

The Spy in your Car

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Black box recorders for cars are keeping drivers under surveillance

In June, Edwin Matos was sentenced to 30 years in prison after being convicted of manslaughter. His car had hit another vehicle on a suburban street in Florida and killed the two teenage girls who were in it.

Sadly there is nothing unusual in that. But at his trial some of the prosecution evidence came not from a pedestrian witness, or another driver, but from Matos's own car.

The Pontiac Grand Am was fitted with an electronic data recording device ` a so-called "black box" ` that was able to record the car's speed, deceleration, when the airbag was deployed and the pressure on the brake and accelerator pedals. It showed that seconds before the crash Matos was doing 114mph.

The case was one of several recent trials in America at which the culprit's car "testified" against them. An estimated 25m vehicles in America have similar event data recorders (EDRs), although their drivers are often oblivious to them.

"Most consumers are unaware that these devices even exist, let alone whether their own vehicles may have such a device," says David Sobel, general counsel of the US-based Electronic Privacy Information Center. "Even those who may know that a recorder is installed are unlikely to know what kinds of data are collected, how long the information is retained and who might have access to it."

In America the primary task of most EDRs is to collect data from the car's various sensors and decide when to fire the airbags. However, many of the devices, which are typically the size of a cassette box, also store the data for a few seconds. The memory is cyclical, so it is being constantly overwritten, but if a crash happens, the data from the moments leading up to it will be stored.

General Motors was the first manufacturer to install them in the early 1990s to monitor the effectiveness of its airbags, and other car makers, such as Ford, have followed suit.

"It's like having a government agent driving around in the back seat of your car," says Bob Weiner, an American lawyer who is defending a woman driver who did not know her vehicle had a black box. "I think it's a tremendous invasion of privacy."

Black boxes are less common in Britain, but they exist. Courier companies, councils and company car fleet managers are installing devices which record driving data in the event of a crash, but also allow remote monitoring of the vehicles. An operator at company headquarters can see where its vehicles are at all times, find out when they are being driven and if they are breaking the speed limit or accelerating recklessly.

At least one system allows a "curfew" to be set, so a council, for example, can make sure employees are not using official vehicles at evenings and weekends.

The devices can even be set to sound an alarm back at base if the driver approaches somewhere they shouldn't be going, such as a port by which they might leave the country.

Those in the industry expect black box technology to spread rapidly through commercial vehicle and company car fleets, then become a common addition to private cars.

"In three to five years' time every vehicle that comes off a production line will have a black box in it," says James Whybrow, business development manager at WS2, a leading British company that sells vehicle monitoring and data recording systems.

One of the most advanced systems on sale is TrakM8 (pronounced "track mate"), made by a Dorset-based company. Several thousand have been fitted to British vehicles, but the company exports far more around the world, particularly to South Africa, where high carjacking rates make vehicle monitoring particularly desirable.

The system, which costs about £650, uses GPRS technology to send data over the mobile phone network to a monitoring computer as often as every few seconds.

"The unit allows you to log positions every 15 seconds, but it also has what we call a black box flight recorder," says Cary Knapton, the managing director of TrakM8. "In the event of a crash it allows you to collect at least the last 30 seconds of data, giving you position and speed."

Evidence from these British black boxes has already been used in legal proceedings, although in less serious cases than those in America. On several occasions data from the TrakM8 have been used to fight fines from speed cameras by proving the driver's speed at a particular time. In another case the owner of a BMW M3 used the device's tracking capability to catch out a mechanic who had taken his car for a night-time spin.

"We do try to sell it on the positive benefits, not the negative benefits," says Knapton. "There are all sorts of human rights issues. From the boss's perspective he's protecting his assets, not tracking his employees, but it is a very sensitive subject."

Whybrow agrees: "The biggest issue we have is trying to get away from people seeing it as big brother. It could be used against you, but turn it round the other way and it could prove I was doing the right speed in a 30mph zone and it was a genuine accident. It works both ways."

Everyone in Britain with such a device in their vehicle would be aware of it. But some top-of-the-range cars already store data as a by-product of their sophisticated engine management computers.

"You can determine the time, the approximate speed and ABS activation," says Len Wayman, an independent traffic accident investigator from Cambridge.

"We recently did an investigation into a fatal accident with a BMW. The driver alleged that the traction control and ABS were inoperative at the time. We downloaded from the engine control unit (ECU) memory and there was no code there that we would associate with a failure of traction control and ABS." The driver is now facing prosecution for causing death by careless driving.

"I don't think people here are aware of how much information can be retrieved from their vehicle's electronic systems," says Richard Freeman, of the AA Trust. It is now routine for police to examine the ECU of cars in accidents, although this is unlikely to give the same level of information as a black box.

Safety campaigners have welcomed the advent of the black box, while one company is planning to market similar devices to parents wanting to keep an eye on teenage drivers.

A German study found the accident rate fell significantly among drivers who knew they had a recorder fitted.

However uncomfortable it may make them feel, being watched by their car seems to change the way people drive for the better.