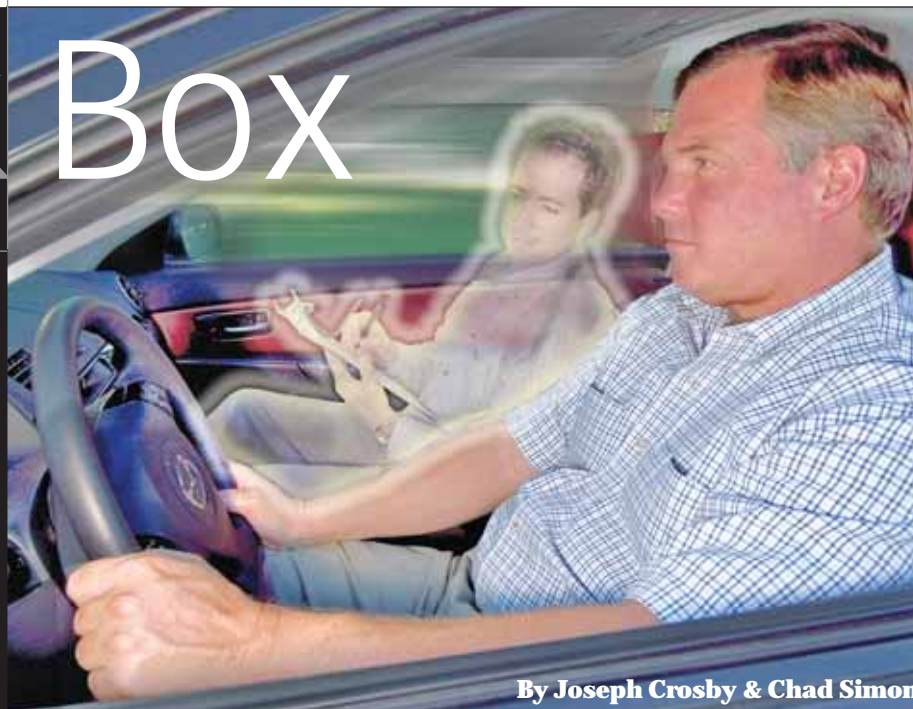


Safety Drives

Black Box

USE IN FLEETS

Event data recorders act as electronic driving instructors. Experts say they can reduce accidents by 20-30 percent.



By Joseph Crosby & Chad Simon

PHOTO: KELLY BRACKEN

In-vehicle event data recorders—black boxes—were originally installed to improve air bag performance based on the severity of the collision. Because EDRs record events such as throttle position, velocity change, abrupt braking, steering wheel angle, and accelerator pedal position, they have also become a tool to help investigators reconstruct accidents.

According to a recent Associated Press article, 15 percent of the nation's 200 million passenger vehicles today, and all General Motors vehicles after 2004, are equipped with black boxes.

The National Highway Traffic Safety Administration (NHTSA) has proposed standards for data collected by EDRs, while the National Transportation Safety Board recommended last year that automakers be required to install them on all passenger vehicles. At the same time, state governments have passed, or are considering, legislation that limits how the data can be used.

Aftermarket EDR Systems

Aftermarket EDR systems use the same technology to help prevent accidents. These systems monitor driving

behavior, fuel, engine diagnostics and hours driven, and can be used with GPS to track vehicles. The fleet manager can configure EDR information to create a driver profile that can be used to manage risk.

On average, the use of event data recorders in fleet can reduce collisions by 20-30 percent, according to Rusty Haight, traffic collision reconstruction expert. He maintains that by installing a passive device (the EDR), an active component is created (drivers' awareness of their behavior). In other words, drivers consciously alter their driving habits because they are aware of the EDR's presence in the vehicle.

Black Boxes in Fleets

Kathleen Konicki, director of associate safety at Nationwide Insurance Co. in Columbus, Ohio is a proponent of fleet EDR use. She says that for more than three years, Nationwide's fleet of 5,900 Ford passenger cars, minivans, and SUVs has been equipped with the Witness Box from Independent Witness, Inc.

"The overriding objective was to try to understand the relationship between

crash forces and bodily injury," says Konicki. "We also wanted to study whether or not there was in fact a 'halo effect' for fleet car drivers. In other words, did they change their driving behaviors because there was a black box in their car?"

Konicki predicts a 30-50 percent reduction in frequency of crashes among drivers whose vehicles are equipped with black boxes.

James Graham, corporate risk manager at Premiere, Inc., in New Iberia, La., says that his Witness Box saves him roughly \$80 a job. His fleet has been using the Witness Box for two months.

"Maybe 10 percent of the fuel I use is on the road," he says. "The rest of it is on the job site where the truck is continuously running. I can now use that data to apply for tax reimbursements."

At more than 30 jobs a month, Graham estimates he'll save more than \$2,000 a month total.

Graham also reports 100 percent compliance with seatbelt use and says he hardly sees any speeding anymore.

Graham says that, because his drivers are aware of the device, vehicle-monitoring systems train good driving habits that will carry over into personal

Three EDR Systems

Independent Witness: Witness Box, WaySmart fleet management system

How it works:

- Witness Box plugs into OBDII or controller area network (CAN). Mounted beneath the seat. Has an independent battery life of two years.
- Records and time stamps three types of vehicle events: direction of movement (front-back, side, vertical), G-Force rating of a collision, and Delta V, or the difference in speed from just before impact to less than a second after. Also monitors speed and seatbelt use.
- Data is sent to the fleet or

safety manager through GPS or cellular network.

- Satellite photos can be analyzed to pinpoint source of event.
- IWIs in-house statisticians analyze data and issue monthly trend reports to the client. Each client has an analyst who works directly with its fleet.

What it does:

- Statisticians analyze number of seat belt, speeding and aggressive driving violations to determine a driver score.
- Accident reconstruction data is court-admissible.

- GPS used to track vehicles real-time or over time.
 - Audible alarms condition drivers to stop speeding and use seatbelts. Drivers have 30 seconds to comply before the fleet manager is alerted by email or text message.
 - Drivers can call for help with panic button.
 - Can automatically calculate IFTA Fuel Tax and HOS reporting requirements.
 - Used by NASCAR to reconstruct accidents.
- www.iwiwitness.com / (866) 2WITNESS

Netistix: FleetPulse

How it works:

- FleetPulse Vehicle Interface Unit (VIU) plugs into the OBDII port under dash.
- The VIU records and time stamps odometer, battery, engine coolant and engine light/malfunction indicator light (MIL) status, misfires, oxygen sensor status, fuel, and diagnostic trouble codes (DTC).
- Data is transferred wirelessly using VIUPoint Manager when vehicle passes WiFi access point, typically a fleet or maintenance yard

or fueling station.

- OverVIU Vehicle Information Manager gathers, analyzes and presents data via alerts, exception reports and data records. Databases can be hosted by the company or by Netistix as a Web service for a monthly, per-vehicle charge.

What it does:

- Maintenance indicators help prevent breakdowns and more accurately plan preventive maintenance schedules.
- Driving behaviors are

tracked such as speed and acceleration trends.

- Optional DTC reporting ensures servicing before major problems.
- Optional fuel application measures consumption trends and idling patterns.
- Optional emissions data can facilitate emissions compliance.
- Integrates into other management systems.

www.netistix.com / (613) 599-5443

Davis Instruments: CarChip and DriveRight 600

How it works:

- CarChip plugs into OBDII port or Controller Area Network (CAN) under dash
- Records and time stamps up to 300 hours of trip details including distance, speed, time, hard accelerations, hard braking, engine DTCs
- Unplugs from vehicle and downloads data to computer or Palm directly or via modem
- DriveRight 600 includes

on-board LCD display console for viewing time, distance, top speed, and average speed.

What it does:

- Generates customizable usage reports (mileage driven, weekend/night-time driving), driver performance reports ("safety scores"), exception reports (excessive speed, hard braking, quick accelerations) and accident logs (last critical pieces of speed data).

- Track and compare drivers and vehicles by fleet, group or location.
 - Optional GPS module tracks vehicles.
 - Use trouble codes to pinpoint vehicle problems before mechanic is involved.
 - Measures idle time.
 - Audible alarms with user-set limits warn drivers of speed, acceleration, and deceleration thresholds.
- www.davisnet.com / (510) 732-9229

vehicle use as well.

"We've had drivers call in and say something just happened before we even got the message," he says. "So, they're conscious of the fact that we're going to call them, and that we're going to check on them."

The instant recording and dispatch of events allows fleet managers and safety operators to confront driver problems early on, rather than having to wait for a monthly report when an incident could be easily forgotten.

Because of the ability to address an individual's driving behavior immediately, Graham notes that it is more likely for that driver to change their behavior before it leads to a complication or accident.

"We don't want to figure out fixes after (an accident)," he says. "We want figure out ways to change people's behavior and prevent it."

Hard Data Backs Up Drivers

At Richmond Ambulance Authority, in Richmond, Va., drivers were at first skeptical about the idea of being monitored.

However, shortly after installing the Road Safety International EDR, an accident occurred in which the other party claimed the ambulance did not use its emergency lights and siren before speeding through a red light, says Jerry Overton, executive director.

After pulling the real-time data from the computer, it was proven that the ambulance did use its lights and siren, and that it came to a full stop at the intersection. After this incident drivers were no longer hesitant about EDR use.

Not only do emergency medical technicians (EMT) know they are being monitored, but a driving program in association with the vehicle's onboard computer enables EMTs to anticipate the ambulance's surrounding parameters.

Since implementing Road Safety, accidents per 100,000 miles have been reduced by more than 50 percent, says Overton. **BA**