



STATUS REPORT

INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

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Who cares about a CAMERA if you're not speeding?

Speeding is a big hazard on busy urban interstate highways. We've got to slow the speeders down, but regular police enforcement doesn't work on busy urban interstates where traffic often moves very fast. Cameras do work because speeding is strongly influenced by drivers'

perceptions of the risk of getting a ticket. This perceived risk isn't very high on busy urban interstates, as anyone can tell who drives these roads during nonrush hours.

More than 2,000 police-reported crashes occur annually on Washington, D.C.'s Capital Beltway, for example. In more than 40 percent of these cases, the drivers are unable to stop before hitting the rears of vehicles ahead of them that, for various reasons, are traveling slower, usually because of congestion ahead.

This combination of high speeds and congestion is the leading cause of crashes on urban interstates.

Regular enforcement ineffective: Police options for addressing the problem are limited. With three or more lanes in each direction and traffic that's relatively dense and fast moving, it's often dangerous for officers to make traditional traffic stops. And even when an officer can safely pull a violator off to the side, a potentially hazardous distraction is created as other drivers going in both directions slow down momentarily, causing a ripple effect in the traffic.

"Traditional enforcement is effective for apprehending and deterring speeders on rural highways with light traffic, but it often isn't feasible on heavily traveled urban freeways," says Institute president Brian O'Neill. "The challenge is to find better methods of controlling speeds on these high-volume roads, and speed cameras can help. They photograph vehicles going a specified amount above the posted limit, and violators are ticketed by mail."

It's because traditional police enforcement often isn't feasible that speed cameras are needed. They provide a way to apprehend violators and deter would-be speeders by increasing the risk of a ticket.

Camera systems typically consist of a radar unit to measure speeds and a camera to photograph the vehicles in violation of the speed limit. The time, date, location, and speed of the vehicle are recorded on the film. And to increase the deterrent value, signs give motorists fair

warning in locations where the cameras are being used.

Research from Canada demonstrates this method of speed control is effective. Evaluating a program in British Columbia that involved 30 cameras, researchers found a 7 percent decline in crashes, up to 20 percent fewer deaths, and a 10 percent decline in daytime injuries the first year the cameras were used. The proportion of speeding vehicles at camera sites declined from 66 percent in 1996 to fewer than 40 percent a year later (see *Status Report*, Dec. 5, 1998; on the web at www.highwaysafety.org).

Crash reductions associated with using speed cameras have been reported in other countries including Australia, Germany, and Norway.

Camera use on London's M25: An ambitious effort to control traffic is on the M25, which circles London similar to the Washington area's beltway and other perimeter expressways across the United States. One of the busiest roads in Europe, the southwest quadrant of the M25 has employed a pilot traffic control system since 1995.

Recognizing that a single speed limit isn't always appropriate for all conditions and traffic densities, British officials introduced an electronic system using loops in all lanes to detect traffic volumes and speeds. Roadside processors analyze the data to detect where traffic is slowing. This information is used to post variable speed limits — ranging from 20 to 60 mph — on electronic signs.

Traffic and other conditions determine the limit at any given time, which is set to produce a uniform and safe traffic flow. For example, a limit is set lower when the traffic ahead has slowed, thus reducing the common danger of fast-moving vehicles suddenly encountering stopped or slower ones. When no variable limit is posted electronically, the speed limit reverts to England's national maximum of 70 mph.

But simply posting variable limits wouldn't be effective. Enforcement of



speed limits, whatever they are, is needed to make the M25's overall traffic control system work. This is accomplished with cameras mounted across the highway to detect and photograph speeding vehicles. First a radar measurement is taken, and speeding vehicles are photographed twice, each photo a half second apart. The distance traveled between the two photos is used to confirm the radar measurement.

The safety benefits of this effort are impressive, O'Neill says. There were 28 per-



The M25's electronic traffic control system includes variable speed limits plus speed cameras mounted across the highway.

cent fewer crashes involving occupant injuries during the first year of the program on the M25, and vehicle-damage-only crashes went down 25 percent. Preliminary data for the second year indicate the improvements are being maintained. At the same time, crashes involving injuries increased 2 percent on a comparison road without the new traffic control system.

About 75 countries rely on cameras to enforce speed limits, but this technology is used in only about a dozen U.S. commu-

nities. Even in these few locales, the cameras usually aren't deployed on the densely traveled urban freeways where the greatest challenge lies.

Camera use favored: One reason cameras aren't used more in the United States is that many elected officials believe there's an absence of public support. Concerns have been expressed about privacy, with opponents invoking the "big brother" issue. However, a nationwide telephone survey conducted in 1995 found that

57 percent of U.S. residents favor cameras to enforce speed limit laws.

Motorists in England like the M25 system. Sixty percent say it's an improvement compared with the old method of handling traffic, according to a survey of 1,600 drivers. A majority think it's easier to maintain a constant speed and say there's less reason to change lanes. More than two-thirds of the drivers surveyed said they want the same system on other congested roads.

Sobriety checkpoints reduce crash deaths on Tennessee roads

Reasonable cost shows checkpoint programs can be conducted with existing resources

Sobriety checkpoints are known to be effective in getting alcohol-impaired drivers off the road. North Carolina's ongoing "Booze It & Lose It" program, for example, has significantly reduced the number of drivers with blood alcohol concentrations (BACs) at or above 0.08 percent (see *Status Report*, June 3, 1995; on the web at www.highwaysafety.org). New evidence from a statewide checkpoint program in Tennessee indicates a 20 percent decline in fatal crashes involving at least one driver with a BAC of 0.10 percent or more.

This reduction means an average of about 9 fatal crashes a month have been avoided during Tennessee's two-year demonstration project. In addition, nighttime single-vehicle injury crashes, which often involve alcohol impairment, decreased almost 6 percent. The reductions continued even after the formal program of checkpoints ended.

Researchers analyzed data from five surrounding states (Alabama, Georgia, Kentucky, Louisiana, and Mississippi) to make sure the effect in Tennessee was related to the checkpoints and not part of a general trend. The comparison states didn't show any declines in fatalities involving drivers with high BACs during the project time period.

Sobriety checkpoints have been used sparingly in the United States except on a local level. Some officials don't consider them cost-effective because they require lots of officers and don't catch many impaired drivers. But the real goal is to deter, not catch, drivers, and the Tennessee program, which used mostly existing resources, may convince more states to act.



"These are dramatic results and they were achieved at a relatively low cost," says John H. Lacey, the study's principal investigator. "They make it incumbent on policy makers and administrators to find ways to establish similar programs in their states."

The National Highway Traffic Safety Administration, which funded the equipment and conducted the evaluation of the Tennessee project, has money to help other states get started. A few already have statewide programs: California, Florida, New Mexico, New York, and Ohio. North Carolina operates thousands of checkpoints every year, more per capita than any other state. Ten states prohibit sobriety checkpoints.

The goal in Tennessee was to demonstrate that statewide programs are feasible in the real world of law enforcement, so no federal money was used for staffing. Localities usually do it by paying overtime, but Tennessee avoided this expense by reassigning officers from other duties. The Tennessee Highway Patrol set up the checkpoints, and local officers helped operate them. The state's entire contribution came to less than \$500,000.

Unlike North Carolina, which conducts periodic blitzes throughout the state, Ten-

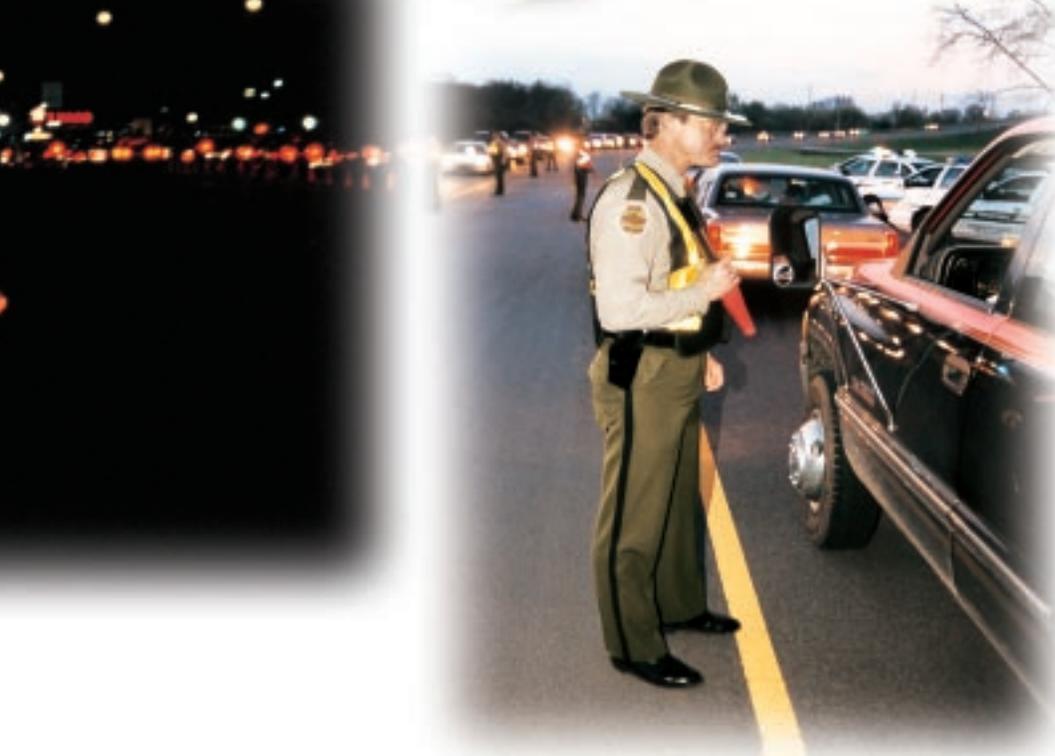




Tennessee held checkpoints every weekend between April 1994 and March 1995. About 145,000 vehicles passed through. Nearly 800 drivers were arrested for driving under the influence of alcohol. Many others were cited for safety belt or child restraint violations and other infractions.



Although only a small portion of drivers ever actually saw a checkpoint, officials tried to create the impression they were everywhere. On some weekends, there were checkpoints in each of the state's 95 counties. Officials also worked closely with radio, television, and newspapers to generate coverage. Publicity about checkpoints is key to their deterrent effect.



Tennessee has continued checkpoints even though the study is over, using roadblocks to look for all kinds of traffic violations, not just alcohol. Researchers cite this as further evidence that statewide programs can operate with existing resources and still maintain the benefits.

For a copy of "An Evaluation of Checkpoint Tennessee: Tennessee's Statewide Sobriety Checkpoint Program," write: Office of Research and Traffic Records, National Highway Traffic Safety Administration NTS-31, 400 7th Street SW, Washington, DC 20590. It's on the web at www.nhtsa.dot.gov.

Three big differences in safety rules for U.S. and European truckers

There's more than an ocean separating truckers in the United States from those in Europe. Even though they do the same job, European truckers are allowed fewer driving hours. They must rest for longer periods. The speeds of their vehicles are limited by special devices, and onboard equipment monitors how fast they go and how long they drive.

"European authorities obviously have been more willing than those in the United States to impose regulations that effectively address driver hours behind the wheel and truck speeds," says Institute president Brian O'Neill.

Driving hours shorter: European Union rules restrict truckers to 9 hours of driving per day, with two 10-hour days permitted each week. They must rest an average of 11 consecutive hours (minimum 9) every 24 hours. In contrast, truckers on U.S. roads may drive up to 10 hours at a stretch before taking an 8-hour rest. Up to 16 hours of driving per day are allowed.

European truck drivers cannot drive their 9 hours continuously. They must take a minimum 45-minute break after 4.5 hours of driving. There's no comparable U.S. requirement.

Even though hours-of-service rules are less stringent in the United States, violations are a serious problem. U.S. truckers keep track of their driving time in logbooks that are easily and frequently falsified. Safety advocates including the Institute have called for electronic onboard recorders that automatically record truckers' speed and time. The Institute has petitioned the Federal Highway Administration for mandatory onboard recorders four times since 1986 without success (see *Status Report*, Aug. 12, 1995).

Electronic recorders will be mandatory in new trucks in Europe within a few years. These devices are essentially tamperproof. Enforcement officials will need laptop or hand-held computers to download the information stored in them. Currently, trucks in Europe are outfitted with tachographs,

mechanical devices that track driving speed and time. Though superior to the paper logbooks used in the United States, tachographs still can be tampered with.

Speed limits lower: Another significant difference involves how fast trucks

may go. In Europe, rigs that weigh more than 26,000 pounds must be equipped with speed governors set at 90 km/h, or approximately 56 mph. There are no equivalent requirements to control truck speeds on U.S. roads.



Pay isn't tied to distance or cargo: Truck drivers in Europe cannot be paid on the basis of distance or amount of cargo. In this country, drivers often are paid by the mile or by percentage of revenue, which some safety advocates contend encourages them to stay on the road longer than the rules allow.

Older truck trailers will become more conspicuous under FHWA's rule extension

Since December 1993, newly manufactured truck trailers have been equipped with reflective materials that improve their visibility. Now older trailers will be subject to the same requirements.

The Federal Highway Administration will require semitrailers and trailers manufactured before December 1993 to be retrofitted with reflective materials. This marks the first time the agency has required trucking companies to retrofit vehicles to meet a new vehicle standard, a spokesman says.

Motor carriers must install retro-reflective tape or reflex reflectors by June 1, 2001. These materials reflect light from vehicle headlights, making it easier for other drivers to see big trucks in time to avoid collisions (see *Status Report*, Vol. 28, No. 4, April 3, 1993).

No U.S. proposals are pending to require speed governors or onboard recorders or to change the way truckers are paid. Congress directed the Federal Highway Administration to reassess hours-of-service rules in 1995, setting out a four-year timetable with benchmarks the agency has consistently failed to meet (see *Status Report*, Sept. 12, 1998; on the web at www.highwaysafety.org).

Big rig safety explored in new federal study

The biggest commercial trucks on U.S. roads, known as longer combination vehicles (LCVs), are permitted in only 20 states, mostly western ones. Some in the trucking and shipping industry want Congress to lift a 1991 freeze on adding new routes for LCVs. They say the longer rigs have lower fatal crash rates than smaller trucks.

But a new study from the U.S. Department of Transportation indicates that LCV's lower overall rates of fatal crashes are because they travel mostly on roads of the highest quality. When the rates are adjusted to take into account differing travel patterns,

the bigger truck rigs have a higher overall fatality rate than single-trailer trucks.

A draft of the federal report, "Comprehensive Truck Size and Weight Study, Vol. III," was released in late 1998, and a final version is expected this year. The multi-volume study was initiated in 1994 to provide "a fact-based framework within which to consider policy alternatives to current federal truck size and weight regulations."

One such regulation requires all states to permit tractors to pull 80,000-pound, 48-foot single trailers or 28-foot twin trailers on federally designated highways. Since 1991 Congress has forbidden expansion of the use of LCVs, which include longer twin trailers and triple trailers, beyond the 20 states that now permit them.

Most fatal crashes occur on roads other than interstates, such as undivided

highways with many entrances and intersections. Because LCVs travel more on interstates, their per-mile fatal crash rate is 3 percent lower than the rate for single-trailer trucks. But when rates are adjusted for percentage of interstate travel, LCVs



have an 11 percent higher overall fatal crash rate. Researchers were unable to adjust for traffic density or region — important because a large percentage of fatal truck crashes occur where traffic is dense.

"If LCV use expanded into the more heavily traveled, higher risk eastern portion of the country, it is not possible to project with certainty what crash rates for larger and heavier trucks would be. But this analysis indicates that crash rates would be higher than past history would suggest," the report says.

The study also looks at handling characteristics, noting "significant differences ... in the stability and control properties of different sizes, weights, and configurations." The report cautions that longer and heavier trucks may be more prone to rollovers and other maneuvering problems.

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