FTE TSM&O Program Initiatives

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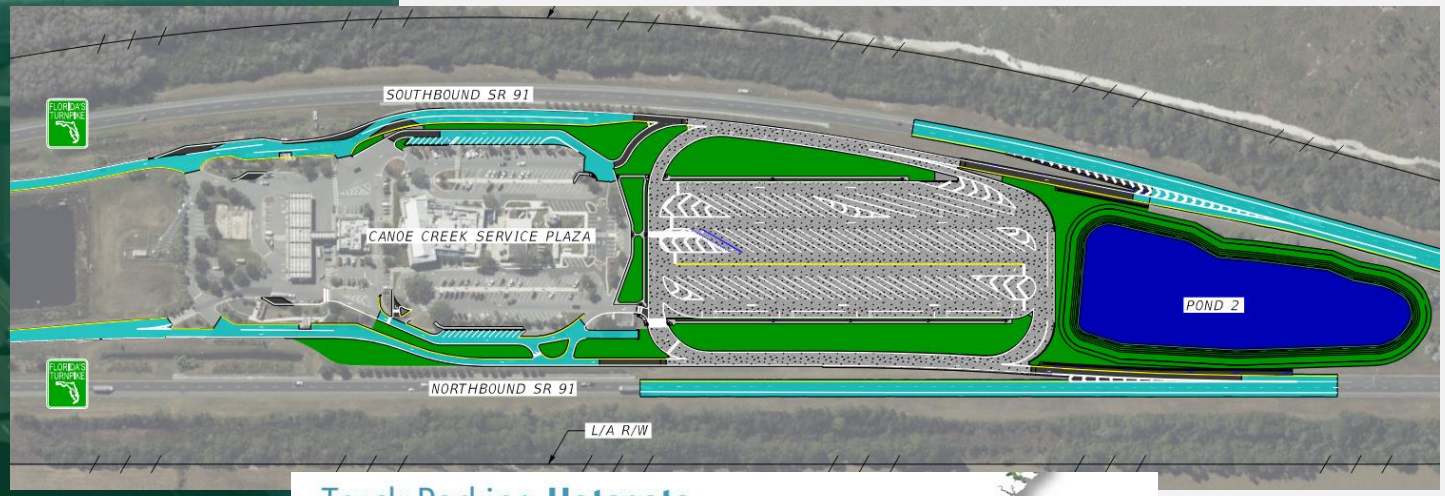
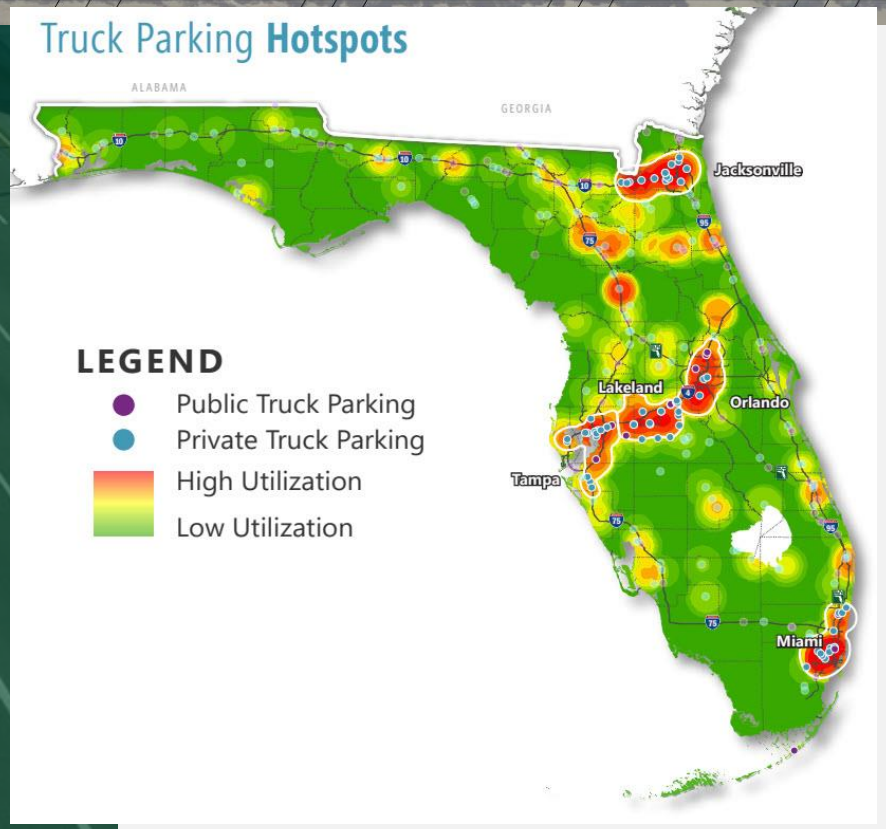
Overall TSM&O Initiatives

- Truck Parking Working Group Meetings
- TSM&O Strategic Plan update
  - Continuing Services TSM&O contract with VHB
  - Update planned for 2025
- FHWA Workshop
  - Capability Maturity Assessment workshops
  - August 2023 – 1st workshop
  - February 27, 2025 – 2nd workshop





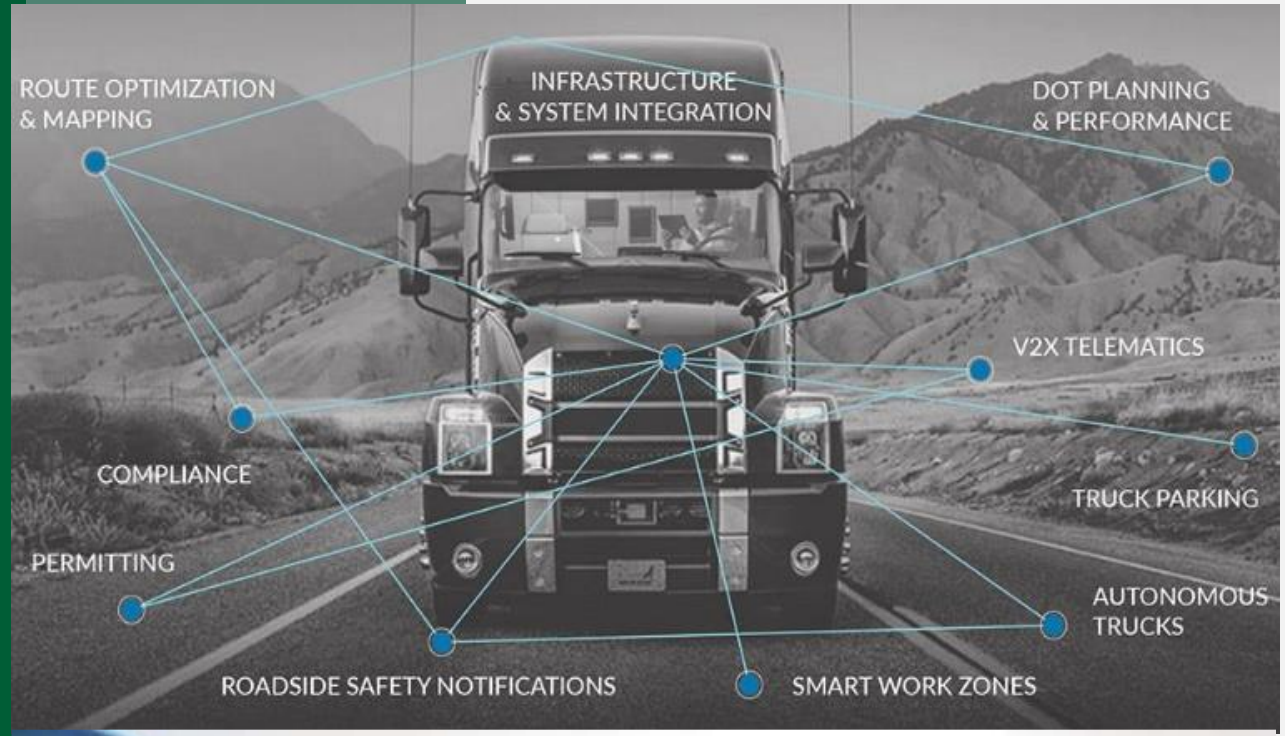
Overall TSM&O Initiatives

- Performance Measures
  - Quarterly to FDOT Central Office
  - Safety (Crashes, Secondary Crashes)
  - Incident Clearance
  - Planning Time Index (PTI)
  - ITS-related (Network Availability, Device Availability)
- Queue Warning System
- SunGuide enhancements
- Wrong Way Driving

FLORIDA'S TURNPIKE

DriveWyze Overview

- Operates North America's largest weight station bypass service.
- The largest embedded cross-platform connected truck solution provider in North America.
- One-of-a-kind vehicle-to-infrastructure omni-channel
- System leveraged to deliver critical safety messages and alerts to commercial transportation subscribers every day.
- In-cab safety alerting services launched in 2018
- Proven to make drivers more aware of unsafe conditions and ultimately reduce the risk of collisions.



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Program Goals

- Provide Smart Roadways alerts to CMVs
  - In real-time
  - Sudden slowdown and unexpected slowdown events
  - Florida’s Turnpike System (1-year project)
  - In-cab devices in CMVs
  - Partnership with INRIX
- Outcomes include
  - Reduce the risk of crashes
  - Measurable change in driver behavior,
  - Speed reduction,
  - Fewer hard braking events,
  - Reduction of bridge hits, and
  - Timely distribution of emergency messages.

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Smart Roadways Alerts

- Smart Roadways alerts
  - Keep drivers informed about traffic events occurring on Florida's Turnpike while allowing them to stay focused on the roadway.
  - Safety-critical notifications delivered directly into the cab of trucks.
- Drivers receiving alerts can take proactive measures.
- Alerts allow drivers to make proper decisions, based on real-time information, as they approach high-risk zones.
- Alerts are displayed on the screen of the truck's ELD device. Alerts use MUTCD iconography and minimal text.

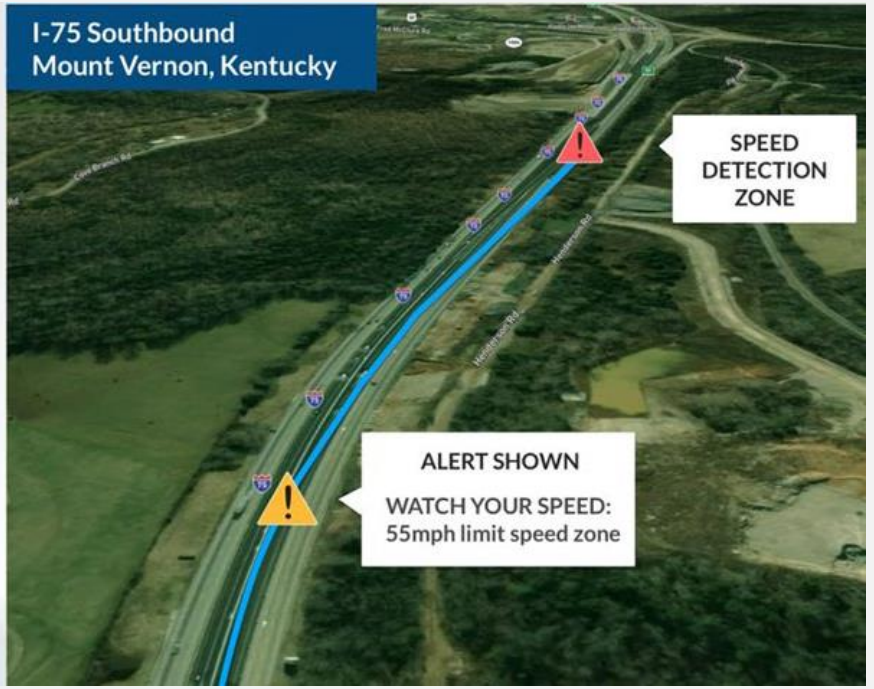
Case Study: I-75 KY

Baseline
70%
speeding incident %

Alerted Drivers
42%
speeding incident %

Alerted drivers 3mph slower on average

NO drivers exceeding 15mph over



Case Study: 200 Truck Carrier

Before Safety+
50%
speeding incident %

After Enabling Safety+
3%
speeding incident %

Keys to Success

- Proactive Driver Training
- Transparent Speed Policies
- Recognizing Low Risk Drivers
- Coaching High Risk Drivers

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Reporting and Analytics

- DriveWyze Smart Roadways helps FTE to directly monitor the effectiveness of alerts and programs.
  - Quantifying the number of alerts received, monitor how drivers respond to messages, such as changes in speeding and hard braking.
  - Historical reporting and analytics provide actionable insights when identifying high-risk roadways.
-
- The FTE online portal includes:
  - Near-real-time dashboard that enables FTE to monitor program analytics.
  - Measured change in driver behavior after receiving safety notifications.
  - Historical reporting and analytics

Unexpected Slowdown and Sudden Slowdown Alerts

Slowdown alerts notify fleet vehicles travelling in FTE corridors of upcoming traffic incidents resulting in an unexpected slowdown or a sudden slowdown of traffic, allowing drivers to take defensive driving measures or alternate routes.

Emergency Alerts

Area wide emergency alert distribute
safety critical information to vehicles
approaching dangerous road conditions,
major road closures, major Hazmat spills,
high wind locations, low bridges, civil unrest

Driver Behavior Insights

DriveWyze collects “breadcrumbs” of speed data from the vehicle.

Data is analyzed

The resulting analysis is optimized to exclude atypical events that could skew results (such as the driver pulling into a rest stop).

Driver behavior data is displayed in views that present:

1. The frequency of hard-braking events
2. The severity of hard braking events
3. Drill down speed data of each individual braking event

Raw bread crumb data is also available upon request.

Program Analytics

Data available regarding program delivery includes:

- Number of alerts received.
- Number of vehicles alerted.
- Alerts count per day.
- Alerts by time of day
- Most active corridors (by Alert Count)

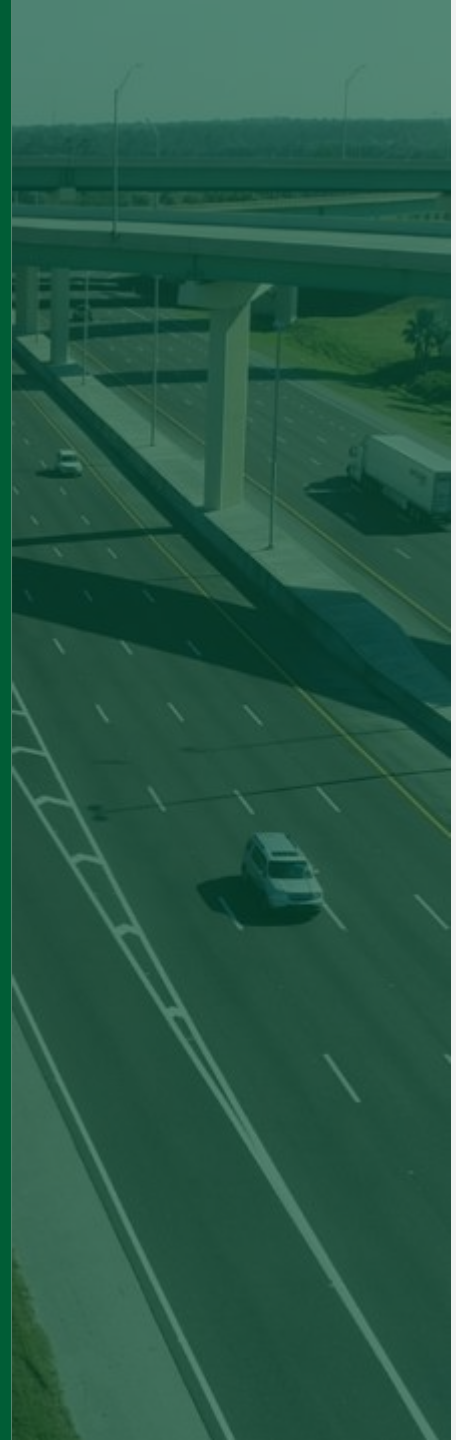
Alert Heat Map

Data is retained in the portal for the most recent 12 months and can be conveniently filtered to a specific date range and/or specific road sections.

Emergency Alerts

- Area wide emergency alerts
  - Safety critical information into vehicles approaching dangerous road conditions
  - Major road closures
  - Low bridges
  - Major Hazmat spills
  - High wind locations
  - other unplanned emergencies

- DriveWyze distributes emergency alerts at the direction of Florida’s Turnpike Enterprise.



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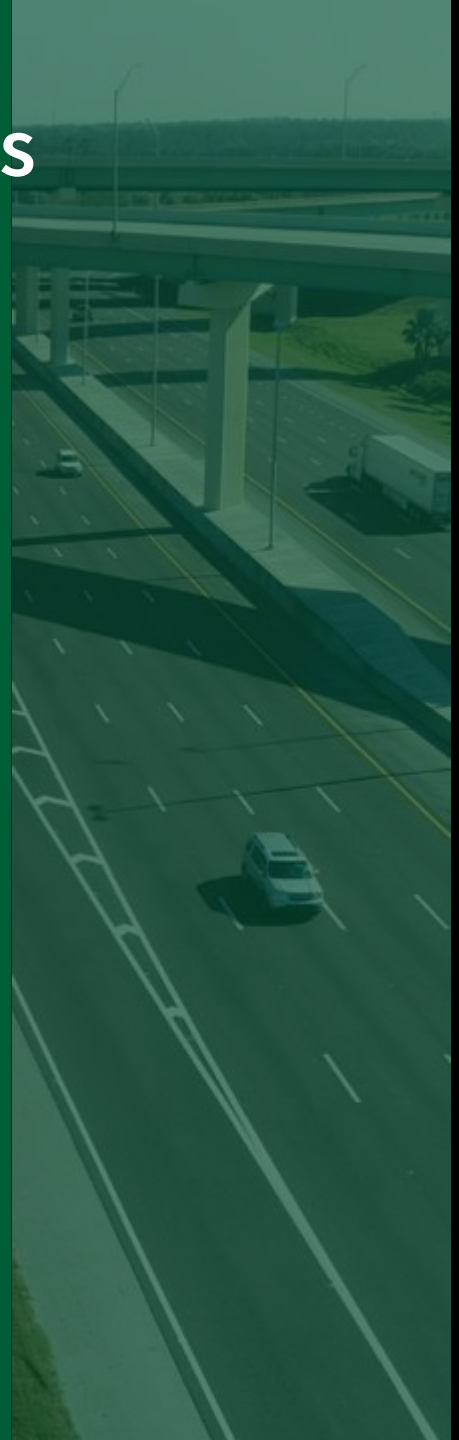
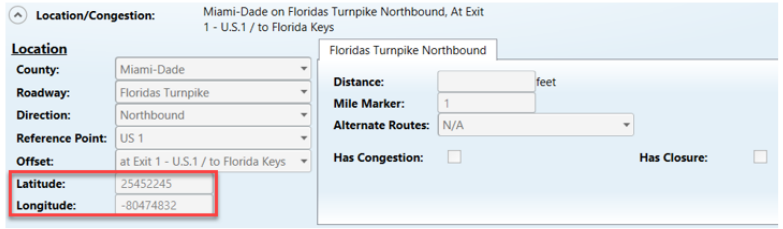
Operational Considerations

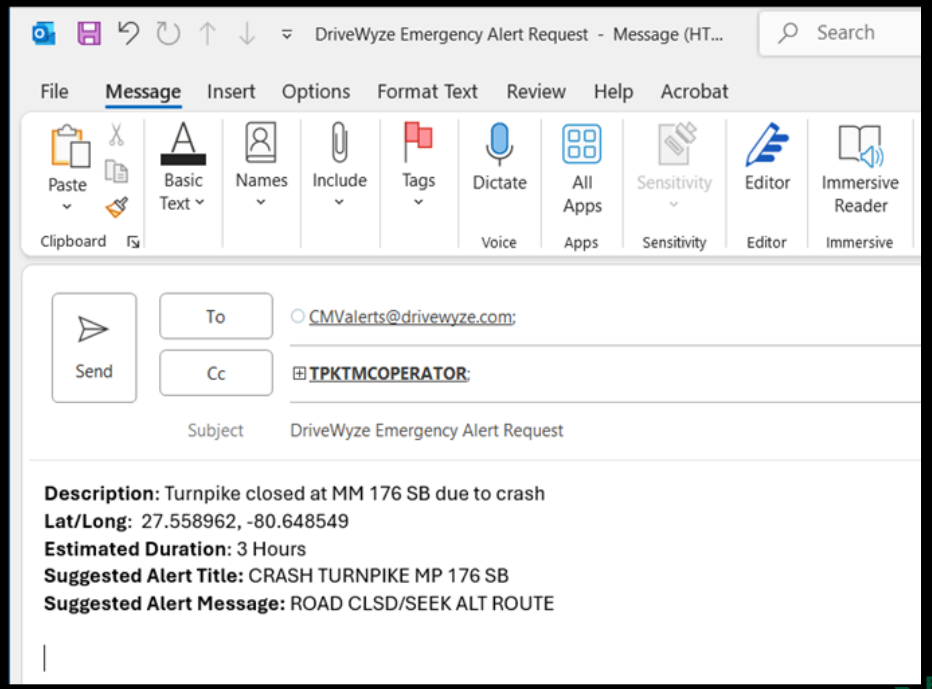
- DriveWyze emergency alerts are a manual process, initiated by the TMC.
- The Turnpike has developed a detailed SOP for criteria and activation instruction.
- Challenging to add additional manual process during major/full closure event management.
- TMC software enhancement for integration would result in more consistent usage.



1. Initiate an Emergency Alert request by calling this dedicated toll-free line: 1-888-285-1040. Advise that you are sending an email request for their review.
2. Send the details by email to CMValerts@drivewyze.com, cc: TPKTMCOperator@dot.state.fl.us and include the following:
   - **Brief description** of the nature of the emergency (e.g. Turnpike closed at MM 176 SB, Beyond SR 60 due to crash)
   - **Lat/Long** of the incident (use SunGuide EM Location)



   - **Anticipated Duration**: How long you anticipate the need for the alert to stay active (estimate three hours if this is unknown)



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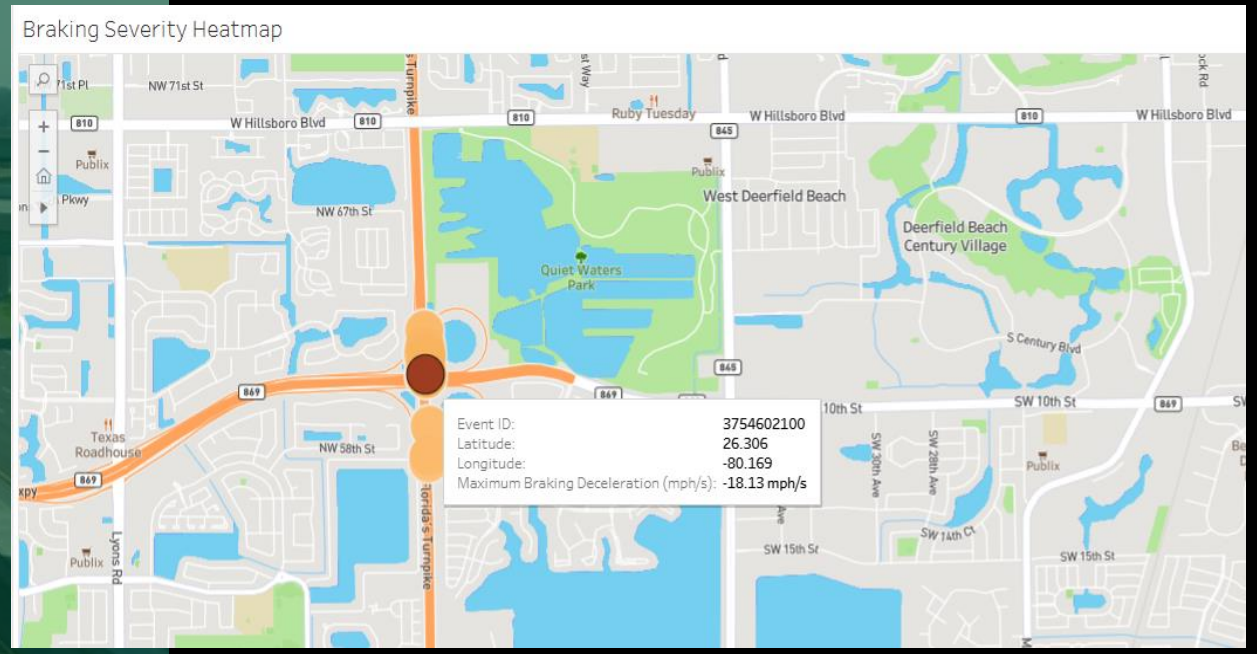
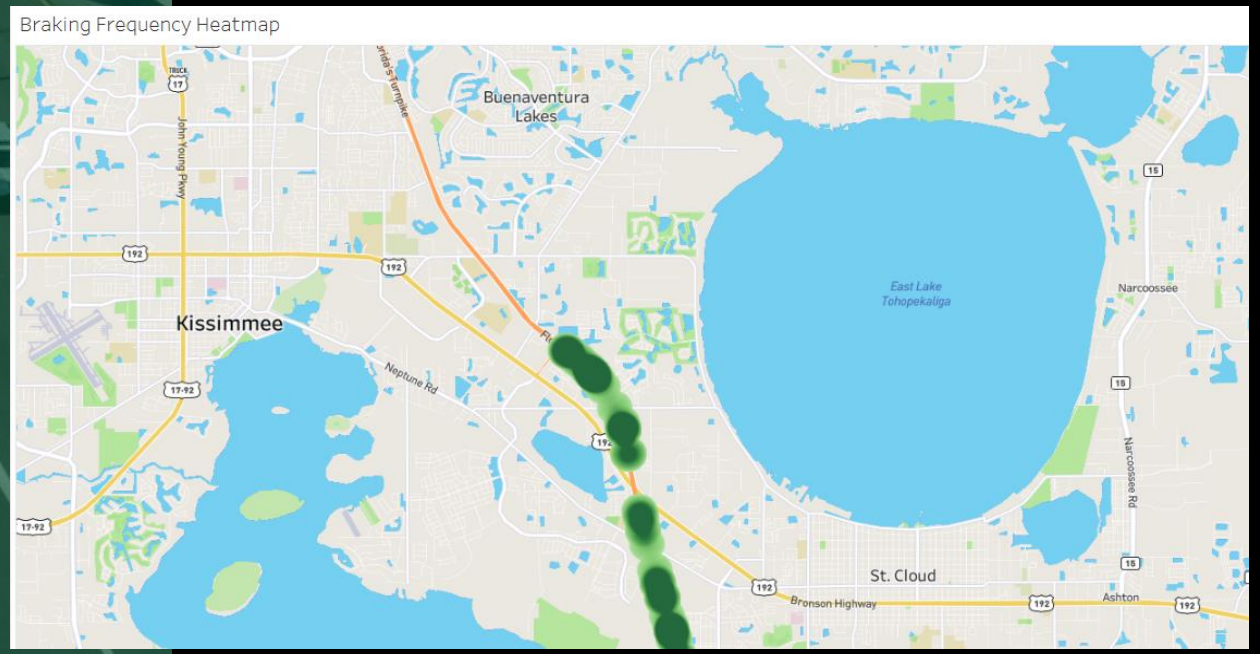
Operational Considerations

- Location Braking Frequency and Braking Severity evaluation can assist in identification of TMC monitoring 'hot spots'
- Braking Severity identified in mph/s and color coded by severity on heatmap
- Braking Frequency can assist in queue management messaging plans and monitoring

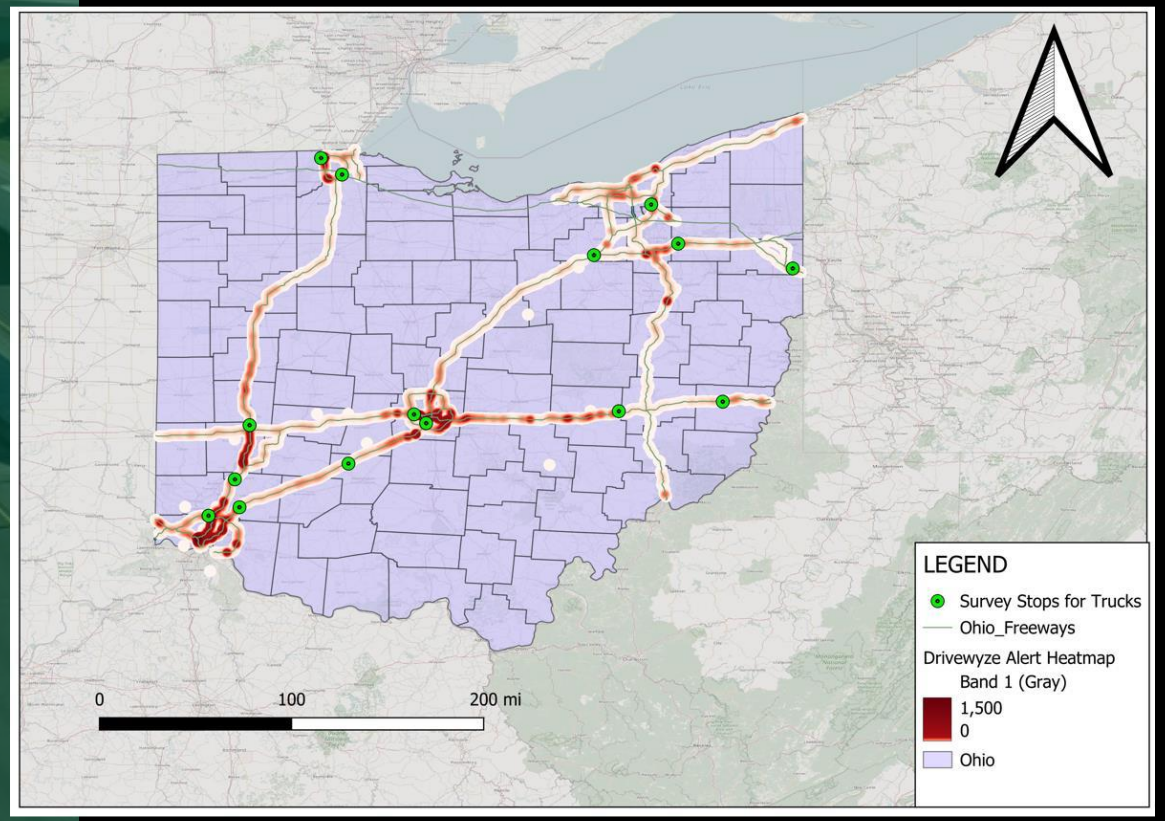




PROGRAM EFFECTIVENESS REFERENCES

OHIO DOT

- Effectiveness, defined as the reduction in congestion-related crashes
- The reduction in crashes resulted in approximately $14 million in benefits
- The benefit-cost analysis of the DriveWyze System showed a BCR of 22.56 for reducing congestion-related crashes, based on ODOT's incurred costs
- The DriveWyze system reduced delays by an average of 20.5 hours per mile in the after period (2022-2023) compared to the before period (2018-2019)



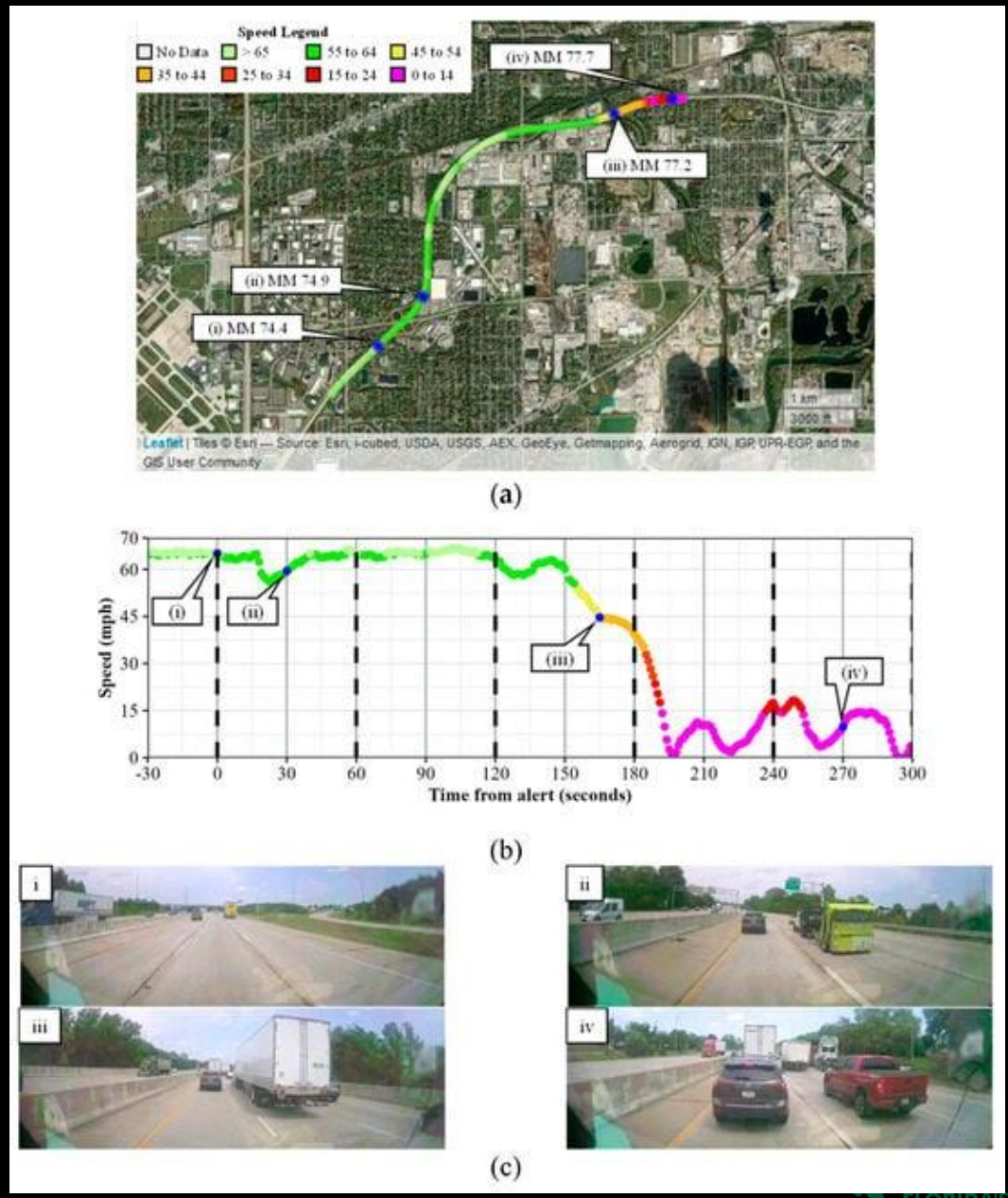
Source: Determination of Effectiveness of Commercial Vehicle Safety Alerts, 09/03/2024 by Emmanuel Kidando Ph.D. P.E. Cleveland State University, Leomar Almanzar P.E., Michael Baker International, Mohammad Jalayer Ph.D.Rowan University, Angela Kitali, Ph.D. University of Washington Tacoma

PROGRAM EFFECTIVENESS REFERENCES

INDIANA DOT

- Approximately 15% of trucks receiving a Congestion alert had reduced their speeds by at least 5 mph 30 s after receiving an alert (Figure 6a);
- Approximately 21.2% of trucks receiving a Dangerous Slowdown alert had reduced their speeds by at least 5 mph 30 s after receiving an alert (Figure 6b);
- The percentage of Congestion alerted trucks who reduce their speeds by at least 5 mph consistently increases and stabilizes up to about 80−85% within 5 min;
- The percentage of Dangerous Slowdown alerted trucks who reduce their speeds by at least 5 mph increases to a maximum of about 55% by 2 min after the alert and then steadily decreases to about 30% at the 5-min mark after receiving an alert.

Source: Impact of In-Cab Alerts on Connected Truck Speed Reductions in Indiana, 09/19/2024 by Jairaj Desai, Enrique D. Saldivar-Carranza, Rahul Suryakant Sakhare, Jijo K. Mathew and Darcy M. Bullock



Next Steps

Phase 1:

Develop method to determine **accuracy** of alerting

- Metric 1: % of trucks that were already operating at a speed of <45mph when receiving alert
- Metric 2: % of trucks that received an alert and never reduced speed <45mph

Develop method to determine the **effectiveness** of alerting

- Metric 1: % trucks that slowed by at least 5mph within 30 seconds of receiving the alert
- Metric 2: % trucks that slowed by at least 5mph who were traveling >70 mph when alert was received

Phase 2:

- Explore reduction in secondary crashes (Signal 4 Analytics/SunGuide data)
- Cost Benefit Analysis
- Streetlight comparison for secondary crash and slow downs
- HERE data comparison for slowed conditions and alert timing

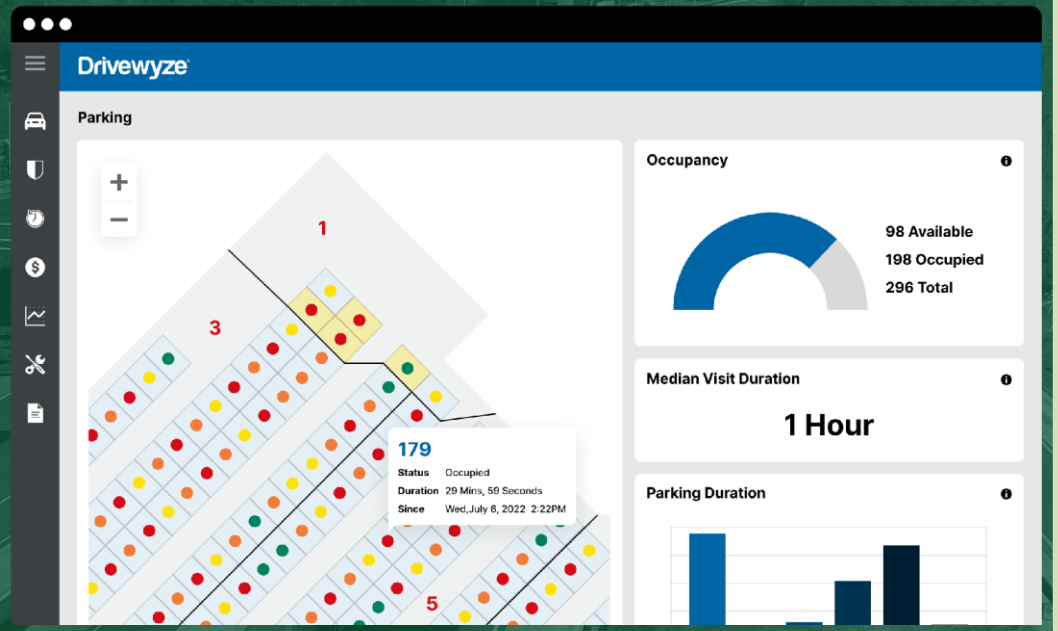
Next Steps

Commercial Vehicle Parking

- Integration of DriveWyze in-cabin devices with TPAS information, sent directly to the commercial customer in real-time, allowing for efficient route planning
- Evaluate feasibility of providing parking space reservation as a service

Low Bridge Alerts

- Currently displayed as static messages, reliant on message boards to warn over height vehicles
- Integration with DriveWyze to send a message directly to the driver, based on vehicle height, guiding it to nearest exit.



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Questions?
Thank You
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