Report 812)











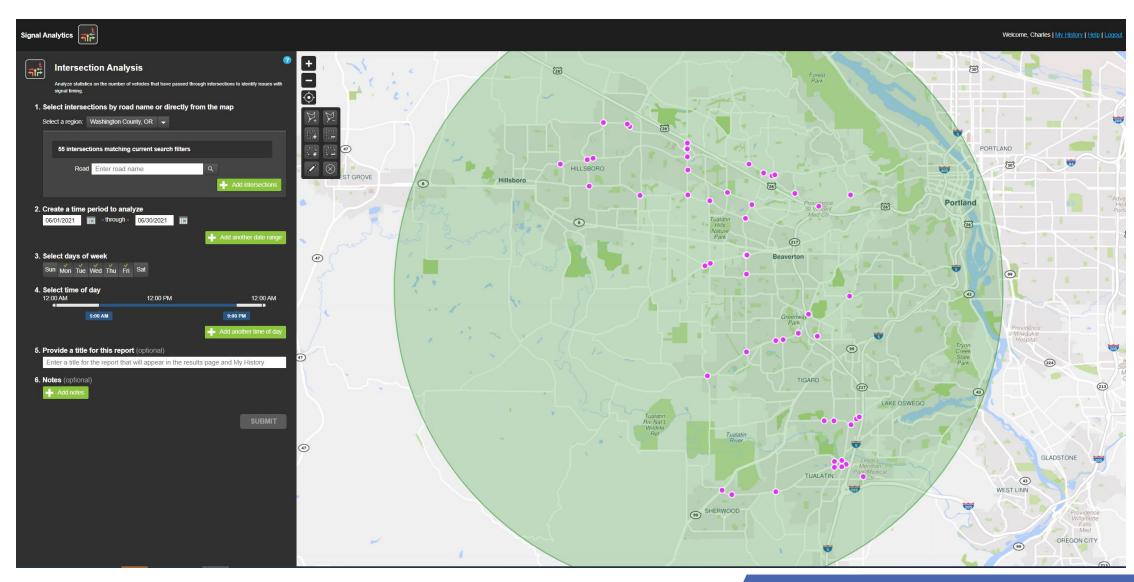




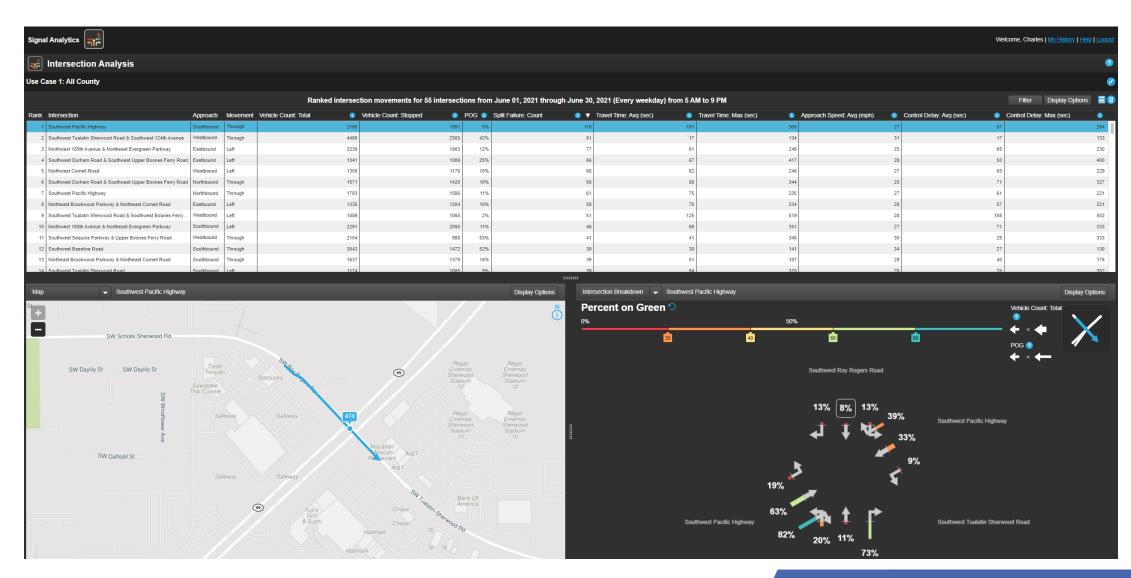




#### Selecting the intersections in my county...



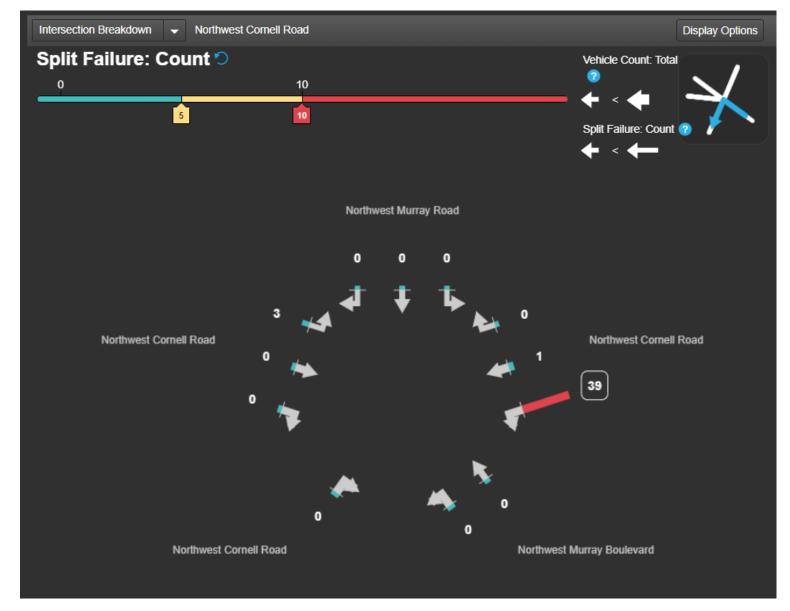
#### Sort the ranked intersection movement table by split failures



### **Countywide Analysis**

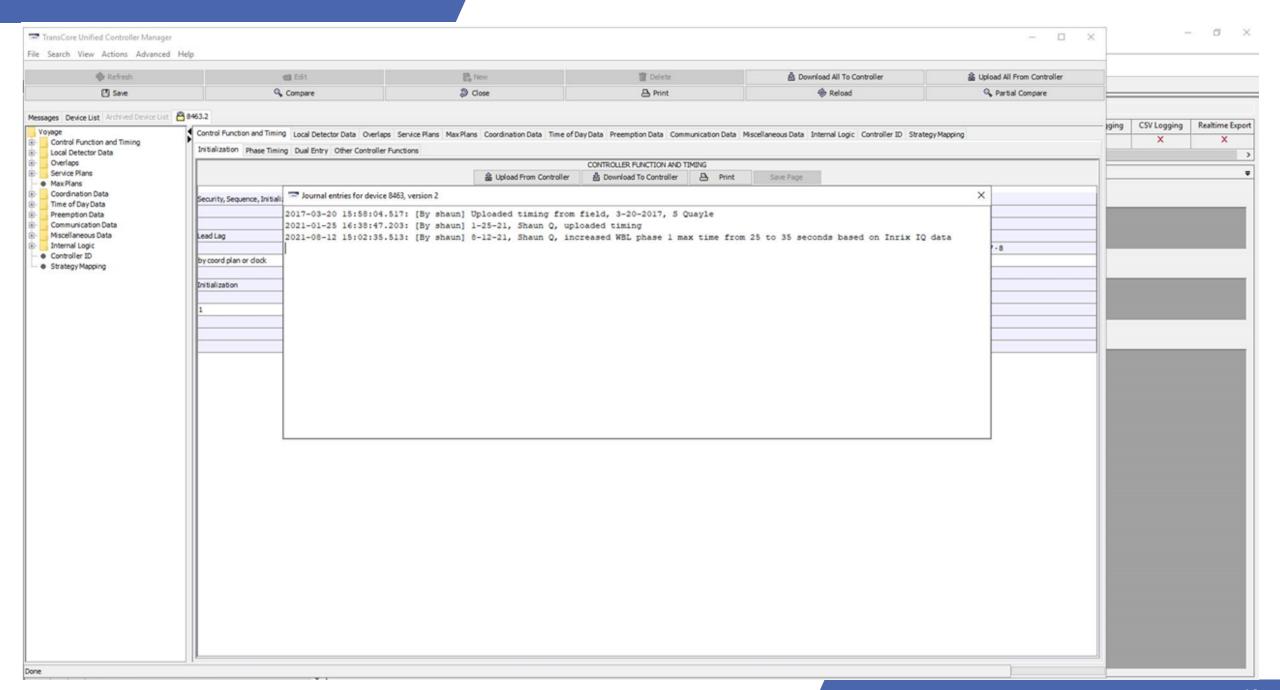
Frequency in Top 10 for Total # of Weekday Split Failures, 5am-9pm								T T
Intersection	Approach	Maneuver	June	May	April	March	February	% in Top 10
Southwest Pacific Highway & TSR	Southbound	Through	1	2	5	3	6	100%
Southwest 124th Avenue & Southwest Tualatin Sherwood Road	Westbound	Through	2					20%
Northwest 185th Avenue & Northeast Evergreen Parkway	Eastbound	Left	3	3				40%
Southwest Durham Road & Southwest Upper Boones Ferry Road	Easthound	Left	4	7	3, 7		9	60%
Northwest Cornell Road & Murray Road	Westbound	Left	5	4	1	4	10	100%
Southwest Durham Road & Southwest Upper Boones Ferry Road	Northbound	Through	6	10	4	9		80%
Southwest Pacific Highway & TSR	Northbound	Through	7	6	2	2	1	100%
Northeast Brookwood Parkway & Northeast Cornell Road	Eastbound	Left	8		10			40%
Southwest Tualatin Sherwood Road & Southwest Boones Ferry Road	Westbound	Left	9		8	5	8	80%
Northwest 185th Avenue & Northeast Evergreen Parkway	Southbound	Left	10					20%
Southwest Baseline Road & 185th Avenue	Northbound	Through				7	2	40%
Southwest Martinazzi Avenue & Southwest Tualatin Sherwood Road	Eastbound	Through		1			3	40%
Southwest Baseline Road & 185th Avenue	Northbound	Left					4	20%
Southwest 92nd Avenue & Southwest Durham Road	Northbound	Left				1	5	40%
Southwest Baseline Road & 185th Avenue	Southbound	Through		9	6	6	7	80%
Southwest Tualatin Sherwood Road & Southwest Boones Ferry Road	Eastbound	Through		5				20%
Northwest Cornell Road & 48th Avenue	Eastbound	Left		8				20%
Southwest Nyberg Street & Fred Meyer Entrance	Southbound	Left				8		20%
Southwest Tualatin Sherwood Road & Southwest Boones Ferry Road	Southbound	Through				10		20%
Southwest Pacific Highway & TSR	Southbound	Right			9			20%

#### Let's take a look at the intersection diagram...



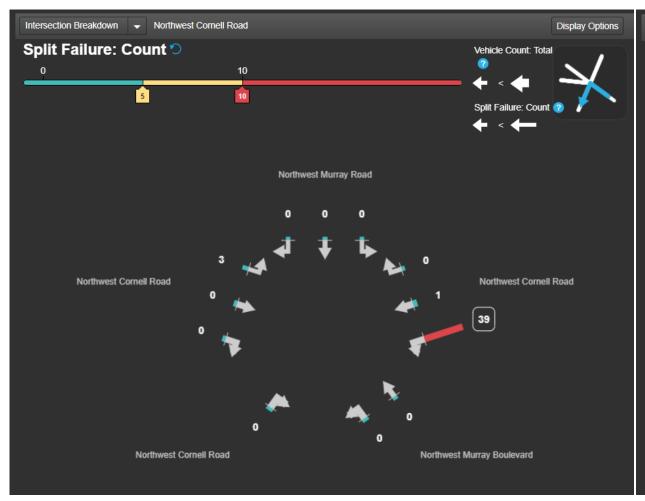
There are a lot more split failures on that left turn movement. What would happen if I extended the max time for that movement?

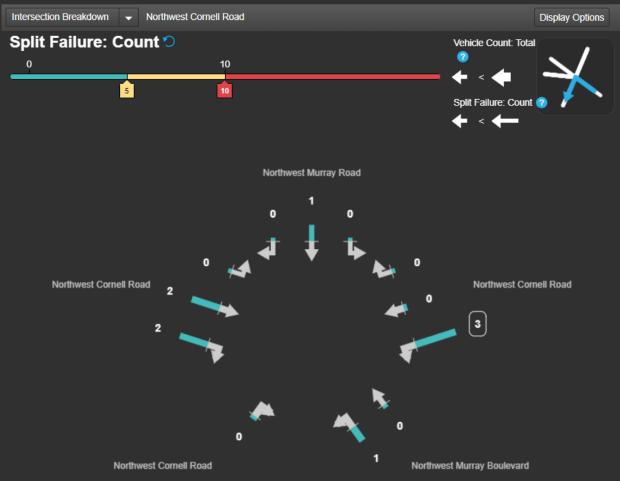


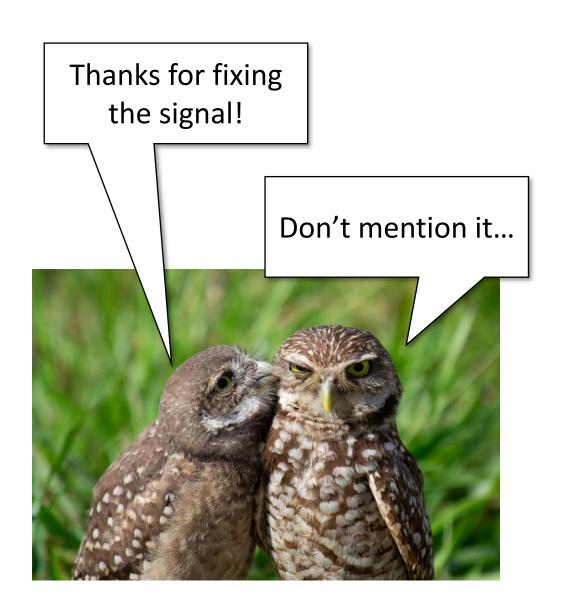


**Before** (Jul. 22 – Aug. 11)

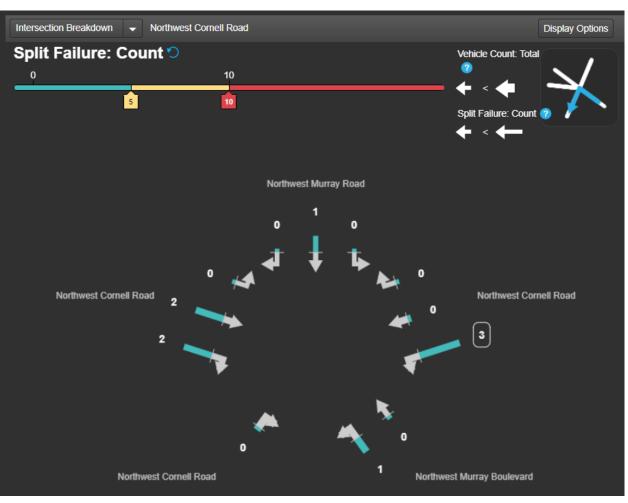
After (Aug. 13 – Sep. 2)







After (Aug. 13 – Sep. 2)



# Use Case 2: How do I compare conditions before and after a signal timing change?

City of Austin, TX

"How can I measure changes to intersection performance if I don't have detection on all my approaches?"

"Using corridor travel times to measure signal timing improvement can be good, but sometimes it seems they don't tell the whole story. Are there additional measures I can use?"

Solution: Use the Signal Analytics to compare split failures, control delay, and percent on green over time



### What is control delay?

"The amount of additional travel time experienced by a user attributable to a control device."



### What is percent on green (POG)?

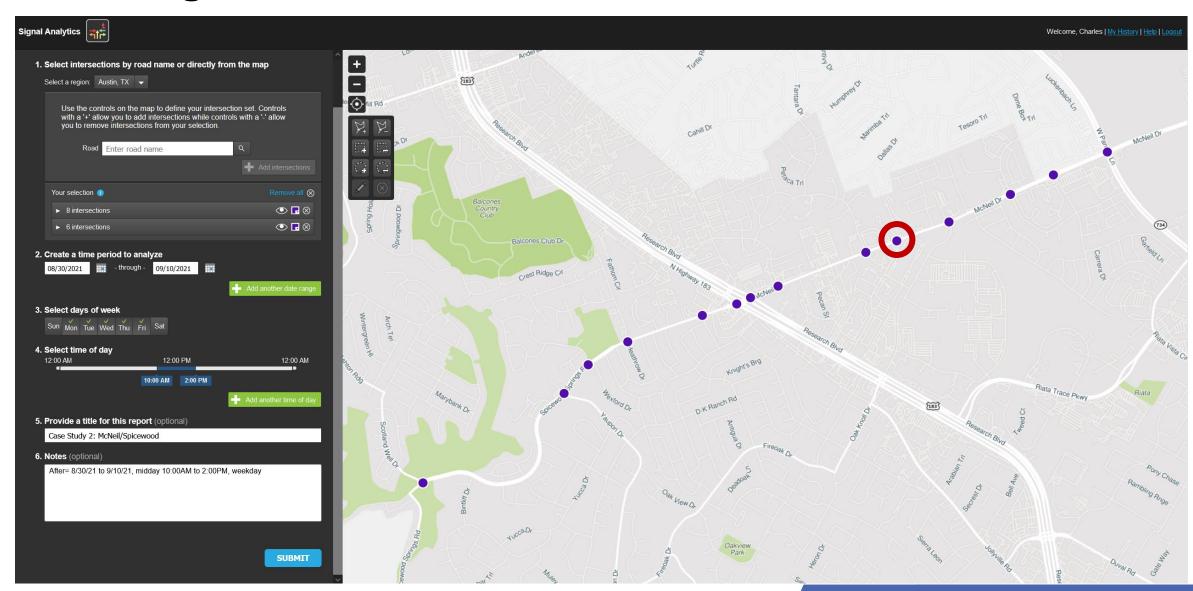
"Proportion of vehicles arriving on green."

- Performance Measures for Traffic Signal Systems

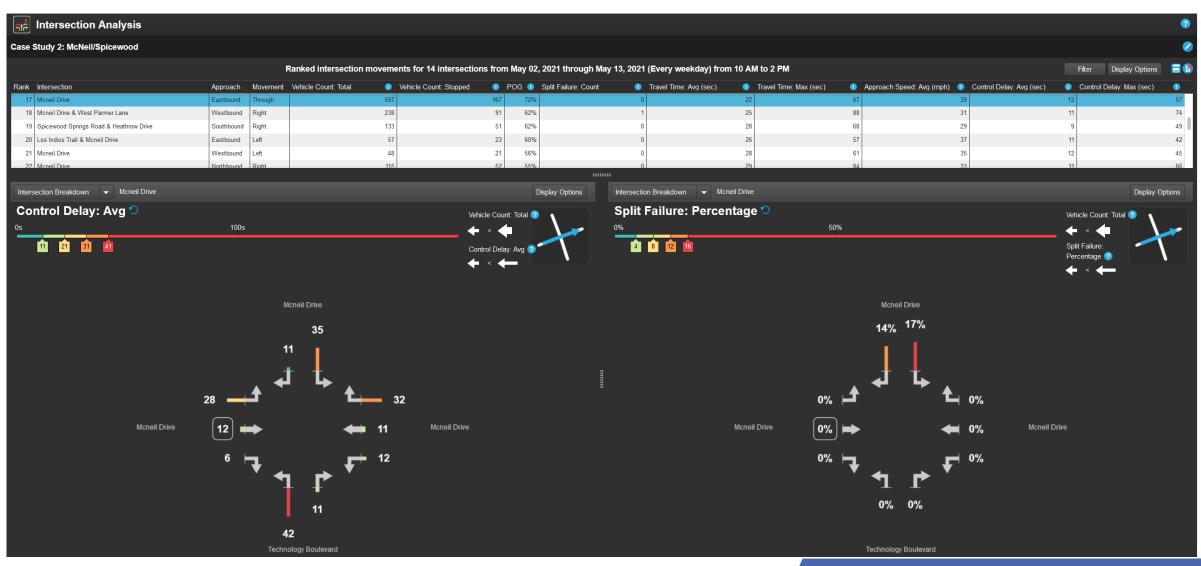


$$= \frac{60}{40 + 60} = \frac{60}{100} = 60\%$$

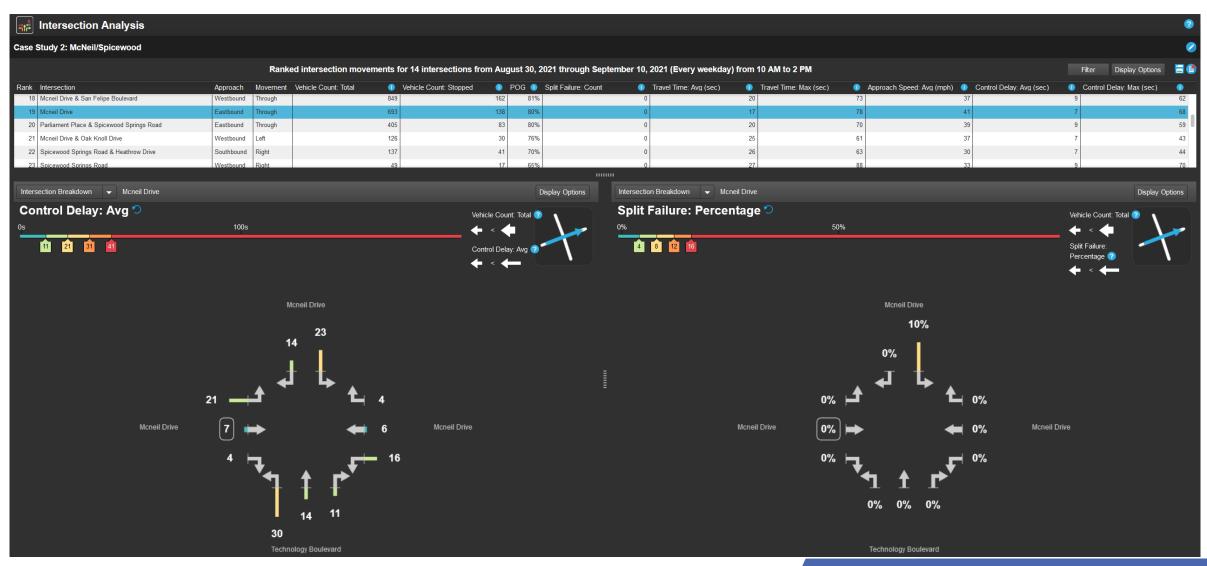
#### Selecting intersections on McNeil Dr....



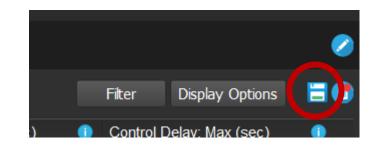
#### **Before retiming**



### After retiming



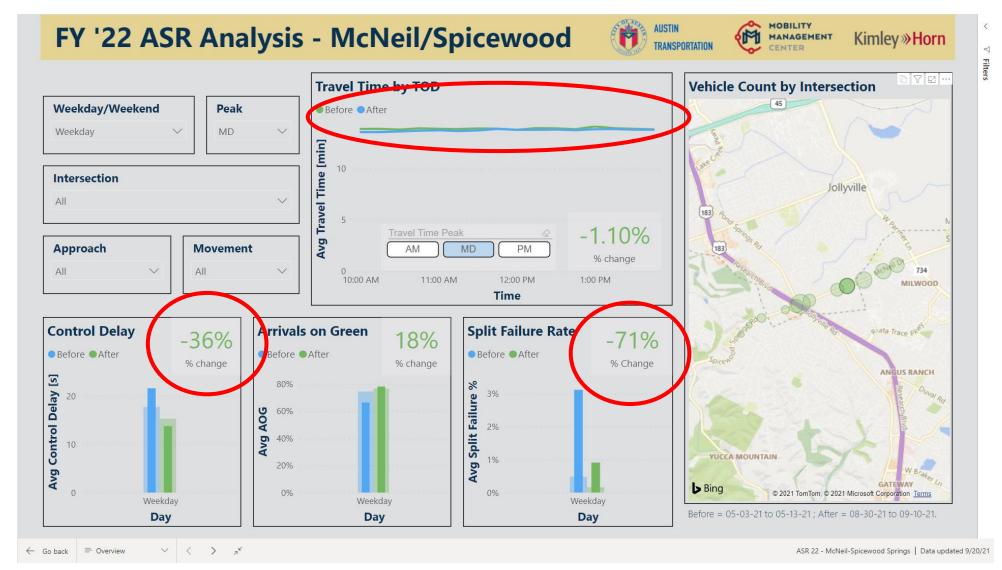
## **Downloading Data**



Сприовго	a IZII FONL	וצו	Allgnment		ואו	Number	ועו		Styles			Cells	l Eq.	ing   Analysis	sensitivity   ^
L29	→ : × ✓ fx 28														
4 - 1	J. 20		_		_										
A	В	C	D	E	F		G	Н		J	K	L	M	N	C -
1 Rank Inter				Longitude		Approach ID			Movement ID					Estimated Volume: Stopped	
		30.439497.7542					7.7542-30.439497.7542_3		30.439497.7542_X3Y2Z	852					
		30.430197.7812					7.7812-30.430197.7812_1		30.430197.7812_DE3F	342				375	
							7.7812-30.430197.7812_3		30.430297.7813_2XW	317				375	
5 4 Mcn	neil Drive & Oak Knoll Drive	30.439497.7542	30.4393591	-97.7542284	Eastbound	30.439497	7.7542-30.439497.7542_2	Through	30.439497.7542_3H3G	808	42	766		1252	
6 5 Los i	Indios Trail & Mcneil Drive	30.437497.7605	30.4373716	-97.7604817	Westbound	30.437497	.7605-30.437497.7605_3	Through	30.437497.7605_3Y	845	74	771			
7 6 Mcn	neil Drive & Heinemann Drive	30.442497.7464	30.4423753	-97.7464263	Westbound	30.442497	7.7464-30.442497.7464_2	? Through	30.442497.7465_3Y	787	72	715	25773	2358	
8 7 Corp.	pus Christi Drive & Mcneil Drive	30.441197.7496	30.4411412	-97.74964205	Eastbound	30.441197	7.7496-30.441197.7496_1	Through	30.441197.7496_4G	828	77	751	. 26539	2468	
9 8 Mcn	neil Drive & West Parmer Lane	30.443897.7424	30.44384835	-97.74239143	Southbound	30.443897	7.7424-30.443897.7424_2	! Right	30.443997.7425_4P2Y	185	19	166	6449	662	
10 9 Corp	pus Christi Drive & Mcneil Drive	30.441197.7496	30.4411412	-97.74964205	Westbound	30.441197	7.7496-30.441197.7496_3	Through	30.441297.7497_5Y	853	89	764	27340	2853	
11 10 Spice	ewood Springs Road & Heathrow Drive	30.431697.7783	30.43162835	-97.77829435	Westbound	30.431697	7.7783-30.431697.7783_3	Through	30.431797.7783_3Z	262	33	229	8993	1133	
12 11 Mcn	eil Drive	30.438197.7582	30.4381404	-97.7581562	Westbound	30.438197	7.7582-30.438197.7582_3	Through	30.438197.7582_3Z3Y	824	109	715	23762	3143	
13 12 Mcn	neil Drive & Heinemann Drive	30.442497.7464	30.4423753	-97.7464263	Eastbound	30.442497	7.7464-30.442497.7464_1	Through	30.442397.7464_4G	739	101	638	24201	3308	
14 13 Spice	ewood Springs Road & Scotland Well Drive	30.422597.7936	30.422528	-97.793613	Eastbound	30.422597	7.7936-30.422597.7936_1	Through	30.422597.7936_2FEI	96	14	82	3797	554	
15 14 Spice	ewood Springs Road & Scotland Well Drive	30.422597.7936	30.422528	-97.793613	Westbound	30.422597	7.7936-30.422597.7936_3	Through	30.422597.7936_aYWX	132	22	110	5220	870	
16 15 Los I	Indios Trail & Mcneil Drive	30.437497.7605	30.4373716	-97.7604817	Eastbound	30.437497	7.7605-30.437497.7605_1	Through	30.437497.7605_5G	497	83	414	16712	2791	
17 16 Spice	ewood Springs Road & Heathrow Drive	30.431697.7783	30.43162835	-97.77829435	Eastbound	30.431697	7.7783-30.431697.7783_1	Through	30.431697.7783_F2H	361	65	296	12391	2231	
18 17 Mcn	neil Drive & West Parmer Lane	30.443897.7424	30.44384835	-97.74239143	Southbound	30.443897	.7424-30.443897.7424_2	Through	30.443997.7425_6P	1167	219	948	40683	7635	
19 18 Mcn	neil Drive & San Felipe Boulevard	30.435297.7670	30.4352045	-97.7670345	Westbound	30.435297	7.7670-30.435297.7670_3	Through	30.435297.7670_6Y	849	162	687	29480	5625	
20 19 Mcn	eil Drive	30.438197.7582	30.4381404	-97.7581562	Eastbound	30.438197	 7.7582-30.438197.7582_1	Through	30.438197.7582_4G2H	693	138	555	19984	3979	
21 20 Parli		30.433397.7727							30.433397.7727_5H	405	83	322	15521	3181	
22 21 Mcn		30.4394 -97.7542					7.7542-30.4394 -97.7542 3		30.439497.7542_X3YV	126	30	96	3757	894	
		_					7.7783-30.4316 -97.7783 2		30.4317 -97.7783 2QRZ	137				1407	
	1 0	30.4283 -97.7831				_	7.7831-30.4283 -97.7831 4		30.4283 -97.7830 eD	49					
		_				_			30.4438 -97.7422 4hG	89	32	57	3103	1116	,
		_					7.7424-30.4438 -97.7424 4		30.4438 -97.7422 6h	792					
27 26 Mcne		30.4381 -97.7582					7.7582-30.4381 -97.7582 4		30.4381 -97.7582 2Cj2H	139				1673	
		_					7.7424-30.4438 -97.7424 3		30.4440 -97.7423 ZYh	300					
		30.4374 -97.7605	30.4373716				7.7605-30.4374 -97.7605 1		30.437497.7605_4G2i	51		28			
30 29 Mcn		30.4381 -97.7582					7.7582-30.4381 -97.7582 3		30.4381 -97.7582 3ZRU	52			•	692	
25 WICH	ICH DINC	30.7301 37.7302	50.7501704	37.7301302	, ** C3tbOullu	30.7301 -37	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	LCIE	30.1301 37.7302 32NU	32	24	20	, 1300	032	

No improvement in travel time

Significant improvement in control delay and split failure rate



Source: Kimley-Horn

# Use Case 3: How do I spot problem intersections on a corridor without leaving the office?

Rhode Island

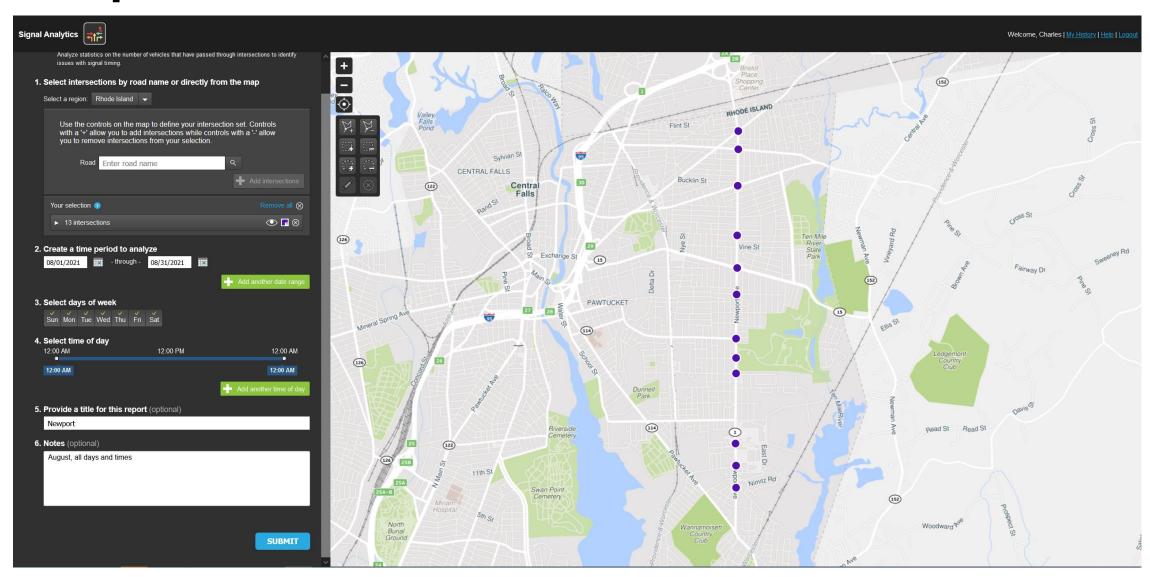
"How can find which intersections on my corridor need some extra TLC?"

"How can I tell which times of the day to work on first?"

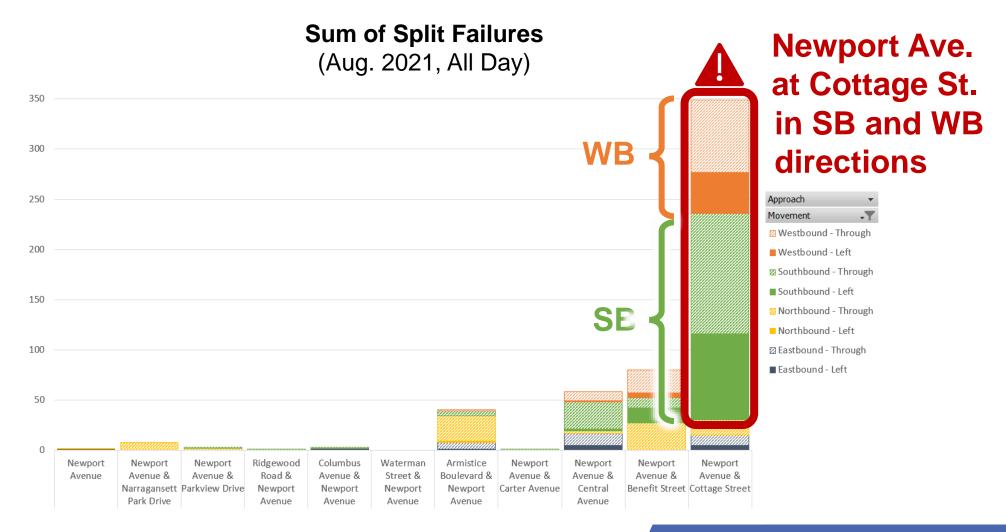
Solution: Use the Signal Analytics to compare split failures by location and time



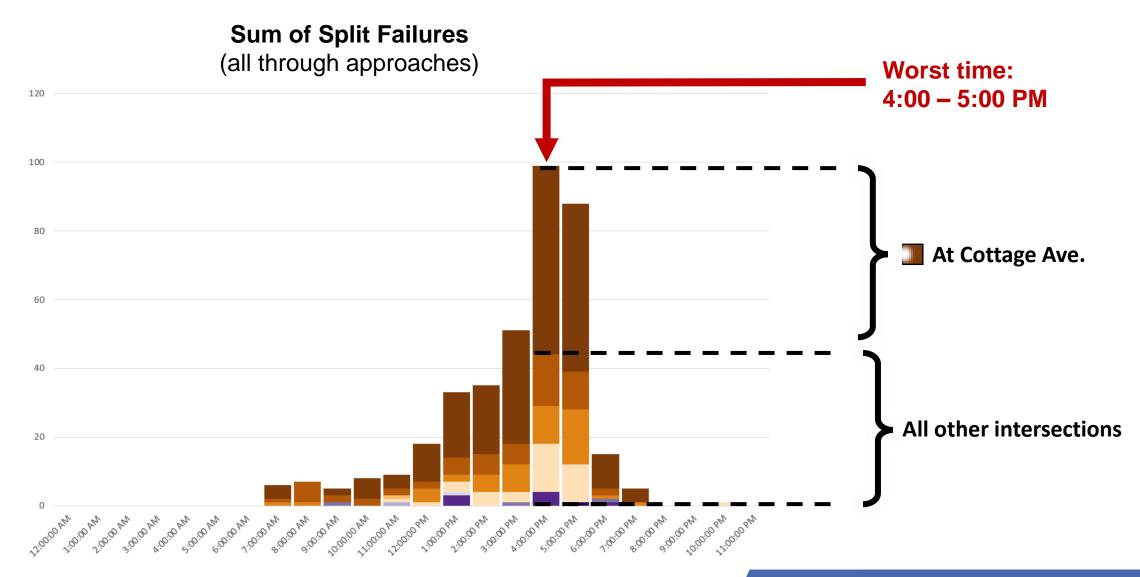
#### Newport Ave. between Pawtucket Ave. and I-95



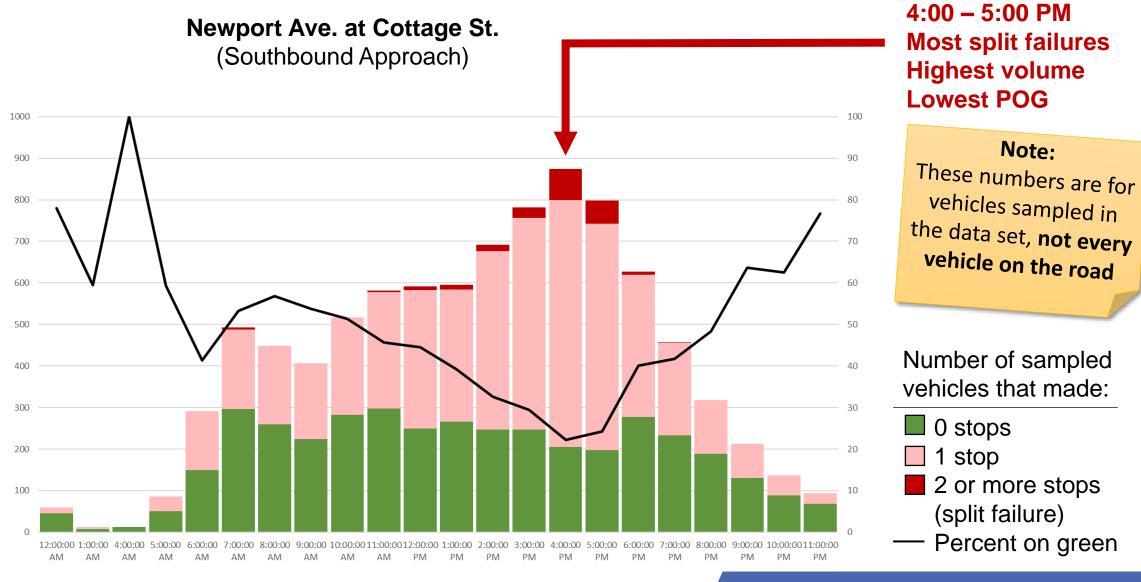
#### Stacking the sum of split failures by intersection



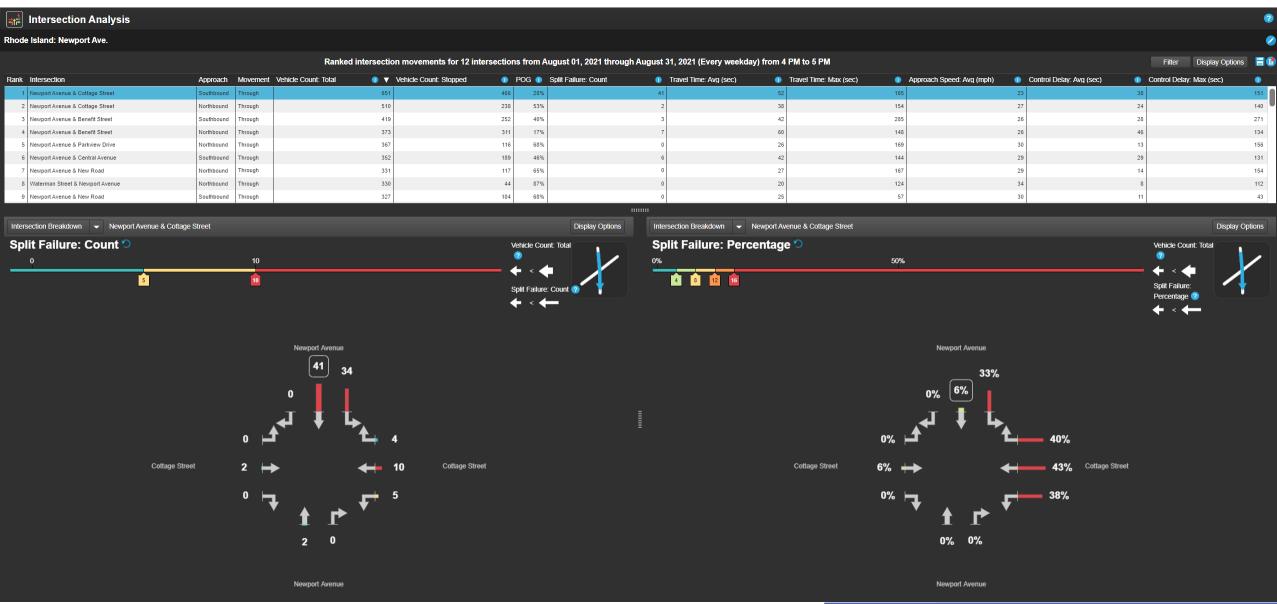
### Stacking the sum of split failures by time of day



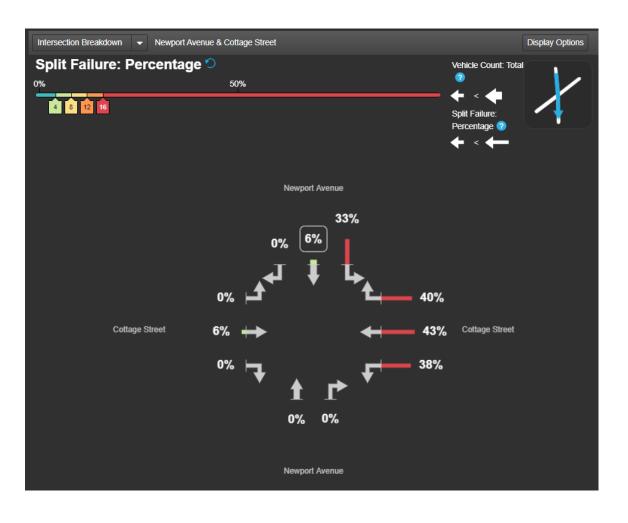
### Sampled vehicles by time of day

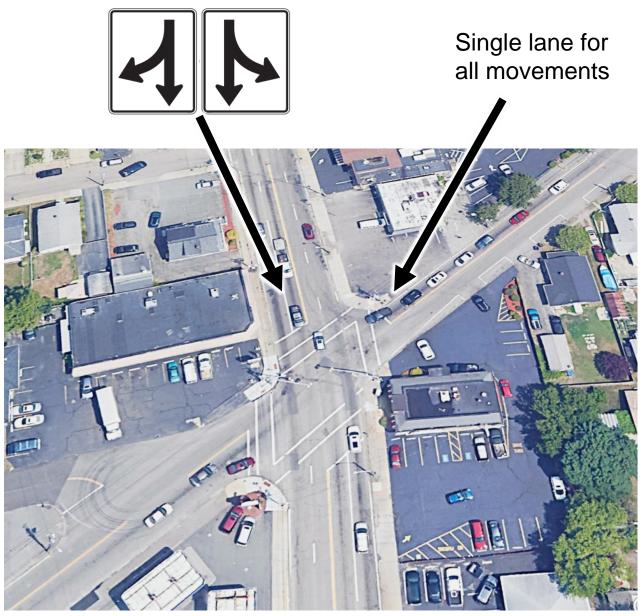


#### Split failure count vs. split failure percentage



## This intersection could use some TLC

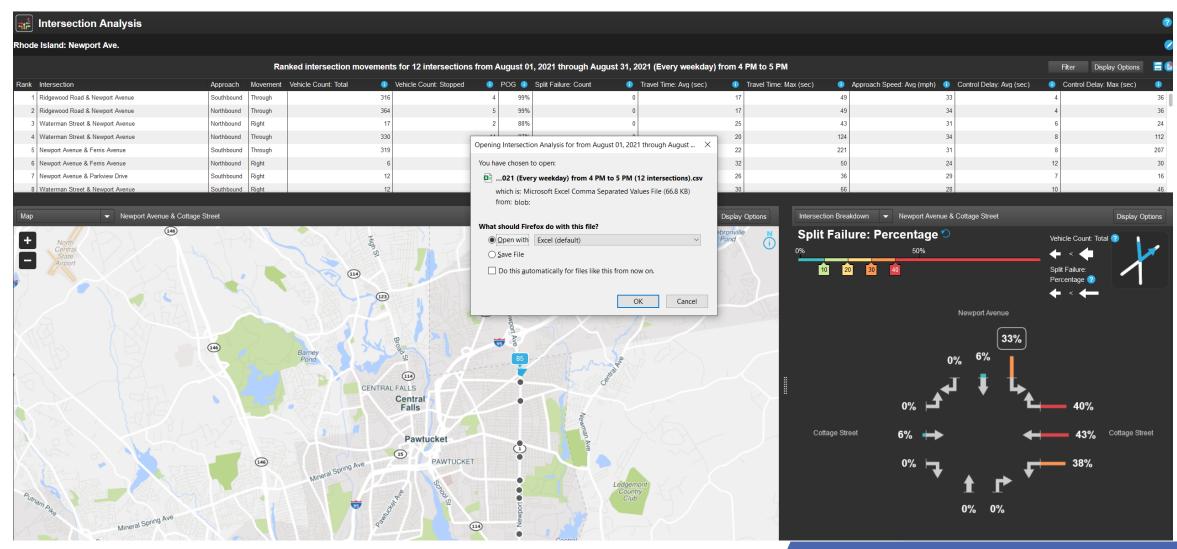




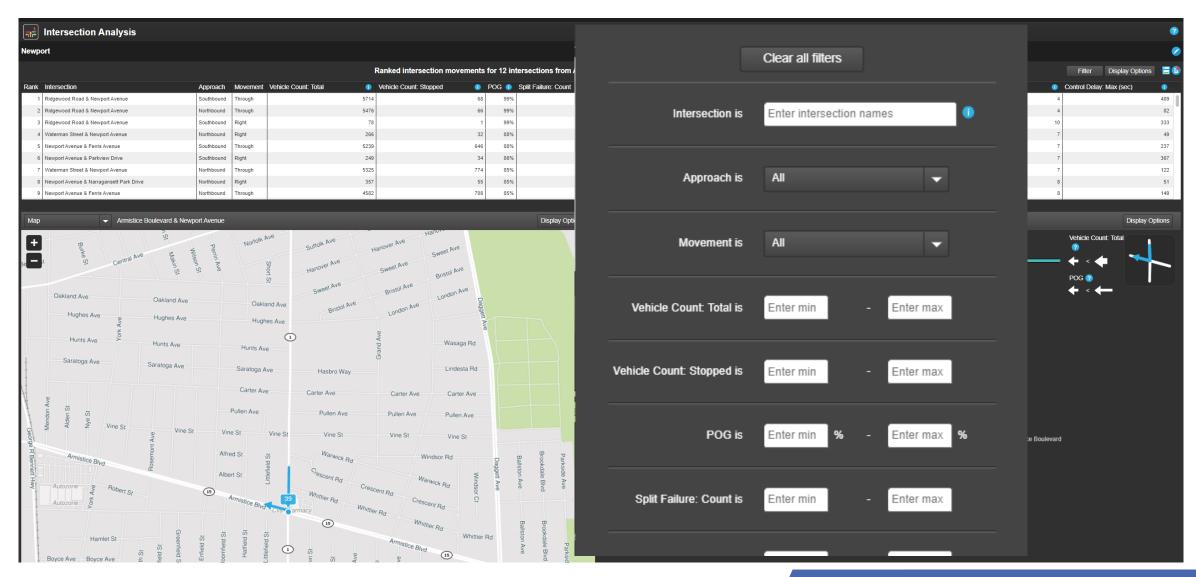
What's New with Signal Analytics



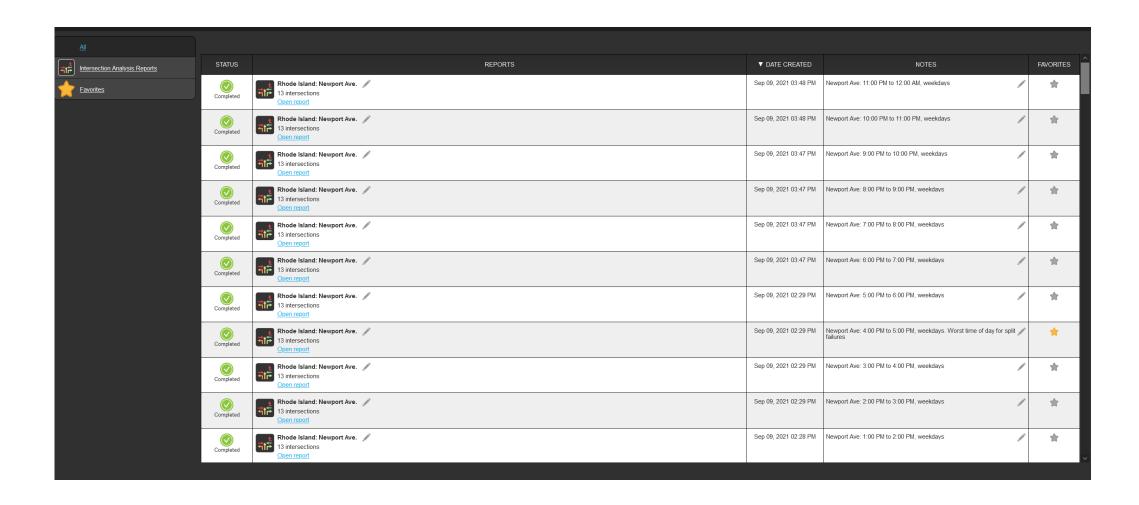
#### Users Can Download Data as a CSV File



#### Users Can Filter Data in Table to Rank Signals on a Corridor



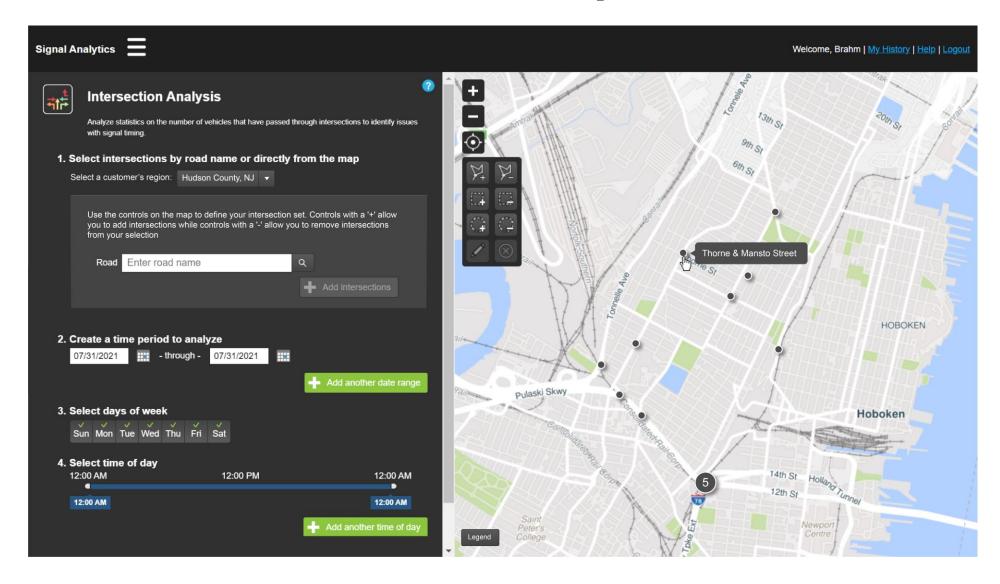
### **Users Can Create Titles and Notes for Reports**



Coming Soon!



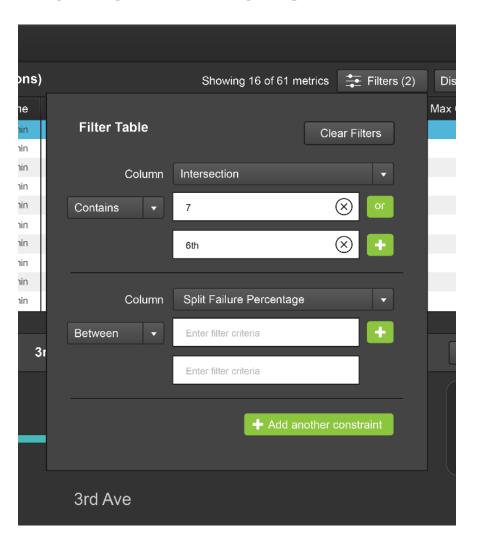
#### Intersection Selection Improvements



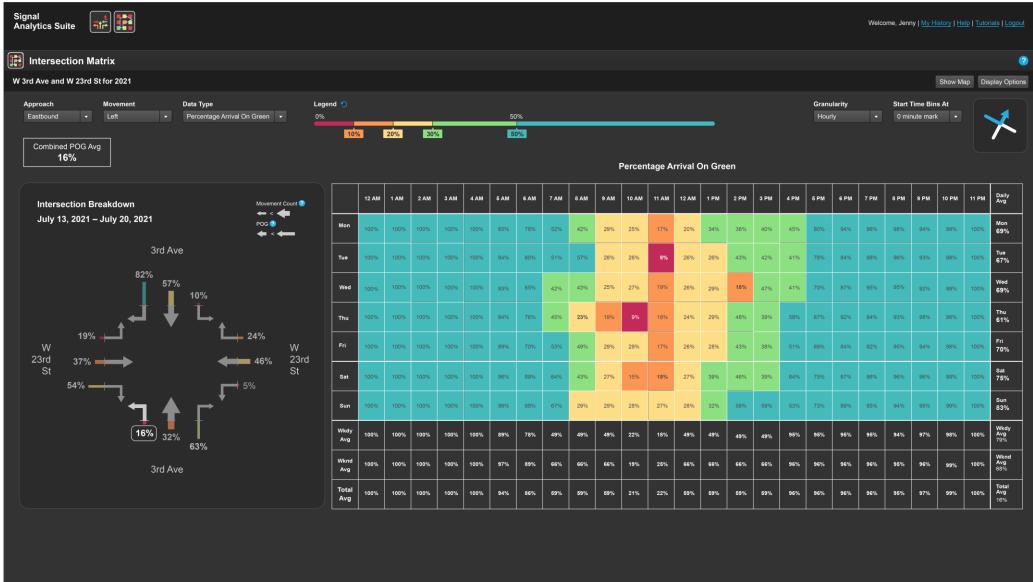
Click on intersections to add them to your selection set.

#### More Data Fields and Even Better Filters





### **Intersection Matrix Tool**





## Thank you!

**Charles R. Lattimer, CATT Lab** 

lattimer@umd.edu



RITIS User Group Meeting September 30, 2021



# RITIS Enhancement Working Group





### RITIS Enhancements Working Group

- 2021 Funding Commitments Came from:
  - Georgia
  - Massachusetts
  - Oregon
  - Virginia
  - Michigan

- Three Major Projects Funded:
  - Causes of Congestion Pie Chart Deep-Dive Analytics
  - Waze Enhancements
  - Corridor Speed Graphs

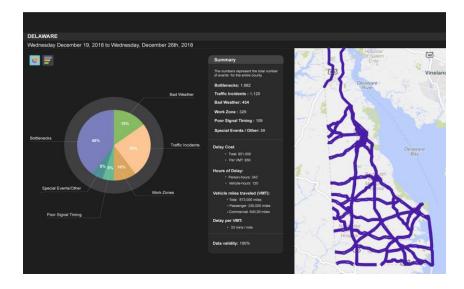
### PDA-Style Congestion Pie Charts

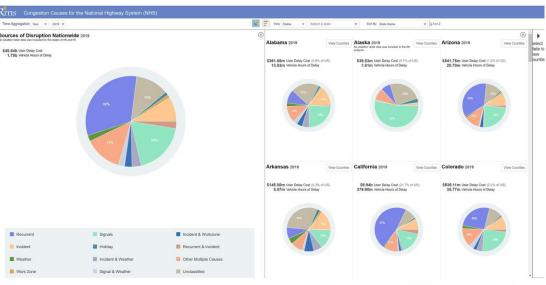
#### • What it is:

 Ability to develop 'causes of congestion' pie charts and UDC bar graphs for any geography and data range using agency owned data fused with other data sources

#### Status of the work:

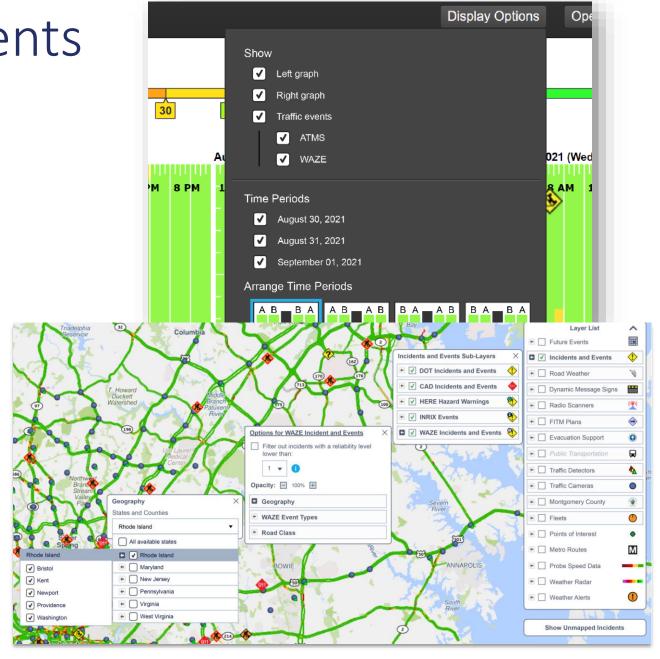
- Software and design work well underway
- Finalizing User Interface Designs, Features, and Workflow
- Automating various scripts / processes
- Designing non-NHS analytical techniques
- Developing algorithms for Waze + Agency event data integration and conflict resolution
- Will be discussing several temporal and spatial resolution selection concepts with the working group in the coming month





### Waze Data Enhancements

- What it is:
  - Filtering in real-time RITIS
  - Integration into PDA Suite
    - Region Explorer
    - Congestion Scans
    - Trend Maps
    - Bottleneck Ranking
  - Integration into Event Timelines
- Status of the work:
  - Software and design work well underway (many tools involved)
  - Interviewed multiple agencies/users
  - Finalizing designs
  - Scaling backend query capacity for large Waze data sets in EQT



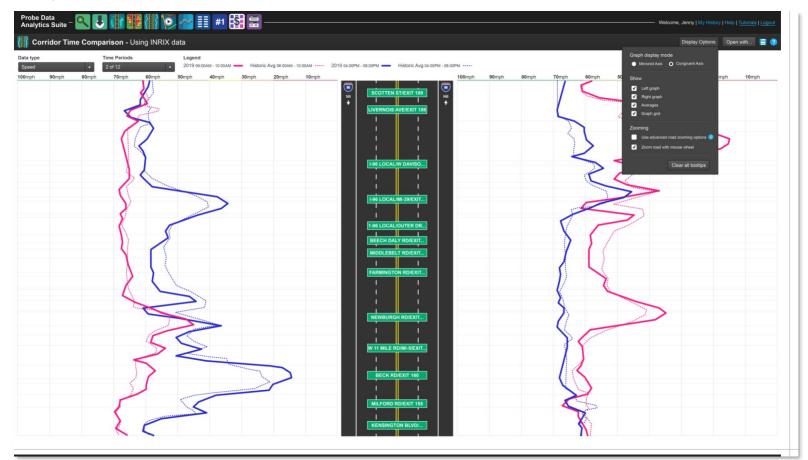
### Corridor Speed Graphs

#### • What it is:

 New PDA tool for comparing how speeds change during different time periods along a given corridor.

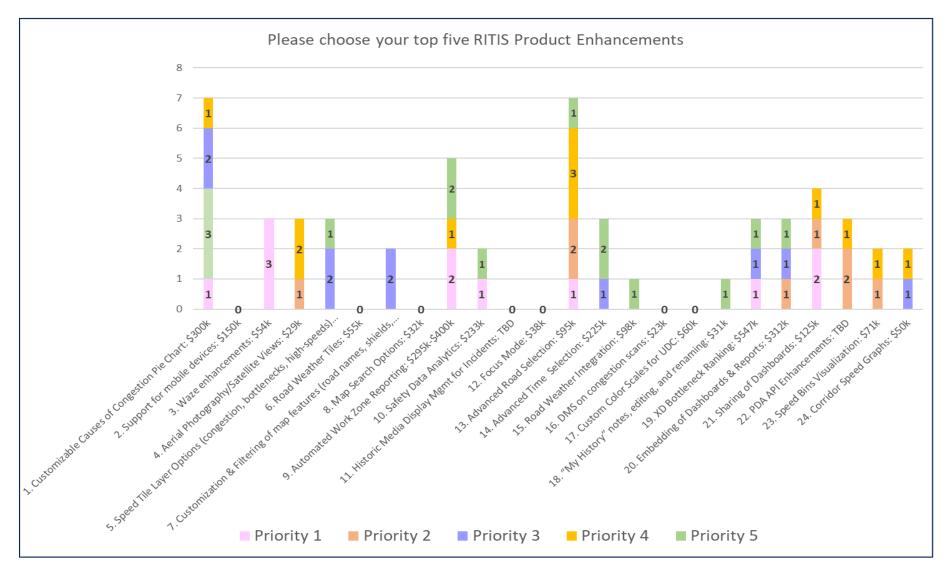
#### Status of the work:

- Finalizing front-end designs for the query interface and the results page.
- Scheduling design-review meetings with GDOT and additional enhancement group users
- Development expected to begin in 1-month



### Plenty of Enhancements Left to Fund

- Need to be planning now for the next round of enhancements and funding.
- The more agencies
   participating and the
   more funds available,
   the more we can
   accomplish.



### Next Steps

- Interested in joining the group, please reach out to
  - Michael Pack <u>PackML@umd.edu</u>
  - Denise Markow dmarkow@tetcoalition.org

- Next meeting is scheduled for
  - December 1, 2021, 2:00pm-3:00pm, ET



# PDA Suite Performance Measures Working Group



### Meeting Highlights

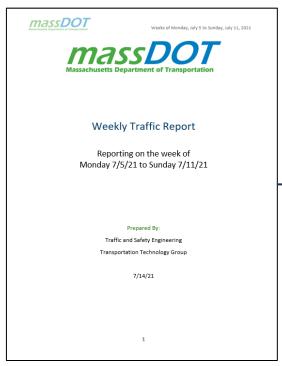
- MassDOT Corridor Performance Reporting Template
- GDOT Reporting Examples
- Ongoing RITIS Training Sessions for Agencies
- Update on the Templates Page on RITIS
- RITIS Virtual Training Workshops



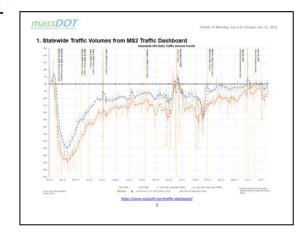
### **Corridor** Performance Report

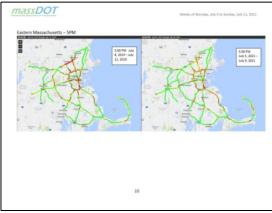
### MassDOT Traffic Reporting Objectives

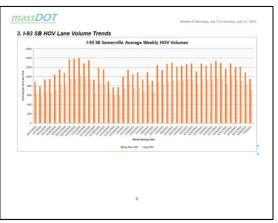
- Update and streamline their Regional
  Performance Reporting process, including
  better ways to communicate findings to
  executives, stakeholders, elected officials and
  the public
- Develop a monthly traffic report using PDA and performance reporting templates
- Create a public-facing dashboard using RITIS tools/results, to be deployed soon



A lot of time and effort to assemble this technical, 28-page report on a weekly basis.

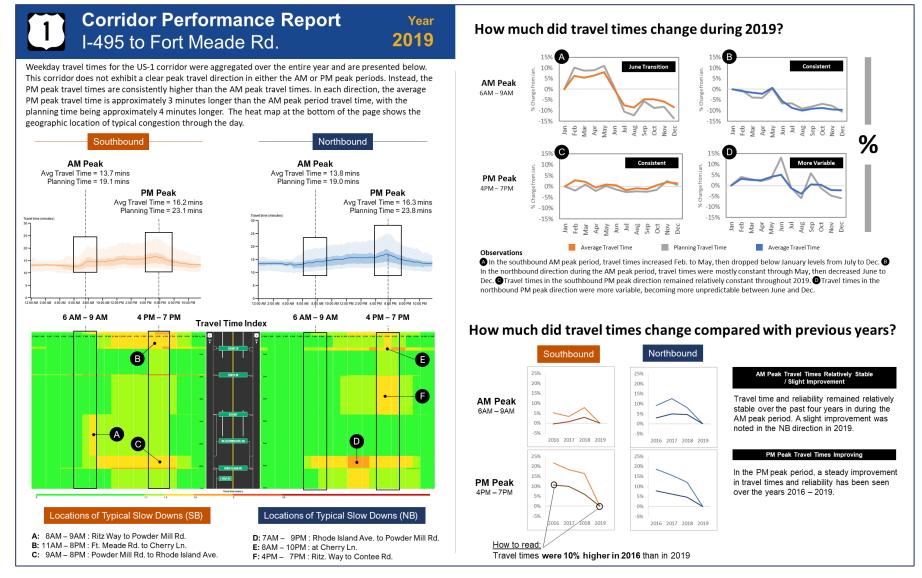








### MassDOT Corridor Reporting Template chosen from the RITIS catalog

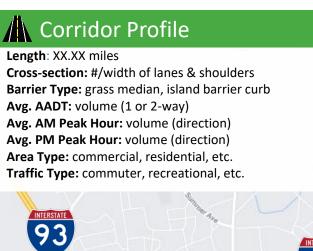




#### massDOT July 2021 Monthly Traffic Report

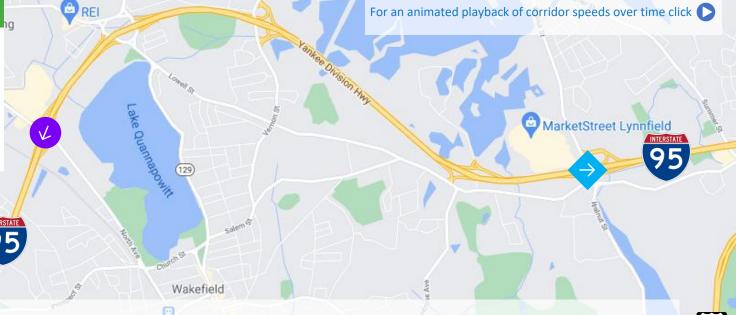
#### **Corridor Performance Detail**





To access detailed results for each measure, log into your PDA account, then Ctrl+Click each Date below to open

For an animated playback of corridor speeds over time click



Congestion in this corridor significantly improved from June to July 2021, due to X, Y and Z.



| US-1 Peabody to I-93 Woburn |

U	June 2021	July 2021	Change
Delay Cost	\$2.05M	\$989K	<b>J</b> 51%
Hours of Delay	83,337h	40,137h	<b>1</b> 52%

#### **Congestion Hot-Spot**

I-95 SB @ North Ave./Exit 42

P	June 2021	July 2021	Change
Average Speed	22 mph	30mph	<b>1</b> 39%
Travel Time Index*	2.7	2.0	<b>1</b> 21%
* TTI = (Travel Time / Free-fl	ow Travel Time)		

#### Worst Bottleneck Condition

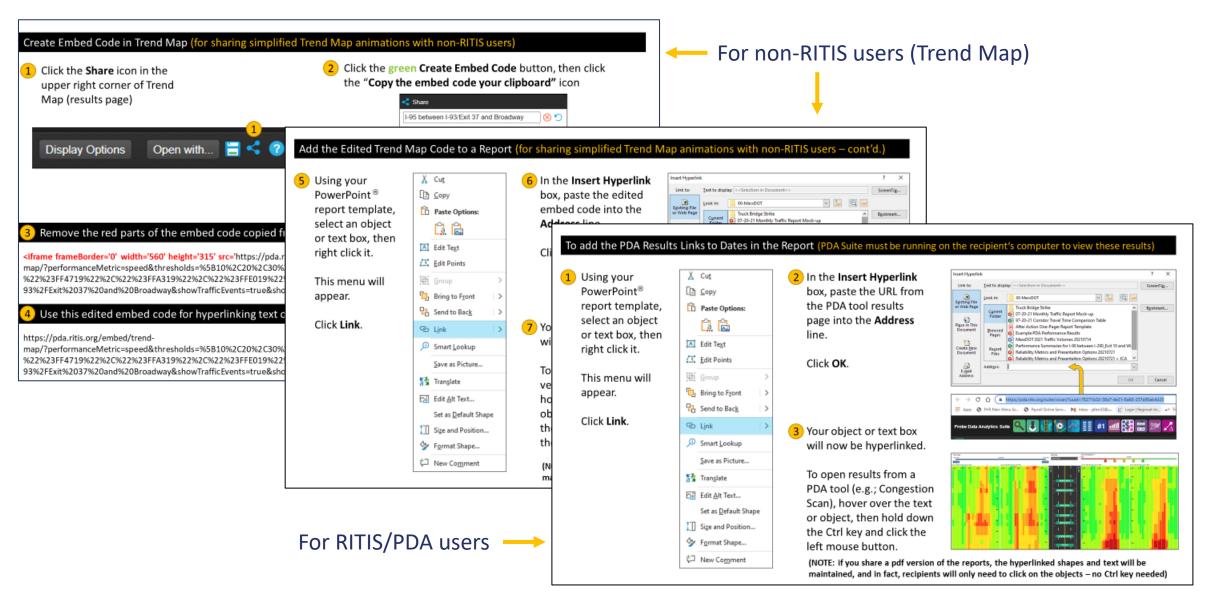
I-95 NB @ Walnut St./Exit 43

•	June 2021	July 2021	Change
Avg. Max Length	4.49 mi	4.24 mi	<b>\$\sqrt{5.5%}</b>
Avg. Duration	2h 13m	1h 25m	<b>↓</b> 36%



A 2.0 TTI means travel time on this date is twice as long than free-flow travel time

### Easy to use "how to" sheets for adding PDA hyperlinks





### Performance Reporting Examples

### GDOT Travel Advisory graphic for Labor Day weekend 2021

- Clean & simple presentation of travel data
- Colors, size of columns and graphics reinforce level of impact
- Clear, concise travel plan suggestions
- Media-friendly format (see below)











### GDOT Gradient color scheme for speed differential tables

Easy to build color-coding for agencies

Easy to
understand
color-coding for
audiences

Allows the reader to quickly focus in on areas of improvement (or impact)

#### North Avenue Study Difference of average EB speeds per TMC per hour (mph)

START	END	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
NORTHSIDE DR	NORTHSIDE DR SPUR	-1.33	0.90	-0.18	3.43	6.23	-1.39	3.51	2.68	-0.42	-0.24	-0.17	0.54	1.01	2.48	-0.06	0.14
NORTHSIDE DR SPUR	TECH PKY/LUCKIE ST	1.67	1.82	0.96	-0.22	4.19	-1.47	0.16	-0.17	-0.33	-1.04	-0.02	2.45	1.27	1.50	3.10	0.89
TECH PKY/LUCKIE ST	I-75/I-85 EXIT RAMP	-0.64	1.09	0.07	0.16	2.32	2.53	0.03	-1.77	-3.04	-2.99	0.05	0.24	0.23	1.43	0.43	-1.30
I-75/I-85 EXIT RAMP	I-75/I-85	-0.64	1.09	0.07	0.16	2.32	2.53	0.03	-1.77	-3.04	-2.99	0.05	0.24	0.23	1.43	0.43	-1.30
I-75/I-85	SPRING ST	-3.19	0.98	1.43	-0.50	1.42	1.35	1.35	-0.04	-0.76	0.25	0.36	0.28	-0.12	1.60	1.68	-0.91
SPRING ST	W PEACHTREE ST	-0.85	3.47	1.08	2.78	3.26	3.55	1.81	2.35	0.62	0.04	0.27	1.64	0.92	-0.28	1.76	-2.53
W PEACHTREE ST	PEACHTREE ST	1.62	2.88	4.54	2.25	1.73	2.92	0.65	3.26	-1.35	1.97	0.83	2.29	-0.06	2.86	3.45	-2.40
PEACHTREE ST	JUNIPER ST	4.47	5.71	4.43	5.49	3.45	3.38	2.39	5.35	-0.23	2.77	1.99	2.20	0.92	1.68	2.62	-1.48
JUNIPER ST	PIEDMONT AVE	1.39	5.88	6.26	6.15	3.58	2.99	2.65	5.28	1.14	5.95	5.72	1.32	1.39	2.97	-1.26	-2.70
PIEDMONT AVE	MYRTLE ST	1.39	5.88	6.26	6.15	3.58	2.99	2.65	5.28	1.14	5.95	5.72	1.32	1.39	2.97	-1.26	-2.70
MYRTLE ST	BOULEVARD	0.53	2.03	0.17	0.78	2.14	1.96	1.23	2.57	3.63	3.25	3.43	3.48	4.75	6.64	-1.17	-1.32
BOULEVARD	FREEDOM PKWY	-1.26	0.39	-1.67	0.25	-1.31	0.65	-1.20	-2.05	-0.36	-0.49	-0.94	-0.18	-0.57	3.07	-1.69	-0.32
AVE	RAGE	0.26	2.68	1.95	2.24	2.74	1.83	1.27	1.75	-0.25	1.03	1.44	1.32	0.94	2.36	0.67	-1.33

#### North Avenue Study Difference of average WB speeds per TMC per hour (mph)

START	END	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
FREEDOM PKWY	BOULEVARD	-0.17	-1.27	0.80	0.57	0.31	-0.20	-0.37	2.06	0.33	-0.02	-0.30	-0.26	-1.40	0.83	0.97	0.73
BOULEVARD	MYRTLE ST	1.04	1.98	2.34	3.08	0.36	1.56	0.55	3.11	0.15	0.31	-0.62	0.42	1.19	2.57	2.76	3.06
MYRTLE ST	PIEDMONT AVE	1.04	1.98	2.34	3.08	0.36	1.56	0.55	3.11	0.15	0.31	-0.62	0.42	1.19	2.57	2.76	3.06
PIEDMONT AVE	JUNIPER ST	1.84	5.48	2.40	4.24	0.72	-0.37	-1.71	-1.18	0.04	1.95	0.05	2.61	1.47	0.66	2.29	3.05
JUNIPER ST	PEACHTREE ST	1.84	5.48	2.40	4.24	0.72	-0.37	-1.71	-1.18	0.04	1.95	0.05	2.61	1.47	0.66	2.29	3.05
PEACHTREE ST	W PEACHTREE ST	1.94	4.54	1.92	3.66	-0.65	1.05	1.59	0.91	-0.06	1.63	0.55	3.15	2.52	2.08	-0.24	2.41
W PEACHTREE ST	SPRING ST	-3.53	1.53	3.21	4.26	1.10	0.18	2.94	0.64	0.61	0.31	0.08	1.65	0.71	1.02	0.40	2.20
SPRING ST	I-75/I-85	0.70	3.26	1.50	4.41	4.08	0.65	2.03	1.54	1.24	1.05	2.32	1.35	2.07	0.14	-0.74	-0.54
I-75/I-85	I-75/I-85 EXIT RAMP	0.70	3.26	1.50	4.41	4.08	0.65	2.03	1.54	1.24	1.05	2.32	1.35	2.07	0.14	-0.74	-0.54
I-75/I-85 EXIT RAMP	TECH PKY/LUCKIE ST	1.68	-0.09	-0.85	0.90	-0.57	0.03	-0.01	-0.48	-0.70	-1.66	-0.08	-1.75	-1.24	-0.20	-1.79	0.77
TECH PKY/LUCKIE ST	NORTHSIDE DR SPUR	1.38	2.15	1.27	0.26	-1.51	1.77	-0.09	0.68	-1.56	-2.19	-0.48	1.14	0.56	0.82	-3.24	0.04
NORTHSIDE DR SPUR	NORTHSIDE DR	1.38	2.15	1.27	0.26	-1.51	1.77	-0.09	0.68	-1.56	-2.19	-0.48	1.14	0.56	0.82	-3.24	0.04
AVE	RAGE	0.82	2.54	1.67	2.78	0.62	0.69	0.48	0.95	-0.01	0.21	0.23	1.15	0.93	1.01	0.12	1.44

# RITIS Ongoing Training for Agencies

### RITIS on-going training for agencies

- Rick Ayers (CATT Lab) has been training agency staff on RITIS, PDA and the use of performance reporting templates
- Template focus has been on:
  - Before & After (incident/accident evaluation)
  - Monthly/Quarterly Summary Reports
  - Corridor Performance
- Agencies taking advantage of the training include:
  - LDOTD
  - ODOT
  - NJDOT





Center for Advanced Transportation Technology Lab Regional Integrated Transportation Information System and Probe Data Analytics Suite

PDA Review and Operational Insights Using RITIS Training Agenda July 27, 2021

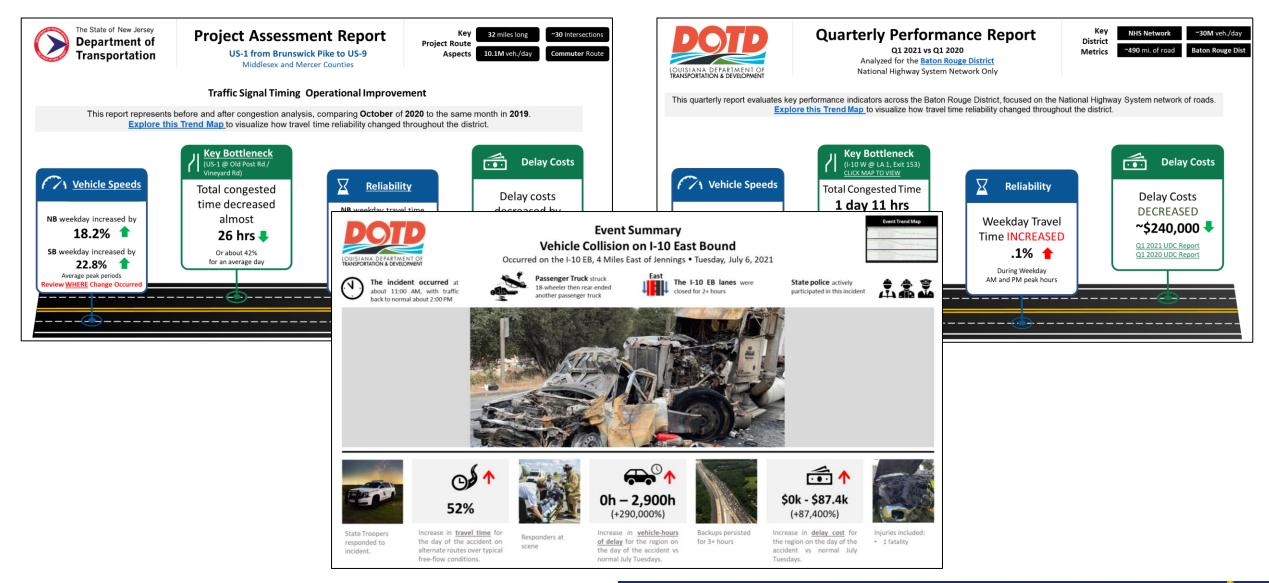
During this session, CATT Lab staff will provide a morning review of Probe Data Analytics and will utilize the aftermoon to train DOTD staff in the utilization of the RITIS platform to support a variety of operations related functions.

0830 to 0845	Welcome & Introductions – All
0845 to 1130	Review of RITIS/PDA Suite:  Overview of RITIS Real-time Situational Awareness Overview Probe Data Analytics Data Analytics/Visualizations/Export/Interoperability
1130 to 1215	Lunch
1215 to 1400	Deep-dive Review of RITIS Real-Time Solutions:  Traffic Map - (focus on DOTD and 3rd party real-time data)  Event Query Tool Incident List Incident Overview Incident Timelines Review Detector tools (demonstration of non-DOTD data)
1400 to 1420	Break
1420 to 1600	Deep-dive Review of RITIS Analytical Capabilities Using DOTD and 3rd-part Archived Data and After Action Report Development:  Dashboards Incident focused widgets Speed and Travel Time widget  PDA tools that integrate/overlay incidents/workzones in the output data visualization

Bottleneck ranking
 Trend Maps
 Congestion Scan
 Region Explorer

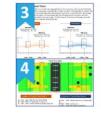
Last Modified by RA on: July 12, 2021

### RITIS on-going training for agencies



# RITIS Templates page

### RITIS templates page "How to create a Report" section layout finalized



#### How to make the hourly travente graph

a Start by opening PDA Performance Charts







b Tailor the chart results



- Under Select roads, enter your state and a road name, select a listed road. A list will appear. Click on the appropriate choice, then to query a smaller segment, click on Partial, then use the From: and To: intersection dropdowns to focus on your analysis segment.
- Next, use Select one or more time periods to choose specific days, months or year to analyze. Choose the specific days of the week by checking or unchecking the days, then add the time period by clicking on the Add time periods button.
- Select a time range to analyze within each time period. Here you can specify peak hours or periods of interest.

Next, select a data source (INRIX, HERE or TomTom or various NPMRDS datasets)

Finally click the Submit button.

- 1. Tailor the **chart results** by selecting, deselecting or editing:
  - Mode (chart by direction or time period)
  - Type (column, line, plot, candlestick)
  - Layout (vertical, tile)
  - X/Y access (full range customization)
  - Metric (11 choices)
  - Chart data (line width, data line color options and % ranges appearance)
  - · Charts (view one or both roadway directions)

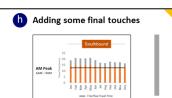
#### Tool Tips / Image Max

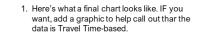
#### TIP

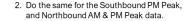
Use the Save as segment set button to save your selected road(s) for later analysis with any PDA tools. Then, just click on the Saved tab at the top instead of searching for a road, find your road and click it.

Clicking on the magnifying glass icon maximizes the size of the image to full screen.

Clicking anywhere in that expanded image takes you back to this page.







Add a sidebar graphic to denote that this is a travel time performance result.

#### How to make the travel time % difference charts

a Use MS Excel to create a new % difference spreadsheet from your original

		No	Sounthbound										
		AN	Л	P	PM			Al	И		PM		
	FF	TT	PT	TT	PT	FF	TT		PT		TT	PT	
Jan	12.4	14.6	19.9	16.2	23.4	12.5	1	3.9	1	3.9	16.1	23.4	
Feb	12.4	14.5	19.8	16.7	24.4	12.5	1	1.7	2	.8	16.5	23.0	
Mar	12.4	14.4	19.1	16.7	24.1	12.5	1	.6	2	. 5	16.4	23.6	
Apr	12.4	14.3	19.1	16.6	23.9	12.5	1	1.7	2	. 5	16.0	22.9	
May	12.4	14.7	20.0	16.9	24.2	12.5	1	.0	2	.9	16.2	23.5	
Jun	12.4	13.8	18.6	17.1	26.5	12.5	1	.8	1	.1	16.2	23.1	
Jul	12.4	13.3	18.6	16.0	23.2	12.5	1	.8	1	.9	15.8	22.8	
Aug	12.4	13.1	18.1	15.6	22.0	12.5	1	2.7	1	6.5	16.0	22.9	
Sep	12.4	13.3	18.3	16.3	24.8	12.5	1	3.2	1	7.8	15.9	22.9	
Oct	12.4	13.3	18.5	16.3	23.1	12.5	1	3.2	1	7.2	16.2	23.0	
Nov	12.4	13.2	18.4	15.9	22.3	12.5	1	3.1	1	7.3	16.4	24.0	
Dec	12.4	13.2	17.8	15.9	22.0	12.5	1	2.7	1	5.3	16.3	23.6	

		No	thbou	Sounthbound						
		AN	1	P	M		A	PIV		
	FF	TT	PT	TT	PT	FF	TT	PT	TT	P
Jan	096	0%	0%	0%	0%	0%	096	0%	0%	
Feb	096	-1%	-1%	3%	4%	0%	6%	10%	3%	
Mar	096	-2%	-4%	3%	3%	0%	5%	9%	2%	
Apr	0%	-2%	-4%	2%	2%	0%	6%	9%	0%	
May	096	1%	0%	4%	3%	0%	8%	11%	1%	
Jun	096	-5%	-7%	5%	13%	0%	096	1%	1%	
Jul	096	-9%	-7%	-1%	-1%	0%	-8%	-11%	-2%	
Aug	096	-10%	-9%	-4%	-6%	0%	-9%	-12%	-1%	
Sep	096	-9%	-8%	1%	6%	0%	-5%	-6%	-1%	
Oct	096	-9%	-7%	0%	-1%	0%	-5%	-9%	1%	
Nov	0%	-9%	-8%	-2%	-5%	0%	-6%	-8%	2%	
Dec	0%	-10%	-10%	-2%	-6%	0%	-8%	-14%	1%	

 Using the original spreadsheet with travel time and planning time data, create a new spreadsheet for the change in % of TT and PT, using these formulas:

$$\frac{\text{TT}_{\text{Aug}}\text{-TT}_{\text{Jan}}}{\text{TT}_{\text{Jan}}} \times 100\% = \Delta\% \text{ TT}$$

$$\frac{\mathsf{PT}_{\mathsf{Aug}}^{\mathsf{-PT}_{\mathsf{Jan}}}}{\mathsf{PT}_{\mathsf{Jan}}} \times 100\% = \Delta\% \,\mathsf{PT}$$



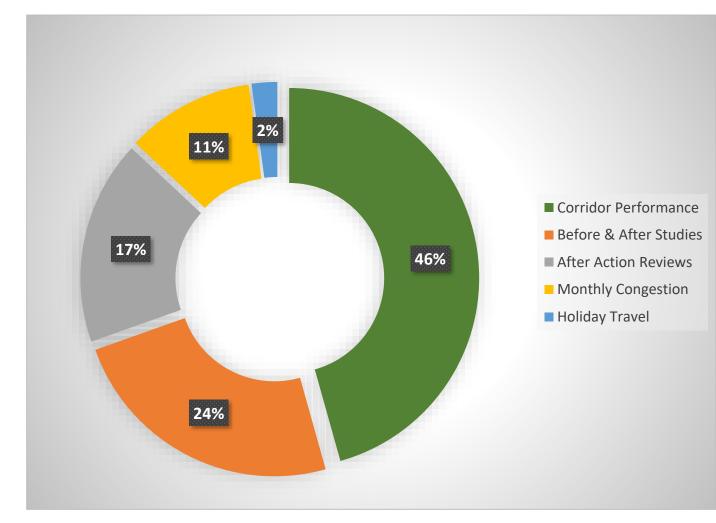


### RITIS Virtual Training Workshop

### Poll Results (from 07/15/21 RITIS User Group meeting)

71%

said they're definitely interested in a workshop



Corridor Performance also came out on top in a poll conducted 05/07/2020

### Training Program Outline (1st cut)

- Focus on Corridor Performance
- Finalize a use case
- Finalize agenda topics
  - RITIS overview, template overview, tool selection, etc. (VERY brief)
  - Step by step process to build the template
  - Show how to use each tool query to results
  - Taking results and building a report
- Overall program length (per session) approximately 1 ½ to 2 hr.
- Use the recordings to build a library of template training to be posted on the RITIS Templates page



# New RITIS Tools and Recent Enhancements





### Improvements to Work Zone Dashboard



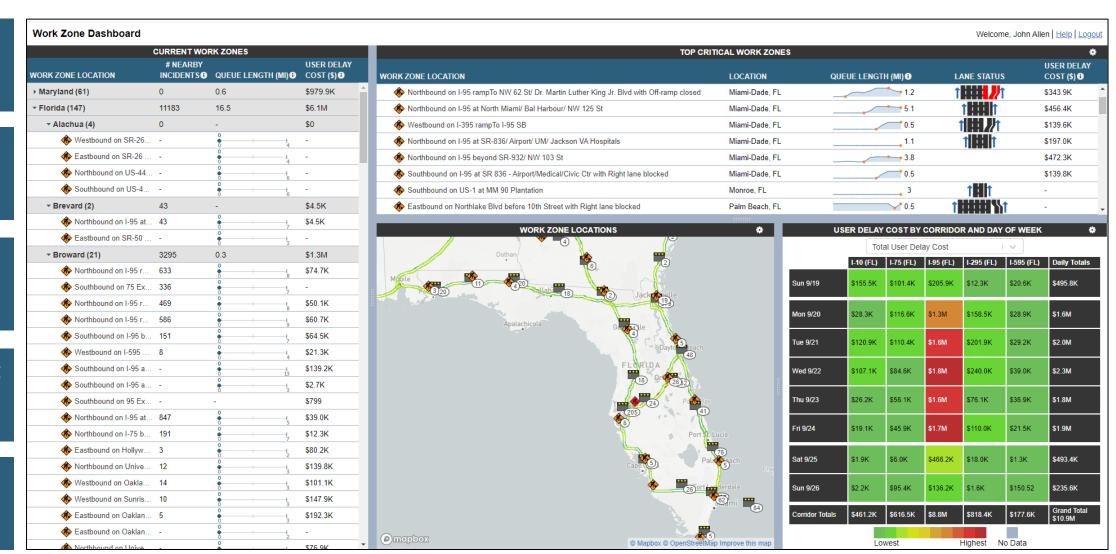
Overall cleaner look

More stable with bug fixes

Saves your State's info

Vector mapping for easier updating

No need to separately select HERE/INRIX



The Individual WZ Profiles Dashboard received some bug fixes but will be significantly revamped in future work, as well as overall WZ data reliability.



### Top Critical Work Zones

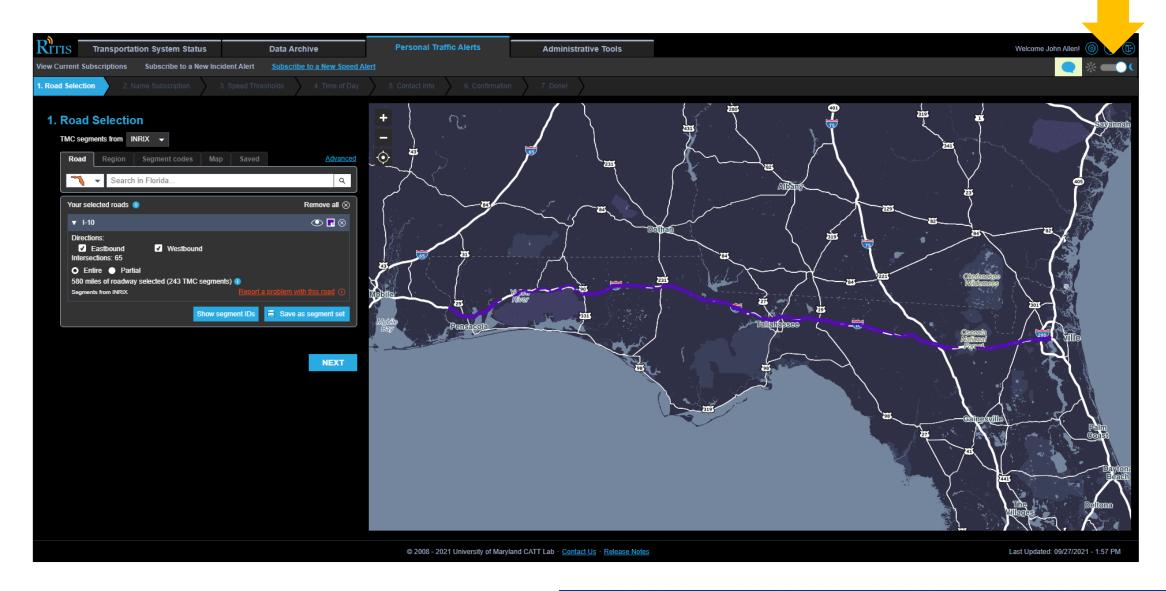


TOP CRIT	ICAL WORK ZONES			
WORK ZONE LOCATION	LOCATION	QUEUE LENGTH (MI) 🗗	LANE STATUS	USER DELAY COST (\$) 🔁
Northbound on I-95 rampTo NW 62 St/ Dr. Martin Luther King Jr. Blvd with Off-ramp closed	Miami-Dade, FL	1.1	<b>†            </b>	\$105.9K
Northbound on I-95 at North Miami/ Bal Harbour/ NW 125 St	Miami-Dade, FL	Today at 3:00 PM: 5 MI 5	<b>†###</b>   †	\$94.3K
♦ Westbound on I-395 rampTo I-95 SB	Miami-Dade, FL	0.5	↑ <b>          </b>	\$127.0K
Northbound on I-95 at SR-836/ Airport/ UM/ Jackson VA Hospitals	Miami-Dade, FL	11.1	<b>†       </b>	\$79.7K
Northbound on I-95 beyond SR-932/ NW 103 St	Miami-Dade, FL	3.6		\$86.8K
Southbound on I-95 at SR 836 - Airport/Medical/Civic Ctr with Right lane blocked	Miami-Dade, FL	0.5		\$127.0K
Southbound on US-1 at MM 90 Plantation	Monroe, FL	3	<b>†##</b>  †	-
Eastbound on Northlake Blvd before 10th Street with Right lane blocked	Palm Beach	0.5	† <b>#####</b> \$\^	

Hover over the orange dots for queue length shows a time stamped queue length

### Day/Night mode added to Personal Traffic Alerts



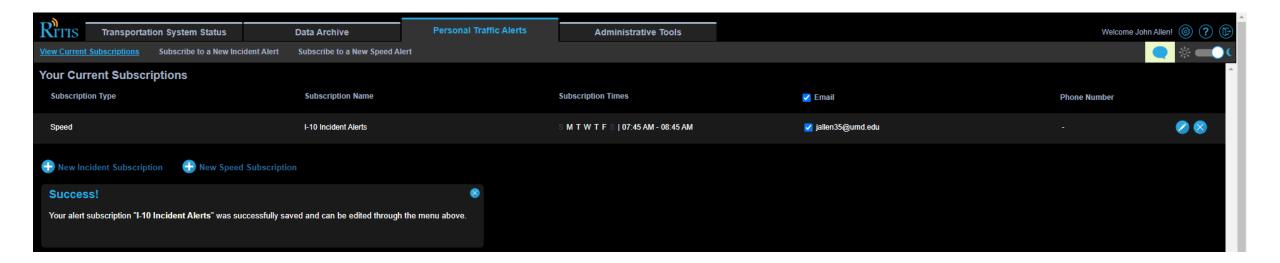


### Subscribing to Personal Traffic Alerts is easy!



#### Simple step-by-step process for incidents or speed changes





Build a list of notifications by email or phone. Add to, edit or delete is simple.

### Data Source Updates

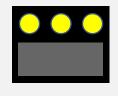


Added display of Oregon DOT traffic detectors on the RITIS Map.





Added display of
Oregon DOT dynamic
message signs on
RITIS Map, RITIS
Meeting, and Traffic
View





Updated Florida DOT district naming to use common names provided by Florida DOT.



District 5 (Central Florida)



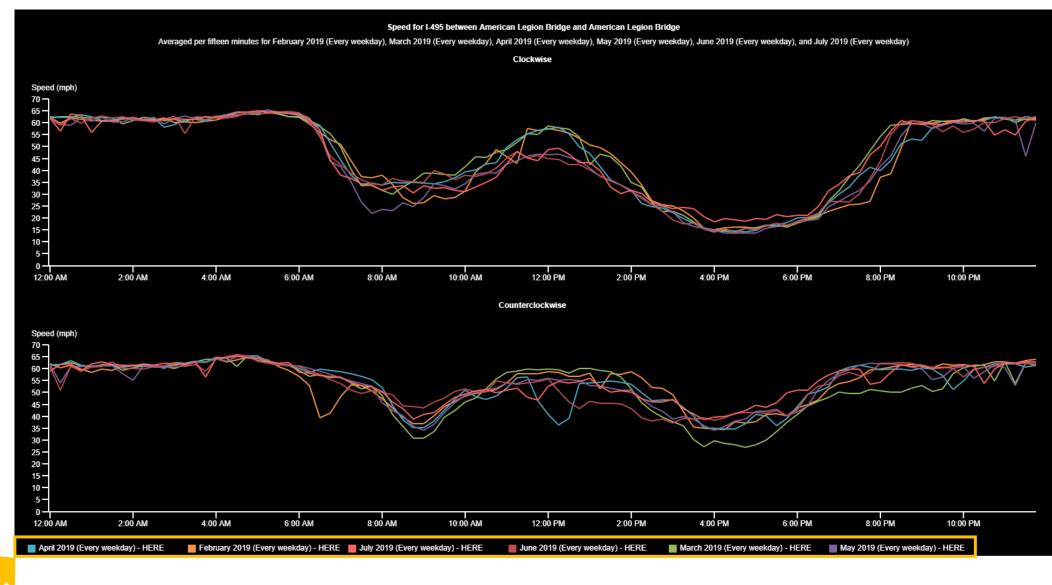
Updated CCTV URLs for higher performance and more secure access directly from ritis.org rather than the originating DOT.



# Probe Data Analytics Suite

### PDA Suite latest updates

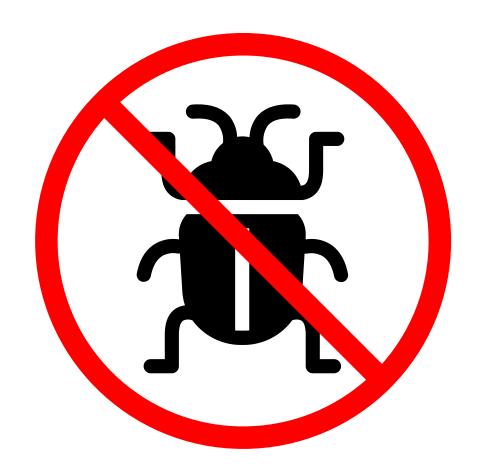
In Performance Charts, chart legends are now shown in uncustomized image exports



### PDA Suite latest updates

# Some important bug fixes/updates

- Bottleneck Ranking (time zone crash)
- Temporal Comparison Maps (pan/zoom)
- MAP-21 (updated data certification schedule)
- Trend Map (occasional incorrect time in header)
- User Delay Cost (AADT data check)

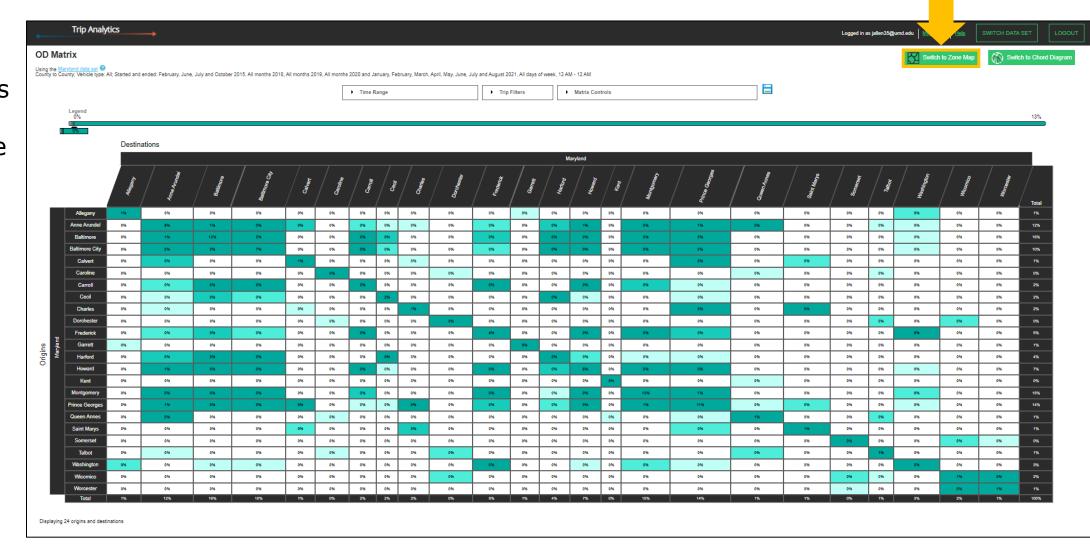


https://pda.ritis.org/suite/updates/

## Trip Analytics

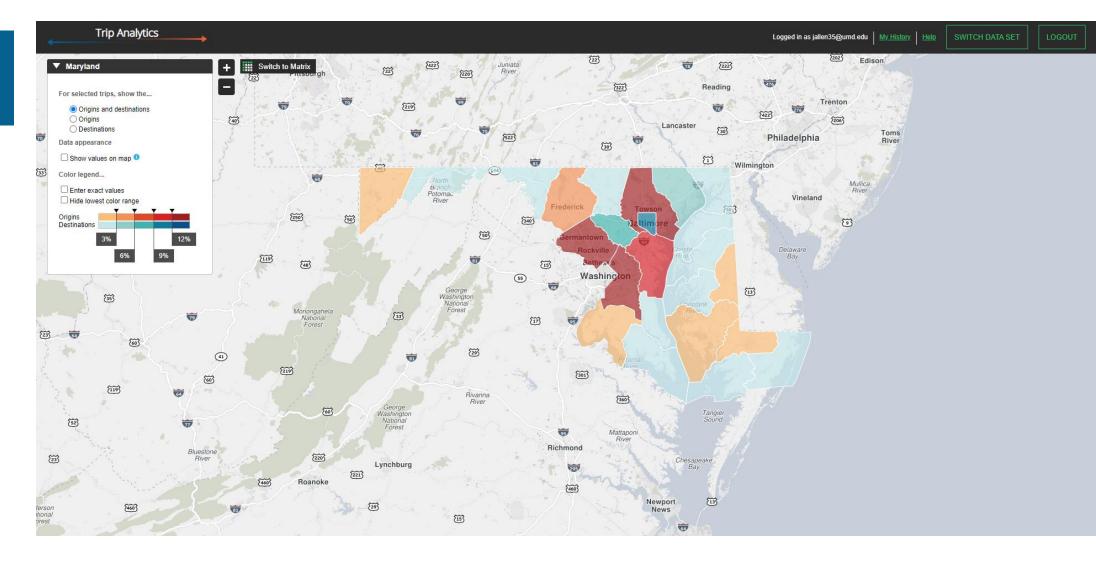
### Trip Analytics latest updates

You can now view the OD matrix results on a zone map with one click.



### Trip Analytics latest updates

Basic OD Map



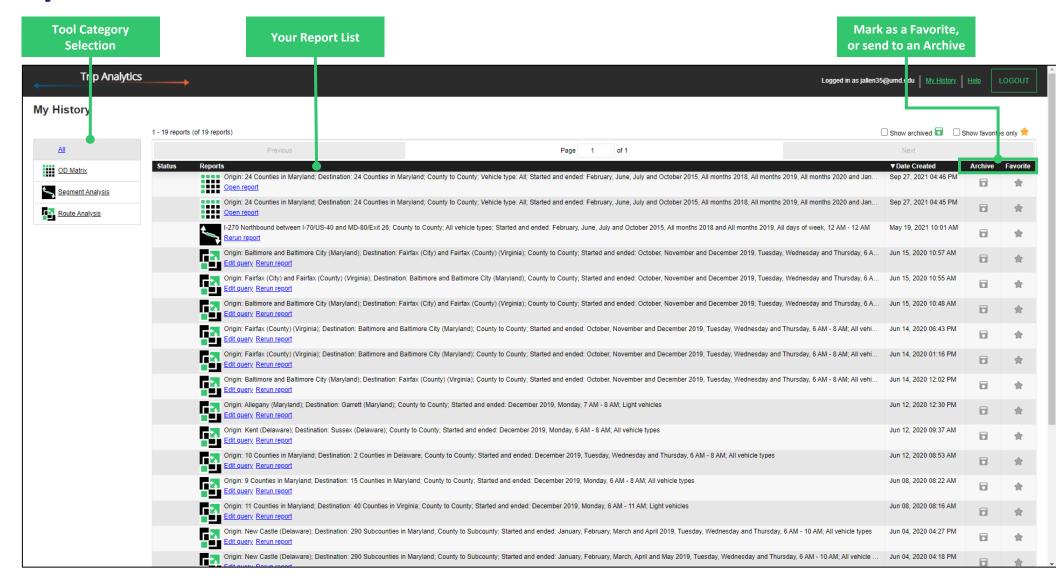
### Trip Analytics My History

Like PDA Suite, Trip Analytics has a **My History** feature that gives users the ability to:

- Edit queries
- Open or rerun reports
- Mark as

   Favorites or
   send to an

   Archive





## Agency Input Session





DVRPC
Manager, Capital Project Development

Jesse Buerk

### We want to hear from you!

- All features and functionality are driven by state/mpo users.
- You are welcome to join any of our User Groups / Working Groups / Listening Sessions to brainstorm/define these new features and functionality.
- You can also type your comments to us today either in the chat box below, or with an email to support@ritis.org



### Wrap Up





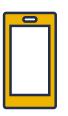
**Jesse Buerk** 

Manager, Capital Project Development, DVRPC RITIS User Group Co-chair

### Questions?







**Denise Markow (TETC)** 

dmarkow@tetcoalition.org

301.789.9088

Joanna Reagle (Logistics)

jreagle@kmjinc.com

610.228.0760

**Michael Pack (CATT Lab)** 

PackML@umd.edu

**RITIS Tech Support** 

support@ritis.org

**PDA Suite Tech Support** 

pda-support@ritis.org

### Thank you!



