

Gulf Region ITS Annual Meeting

Leveraging **Connected Vehicle** Technology and **Artificial Intelligence** - Case Study -

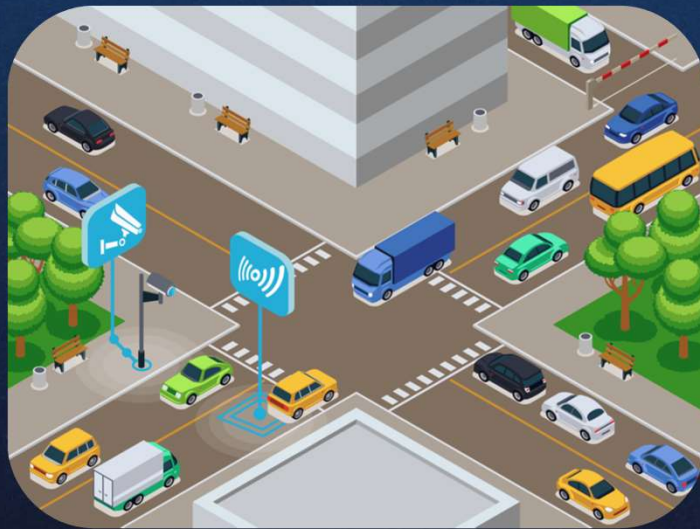
November 17, 2021



Transportation and mobility data have proliferated far beyond traditional ITS devices

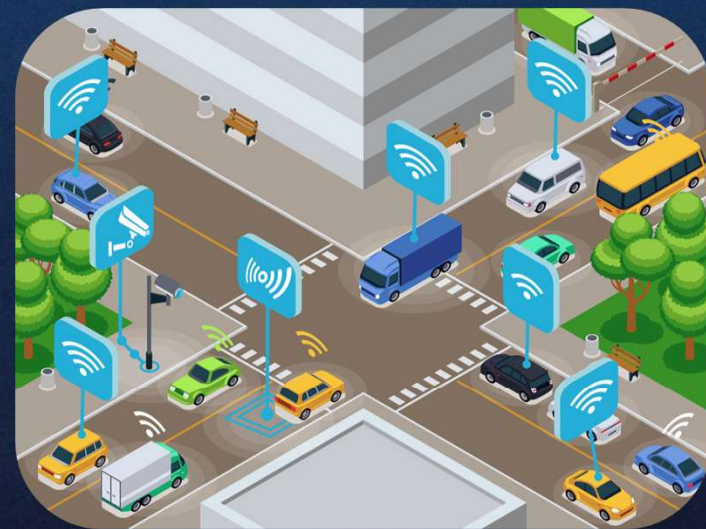
Traditional

Typically solely reliant on physical ITS infrastructure



Today

Physical and virtual data transmitted through connected vehicles and apps



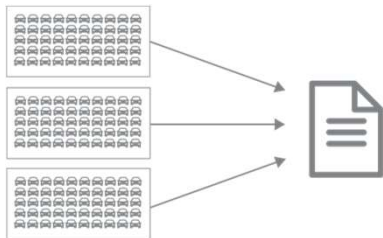
Connected vehicles are collecting **more data** from a **wider variety** of sensors and on-board devices



Different types of connected vehicle data for different use cases

Aggregated

Typically generated through probe data



Traffic Flow / Speed



Length of Queues



Travel Time & Delays



Traffic Volume

Individual Car Data

Rich data transmitted through connected vehicle sensors or aftermarket telematics devices



Location (Lat/Long)



Driver Behavior *



Speed / Heading

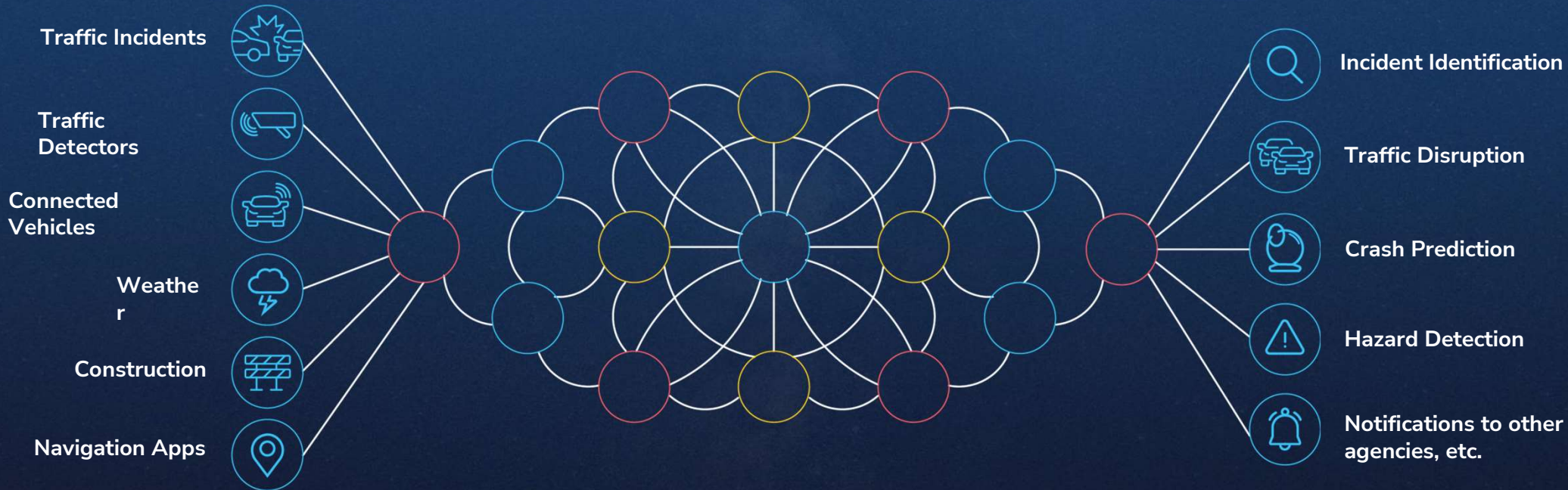


Additional Metadata *

The sheer **volume** of this data is far beyond what a human being can **process** alone



Machine learning technology allows us to process mass amounts of data to **learn patterns** and **detect anomalies**



Connected vehicle data from partners powers the AI insights of the platform



3 second capture rate with 30 second latency



1.3 billion journeys tracked each month

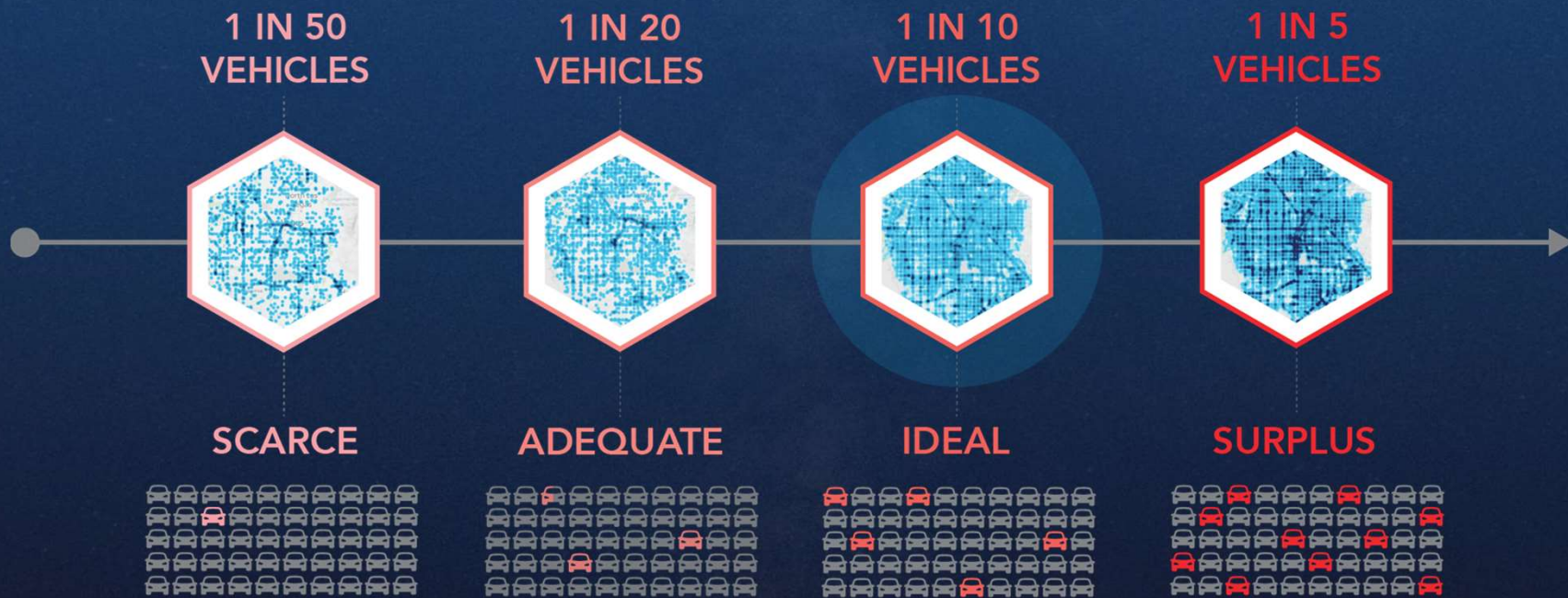


Location data is 95% accurate to within a ~3-yard radius, the size of a typical car

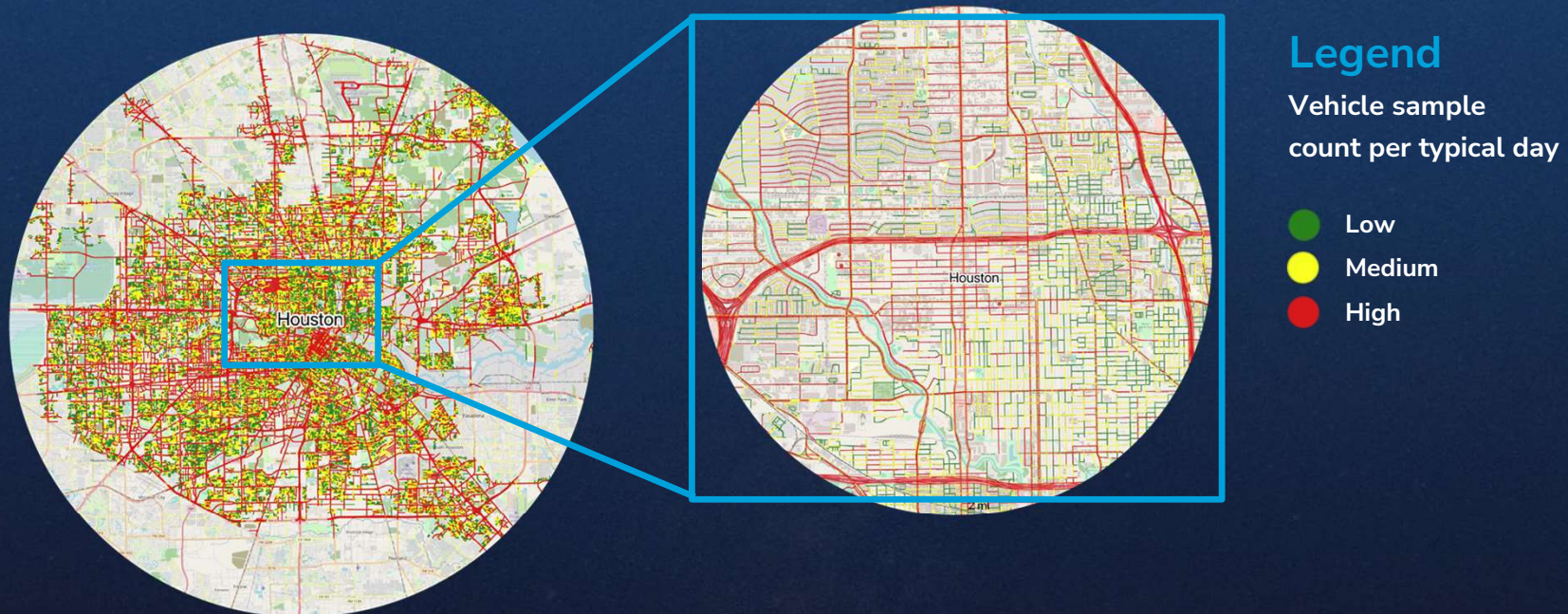


Lane level precision allows for precise incident detection, enabling a measurable reduction in time to intervention

Data from connected vehicles provides **more visibility** of true roadway conditions

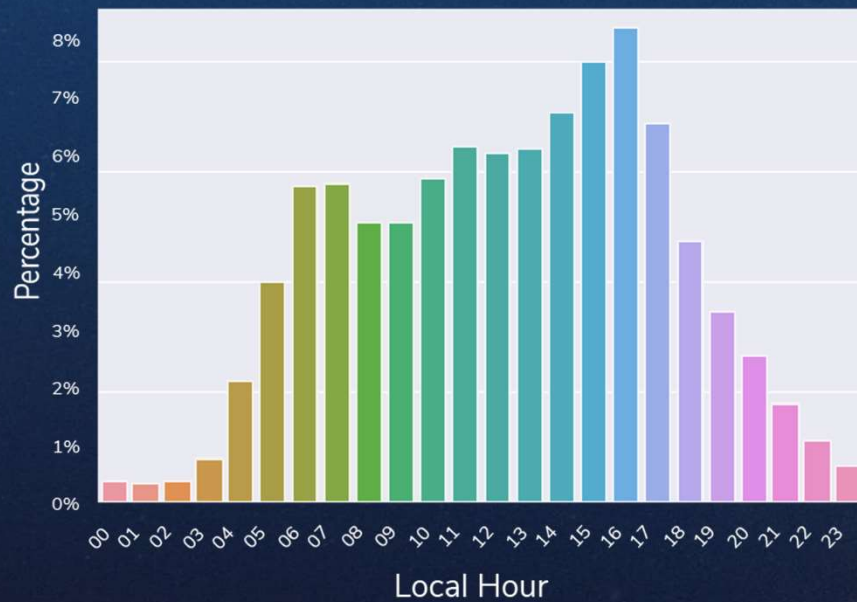


Connected vehicle data coverage shows that there is much data available on arterial roads

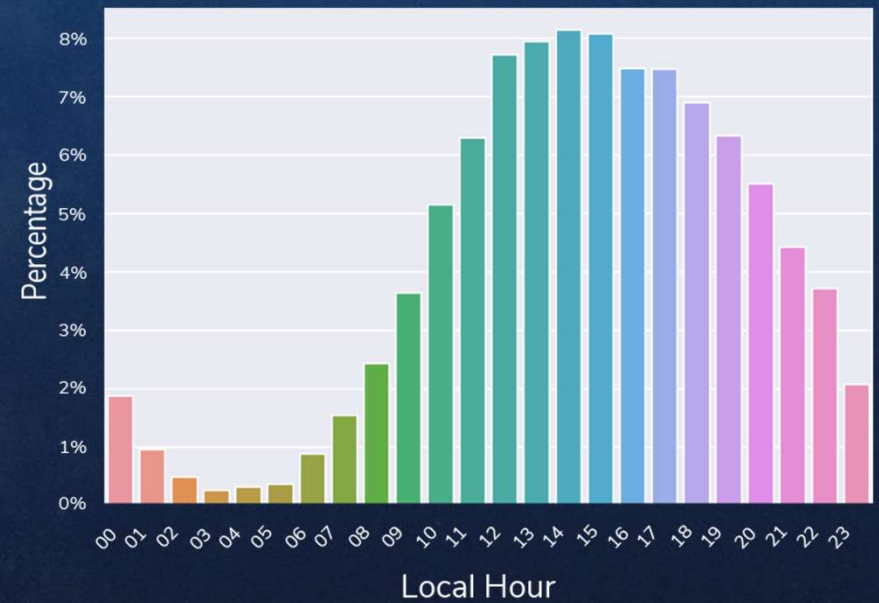


Connected Vehicle Trip Percentages

Trip Percentages for Houston



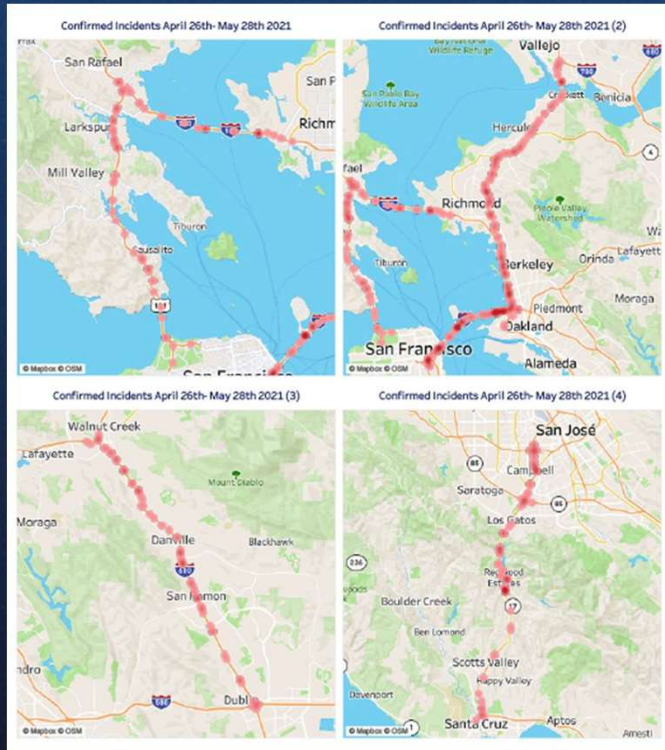
Trip Percentages for Salt Lake City



Machine learning technology allows us to process mass amounts of data to **learn patterns** and **detect anomalies**

Waycare is integrating data from thousands of connected vehicles to notify users, in real-time, of traffic hazards and road incidents.

Case Study: Bay Area



Additional incidents



+23%

Compared to
previous incident
detection methods

Identified Faster



43%

Of incidents
detected were
faster than a
911 call



8 minutes

On average,
faster than
traditional
methods

In 2018, Nevada Highway Patrol (NHP) launched a pilot program with Waycare's predictive analytics to take proactive measures to reduce traffic injuries and fatalities



The NHP coordinated with its partners at the Regional Transportation Commission of Southern Nevada and Nevada Department of Transportation to implement a pilot program using Waycare.

NHP positioned its Troopers in highly visible, strategic locations to encourage speeding drivers to slow down **before** they enter a high-risk zone (thus reducing the possibility of drivers slamming on their brakes abruptly)

The Regional Transportation Commission of Southern Nevada (RTC) activated Dynamic Message Signs (DMS) in conjunction with the NHP



The RTC activated DMS in locations near the STMS zone, to alert drivers to reduce their speed and drive more cautiously. This action was paired with the NHP Troopers' presence to increase the effectiveness of the program.

The Road to Zero program resulted in an **18% reduction** in primary crashes and a **43% reduction** in percentage of average speeding

18% Reduction in Traffic Crashes



Sum of crashes without preventative activities present

Sum of crashes while preventative activities were present

43% Decrease in Drivers Over the Speed Limit



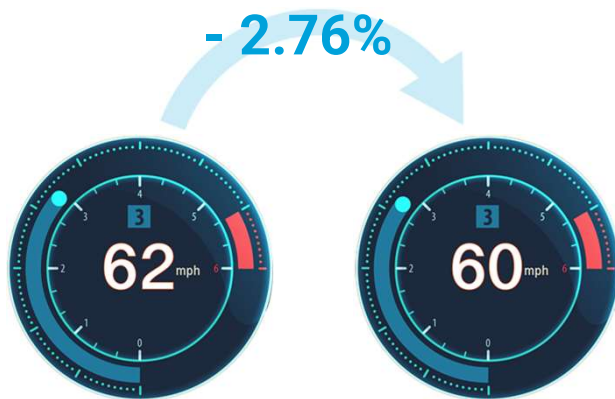
% that drivers were over the posted speed limit when no preventative activities were present

% that drivers were over the posted speed limit when while preventative activities were present

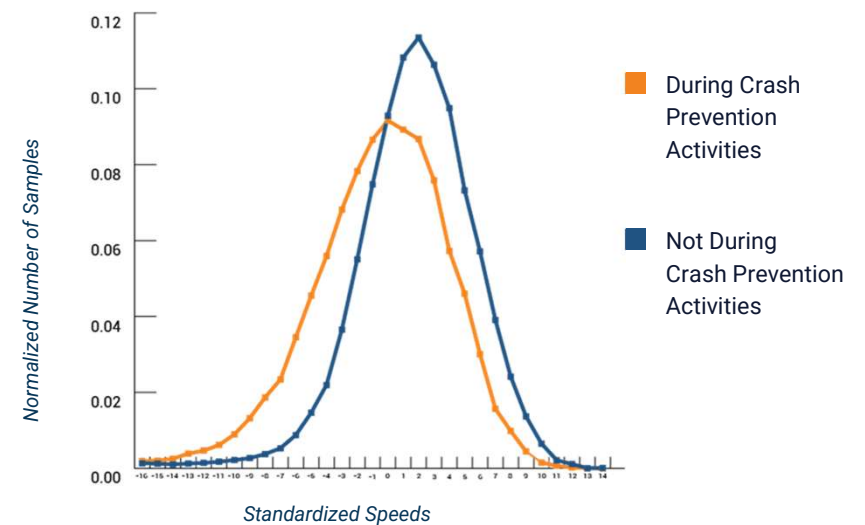
* Feb-Dec, 2020 on I-15 NB at Russell, I-15 SB at Lake Mead, and US-95 SB at Jones.

STMS Activity helped reduce average speeds and improve speed harmonization

STMS sites reduced avg speed but did not create traffic slowdowns



9% decline in standard deviation is an indicator of speed harmonization in the STMS corridor



Impact by the numbers:

Funding from federal, state and local agencies is heavily tied to the ability to show measurable improvements in traffic safety and incident management.



18% reduction in primary crashes on monitored roads



21% increase in incidents identified



180% increase in public outreach



9 min reduction in incident identification time



43% of speeding drivers reduced their speed to adhere to the speed limit after STMS (strategic traffic management site)

Thank You



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