

Driverless Cars – A Shift in Risk A Talk with James Anderson

- What is an “autonomous vehicle”
 - SAE International, previously known as the Society of Automotive Engineers (SAE)
 - Global association of engineers and technical experts in the aerospace, automotive and commercial-vehicles industries.¹
 - Sets industry engineering standards.
 - SAE standard of automation levels
 - 0: no automation
 - 1: driver assistance. Driver must perform all aspects of the driving. Most cars manufactured today are partial assistance
 - 2: partial automation. Car can steer, accelerate and brake and requires driver to respond to traffic conditions. E.g. Tesla Autopilot.
 - 3: conditional automation. Car can manage most aspects of driving, but driver must be available to take over in certain scenarios.
 - 4: high automation. Car can perform all driving functions under most conditions. Driver option to control the car.
 - 5: full automation. Car can perform all driving functions under all conditions. E.g. Waymo developing full automation vehicles.
 - Autonomous vehicle advantages
 - Transportation safety: fewer driver error, less alcohol related crashes
 - Access to transportation for limited mobility groups (e.g. young, elderly, people with disabilities)
 - Traffic flow efficiency
 - Alleviate urban density
 - Energy and emissions
 - Autonomous vehicle impact
 - Industries like taxi services, public transition, parking.
 - Possible shift in car ownership to car sharing.
- Cybersecurity risks
 - As with all technologies, AV is susceptible to cybersecurity breaches.
 - Vulnerabilities to:
 - Manufacturer systems
 - Vehicle fleet
 - Types of risks
 - Cyber theft or crimes
 - Surveillance
 - Cyber warfare

¹ <https://www.sae.org/about>

- Potential liability issues
 - Manufacturer liability for software vulnerabilities or other system failures, including human error.
 - Vehicle owner/operator liability for failing to upgrade software.
- Shift in tort liability
 - Why a shift in tort liability may occur:
 - Classical justifications for tort liability
 - Economic deterrence
 - Corrective justice
 - Compensation for injury
 - Possible shift away from the human driver.
 - Shift to the cheapest cost avoider, the manufacturer. Liability may arise from defects in manufacturing, design, or warning.
 - Driver liability in personal injury claims
 - Unresolved questions of how to apportion fault if driver does not cause the accident.
 - How to apportion fault between the driver, manufacturers, and infrastructure.
 - No-fault regime
 - In no-fault states, car crash victims are directly compensated for their losses by their own insurance.
 - Will AVs push system to a universal no-fault? Unclear whether a no-fault regime would be cost saving or inducing with AVs.
 - Insurance
 - Open questions in insurance
 - Will AV create new categories of crashes to insure?
 - Who will insure the vehicle?
 - Impact on third party liability insurance?
 - Mandated product liability insurance?
- Regulatory
 - Issues
 - Preemption
 - Tort liability state by state
 - Federal AV legislation failed to pass in 2018
 - American Vision for Safer Transportation Through Advancement of Revolutionary Technologies Act (AV Start Act)² provided:
 - Framework for federal role
 - Preemption in certain safety related areas
 - Conditions for testing, evaluation, and demonstration
 - States

² <https://www.congress.gov/bill/115th-congress/senate-bill/1885>

- Patchwork of AV regulation, most related to testing and development.³

Additional Resources

- Anderson, James M., Nidhi Kalra, Karlyn D. Stanley, Paul Sorensen, Constantine Samaras, and Tobi A. Oluwatola, *Autonomous Vehicle Technology: A Guide for Policymakers*. Santa Monica, CA: RAND Corporation, 2016.
https://www.rand.org/pubs/research_reports/RR443-2.html. Also available in print form.
- Anderson, James M., Nidhi Kalra, Karlyn D. Stanley, and Jamie Morikawa, *Rethinking Insurance and Liability in the Transformative Age of Autonomous Vehicles*. Santa Monica, CA: RAND Corporation, 2018.
https://www.rand.org/pubs/conf_proceedings/CF383.html. Also available in print form.

³ Insurance Institute for Highway Safety (IIHS) Autonomous vehicle laws by state chart:
<https://www.iihs.org/topics/advanced-driver-assistance/autonomous-vehicle-laws>