

PENNDOT TSMO PERFORMANCE PROGRAM

Ryan McNary
Manager, Traffic Systems and Performance

TSMO PERFORMANCE PROGRAM

Program Overview

EDC-4 – Incident Timeline

- Crowd-Sourced Data Validation
 - Result: Traffic Alerts App For TMCs

Crashes in Congestion

- Congestion Pie Chart
 - Result: Virtual HAR

Traffic Volume

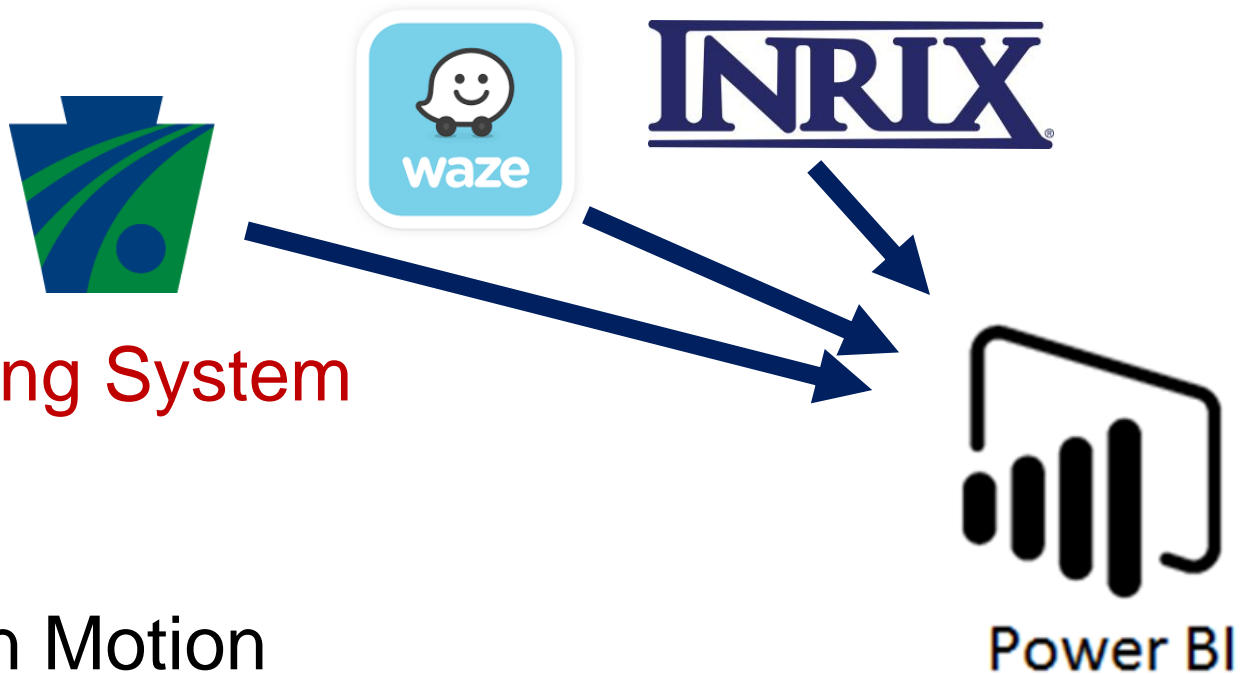
- COVID-19
- Fuel Tax Revenue
 - Result: Traffic Volume Dashboard

Work in Progress



TSMO ANALYTICS DATA

- **Crash Records**
- **Road Condition Reporting System**
- Maintenance Database
- Weather Stations
- Traffic Counter/Weigh in Motion
- ATMS DMS Message History
- ITS Device Locations

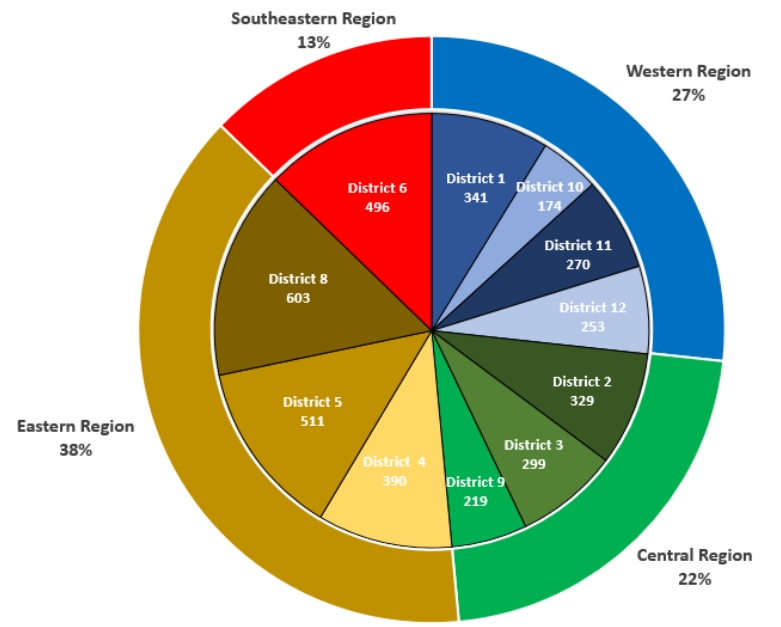
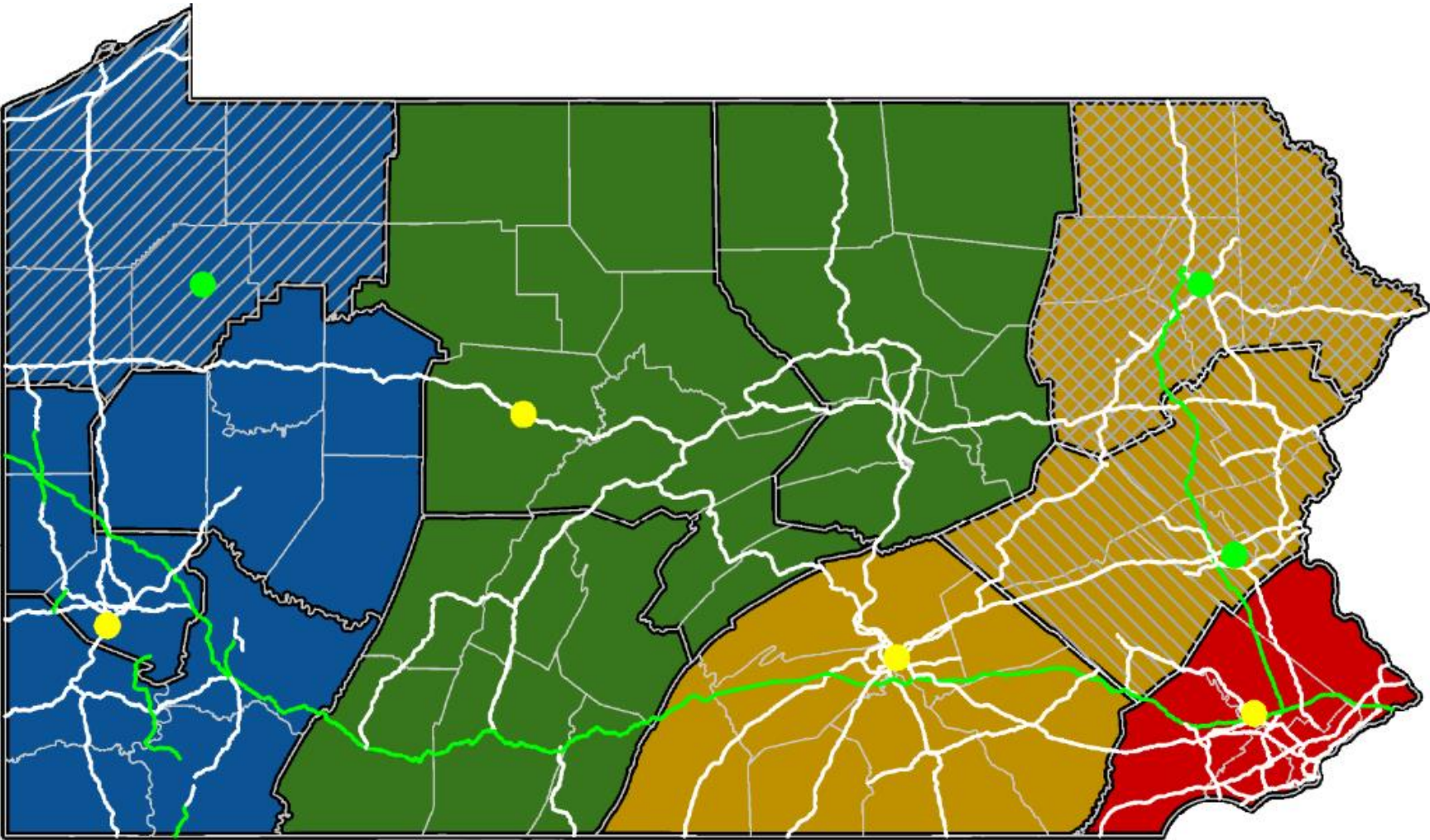


Performance Reports Located at:

<https://www.penndot.gov/ProjectAndPrograms/operations> or Google "PennDOT TSMO"



ANALYSIS ON PENNSYLVANIA "CORE NETWORK"



- District Offices
- District Offices
- Pennsylvania Turnpike Network

- PennDOT Core Road Network
- District 5 (M-F 05:45 to 20:00)
- District 4 (M-F 06:00 to 18:00)

- District 1 (24/7 November 1st to April 1st)
- Western Region
- Southeastern Region

- Eastern Region
- Central Region

EDC-4 - INCIDENT TIMELINE



INCIDENT TIMELINE

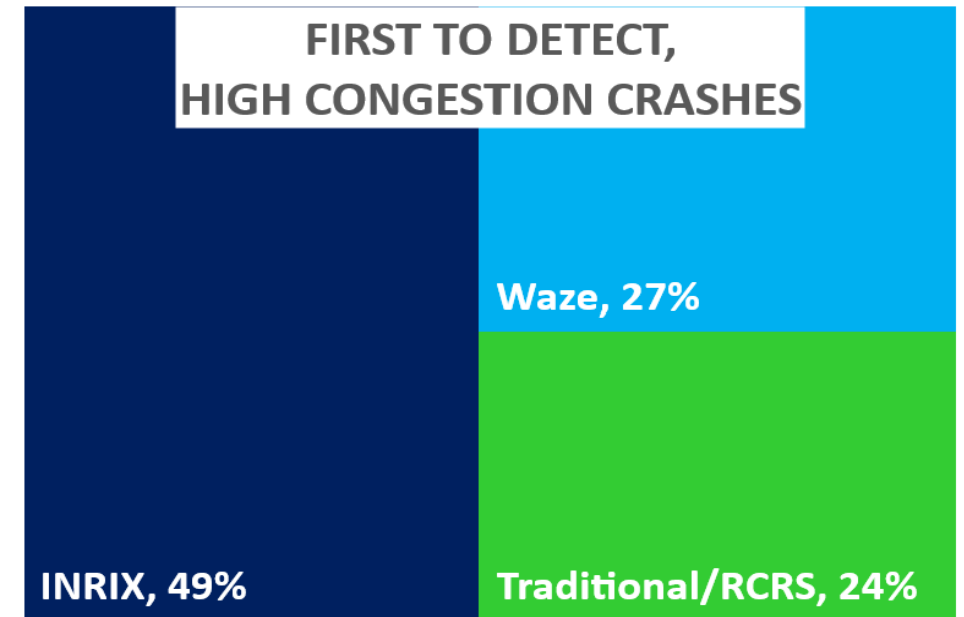
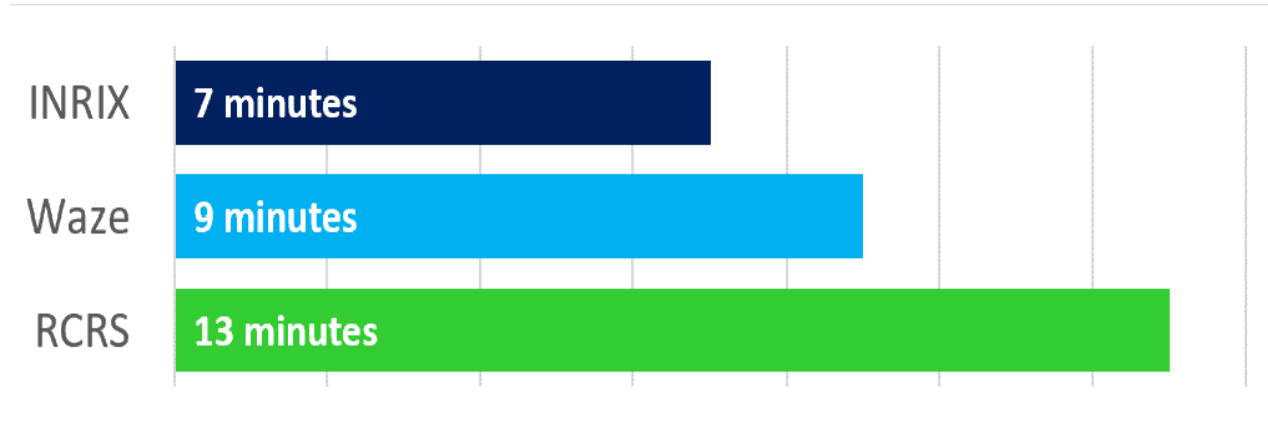
	2017 Incident Clearance Time (min)	2017 Incident Count	2018 Incident Clearance Time (min)	2018 Incident Count	Change
I-90	171	30	124	41	-47
ERIE	171	30	124	41	-47
I-376	62	994	61	977	-1
ALLEGHENY*	62	983	60	964	-2
BEAVER*	68	3	117	7	49
LAWRENCE*	147	6	313	4	166
MERCER	51	2	148	2	97
I-79	122	329	86	350	-36
ALLEGHENY*	85	241	81	263	-4
BUTLER*	511	21	115	14	-396
CRAWFORD	292	6	156	2	-136
ERIE	142	2	66	10	-76
GREENE*	195	6	94	23	-101
MERCER	114	6	81	6	-33
WASHINGTON*	106	47	109	32	3
I-279	66	211	78	248	12
ALLEGHENY*	66	211	78	248	12
I-579	53	25	52	29	-1
ALLEGHENY*	53	25	52	29	-1
I-99	120	76	90	100	-30
BEDFORD	N/A	0	61	1	N/A
BLAIR	96	21	117	39	21
CENTRE	136	55	73	60	-63

New Milestone: “**Incident Influence Time**” is measured from time the incident occurs until traffic returned to historically normal speeds



CROWD-SOURCED INCIDENTS

- INRIX/Waze combined detect **86.7%** of reportable crashes



CROWD-SOURCED INCIDENT APP

Filter & Legend

Search:

Source	District	Road	Direction	AlertType	Severity	Congestion	Reported Time	Status
Waze/Inrix	D04	I-80	Westbound	Congestion(Inrix)	2-Moderate	2.84 miles	6:07 PM (a minute ago)	active (v.40)
RCRS/Inrix	D05	US-22	Eastbound	Incidents(Inrix)	2-Moderate	1.59 miles	6:04 PM (4 mins ago)	active (v.2)
Waze/RCRS/Inrix	D06	I-76	Eastbound	Congestion(Inrix)	2-Moderate	2.20 miles	6:01 PM (7 mins ago)	active (v.34)
Waze/Inrix	D06	I-95	Southbound	Congestion(Inrix)	2-Moderate	2.56 miles	5:57 PM (11 mins ago)	cleared (v.34)
Waze	D08	US-30	N/A	Minor Accident	1-Low	N/A	5:56 PM (11 mins ago)	active (v.1)
Waze/Inrix	D04	I-81	Northbound	Incidents(Inrix)	3-High	0.00 miles	5:53 PM (15 mins ago)	active (v.11)
Waze/Inrix	D06	I-476	None	Incidents(Inrix)	3-High	0.38 miles	5:51 PM (17 mins ago)	active (v.15)
Waze/Inrix	D04	I-80	Westbound	Incidents(Inrix)	3-High	1.49 miles	5:51 PM (17 mins ago)	active (v.9)
Waze/RCRS/Inrix	D05	US-22	Eastbound	Congestion(Inrix)	2-Moderate	2.41 miles	5:51 PM (17 mins ago)	active (v.4)
Waze/Inrix	D05	US-22	Westbound	Congestion(Inrix)	2-Moderate	1.31 miles	5:43 PM (25 mins ago)	cleared (v.6)
Inrix	D08	US-30	None	Incidents(Inrix)	2-Moderate	0.00 miles	5:38 PM (30 mins ago)	active (v.1)
Waze/Inrix	D04	I-80	Westbound	Congestion(Inrix)	2-Moderate	2.07 miles	4:20 PM (an hour ago)	active (v.34)
Waze/Inrix	D04	I-80	Westbound	Congestion(Inrix)	3-High	3.90 miles	3:36 PM (2 hour ago)	active (v.15)
Inrix	D05	US-222	Northbound	Incidents(Inrix)	3-High	2.03 miles	3:27 PM (2 hour ago)	active (v.1)

Inrix Incident Details

[Incident Timeline](#)

Inrix v40: Delays of three minutes and delays easing on I-80 Westbound in Hetlerville. Average speed 25 mph.

Waze v4: Accident Minor, Hazard On Shoulder Car Stopped reported on this Congestion(Inrix).

InrixID: 130292031

Status: **active**

Severity: **2-Moderate**

Impacting: Yes

Road: I-80

Type: Congestion

Direction: Westbound

Location: between I-80 and I-80

Reported Time: Starts at 6/11/2020 3:34 PM, ends at 6/11/2020 6:45 PM.

Delay Impact

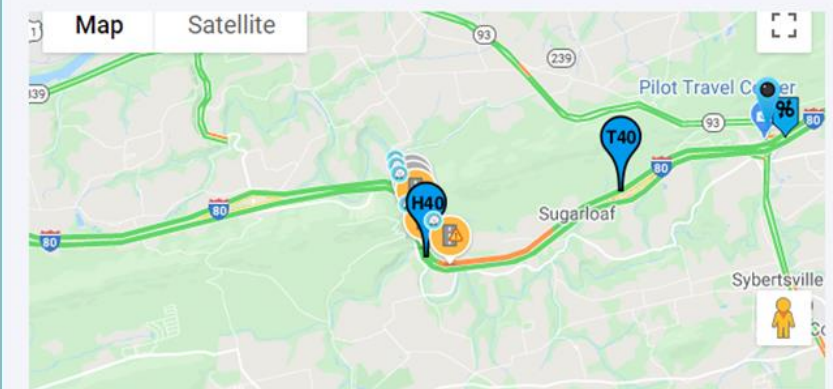
Delay Minutes: 3.00 mins

Abnormal: No

Congestion Length: 2.84 miles

DMS SignBoard

- DMS-04-044 located on Located on right side of roadway..4.8 miles before Rt. 93 Exit 256, and 8.7 miles before I-81/I-80 Interchange..Old #23 is junk and will cut up in 2019



“REAL-TIME” INCIDENT TIMELINE

TRAFFIC ALERTS

pennsylvania
DEPARTMENT OF TRANSPORTATION

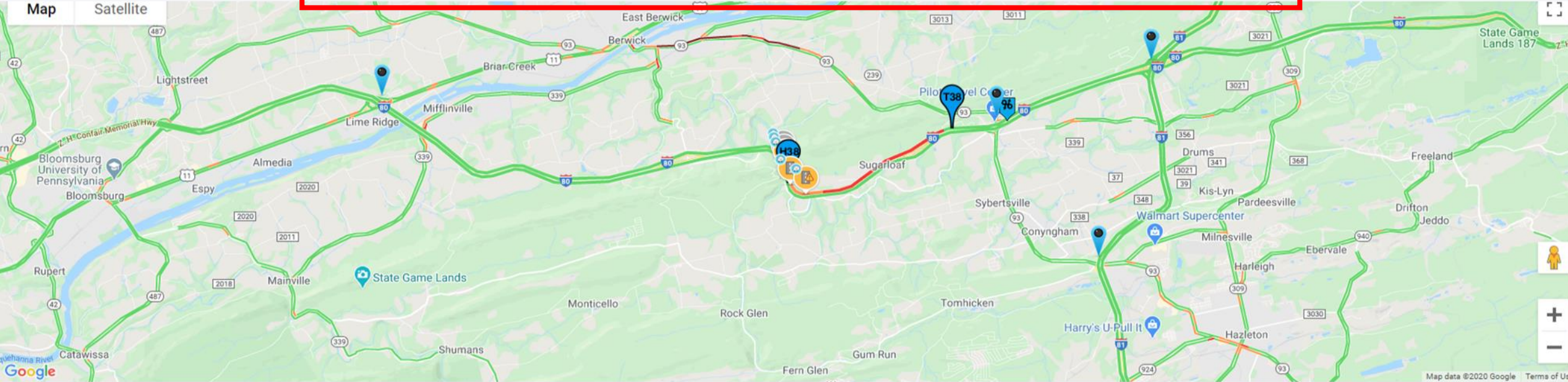
Versions: 1

38

40

Legend

Map Satellite



D04 active (V38) : Congestion upto 4.07 miles on I-80 with severity 2-Moderate.

Updated time: Jun 11, 2020 6:01:05 PM (6 mins ago)

Inrix: Delays of six minutes and delays easing on I-80 Westbound in Hetterville. Average speed 25 mph.

Waze: Hazard On Shoulder Car Stopped, Accident Minor reported on this Congestion.

RCRS: Open(V8) reported on this .

InrixID: 130292031

Status: active

Severity: 2-Moderate

Impacting: Yes

Road: I-80

Type: Congestion

Direction: Westbound

Reported Time: Starts at 6/11/2020 3:34 PM, ends at 6/11/2020 6:40 PM.

Location: between I-80 and I-90

Delay Impact:

Delay Minutes: 5.00 mins

Congestion Length: 4.07 miles

Abnormal: No

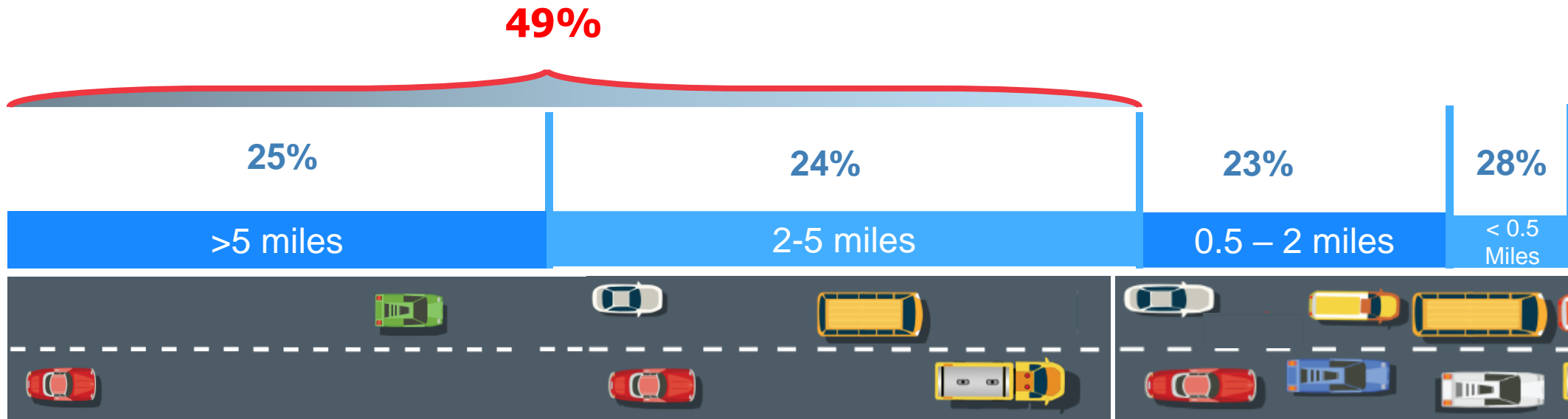


CRASHES IN CONGESTION



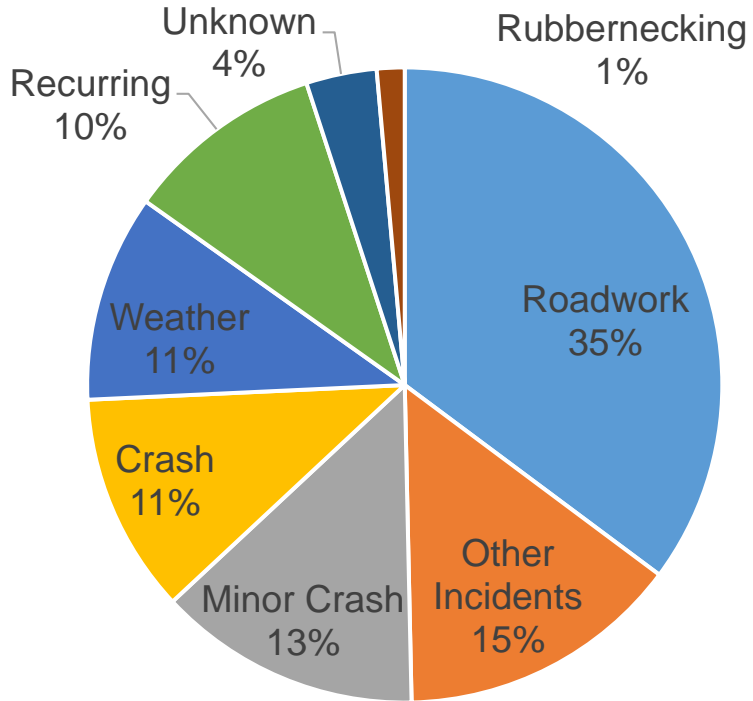
SECONDARY CRASHES

- **1,122 Secondary Crashes** in 2019
 - 6 fatalities
 - 712 injuries
- **81% > 15 minutes** after primary crash
- **46% > 1 hour** after primary crash

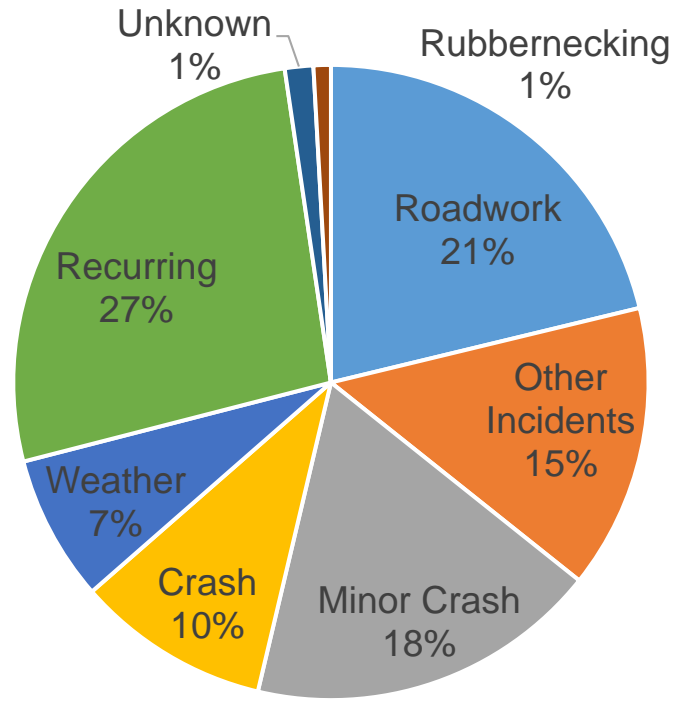


2019 CONGESTION PIE CHART

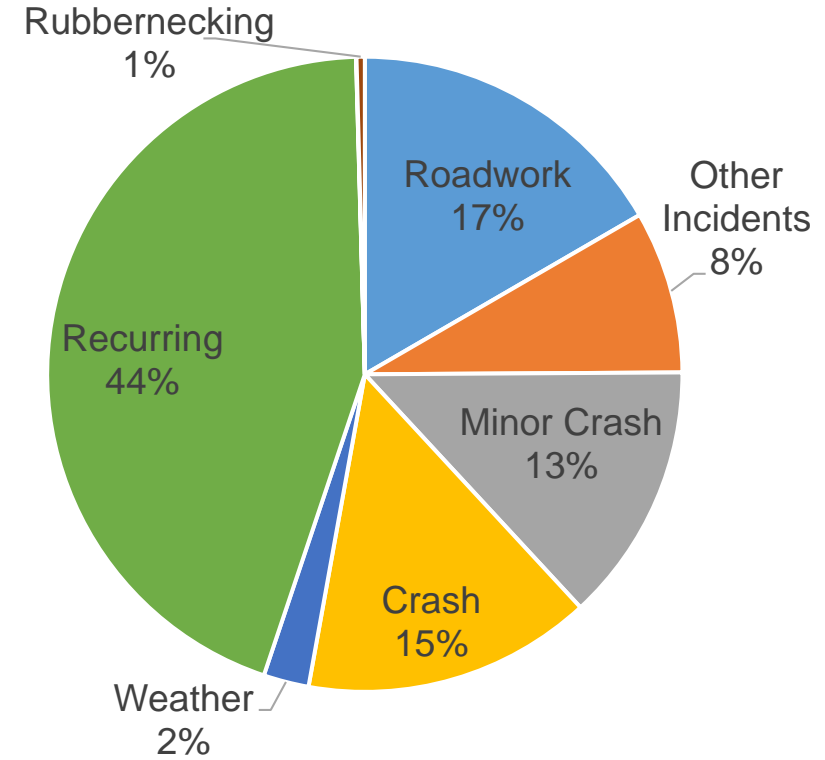
Pennsylvania



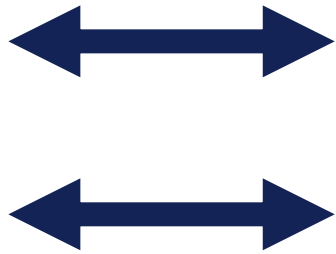
Philadelphia Metro



I-95 in Philadelphia



VIRTUAL HIGHWAY ADVISORY RADIO



ATMS

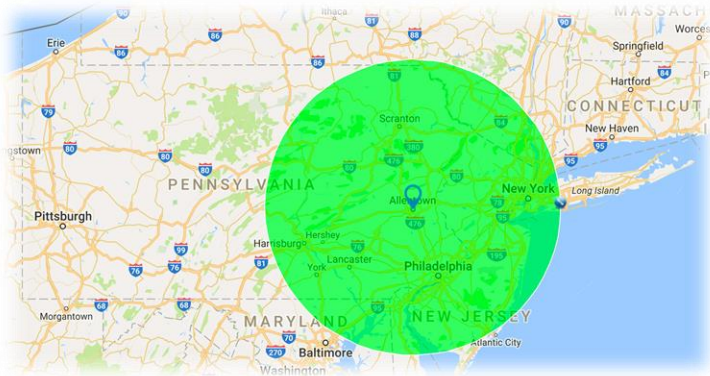


511PA Website with voice

IVR – **Priority Floodgate**

Geofenced **DriveMode**
Voice Alert

Geofenced **Push**
Notifications with voice

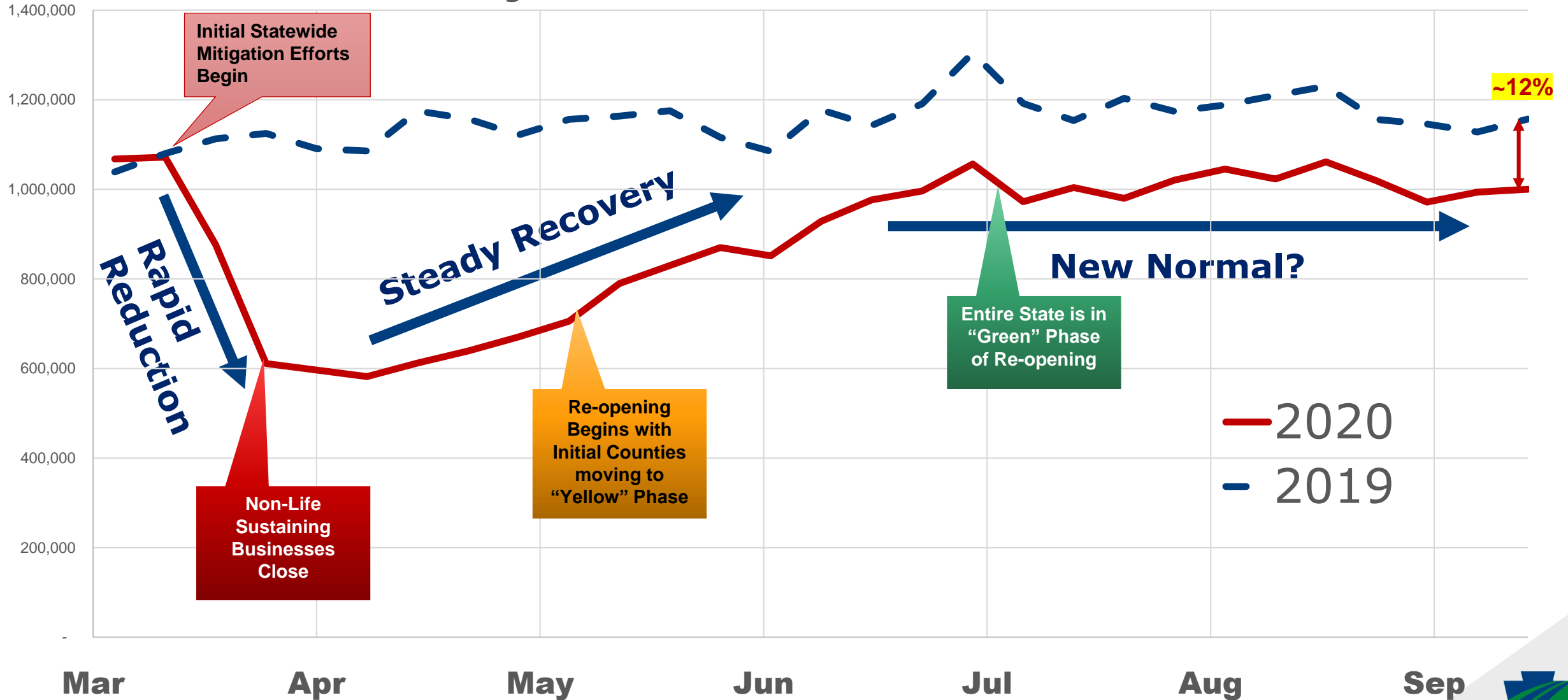


TRAFFIC VOLUME

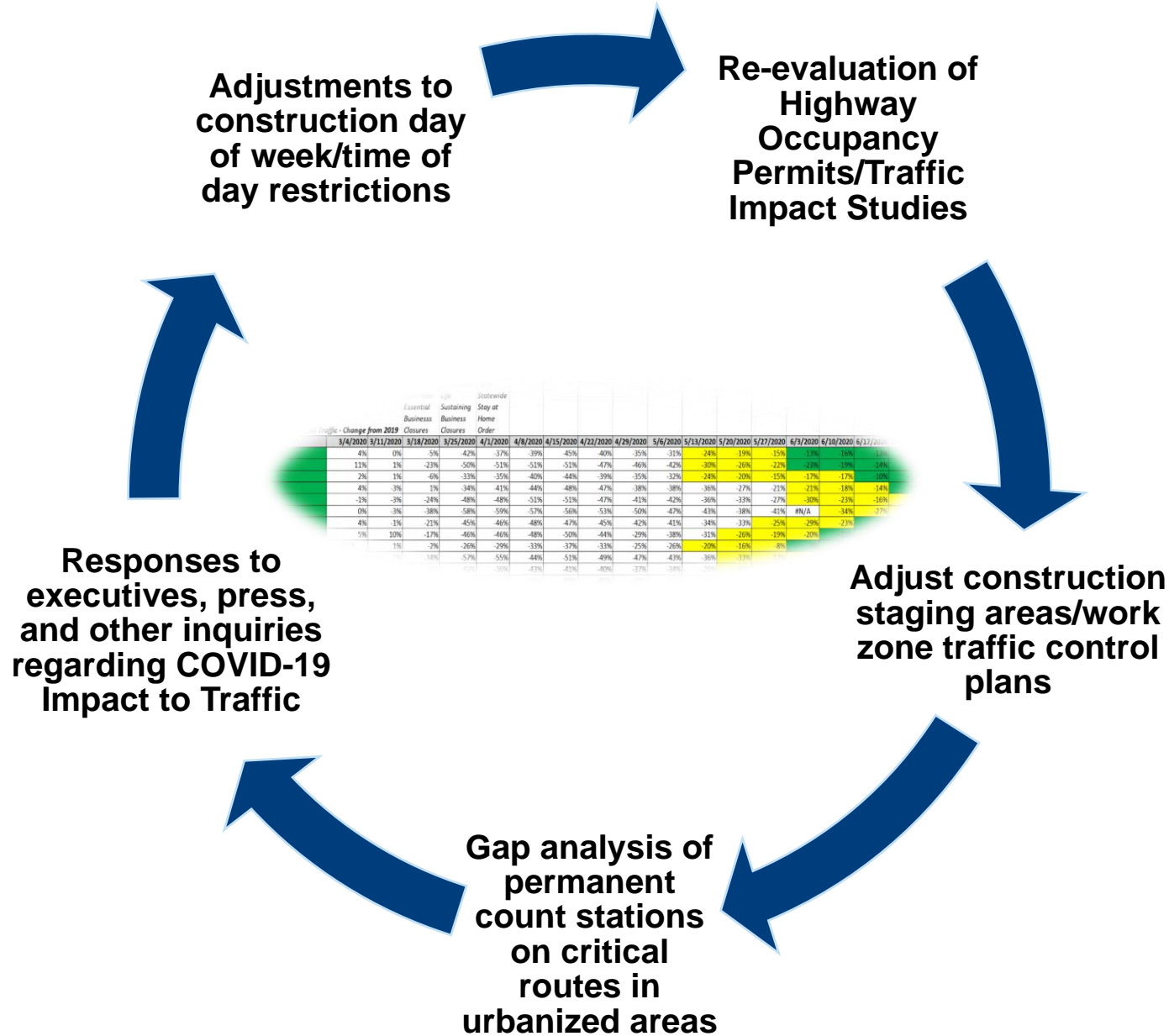


LEARNING FROM COVID-19

Pennsylvania Core Network Volumes



Twice a Week Traffic Report



ADAPTING TO COVID-19 - FUNDING

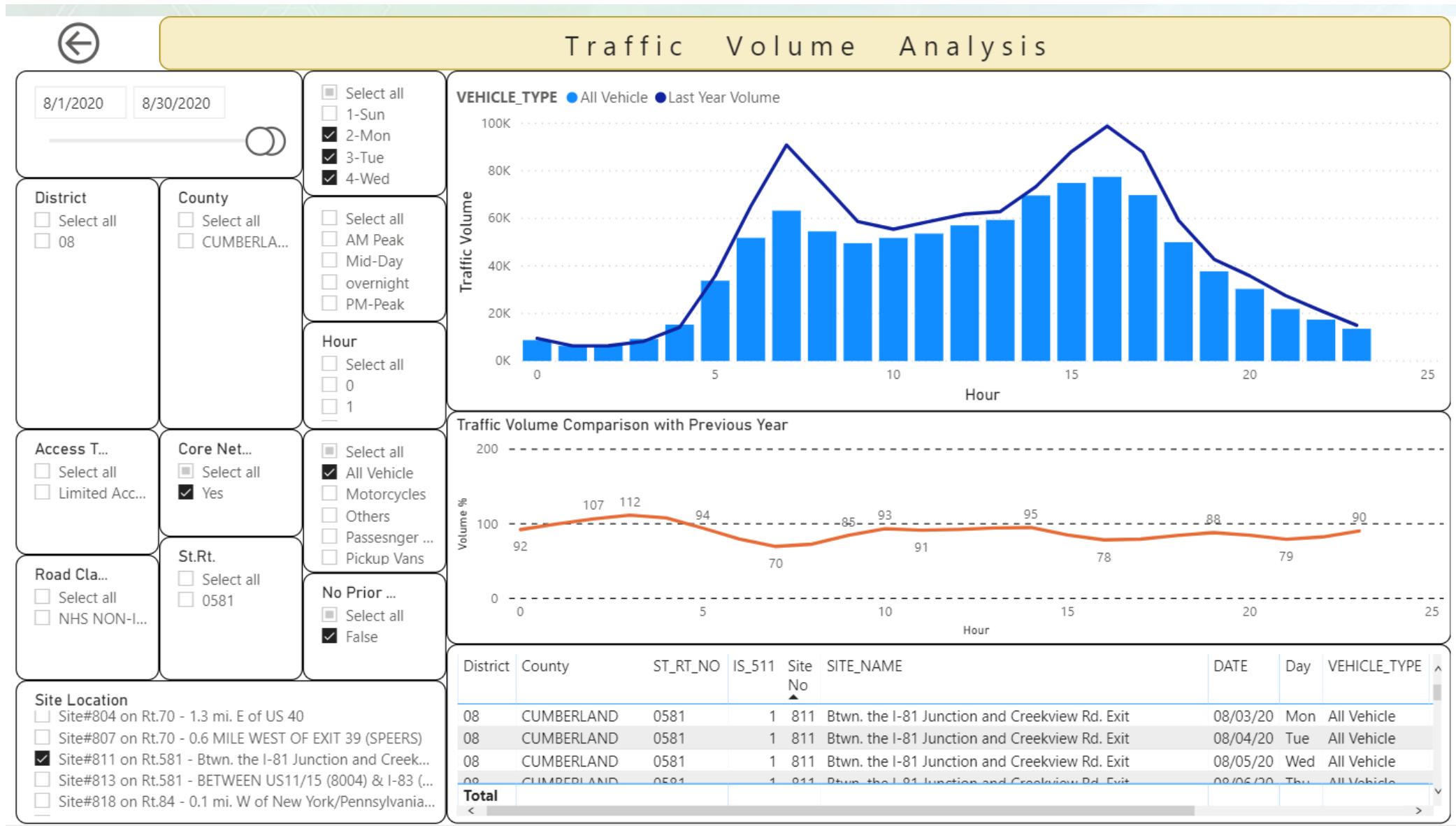
Gas and Diesel Monthly Projection =

$$\begin{aligned} & \text{Gallons Of Gas} \times \$0.576 \times \% \text{ VMT Estimate} \\ & + \text{Gallons Of Diesel} \times \$0.741 \times \% \text{ VMT Estimate} \end{aligned}$$

- **97.5%** Fuel Tax Revenue is from Gas and Diesel Sales
- Monthly Shortfall Report for Executive Planning
- Refining sources and model for better predictions



Traffic Volume Dashboard



A WORK IN PROGRESS...

- Weather Analysis to Automate Protection Messaging for Adverse Driving Conditions (whiteouts) – **Safety/TMC Operations/TIM**

Hazardous Winter Conditions Highway Safety Performance		
Condition	Greater Likelihood of Crash (Times More)	
	Commercial Vehicle	Non-Commercial Vehicle
Low Visibility ¹	2.2 x	3.2 x
High Wind ²	7.4 x	2.6 x
Freezing Surfaces ³	2.4 x	1.7 x
Freezing Rain ⁴	1.9 x	1.7 x
Slippery Surfaces ⁵	1.8 x	1.2 x

Notes:

¹ Low Visibility is based on a deficient RWIS visibility rating (<5)

² High Wind is defined as wind speeds 25 MPH or greater.

³ Freezing Surfaces include non-dry road surfaces with a surface temperature under 33°.

⁴ Freezing Rain includes non-snow precipitation with an air temperature under 33°.

⁵ Slippery Surfaces include a deficient RWIS grip level (<65) with an air temperature under 40° and some precipitation in the past three hours.



THANK YOU

Ryan McNary
Manager, Traffic Systems and Performance