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Vehicle technology and accident investigation: What personal injury attorneys must know

Advanced vehicle technology and data are reshaping accident investigations, forcing personal injury attorneys to track system performance, human interaction and emerging liability issues in modern crash litigation.

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The last decade has brought a paradigm shift in how we drive and what our cars can now do for drivers. Driver assistance technologies and advanced data systems are rapidly shifting the emphasis in accident investigation and litigation from "what did the driver see?" to "what did the technology record?" The questions are shifting from "which driver was negligent or reckless?" to "what system failed?" As new vehicle technologies become widespread, they are blurring the lines between human error and machine malfunction, between personal responsibility and product liability.

Historically, motor vehicle accident case analyses hinged on good old-fashioned "analog" investigation: police reports, eyewitness accounts, scene analysis and evaluation of physical evidence. But today, lawyers who represent clients in collision cases face an escalating urgency to stay abreast of technology evolving at whiplash speed.

To conduct discovery in modern crash cases, victims' attorneys must understand the driving technologies themselves (purpose, expectation, operation and effectiveness), the standards and regulations that apply, and, most importantly, how all those factors intersect with human behavior under the real-world circumstances of accidents. Plaintiff's lawyers also must know how to access and interpret critical data recorded by the systems.

Key drivers

In 2015, the National Transportation Safety Board (NTSB) began recommending that vehicle manufacturers include collision avoidance technology (CAT) as standard equipment on all passenger and commercial vehicles; and, likewise, that consumers "informed about the technology's capabilities and limitations, should buy vehicles equipped with it."

Yet 10 years later, while the technology is ubiquitous, consumer understanding of CAT's capabilities and limitations has not kept pace, in part because the terminology remains confusing and even misleading – sometimes with tragic consequences.

CAT systems can provide a range of detection, alerts and assistance, from rear traffic crossing and blind-spot detection to collision warnings, adaptive cruise control and automatic emergency braking. They employ diverse mechanisms to detect and respond to potential hazards in real-time, including cameras, ultrasonic sensors, radar, LiDAR and AI.

There are two broad categories of collision avoidance technology: Advanced Driver Assistance Systems (ADAS) and Automated Driving Systems (ADS). The U.S. Department of Transportation relies on the SAE Levels of Driving Automation™ (Levels 0-5) to distinguish between them. While those levels are useful for engineers and regulators, they do not always map cleanly onto how real drivers experience or understand the systems in practice.

• **Advanced Driver Assistance Systems (ADAS)** include features such as lane-keeping assist, adaptive cruise control, parking assistance, blind-spot monitoring and forward-collision warning. Most vehicles on the road today operate at SAE Levels 0-2, in which the vehicle can assist with certain driving functions but does not perform the entire driving task. In these systems, human engagement is still expected, but it can vary widely–from eyes on and hands on to eyes on and hands off–depending on the feature and the manufacturer's design.

• **Automated Driving Systems (ADS)**, generally associated with SAE Levels 3-5, are intended to perform sustained dynamic driving tasks under defined conditions, including monitoring the driving environment and executing control actions without continuous human input.

In theory, these categories draw a clear line between driver assistance and automation. In reality, that line has been increasingly murky. Some manufacturers combine multiple assistance features, market them using automation-suggestive language, or design systems that permit hands-off operation while still requiring the driver to supervise the roadway. As a result, consumers are often left uncertain about what level of attention, intervention or oversight is actually expected of a driver.

In addition, sleek marketing for systems like Tesla's *Autopilot* and the concept of fully "self-driving" cars can further confuse consumers or give false confidence, while adding complexity to liability questions.

When an accident occurs due to the failure of these technologies, even if some human error was involved, proving fault centers on a few key questions: What was the technology supposed to do? How did that feature actually perform (or not) under the circumstances? And what made the difference–why did it fail?

Advanced vehicle data systems can be instrumental in accident reconstruction, but the scope of potentially relevant data now extends far beyond the traditional Event Data Recorder (EDR) or "black box." Modern vehicles may generate and store information from multiple sources, including onboard memory, Controller Area Network (CAN) data, telematics systems, GPS modules, cameras, radar and other sensors tied to driver-assistance features. These data streams may reflect vehicle speed, braking, steering inputs, system status, warnings issued, object detection, and, in some cases, show when a human operator interacted with the vehicle.

Taken together, these sources can offer a far more complete picture of the conditions leading up to a collision. But in practice, identifying what data exists, where it is stored and how long it is retained is often anything but clear. Some information is stored locally on the vehicle, some is transmitted wirelessly to manufacturers or third parties, and some is overwritten or deleted after short retention periods (frequently without the owner's knowledge).

Accessing and interpreting this data can present additional hurdles. Manufacturers and component suppliers often rely on proprietary software, tools or formats to retrieve and decode vehicle data, limiting meaningful access to those the manufacturer chooses. In the absence of comprehensive federal standards governing data transparency, ownership and access, investigators and litigants may face delays, high costs and uncertainty. Accessing and obtaining the data often requires consent, subpoenas or court orders to obtain time-sensitive information.

As vehicles become increasingly connected, the lack of standardized, independent access to vehicle data poses growing challenges. Data critical to understanding how a collision occurred should not be accessible only to manufacturers. Greater transparency and uniform standards are essential to ensure that vehicle owners, investigators, regulators and courts can fairly and reliably evaluate what happened when advanced vehicle technology is involved.

The road ahead

When it comes to high-tech cars and advanced data systems, the future is both already here and still ahead of us. In many ways, the technology is still catching up to its own hype. In the meantime, consumers remain vulnerable to both the failure of new features and confusion about what those features can actually do. In the legal field, modern motor vehicle systems have opened compelling new avenues for litigation in accident cases but have also created a rapidly evolving obstacle course of terminology, technology and regulatory standards to understand.

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