

Legal Status of Autonomous Vehicles: Legal Liabilities and Regulations

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Abstract

The integration of highly automated driving technologies has initiated a monumental shift in international transportation systems, presenting an unparalleled opportunity to eliminate traffic fatalities caused by human fallibility. However, as the automotive industry pivots from standard mechanical operations toward Artificial Intelligence-Defined Vehicles, the foundation of modern jurisprudence faces a severe structural crisis. Traditional tort law is fundamentally anchored in human agency and the objective standard of a "reasonable person." This research paper delivers a comprehensive, comparative examination of the legal status of autonomous vehicles (AVs), exploring the deep friction between legacy liability doctrines and non-deterministic algorithmic decision-making. By analyzing the Society of Automotive Engineers (SAE) taxonomy, this study investigates the "responsibility gap" created when the dynamic driving task is transferred from a human to a machine. The analysis evaluates the necessary jurisprudential shift from fault-based negligence toward strict product liability and no-fault compensation models. Furthermore, it provides an exhaustive assessment of the latest 2026 global regulatory frameworks, including the United States' SELF DRIVE Act of 2026, the enforcement of the European Union's AI Act, the operationalization of the UK's Automated Vehicles Act, Germany's early integration of Level 4 mobility, and the infrastructural metamorphosis occurring under India's 2026 commercial Advanced Driver Assistance Systems (ADAS) mandates. Lastly, this paper synthesizes emerging 2026 case law—including recent litigation involving Tesla's Full Self-Driving claims, Waymo, and Baidu Apollo Go—to demonstrate how courts are currently adjudicating the failures of both partial and fully driverless systems. The study concludes that the equitable commercialization of AVs requires the abandonment of fragmented, state-by-state laws in favor of unified, strict-liability frameworks that guarantee swift victim compensation and enforce absolute corporate accountability.

Keywords: Autonomous Vehicles, Legal Liability, Product Liability, Artificial Intelligence Act, Automated Vehicles Act 2024, Strict Liability, SAE Levels of Automation, Motor Vehicles Act, Negligence.

1. Introduction

Historically, international road traffic jurisprudence has been anchored by a singular, fundamental premise: a human operator maintains direct, mechanical control over the vehicle. Consequently, traffic codes, insurance underwriting, and civil liability doctrines have been meticulously engineered to evaluate human behaviour. Legal systems penalize impairment, distraction, and delayed reflexes by comparing the driver's

actions to the legal fiction of the "reasonable person". The accelerated deployment of autonomous vehicles and intelligent Advanced Driver Assistance Systems (ADAS) has now rendered this foundational legal assumption obsolete.

Automotive safety researchers project that the mass adoption of self-driving infrastructure could eradicate the vast majority of global collisions, recognizing that human error—such as fatigue, intoxication, and inattention—is the proximate cause of over 90 percent of roadway accidents. While the public health advantages are undeniable, the deployment of artificial intelligence in physical, moving machines generates profound legal dilemmas. When a non-deterministic algorithm commits a fatal error, the traditional legal mechanisms designed to assign blame to a negligent human collapse entirely.¹

The primary legal hurdle in the autonomous era is the allocation of civil and criminal liability: identifying whether the human passenger, the vehicle manufacturer, the software developer, the telecommunications provider, or the AI itself must bear the financial and legal burden of a collision. Because the transition to full autonomy will unfold over decades, human-driven cars and AI-piloted robotaxis will share the same infrastructure, forcing courts to navigate a highly volatile legal environment.

This research paper investigates the evolving legal status of autonomous vehicles, deciphering the technical and statutory definitions that dictate liability allocation. It dissects the theoretical departure from human negligence toward strict product liability, conducts a comparative analysis of the 2026 global regulatory landscape, and reviews landmark jurisprudence emerging from the latest wave of autonomous vehicle litigation to map the future of transportation law.

2. The Taxonomy of Automation and the "Responsibility Gap"

Before legal accountability can be assigned, courts and regulatory bodies must define the precise degree of vehicular autonomy involved in an incident. Internationally, legislators rely on the taxonomy developed by the Society of Automotive Engineers (SAE) International. The SAE J3016 standard delineates vehicle automation into six distinct tiers. These tiers transcend mere engineering benchmarks; they act as strict legal boundaries that determine the exact moment liability shifts from the human occupant to the original equipment manufacturer (OEM).

¹ Laxmi Narayan, Autonomous vehicle market size to hit USD 5,439.46 billion by 2035 Precedence Research (2026), <https://www.precedenceresearch.com/autonomous-vehicle-market> (last visited Apr 2, 2026).

Table 1: SAE Levels of Automation and Liability Allocation

SAE Level	Automation Designation	Operational Description	Legal Liability and Responsibility
Level 0	No Automation	The human performs all dynamic driving tasks. The vehicle only provides warnings (e.g., blind-spot alerts).	Human Driver: Full liability under traditional negligence and traffic laws.
Level 1	Driver Assistance	The vehicle controls either steering or speed, but the human must perform the remainder of the driving task.	Human Driver: Full liability. The human is legally operating the vehicle.
Level 2	Partial Automation	The vehicle controls both steering and speed simultaneously. The human must constantly monitor the environment.	Human Driver: Full liability. Classified as a "Driver Support System." Driver distraction remains the legal fault.
Level 3	Conditional Automation	The vehicle performs all aspects of driving under specific conditions. The human must take over upon a system request.	Shared/Transitional: Manufacturer is liable while the system is engaged; liability shifts to the human during a handoff.
Level 4	High Automation	The vehicle performs all driving tasks in defined operational areas (geofencing). No human intervention is required.	Manufacturer/Operator: The system is entirely responsible. Human occupants are legally considered passengers.
Level 5	Full Automation	The vehicle performs all driving tasks under all roadway and environmental conditions.	Manufacturer/Operator: Absolute product or system liability. Human occupants bear no driving liability.

2.1 The Liability Rubicon and the Handoff Dilemma

The most treacherous legal boundary within the SAE framework exists between Level 2 and Level 3 automation. In Levels 0 through 2, the law universally recognizes the human occupant as the active "driver".

In the event of a collision involving a Level 2 system (such as Tesla's Autopilot), courts routinely hold the human driver legally culpable for failing to supervise the artificial intelligence.

Level 3, however, introduces "conditional automation," allowing the human to legally disengage from the driving task under specific operational design domains, provided they remain a "fallback-ready user" capable of retaking control when prompted. These dynamic triggers the "handoff dilemma," an evidentiary nightmare for litigators. If a fatal crash occurs during the brief window it takes for a human to regain situational awareness, determining whether the fault lies with an inadequate machine warning or a negligent human reaction is incredibly complex. Due to this massive liability friction, many technology companies have skipped Level 3 entirely to focus on Level 4 robotaxis, where human occupants are legally insulated as mere passengers and liability is consolidated entirely upon the corporate operator.

3. The Evolution of Legal Liability Frameworks

As human operators are engineered out of the dynamic driving task, the legal theories utilized to compensate victims must radically evolve. The autonomous transition fundamentally ruptures traditional tort law, compelling the judicial system to adopt alternative liability paradigms.

3.1 From Negligence to Product Liability

In traditional auto accidents, victims seek financial recovery by proving the opposing driver breached their duty of care through negligence. However, when an autonomous vehicle causes a crash, there is no human behavior to weigh against the legal standard of a "reasonable person". Consequently, plaintiffs must pivot to product liability doctrines.

Under product liability, attorneys must prove that the vehicle's hardware sensors or software algorithms contained a design or manufacturing defect that proximately caused the injury. Applying this to modern AI creates a massive "responsibility gap". Advanced systems utilize Large Language Models and deep neural networks that learn probabilistically rather than relying on deterministic, hard-coded rules. This non-deterministic nature can lead to "algorithmic hallucinations"—false machine perceptions that trigger sudden, erroneous maneuvers. Proving a specific design defect in millions of lines of black-box code when the AI hallucinates an obstacle is an immense evidentiary burden for plaintiffs.²

3.2 Strict Liability and No-Fault Compensation Systems

To overcome the insurmountable evidentiary barriers of proving complex software defects, legal scholars overwhelmingly advocate for strict liability models. Under strict liability, the manufacturer or fleet operator

² Spiekermann, S. (2022) What to expect from IEEE 7000: The first standard for building ethical systems, IEEE Technology and Society. Available at: <https://technologyandsociety.org/what-to-expect-from-ieee-7000-the-first-standard-for-building-ethical-systems/> (Accessed: 02 April 2026).

is held financially accountable for any damages caused by the vehicle while in autonomous mode, regardless of whether a specific coding defect or negligence can be identified.

The jurisprudential justification is that multi-billion-dollar manufacturers are in a superior position to absorb the systemic costs of accidents, insure against portfolio risks, and distribute those costs across their consumer base. Additionally, some experts propose a "Manufacturer Enterprise Responsibility" system, which would require automakers to pay into a federally administered fund based on market share. This would allow victims of algorithmic failures to bypass protracted litigation and claim compensation directly from the fund.

3.3 The Debate on Artificial Intelligence Personhood

As machine learning achieves human-like decision-making capabilities, an academic debate has surfaced regarding whether AI systems should be granted "legal personhood." Much like a modern corporation, granting an autonomous vehicle the status of an "electronic person" would allow the machine to hold its own insurance policy and be sued directly as an independent entity, entirely shielding the human owner from vicarious liability.

However, this concept has met severe resistance. Global courts and legislators argue that machines lack moral agency, possess no independent assets to satisfy legal judgments, and cannot be ethically punished. Contemporary 2026 jurisprudence firmly rejects AI personhood, instead opting to combine strict corporate product liability with rigorous, proactive risk management.

Table 2: Comparison of Liability Models for Autonomous Vehicles

Legal Framework	Basis of Liability	Burden of Proof	Primary Advantage	Primary Disadvantage
Negligence	Human error or breach of duty.	Plaintiff must prove duty, breach, causation, and damages.	Relies on well-established legal precedents.	Obsolete for Level 4/5 vehicles where humans do not drive.
Product Liability	Defective design, manufacturing, or warning.	Plaintiff must prove the software/hardware was inherently defective.	Holds technology companies accountable for rushed products.	Highly complex, expensive, and difficult to prove software defects.

Legal Framework	Basis of Liability	Burden of Proof	Primary Advantage	Primary Disadvantage
Strict Liability / No-Fault	Occurrence of the accident while the system is engaged.	Plaintiff only needs to prove the vehicle caused the injury.	Swift compensation for victims without lengthy litigation.	May place heavy financial burdens on manufacturers early on.
Legal Personhood	The AI system is viewed as an independent actor.	Victim sues the vehicle's legal entity directly.	Protects human owners from unfair vicarious liability.	Controversial; machines lack moral agency and assets to pay.

4. Global Regulatory Frameworks

Recognizing that the legal challenges of autonomy cannot be resolved purely through the judicial interpretation of antiquated statutes, global governments are actively deploying bespoke regulatory architectures in 2026.

4.1 The United States: Federalism and State-by-State Patchwork

Historically, the United States has suffered from a fragmented regulatory patchwork: the federal government regulates vehicle design, while 50 individual states govern rules of the road and insurance liability. To rectify this, the US Congress introduced the SELF DRIVE Act of 2026 (H.R. 7390). This landmark legislation establishes a unified federal spine for Level 3, 4, and 5 systems.

Crucially, the SELF DRIVE Act shifts away from voluntary guidelines by mandating that manufacturers establish and submit formal "Safety Cases"—evidence-backed documents demonstrating the system is free from unreasonable risk. The bill explicitly creates legal pathways to exempt highly automated vehicles from legacy safety standards, legally permitting the removal of steering wheels and brake pedals. It also establishes a National Automated Vehicle Safety Data Repository to mandate standardized crash reporting, ensuring corporate transparency.

Table 3: Examples of State Liability Coverage Requirements for Highly Automated Vehicles

US State	Operational Deployment Status	Specific Liability Coverage Requirements
Alabama	Level 4 and 5 permitted without a licensed driver in the vehicle.	\$100,000 (private), \$1 million (commercial entity), \$2 million (automated commercial motor vehicle).
Arizona	Level 4 and 5 permitted without a licensed driver.	Must have the exact same liability coverage required for non-automated vehicles under existing law.
Arkansas	Licensed driver required in vehicle for the first 6 months of operation.	Ranging from \$750,000 to \$5 million, depending on the vehicle type and its commercial purpose.
California	Level 4 and 5 permitted without a licensed driver in the vehicle.	Liability coverage of at least \$5 million is required.
Colorado	Level 4 and 5 permitted.	Specific liability coverage amounts are not explicitly addressed in automated vehicle statutes.

4.2 The European Union: The AI Act and Product Liability Directive

The European Union maintains the most aggressive, preemptive regulatory posture in the world. By 2026, the sweeping provisions of the EU Artificial Intelligence Act are fully applicable, explicitly categorizing the AI systems powering autonomous vehicles as "high-risk". This classification places severe obligations on automakers, mandating third-party conformity assessments, strict human oversight mechanisms, and the elimination of algorithmic bias.

Complementing the AI Act is the modernized Product Liability Directive. Acknowledging the shift toward AI-Defined Vehicles, the directive explicitly categorizes standalone software and over-the-air (OTA) updates

as products subject to strict liability. If a manufacturer fails to patch a known algorithmic hallucination and a crash ensues, the automaker faces absolute liability.³

Table 4: Implementation Timeline of the EU Artificial Intelligence Act

Implementation Date	Regulatory Phase	Impact on Autonomous Vehicle Manufacturers
August 1, 2024	Entry into Force	The AI Act officially becomes law across all 27 EU Member States.
February 2, 2025	Prohibitions Apply	Bans on unacceptable AI practices (e.g., social scoring, real-time biometric identification) take effect.
August 2, 2025	Governance Rules	Obligations for general-purpose AI models and data governance frameworks become fully applicable.
August 2, 2026	Full Applicability	The majority of the AI Act's provisions become fully applicable and enforceable.
August 2, 2027	High-Risk Integration	Extended transition period ends for high-risk AI systems that are embedded into regulated products like vehicles.

4.3 The United Kingdom: The Automated Vehicles Act 2024

The United Kingdom has established total legal clarity through the Automated Vehicles Act (AVA) 2024, which is actively rolling out secondary legislation to put self-driving cars on British roads by 2026. The AVA's most revolutionary element is its statutory allocation of liability: when an authorized automated driving system is engaged, human occupants are granted complete immunity from civil and criminal driving offenses.

³ Raviv, A. (2024) Event Data Recorders, Federal Register. Available at: <https://www.federalregister.gov/documents/2024/12/18/2024-29862/event-data-recorders> (Accessed: 03 April 2026).

The framework relies on an insurer-led compensation model. If an autonomous vehicle causes a collision, the vehicle's motor insurer acts as the immediate point of compensation for victims. Following the payout, the insurer is legally empowered to initiate recovery claims directly against the "Authorised Self-Driving Entity"—the corporate software developer or manufacturer—if a software defect is identified.⁴

4.4 Germany: The Pioneer of Level 4 Integration

Germany was the first nation globally to establish a statutory framework allowing fully driverless Level 4 vehicles to operate in regular public traffic within defined operational areas, passing the Act on Autonomous Driving in 2021. Operating under a strict type-approval regime, German regulations require comprehensive pre-market testing.

Furthermore, Germany has successfully aligned its domestic laws with international standards, heavily integrating the United Nations Global Technical Regulation (GTR) on Automated Driving Systems, which was finalized in early 2026. This UN GTR enforces a global "safety case" approach, requiring multi-pillar validation through simulations, track testing, and the mandatory installation of Data Storage Systems for Automated Driving (DSSAD).

4.5 India: Statutory Constraints and Infrastructural Developments

Unlike Western nations aggressively scaling Level 4 robotaxis, India faces a profoundly different infrastructural and legal reality. The primary statute governing road transport, the Motor Vehicles Act of 1988, strictly requires a human operator to maintain "effective control" of the vehicle, making the deployment of fully autonomous driverless cars legally impossible without comprehensive legislative amendments.

However, India is making massive strides in vehicular safety through mandatory automation. The Ministry of Road Transport and Highways (MoRTH) issued a sweeping mandate requiring all newly introduced heavy commercial vehicles and passenger vehicles carrying more than eight occupants to be equipped with Advanced Driver Assistance Systems (ADAS) by April 1, 2026. This legal mandate requires the integration of Advanced Emergency Braking Systems (AEBS), Driver Drowsiness and Attention Warning Systems (DDAWS), and Lane Departure Warning Systems (LDWS). Furthermore, to support this technological leap, the Indian government has provisionally allocated 30 MHz of spectrum to mandate Vehicle-to-Vehicle (V2V) communication systems in new cars by late 2026, creating a foundational network for future autonomy.

⁴ Wilson, O. (2026) Automated vehicles in the UK: What's coming down the road in 2026? Hogan Lovells. Available at: <https://www.hoganlovells.com/en/publications/automated-vehicles-in-the-uk-whats-coming-down-the-road-in-2026> (Accessed: 02 April 2026).

5. Recent Jurisprudence and Landmark Settlements (2023-2026)

While legislators draft future frameworks, the court systems are currently defining liability boundaries through aggressive civil litigation. A massive wave of case law emerging between 2025 and 2026 highlights a definitive judicial rejection of automakers attempting to deflect liability entirely onto human operators.

5.1 Level 2 ADAS Litigation: The Tesla Cases

Litigation surrounding SAE Level 2 systems, where human drivers are legally required to supervise the automation, reached a critical inflection point in late 2025. In a landmark Miami decision (*Benavides v. Tesla*), a jury awarded \$243 million in damages against Tesla for a fatal Autopilot crash. The jury explicitly rejected Tesla's defense that its marketing of "Full Self-Driving" capabilities was merely "corporate puffery," ruling that misleading marketing lulls drivers into a false sense of security, triggering product liability.

Plaintiff strategies have evolved dramatically in 2026. In March 2026, a lawsuit was filed in Houston after a Cybertruck utilizing Full Self-Driving software attempted to drive off a highway overpass, striking a concrete barrier. Beyond standard product defect claims, the plaintiff introduced a novel tort claim for the "negligent retention" of CEO Elon Musk, alleging the corporation was grossly negligent in allowing an executive to override internal engineering recommendations and deploy camera-only systems without LiDAR.⁵

5.2 Level 4 Robotaxi Litigation: Uber, Cruise, and Waymo

Litigation involving Level 4 fully autonomous fleets removes the human driver entirely, placing the legal crosshairs directly on the manufacturer's algorithmic safety data. Following General Motors' Cruise paying an \$8 million settlement in 2024 after a robotaxi dragged a pedestrian, the industry has faced intense scrutiny.

By 2026, the robotaxi market is dominated globally by Alphabet's Waymo in the US and Baidu's Apollo Go in China, both executing hundreds of thousands of driverless rides weekly. However, scaling operations has exposed the legal risks of massive infrastructure dependency. In April 2026, a systemic malfunction caused over 100 Baidu Apollo Go robotaxis to freeze simultaneously on expressways in Wuhan, trapping passengers inside for hours. Incidents of this scale demonstrate that liability for Level 4 systems is expanding beyond single-car crashes to encompass mass tort claims for false imprisonment, software negligence, and V2X telecommunications failures. In these jurisdictions, crash litigation requires plaintiff attorneys to subpoena server logs and telemetry data within 72 hours to prove algorithmic defects.

⁵ Kolodny, L. (2025) Tesla must pay portion of \$329 million in damages after fatal autopilot crash, Jury says, CNBC. Available at: <https://www.cnbc.com/2025/08/01/tesla-must-pay-329-million-in-damages-in-fatal-autopilot-case.html> (Accessed: 02 April 2026).

6. Conclusion

The integration of autonomous vehicles onto public roadways represents an unprecedented challenge to the foundations of international law. As transportation transitions from human-driven machines to AI-Defined Vehicles, the traditional tort model of human negligence is rendered entirely obsolete. A comparative analysis of global regulations reveals that governments are abandoning reactive, fragmented policies in favor of proactive, harmonized safety architectures.

The European Union's AI Act, the US SELF DRIVE Act of 2026, and the UN Global Technical Regulation universally enforce a strict "safety case" approach, legally binding manufacturers to lifecycle safety management systems. The UK's Automated Vehicles Act models the ideal future of civil liability, officially immunizing human occupants and channeling financial recovery directly through insurers to the corporate developers. Meanwhile, developing nations like India and other countries are taking pragmatic steps, mandating active ADAS safety systems to curb immediate roadway fatalities while preparing their legacy statutes for a driverless future. Ultimately, the massive 2026 wave of litigation targeting corporate executives and algorithmic hallucinations proves that the judicial system will not allow technology companies to privatize the profits of innovation while socializing the risks of artificial intelligence. Ensuring a safe transportation future demands transparent, strict-liability frameworks that prioritize absolute corporate accountability and rapid victim compensation.