BACK IN THE DRIVER'S SEAT: THE UNITED STATES SHOULD ENACT A UNIFIED AUTOMATED VEHICLE LAW AND REGULATION

James Ng[†]

ABSTRACT

Automated Vehicles are becoming more and more prevalent in the modern world. Although these vehicles are not without drawbacks, they are predicted to have numerous benefits to society and are here to stay. However, as society progresses towards a more computer-controlled and less human-operated vehicle world, U.S. laws have been unable to keep up with these scientific developments.

The federal and state governments have yet to achieve uniformity in their automated vehicle laws and regulations. The former has only provided voluntary guidance. For the latter, some states have taken progressive approaches, while others have taken more conservative ones. Taking into consideration that the current and upcoming automated vehicle technologies will create difficulties for claimants to successfully bring claims under the existing state product liability laws, this Note will explore potential solutions and propose a solution to address the current flaws.

This Note will examine what the European Union has achieved in this area of law and what solutions other legal scholars have proposed to address the issue. Finally, this Note will propose that the United States enact a unified federal automated vehicle regulation with a private cause of action for automated vehicle product liability.

TABLE OF CONTENTS

DOI: https://doi.org/10.15779/Z38KP7TS5T

† B.S., New York University Tandon School of Engineering (2014); J.D., Brooklyn Law School (Expected 2025). I want to thank all the *Berkeley Technology Law Journal* staff for choosing my Note to be first prize for the writing competition and supporting the publication of this Note. I also want to thank all the *Brooklyn Journal of International Law* staff for assisting in developing this Note. Lastly, I would like to thank my family and friends for all the support throughout my life and the development of this Note.

I. INTRODUCTION

Traveling in a self-driving car was dreamt of long before today.[1] In David H. Keller's short-story *The Living Machine* (1935), he envisioned a world with self-driving vehicles that would bring tremendous societal benefits.[2] He imagined:

> Old people began to cross the continent in their own cars. Young people found the driverless car admirable for petting. The blind for the first time were safe. Parents found they could more safely send their children to school in the new car than in the old cars with a chauffeur.[3]

However, this distant dream would not emerge as a reality until nearly a century later.[4]

Indeed, this dream is now reality. Although most modern vehicles continue to lack the capability to be fully autonomous, many already have semi-autonomous features.[5] An industry forecast projected that the global autonomous vehicle market would increase from $76 billion in 2020 to $2.16 trillion by 2030.[6] The United States Department of Transportation declared that self-driving technology will bring about "a new era of transportation."[7] As early as 2016, the United States officially recognized autonomous vehicles as the future of motor vehicles.[8] More recently, on November 15, 2021, President

---

1. *See* Marc Weber, *Where To? A History of Autonomous Vehicles*, COMPUT. HIST. MUSEUM (May 8, 2014), https://computerhistory.org/blog/where-to-a-history-of-autonomous-vehicles/?key=where-to-a-history-of-autonomous-vehicles; Bonnie Gringer, *History of the Autonomous Car*, TITLE MAX, https://www.titlemax.com/resources/history-of-the-autonomous-car (last visited Oct. 27, 2022).

2. David H. Keller, *The Living Machine*, 6 WONDER STORIES 12, 1461, 1470 (1935).

3. *Id.*

4. *A Brief History of Autonomous Vehicle Technology*, WIRED, https://www.wired.com/brandlab/2016/03/a-brief-history-of-autonomous-vehicle-technology/ (last visited Dec. 26, 2023).

5. Gringer, *supra* note 1.

6. Abhay S & Sonia M, *Autonomous Vehicle Market by Level of Automation (Level 1, Level 2, Level 3, Level 4, and Level 5), Application (Civil, Defense, Transportation & Logistics, and Construction), Drive Type (Semi-autonomous and Full Autonomous), and Vehicle Type (Passenger Car and Commercial Vehicle): Global Opportunity Analysis and Industry Forecast, 2021-2030*, ALLIED MKT. RSCH. (Feb. 2022), https://www.alliedmarketresearch.com/autonomous-vehicle-market.

7. *USDOT Automated Vehicles Activities*, U.S. DEP'T OF TRANSP. https://www.transportation.gov/AV (last updated Mar. 28, 2022) (recognizing the self-driving vehicles will be the dawn of "a new era of transportation").

8. U.S. DEP'T OF TRANSP. & NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., FEDERAL AUTOMATED VEHICLES POLICY: ACCELERATING THE NEXT REVOLUTION IN ROADWAY SAFETY, at 3, 5, 6 (2016), https://www.transportation.gov/sites /dot.gov/files/docs/AV%20policy%20guidance%20PDF.pdf.

Biden signed the Infrastructure Investment and Jobs Act into law that discussed researching and updating existing regulations related to automated vehicles.[9] These recent federal government activities indicate the government's interest in regulating this new technology.[10]

An automated vehicle (AV) is a vehicle capable of operating without the driver's control by relying on software and programs that include sensors to control vehicular movement.[11] An AV has internet connectivity that allows for software and program updates as well as communication with other vehicles, traffic devices, and infrastructure to improve the vehicle's safety.[12]

The inevitable introduction of AVs has created a two-fold interrelated issue for the current United States AV regulatory framework and existing product liability law. First, there are no standardized laws and regulations for AVs between the federal and state governments. The federal government has mainly issued voluntary guidance, whereas some states have taken diverse approaches to address emerging AVs.[13] Secondly, most of the current state product liability laws are exceptionally burdensome for a party harmed by an AV compared to a traditional vehicle.[14] While some states have taken a more progressive approach in addressing the above-mentioned issues, others have not been as liberal in this area.[15] However, with the rapid advancement of AVs, federal and state regulations are failing to provide an innovation-friendly

9. Infrastructure Investment and Jobs Act, HR 3684, 117th Cong. (discussing that this act "authorize[s] funds for Federal-aid highways, highway safety programs, and transit programs"). *See also* Infrastructure Investment and Jobs Act, §§ 11135, 13005, 13006, 24102, 24108, 25005.

10. The legislative purpose and congressional intent are key factors courts consider when determining Congressional authority under commerce clause and federal preemption. *Infra* note 280, 286.

11. *What is an Autonomous Car?*, SYNOPSYS, https://www.synopsys.com/automotive/what-is-autonomous-car.html (last visited Oct. 27, 2022). (explaining an autonomous car is "self-aware and capable of making its own choices, whereas, an automated car "follow[s] orders and then drive itself.")

12. *See* TE Connectivity, *6 Key Connectivity Requirements of Autonomous Driving*, IEEE SPECTRUM (Oct. 4, 2018), https://spectrum.ieee.org/6-key-connectivity-requirements-of-autonomous-driving; *see also* Jayna Locke, *What is Connected Vehicle Technology and What Are the Use Cases?*, DIGI (June 17, 2020), https://www.digi.com/blog/post/what-is-connected-vehicle-technology-and-use-cases.

13. Mark J. Fanelli & F. Jackson Stoddard, *States Lead the Way on Autonomous Vehicle Regulation as Federal Law Looms on the Horizon*, MORGAN LEWIS (May 25, 2022), https://www.morganlewis.com/pubs/2022/05/states-lead-the-way-on-autonomous-vehicle-regulation-as-federal-law-looms-on-the-horizon; *see* Gurney, *infra* note 120, at 257–66.

14. *See* Gurney, *infra* note 120, at 257–66.

15. *See generally Autonomous Vehicles*, GOVERNORS HIGHWAY SAFETY ASS'N, https://www.ghsa.org/state-laws/issues/autonomous%20vehicles (last visited Nov. 10, 2022); *see* Gurney, *infra* note 120, at 257–66.

environment, which is hindering the progression of this beneficial technology.[16]

Many legal scholars have recognized that the United States' current AV framework and liability system is insufficient, and they have proposed solutions.[17] As early as 2013, legal scholar Jeffrey Gurney explored this topic profoundly and correctly predicted the implication of AVs in the existing framework and system.[18] Since then, potential solutions have been proposed by different scholars.[19] This Note will explore four types of these solutions—(1) insurance, (2) Federal Motor Vehicle Safety Standards (FMVSS), (3) uniform law, and (4) a "hands off" approach—and discuss the flaws of these solutions.[20]

This Note then proposes that Congress creates a comprehensive federal AV regulation that preempts all state regulations on the design, construction, or performance of AVs and creates a cause of action for victims to bring a claim against manufacturers in a product liability suit. Victims will be afforded two new legal rights to ease the burden of bringing a claim: the "right of access to evidence"[21] and the "presumption of causality."[22] Part II will outline the current automation levels for AVs, their benefits and drawbacks, and the current landscape of AV regulations at the federal and state levels. Understanding the most recent developments in AVs, and their benefits and drawbacks, is key to understanding why Congress must regulate this area. Part III will explore issues with the current U.S. AV regulations and product liability laws. Specifically, it will examine how U.S. product liability laws are incompatible with AV. Part IV will search for potential solutions based on the European Union's current state of AV regulations and related product liability laws, as well as other scholarly solution proposals including insurance, federal regulation, uniform law, and the hands-off approach. Lastly, Part V will propose a solution to address the issues by enacting a unified federal AV regulation with a private cause of action for AV product liability.

16. *See* Robert E. Latta, *Federal Autonomous Vehicle Framework is Needed for the US to be a Leader in AV Technology*, HILL (June 07, 2022), https://thehill.com/driving-into-the-future/3513655-federal-autonomous-vehicle-framework-is-needed-for-the-us-to-be-a-leader-in-av-technology/.

17. *See, e.g.*, Dr. Michael Chatzipanagiotis & Dr. George Leloudas, *infra* note 250.

18. Gurney, *infra* note 120, at 257–66.

19. *See* Dr. Chatzipanagiotis & Dr. Leloudas, *infra* note 250; Davola, *infra* note 260; Geistfeld, *infra* note 264; Hockstad & Fisher, *infra* note 272; Bollman, *infra* note 279.

20. *Id.*

21. *EU Press PLD and AI Liability*, *infra* note 242.

22. *Id.*

II. AV TECHNOLOGY AND REGULATIONS AT THE FEDERAL AND STATE LEVELS

Part II will provide an overview of AV technology and the attempts to regulate AVs at the federal and state levels. Section II.A will first discuss the different levels of driving automation for AVs and then consider the benefits and drawbacks of AVs. Section II.B will discuss the federal government's involvement in regulating AVs. Section II.C will discuss the state government's involvement in regulating AVs.

A. AN OVERVIEW OF AV TECHNOLOGY

1. SAE J3016 Levels of Driving Automation

Although the term AV primarily refers to self-driving cars, AV is a broad term encompassing different automated capabilities.[23] To classify the sophistication of an AV, the United States used the Society of Automotive Engineers (SAE) definitions for levels of automation.[24] The SAE defined six levels of driving automation—from "Level 0" through "Level 5"—in the *SAE J3016 Recommended Practice*.[25] Many countries, including the United States[26] and the European Union, use this discursive framework for regulating AVs.[27]

SAE Level 0, Level 1, and Level 2 vehicles require the drivers to be driving—that is, steering, braking, and accelerating—and must supervise the automation support features to maintain safety.[28] Examples of SAE Level 0 features include automatic emergency braking, blind spot warning, and lane departure warning.[29] The Level 0 features are "limited to providing warnings and momentary assistance."[30] Examples of SAE Level 1 features include lane

23. *See* U.S. Dep't of Transp. & Nat'l Highway Traffic Safety Admin., *supra* note 8, at 9.

24. *Id.* at 9–10.

25. *SAE Levels of Driving Automation Refined for Clarity and International Audience*, SAE INT'L (May 3, 2021), https://www.sae.org/blog/sae-j3016-update.

26. Nat'l Sci. & Tech. Council & U.S. Dep't of Transp., ENSURING AMERICAN LEADERSHIP IN AUTOMATED VEHICLE TECHNOLOGIES - AUTOMATED VEHICLES 4.0, 29 (2020), https://www.transportation.gov/sites/dot.gov/files/2020-02/EnsuringAmericanLeadershipAVTech4.pdf.

27. Susanne Pillath, *Automated Vehicles in the EU*, EUROPEAN PARLIAMENTARY RSCH SERV. 3–5 (Jan. 2016), https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573902/EPRS_BRI(2016)573902_EN.pdf [hereinafter *AV in EU*].

28. Jennifer Shuttleworth, *SAE Standards News: J3016 Automated-Driving Graphic Update*, SAE INT'L (Jan. 7, 2019), https://www.sae.org/news/2019/01/sae-updates-j3016-automated-driving-graphic (explaining Level 0 features are "limited to providing warnings and momentary assistance"; Level 1 features "provide steering OR braking/acceleration support"; and Level 2 features provide steering, acceleration, and braking support).

29. *Id.*

30. *Id.*

centering OR adaptive cruise control.[31] Features in SAE Level 1 morph into SAE Level 2 when both the lane centering and adaptive cruise control are used at the same time, which allows the "features [to] provide steering [and] braking/acceleration support to the driver."[32] Some current systems, such as the "Tesla Autopilot and Cadillac Super Cruise systems," already qualify as Level 2.[33] Under SAE Levels 0, 1, and 2, automation support features are considered to be "driver support features," instead of "automated driving features" that can be seen in higher SAE Levels, so the driver is considered to be "driving."[34]

Starting from SAE Level 3, the role of "driving" begins to shift from the driver to the self-driving technology.[35] Level 3 is of important contemporary consideration as Level 3 vehicles are on the verge of being commercially deployed.[36] In comparison to lower levels, vehicles that have SAE Level 3, 4, or 5 systems do not require the driver to be driving when "automated driving features are engaged—even if [the drivers] are seated in 'the driver's seat.'"[37] In a Level 3 vehicle, the driver may need to engage in driving at the automated feature request because the vehicle can only be driven under limited[38] conditions and will not operate when certain conditions are not met.[39]

For SAE Levels 4 and 5, the "automated driving features will not require [the driver] to take over driving."[40] A Level 4 system can only be operated

31. *Id.*

32. *Id.*

33. *The 6 Levels of Vehicle Autnomy Explained*, SYNPOSYS, https://www.synopsys.com/automotive/autonomous-driving-levels.html#:~:text=The%20vehicle%20can%20control%20both,both%20qualify%20as%20Level%202 (last visited Dec. 26, 2022).

34. Shuttleworth, *supra* note 28.

35. *See generally id.*

36. In December of 2021, automaker Mercedes-Benz received approval in Germany for a new level 3 Drive Pilot system, and planned on applying for certification to test their system in the U.S. Automaking companies, such as Polestar and BMW, are also scheduled to offer level 3 systems in their vehicle in 2022. Shuttleworth, *supra* note 28; Murray Slovick, *Level 3 Autonomous Vehicles: Regulators Can't Keep Up with the Tech*, ELECTRONIC DESIGN (Jan. 24, 2022), https://www.electronicdesign.com/markets/automotive/article/21214818/electronic-design-level-3-autonomous-vehicles-regulators-cant-keep-up-with-the-tech; Angel Sergeev, *Mercedes Drive Pilot Level 3 Autonomous Tech Officially on Sale in Germany*, MOTOR 1 (May 6, 2022), https://www.motor1.com/news/584121/mercedes-level-3-autonomous-tech-on-sale/.

37. Shuttleworth, *supra* note 28.

38. Cabe Atwell, *What are SAE's Five Self-driving Levels?*, FIERCE ELECTRONICS (June 6, 2022), https://www.fierceelectronics.com/sensors/what-are-saes-five-self-driving-levels (explaining a level 3 AV can be self-driving under ideal conditions and within limitation, such as "limited-access divided highways at certain speeds").

39. Shuttleworth, *supra* note 28.

40. *Id.*

under limited conditions.[41] Although the deployment of Level 4 systems is not yet widespread, companies are developing the technology for its arrival.[42] Level 5 vehicles, which can be driven entirely by automated driving features under all conditions, are the only vehicles that are not yet accessible to the public, even though the technologies are being tested.[43]

2. Benefits and Drawbacks of AVs

In January 2020, the United States Department of Transportation (DOT) published a report explaining that the National Highway Traffic Safety Administration (NHTSA) has established "four main areas of potential benefit with regard to AVs: safety, economic and societal benefits, efficiency and convenience, and mobility."[44] A NHTSA Research conducted from 2005 to 2007 showed that 95% of the "critical reasons for crashes" are attributed to drivers.[45] Automated Driving Systems (ADS) can reduce, or even eliminate, human error and poor human choices, leading to drastic improvements in public safety on roadways.[46] NHTSA also identified additional potential economic and societal benefits "including increased economic productivity and efficiency, reduced commuting time, and even the potential reduction of the environmental impact of conventional surface vehicles while increasing

41. The difference between a level 3 and level 4 AV is that a level 4 AV does not expect any driver's input and is fully capable of handling all driving function that is set within its operational perimeter. Shuttleworth, *supra* note 28; Atwell, *supra* note 38.

42. Synopsys, *supra* note 33 (discussing companies that are developing and building level 4 vehicles. In the United States, taxi service company Waymo has been testing a level 4 self-driving taxi service in Arizona. A French company, NAVYA, has built and sold level 4 shuttles and cabs. Canadian company Magna is working on level 4 kit to turn vehicles into AVs. Volvo and Baidu are developing level 4 vehicles to be used in China).

43. Shuttleworth, *supra* note 28; Synopsys, *supra* note 12.

44. Nat'l Sci. & Tech. Council & U.S. Dep't of Transp., *supra* note 26, at 2. NHTSA is a federal agency that is given the authority to reduce traffic accidents and related death and injuries. *See* 49 U.S.C. § 30101.

45. U.S. DEP'T OF TRANSP. NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., CRITICAL REASONS FOR CRASHES INVESTIGATED IN THE NATIONAL MOTOR VEHICLE CRASH CAUSATION SURVEY (Feb. 2015), https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812115. (explaining that

> The critical reason is the immediate reason for the critical pre-crash event and is often the last failure in the causal chain of events leading up to the crash. Although the critical reason is an important part of the description of events leading up to the crash, it is not intended to be interpreted as the cause of the crash nor as the assignment of the fault to the driver, vehicle, or environment.

Specifically, the critical reasons are attributed to four categories: drivers, vehicles, environment, and unknown critical reasons.)

46. Nat'l Sci. & Tech. Council & U.S. Dep't of Transp., *supra* note 26, at 2.

overall system energy efficiency."[47] Lastly, automated technology can enhance the "independence, economic opportunities, and social well-being" for the elderly and people with disabilities.[48]

Despite the numerous benefits, ADS also presents potential drawbacks.[49] The three most considerable drawbacks are (1) job loss in transportation,[50] (2) weakened cybersecurity,[51] and (3) an unresolved moral dilemma.[52] First, the jobs of many trucking, transit, and delivery workers can be replaced by AVs.[53] Second, since AVs rely heavily on electronic systems and connectivity to provide safety, AVs are susceptible to cyber threats that may hack the vehicle's system and put the vehicle's passengers and the public in danger.[54] Lastly, developers may have to design the AV to choose between unfavorable outcomes leading to a moral dilemma known as the "Trolley Problem."[55] The

47. *Id.*; *see generally* SECURING AMERICA'S FUTURE ENERGY, AMERICA'S WORKFORCE AND THE SELF-DRIVING FUTURE: REALIZING PRODUCTIVITY GAINS AND SPURRING ECONOMIC GROWTH (June 2018), https://avworkforce.secureenergy.org/wp-content/uploads/2018/06/Americas-Workforce-and-the-Self-Driving-Future_Realizing-Productivity-Gains-and-Spurring-Economic-Growth.pdf (discussing improving safety in AV can lead to improve productivity and efficiency).

48. Nat'l Sci. & Tech. Council & U.S. Dep't of Transp., *supra* note 26, at 3.

49. Jonathan Negretti, *Self-Driving Cars: Pros and Cons*, NEGRETTI LAW (June 2, 2021), https://negrettilaw.com/news/self-driving-cars-pros-and-cons/.

50. *See id.*

51. U.S. Dep't of Transp., *infra* note 54.

52. Negretti, *supra* note 49; *see also* Scott B. Smith, *Framework for Automated Driving System Impact Assessment*, VOLPE CTR. (May 19, 2022), https://www.pcb.its.dot.gov/t3/s220519/s220519_Impacts_on_Roads_from_Automated_Driving_Systems_presentation_Smith.pdf (identifying other potential drawbacks).

53. Negretti, *supra* note 49. One 2017 report suggests that "[m]ore than four million jobs will likely be lost with a rapid transition to autonomous vehicles." CTR. FOR GLOBAL POLICY SOLUTIONS, STICK SHIFT: AUTONOMOUS VEHICLES, DRIVING JOBS, AND THE FUTURE OF WORK 3 (2017), https://web.archive.org/web/20220203070610/https://www.law.gwu.edu/sites/g/files/zaxdzs2351/f/downloads/Stick-Shift-Autonomous-Vehicles-Driving-Jobs-and-the-Future-of-Work.pdf.

54. Negretti, *supra* note 49. As NHTSA points out, vehicles, which includes AV, depend on connectivity to utilize their information systems. These systems are susceptible to cyber-attacks such as hacking, "unauthorized access, damage, or anything else that might interfere with safety function[.]" *Vehicle Cybersecurity*, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., https://www.nhtsa.gov/technology-innovation/vehicle-cybersecurity (last visited Nov. 10, 2022).

55. Some studies have considered whether an ADS is forced to choose between two unethical choices that will result in harm, this is also known as the trolley problem. Human drivers react to emergencies "instinctively," but AV makes decisions that are "predetermined by programmers." Negretti, *supra* note 49; Matteo Luccio, *The Trolley Problem: What Would a Self-driving Car Do?*, GPS WORLD (Dec. 12, 2021), https://www.gpsworld.com/what-would-a-self-driving-car-do/#:~:text=In%20the%20trolley%20problem%2C%20a,would%20

U.S. government is nonetheless committed to leadership in AV "development and integration" while prioritizing "safety, security, and privacy."[56]

B. AN OVERVIEW OF THE REGULATIONS AT THE FEDERAL LEVEL

Traditionally, both federal and state governments enforce vehicle safety regulations in the United States.[57] Federal agencies regulate the safety, testing, and fuel economy and emission of vehicles.[58] They also investigate vehicular accidents and make safety improvement recommendations.[59] On the other hand, states regulate roadway safety through vehicle licensing, vehicle regulation, vehicle inspections, traffic laws, safety infrastructure, vehicle insurance, and motor vehicle liability.[60] Despite the growing amount of AVs on public roads, there is no comprehensive AV regulation framework at the federal or state level in the United States.[61]

1. Federal Government Involvements in AV Regulation

Before 1966, Congress was not active in traffic safety regulation, except for addressing limited road safety issues, and it did not have comprehensive traffic and motor vehicle legislation.[62] However, Congress began to pay greater attention in the face of alarming statistics: the National Safety Council reported a staggering quantity of automobile accident deaths, injuries, and damages.[63] To address these concerns, Congress established the United States Department of Transportation ("USDOT") on October 15, 1966, and asked USDOT to develop national policies:

---

not%20have%20been%20involved; *see generally Next Stop: 'Trolley Problem'*, MERRIAM-WEBSTER, https://www.merriam-webster.com/words-at-play/trolley-problem-moral-philosophy-ethics (last visited Nov. 10, 2022).

56. Nat'l Sci. & Tech. Council & U.S. Dep't of Transp., *supra* note 26, at 1.

57. AUTONOMOUS VEHICLE: LEGAL AND REGULATORY DEVELOPMENTS IN THE UNITED STATES, JONES DAY 5 (July 2021), https://www.jonesday.com/-/media/files/publications/2021/05/autonomous-vehicles-legal-and-regulatory-developments-in-the-us/files/autonomous-vehicles-legal-and-regulatory-developme/fileattachment/autonomous-vehicles-legal-and-regulatory-developm.pdf.

58. *Id.* (pointing out that the NHTSA, the Environmental Protection Agency, the Federal Motor Carrier Safety Administration, and the National Transportation Safety Board are federal agencies that regulate vehicle safety).

59. *Id.*

60. *Id.*

61. *See generally id.*

62. *National Traffic and Motor Vehicle Safety Act*, ASS'N OF CTRS. FOR THE STUD. OF CONG., http://acsc.lib.udel.edu/exhibits/show/legislation/traffic-and-motor-vehicle-safe (last visited Nov. 10, 2022).

63. *Id.* (discussing how in 1966, the National Safety Council reported that "automobile accidents resulted in 49,000 death, 1.8 million minor injuries, and $8.5 billion in damages, lost wages, and medical expenses in 1965 alone").

> to facilitate the development and improvement of coordinated transportation service . . . ; to encourage *cooperation of Federal, State, and local government* . . . and other interested parties toward the achievement of national transportation objectives; to stimulate technological advances in transportation; to provide general leadership in the identification and solution of transportation problems; and to *develop* and recommend . . . *national transportation policies and programs* to accomplish [] objectives . . . [for] the needs of the public, users, carriers, industry, labor . . . .[64]

The roadway safety concerns also led to the signing of the National Traffic and Motor Vehicle Safety Act of 1966.[65] The act gave rise to NHTSA and granted the USDOT the authority to reduce traffic accidents and related injuries.[66] The act also granted the authority "to prescribe motor vehicle safety standards for motor vehicles and motor vehicle equipment in interstate commerce; and to carry out needed safety research and development."[67] These standards are now the Federal Motor Vehicle Safety Standards (FMVSS).[68] These regulations supersede state law because the authorizing statute expressly preempts states from creating their motor vehicle safety standards unless they are identical to FMVSS.[69]

To date, the USDOT mainly provides guidance for states, manufacturers, and other stakeholders to follow.[70] For example, the 2021 Infrastructure

64. Department of Transportation Act, Pub. L. No. 89-670, 80 Stat. 931, 931 (1966) (emphasis added).

65. Ass'n of Ctrs. For the Stud. Of Cong., *supra* note 62. This act has been codified in 49 U.S.C Chapter 301. 49 U.S.C. § 30101.

66. 49 U.S.C. § 30101.

67. *Id.*

68. *Regulations*, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., https://www.nhtsa.gov/laws-regulations/fmvss (last visited Nov. 10, 2022).

69. 49 U.S.C. § 30103(b).

70. The USDOT issued a guidance in January 2020 with core interests to "Protect Users and Communities," "Promote Efficient Markets," and "Facilitate Coordinated Efforts." NAT'L SCI. & TECH. COUNCIL & U.S. DEP'T OF TRANSP., *supra* note 26, at 1. In January 2021, USDOT issued another guidance that set goals to "promote collaboration and transparency," "modernize the regulatory environment," and "prepare the transportation system." U.S. DEP'T OF TRANSP., AUTOMATED VEHICLES: COMPREHENSIVE PLAN, at I (2021) https://www.transportation.gov/sites/dot.gov/files/2021-01/USDOT_AVCP.pdf [hereinafter *AV Comprehensive Plan*]. On June 29, 2021, NHTSA issued an order to require manufacturers and operators to report crashes for vehicles with *Standing General Order on Crash Reporting*, ADS. U.S. DEP'T OF TRANSP., https://www.nhtsa.gov/laws-regulations/standing-general-order-crash-reporting (last visited Nov. 15, 2022). On November 15, 2021, Congress passed the Infrastructure Investment and Jobs Act that discussed researching AV use, establishing special rules and traffic enforcement system that applies to aVs on highways, and updating the Manual on Uniform Traffic Control Devices to support the safe integration of AV. Infrastructure Investment and Jobs Act, *supra* note 9.

Investment and Jobs Act provided that the USDOT "shall cooperate . . . with foreign governments" and other stakeholders to bring "global harmonization" to vehicle regulations.[71] The most recent concrete update is a final rule,[72] issued on March 10, 2022, that amended the FMVSS for occupant protection in a vehicle with ADS by updating existing terminology, such as "driver's seat" and "steering wheel," to "[resolve] ambiguities in applying the standards to ADS-equipped vehicles without traditional manual controls."[73]

AVs are already subject to the same regulations as non-autonomous vehicles. An AV, like any vehicle, must comply with federal laws to operate on public roads.[74] Motor vehicles, including AVs, must comply with the FMVSS to be manufactured and sold in the United States or imported into the United States.[75] U.S. manufacturers must self-certify their vehicles to comply with the FMVSS.[76] However, with numerous revolutionary AV designs do not comply with the current FMVSS, so most AV manufacturers and testers have to apply for exemptions to test their vehicles on the road.[77]

2. The SELF DRIVE Act and the AV START Act

Despite a lack of a comprehensive federal AV regulation, Congress did attempt to pass the SELF DRIVE Act a few years ago.[78] U.S. House Representative Robert Latta introduced the SELF DRIVE Act on July 25, 2017; the House Committee on Energy and Commerce unanimously passed the act on September 6, 2017.[79] Although the bill passed in the House, it did

71. H.R. 3684, 117th Cong. § 24211 (2021-2022).

72. Final rule is a terminology used by the federal government to designate rules that would be published in the Federal Register after a public review process. *Rulemaking*, RULEMAKING INITIATIVE, https://www.regulations.gov/learn (last visited Nov. 13, 2022).

73. U.S. DEP'T OF TRANSP. NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., FINAL RULE ON OCCUPANT PROTECTION FOR VEHICLES WITH AUTOMATED DRIVING SYSTEMS, at 2–3 (2022), https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-03/Final-Rule-Occupant-Protection-Amendment-Automated-Vehicles.pdf.

74. U.S. DEP'T OF TRANSP. NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., FIRST AMENDED STANDING GENERAL ORDER 2021-01 (Aug. 5, 2021), https://www.nhtsa.gov/sites/nhtsa.gov/files/2021-08/First_Amended_SGO_2021_01_Final.pdf.

75. 49 U.S.C. § 30101, 30112. Motor vehicles can be exempted under § 30113 and § 30114. § 30113, § 30114.

76. 49 C.F.R. § 567.4

77. LAURA FRAADE-BLANAR & NIDHI KALRA, AUTONOMOUS VEHICLES AND FEDERAL SAFETY STANDARDS: AN EXEMPTION TO THE RULE?, at 1–2 (2017), https://www.rand.org/content/dam/rand/pubs/perspectives/PE200/PE258/RAND_PE258.pdf.

78. The "SELF DRIVE Act" was referred in Senate on September 7, 2017. Safely Ensuring Lives Future Deployment and Research in Vehicle Evolution Act, H.R. 3388, 115th Cong. § 1 (2017), https://www.congress.gov/bill/115th-congress/house-bill/3388/text/rfs.

79. Alexandra Green, The *Self Drive Act: An Opportunity to Re-Legislate A Minimum Cybersecurity Federal Framework for Autonomous Vehicles*, 60 SANTA CLARA L. REV. 217, 221 (2020).

not pass in the Senate because the Committee did not present the act before the expiration of the session.[80] The act's purpose was "to memorialize the Federal role" in "encouraging the testing and deployment of [highly-automated] vehicles."[81] In service of unifying the regulatory scheme, the act would have preempted states from prescribing "any law or regulation regarding the design, construction, or performance" of AVs unless they are identical to the federal laws and regulations.[82]

Similarly, Senator John Thune introduced the AV START Act in the Senate on September 28, 2017.[83] In the same manner as the SELF DRIVE Act, the AV START Act, among other things, would have preempted certain state and local laws and required NHTSA to update its FMVSS.[84] However, this Act also suffered the same fate as the SELF DRIVE Act and was never made into law.[85]

Both these Acts aimed to unify the AV regulatory scheme into a single national compliance framework. As one commentator explained, these Acts would have prevented state regulation from forming "a patchwork of differing standards" and thereby given manufacturers "more certainty" without "compromis[ing] public safety."[86]

Nevertheless, the acts were criticized on at least two grounds: (1) updating FMVSS takes so long that the resulting standard would not match the technological advancement; and (2) the acts failed to provide manufactures guidance on how AVs can achieve the required "equivalent level of safety" of a non-autonomous vehicle.[87] As a result, critics argued that the acts' changes could slow down innovation.[88]

---

80. Green, *supra* note 79.

81. *Id.*

82. Safely Ensuring Lives Future Deployment and Research In Vehicle Evolution Act, H.R. 3388, 115th Cong. § 3 (2017), https://www.congress.gov/bill/115th-congress/house-bill/3388/text/rfs.

83. Spencer A. Mathews, *When Rubber Meets the Road: Balancing Innovation and Public Safety in the Regulation of Self-Driving Cars*, 61 B.C. L. REV. 295, 307 (2020).

84. As this author pointed out, the SELF DRIVE ACT preempts laws pertaining to the "design, construction, or performance" of AV. This was distinguishable from the AV START ACT, where it only preempts nine subject areas: "system safety, data recording, cybersecurity, human-machine interface, crashworthiness, capabilities, post-crash behavior, account for applicable laws, and automation function." Mathews, *supra* note 83, at 308.

85. *See* S. 1885, 115th Cong. (2017-2018) (showing that the senate report was introduced, but did not make any further progress).

86. Mathews, *supra* note 83, at 326.

87. *Id.* at 327.

88. *Id.* at 326.

3. *A Brief Overview of the Relationship Between FMVSS and State Product Liability Law*

On top of understanding the AV regulations at the federal level in the United States, we must explore progress at the state level. A brief overview of the relationship between FMVSS and the states' product liability law is necessary before an in-depth discussion in Part III on how the current product liability law is flawed when applied to AVs. While NHTSA regulates the safety of vehicles via FMVSS, which are relevant to a product liability lawsuit, a violation of FMVSS does not provide a private cause of action for such a lawsuit.[89] The NHTSA regulation specified that "[c]ompliance with a [FMVSS] . . . does not exempt a person from liability at common law."[90] Presently, every state has codified common law product liability doctrines in its statutes.[91] A claimant can file a vehicle product liability suit in a court under the relevant state's product liability laws.[92]

C. STATE GOVERNMENTS' INVOLVEMENT IN AV REGULATION

In contrast to the federal government's lack of comprehensive AV regulation, states have diverse AV testing, deployment, and liability regulations.[93] However, diverse regulations are creating inconsistencies between state lines. An AV traveling through different states may face different laws, making it difficult for stakeholders to comply with them or prepare to deal with liability risks associated with different state laws.[94]

States have taken multiple approaches to AV regulation.[95] These approaches include: (1) authorizing only a research study on AV; (2) authorizing AV testing with a human operator; (3) authorizing AV testing without a human operator; and (4) authorizing full deployment on public

89. Kenneth Ross & Ted Dorenkamp, *Product Liability and Safety in the United States: Overview*, THOMSON REUTERS (Sept. 1, 2020), https://uk.practicallaw.thomsonreuters.com/w-012-8129?transitionType=Default&contextData=(sc.Default)&firstPage=true.

90. 49 U.S.C. § 30103(e).

91. MATTHIESEN, WICKERT & LEHRER, S.C., PRODUCT LIABILITY IN ALL 50 STATES (Jan. 13, 2022), https://www.mwl-law.com/wp-content/uploads/2018/02/PRODUCT-LIABILITY-LAW-CHART.pdf.

92. *See* Ross & Dorenkamp, *supra* note 89.

93. *See* Governors Highway Safety Ass'n, *supra* note 15.

94. Trayce Hockstad & Justin Fisher, *Automated Unity: Evaluating the Uniform Law Commission's Autonomous Vehicle Act*, 61 WASHBURN L.J. 275, 286 (2022) (explaining that terms in state motor vehicle codes are inconsistent across or within states); Mark A. Geistfeld, *A Roadmap for Autonomous Vehicles: State Tort Liability, Automobile Insurance, and Federal Safety Regulation*, 105 CAL. L. REV. 1611, 1611 (2017).

95. Governors Highway Safety Ass'n, *supra* note 15.

roads.[96] Thirty-eight states and the District of Columbia have enacted legislation or issued orders regarding AVs.[97]

Some states are more hands-on in regulating the responsibility and liability of AV operations.[98] Several states impose a duty on the vehicle operator, the AV, or the testing company to remain at the crash scene or to report the accident to law enforcement authorities.[99] Some states require AV developers to have vehicle insurance, and the mandatory insurance type and amount differ depending on the state's law.[100] Others require the AVs to achieve minimal risk conditions in case of a failure or malfunction of the ADS to be operated.[101]

Some states take a more progressive approach to address liability in a motor vehicle accident.[102] At least two states—Tennessee and Utah—specify the liability division between the operator and the ADS in specific circumstances. The Tennessee AV code specifies that "[w]hen the ADS is fully engaged . . . the ADS shall be considered the driver or operator of the motor vehicle for the purpose[] of determining: (1) Liability of the vehicle owner or lessee for alleged personal injury, death or property damage in an incident . . . ."[103] Similarly, the Utah AV code specifies that:

> (1)(a) When an ADS is operating a motor vehicle, the ADS is the operator . . .
>
> (b) The ADS is responsible for the compliant operation of the vehicle and is not required to be licensed . . .
>
> (2)(a) If a vehicle with an engaged [SAE] level three ADS issues a request to intervene, the ADS is responsible for the compliant operation of the vehicle until disengagement of the ADS.
>
> (b) If a vehicle with an engaged [SAE] level four or five ADS issues a request to intervene, the ADS is responsible for the

96. *Id.*; Ernst Karner, Bernhard A. Koch, & Mark A. Geistfeld, *Comparative Law Study on Civil Liability for Artificial Intelligence*, at 124–26 (2020) https://op.europa.eu/en/publication-detail/-/publication/8a32ccc3-0f83-11ec-9151-01aa75ed71a1/language-en (identifying eleven states allow AV to operate without a human operator, two states only allow AV with a human operator, seven states allow AV on public roads) [hereinafter *EU AI Liability Study*].

97. Governors Highway Safety Ass'n, *supra* note 15.

98. *EU AI Liability Study*, *supra* note 96, at 124–42.

99. *Id.* at 133–35 (identifying nine states that regulate duty in the event of a crash).

100. Each state that requires minimal risk condition define the term in their statute. *Id.* at 135–38 (identifying eleven states that require insurance for AVs).

101. *Id.* at 137–38 (identifying five states that require minimal risk condition).

102. *Id.* at 132–33.

103. TENN. CODE ANN. § 55-30-106 (West 2021); *AI Liability Study*, *supra* note 107, at 132.

> compliant operation of the vehicle until or unless a human user begins to operate the vehicle.
>
> (3) The ADS is responsible for compliant operation of an ADS-dedicated vehicle.[104]

Both states indicate that the ADS would be considered the operator when determining liability.

In contrast, Louisiana takes a more conservative approach.[105] The Louisiana statute states that "[t]he person or entity operating the [AV] may be issued a . . . penalty if the vehicle fails to comply with any traffic or motor vehicle laws . . ."[106] but does not specify who the operator is and only indicated that the person or entity that registered the ADS "[would] be considered to be licensed to operate the vehicle."[107] There is no clear division of responsibility between a traditional human driver and the ADS "driver." Notably, the statute specifies that "[t]he provisions of this Part shall not be construed to repeal, modify, or preempt any liability . . . pursuant to existing law . . . ."[108] Without relevant precedents, the division of liability will be a question for a factfinder.

III. THE ISSUE WITH THE CURRENT U.S. AV REGULATIONS AND PRODUCT LIABILITY LAW

Part III will explain that currently, there is a lack of comprehensive federal AV regulations and that the existing state product liability laws are insufficient when applied to AVs. Section II.A will explain that states are not uniform in their approaches to AVs. Section II.B will discuss how the failure to warn, manufacturing defects, and design defects cannot adequately address the risks of AVs.

A. A LACK OF COMPREHENSIVE FEDERAL AV REGULATIONS

The issue with AV regulations and product liability is two-fold. First, no uniform federal AV laws or regulations exist to create consistency between state lines. In contrast, the USDOT primarily provides voluntary guidance on AVs and has only just begun modifying existing FMVSS on AV manufacturing.[109] States have taken diverse approaches to address emerging AVs. While some states have progressive laws addressing AVs, others take a

104. UTAH CODE ANN. § 41-26-104 (West 2019); *AI Liability Study*, *supra* note 107, at 132.
105. *See* LA. STAT. ANN. § 32:400.4 (2022); *see AI Liability Study*, *supra* note 107, at 133.
106. LA. STAT. ANN. § 32:400.4 (2022).
107. *Id.*
108. LA. STAT. ANN. § 32:400.8 (2022).
109. *See AV Comprehensive Plan*, *supra* note 70, at 7; U.S. Dep't of Transp. Nat'l Highway Traffic Safety Admin., *supra* note 73.

conservative route in lawmaking.[110] A lack of uniform AV regulations has led to fragmentary experimentation by individual states and manufacturers.[111]

More specifically, the lack of a comprehensive AV regulation can also affect a claimant's ability to recovery in a product liability suit. This concern can be witnessed in two Arizona cases: *Dashi v. Nissan North America, Inc.* and *Varela v. FCA US LLC.*[112]

In *Dashi v. Nissan North America, Inc.*, a 2019 products liability case in the Court of Appeals of Arizona, the plaintiff alleged that a collision would not have happened if the manufacturer had equipped the crashing vehicle with an automatic emergency braking system.[113] The *Dashi* court held that the claim was impliedly preempted by NHTSA's refusal to set automatic emergency braking system standards.[114]

The *Dashi* decision was not overruled by the Supreme Court of Arizona until a 2022 case, *Varela v. FCA US LLC.*[115] In *Varela*, the plaintiff alleged that she would not have been injured and that her daughter would not have been killed if the vehicle that crashed into her car was equipped with an automatic emergency braking system.[116] The *Varela* court overruled *Dashi* and held that NHTSA did not establish "a policy objective that actually conflicts" with the issue of failure to install the automatic emergency braking system.[117] The court also held that the federal government's published guidance, *Automated Vehicles 3.0*, did not establish that the "regulation of automated vehicles and automated driving systems is exclusively federal."[118]

Even though *Dashi* and *Varela* were both ruled in the same state, the claimants received completely opposite outcomes, and it took three years for the Arizona Supreme Court to reverse the original ruling.[119]

110. *See* Governors Highway Safety Association, *Autonomous Vehicles*, https://www.ghsa.org/state-laws/issues/autonomous%20vehicles (last visited Nov. 10, 2022); Gurney, *infra* note 120, at 248–51.

111. *Id.*

112. Dashi v. Nissan N. Am., Inc., 445 P.3d 13 (Ariz. Ct. App. 2019; Varela v. FCA US LLC, 505 P.3d 244 (Ariz. 2022).

113. *Dashi*, 445 P.3d at 14–15.

114. *Id.* at 21–24.

115. *Varela*, 505 P.3d at 262.

116. *Id.* at 250–51.

117. *Id.* at 250, 262.

118. *Id.* at 255.

119. *See Dashi*, 445 P.3d at 13; *Varela*, 505 P.3d at 244.

B. EXISTING STATE PRODUCTS LIABILITY LAWS ARE INSUFFICIENT WHEN APPLIED TO AVS

The second issue is that at present, states' product liability laws are inadequate to address the risk of AVs.[120] To understand the issue, it is essential to understand the U.S. product liability law generally.

1. An Overview of Product Liability Law in the United States

In the United States, to bring a product liability claim, a claimant must show a product's defect, the defendant's liability concerning that defect, and that the defect was a proximate cause of the claimant's injury.[121] A product liability case focuses on a claim that a product was defective or that conduct related to the product was deficient.[122]

Product liability can be held under three defects: failure to warn, manufacturing defects, and design defects.[123] A failure-to-warn defect is found when a product "is defective because of inadequate instructions or warnings when the foreseeable risks of harm posed by the product could have been reduced or avoided by . . . reasonable instructions or warning . . . ."[124]

Under manufacturing defect law, a product is defective "when the product *departs from its intended design* even though all possible care was exercised in the preparation and marketing of the product[.]"[125]

When considering a design defect claim, courts mainly apply one of two tests: (1) the consumer expectations test and (2) the risk-utility test.[126] A majority of the states have adopted the latter test.[127]

First, under the consumer expectations test,

---

120. *See* Jeffrey K. Gurney, *Sue My Car Not Me: Products Liability and Accidents Involving Autonomous Vehicles*, 2013 U. ILL. J.L. TECH. & POL'Y 247, 257–66 (2013).

121. 49 Am. Jur. Proof of Facts 2d 293 (Originally published in 1987) (explaining a proximate cause is a cause "in natural and continuous sequence, and unbroken by any efficient, intervening cause, produced the injury, and without which the injurious result would not have occurred.")

122. Sean P. Wajert, *Product Liability Claims, Defenses, and Remedies*, https://us.practicallaw.thomsonreuters.com/2-504-1711 (last visited Nov 10, 2022).

123. 96 A.L.R.3d 22 (Originally published in 1979); RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998); Even if the defendant was liable, the claimant may recover partially or not recover at all, depending on the fault allocation.

124. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998).

125. *Id.* (emphasis added).

126. Ross & Dorenkamp, *supra* note 89; *see* 96 A.L.R.3d 22 (Originally published in 1979); § 5:1. Strict liability in tort, 1 Owen & Davis on Prod. Liab. § 5:1 (4th ed.).

127. Margaret Z. Smith, *50 State Survey of Design Defect Requirements*, PRO TE: SOLUTIO (Mar. 13, 2019), https://protesolutio.com/2019/03/13/50-state-survey-of-design-defect-requirements/ (pointing out in 2010, one court counted "35 of the 46 states that recognize strict products liability utilize some form of risk-utility analysis").

> [o]ne who sells any product in a defective condition *unreasonably dangerous* to the user . . . is subject to liability . . . if (a) . . . in the business of selling such a product, and (b) it is expected to and does reach the user . . . *without substantial change* in the condition in which it is sold.[128]

A product is unreasonably dangerous when it is "dangerous to an extent beyond that which would be contemplated by an *ordinary consumer* who purchases it, with the *ordinary knowledge* common to the community as to its characteristics."[129]

Second, under the risk-utility test,

> [a] product . . . is defective in design when the foreseeable risk of harm posed by the product could have been reduced or avoided by the adoption of a *reasonable alternative design* by the seller . . . and the omission of the alternative design renders the product not reasonably safe.[130]

This test focuses on if the product was unreasonably unsafe because "a *reasonable alternative design* would, at *reasonable cost*, have reduced the foreseeable risks of harm posed by the product."[131] It should also be noted that scholars have found there is no difference between negligence and the risk-utility test because a plaintiff has to essentially prove the same things under both theories—"that the product contained a danger that is unreasonable."[132] However, interestingly, the resulting decisions from these theories are inconsistent, leading some scholars to suggest that one solution is to restrict a plaintiff to "elect a single theory, strict liability or negligence."[133]

In any case, the emphasized terms under both the manufacturing and design defect doctrines are particularly troublesome when applied to AVs. In the existing product liability framework, the claimant may experience increased difficulties.[134] The difficulties with the failure to warn, manufacturing defect, and design defect doctrines will be explored sequentially.

---

128. RESTATEMENT (SECOND) OF TORTS § 402A (1965) (emphasis added); *see generally* RESTATEMENT (SECOND) OF TORTS INTRO. (1965) (discussing the objective and influence of the Restatement).

129. RESTATEMENT (SECOND) OF TORTS § 402A (1965) (emphasis added).

130. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998) (emphasis added).

131. *Id.*

132. § 5:29. Comparison with other liability theories—Strict liability vs. negligence, 1 Owen & Davis on Prod. Liab. § 5:29 (4th ed.).

133. *Id.*

134. *See generally* Gurney, *supra* note 120.

Finally, under failure to warn law, manufacturers have a duty to warn the vehicle users of foreseeable harm that the users may encounter in their AV use.[135]

2. The Issue with Failure to Warn

First, we address the defect of failure to warn when applied to the AV field: manufacturers have a duty to warn the vehicle users of foreseeable harm that the users may encounter in their AV use.[136] The most predictable failure to warn in the AV context is failing to instruct operators on how to use an AV safely.[137] One can foresee that users would experience some difficulties in bringing a failure to warn claim on a defective AV. However, given that manufacturers expectedly will issue warnings to vehicle users, as they already had done in existing vehicles, the level of difficulty would not be vastly different from a traditional vehicle claim.[138]

An Eleventh Circuit case, *Watkins v. Ford Motor Company*, can demonstrate the difficulty.[139] In *Watkins*, a driver brought a failure to warn claim after he lost control of his vehicle, which resulted in his vehicle rolling over and causing him fatal injuries.[140] The defendant argued that since "no warning could guard against the dangers of rollover, there can be no causation [of the driver's death]."[141] In a vacating a grant of summary judgment for the manufacturer, the *Watkins* court explained that the warning only needs to inform a consumer of the nature and existence of a hazard so the consumer can make an informed decision regarding the risk.[142] The court added that to determine whether a warning is adequate, a factfinder must consider if the warning "provide[d] a complete disclosure of the existence and extent of the risk involved."[143] Nowadays, manufacturers like Tesla provide this level of warning.[144]

Given that Tesla is renowned for its autopilot feature, we will use them as an example. In a hypothetical scenario where a driver was injured due to the autopilot function of a Tesla Model 3, Tesla can easily point to its Tesla Model

135. *See id.* at 264–65.

136. *Id.*

137. *See id.* at 264.

138. *See* Alexander B. Lemann, *The Duty to Warn in the Age of Automation*, 110 KY. L.J. 469, 472–73 (2022).

139. *Watkins v. Ford Motor Co.*, 190 F.3d 1213 (11th Cir. 1999).

140. *Id.* at 1215.

141. *Id.* at 1218–19.

142. *Id.*

143. *Id.* at 1220.

144. *See, e.g., Model 3 Owner's Manual*, TESLA, https://www.tesla.com/ownersmanual/model3/en_jo/GUID-E5FF5E84-6AAC-43E6-B7ED-EC1E9AEB17B7.html (last visited Sept. 24, 2023).

3 Owner's Manual on the company's website to show it provided warnings.[145] Currently, under the autopilot page, the manual provides warnings such as: "[i]t is the driver's responsibility to be in control of Model 3 at all times;" and "Traffic-Aware Cruise Control is designed for your driving comfort and convenience and is not a collision warning or avoidance system . . . . Failure to do so can result in serious injury or death."[146] Knowing the inherent risk of AVs, vehicle manufacturers will have equivalent warnings for their vehicles, which will make a claim for failure to warn challenging to remedy.

3. The Issue with Manufacturing Defects

In contrast, under the manufacturing defect doctrine in the AV area, a claimant will likely experience more difficulty proving the AV did not work per the manufacturer's specifications as compared to a non-AV claimant.[147] Regarding the physical components of the vehicle, AV designs are more sophisticated than traditional vehicles, and AVs operate with more electrical and computational components.[148] The highly technical vehicle components pose an obstacle for a claimant to prove product deviation.[149] To make matters worse, AVs rely heavily on software, and courts decline to extend manufacturing defective x law to intangible products.[150] Even if a court accepted that software is a manufactured product, proving that a defect originated from software and programming error would be a tremendous hurdle for a claimant.[151] The claimant has to prove that the software and program deviated from the manufacturer's specifications, regardless of whether the software and program were installed when it was first purchased or later updated via the vehicle's internet.[152]

To illustrate, we will study the following two cases: *Dack v. Volkswagen Group of America* and *Chiulli v. American Honda Motor Co., Inc.*[153]

In *Dack*, a 2021 Missouri District court case, plaintiffs alleged their vehicles were equipped with a "Forward Collision Warning and Autonomous Emergency Braking" system that can help monitor traffic, warn the driver of any possible collision, and prevent or reduce the effect of a collision.[154] The

145. *See id.*
146. *Id.*
147. Gurney, *supra* note 120, at 258–60.
148. *See id.*
149. *See id.*
150. *Id.*
151. *See id.*
152. *See id.*
153. *See* Dack v. Volkswagen, 565 F. Supp. 3d 1135 (W.D. Mo. 2021); Chiulli v. Am. Honda Motor Co., 2023 WL 5763053 (N.D. Cal. Sept. 6, 2023).
154. *Dack*, 565 F. Supp. 3d at 1139.

plaintiffs alleged that the system would unexpectedly apply the brakes as a result of "defective software coding."[155] Plaintiffs did not allege defective design, but nonetheless they argued that they should be allowed to perform discovery to determine whether the defect is a design or manufacturing defect.[156] The *Dack* court explained manufacturing defects occur when there are "defects in material and/or workmanship," whereas "design defects refer to the inadequacy of the design itself."[157] However, because the plaintiffs only alleged a software coding defect that caused the brakes to engage unexpectedly and did not allege any facts to show "defects in material and workmanship," the court granted the defendant's motion to dismiss.[158]

In *Chiulli*, a case in the Northern District of California, plaintiffs alleged their vehicle's "Infotainment System" was defective because its safety features malfunctioned, causing drivers to become distracted.[159] Plaintiffs alleged the "improperly designed and/or programmed/calibrated software" was "*per se* a manufacturing defect."[160] In 2023, the *Chiulli* court explained that:

> A design defect exists when the product is built in accordance with its intended specifications, but the design itself is inherently defective. By contrast, a manufacturing defect exists when an item is produced in a substandard condition, where a manufacturer fails to comply with its own design specifications, and is often demonstrated by showing the product performed differently from other ostensibly identical units of the same product line.[161]

The court further explained that differentiating between a design defect and a manufacturing defect involves determining "whether a programming or calibration defect is part of the specifications [(a design defect)] or constitutes a deviation from the specifications [(a manufacturing defect)]."[162] The court ultimately found the plaintiffs failed to state a claim given they only speculated that the defect "may be a software calibration issue that was introduced during manufacture[.]"[163]

155. *Id.* at 1139, 1146.
156. *Id.* at 1146.
157. *Id.* at 1147.
158. *Id.*
159. Infotainment System's safety features includes Bluetooth pairing for phone call and navigation and rear-view camera system for back-up and blind-spot cameras. *Chiulli,* 2023 WL 5763053, at *1.
160. *Id.* at *8.
161. *Id.* at *7 (internal quotations marks and citations omitted).
162. *Id.* at *8.
163. *Id.*

Both the *Dack* and *Chiulli* cases show the difficulty AV product liability plaintiffs have experienced getting past a motion to dismiss.[164] The plaintiffs in *Dack* wanted additional information to determine the defect but were ultimately denied.[165] Presumably, the plaintiffs in *Chiulli* also suffered from a lack of information, so they had to speculate the defect "may be a software calibration issue."[166] As stated earlier, these problems can compound for vehicles that receive software updates over the internet.[167]

4. The Issue with Design Defects

Lastly, depending on the jurisdiction, the claimant may experience difficulty proving an AV product liability claim under a design defect.[168] As discussed in Section III.B.1, courts have adopted either the consumer expectations test or the risk-utility test, with the latter being the dominant choice.[169] The consumer expectations test focuses on a defective condition being so "unreasonably dangerous" that an "ordinary consumer" with "ordinary knowledge" would not expect it.[170] Applying the consumer expectation test to an AV, consumers expect the AV will be driven safely. So, if the vehicle's automated feature caused a crash, a consumer can argue the automated feature was dangerous "beyond that which would be contemplated by an ordinary consumer[.]"[171] The test does not require the consumer to have a sophisticated knowledge of AV technology.[172] The expectations are "based on the reasonable person, and not the reasonable Distracted Driver or the reasonable Diminished Capabilities Driver."[173]

However, the test is not without uncertainties. It is unclear how a court would treat software and program updates under the test. Under the test, for a product to be defective, it must reach the user without substantial change in the condition.[174] A software and program update may be considered a change

164. *See Dack*, 565 F. Supp. 3d; *Chiulli*, 2023 WL 5763053.
165. *See Dack*, 565 F. Supp. 3d.
166. *See Chiulli*, 2023 WL 5763053 at *8.
167. *See* Gurney, *supra* note 120, at 258–60.
168. *Id.* at 260–64.
169. *Id.*
170. RESTATEMENT (SECOND) OF TORTS § 402A (1965).
171. Gurney, *supra* note 120, at 260–64; RESTATEMENT (SECOND) OF TORTS § 402A (1965).
172. *See* Gurney, *supra* note 120, at 260–64.
173. *Id.*
174. *See id.*; EUROPEAN PARLIAMENT, A COMMON EU APPROACH TO LIABILITY RULES AND INSURANCE FOR CONNECTED AND AUTONOMOUS VEHICLES, at 20–21 (Feb. 2018) [hereinafter *EU Liability Study*], https://www.europarl.europa.eu/RegData/etudes/STUD/2018/615635/EPRS_STU(2018)615635_EN.pdf (identifying liability issues related to software, programs, and network issues related to AVs).

in condition after the vehicle delivery. Further, these updates may rely on third-party companies to install, which bypass the vehicle manufacturer and keep them from being involved in the update process.[175] Additionally, network failures may lead the software and programs to malfunction, adding another layer of complication for the claimant. No clear-cut liability is assigned to the multitude of actors involved to ensure that an AV operates properly.

To illustrate, in *Scirocco v. Ford Motor Company*, a plaintiff was injured when her vehicle came to an unexpected abrupt stop while she was driving downhill, even though she did not apply the brakes.[176] The plaintiffs took the vehicle to the manufacturer's dealership for repairs, and during the repair, the vehicle's "powertrain control module [] was updated to a newer software version."[177] The repair technician entered the vehicle identification number into a program to "identif[y] any outstanding service actions or technical service bulletins related to the vehicle," and, of relevance, the program identified a "harsh 3-1 or 2-1 rolling stop downshift" issue in some of the manufacturer's vehicles.[178] The *Scirocco* court found the plaintiffs did not have expert testimony and evidence to prove the vehicle was defective.[179] The court started by stating that the plaintiffs must prove, among other things, that "the defective condition rendered the product unreasonably dangerous to the user or consumer."[180] The court explained its finding by pointing out the plaintiffs failed to show the vehicle had the defect "at the time it was manufactured or at the time of the accident" because the plaintiffs did not show their vehicles "had the condition described in the [program] or even had the software model that could render the [program] applicable."[181] The court added in its footnotes that the plaintiffs did not meet their burden of proof by failing to provide expert testimony because the issue was "highly technical."[182]

Scirocco demonstrates that even when the plaintiffs can identify some evidence that indicates the manufacturer knew about software defects, their claim may not survive summary judgment without proof that the software in their vehicle was, in fact, defective.[183] The court acknowledged that the software issue is "highly technical," so the plaintiff had to produce expert

175. *See EU Liability Study*, *supra* note 174, 84–86.
176. Scirocco v. Ford Motor Co., 641 F. App'x 414, 415 (5th Cir. 2016)
177. *Id.*
178. *Id.*
179. *Id.*
180. *Id.* at 416; *see generally* RESTATEMENT (SECOND) OF TORTS § 402A (1965).
181. *Scirocco*, 641 F. App'x at 416–17.
182. *Id.* at 417 n.3.
183. *See generally id.* at 416–417.

testimony.[184] It follows that one can anticipate proving defective software, especially in an even more complex AV lawsuit, is difficult and costly.

Yet, another consideration, as the Supreme Court of Ohio wisely pointed out in *Knitz v. Minster Mach. Co.,* is that "there are situations in which 'the consumer would not know what to expect because he would have no idea how safe the product could be made.'"[185] The *Knitz* court elucidated that

> [d]ifficulty could arise, for example, where the injured party is an innocent bystander who is ignorant of the product and has no expectation of its safety, or where a new product is involved and no expectation of safety has developed. Conversely, liability could be barred hypothetically where industrial workmen "gradually learn of the dangers involved in the machinery they must use to make a living and come to 'expect' the dangers."[186]

Since AV technology is relatively new and will continue to change for the foreseeable future, the problem identified by the *Knitz* court will likely manifest.

On the other hand, proving design defects under the risk-utility test is also problematic. For a claimant to succeed under the risk-utility test, the claimant must prove that a "reasonable alternative design" is available at a "reasonable cost" and would have "reduced or avoided" the harm.[187] Tangible components of an AV are more accessible for a claimant to compare with other vehicle manufacturers' designs to determine whether the harm reduction and cost of such a component would be reasonable.[188] However, the reasonable alternative design requirement for intangible components will be problematic.[189] A plaintiff must show the manufacturer's ability to program the AV safer through expert testimonies.[190] Experts must demonstrate how software can be designed to be safer than the ones used in the defective

184. *Id.* at 417 n.3.

185. Knitz v. Minster Mach. Co., 432 N.E.2d 814, 818 (Ohio 1982) (quoting Wade, *On the Nature of Strict Tort Liability for Products*, 44 MISS. K.J. 825, 829).

186. *Id.* (quoting Beasley, Products Liability and the Unreasonably Dangerous Requirement, 88-89).

187. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998).

188. *See* Gurney, *supra* note 120, at 260–64; RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998); *see also* Brendan Fleming, *What's the Difference Between Autonomous and Electric Vehicles?*, ELECTRONICDESIGN (June 8, 2021), https://www.electronicdesign.com/markets/automotive/article/21165478/klas-whats-the-difference-between-autonomous-and-electric-vehicles (explaining Avs rely on "in-vehicle data loggers" that use data captured from sensors that guide the vehicles. These tangible components can be analyzed individually and compared to other's manufacturer's alternatives.)

189. *See* Gurney, *supra* note 120, at 260–64.

190. *Id.*

product.[191] Also, it is unclear whether network failures and cybersecurity issues can be addressed under the current product liability.[192]

Trent v. Ford Motor Co. provides further insights into a claimant's difficulties.[193] In *Trent*, a plaintiff's vehicle struck a guardrail, causing the side airbag to deploy, which struck the plaintiff's right eye.[194] The plaintiff claimed the manufacturer defectively designed its airbag crash sensing system, causing it to deployed unnecessarily.[195] The court explained that the plaintiff needed to show the availability of an "alternative safer design."[196] The court clarified that a plaintiff must present more than a "theoretically probable" alternative design that is feasible and could have prevented the injury.[197] Instead, a plaintiff "must provide expert testimony" to show a "practicable, feasible, safer, alternative design," where one way to establish such design is to demonstrate the alternative design "has been widely used in another product."[198] The court found that, in this case, the plaintiff was able to establish an alternative design by another manufacturer.[199] Still, it ultimately ruled against the plaintiff because the plaintiff failed to prove the defective design was the cause of her injury.[200]

Trent illustrates to us that even when a plaintiff can show an alternative design, a plaintiff has a significant burden to prove a defective design caused their harm, which will likely heighten in a world of highly complex AVs.[201] Because of the complexity of an AV product liability suit, both physical component and software programming experts will be needed to ascertain the root cause of an accident, leading to costly litigation.[202] The plaintiff's burden of proof in an AV product liability suit will be harder to satisfy compared to a traditional vehicle suit.[203]

IV. A SEARCH FOR POTENTIAL SOLUTIONS

To consider alternative proposed solutions in AV regulations and related product liability law, Part IV of this Note will search for potential solutions

191. *Id.*
192. *See EU Liability Study*, *supra* note 174, 24–27.
193. Trent v. Ford Motor Co., 2 F. Supp. 3d 1022 (W.D. Ky. 2014).
194. *Id.* at 1023.
195. *Id.*
196. *Id.* at 1026.
197. *Id.*
198. *Id.* (internal quotation marks and citation omitted).
199. *Id.* at 1027.
200. *Id.*
201. *Trent*, 2 F. Supp. 3d at 1022.
202. *See* Gurney, *supra* note 120, at 265–66.
203. *Id.*

based on the European Union's current state of AV regulations and related product liability law, as well as other scholarly solution proposals including insurance, federal regulation, uniform law, and the hands-off approach.

A. THE EUROPEAN UNION'S AV REGULATIONS AND PRODUCT LIABILITY LAW

Part IV.A.1 will provide some background on what the European Union has done regarding AV regulations. Section IV.A.2 will discuss the European Union's 1985 Product Liability Directive, and Section IV.A.3 will briefly explore the issue with this directive. Subsequently, Section IV.A.4 will discuss the relevant 2022 amendments to this directive.

1. Background

In the European Union, the European Commission (EC) has the executive power to propose and implement laws based on the objectives of E.U. treaties.[204] There are three types of binding legislation—regulations, directives, and decisions—and two types of non-binding legislation—recommendations and opinions.[205]

Regarding AV technology, the EC promised to make transportation "safer, more accessible and sustainable."[206] Similar to the United States's finding, EC identified AV to improve road safety because human error is estimated to be 94% of accidents.[207] They also identified other benefits, such as mobility for the elderly, disabled, or under-served, accelerating vehicle electrifications, and improving urban planning.[208] Additionally, they recognized that the AV market was expected to bring economic benefits "exceeding EUR 620 billion by 2025 for the EU automotive industry."[209]

---

204. European Commission Directorate-General for Communication, *What The European Commission Does in Law*, https://ec.europa.eu/info/about-european-commission/what-european-commission-does/law_en (last visited Nov. 10, 2022).

205. Each type of binding legislation has a different function. A regulation must be followed across the EU. A directive set out a goal for individual countries to creates or revises their own laws to reach the goal. A decision is directed toward a specific entity such as one of the member states or a company. A recommendation suggests "a line of action" with no legal obligation. An opinion is a statement with no legal obligation. *Id.*; European Commission Directorate-General for Communication, *Types of EU Law*, https://ec.europa.eu/info/law/law-making-process/types-eu-law_en (last visited Nov. 14, 2022).

206. *See On the Road to Automated Mobility: An EU Strategy for Mobility of the Future*, COM (2018) 283 final (May 17, 2018), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0283.

207. *See id.*

208. *See id.*

209. *Id.*

Unlike the U.S. manufacturers' self-certification system for vehicle compliance, under the E.U. vehicle type approval system, a manufacturer can obtain approval for a new vehicle type if it meets the E.U. approval regulations.[210] Once the regulations have been met and approved by a national authority, a manufacturer can market its approved vehicle to other member states without further authorization.[211]

The EC has been active in creating rules in the AV area and considers itself "a pioneer in the field."[212] More recently, on July 6, 2022, the EC released a vehicle safety regulation introducing a range of mandatory advanced driver assistance systems to improve road safety.[213] It also established a legal framework and has paved the way for approving and introducing high-level AVs for mass production.[214] In a recently updated E.U. regulation on type approval requirements for motor vehicles, the European Union set goals to "harmonize[] rules and test procedures for the type approval of vehicles" and to simplify the rules by replacing them with UN regulations.[215] These proposals align with the European Union's goal of achieving international harmonization.[216] The type approval regulation also requires a motor vehicle to be equipped with an event data recorder, which records and stores "critical crash-related parameters and information shortly before, during and immediately after a collision[.]"[217] However, the event data recorder remarkably does not allow the vehicle or holder to be identified, which would be helpful in a liability lawsuit.[218]

---

210. *Id.*

211. *See id.*

212. European Commission Press Release, The Commission, New Rules To Improve Road Safety And Enable Fully Driverless Vehicles in the EU (July 6, 2022) https://ec.europa.eu/commission/presscorner/detail/en/IP_22_4312 [hereinafter *New Vehicle General Safety Regulation*].

213. *Id.*; *see* Council Regulation 2019/2144, 2019, O.J. (L 325) 1 (EU).

214. *See New Vehicle General Safety Regulation*, *supra* note 212; Council Regulation 2019/2144, 2019, O.J. (L 325) 1 (EU); Commission Delegated Regulation 2022/2236, 2022 O.J. (L 296) 1, 2 (EU).

215. Council Regulation 2019/2144, 2019, O.J. (L 325) 2–6; *see generally* Council Regulation 2022/1426, O.J. (L221) 1, 2 (laying down rules for type approval of ADS for fully AVs).

216. *AV in EU*, *supra* note 27, at 6–7, 10–11.

217. Council Regulation 2019/2144, 2019, O.J. (L 325) 3.

218. *Id.* at 3, 9, 11–12, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2144&from=EN; *but see* EUROPEAN COMMISSION, GUIDELINES ON THE EXEMPTION PROCEDURE FOR THE EU APPROVAL OF AUTOMATED VEHICLES, at 5 (Feb. 12, 2019), https://ec.europa.eu/docsroom/documents/34802/attachments/1/translations/en/renditions/native (recommending the installation of event data recorders to "assign liability in case of accident." This is of particular interest because the regulation appears to have shifted away from this guideline).

2. 1985 Product Liability Directive

After the formation of the European Union, legal scholars discussed harmonizing the various national tort laws and creating a common European tort law.[219] Despite pushes for a unified European tort law, none has been successful.[220] However, one well-known area in which the European Union succeeded in harmonizing European law is product liability.[221] In 1985, the European Union issued a directive known as the Product Liability Directive ("PLD").[222] The PLD specified that "[t]he producer shall be liable for damage caused by a defect in his product."[223] The PLD required the injured person "to prove the damage, the defect and the causal relationship between defect and damage."[224] The PLD explains that

> [a] product is defective when it does not provide the safety which a person is entitled to expect, taking all circumstances into account, including: (a) the presentation of the product; (b) the use to which it could reasonably be expected that the product would be put; (c) the time when the product was put into circulation.[225]

A product is not defective if "a better product is subsequently put into circulation."[226] Similarly, the European Union's Motor Insurance Directive (MID") requires "all motor vehicles in the European Union to be covered by compulsory third party insurance."[227] The PLD and MID are the two main E.U. regulations to govern liability in motor vehicles and to appropriate risk.[228]

3. Issues with the 1985 PLD for AVs

The European Union has identified traditional motor vehicle risks are related to hardware failure or a driver's action.[229] However, with the introduction of AV, additional risks such as software and network failure (programming update failure) and cybersecurity (hacking) can no longer be

219. CEES VAN DAM, EUROPEAN TORT LAW 3–6 (2d ed. 2013).

220. *Id.* at 13–14 (stating a unified system is halted by differences between nation's legal system, language, and culture).

221. *See id.* at 301.

222. CEES VAN DAM, EUROPEAN TORT LAW 21, 29 (2d ed. 2013) (discussing PLD took years to be implement by every single nation in the European Union since the directive requires each state to implement the PLD into a member state's law).

223. Council Directive 85/374/EEC, 1985 O.J. (L 210) 29–30.

224. *Id.* at 31.

225. *Id.*

226. *Id.*

227. *Motor Insurance*, EUROPEAN COMMISSION, https://finance.ec.europa.eu/insurance-and-pension-funds/insurance/motor-insurance_en (last visited Nov. 11, 2022).

228. *EU Liability Study*, *supra* note 174, at 5.

229. *Id.* at 20–22.

covered by existing regulations.[230] The European Union has also identified that claimants would have difficulty proving defects without "associated detection technology."[231]

Under the PLD, a producer is not liable if the defect that caused the damage did not exist when the product was put into circulation.[232] A producer is also not liable if the "scientific and technical knowledge" at that time did not allow the defect to be discovered.[233]

Under the existing PLD, software updates to AVs can make them defective after they have left the factory, so a producer will not be liable. Similarly, because of the ever-changing programming and cybersecurity risks from malicious actors, a producer may be held not to have had the scientific and technical knowledge to discover a defect, so they will not be liable.[234] Since high-level AVs can be driven either by the AV system or a human operator, it is difficult to determine whether the manufacturer or driver is at fault.[235]

4. The European Union Amends the 1985 PLD

On September 28, 2022, the European Union modernized the 1985 PLD.[236] The European Union intended the PLD update to "reflect the nature and risks of product in the digital age and circular economy," making it easier for plaintiffs to prove their claims and ensuring "legal certainty" for AV developers to know their risk and cost of civil liability and related transactional costs.[237]

Specifically, the amended PLD changed the definition of a product to include "electricity, digital manufacturing files and software,"[238] like the

230. *Id.* at 20–27.

231. *Id.* at 22.

232. *See* Council Directive 85/374/EEC, 1985 O.J. (L 210) 29–30.

233. *Id.* at 29, 31.

234. *EU Liability Study*, *supra* note 174, at 63–64.

235. *See generally EU Liability Study*, *supra* note 174, at 23–24.

236. *Proposal for a Directive of the European Parliament and of the Council on Liability for Defective Products*, COM (2022) 495 final, at 1–4 (Sept. 28, 2022) [hereinafter *EU Amended PLD*]. In a 2018 E.U. assessment on liability rules and insurance for AV, the European Union generated four options to address gaps and uncertainties in AV liability: "the status quo," PLD reformation, MID reformation, and a new E.U. legislation. The last option was considered "preferable as it has the greatest potential" to address all the issues and gaps. *EU Liability Study*, *supra* note 174, at 6, 29–31. Ultimately, the European Union executed the second option.

237. It should be noted that the modified PLD specified that "Member States shall not maintain or introduce, in their national law, provisions diverging from those laid down in [the amended PLD], including more, or less, stringent provisions to achieve a different level of consumer protection, unless otherwise provided for in [the amended PLD]. *EU Amended PLD*, *supra* note 236, at 2, 24.

238. *Id.*at 24.

programs. The amended PLD also defined a product as defective when it does not provide expected safety that is based on:

- "the presentation of the product,"
- "the reasonably foreseeable use and misuse of the product,"
- "the effect on the product of any ability to continue to learn after deployment,"
- "the moment in time . . . where the manufacturer retains control over the product after . . . [it] left the control of the manufacturer," and
- "cyber security requirements."[239]

The expanded coverage authorizes claims that software and programs are defective. Furthermore, the amended PLD created liability for "economic operators," defined as manufacturers, service providers, authorized representatives, importers, and distributors.[240] This new term allows claimants to sue other third-party manufacturers for product liability. The amended PLD explained that an economic operator is not exempted from defectiveness within their control for "software, including software updates or upgrades" and "the lack of software updates or upgrades necessary to maintain safety."[241]

Additionally, the amended PLD created a right—the "right of access to evidence."[242] This right entitles a claimant injured by a defective product to compel the defendant "to disclose relevant evidence that is at its disposal" when the claimant "presented facts and evidence sufficient to support the plausibility of [their] claim."[243] The right of access to evidence eases a claimant's difficulty in uncovering necessary information to determine defects in an AV.

Furthermore, the amended PLD rebalanced the burden of proof to the claimant's advantage by creating "presumption of causality."[244] It states that

> [t]he defectiveness of the product shall be presumed, where any of the following conditions are met: (a) the defendant has failed to comply with an obligation to disclose relevant evidence . . . ; (b) the

239. *Id.* at 26–27.
240. *Id.* at 27.
241. *Id.* at 29–30.
242. European Commission Press Release, The Commission, New Liability Rules on Products and AI to Protect Consumers and Foster Innovation (Sept. 28, 2022), https://ec.europa.eu/commission/presscorner/detail/en/ip_22_5807 [hereinafter *EU Press PLD and AI Liability*].
243. *EU Amended PLD*, *supra* note 236, at 28.
244. *EU Press PLD and AI Liability*, *supra* note 242.

> claimant establishes the product does not comply with mandatory safety requirements laid down in Union law or national law . . . ; (c) the claimant establishes that the damage was caused by an obvious malfunction of the product during normal use or under ordinary circumstances.[245]

Moreover, it declares

> [w]here [a court judges] . . . the claimant faces excessive difficulties, due to technical or scientific complexity, to prove the defectiveness of the product or the causal link between its defectiveness and the damage, or both, the defectiveness of the product or causal link between its defectiveness and the damage, or both, shall be presumed where the claimant has demonstrated, on the basis of sufficiently relevant evidence, that: (a) the product contributed to the damage; and (b) it is likely that the product was defective or that its defectiveness is likely cause of the damage, or both.[246]

After the plaintiff makes a threshold showing, the presumption of causality puts the burden of proof on the manufacturer to show that the alleged defective product was, in fact, not defective.[247]

The amended PLD helps ensure that victims get the same level of protection when a "smart" product like an AV harms them that they would with any other automobile.[248] These PLD modifications align with the goal of the European Union to promote AV introduction not only by ensuring all producers know their risk and cost of civil liability but also by increasing public trust in this emerging technology.[249]

B. OTHER POTENTIAL SOLUTIONS

Section IV.B will discuss four potential solutions that other legal scholars have proposed. Sections IV.B.1–4 will respectively examine the solutions based on (1) insurance, (2) FMVSS, (3) uniform law, and (4) hands-off approach.

1. "Insurance"

Aside from exploring what the European Union has done, it is worth investigating solutions that other scholars have proposed to address the insufficiency of the current U.S. AV regulatory framework and liability

245. *EU Amended PLD*, *supra* note 236, at 28.
246. *Id.*at 28–29.
247. *Id.* at 2, 12, 19–20.
248. *EU Press PLD and AI Liability*, *supra* note 242.
249. *EU Liability Study*, *supra* note 174, at 28–29.

system.[250] The first type of solution is to address the issue via insurance or an insurance-like system.[251] One author proposed laws mandatorily raising the current driver insurance minimum to increase recovery success.[252] The author explained that most current state driver insurance minimums do not adequately cover serious injury crashes. [253] Typically, naming vehicle manufacturers as defendants in a car crash is more advantageous as compared to naming the drivers and their insurance because manufacturers can pay more than the personal insurance minimum.[254] In an AV crash, a claimant is likely to sue manufacturers because there is a high chance that vehicle design can be related to the crash.[255] However, the current low insurance minimum coverage and increased difficulty in bringing a suit against an AV manufacturer can limit any recovery.[256] By increasing the insurance minimum coverage, an injured party is more likely to be put in the same position as if the crash had not occurred. [257] Nevertheless, the insurance solution may not be ideal. The proposal author admitted there are adverse effects from the increased insurance minimum coverage leading to a rise in "the cost of owning and operating a vehicle." [258] Such an increase could be detrimental to the underserved and might encourage drivers to refuse to obtain insurance.[259]

Another author proposed a federal "two-step" liability system: the first step consists of administrative courts that determine negligence, and the second step is a "participated fund" that is subsidized equally between manufacturers and public resources, i.e., a federal tax.[260] This fund can be viewed as public insurance. As illustrated in Section III.B.3-4, this system's

250. Michael Chatzipanagiotis & George Leloudas, *Automated Vehicles and Third-Party Liability: A European Perspective*, 2020 U. ILL. J.L. TECH. & POL'Y 109, 186–89 (2020).

251. *Id.*

252. Insurance solution has been seen in Nevada and California, where they require AV developers to have a five million dollars in crash liability to test their AVs. Bryant Walker Smith, *How Governments Can Promote Automated Driving*, 47 N.M.L. REV. 99, *128–*130 (2017).

253. *Id.* at *129–*130,

254. *Id.*

255. *Id.*

256. *Id.* at *130.

257. *Id.*

258. *Id.* at *129.

259. *See id.*

260. Under the proposed system, the court can find negligence if there is an easily identifiable and resolvable error in the software or if the technology is inadequate compared to other technologies being used at the time. The participated fund would pay using the manufacturer's subsidy if negligence was found. In contrast, if negligence is not found, the participated fund will pay using the public resource's subsidy. Antonio Davola, *A Model for Tort Liability in A World of Driverless Cars: Establishing A Framework for the Upcoming Technology*, 54 IDAHO L. REV. 591, 609–12 (2018).

issue is that software errors may not be easily identifiable or resolvable under the current legal systems.[261] Further, identifying comparable functional technologies falls short in the same manner as a reasonable alternative design claim. The system may even experience additional pushback because taxpayers will be mandated to pay to the fund even if they do not benefit.[262] Lastly, since states traditionally regulate insurance, they may resent federal intrusion on the state's traditional police power.[263]

2. FMVSS

The issues with AV regulation may also be addressed through FMVSS, first discussed earlier in Section II.B.[264] One author proposed that NHTSA update the current FMVSS to ensure AV safety, allowing manufacturers to avoid liability under a regulatory compliance defense.[265] Another author proposed a comparable solution of adopting a negligence per se liability standard. Under this solution, a claimant could use a negligence per se liability standard against the manufacturer for violating NHTSA's regulations.[266] One can foresee that the downfall of these solutions is that claimants will rely heavily on NHTSA to set appropriate standards and update them concerning the most current technology. If the standards are weak, the claimants are not likely to recover from injuries. In contrast, if NHTSA's regulation is overly restrictive, even though claimants will benefit, developers and manufacturers can be impeded from innovation. Since AV technology still has some years until it is fully developed, NHTSA would be given the difficult task of maintaining balance in setting the FMVSS to ensure adequate injury recovery.

3. Uniform Law

The third genus of solutions involve uniform law.[267] The Uniform Law Commission has drafted the Uniform Automated Operation of Vehicles Act to unify state legislation on AVs.[268] The act regulates AV technology on deployment, insurance, driver licensure and location requirements, as well as

261. *See* Gurney, *supra* note 120, at 258–64.

262. *Id.*

263. Chatzipanagiotis & Leloudas, *supra* note 250, at 188.

264. Mark A. Geistfeld, *The Regulatory Sweet Spot for Autonomous Vehicles*, 53 WAKE FOREST L. REV. 101, 114 (2018).

265. *Id.* at 105.

266. Jacob B. Jensen, Note, *Self-Driving but Not Self-Regulating: The Development of A Legal Framework to Promote the Safety of Autonomous Vehicles*, 57 WASHBURN L.J. 579, 606–7 (2018) (explaining the negligence per se liability).

267. *See* Trayce Hockstad & Justin Fisher, *Automated Unity: Evaluating the Uniform Law Commission's Autonomous Vehicle Act*, 61 WASHBURN L.J. 275, 276–77 (2022).

268. *Id.* at 276.

unattended vehicles.[269] However, as one author identified, the act does not address critical issues such as local government preemption, liability, and duties after accidents.[270] Also, the author criticized how terms in the act are used inconsistently across or within the current state's motor vehicle codes.[271] The distinctive definition of the terminology in different states can lead to dissimilar enforcement of the uniform law.[272] Additionally, there is uncertainty about whether states would adopt the uniform law.[273] Without the adoption, such a law is not enforceable, and the disarray of AV regulations continues.

4. Hands-Off Approach

The fourth type of solution does not address the issue and instead takes a hands-off approach. Some argue that government intrusion will raise the cost of AVs and hinder their development; instead, the government should permit innovation.[274] When addressing legal intervention in E.U. AV regulation, one author questions whether the introduction of AV requires a legal solution since the risk of new technology is "inherent in all new technologies[] until they mature."[275] As the famous example of "the Law of the Horse" illustrates, tailoring the law to a developing subject may be unnecessary if it can be instead tied to the principles underlying existing law.[276]

Legislators will not need to regulate as long as the risk is insurable.[277] Nonetheless, they did acknowledge that strict liability is their "framework of choice" because, under such a framework, the claimant has a lower burden for proof.[278] A simpler recovery can promote public trust in AV, leading to a promotion of its deployment.[279] The problem with a hands-off approach is that the manufacturers and the public would have to adjust their expectations

269. *Id.*
270. *Id.*
271. *Id.* at 278.
272. *Id.* at 286–87.
273. *See id.* at 285.
274. Sean Bollman, Article, *Autonomous Vehicles: A Future Fast Approaching with No One Behind the Wheel*, 20 PGH. J. TECH. L. & POL'Y 1, 15–16 (2019).
275. Chatzipanagiotis & Leloudas, *supra* note 250, at 193.
276. Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207 (1996) (explaining that policy based on new technology is "shallow" and "miss[es] unifying principles."). Judge Easterbrook illustrated this principle by stating "[l]ots of cases deal with sales of horses; others deal with people kicked by horses; still more deal with the licensing and racing of horses, or with the care veterinarians give to horses, or with prizes at horse shows." *Id.* But this does not mean that we need The Law of the Horse, instead we have contract law and tort law, but applied to horses. *Id.*
277. Chatzipanagiotis & Leloudas, *supra* note 250, at 193.
278. *Id.* at 194.
279. *Id.*

based on how each state regulates AV and addresses liability. As more AVs get deployed onto the road, states may be forced to legislate their version of AV and liability laws. Differences between state laws can ultimately confuse all stakeholders regarding interstate travel.

V. A SOLUTION TO PREPARE THE UNITED STATES FOR THE INEVITABLE AV FUTURE BY ENACTING A UNIFIED FEDERAL AV LAW AND REGULATION WITH A CAUSE OF ACTION FOR AV PRODUCT LIABILITY

After studying the recent E.U. action and other scholars' proposed solutions, this Note proposes a solution at the federal level to create uniformity in the United States. The solution suggests that Congress create a comprehensive federal AV law and regulation that preempts all state regulations on AV design, construction, and performance. This law will also create a cause of action for victims to bring a claim against manufacturers in a product liability suit.

A. CONGRESSIONAL AUTHORITY

Section V.A will explore the congressional authority to demonstrate that Congress can create a unified federal AV regulation. Section V.A.1 will focus on congressional authority under the commerce clause. Section V.A.2 will focus on the federal preemption power on state laws.

1. Commerce Clause

Congress must have authority under the U.S. Constitution to create such a law.[280] Congress can rely on the commerce clause to regulate AVs[281] and the supremacy clause to preempt state AV laws.[282] Congress will likely not experience constitutional difficulties creating a comprehensive federal AV law.

Under the Commerce Clause, there are three categories that Congress can regulate: (1) "the use of the channels of interstate commerce," (2) "the instrumentalities of interstate commerce," and (3) "activities having a substantial relation to interstate commerce."[283]

As this Note has indicated, the federal government's recent activities strongly suggest that it has an interest in promoting AVs due to their significant

280. U.S. Const. art. I, § 1.

281. U.S. Const. art. I, § 8, cl. 3.

282. U.S. Const. art. VI, cl. 2.

283. 15A AM. JUR. 2D *Commerce* § 19 (2022); *see also* Taylor v. United States, 579 U.S. 301, 306 (2016) (enumerating three categories that Congress can regulate under the Commerce Clause).

societal and economic benefits. As discussed in Part V, similar benefits were also recognized by the European Union. Given that large-scale AV deployments throughout the United States are inevitable, AVs will become "things in interstate commerce" that use "channels of interstate commerce."[284] In a 2003 U.S. Supreme Court case, *Pierce County, Washington v. Guillen*, the Court recognized Congress' Commerce Clause power to grant the USDOT the authority to collect information on highway safety to "reduc[e] hazardous conditions" on the road.[285] Since the advent of AVs poses the threat of hazardous road conditions, a federal AV law should be viewed as proper use of Congress's Commerce Clause power.

2. Federal Preemption of State Law

The federal government can rely on the U.S. Constitution's Supremacy Clause to ensure the state's laws do not contradict the federal government's objective.[286] Because the federal government's authority is "supreme," state law is preempted when it conflicts with federal laws and regulations.[287] Congress can preempt areas traditionally under state control if state laws clearly and substantially conflict with federal laws.[288]

Currently, NHTSA has the authority to preempt state laws that conflict with FMVSS.[289] Additionally, FMVSS has a "saving clause" which states that compliance with FMVSS "does not exempt a person from liability at common law."[290]

---

284. 15A AM. JUR. 2D *Commerce* § 19 (2022).

285. Pierce Cnty., Wash. v. Guillen, 537 U.S. 129, 147 (2003) (explaining Congress' legislation "would result in more diligent effort to collect the relevant information, more candid discussions of hazardous locations, better informed decisionmaking, and ultimately, greater safety on our Nation's roads." The Court continues that the legislation "can be viewed as legislation aimed at improving safety in the channels of commerce and increasing protection for the instrumentalities of interstate commerce.")

286. 148 AM. JUR. *Trials* 211 § 2 (2017); *see* U.S. Const. art. VI, cl. 2.

287. 148 AM. JUR. *Trials* 211 §§ 5–7 (2017) (explaining there are three categories of federal preemption of state law: (1) express preemption by Congress, (2) implied preemption based on the impossibility of following due to conflict, and (3) federal law occupies the field); *see also* Perry v. Mercedes Benz of N. Am., Inc., 957 F.2d 1257, 1261 (5th Cir. 1992).

288. Although some areas of law, such as health, is typically considered outside the preemption, the exact coverage of the preemption is not defined. *See* 148 AM. JUR. *Trials* 211 (2017).

289. 49 U.S.C. § 30103(b) ("When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance . . . only if the standard is identical . . . ."); FMVSS also prescribed a preemption related to rental vehicle. 49 U.S.C. § 30106.

290. 49 U.S.C. § 30103(e) ("Compliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law.").

In 2000, the Supreme Court addressed the preemption authority of the USDOT involving FMVSS in *Geier v. American Honda Motor Company, Inc.*[291] In *Geier*, plaintiffs-petitioners sued a car manufacturer for negligently and defectively designing its car because it lacked a driver's side airbag, in violation of state law.[292] The Supreme Court affirmed the lower court's dismissal of the lawsuit, reasoning that the state law that establisheda different airbag safety standard was an "obstacle to the accomplishment of [the FMVSS.]" However, the Court explained that the lawsuit was not expressly preempted due to the FMVSS's "saving" clause which illustrated Congress's intention not to preempt the tort suit.[293] Specifically, the Supreme Court explained

> [t]he saving clause assumes that there are some significant number of common-law liability cases to save . . . . *Without the saving clause*, *a broad reading of the express pre-emption provision arguably might pre-empt* [*common-law tort actions*], for . . . , it is possible to read the pre-emption provision, standing alone, as applying to standards imposed in common-law action, as well as standards contained in state legislation or regulations . . . . [S]o, it would pre-empt all nonidentical state standards established in tort actions covering the same aspect of performance as an applicable federal standard, even if [it] established a minimum standard . . . .[294]

The emphasized line suggests that the USDOT can have a broad authority to preempt a common law tort lawsuit if there is no saving clause in the FMVSS.

Therefore, with Congress' express preemption, Congress can likely preempt all state regulations and product liability suits on AV's design, construction, or performance.

B. A UNIFIED FEDERAL AV REGULATION WITH A CAUSE OF ACTION FOR PRODUCT LIABILITY SUITS

With the congressional authority hurdle addressed, this Note's solution is now on constitutional footing. Congress can create comprehensive federal AV law that preempts all state regulations on AV design, construction, and

---

291. Geier v. Am. Honda Motor Co., 529 U.S. 861, 861 (2000); There were several cases involving FMVSS that were reviewed by the Supreme Courts, but they are not discussed here for the purpose of this note. *See generally* Williamson v. Mazda Motor of Am., Inc., 562 U.S. 323 (2011) (holding FMVSS 208 does not preempt state tort suits about installing lap and shoulder belt); Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29 (1983) (relating to the history of FMVSS 208).

292. Geier, 529 U.S at 865.

293. The saving clause "says that '[c]ompliance with' a federal safety standard 'does not exempt any person from any liability under common law.'" *Id.* at 865–66.

294. *Id.* at 868–69 (emphasis added).

performance and any related product liability suit and provide a cause of action for victims to bring a claim against manufacturers in a product liability suit.

Given the existence of FMVSS, Congress can give authority to NHTSA to update the current FMVSS to be compatible with AVs. Alternatively, Congress can create new FMVSS specifically for AVs that will not disrupt the current regulations for traditional motor vehicles.

The new regulations should include two general types of regulation. The first type of regulation should include specific and restrictive rules that ensure manufacturers have the necessary equipment and systems to create a safe and functional AV. The second type of regulation should include broader standards that set safety goals but which do not specify how a manufacturer must meet the goals. This regulation will allow manufacturers more flexibility to develop and remain "technology-neutral."[295] The recent E.U. regulations contain the latter type of approval.[296] The E.U. act allows manufacturers to demonstrate that their AVs are "free of unreasonable safety risk" by setting parameters and criteria to assess whether the manufacturer's design is safe.[297] While Congress may consider employing a certification system similar to the E.U.-type approval,[298] it would not be necessary under this solution. The cause of action for bringing a product liability claim and any monetary damages will adequately incentivize the manufacturer to ensure their products are safe.

The unified AV regulation must require all AVs to install event data recorder systems.[299] This requirement is equivalent to the European Union's requirement for an event data recorder. However, unlike the current E.U. regulation, the data from the event data recorder should be allowed to be used in a liability suit under the NHTSA's regulation. This data will assist claimants, defendants, and courts in determining circumstances, faults, and liability between the driver and ADS. NHTSA needs to determine the types of data

295. *AV Comprehensive Plan*, *supra* note 70, at 4 (discussing remaining technology neutral in order to "promote efficient markets").

296. *See* Commission Regulation 2022/1426, 2022, O.J. (L 221) 1–2.

297. Although the E.U. regulation focus on assessing the manufacturer's design for type approval, the United States can apply similar regulation in its own way. Commission Regulation 2022/1426, 2022, O.J. (L 221) 1–2. (stating that "[g]iven the complexity of automated driving systems, it is necessary to supplement the performance requirements and tests of this Regulation by manufacturer documentation demonstrating that the automated driving system is free of unreasonable safety risks to vehicle occupants and other road users . . . .")

298. *On The Road to Automated Mobility: An EU Strategy for Mobility of The Future*, *supra* note 206.

299. *Cf.* Council Regulation, *supra* note 217.

useful in a liability suit without exposing unnecessary user personal data that can be susceptible to hacking.[300]

NHTSA also must address the concerns related to software updates, network failure, and cybersecurity. NHTSA must set broad requirements to ensure manufacturers' AVs have adequate, or even the most up-to-date, software and programs.[301] They should also address how an AV should react in network failure.[302] Moreover, cybersecurity procedures and protocols should be established to prevent the failure of a safety system. Lastly, NHTSA should require specific manufacturer warnings with a predetermined minimum amount of information.

This proposed federal law must also allow claimants to bring a product liability suit related to an AV's design, construction, and performance. Further, a claimant must be able to bring all relevant parties into the courtroom. When a claimant wants to implead a manufacturer in a personal injury suit, the trial court should be required to permit the impleaders if the claimant can show proper merit and if the impleading does not delay or unduly complicate the trial or prejudice the impleader.[303]

As discussed in Part IV, the failure-to-warn doctrine does not warrant any changes. However, changes must be made to both manufacturing defect and design defect doctrines. Learning from the recent E.U. amendment to the PLD in Section V.B, this Note's proposed law will create identical rights to the European Union's "right of access to evidence"[304] and the "presumption of causality."[305]

The former gives claimants easier access to information that may not be readily available to prove the plausibility of their claim.[306] This right can expedite the legal process, which would ultimately reduce the economic burden for the claimant and the legal system.

The latter allows courts to shift the burden of proof from the claimant to the defendant if a defect is presumed.[307] The defect is presumed when: (1) the defendant fails to disclose relevant evidence; (2) the claimant proves the AV

300. *See generally* U.S. Dep't of Transp. NHTSA, *supra* note 54.

301. Updates can be classified as essential and optional to the functionality and safety of the AVs. An AV should be rendered non-operational until it receives essential updates.

302. Depending on the road, environment, and the AV itself, a network failure may render the AV not operational or operational under limited conditions.

303. *See* § 16:276. Impleader in consumer product liability suits, 7 Fed. Proc., L. Ed. § 16:276.

304. *EU Press PLD and AI Liability, supra* note 242.

305. *Id.*

306. *Id.*

307. *Id.*

does not meet the FMVSS; or (3) the claimant proves an obvious malfunction caused the damage during normal use and circumstances.[308]

The proposed law should largely remain the same in terms of defenses to a product liability suit. Manufacturers can produce evidence to prove that they are not liable for the damages once the claimant can prove the presumption of causality. One customary type of defense is misuse, which can be classified into two categories, per Professor David Fisher: (1) abnormal use, which is "use for an unintended and unforeseeable purpose"; and (2) mishandling, which is "use for a product's intended purpose but in an unforeseeable manner."[309] When a product is misused, courts assume that the product was not defective.[310] It follows that since the product was not defective, there should be no liability.[311] Despite being an unlikely scenario, the misuse defense will continue to apply where a product is, in fact, defective and misused.

Another common defense to a product liability suit is contributory negligence. In the AV context, the assumption of risk defense can arise when "a plaintiff's conduct creates an unreasonable risk to himself (1) either in the manner in which he uses a product which has a manufacturing type of defect, or (2) by causal conduct which is unreasonable but which is not related to his use of the product."[312] In the use of AV, this type of defense will occur in SAE Level 3 or below because the driver will be required to drive when the automated features are not active. Since SAE Level 4 and Level 5 do not require driver intervention, this type of defense is not probable.

One last consideration is whether comparative negligence should be used instead of contributory negligence.[313] The main issue is whether a comparative model would have an undesired negative impact on a product liability policy founded on providing better consumer protection.[314] Although comparative negligence proponents argue that it is unduly unfair to make others bear the burden of a careless user, opponents respond that contributory negligence is better at "providing an incentive for safer products, compensation of those injured by defective products[,] and spreading of the risks of product injuries."[315] The Pennsylvania Supreme Court affirmed this stance,

308. *EU Amended PLD*, *supra* note 236, at 28.

309. William J. McNichols, *The Relevance of the Plaintiff's Misconduct in Strict Tort Products Liability, the Advent of Comparative Responsibility, and the Proposed Restatement (Third) of Torts*, 47 OKLA. L. REV. 201, 213 (1994).

310. *See id.* at 211–12.

311. *See id.*

312. *Id.* at 213.

313. *Id.* at 237.

314. *Id.* at 240.

315. *Id.* at 243.

acknowledging that "[manufacturers] are in a position to absorb the loss by distributing [the risk of loss for injury] as a cost of doing business."[316] Since AV manufacturers have much more control over the consumers, a contributory negligence scheme is preferable over a comparative negligence scheme.

Adhering to the updated PLD, the proposed law must also include software, subsequent updates, and other intangible items as a product addressable under product liability.[317] Under the manufacturing defect context, these intangible items should be treated as manufactured. Once causality is presumed, manufacturers must prove they made their products according to their specifications, and claimants can challenge the manufacturers' proof.

For a design defect claim, the courts should use a risk-utility test instead of the consumer expectations test because consumer expectations, especially for AVs, are difficult to determine and impractical. On the one hand, a consumer may expect an AV always to be safe, which means a manufacturer would be liable whenever there is a crash. On the other hand, an "ordinary" consumer may not perceive a defective condition as "unreasonably dangerous."[318] Reflecting on the discussion in Section III.B.4, claimants in the current AV environment will encounter circumstances, as pointed out by the *Knitz* court, where "the consumer would not know what to expect because he would have no idea how safe the product could be made."[319]

Under the risk-utility test, manufacturers must prove there are no reasonable alternative designs by comparing them to other manufacturers' designs once causality is presumed.[320] After the manufacturer has produced their evidence, the claimants can challenge their claim. Here, as suggested by the *Knitz* court, we should allow a product to be found defective "if through hindsight the jury determines that the product's design embodies 'excessive preventable danger[.]'"[321] This method will be different when assessing a design defect claim than assessing a negligence claim.[322] In a negligence claim, the manufacturer will evaluate the relationship between burden and the

316. *Id.* at 244.
317. *Cf. EU Amended PLD*, *supra* note 236, at 29–30.
318. RESTATEMENT (SECOND) OF TORTS § 402A (1965).
319. *Knitz*, 432 N.E.2d at 818.
320. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998).
321. *Knitz*, 432 N.E.2d at 818.
322. As discussed in part III, where scholars have criticized the similarity between negligence and risk utility test. 1 Owen & Davis on Prod. Liab. § 5:29, *supra* note 132.

probability of loss at the time of the design.[323] Instead, based upon the *Knitz* framework, factfinders should be allowed to re-evaluate in hindsight based on new technologies that were developed after the product's design to determine if the defective design was preventable at the time of design.[324]

To illustrate the proposed solution, let's suppose NHTSA creates a new FMVSS under the first type of regulation, which requires "all SAE Level 3 vehicles must have sensing devices to identify the emergency situation." Also, suppose NHTSA creates another new FMVSS under the second type of regulation, requiring manufacturers to meet a goal: "All SAE Level 3 vehicles must be able to take mitigating or evasive maneuver to protect passengers."

In a hypothetical scenario where a driver in an SAE Level 3 vehicle was injured in an accident, the driver can point to the fact that, according to NHTSA, their vehicle was supposed to have sensing devices and be able to take maneuver to protect them. The driver will then have a cause of action to sue their vehicle manufacturer since the accident was related to an AV's design, construction, and performance.

Because of the "right of access to evidence," once the driver "presented facts and evidence sufficient to support the plausibility of [their] claim," they will be able to obtain additional information to investigate and support their claim.[325] Due to the proposal's requirement of an event data recorder in every AV, the vehicle will have recorded the data from the required sensors and mitigation or evasive maneuvers that the vehicle had taken when the accident occurred. The data recorder can also record the version of the software at the time of the accident, allowing the driver to investigate any software-related defects.

Once the driver properly pleads his case, under the new law the manufacturer will be presumed to have caused the accident unless they can prove otherwise. This presumption will force the manufacturer to present the emergency sensors they had installed and maneuvering programs that they used to show that they had complied with the NHTSA requirements. In response, the driver can argue the software program is a manufacturing defect. Under design defect theory, the driver can argue the vehicle was unreasonably dangerous and present safer alternatives compared to what the manufacturer had produced. Specifically, under the less stringent standard, the driver can

323. *See generally* Patrick J. Kelley, *The Carroll Towing Company Case and the Teaching of Tort Law,* 45 ST. LOUIS U. L.J. 731 (2001) (discussing about Judge's Hand's famous formula for determining negligence "in algebraic terms: if the probability be called P; the injury, L; and the burden, B; liability depends upon whether B is less than L multiplied by P: i.e., whether B < PL.)

324. *See generally Knitz*, 432 N.E.2d at 818.

325. *See EU Press PLD and AI Liability, supra* note 242.

present new technologies that were developed later to determine if the defective design would have been preventable at the time of design, based on what was being developed by other manufacturers. However, if the defenses discussed above are unsuccessful, the manufacturer will have to "absorb the loss by distributing it as a cost of doing business."[326]

As illustrated, under the proposed law, claimants have an improved prospect of succeeding in both manufacturing defect and design defect claims. With a new and updated FMVSS, accompanied by a new cause of action and legal rights, this solution will address the lack of a comprehensive federal AV regulation, the current fragmentation of states' AV laws, and the heightened difficulties for claimants to bring AV product liability suits.

VI. CONCLUSION

Under the current pace of AV development, the federal and state laws and regulations on AV are falling behind the industry's progress. To promote the three goals set forth by the USDOT—"promote collaboration and transparency," "modernize the regulatory environment," and "prepare the transportation system"—Congress should legislate a unified federal AV regulation.[327]

Although the proposed regulation is not fully comprehensive, it is a necessary start. The regulation would accelerate the introduction of future, unified, comprehensive federal laws and regulations in areas such as road construction, traffic, and network systems to create a truly unified traffic system. The regulations also present a possibility for the United States to meet its global harmonization goal.[328] Perhaps the United States can learn from the European Union to harmonize its regulations with those of the UN.[329]

More importantly, unified regulation will provide clear standards and liability expectations for both manufacturers and consumers and improve public trust in AVs. The regulation aligns with the task of the USDOT to develop and coordinate transportation, encourage federal and state cooperation, stimulate technological advances, be a leader in solving transportation problems, and develop national transportation policies and programs.[330] To maintain U.S. leadership in AV technology, the government can no longer take detours and sit in the backseat by setting guidance. They

326. *See* McNichols, *supra* note 309, at 243–44.

327. *AV Comprehensive Plan*, *supra* note 70, at i.

328. Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, § 24211, 135 Stat. 429, 825 (2021).

329. *See* Council Regulation 2019/2144, 2019, O.J. (L 325) 5.

330. *See* Department of Transportation Act, Pub. L. No. 89-670, 80 Stat. 931, 931 (1966).

must take back the driver's seat. A unified, comprehensive federal AV regulation is the express lane to travel to a new era where the public can reap the benefit of AVs and the manufacturers can be the world leader in emerging AV technologies. Now is the time to make a dream, once believed to be impossible, a reality.