



PennDOT

Traffic Operations Performance Metrics Program

Introduction

- How we started the Performance Metrics Program
- Challenges with correlating datasets
- Impactful metrics
- Outcomes from Performance Program
- Future Planned Metrics

Where we started

KEY: Internal PennDOT Support and Vision

- IT – Dedicated Team of Data Scientists and Developers
- Traffic Operations Analytics Tool
 - Incident Timeline
 - Road Condition Reporting System (RCRS) – Incident Management
 - INRIX

Software Infrastructure

- Microsoft Azure Services and Power BI - Flexibility to build tests analyses in the Cloud
 - Microsoft Power-BI for data analytics and reporting
 - Azure BLOB storage for storage of Big Data from Inrix and Waze
 - Azure Data Warehouse for processing Big Data
 - Azure SQL for database analysis
 - Azure ADF for data movement and co-ordination of tasks
 - MS .NET to build the Analytic Portal webpage
 - Informatica ETL to move data between on premise and cloud environments
 - CA ERWin for data modeling

Correlating Big Data in the Cloud

- SQL Database size: 110 GB
- SQL Data Warehouse size: 7472 GB
- Total database size for TOA is **7582 GB**. Both in the cloud.

Data volume:

- Inrix raw speed data by minute: Total **163 billion** rows on file.
 - **1.16 billion** rows added per week.
- Inrix non-recurring congestion segments: **188 million** calculated so far.



Mitigating the Database Challenges

- We're building the Analysis Application on the fly
 - Shifted gears to a very **agile** development style
- Development team has never worked with the data before
 - Each database has their own **nuisances/learning curve**
 - **Location data** has been a key tying factor between all databases
- This has never been done in PennDOT before
 - Calculated choices of metrics, outreach, tiered approach to the program
- **Data Quality – SSP, PennDOT on Scene, Traffic Control Plan**

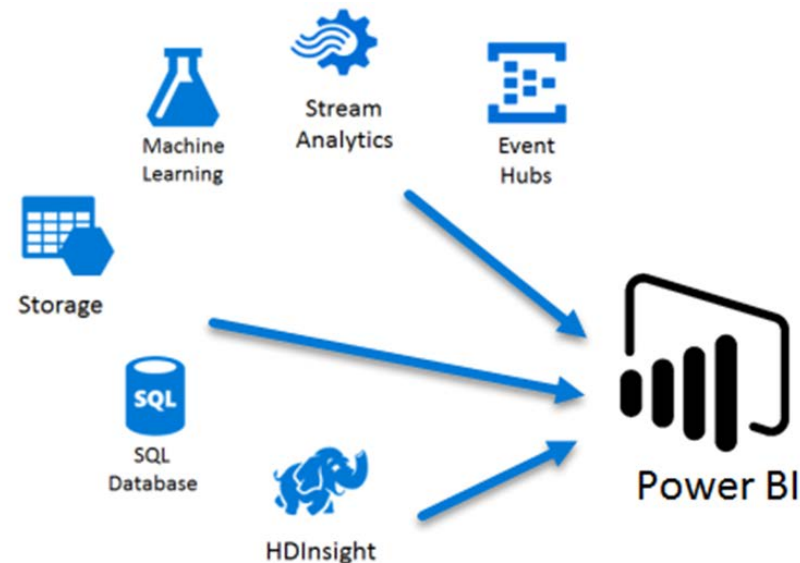
Where we are now

- Correlated Databases:

- Road Condition Reporting System
 - Incidents and Work zones
- INRIX speed data
- Waze Incidents
- Crash Database

- Databases that are planned:

- PennDOT Maintenance
- Service Patrol Assists
- ATMS – DMS Message History
- High Resolution Traffic Signal
- Traffic Volume
 - Real time traffic volume?



Select Dates:
 1/1/2017 8/19/2018

Incident Timeline Summary - RCRS Events

Incident Count
23.33K

*Darker shaded areas in map represent a higher average incident influence time relative to lighter shaded areas. Click on map regions, to filter the bar charts and data grid.

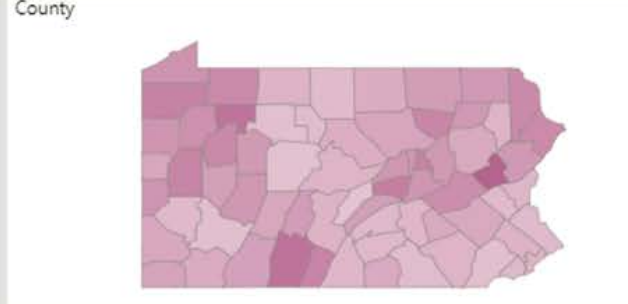
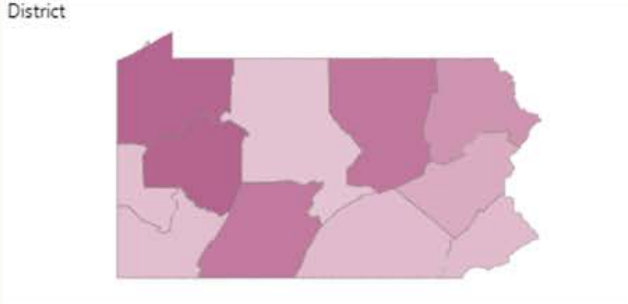
- Select All
- Core Network
- Non-Core Network

Avg Inc Influence
135 mins

- Select All
- First Responder
- PennDOT Responder
- No Responder

Avg Inc Clearance
90 mins

Avg Road Clearance
88 mins



- Select All
- Road Closed
- Lane Restriction
- No Lane Restriction

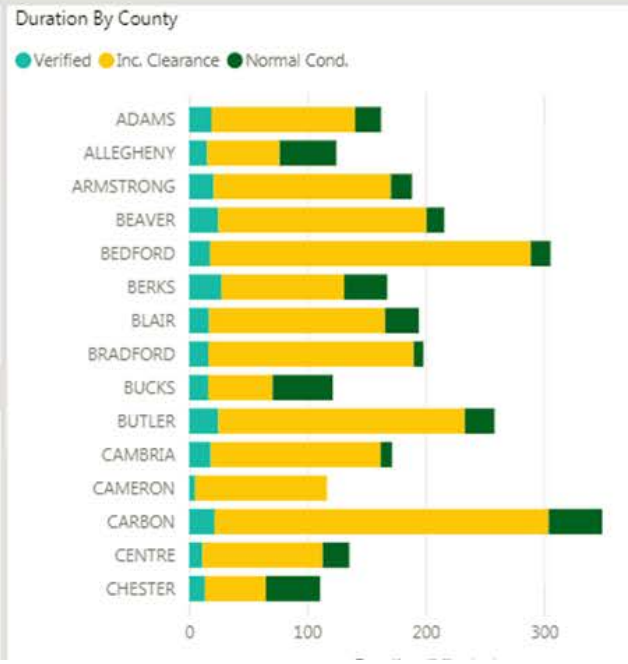
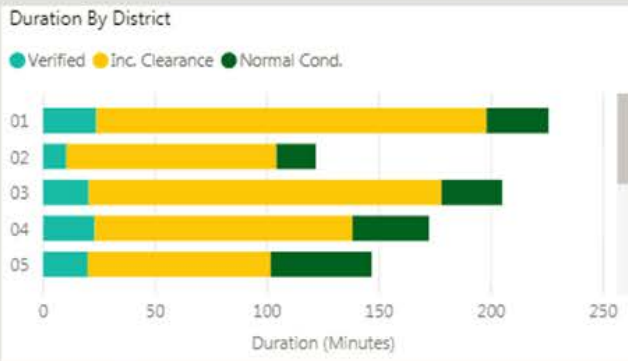
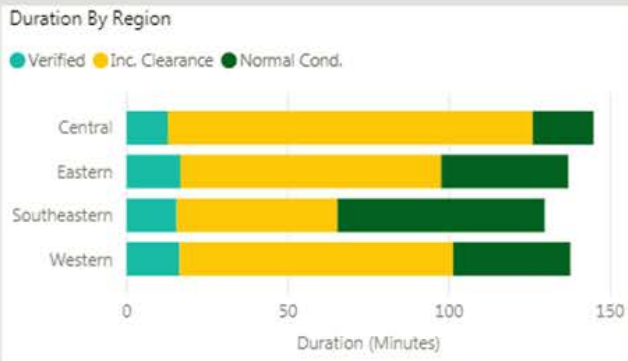
Detected Time

- Select All
- 12:00 AM
- 1:00 AM
- 2:00 AM
- 3:00 AM
- 4:00 AM
- 5:00 AM
- 6:00 AM
- 7:00 AM
- 8:00 AM
- 9:00 AM

Route Number
 Search

- 1003
- 1004
- 1005
- 1006
- 1007
- 1008

- Cong Severity
- Select All
 - 1-Critical
 - 2-Severe
 - 3-Major
 - 4-Moderate
 - 5-Minor



*To drill through to single incident detail view or Crash Attribute detail, right-click on any column and select drill through.

| Incident | County | Road | Bearing | RCRS ID | CRASH ID | WAZE ID | Inrix Congestion ID | Congestion Severity | Verification Mins | Road Clearance |
|----------|--------------|-------------------------|---------|---------|------------|----------|-----------------------|---------------------|-------------------|----------------|
| 1078890 | LANCASTER | US 222 | S | 392660 | | | 131042135220180626... | 2-Severe | 0 | |
| 1074506 | CENTRE | PA 53, Historic US 3... | S | 388080 | 2018061179 | | 131057937720180608... | 1-Critical | 2 | |
| 594750 | BUTLER | I 79 | N | 307074 | 2017025389 | 10110107 | 131024198320170303... | 2-Severe | 14 | |
| 594751 | BUTLER | I 79 | N | 307074 | 2017025412 | 10110107 | 131024198320170303... | 2-Severe | 14 | |
| 601688 | BUTLER | I 79 | N | 307074 | 2017025408 | 10119537 | 131024198320170303... | 2-Severe | 14 | |
| 533502 | ERIE | US 19, West 38th St... | E | 301898 | 2017008185 | | 131030330620170119... | 4-Moderate | 0 | |
| 663474 | PHILADELPHIA | South 4th Street | S | 327786 | 2017097616 | | 128268922420170622... | 2-Severe | 7 | |

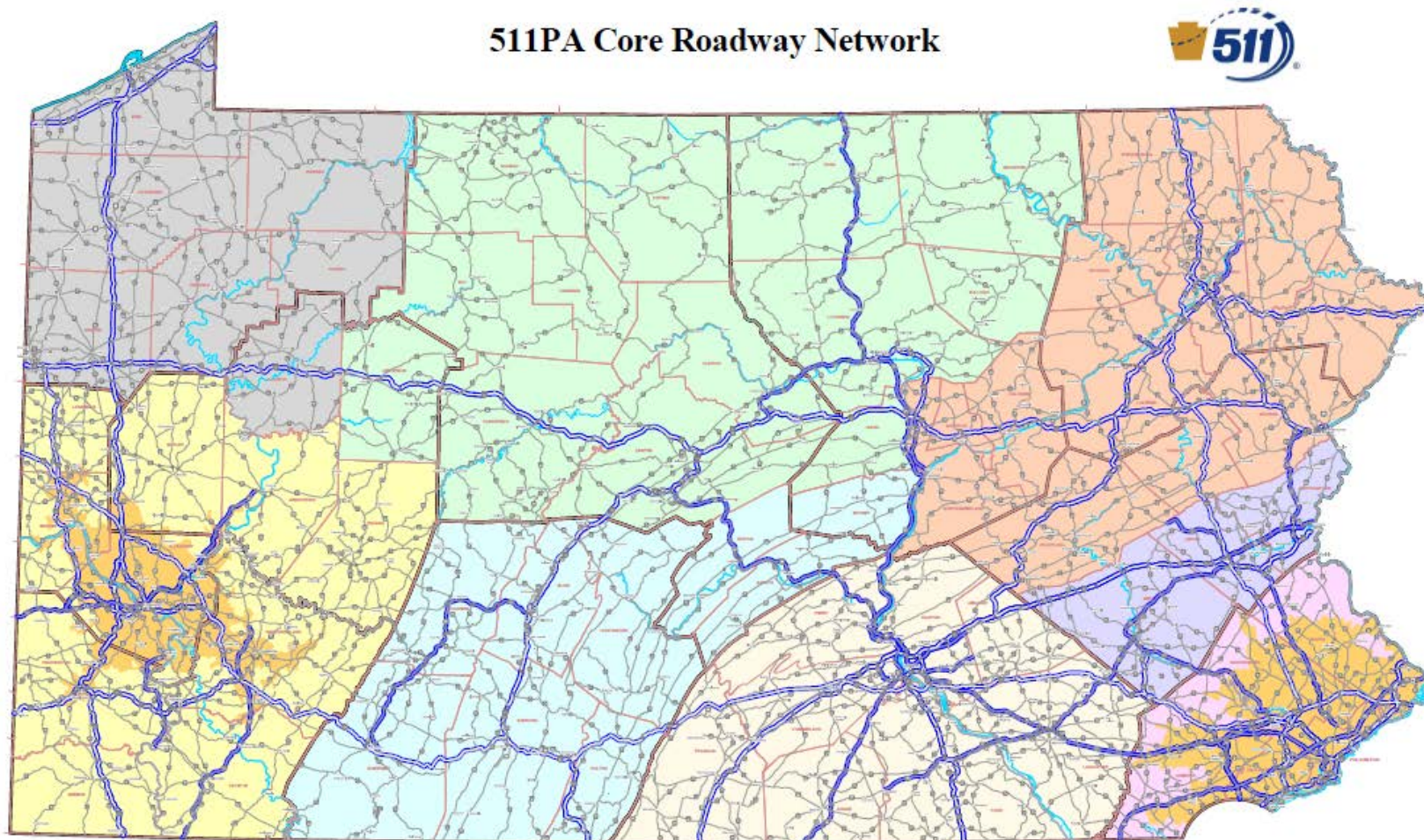
Transportation Systems Management and Operations Performance Report

2018 Q2 EDITION

- Released two quarterly reports to date
- Planned annual recap report in April 2019
- Working toward covering all portions of the “congestion pie chart”
 - Recurring Congestion (bottlenecks)
 - Incidents (Crashes)
 - Work Zones
 - Weather
 - Special Events
 - Traffic Signal Performance (Arterial Performance)

Performance Metrics Caveats

- All analysis uses 2017 data and is limited to the “core roadway network”



Incident Clearance Times

| | Incident Clearance Time (min) | # of Incidents | | Incident Clearance Time (min) | # of Incidents |
|--------------------|-------------------------------|----------------|--------------------|-------------------------------|----------------|
| District 1 | 185 | 69 | District 2 | 116 | 230 |
| CRAWFORD | 317 | 5 | CENTRE | 130 | 87 |
| ERIE | 170 | 29 | CLEARFIELD | 101 | 79 |
| MERCER | 141 | 28 | CLINTON | 150 | 36 |
| VENANGO | 326 | 7 | JUNIATA | 79 | 3 |
| | | | MIFFLIN | 74 | 25 |
| District 3 | 164 | 103 | District 4 | 106 | 127 |
| COLUMBIA | 188 | 11 | LACKAWANNA | 68 | 51 |
| LYCOMING | 135 | 24 | LUZERNE | 122 | 48 |
| MONTOUR | 244 | 8 | PIKE | 125 | 17 |
| NORTHUMBERLAND | 211 | 11 | SUSQUEHANNA | 157 | 6 |
| SNYDER | 123 | 9 | WAYNE | 222 | 5 |
| TIOGA | 111 | 12 | | | |
| UNION | 175 | 28 | | | |
| District 5 | 75 | 766 | District 6 | 50 | 3593 |
| BERKS | 111 | 114 | BUCKS | 55 | 298 |
| CARBON | 144 | 6 | CHESTER | 54 | 285 |
| LEHIGH | 59 | 352 | DELAWARE | 59 | 491 |
| MONROE | 104 | 71 | MONTGOMERY | 57 | 757 |
| NORTHAMPTON | 62 | 205 | PHILADELPHIA | 53 | 1762 |
| SCHUYLKILL | 175 | 18 | | | |
| District 8 | 74 | 1901 | District 9 | 128 | 37 |
| ADAMS | 122 | 22 | BEDFORD | 20 | 1 |
| CUMBERLAND | 78 | 433 | BLAIR | 82 | 19 |
| DAUPHIN | 70 | 608 | CAMBRIA | 78 | 6 |
| FRANKLIN | 86 | 61 | FULTON | 279 | 9 |
| LANCASTER | 79 | 281 | SOMERSET | 90 | 2 |
| LEBANON | 108 | 66 | | | |
| PERRY | 98 | 23 | | | |
| YORK | 62 | 407 | | | |
| District 10 | 208 | 36 | District 11 | 64 | 1402 |
| BUTLER | 161 | 14 | ALLEGHENY | 63 | 1394 |
| CLARION | 229 | 9 | BEAVER | 63 | 3 |
| JEFFERSON | 243 | 13 | LAWRENCE | 138 | 5 |
| District 12 | 122 | 153 | | | |
| FAYETTE | 121 | 5 | | | |
| GREENE | 170 | 7 | | | |
| WASHINGTON | 137 | 87 | | | |
| WESTMORELAND | 92 | 54 | | | |

| | | |
|-------------------|-----------|-------------|
| District 6 | 50 | 3593 |
| BUCKS | 55 | 298 |
| CHESTER | 54 | 285 |
| DELAWARE | 59 | 491 |
| MONTGOMERY | 57 | 757 |
| PHILADELPHIA | 53 | 1762 |

| | | |
|--------------------|-----------|-------------|
| District 11 | 64 | 1402 |
| ALLEGHENY | 63 | 1394 |
| BEAVER | 63 | 3 |
| LAWRENCE | 138 | 5 |

TABLE 1. CRASHES THAT CAUSED HIGH CONGESTION AND RCRS ON CORE ROADWAY NETWORK

| Traffic Management Centers (TMC) | 2017 Reportable Crashes | Linked to RCRS | % Linked to an RCRS | High Congestion Crashes | Linked to RCRS | % Linked to RCRS |
|----------------------------------|-------------------------|----------------|---------------------|-------------------------|----------------|------------------|
| Southeastern RTMC (D6) | 5,522 | 2,797 | 51% | 891 | 685 | 77% |
| Eastern RTMC (D8) | 5,509 | 2,240 | 41% | 1118 | 784 | 70% |
| District 4 | 206 | 48 | 23% | 43 | 23 | 53% |
| District 4 (D8) | 516 | 70 | 14% | 89 | 37 | 42% |
| District 5 | 1,236 | 475 | 38% | 297 | 204 | 69% |
| District 5 (D8) | 785 | 146 | 19% | 108 | 57 | 53% |
| District 8 | 2,766 | 1,501 | 54% | 581 | 463 | 80% |
| Central RTMC (D2) | 1074 | 340 | 32% | 147 | 112 | 76% |
| District 2 | 460 | 234 | 51% | 79 | 71 | 90% |
| District 3 | 411 | 83 | 20% | 50 | 37 | 74% |
| District 9 | 203 | 23 | 11% | 18 | 4 | 22% |
| Western RTMC (D11) | 2,573 | 1133 | 44% | 561 | 379 | 68% |
| District 1 | 120 | 19 | 16% | 16 | 7 | 44% |
| District 1 (D11) | 169 | 25 | 15% | 32 | 15 | 47% |
| District 10 | 216 | 44 | 20% | 50 | 21 | 42% |
| District 11 | 1,563 | 905 | 58% | 345 | 272 | 79% |
| District 12 | 506 | 141 | 28% | 118 | 64 | 54% |
| Statewide | 14,678 | 6,510 | 44% | 2717 | 1960 | 72% |

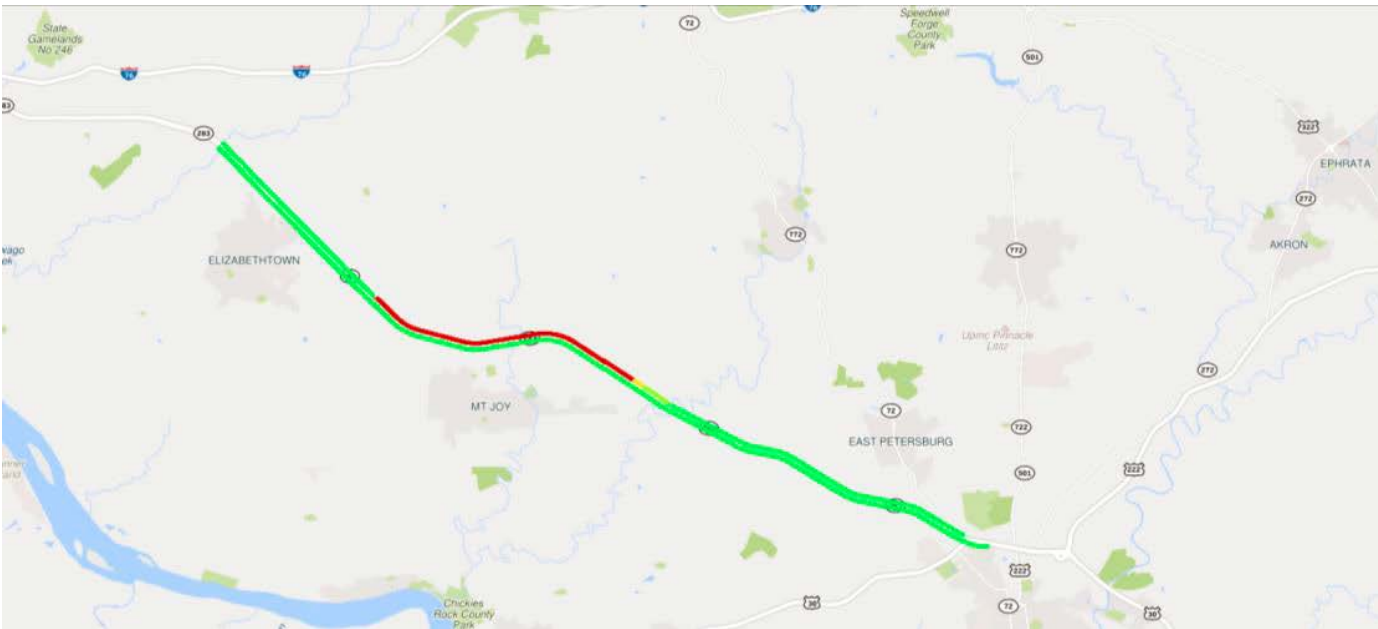
Sources: Roadway Condition Reporting System (RCRS), ~~www~~ Inrix Crash Reporting System (CRS)

Goal: Increase TMC situational awareness of critical incidents

Within the capability of our TMC Tools

- Google
- Waze
- INRIX
- CCTV

“High Congestion Crash”

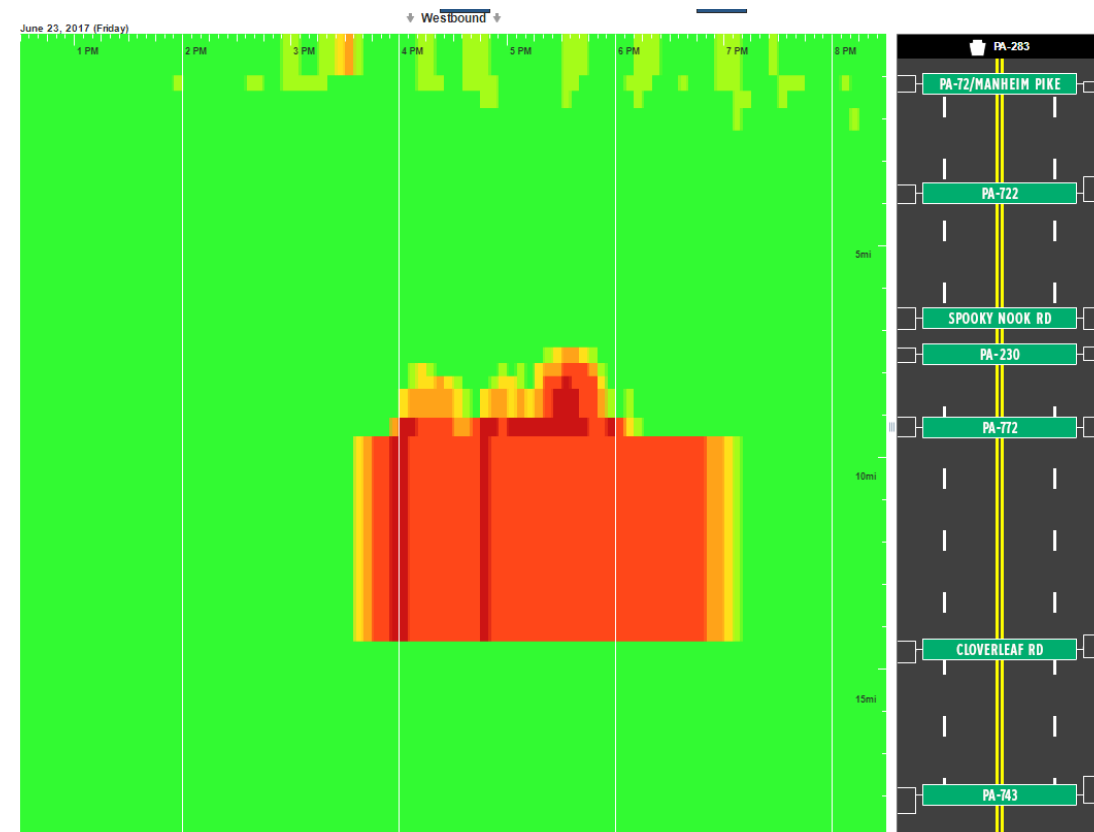


Example of a “severe” congestion incident:

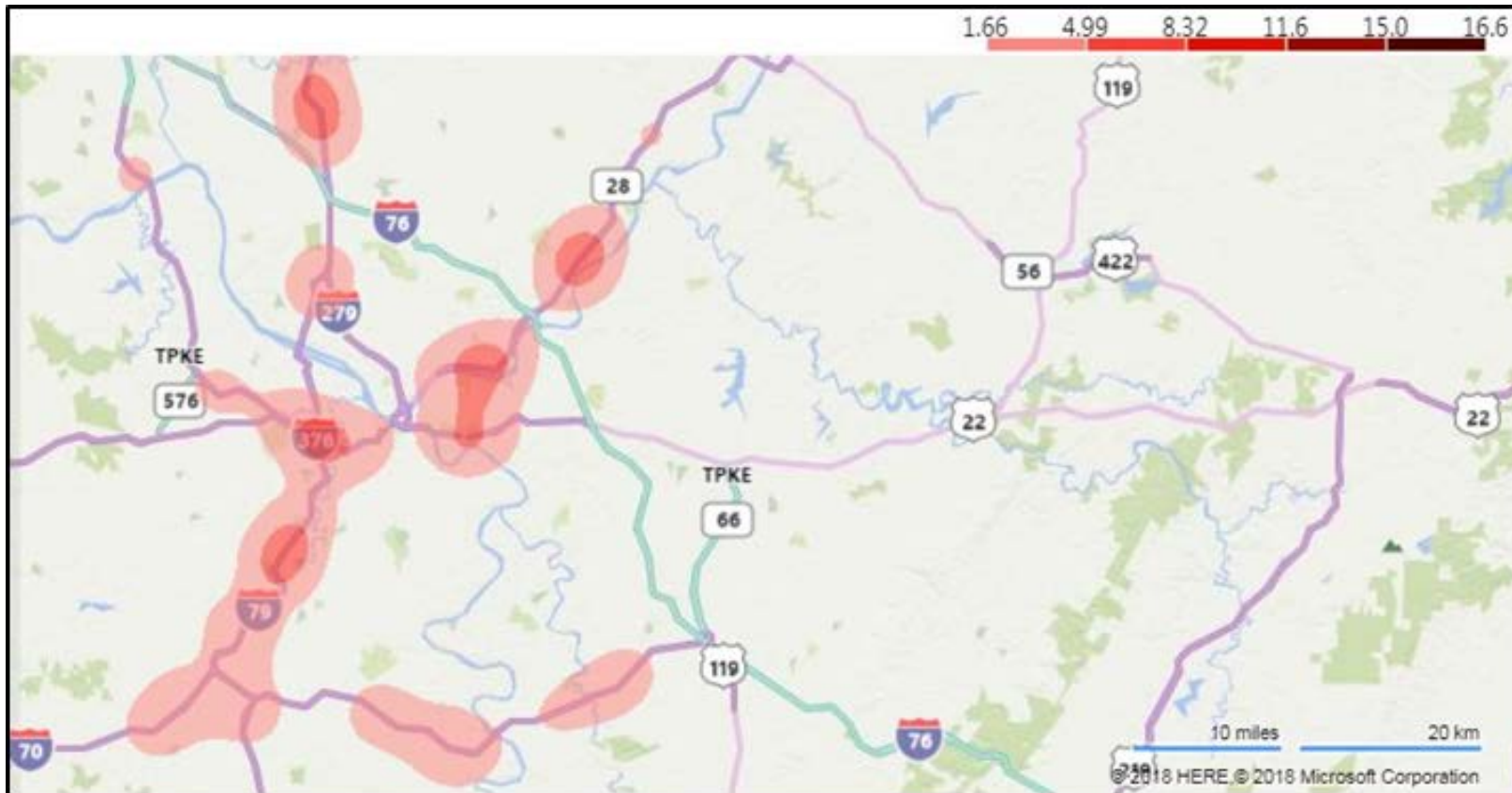
- 210 minutes of congestion
- Average speed of 25 mph
- Normal historical speed was 60 mph

$$(210 * (60 - 25) = 7,350).$$

Severe: 3,000 – 9,999, Critical: $\geq 10,000$

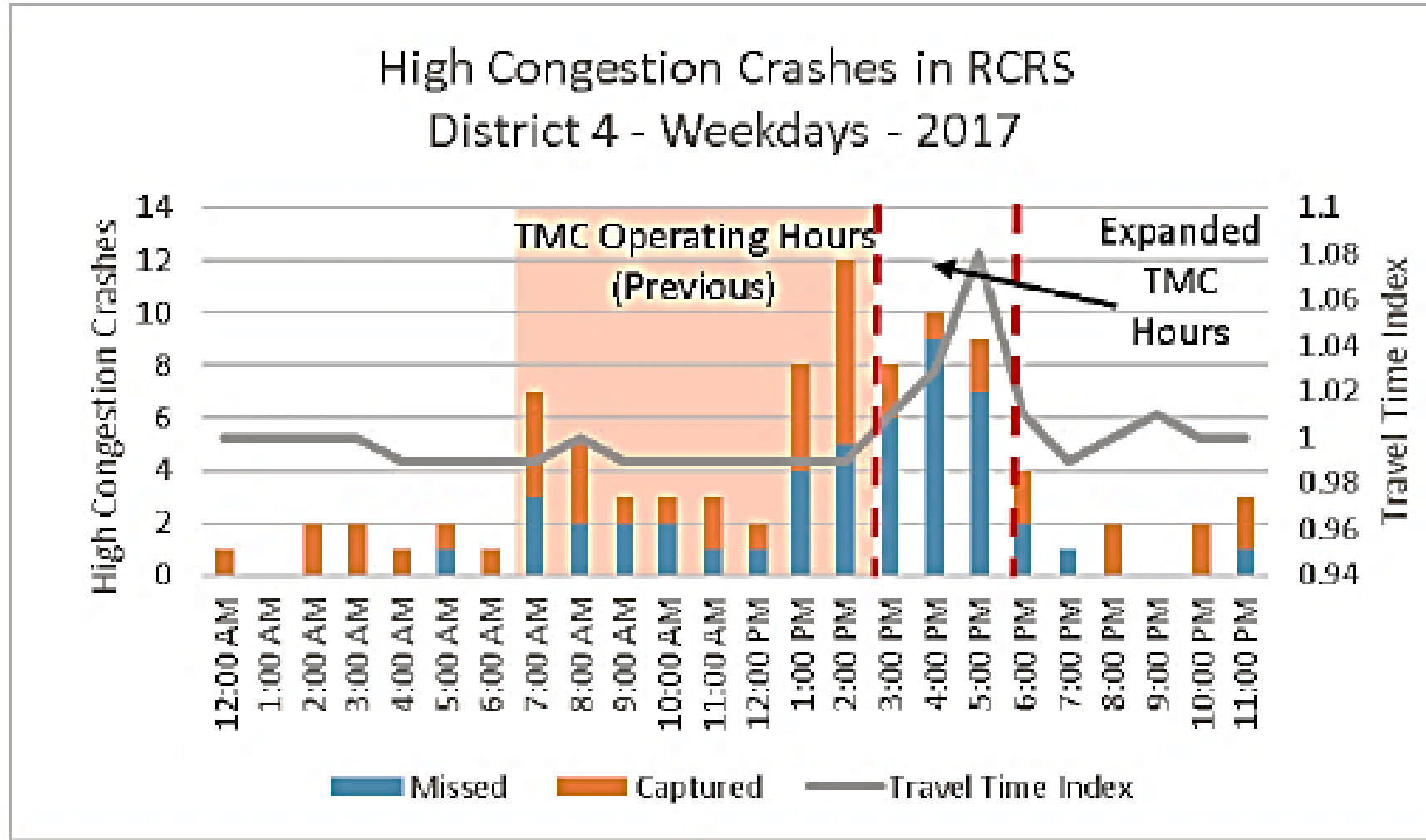


Locations of High Congestion Crashes without TMC Situational Awareness



TMCs can focus situational awareness efforts, and investigate potential improvements to day to day operations coverage.

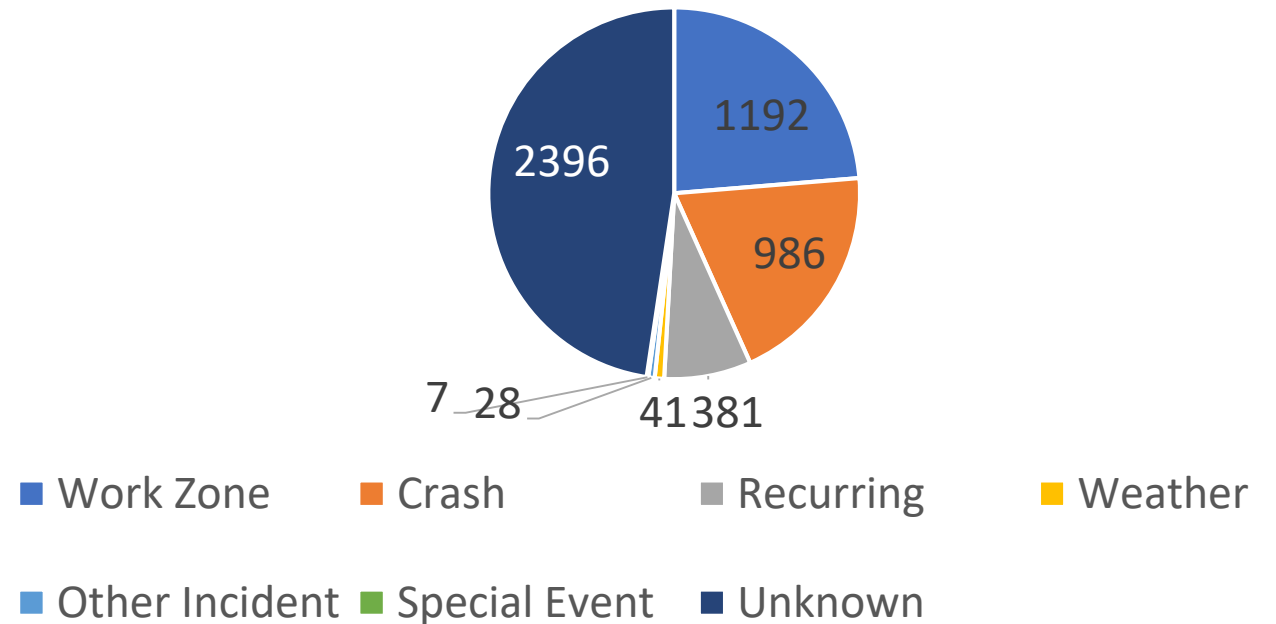
TMC Situational Awareness by Time of Day



Congestion-Related Crashes

- 15,237 reportable crashes on the PennDOT Core Network in 2017.
- 5,031 within existing congestion
 - 65% rear end collisions
 - 19% hit a fixed object
- 30 Fatalities in Non-Recurring

Congestion-Related Crashes by Type
2017



Secondary Crashes from Time of Primary

| Time after Primary Crash (Minutes) | Secondary Crashes | Fatalities | Total Injured | Primary Crash in RCRS | Primary Crash in RCRS before Secondary | DMS Present |
|------------------------------------|-------------------|------------|---------------|-----------------------|--|-------------|
| 0-15 | 251 | 4 | 191 | 101 | 29 | 216 |
| 16-30 | 124 | 0 | 72 | 67 | 42 | 106 |
| 31-60 | 210 | 1 | 156 | 112 | 103 | 181 |
| 61+ | 401 | 2 | 260 | 183 | 173 | 351 |

Secondary Crashes Distance Prom Primary

| Distance from Primary Crash (Miles) | Secondary Crashes | Fatalities | Total Injured | Primary Crash in RCRS | Primary in RCRS before Secondary? | DMS Present? |
|-------------------------------------|-------------------|------------|---------------|-----------------------|-----------------------------------|--------------|
| <.5 | 293 | 3 | 178 | 156 | 85 | 257 |
| .5 - 2 | 238 | 2 | 164 | 118 | 91 | 203 |
| 2 to 5 | 235 | 1 | 189 | 98 | 93 | 203 |
| > 5 | 220 | 1 | 148 | 91 | 81 | 191 |

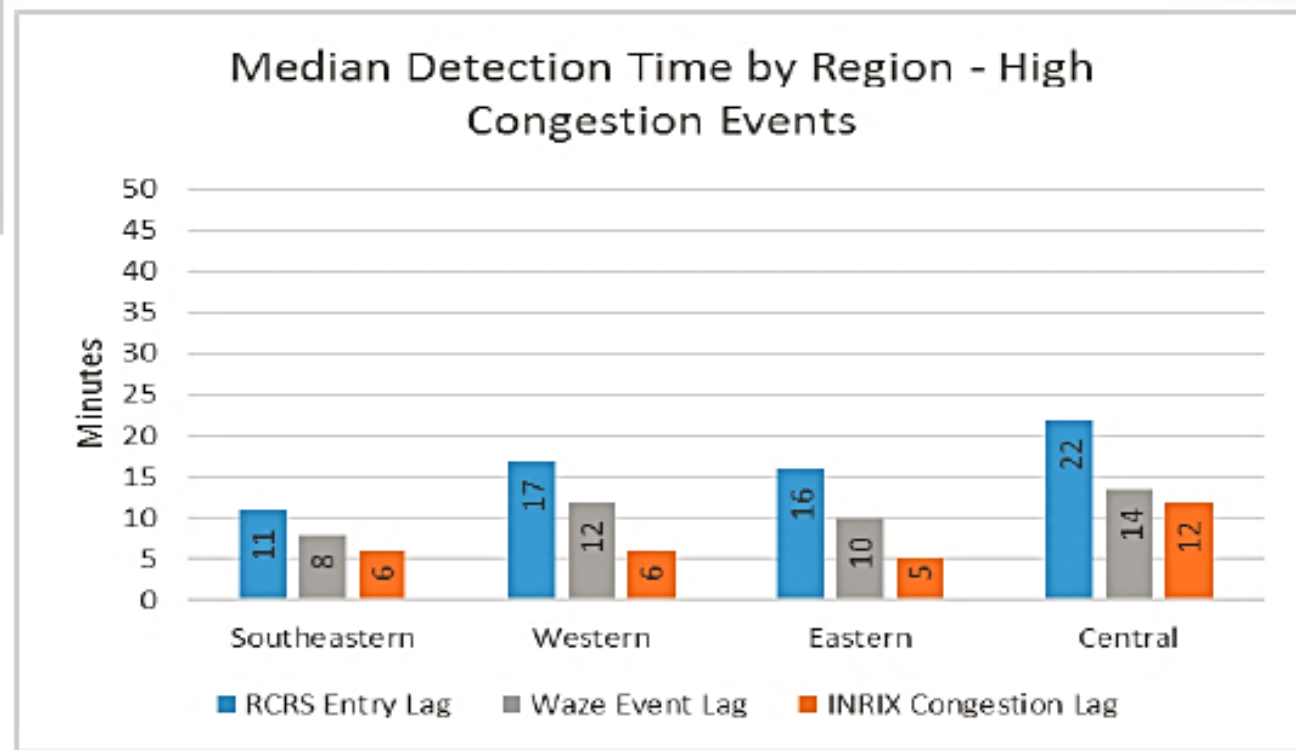
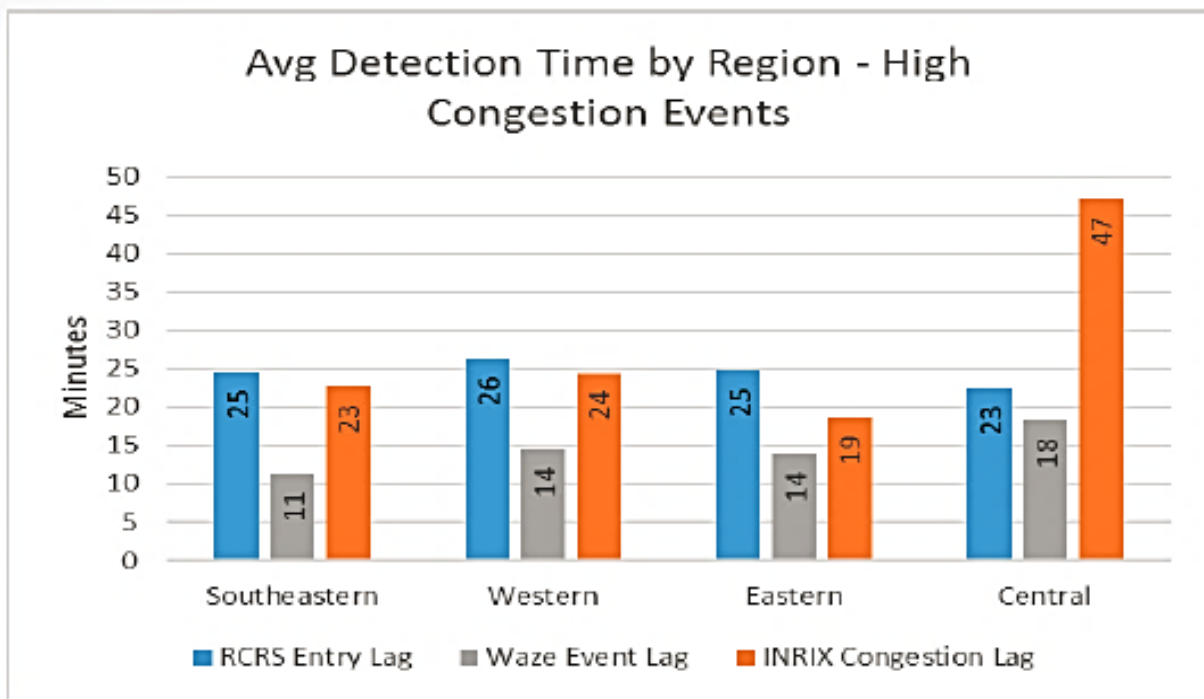
| | |
|---------------------------|------------|
| Fatalities | 7 |
| Suspected Serious | 24 |
| Suspected Minor | 298 |
| Possible Injury | 89 |
| Unknown Severity | 226 |
| Unknown if Injured | 39 |

Work Zone Crashes by Length of Congestion

| Distance from Work Zone (Miles) | Total Crashes | Fatalities | Total Injured | RCRS Only | Maintenance DB Only | Both | DMS Present? |
|---------------------------------|---------------|------------|---------------|-----------|---------------------|------|--------------|
| <.5 miles | 778 | 10 | 421 | 81 | 71 | 626 | 655 |
| .5 to 2 miles | 122 | 1 | 96 | 33 | 13 | 76 | 103 |
| 2 to 5 miles | 150 | 1 | 99 | 23 | 25 | 102 | 128 |
| > 5 miles | 142 | 0 | 100 | 21 | 17 | 104 | 123 |

| | |
|---------------------------|------------|
| Fatalities | 12 |
| Suspected Serious | 20 |
| Suspected Minor | 386 |
| Possible Injury | 137 |
| Unknown Severity | 199 |
| Unknown if Injured | 72 |

Validating Crowd-Sourced Incident Detection Data



INRIX and Waze “Traffic Alerts Dashboard”

- URL: <https://trafficalerts.penndot.gov/#/home>

Filters for Districts and Route Selections

Waze Reliability Score and the INRIX Congestion Severity Level

Traffic Dashboard

Welcome, **Ryan McNary**
(Super Administrator)

pennsylvania
DEPARTMENT OF TRANSPORTATION

Districts: --Select--
Routes: --Select--

Reliability: 5 10 Severity: 0-Minimal 4-Severe

Alert Type: 4 checked Apply

input text to filter value from any column on data grid.Ex. I-81, Major Accident, Active

Filter for Waze and INRIX Specific Incident Types

Free Text Incident Feed Search

Incident Map Overview

Traffic Dashboard

| Source | Impacting Road | AlertType | Severity | Length | Reported Time | Status | Accurate? | FalsePositive? | RCRS? | Dismiss? |
|------------|----------------|-------------------|------------|------------|------------------------------|---------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Inrix | US-11 | Congestion(Inrix) | 2-Moderate | 1.03 miles | 10:50 AM (a few seconds ago) | active (v.9) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix | I-83 | Congestion(Inrix) | 3-High | 3.91 miles | 10:50 AM (a few seconds ago) | active (v.36) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix | I-78 | Congestion(Inrix) | 3-High | 5.94 miles | 10:49 AM (a minute ago) | active (v.10) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix | I-80 | Congestion(Inrix) | 3-High | 4.09 miles | 10:49 AM (a minute ago) | active (v.19) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inrix | I-79 | Congestion(Inrix) | 3-High | 2.15 miles | 10:48 AM (2 mins ago) | active (v.6) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inrix | US-202 | Incidents(Inrix) | 2-Moderate | 0.00 miles | 10:47 AM (3 mins ago) | active (v.3) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix | I-83 | Congestion(Inrix) | 2-Moderate | 2.05 miles | 10:47 AM (3 mins ago) | active (v.4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix | I-83 | Congestion(Inrix) | 2-Moderate | 2.20 miles | 10:47 AM (3 mins ago) | active (v.13) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix | I-80 | Congestion(Inrix) | 3-High | 6.15 miles | 10:46 AM (4 mins ago) | active (v.19) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inrix | I-80 | Congestion(Inrix) | 3-High | 5.12 miles | 10:45 AM (5 mins ago) | active (v.35) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix | I-79 | Congestion(Inrix) | 2-Moderate | 3.56 miles | 10:45 AM (5 mins ago) | active (v.3) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inrix | US-1 | Incidents(Inrix) | 2-Moderate | 2.83 miles | 10:45 AM (5 mins ago) | active (v.16) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inrix | US-219 | Congestion(Inrix) | 2-Moderate | 1.39 miles | 10:41 AM (9 mins ago) | cleared (v.4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Inrix v9: Severe delays of eleven minutes and delays easing on US-11 Hanover St Eastbound between PA-641 Orange St and Louther St. Average speed five mph.

InrixID: 80910066

Status: active

Severity: 2-Moderate

Impacting: 📍

Reported Time: Starts at 8/9/2018 9:47 AM, ends at 8/9/2018 11:27 AM.

Road: US-11

Type: Congestion

Direction: Eastbound

Location: between US-11 High St / US-11 Ritner Hwy / PA-641 Orange St and US-11 Hanover St / Louther St

Delay Impact:

Delay Minutes: 9.83 mins

Length of congestion: 1.03 miles

Abnormal: 🚨

[Open Incident Timeline](#)

Live Incident Dashboard from Waze and INRIX (links both if confirmed by each source)

| Source | Impacting Road | AlertType | Severity | Length | Reported Time | Status | Accurate? | FalsePositive? | RCRS? | Dismiss? | |
|-----------------------|----------------|-----------|-------------------|------------|---------------|-----------------------|----------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Inrix NEW | | US-322 | Incidents(Inrix) | 2-Moderate | 1.03 miles | 8:51 AM (4 mins ago) | active (v.1) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix | | I-83 | Congestion(Inrix) | 1-Low | 2.61 miles | 8:51 AM (5 mins ago) | cleared (v.18) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix NEW | | PA-28 | Congestion(Inrix) | 2-Moderate | 1.26 miles | 8:46 AM (10 mins ago) | cleared (v.3) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix NEW | | PA-581 | Incidents(Inrix) | 2-Moderate | 0.28 miles | 8:46 AM (10 mins ago) | active (v.5) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inrix NEW | | I-276 | Incidents(Inrix) | 2-Moderate | 0.93 miles | 8:41 AM (14 mins ago) | active (v.3) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze/Inrix NEW | | I-95 | Incidents(Inrix) | 4-Severe | 2.19 miles | 8:39 AM (17 mins ago) | cleared (v.4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze NEW | | I-79 | ACCIDENT MINOR | 1-Low | N/A | 8:06 AM (49 mins ago) | N/A | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waze NEW | | I-81 | ACCIDENT MAJOR | 1-Low | N/A | 6:29 AM (2 hour ago) | N/A | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Notes:

- The “New” feature will stay active until someone selects it within your District settings. Once clicked it will go away
- The selections, accurate, false, etc., are designed to help the system learn from it’s mistakes. The goal is to progressively make the tool better based off user interaction
 - If an incident is dismissed or marked as a false, the incident will be removed from all users feeds (within your District Settings)
- If you see a Status with a “v.” higher than 1 there is a real time incident timeline available (see next page)

Inrix v2: Delays increasing and delays of seven minutes on I-79 Northbound in Franklin Park. Average speed ten mph.

InrixID: 81002102

Status: active

Severity: 2-Moderate

Impacting:

Reported Time: Starts at 8/10/2018 9:14 AM, ends at 8/10/2018 10:08 AM.

Road: I-79

Type: Congestion

Direction: Northbound

Location: between I-79 Exit 68 / Mount Nebo Rd / Blackburn Rd and I-79

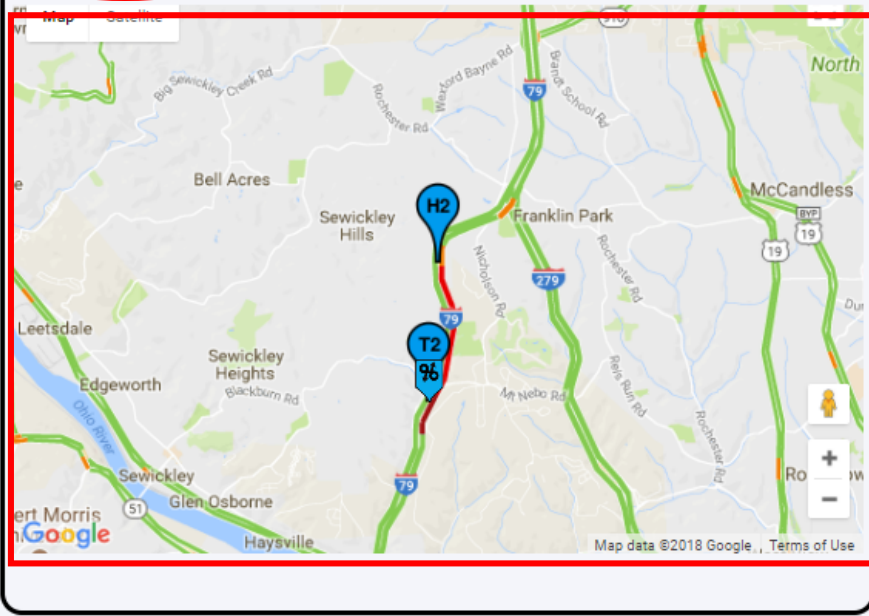
Delay Impact:

Delay Minutes: 7.88 mins

Length of congestion: 1.82 miles

Abnormal

[Open Incident Timeline](#)



Detailed incident information directly from each source (INRIX and Waze)

First reported time, and Waze or Inrix's estimated time traffic impact will "end"

Detailed location information from Waze or INRIX

Delay in minutes from historical norm.

Length of congestion in miles

Any "status" with a v. higher than 1 this will populate. Click to open a new page that highlights only this incident's timeline. Once opened this page will continue to update as the incident progresses.

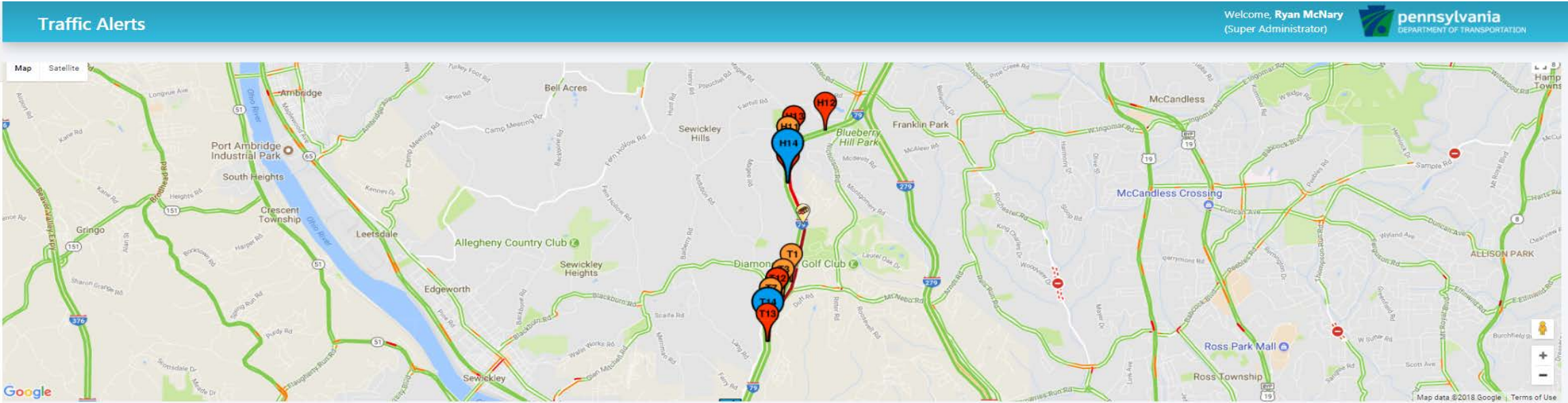
Real time Google Map with Traffic. Zoomable to further look investigate incidents.

Waze alerts will populate on the map

H2 = Head of Congestion, T = Tail of Congestion

= INRIX reported detour point

Incident Timeline

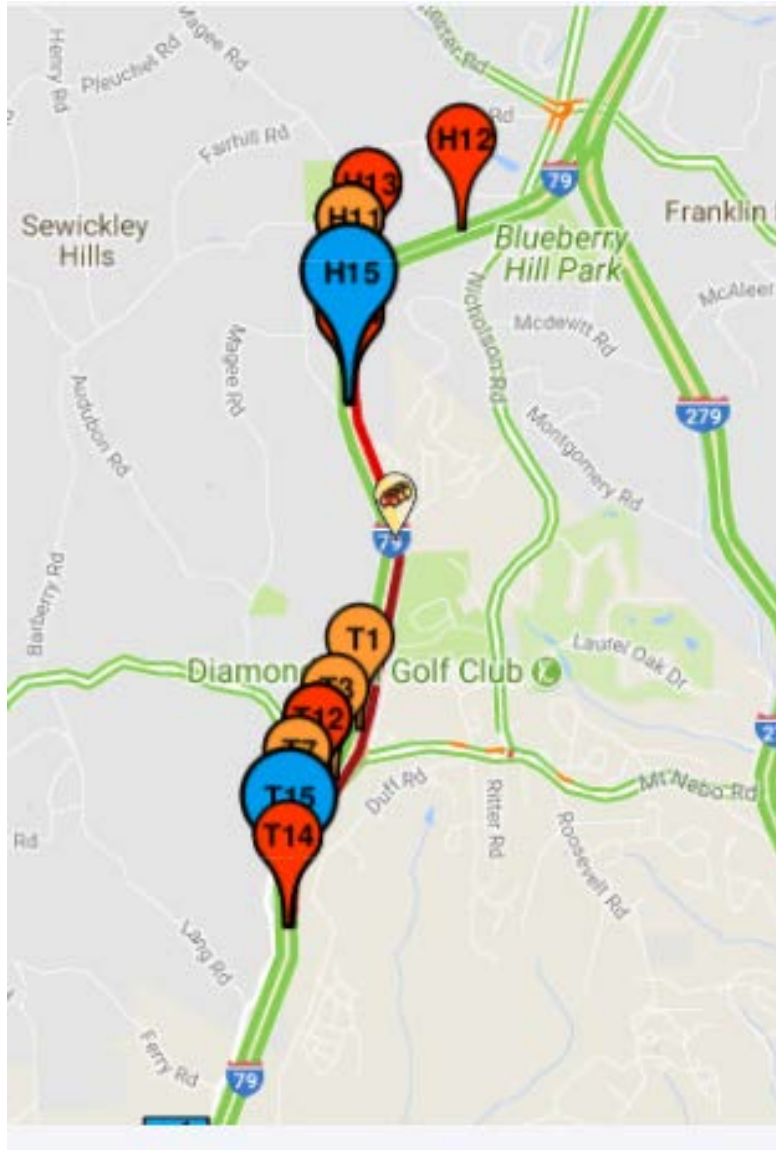


| active (V14) : Congestion upto 2.12 miles on I-79 with severity 3-High. | | Updated time: Aug 10, 2018 10:08:01 AM (a few seconds ago) | |
|--|----------------------------------|--|-------------------|
| Severe delays of twelve minutes and delays increasing on I-79 Northbound in Franklin Park. Average speed ten mph. JAM reported from waze on this Congestion. | | | |
| InrixID: 81002102 | Status: active | Severity: 3-High | Impacting: |
| Reported Time: Starts at 8/10/2018 9:14 AM, ends at 8/10/2018 10:45 AM. | Direction: Northbound | Location: between I-79 and I-79 | Road: I-79 |
| Type: Congestion | | | |
| Delay Impact: | Delay Minutes: 10.87 mins | Distance: 2.12 miles | Abnormal: |
| active (V13) : Congestion upto 2.63 miles on I-79 with severity 3-High. | | Updated time: Aug 10, 2018 10:07:01 AM (a minute ago) | |
| active (V12) : Congestion upto 2.65 miles on I-79 with severity 3-High. | | Updated time: Aug 10, 2018 10:05:01 AM (3 mins ago) | |
| active (V11) : Congestion upto 2.02 miles on I-79 with severity 2-Moderate. | | Updated time: Aug 10, 2018 10:03:03 AM (5 mins ago) | |
| active (V10) : Congestion upto 2.02 miles on I-79 with severity 3-High. | | Updated time: Aug 10, 2018 10:01:02 AM (7 mins ago) | |
| active (V9) : Congestion upto 1.67 miles on I-79 with severity 3-High. | | Updated time: Aug 10, 2018 9:57:01 AM (11 mins ago) | |

Most Recent Incident Update

All historical update details

Incident Timeline



- H = Head of Congestion
- T = Tail of Congestion
- Numbers = Increase with most recent
- Most recent will always be BLUE
- Pins are color coded by the congestion severity at that updates Time (green, orange, red).
- Waze alerts will show on the map

Planned Metrics

- Work Zones Impact on Congestion by Time of Day
 - Work Zone Production Efficiency with Congestion and Location by Time of Day
- Work Zone Situational Awareness
- Congestion/Delay by Work Zone Traffic Control Plan (roadway type)
- Operationally Deficient Ranking for Core Network Segments
- DMS Message Effectiveness
- Service Patrol Impact on Congestion

