

# Cars as lethal agents

It is sometimes hard to remember that a car can be a lethal weapon—until a reckless, drunk, drugged, or simply homicidal driver makes it impossible to forget. Motor vehicles are as dangerous as loaded guns, but proving lethal intent and prosecuting the driver in a vehicle homicide case can involve complex legal arguments.

Through familiarity, we are inclined to think of the family car as a benign, safe form of transport. But as the following three cases show, vehicles can often be the lethal agent in homicide cases.

In London, a drug addict stole a woman's purse and ran to a waiting car. When she pursued him, the driver accelerated over the woman, killing her.

In Hasama, Japan, a carpenter attacked another driver with a crowbar in a fit of road rage after a minor collision, then drove over her body to finish her off.

In Chicago, a driver crushed a cyclist under his wheels after the man banged on the side of his SUV.

To counter attacks like these, many nations have a specific vehicle homicide offense, so that when there is an element of malice, car killings can be treated as murder, rather than fatal traffic "accidents."

## Building a case

In the above examples, the drivers' intention to kill was obvious, but a homicide conviction is not automatic. Prosecutors rely on forensic scientists to help them construct an indefensible case. In less clear-cut cases, forensic investigation plays a still more vital part in establishing what happened. Specifically, investigators look at the crime scene for evidence about the speed and direction of the vehicle, the visibility, and whether the driver was braking. Evidence missed at this early stage is lost forever, but where the crime scene is a busy road, investigators may be under extreme pressure to complete their work quickly so traffic can flow again.

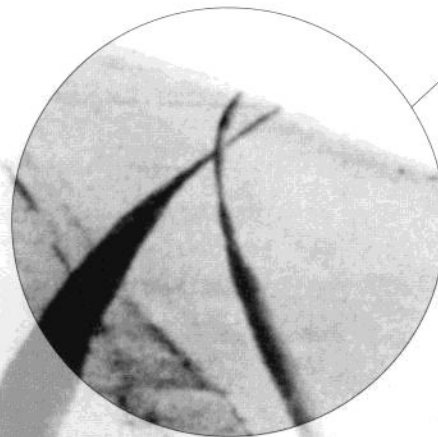
Sketches of the road are particularly important, with exact measurements and locations of skid marks. To a certain



### INTERVIEWING WITNESSES ▲

*Bystanders can provide useful observations. However, perception is subjective, and eyewitness estimates of speed are often wildly inaccurate.*

extent, photographs can help to fill in any gaps in the information: rectification software can deduce distances of the marks on the road from photographs taken at an oblique angle. Vehicle type and mass are also recorded for later crash reconstruction.



### MARKS ON THE ROAD ▲

*The length of skid marks, and their radius, are good guides to the speed of a braking vehicle. Cornering at high speed leaves marks with characteristic scuffing where the vehicle slips sideways.*



Once the scene of a fatal crash has been cleared, the vehicles are not just towed away. They are treated with the same care as any other evidence. A forensic engineer will need to study them if there is any suspicion of mechanical failure, or deliberate sabotage such as cut brake lines. Bodywork damage and trace evidence can also help establish facts about the impact, such as the vehicle's speed and orientation.

## Who was driving?

It is not always clear who was driving. Vehicle occupants are sometimes thrown from their seats, and surviving drivers may try to hide their guilt by blaming a passenger who died in the crash.



**CRASH SCENE INVESTIGATION:**

1. *Treat crash survivors.*
2. *Take samples for drug and alcohol tests.*
3. *Record vehicles and marks on the road.*
4. *Document vehicle damage.*
5. *Interview witnesses.*
6. *Document survivors' injuries.*
7. *Preserve vehicles as evidence.*



**INJURIES ▶**

*Medical care for the injured takes precedence. However, once paramedics have made sure that there is no immediate danger, detectives need access to the survivors. Trace evidence adhering to their clothes and skin, and photographs of injuries, can all help in a prosecution.*



**DAMAGE TO VEHICLES ▲**

*Vehicles of similar size are built to conform to the same safety standards, so the damage they sustain on impact is a reliable indicator of the combined speed at which they were traveling. But determining the speed of each vehicle is much more difficult.*

**SUSPECTED VEHICLE HOMICIDE ▲**

*Good management of a fatal crash scene is vital for effective investigation. Damaged vehicle parts just thrown into a trunk can destroy useful evidence.*

Trace evidence, with medical and pathology reports, can help establish who was actually behind the wheel. Airbags, for example, retain hair, makeup, and skin traces, and they often cause distinctive facial injuries, too. The vehicle pedals and the soles of the driver's shoes mark each other. If the car occupants were wearing seatbelts, medical and autopsy reports should reveal shoulder bruising, which would indicate the side of the car they were sitting on, and help identify the driver.

**Reconstructing the crash**

Determining a driver's intentions and their responsibility for a fatal crash is easier if it can be recreated, with line of sight and reaction times established. Crash modeling packages, such as PC-Crash, work in a way that at first seems upside-down. The operator enters information about the crash scene after the incident, such as the resting position of the vehicles, their mass and type, and the length and radius of the tire marks on the road. The software then works backward, using complex calculations to estimate the speeds and directions of all involved before impact. The final result is an animation of the crash, which the jury can watch at the trial.



**RECREATING THE CRASH ▲**

*Simulation software reconstructs crashes using a variety of information: measurements of the crash scene and skid marks; positions of vehicles and pedestrians; road surface and tire conditions. Vehicle appearance and performance data come from an extensive built-in library.*