UC San Diego Health

Use of Real-Time Driver Alerts to Improve CMV Safety

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TREDS

VISION: TREDS aspires to be a leader in transit safety by aligning cutting -edge research with innovative education programs to reach zero fatalities and injuries across transportation systems.

PRIORITY AREAS:

- Education and training to improve roadway safety;
- Research to inform public policy;
- Serve health care providers, law enforcement, industry professionals, and general public;
- Aging road users, distracted driving, pedestrian safety, and driving under the influence;
- Passenger vehicles, commercial vehicles, bikes, and trains

TREDS Research Team

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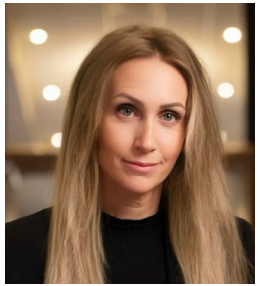

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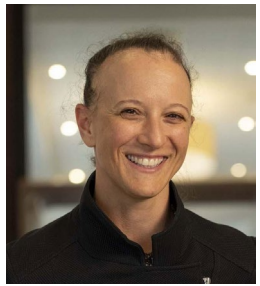

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Overview of Study

- UC San Diego TREDS has partnered with Drivewyze to offer real-time alerts notifying CMV drivers of upcoming active work zones in California
- Caltrans Commercial Wholesale Web Portal Version 2 (CCWWP-2) provides locations of active work zones
- MUTCD-compliant and hands-free alerts are delivered via in-cab Electronic Logging Device (ELD).
- Vehicle location data is collected to understand impact of alerts on speed and driving behavior

Where and When are alerts being sent out?

- Alerts will be deployed for a total of 12-14 months
- Alerts launched April 2024 in San Diego and Imperial County (Caltrans District 11)
- Alerts launched in District 2 (Northeast Counties) September 2024
- Alerts may expand into a third district Spring 2025

Photo Credit: Caltrans

Data Collection Process

Pre-alert data

DriveWyze collects vehicle behavior data such as speed, acceleration, and bearing at one-second intervals.

Work Zone Alert Trigger

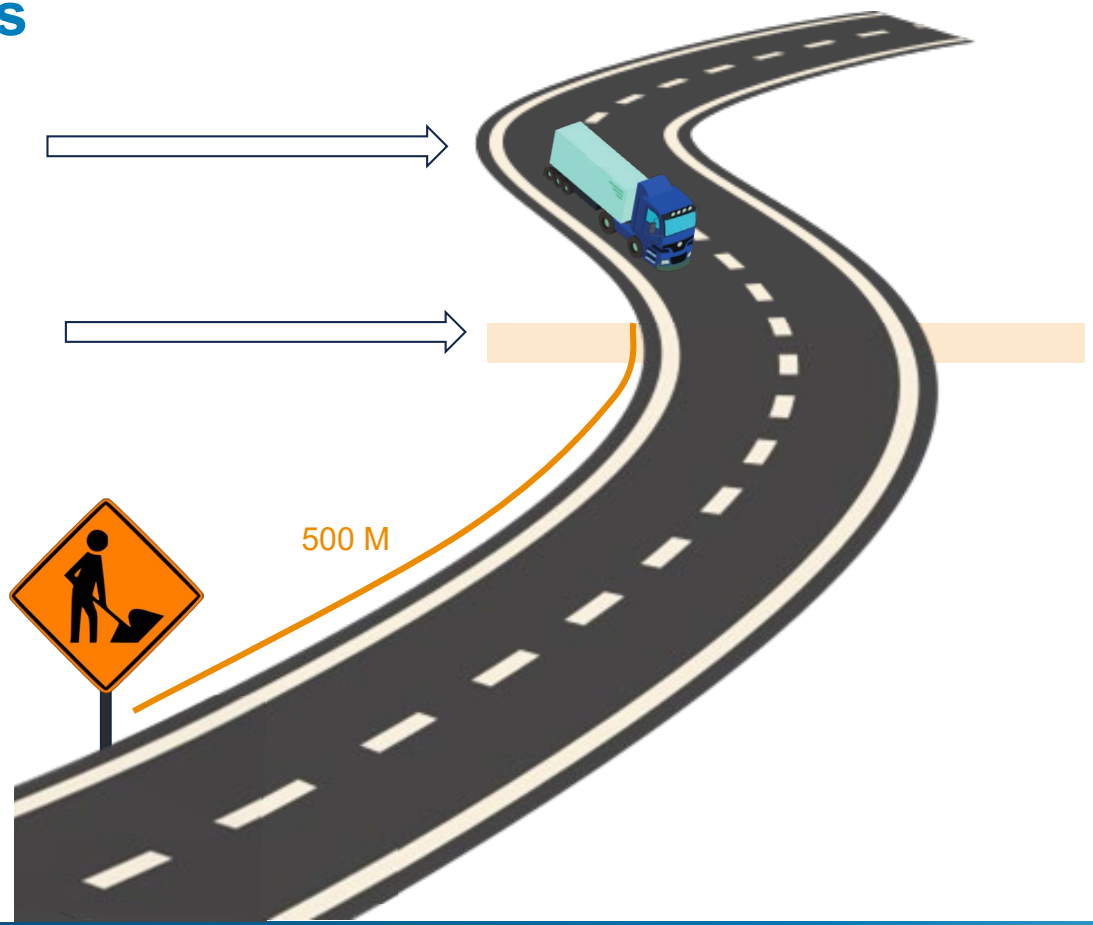
At 500 meters outside the CALTRANS-designated work zone location, an alert about the upcoming work zone is delivered to the vehicle's ELD.

Post-alert data

Data is collected on vehicle behavior measures each second for a 5-minute time period once the alert is displayed.

Control Group

DriveWyze will 'ping' the vehicle as if an alert were to be displayed, but nothing shows on the ELD; therefore, the same data can be collected pre-and post-alert for comparison.



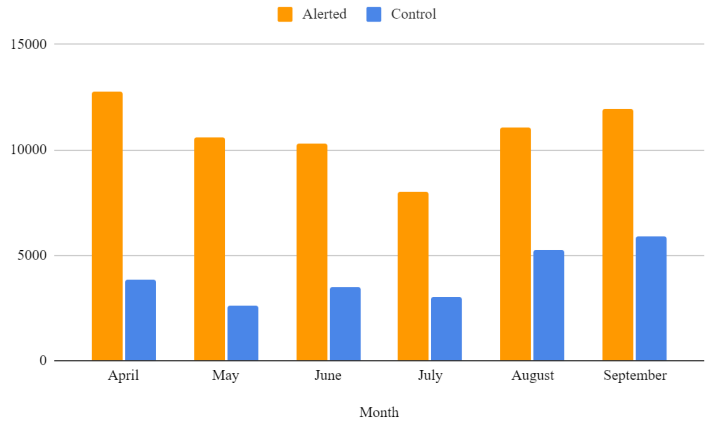
What do we hope to achieve?

- Measurable changes in driver behavior (such as overall speed reduction and reduction in hard braking) in response to in-cab notifications during study period
- Reduction in CMV-involved crashes in California work zones
- Understanding the perception of in-cab alerting among key stakeholders such as participating fleets, driver supervisors, drivers, and road workers
- Increasing awareness and adoption of free safety alerts among fleets and drivers

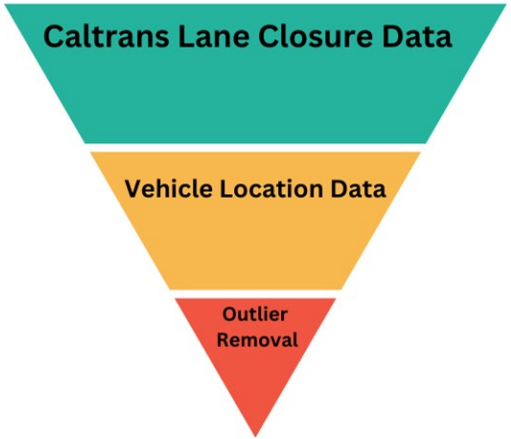
Alerts Overview

As of September 16, 2024:

- 88,742 vehicle visits have been recorded for 2,331 unique active work zone sites across Caltrans Districts 11 and 2
- Total of 64,640 alerted vehicle visits and 24,102 control vehicle visits.
- Analyses restricted to 10 sec before and after alerting as we resolve control group data gap

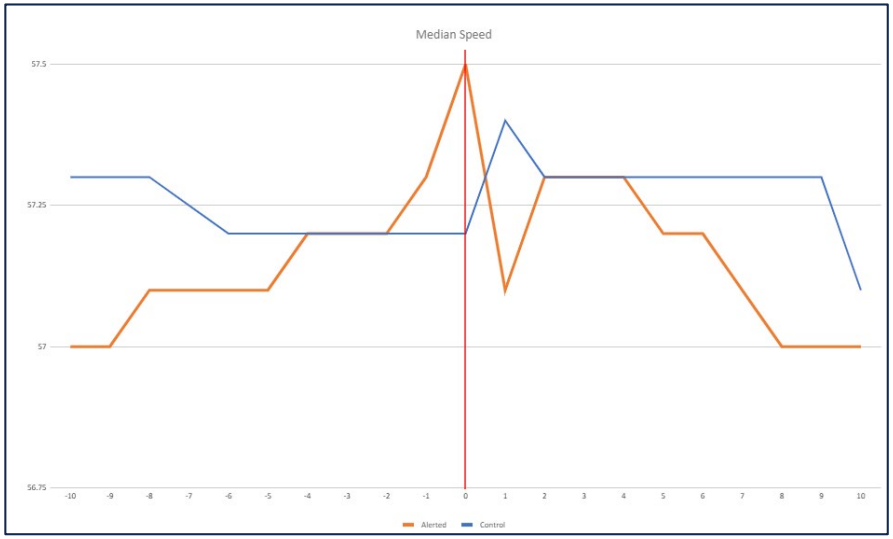


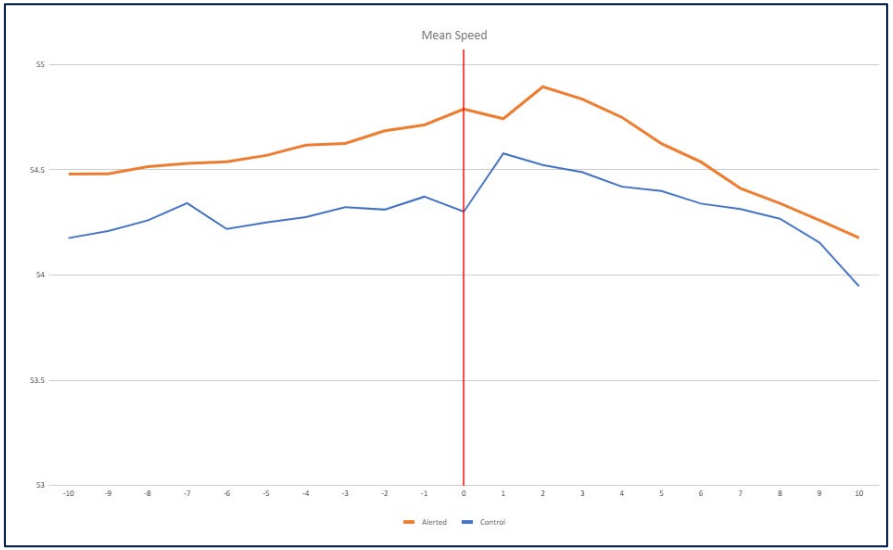
Current Dataset:
Overview of Data Collection & Quality Control Process



		Vehicle Visits: Alerts Sent		Vehicle Visits: Location Data		Vehicle Visits: Outliers Removed	
Dates	District	**Alerted**	**Control**	**Alerted**	**Control**	**Alerted**	**Control**
4/1/24 - 9/16/24	11	65,159	54,881	58,264	24,184	57,727	20,529
9/1/24 - 9/16/24	2	7,714	6,474	6,941	5,392	6,913	3,573
ALL		72,873	61,355	65,205	29,576	64,640	24,102
		134,228		94,781		88,741	

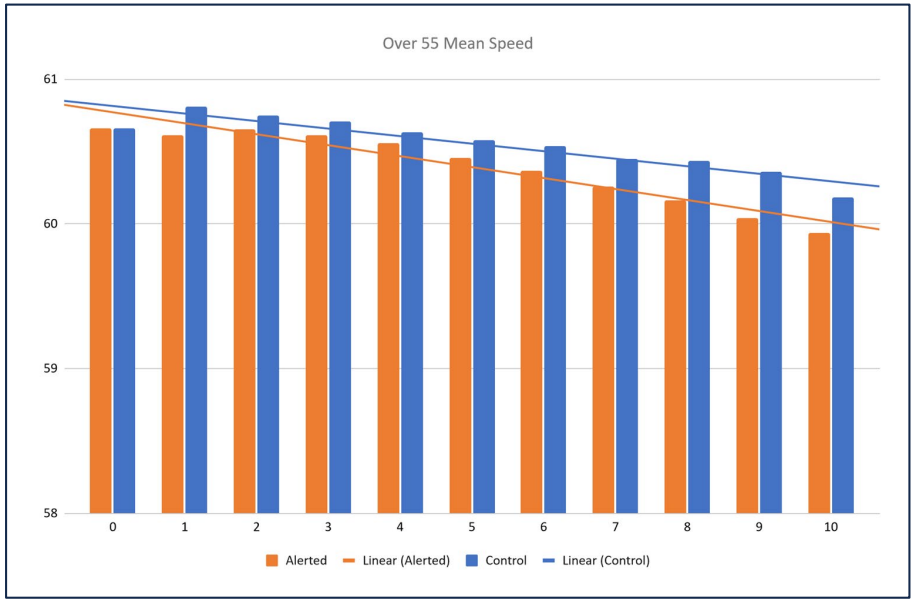
Comparing Medians and Means

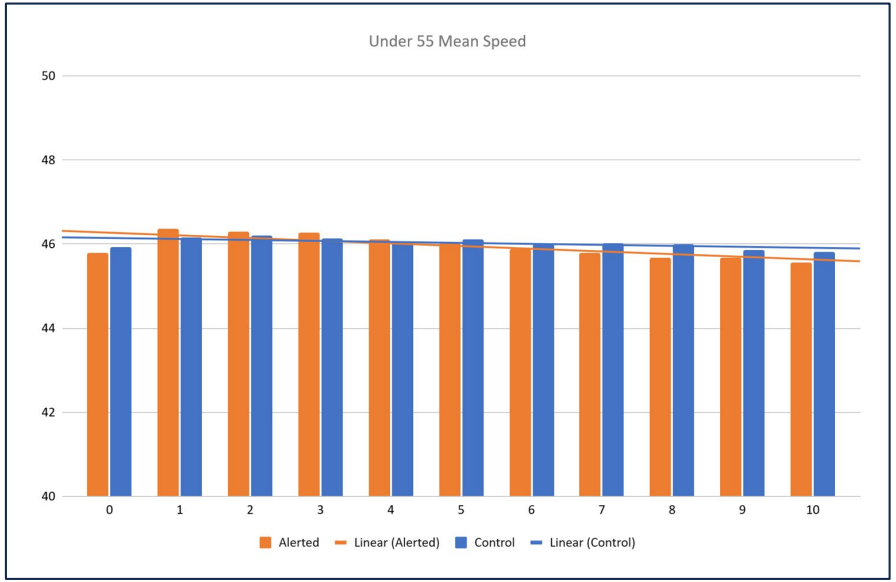




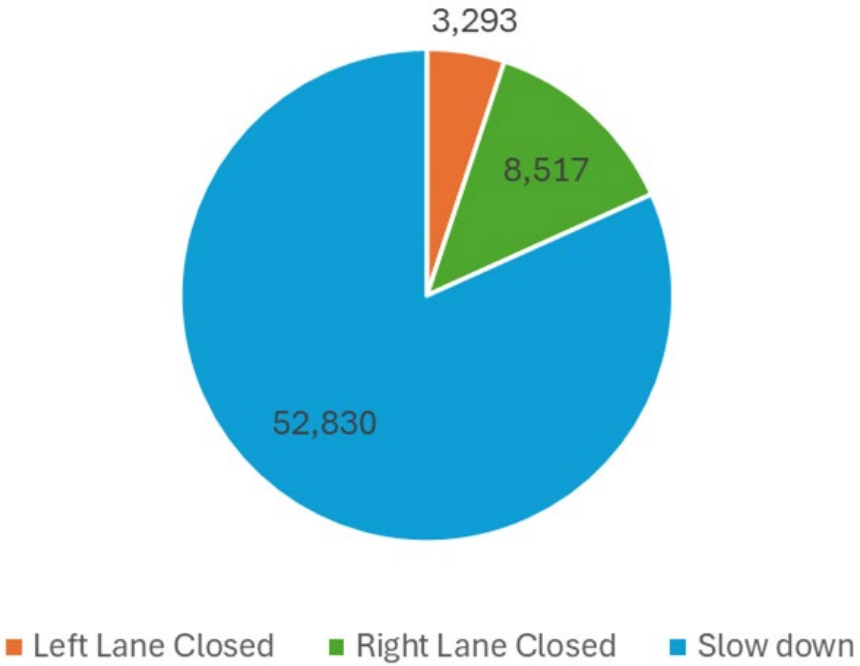
Mode Analysis: Exceeding CMV Speed Limit

Alerted vehicles traveling over 55 MPH: Slow more than control vehicles 10 sec post alerting



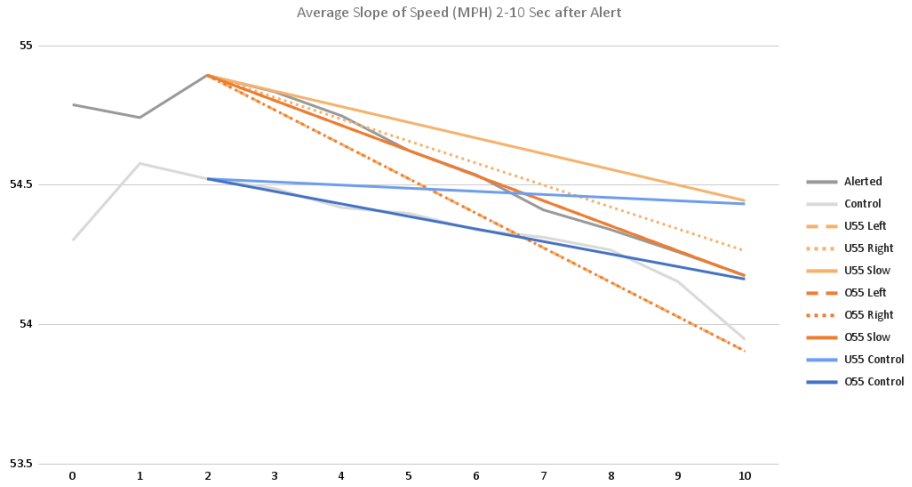


Lane-Specific Alerting



Lane-Specific Alerts May Be More Effective

	Pre-Alert Speed Under 55 MPH		Pre-Alert Speed Over 55 MPH	
Message	**Alerted**	**Control**	**Alerted**	**Control**
(none)		-.01		-.04
Left Lane Closed	-.11		-.08	
Right Lane Closed	-.07		-.11	
Slow Down	-.05		-.08	



Thank you to our Funder and Collaborators!