

Laws of average

BRIAN SHOCKLEY discusses a viable solution for commercial vehicle speed enforcement

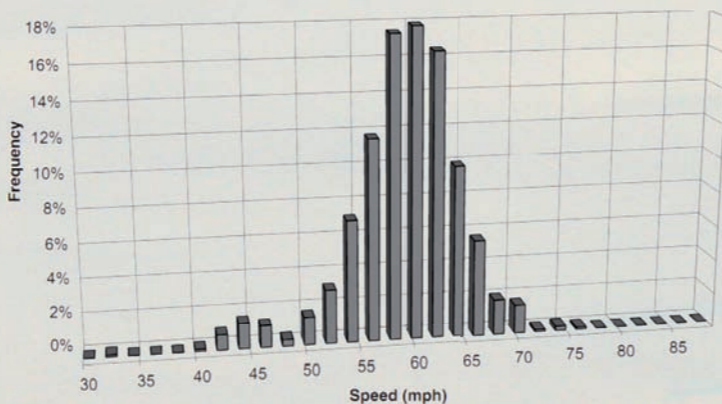
The versatility of automated license plate recognition (ALPR) as a traffic sensor continues to fuel new and innovative applications of the technology. ALPR has long been used effectively for toll violation enforcement, travel time measurement, origin-destination analysis, congestion mitigation, and many other applications.

Most recently, the University of Tennessee in Knoxville, Tennessee, has successfully applied this technology in a pilot study to address the ever-growing environmental and safety concerns brought about by commercial vehicles traveling above posted speed limits.

According to a 2003 Federal Highway Administration (FHWA) study, a reduction in a commercial vehicle's average speed from 65mph to 55mph can result in reduced nitric oxide emissions by almost 20 per cent per vehicle! Coupled with the fact that there are almost 12m commercial vehicles (R.L. Polk, 2009) in operation on United States roadways today, the potential environmental benefit is significant.

These facts have led many cities in the United States to reduce speed limits for Class 3 and higher (above 10,000lbs gross vehicle weight) commercial vehicles. Reduced speeds for these vehicles has an obvious safety benefit as well, as these larger vehicles are more prone to lose control at high speeds, sometimes with devastating consequences both in terms of road user safety and travel disruption.

While the speed limit change may be somewhat simple to implement, these changes are cosmetic without the ability to properly enforce. The Tennessee Highway Patrol was faced with this challenge when the City of Knoxville reduced its commercial vehicle speed limit to 55mph in 2007. Knoxville is a major thoroughfare for commercial vehicles with the I-40 and I-75 interchange, and prior studies have proven that roughly 80 per cent of all commercial vehicles travel in excess of the posted speed limit.



“Larger vehicles are more prone to lose control at high speeds, sometimes with devastating consequences both in terms of road user safety and travel disruption”

A valid argument

Using two SpikeHDTMALPR systems from PIPSTechnologyTM, Dr Lee Han of the University's Department of Civil & Environmental Engineering, with funding from the National Transportation Research Center, Inc. (NTRCI), engaged in a pilot project to study the average speed of commercial vehicles along a busy corridor of I-40. With one SpikeHD placed at the beginning of a weigh station, and another placed 1.4 miles prior to the weigh station, the two systems were used to match license plates across the known distance and calculate average speed. While the cameras were placed in the far right lane, temporarily mounted in close proximity to one another and no optimization occurred during the installation process, the system was effective in validating that over 80 per cent of vehicles are still violating the posted speed limit of 55mph. Roughly 20 per cent of these vehicles were traveling 65 mph or higher.

To minimize demand on limited law enforcement resources, a more formal deployment of ALPR for purposes of average speed enforcement could certainly aid in the enforcement of commercial vehicle speed regulations and ultimately modify driver behavior, reducing emissions and improving road user safety. Average speed enforcement is growing in acceptance and popularity in other parts of the world. Contrasted with traditional “point in time” speed enforcement technologies such as radar, average speed enforcement systems monitor speed across longer distances, and across various segments, within the road network. Using GPS for accurate time, and using calculations that always benefit the driver, average speed enforcement shows great potential for influencing driver behavior.

The automated nature of average speed enforcement can allow for escalating enforcement rules. Warnings can be issued to first-time offenders or to those within some defined limit. Formal citations can be issued to repeat offenders or to those travelling at excessive speeds. Combined with an advanced vehicle classification technology, the system can also provide different fees based on the number of axles or gross vehicle weight. Citations could be automatically processed and mailed to the trucking company or reviewed and issued by an officer at the next commercial vehicle checkpoint. Due to the certainty of enforcement and the resulting financial implications, average speed enforcement would likely influence commercial trucking companies to develop policies designed to hold drivers more accountable for their driving behavior.

Clear Benefits

Due to the versatility of ALPR technology, the same cameras deployed for an average speed system could also provide other benefits to transportation professionals, providing travel time information to a traveler information system, and data for other purposes such as origin-destination analysis. The same system could also provide a public safety benefit, monitoring for vehicles of interest such as Amber Alerts or stolen vehicles and alerting law enforcement for appropriate action. ALPR is a multi-purpose sensor, with tremendous application potential limited only by the imagination. **TH**

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