OVERHYPING MASS TORTS FOR AUTONOMOUS VEHICLES: WHY PREEMPTING CIVIL TORT LIABILITY IS UNWARRANTED

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Abstract

After decades of innovation and technological development, autonomous vehicles (AVs) have nearly arrived. Though AVs could create safer roads overall, these technologies will continue to pose risks and hazards in a potentially inequitable way. Under the expectation of profuse personal injury liability, commentators have recently recommended the federal government consider preempting many state tort law claims against AV developers and install an administrative compensation fund for injured victims. This article will dissect the arguments favoring tort preemption and administrative funds, finding them grounded in speculation and insufficient on normative grounds. At this juncture, the low probability of mass torts posing an existential threat to AV developers cannot justify the marginal upsides of a virtually exclusive compensation fund, which itself may disincentivize safety initiatives for AVs.

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I. Introduction

After decades of innovation and technological development, autonomous vehicles (AVs) have nearly arrived.[1] These technologies have the potential to reduce motor vehicle collisions, transform mobility, and give rise to new business models, and testing AVs on public roads in the United States has occurred for several years.[2] The U.S. even justified its decision not to join the 2020 Stockholm Declaration on Road Safety, in part, due to its progress in developing AVs.[3] The recent COVID-19 pandemic may see further interest in the technology, as AV developers have raced to position themselves as part of the solution to prevent the spread of infection.[4]

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[1] *See, e.g.*, Bill Canis, *Issues in Autonomous Vehicle Testing and Deployment* 20 CONG. RSCH. SERV. (Feb. 11, 2020), *archived at* https://perma.cc/9MB3-THWZ (noting that "between 2013 and October 2019 . . . 29 states and the District of Columbia enacted legislation, governors in 11 states issued executive orders, and 5 states issued both an executive order and enacted legislation" on AVs).

[2] *See id.* (discussing how different states have authorized AV testing and their methods of doing so).

[3] *See U.S. Explanation of Position on the 2020 Stockholm Declaration Third Global Ministerial Conference on Road Safety* (Feb. 2020), *archived at* https://perma.cc/SX3A-2UXE (using progress towards AVs and their potential safety benefits to help justify the decision to distance the U.S. from the Declaration).

[4] *See, e.g.*, Jane Lanhee Lee & Nathan Frandino, *Self-Driving Vehicles Get in on the Delivery Scene Amid COVID-19*, REUTERS (Apr. 29, 2020), *archived at* https://perma.cc/8W3K-M5U7 (noting that "cars, trucks, sidewalk robots and

Despite their potential, organizations such as the World Economic Forum note that various AV governance challenges remain.[5] Choosing how to regulate AVs to strike the proper balance between benefits, risks, and uncertainties will no doubt reflect the social, cultural, political, and economic values of the decisionmakers.[6] Yet, public regulatory agencies will not be the only institutions involved in constructing a regulatory environment for AVs in the United States or beyond.[7]

Perhaps unsurprisingly, much has been written already about AVs and common law liability over the last decade.[8] Though AVs hold great potential to reduce public health and safety hazards from motor vehicle collisions, they will ultimately continue to be involved

shuttles are rolling out of the labs and parking garages and onto American streets to help deliver groceries, meals, and medical supplies"). *See also* Baidu, *How Coronavirus is Accelerating a Future with Autonomous Vehicles* (May 18, 2020), *archived at* https://perma.cc/3J9D-WH3B (arguing that AVs can assist in pandemic responses).

[5] *See* Nicholas Davis & Thomas Philbeck, *Global Technology Governance: A Multistakeholder Approach*, WORLD ECON. FORUM 1,16 (Oct. 2019), *archived at* https://perma.cc/U75J-EMFF (explaining that data governance and privacy issues frequently appear around emerging technologies, including AVs).

[6] *See id*. at 6 (noting that in the "challenge of ensuring that machine learning systems treat all people fairly, the principles seem clear while the governance mechanisms are not"); Julia Black, *The Role of Risk in Regulatory Processes*, OXFORD HANDBOOK OF REGULATION 302, 320 (Sept. 2010) (describing how applying the concept of risk carries certain assumptions and can influence policy and decision-making). *See generally* CRISTIE FORD, INNOVATION AND THE STATE: FINANCE, REGULATION, AND JUSTICE (2017) (discussing how innovation can influence regulatory policy and practice); Jane Stapleton, *Regulating Torts*, REGULATING LAW 122, 125 (Christine Parker et al. eds., 2004) (reviewing processes courts use in their decision making).

[7] *See* Davis & Philbeck, *supra* note 5, at 7 (discussing the role of and need for private and civil society regulatory interventions in addition to government regulation).

[8] *See generally, e.g.*, Mark A. Geistfeld, *A Roadmap for Autonomous Vehicles: State Tort Liability, Automobile Insurance, and Federal Safety Regulation*, 105 CAL. L. REV. 1611 (2017) (arguing for synergistic use of state tort law and federal regulation for AVs); Jeffrey K. Gurney, *Sue My Car Not Me: Products Liability and Accidents Involving Autonomous Vehicles,* 13 U. ILL. J.L. TECH. & POL'Y 247 (2013) (debating whether liability should fall on AV developers or drivers); Gary E. Marchant & Rachel A. Lindor, *The Coming Collision Between Autonomous Vehicles and the Liability System*, 52 SANTA CLARA L. REV. 1321 (2012) (mapping potential litigants and applicable doctrines in AV tort suits); K.C. Webb, *Products Liability and Autonomous Vehicles: Who's Driving Whom?*, 23 RICH. J.L. & TECH. 9 (2017) (exploring how law and AV innovation will influence each other).

in collisions to some degree.[9] Legal scholars have discussed the potential of plaintiffs using civil tort doctrines such as negligence, products liability, and breach of warranty to hold AV developers liable for injuries which result from collisions.[10] Liability analyses have extensively considered how the novel software, hardware, and social perceptions of AVs will modulate civil tort liability.[11]

Under the expectation of profuse personal injury liability, multiple entities and commentators have recently recommended the federal government consider preempting many state tort law claims against AV developers and install an administrative compensation fund for injured victims.[12] The argument for preemption and a fund

[9] *See* Marchant & Lindor, *supra* note 8, at 1322 (anticipating that, even if collisions may decrease in frequency, collisions involving AVs will continue to occur and liability will remain a serious issue).

[10] *See id.* (describing the potential liability implications for AVs, including around liability doctrines, potential litigants, comparative risk issues in adjudicating liability, and potential liability protections available). *See also* ELIZABETH CHAMBLEE BURCH, MASS TORT DEALS: BACKROOM BARGAINING IN MULTIDISTRICT LITIGATION 32 (2019) (exploring the values that can be promoted through tort litigation); Karl S. Coplan, *Citizen Litigants, Citizen Regulators: Four Cases Where Citizen Suits Drove Development of Clean Water*, 25 COLO. NAT. RESOURCES, ENERGY & ENVTL. L. REV. 61, 121–22, 124 (2014) (describing how litigation can be an effective way to precipitate legislative and regulatory action); Andrew F. Popper, *In Defense of Deterrence*, 75 ALBANY L. REV. 181, 181–82 (2011-2012) (providing arguments in favor of the civil tort system and the role of deterrence); Riaz Tejani, *Efficiency Unbound: Processual Deterrence for a New Legal Realism*, 6 U.C. IRVINE L. REV. 207, 208–09 (2016) (exploring how motivations to avoid the litigation process can promote deterrence).

[11] *See generally* Ryan J. Duplechin, *The Emerging Intersection of Products Liability, Cybersecurity, and Autonomous Vehicles*, 85 TENN. L. REV. 803, 817 (2018) (arguing AVs will pressure courts to reevaluate theories of tort liability); Emily Frascaroli et al., *Let's Be Reasonable: The Consumer Expectations Test is Simply Not Viable to Determine Design Defect for Complex Autonomous Vehicle Technology*, 2019 J. L. & MOBILITY 53, 54 (assessing how AVs will lead courts to engage with new theories of tort liability).

[12] *See Torts of the Future: Addressing the Liability and Regulatory Implications of Emerging Technologies,* INST. FOR LEGAL REFORM (Mar. 29, 2017), *archived at* https://perma.cc/ZV3A-UL4N (describing how an accident victim compensation fund could serve as an alternative to traditional tort liability); JAMES M. ANDERSON, ET AL., AUTONOMOUS VEHICLE TECHNOLOGY A GUIDE FOR POLICYMAKERS, xxiii (RAND Corp., ed. 2016) (noting how policymakers could preempt state tort law remedies). *See also* Robert L. Rabin, *Indeterminate Future Harm in the Context of September 11*, 88 VA. L. REV. 1831, 1851–52 (2002) (reviewing the benefits of victim compensation funds more generally)*;* Sergio J. Campos, *Mass Torts and Due*

maintains that the potential social benefits of AVs are too great to jeopardize by exposure to mass torts.[13] Advocates envision a virtually exclusive fund similar to the National Vaccine Injury Compensation Program, with public administration of a no-fault fund financed by taxing AV developers in return for limited civil tort liability.[14] By restricting predominant tort theories, even if other claims such as misrepresentation or conspiracy were left intact, such a scheme would leave the administrative fund as the primary method of claim resolution for a vast majority of potential claimants.[15]

Process, 65 VAND. L. REV. 1059, 1063 (2012) (describing the effects of moving from the civil justice system to victim compensation funds); Linda S. Mullenix, *Prometheus Unbound: The Gulf Coast Claims Facility as a Means for Resolving Mass Tort Claims—A Fund Too Far*, 71 LA. L. REV. 819, 882–86, 913 (2011) (assessing how administrative compensation funds can lack transparency).

[13] *See* ANDERSON ET AL., *supra* note 12, at xxiv (noting the costs and benefits of AVs). *But see* Ashley Nunes, Sam Harper & Kristen D. Hernandez, *The Price Isn't Right: Autonomous Vehicles, Public Health, and Social Justice*, 110 AM. J. PUB. HEALTH 796, 796–97 (2020) (concluding that "if commercial autonomous taxi services were offered today, fares would be—on a per mile basis—significantly costlier than continued ownership of older vehicles.").

[14] *See* Tracy Hresko Pearl, *Compensation at the Crossroads: Autonomous Vehicles & Alternative Victim Compensation Schemes*, 60 WM. & MARY L. REV. 1827, 1890 (2019) ("a specially designed, no-fault victim compensation fund offers a sensible way to address the issues identified above and to resolve autonomous vehicle crash cases in a faster and less costly manner . . . Preliminary calculations suggest that a tax of less than $1,000 per vehicle sold would be enough to finance the fund from year to year."); Adam Thierer, *When the Trial Lawyers Come for the Robot Cars*, SLATE (June 10, 2016), *archived at* https://perma.cc/W46B-SHJJ (arguing that the National Childhood Vaccine Injury Act of 1986 could serve as a guide to address the potential issue of excessive liability for AV collisions). *see also* Owen M. Fiss, *The Political Theory of the Class Action*, 53 WASH. & LEE L. REV. 21, 23–24 (1996) (reviewing the effects of an exclusive compensation fund); *National Vaccine Injury Compensation Program*, HRSA (Jan. 2020), *archived at* https://perma.cc/38RE-HQ5N (providing an overview of the National Vaccine Injury Compensation Program). *See generally* Daniel Sarewitz & Richard Nelson, *Three Rules for Technological Fixes*, 456 NATURE 871, 871 (2008) (examining the context for vaccine accessibility in the United States).

[15] *See generally* Richard C. Ausness, *The Impact of the* Cipollone *Case on Federal Preemption Law*, J. PROD. & TOXICS LIAB. 1, 6 (1993) (discussing federal preemption and its effects on product liability); John G. Culhane, *Tort, Compensation, and Two Kinds of Justice*, 55 RUTGERS L. REV. 1027, 1095–98 (2003) (describing how compensation funds as a replacement for civil tort liability can create tensions between goals of corrective and distributive justice). *See also* Gillian K. Hadfield, *Framing the Choice Between Cash and the Courthouse: Experiences with the 9/11 Victim Compensation Fund*, 42 LAW & SOC'Y REV. 645,

Thus far, Congress has declined adopting a scheme of federal preemption for AV tort claims.[16] The proposed, bipartisan SELF DRIVE Act specifically declined to preempt state tort claims, while preempting states in several other arenas.[17] Yet the bill died in the Senate in 2018 and no legislation has since been proposed with a broad cohort of support.[18] Policymakers continue to discuss a federal regulatory regime, but it remains a contentious matter.[19]

As lawmakers continue to consider the appropriate federal regulatory scheme for AVs, they should approach the question of whether to preempt civil tort claims with caution.[20] AVs have not yet gained market access, though evidence available from authorized road tests and doctrinal constraints on aggregating mass actions suggest liability will not likely overwhelm the budding industry.[21] Moreover, cutting off access to the tort system is a significant and severe step.[22] Multiple democratic values and individual rights fundamental to the civil justice system cannot be easily replicated with an administrative compensation fund, so establishing a fund as a virtually exclusive remedy will require extensive analysis beyond economic cost-benefit

661–62 (2008) (illustrating that some claimants turn to litigation rather than use compensation funds because they seek to pursue accountability or retribution over solely compensation); Tamara Relis, *"It's Not About the Money!": A Theory on Misconceptions of Plaintiffs' Litigation Aims*, 68 U. PITT. L. REV. 701, 703 (2007) (reviewing misconceptions about the motivations of plaintiffs).

[16] *See* David Shepardson, *Congress Will Try Again in 2021 on Self-Driving Car Reform*, REUTERS (Sept. 23, 2020), https://www.reuters.com/article/us-autos-self-driving-congress/congress-will-try-again-in-2021-on-self-driving-car-reform-idUSKCN26E2RA.

[17] *See* Safely Ensuring Lives Future Deployment and Research in Vehicle Evolution Act, H.R. 3388, 115th Cong. (2017). *See* CONG. RSCH. SERV., H. REPT. 115-294, SAFELY ENSURING LIVES FUTURE DEPLOYMENT AND RESEARCH IN VEHICLE EVOLUTION ACT (2017) (detailing how "[t]he bill preempts states from enacting laws regarding the design, construction, or performance of highly automated vehicles or automated driving systems unless such laws enact standards identical to federal standards.").

[18] *See* Andrew J. Hawkins, *We Still Can't Agree How to Regulate Self-Driving Cars*, VERGE (Feb. 11, 2020), *archived at* https://perma.cc/BN7B-MYT7 (highlighting failures of major efforts at proposing legislation).

[19] *See* Shepardson, *supra* note 16 ("U.S. lawmakers have been divided for years over how to reform regulations governing self-driving cars and what consumer and legal protections should be included.").

[20] *See infra* Part II.

[21] *See infra* Part II.

[22] *See infra* Part III.

evaluations.[23] Further, various parties have vested interests in whether and how federal regulations preempt state tort claims.[24] These can include federal lawmakers and regulators, state actors, business groups, civil society organizations, and individuals with current or potential tort claims.[25] That federal preemption would significantly benefit the interests of established vehicle developers and large technology firms over other stakeholders should provide reason for pause.[26]

This article will dissect the arguments favoring tort preemption and administrative funds, finding them grounded in speculation and insufficient on normative grounds. Part I will review the technology, risks, and benefits behind AVs as well as the regulatory backdrop for the preemption debate. Considering doctrinal law, Part II will analyze the potential for mass torts to develop against AV developers before Part III explores policy arguments against preemption and compensation in this regulatory space at this time.

II. Benefits, Risks, and Regulation of AVs

Despite progress over the last several decades, death and injury from motor vehicle collisions remains a significant public health and safety challenge.[27] The World Health Organization reports 1.35

[23] *See infra* Part III.

[24] *See* Catherine M. Sharkey, *Inside Agency Preemption*, 110 MICH. L. REV. 521, 595 (2012) (listing "state governmental organizations and other representatives of state interests, state attorneys general, consumer-and business-oriented organizations, and private litigants" as "[s]takeholders with vested interests in preemption disputes").

[25] *See id.* (listing "[s]takeholders with vested interests in preemption disputes").

[26] *See id.* (detailing the advantages and drawbacks of federal preemption). Notably, AVs offer not only new products for developers to market, but also potentially new business models entirely. *See* Warwick Goodall et al., *The Rise of Mobility as a Service: Reshaping How Urbanites Get Around*, 20 DELOITTE REV. 112, 121–22 (2017) (discussing the rise of mobility as a service (MaaS) offerings and incorporations of autonomous vehicles).

[27] *See* Lawrence Gostin, *Traffic Injuries and Deaths: A Public Health Problem We Can Solve,* JAMA FORUM. (Feb. 28, 2018), *archived at* https://perma.cc/T8FW-T325 (noting that "[b]eyond injuries, disabilities, and deaths, traffic crashes cause massive economic and social harm."). *See also Winnable Battles Final Report: Motor Vehicle injuries*, CDC (Dec. 14, 2017), *archived at* https://perma.cc/7PK4-S63Y [hereinafter CDC] (discussing how "the number and rate of motor vehicle crash deaths has fallen since 2005; however, the number of deaths in 2015 increased to 35,092 (the highest number since 2008)").

million fatalities related to traffic incidents occurred in 2015.[28] The global mortality figures for traffic incidents continues to rise, but the rate of growth has recently begun to slow.[29] The U.S. Centers for Disease Control and Prevention (CDC) has determined that motor vehicle crashes resulted in over 3 million injuries in 2017 and constitutes a leading cause of death for individuals under the age of 55.[30] The causes of morbidity and mortality are multifactorial, though the U.S. National Highway Traffic Safety Administration (NHTSA) estimates human error plays a role in over 90% of motor vehicle collisions.[31]

Accordingly, AVs could reduce health hazards by removing human error from the roads, instead making driving decisions with artificial intelligence (AI) based on input from sensors and available datasets.[32] However, the extent of this remedial effect remains difficult to predict.[33] AV error and exogenous conditions will likely continue to yield crashes even when human control has been fully ceded, and mixing human and driverless vehicles could create an increase in short-term collisions.[34] In particular, AVs still struggle to account for weather including rain, snow, and ice and cannot predict

[28] *See* WORLD HEALTH ORG., GLOBAL STATUS REPORT ON ROAD SAFETY 2018 4, WHO (2018), *archived at* https://perma.cc/CP4K-VJ3E (highlighting annual road traffic mortality statistics from 2000–2016).
[29] *See id.* (describing trends in global mortality figures).
[30] *See* LINCS: Linking Information for Nonfatal Crash Surveillance: A guide for integrating motor vehicle crash data to help keep Americans safe on the road, CDC (Mar. 15, 2021), archived at https://perma.cc/Y8KF-YA4K [hereinafter CDC] ("Motor vehicle crashes (MVCs) are a leading cause of death for people aged 1-54 years in the United States . . . In 2017, MVCs accounted for 37,133 deaths, and more than 3 million injuries"). Moreover, "MVCs are a leading cause of injury-related emergency department visits; the fourth leading cause among all ages in 2017." Id.
[31] *See Critical Reasons for Crashes Investigated in the National Motor Vehicle Crash Causation Survey,* U.S. NAT'L HIGHWAY TRAFFIC SAFETY ADMIN. (Feb. 2015), *archived at* https://perma.cc/XVV2-AD94 (reviewing factors that can lead to motor vehicle collisions).
[32] *See* Canis, *supra* note 2, at 1 (making the argument for pursuing AVs).
[33] *See id.* (suggesting that AVs may not resolve all collisions).
[34] *See Safer Roads with Automated Vehicles?* 5 (OECD/ITF, 2018) (finding that the complex interactions between human behavior and automated driving systems are likely to increase "the risk of unintended consequences that would make driving less safe, not more"). *See also* Jean-François Bonnefon, Azim Shariff & Iyad Rahwan, *The Social Dilemma of Autonomous Vehicles*, 352 SCI. 1573, 1573 (2016) (explaining that "not all crashes will be avoided").

or prepare for every possible roadway scenario.[35] Additionally, the digital technologies that power AVs also open them to cybersecurity issues that could directly cause collisions or promote them by disrupting AV hardware or software.[36]

Both benefits and risks scale with the degree of automation in AVs.[37] SEA International provided the transnational standard which defines the now well-known levels of automation in AVs from 0 to 5.[38] While level 0 assumes full human control of a vehicle, levels 4-5 involve virtually no human input.[39] Most discussions of AVs focus on those highly autonomous vehicles (HAVs) which require essentially no human control, as these AVs will provide the greatest benefits but pose the most challenging regulatory and legal issues.[40]

Despite the hype around the governance challenges of AVs, they will not emerge into a regulatory void.[41] Existing federal vehicle regulations and enforcement schemes will also apply to AVs as "inherited regulations," with which AV developers must also comply when designing and manufacturing the ordinary components of the new vehicles.[42] Whether the inherited regulations are appropriately

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[35] *See* Will Knight, *Snow and Ice Pose a Vexing Obstacle for Self-Driving Cars*, WIRED (Feb. 3, 2020), *archived at* https://perma.cc/SGG6-ZZQ3 (describing how various weather conditions "can obscure and confuse sensors" onboard AVs).

[36] *See* Araz Taeihagh & Hazal Si Min Lim*, Governing Autonomous Vehicles: Emerging Responses for Safety, Liability, Privacy, Cybersecurity, and Industry Risks*, 39 TRANSP. REVS. 103, 115–16 (2019) (detailing several examples of how AVs may be susceptible to various cybersecurity threats).

[37] *See* Jean-François Bonnefon, Azim Shariff & Iyad Rahwan, *supra* note 34 (explaining the moral dilemmas that can arise through programming AVs to make utilitarian decisions in emergency situations).

[38] *See Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles*, SAE INT'L. (June 15, 2018), *archived at* https://perma.cc/LUS5-GTNU [hereinafter Taxonomy and Definitions] (providing the international standard that prescribes a taxonomy for six levels of driving automation, from zero to five).

[39] *See id.* (specifying the differences between the various levels of automation).

[40] *See* U.S. NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., FED. AUTOMATED VEHICLES POL'Y: ACCELERATING THE NEXT REVOLUTION IN ROADWAY SAFETY 10 (Nat'l Highway Traffic 2016) [hereinafter Federal Automated Vehicle Policy] (noting the benefits, risks, and uncertainties associated with innovation in HAVs, and providing a framework of voluntary guidelines to encourage safe AV systems).

[41] *See generally* Elen Stokes, Nanotechnology and the Products of Inherited Regulations, 39 J.L. & SOC'Y 93, 93 (2012).

[42] *See id*. at 93 ("New technologies do not always elicit new regulatory responses. More often than not, policymakers deal with new technologies by deferring to existing regulatory regimes.").

tailored to the new conditions created by AVs remains a separate question and goes beyond the scope of this essay.[43]

In 1966, Congress enacted the National Traffic and Motor Vehicle Safety Act ("Safety Act") to address the public health hazards posed by traffic collisions.[44] The Safety Act established what would become the NHTSA to set and enforce performance standards on the design, production, and safety features of vehicles.[45] The Federal Motor Vehicle Safety Standards ("FMVSS") constitute the NHTSA's primary body of safety regulations,[46] which place binding performance standards predominantly in three areas: vehicle (1) crash avoidance, (2) crashworthiness, and (3) post-crash survivability.[47] These standards prescribe minimum performance levels required for various design components and safety features of vehicles such as air bags, impact protection, and fuel system integrity.[48] Between 1960 and 2012, the NHTSA estimates these standards prevented over 600,000 deaths,[49] though morbidity and mortalities from vehicle collisions certainly persist.[50]

The existing federal regulatory regime for vehicles does contain preemption elements.[51] The Safety Act provides that standards the NHTSA sets will preempt any nonidentical state-level rules, while

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[43] *See id.* at 95 ("The emergence of new, technologically enhanced products into an inherited regulatory environment ought to provide an opportunity for re-examining the current approach.").

[44] *See* 49 U.S.C. § 30101–183 (1966) (noting the purpose of the Act was "to reduce traffic accidents and deaths and injuries resulting from traffic accidents.").

[45] *See* 49 U.S.C. § 105 (2012) (situating NHTSA as an agency in the Department of Transportation).

[46] *See* 49 C.F.R. §§ 571–571.500 (2020) (providing standards for motor vehicles). *See also* Stephen P. Wood et al., *The Potential Regulatory Challenges of Increasingly Autonomous Motor Vehicles*, 52 SANTA CLARA L. REV. 1423, 1434–38 (2012) (discussing the objectives of NHTSA safety standards).

[47] *See* Laura Fraade-Blanar & Nidhi Kalra, *Autonomous Vehicles and Federal Safety Standards: An Exemption to the Rule?* 1 (RAND Corp., 2017) (identifying three domains where standards have been set).

[48] *See Regulations*, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN. (Mar. 16, 2021), *archived at* https://perma.cc/VW5D-L6XC (listing and describing the Federal Motor Vehicle Safety Standards issued by the NHTSA).

[49] *See* C.J. Kahane, *Lives Saved by Vehicle Safety Technologies and Associated Federal Motor Vehicle Safety Standards, 1960 to 2012*, U.S. DEPT. OF TRANS., Rep. No. DOT HS 812 069, at i (2015) (reporting the estimated effects of the NHTSA standards).

[50] *See id.* at xx (providing mortality data from motor vehicle collisions between 1960 and 2012).

[51] *See* 49 C.F.R. §§ 571–571.500 (2020).

also carving out an exception for some common law liability.[52] Over several decisions, the Supreme Court has interpreted the Safety Act to impliedly preempt some tort claims that could interfere with implementation of a regulation.[53] When a NHTSA standard allows manufacturers to choose between two different safety features, the regulation can preempt common law claims alleging injury from a vehicle lacking only one of the features.[54] However, preemption will only trigger when providing manufacturers with an option between different safety features furthers a "significant regulatory objective."[55] In other words, preemption will not apply when NHTSA only provides options out of a concern that mandating both features would impose high costs on industry.[56] Commentators have suggested that, in practice, courts appear notably deferential to the U.S. Department of Transportation's (DOT) case-by-case views on whether a standard should preempt tort claims.[57]

The NHTSA has not yet issued binding standards specifically for AVs,[58] so preemption of civil tort liability has not yet engaged

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[52] *See* 49 U.S.C. § 30103(b), (e) (2020) (defining the exceptions for common law liability).

[53] *See generally* Geier v. American Honda Motor Co., 529 U.S. 861 (2000); Williamson v. Mazda Motor of America, Inc., 562 U.S. 323 (2011).

[54] *See Geier*, 529 U.S. at 869–70 ("we conclude that the saving clause foresees—it does not foreclose— the possibility that a federal safety standard will pre-empt a state common-law tort action with which it conflicts").

[55] *See Williamson*, 562 U.S. at 335–36 (2011) ("In *Geier* . . . the regulation sought to maintain manufacturer choice in order to further significant regulatory objectives. Here, these same considerations indicate the contrary.").

[56] *See id.* at 336 ("We consequently conclude that, even though the state tort suit may restrict the manufacturer's choice, it does not 'stan[d] as an obstacle to the accomplishment . . . of the full purposes and objectives' of federal law . . . Thus, the regulation does not pre-empt this tort action.").

[57] *See* Ernâni Magãlhies, *To Choose or Not to Choose: A Critique of the Geier-Williamson Automobile Tort Preemption Regime,* 10 DARTMOUTH L. J. 61, 74 (2012) (arguing the Geier-Williamson framework places significant weight on the DOT's opinion regarding the preemptive effect of NHTSA standards).

[58] *See* Notice of Request for Comments: V2X Communications, 83 Fed. Reg. 66, 338 (Dec. 26, 2018) (discussing how the agency considered a standard for vehicle-to-vehicle ("V2V") communications, however, public comments dissuaded the NHTSA from finalizing the rule and is reconsidering the scope of such a standard). *See also* Sean O'Kane, *Self-Driving School Bus Project Stopped After Government Intervenes*, VERGE (Oct. 22, 2018), *archived at* https://perma.cc/9SJK-63PD. Notably, the NHTSA has taken at least one enforcement action so far against a testing program for autonomous school buses where the developer engaged in a "direct violation of the terms of [the] approved test project." *Id.*

through this mechanism. However, both the agency and the DOT have begun managing AVs through voluntary regulatory programs.[59] The DOT program operates primarily by importing technical standards from authoritative national and transnational standard-setting bodies and recommending AV developers adopt these standards.[60] In addition to providing nonbinding guidance, the NHTSA accepts and encourages submissions from AV developers performing "Voluntary Safety Self-Assessments" pursuant to the guidance.[61] Thus far, over 25 voluntary disclosures have been published on the NHTSA's website,[62] suggesting some level of success.[63] Yet, deploying voluntary standards reflected the Trump administration's explicit policy that federal agencies should not "needlessly hamper AI innovation and growth,"[64] and the Biden administration may now take a different approach.

In the absence of binding federal regulations, states have taken the lead in setting standards for and authorizing the testing of AVs on

[59] *See* U.S. DEP'T OF TRANSP., PREPARING FOR THE FUTURE OF TRANSPORTATION: AUTOMATED VEHICLES 3.0 (2018) (outlining the DOT's voluntary regulatory programs for AVs). *See also* Nat'l Sci. & Tech. Council & U.S. Dep't. of Transp., Automated Vehicles 4.0, U.S. Dep't. of Transp.: Ensuring Am. Leadership in Automated Vehicle Tech. 1 (2020) [hereinafter Leadership in Automated Vehicle] (updating the DOT's voluntary regulatory programs for AVs).

[60] *See* U.S. DEP'T OF TRANSP., PREPARING FOR THE FUTURE OF TRANSPORTATION: AUTOMATED VEHICLES 3.0, *supra* note 59 (detailing the DOT's approach to voluntary AV technical standards).

[61] *See* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., AUTOMATED DRIVING SYSTEMS: A VISION FOR SAFETY 2.0 (Sept. 2017), *archived at* https://perma.cc/SC68-MDAZ (outlining the guidelines for voluntary safety self-assessment).

[62] *See Voluntary Safety Self-Assessment*, NHSTA (Mar. 16, 2021), *archived at* https://perma.cc/5BEB-DDJ4 (listing the voluntary disclosures to the NHSTA).

[63] *See id*. (showing that the NHSTA's voluntary safety self-assessment has been used by various firms).

[64] *See* Russel T. Vought, Office of Sci. & Tech. Policy, Memorandum for the Heads of Executive Departments and Agencies: Guidance for Regulation of Artificial Intelligence Applications (Jan. 7, 2020), *archived at* https://perma.cc/5U46-SAZJ. *See also* Exec. Order No. 13,859, Maintaining American Leadership in Artificial Intelligence, 84 Fed. Reg. 3967 (Feb. 11, 2019) (expressing the Trump administration's policy preferences on AI).

public roads.[65] Yet, states have largely avoided rulemaking on products liability for AV collisions.[66]

III. Assessing Overhype Around AV Mass Torts

Against the uncertain backdrop of how civil tort liability will apply and potential state-by-state differences, overhype and concern about mass torts undercutting AV development has burst forth. Yet, part of this concern may arise from autopilot features, rather than truly autonomous driving functionalities.[67] Tesla vehicles engaged in autopilot functions have now experienced multiple crashes or collisions, resulting in several fatalities.[68] However, these autopilot features meet SAE International's definition of level 2 automation, which involves the vehicle adopting some driving functions but continues to require substantial human input and vigilance.[69] These autopilot features do not reflect the highly autonomous vehicles (HAVs) pursued by most AV developers such as Volvo and Waymo

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[65] *See Autonomous Vehicles | Self-Driving Vehicles Enacted Legislation*, NCSL (Feb. 18, 2020), *archived at* https://perma.cc/P3ZN-HASS (illustrating state efforts to regulate AV on public roads).

[66] *See id.* (presenting current state efforts which generally do not directly or definitively address liability).

[67] *See* Geistfield, *supra* note 8, at 1625 (arguing that fully autonomous vehicles may be safer models of autonomous driving).

[68] *See* Tom Krisher, *3 Crashes, 3 Deaths Raise Questions About Tesla's Autopilot*, AP NEWS (Jan. 3, 2020), *archived at* https://perma.cc/M7WW-W8FH (reviewing Tesla's collision history briefly); Bryan Pietsch, *2 Killed in Driverless Tesla Car Crash, Officials Say*, N.Y. TIMES (Apr. 18, 2021) *archived at* https://perma.cc/QV3W-MYXL (reporting a recent collision with two fatalities).

[69] *See* Geistfield, *supra* note 8, at 1625 ("Levels 2 and 3 involve limited autonomous driving that requires the human operator to monitor conditions and assume control if necessary, and level 4 involves full vehicle autonomy only within certain operating conditions."). *See also* Kathleen Walch, *Are All Levels Of Autonomous Vehicles Equally Safe?*, FORBES (Dec. 8, 2019), *archived at* https://perma.cc/AR57-4RPT (analyzing the level of autonomy the vehicle possesses).

> Level 2: The vehicle has greater autonomous capabilities by combining two or more advanced driver assistance systems such as automatic lane keeping and breaking or steering acceleration. While the driver can operate without needing to pay as much attention at this level, the vehicle is not really fully autonomous, and as a result, drivers need to be engaged and ready to take over control at any time.

Id.

(Alphabet), which are the focus of innovation, liability concerns, and this article.[70]

Though still early, available evidence from HAV testing on public roads may suggest that collisions related to AVs may be less common than once feared, limiting the number of hypothetical plaintiffs. As of early 2021 in the U.S., greater than half of states have authorized AV testing on public roads with legislation or executive orders.[71] States including Arizona and California even allow for companies such as Waymo to operate test AVs on public roads without safety drivers in the front seat.[72] Since public road testing began, AVs have been involved in crashes or collisions in these states only in the tens or hundreds, with California reporting fewer than 300 collisions total despite extensive public street testing there for several years.[73] In many cases, the primary fault appears to result from human drivers on the road with AVs, though this is not necessarily a shield from liability.[74] Only one HAV fatality has been recorded, involving a pedestrian struck by a level 3 AV from Uber in 2018.[75] Level 4 and 5

[70] *See* Alex Davies, *The Very Human Problem Blocking the Path to Self-Driving Cars*, WIRED (Jan. 1, 2017), *archived at* https://perma.cc/AWZ2-Q6ZZ (determining that the term autopilot is not synonymous to autonomous).

[71] *See Autonomous Vehicles: Self-Driving Vehicles Enacted Legislation*, NCSL (Feb. 18, 2020), *archived at* https://perma.cc/WS9F-PC8C (summarizing state policies towards AVs).

[72] *See Autonomous Vehicles Testing and Operating in the State of Arizona*, ADOT (last visited Mar. 18, 2021), *archived at* https://perma.cc/K4X4-G9WP (describing how driverless AVs are tested without drivers in Arizona); *Autonomous Vehicles Tests Without a Driver*, STATE OF CA DMV (last visited Feb. 5, 2021), *archived at* https://perma.cc/FU3G-L456 (describing how driverless AVs are tested without drivers in California).

[73] *See Report of Traffic Collisions Involving an Autonomous Vehicle (OL 316),* CAL. DEP'T OF MOTOR VEHICLES (Apr. 8, 2020), *archived at* https://perma.cc/GN5C-B5TW (listing each recorded autonomous vehicle collision report, a total of 295 as of March 29, 2021).

[74] *See* Jack Stewart, *Why People Keep Rear-Ending Self-Driving Cars*, WIRED (Oct. 18, 2018), *archived at* https://perma.cc/BCY6-W9BU (describing the dynamics between human drivers and AVs

[75] *See* Daisuke Wakabayashi, *Self-Driving Uber Car Kills Pedestrian in Arizona, Where Robots Roam*, N.Y. TIMES (Mar. 19, 2018), *archived at* https://perma.cc/C8TG-5WX4 (describing the collision involving an AV being tested by Uber in which the vehicle struck and killed a pedestrian).

AVs have not yet caused fatal accidents, though vehicles at this advanced level have not received as much testing on public roads.[76]

To be sure, available evidence is limited and cannot perfectly predict outcomes when widespread AV use becomes normal.[77] However, the relatively low number of HAV collisions reported, in combination with mass tort doctrinal issues discussed below, suggests that potential mass tort liability has been overhyped for AVs at this time.

A. Potential for AV Mass Actions

Whether AV mass torts could truly overwhelm the industry may depend in large part on the probability that a court will certify a class action or that the Judicial Panel on Multidistrict Litigation (MDL Panel) will consolidate claims for pretrial proceedings.[78] Failure to certify or consolidate potential AV-related personal injury claims, or doing so on terms favorable to defendants, could significantly limit the power of claimants and of mass torts to undermine AV development.[79]

Class actions can provide a useful procedural device to resolving mass actions, though forming a class depends on whether the court finds it can be certified under Rule 23 of the Federal Rules of Civil Procedure or analogous state law.[80] In federal courts, Rule 23(a) requires courts to determine whether the claimants have sufficient numerosity, commonality, typicality, and adequate representation.[81] Courts have traditionally certified mass tort actions as damages classes under Rule 23(b)(3),[82] though other class categorizations are possible,

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[76] *See* Lance Eliot, *Explaining Level 4 and Level 5 Of Self-Driving Cars in Plain English*, Forbes (Dec. 20, 2019), *archived at* https://perma.cc/45QM-U6Y7 (noting how Level 4 5 AVs are under development, yet their testing has thus far been limited to only a few trial programs).

[77] *See* Wakabayashi, *supra* note 75 (explaining that AV "technology is still only about a decade old, and just now starting to experience the unpredictable situations drivers can face.").

[78] *See* Caldwell et al., *Judicial Panel on Multidistrict Litigation*, JPML (2021), *archived at* https://perma.cc/JR8G-PRYE.

[79] *See* David Rosenberg, *Mass Tort Class Actions: What Defendants Have and Plaintiffs Don't*, 37 HARV. J. LEGIS. 393, 393–97 (2000).

[80] *See* Fed. R. Civ. P. 23 (c) (2020) (explaining how a class action can be certified).

[81] *See* Fed. R. Civ. P. 23 (a) (2020) (setting forth the prerequisites for class action suits).

[82] *See* Fed. R. Civ. P. 23 (b) (3) (2020); Michael A. Perino, *Class Action Chaos? The Theory of the Core and an Analysis of Opt-Out Rights in Mass Tort Class Actions*, 46 EMORY L. J. 85, 94 (1997).

imposing two additional requirements: predominance and superiority.[83] Evaluating predominance, commonality, and typicality will frequently (or, perhaps, realistically) collapse into one overarching analysis of whether claimants generally have significant legal or factual issues in common which outweigh any divergent questions present.[84] Superiority instead involves showing that the class action device would be better than other methods of litigating the personal injury claims, usually juxtaposed with individualized litigation.[85]

Taken together, the requirements for a mass tort as a damages class ultimately require that personal injury claims have a threshold level of cohesion to justify combination as a class and appropriate representation of subgroups within the class.[86] A critical question for evaluating cohesion then becomes whether the court elects to focus on a defendant's conduct, which is more likely to have similar impacts across the class, or the plaintiffs' eligibility in the class, which may weigh against certification when their factual circumstances vary widely.[87] Ultimately, however, the last several decades have seen a general trend against class certification for tort claims.[88]

In the AV context, achieving class certification will likely hit cohesion roadblocks.[89] Motor vehicle crashes generally, and resulting injuries, are highly context-dependent and may give rise to dissimilar

[83] *See* Fed. R. Civ. P. 23 (b) (3) (explaining that a class action will be maintained if "the court finds that the questions of law or fact common to class members predominate over any questions affecting only individual members, and that a class action is superior to other available methods for fairly and efficiently adjudicating the controversy.").

[84] *See* Byron G. Stier, *Resolving the Class Action Crisis: Mass Tort Litigation as Network*, 2005 UTAH L. REV. 863, 872–75 (2005) (noting that "by requiring common issues to predominate individual issues, the predominance criterion ensures judicial economy is served by a class action.").

[85] *See id*. at 875–76 (stating that "the presence of individualized issues also affects the court's understanding of not only predominance, but also superiority").

[86] *See* Amchem Products, Inc. v. Windsor, 521 U.S. 591, 623, 626–27 (1997); Ortiz v. Fibreboard Corp., 527 U.S. 815, 858, 864–65 (1999).

[87] *See* Elizabeth Chamblee Burch, *Constructing Issue Classes*, 101 VA. L. REV., 1874–81 (2015) (comparing plaintiff eligibility and defendant alleged conduct as a focus for certification).

[88] *See* Edward F. Sherman, *The MDL Model for Resolving Complex Litigation If a Class Action Is Not Possible*, 82 TUL. L. REV. 2205, 2206–08 (2008).

[89] To date, the only class certified related to autonomous vehicles was over consumer protection issues and not directly related to safety or injury. *See* Sheikh v. Tesla, Inc., 2018 U.S. Dist. LEXIS 188338 1, 8 (N.D. Cal. 2018).

claims and defenses.[90] A wide range of potential kinds of plaintiffs could appear, such as AV occupants, occupants of other motor vehicles, bicyclists, pedestrians, or individuals inside a structure or building struck by an AV. Personal injury claims could involve AV design features, hardware, software, or all three. Were sensors adequate to detect surrounding movements? How was the AI trained and what did it react to?[91] Was a steering wheel available for AV occupants to react, or did the AV model lack steering controls entirely?[92] What weather and built environment conditions were involved? Further, how AVs are programmed to make decisions when a crash becomes likely will vary with the situation, including how on-board AI prioritizes the safety of its occupants versus different types of external actors or property.[93]

Various individualized arguments for AV developers as defendants will be available as well, which could also defeat aggregation of claims. Factors such as how non-AV occupants or pedestrians reacted or contributed to the collision, whether AV occupants wore their seatbelts, and whether the AV was used in weather conditions for which it was certified could all vary with the individual collision.[94] Defendants may benefit from asserting their specific defenses individually and may not desire class certification.

Variations in state tort law and potential federalism issues, should federal courts become involved, will also complicate aggregating AV-related personal injury claims.[95] State tort law,

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[90] *See, e.g.,* Eleni Th. Petridou & Constantine N Antonopoulos, Injury Epidemiology, in International Encyclopedia of Public Health 258, 260 (Stella R. Quah ed., 2d. ed., 2017).

[91] *See* News Release, *'Inadequate Safety Culture' Contributed to Uber Automated Test Vehicle Crash – NTSB Calls for Federal Review Process for Automated Vehicle Testing on Public Roads*, NAT'L TRANSP. SAFETY BD. (Nov. 19, 2019), *archived at* https://perma.cc/7JSS-V4DL.

[92] *See* Alex Davies, *GM Will Launch Robocars Without Steering Wheels Next Year*, WIRED (Jan. 12, 2018), *archived at* https://perma.cc/D47V-YKLG (highlighting a potential AV model designed without a steering wheel).

[93] *See* Amy Maxmen, *A Moral Map for AI Cars*, 562 NATURE 469, 469–70 (Oct. 23, 2018) (emphasizing the contested nature of decisions about ethical issues here). "People who think about machine ethics make it sound like you can come up with a perfect set of rules for robots, and what we show here with the data is that there are no universal rules." *Id.*

[94] *See* Taeihagh & Lim, *supra* note 36, at 107 (reviewing factors which could contribute to harmful outcomes in motor vehicle collisions).

[95] *See* Mary J. Davis, Towards the Proper Role for Mass Tort Class Actions, 77 OR. L. REV. 157, 219–23 (1998).

whether for motor vehicle crashes in general or on specific law for AVs, may create significant differences in liability rules, causation, or defenses.[96] Some procedural devices may overcome such choice of law issues, such as strategically designing limited issue classes, though courts will still need to perform context-specific analysis here.[97] Creating subclasses could also avoid choice of law issues, as well as aggregation issues over the type of claim, but requirements for highly specific subclasses could again potentially water down the power of these mass actions.[98]

Perhaps the best way to achieve class certification will involve leveraging the federal preemption defense if AV developers chose to assert it. Should defendants assert preemption as a defense against all plaintiffs, it could increase the cohesion of a putative class by granting all claimants a common legal issue to litigate.[99] While no binding federal regulations currently apply to the emerging technological features of AVs, a myriad of inherited regulations from NHTSA still apply to AVs.[100] While HAVs may lack some standardized features such as mirrors, other applicable standards such as those on braking systems and passive restraints for passengers will certainly still apply and could provide a "hook" for a preemption defense.[101] Which standard AV developers might invoke will also depend tightly on the facts of the individual tort claims and the position of the plaintiff in the collision, as well as how it may be treated by a federal court's preemption analysis.[102] The standard invoked for preemption will ultimately present a fact-intensive question, which itself may weigh

[96] *See id.*

[97] *See id*. at 223 ("Limited issue classes on liability as against such a small number of potentially culpable defendants can hardly be said to involve so many variations of state law on liability as to defeat predominance when the focus is placed properly on the issue of liability in its duty and breach component and not on the causation and defenses issues.").

[98] *See* Howard M. Erichson, *Mass Tort Litigation and Inquisitorial Justice*, 87 GEO. L.J. 1983, 2000 (1999) (arguing that subclasses may aid in avoiding issues around choice of law).

[99] *See* In re Agent Orange Prod. Liab. Litig., 818 F.2d 145, 167–68 (2d Cir. 1987) (evaluating the significance of asserting preemption). Similarly, during the *Agent Orange* mass torts, defendants asserted the military contractor defense, which resulted in a common legal question for all plaintiffs and rendered class certification a superior procedural device. *Id.*

[100] *See supra* Part II.

[101] *See supra* Part II.

[102] *See generally* Williamson v. Mazda Motor of America, Inc., 562 U.S. 323, 336 (2011); Geier v. American Honda Motor Co., 529 U.S. 861, 886 (2000).

against class certification if developers cite different standards to preempt different claims based on their factual differences.[103]

These underlying doctrinal complications with certifying a putative class for AV personal injuries are compounded further by the Class Action Fairness Act ("CAFA"), which empowers defendants to remove many mass actions to federal court.[104] By forcing plaintiffs to file class actions on a state-by-state basis and undercutting the capacity to find a sympathetic forum, CAFA provides advantages to defendants in mass actions.[105] These effects of CAFA may benefit AV developers, especially as states develop different common law postures towards AV collisions over time.

As opposed to class certification, consolidating mass tort claims into multidistrict litigation (MDL) would be comparatively easier but potentially more limited in scope.[106] Federal statutory law provides that MDL consolidation can occur when claimants have at least one question of law or fact in common, if promoting convenience, efficiency, and justice.[107] This lower standard, versus class certification, might lead to MDLs as a more realistic procedural device for AV-related personal injury mass torts. However, most MDLs do not become "mega-cases" for numerous reasons.[108] For example, decisionmakers may only consolidate some of the universe of claims or the pretrial proceedings may quickly resolve, especially if limited in scope.[109] Even if some AV-related claims are consolidated in an MDL, the highly individualized nature of factual and even legal issues potentially involved in AV collisions described above will likely limit the potential size and duration of these mass actions.

Further, MDLs may pose less of an existential financial threat to AV developers than certified class actions, particularly when

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[103] *See* Burch, *supra* note 87, at 1874–81.

[104] *See* Class Action Fairness Act of 2005, Pub. L. No 109-2, 119 Stat 4 (allowing defendants to remove state tort claims to a federal forum).

[105] *See* Sherman, *supra* note 88, at 2207–08 ("Given the aversion of many federal courts to class certification of multistate class actions, CAFA removal could often mean that a case would not be certified as a class action in the federal court"). *See generally* Richard L. Marcus, *Assessing CAFA's Stated Jurisdictional Policy*, 156 U. PA. L. REV. 1765 (2008).

[106] *See* 28 U.S.C. §1407(a) (2020) (outlining the conditions and procedure for consolidating civil actions into multidistrict litigation).

[107] *See id*.

[108] *See* John G. Heyburn II, *A View from the Panel: Part of the Solution*, 82 TULANE L. REV. 2225, 2230 (2008).

[109] *See id*.

structural and political factors push for settlement outcomes that incorporate many of defendants' interests. While MDL courts textually only have authority over "pretrial proceedings," innovative and ambitious actors in MDLs often attempt to resolve many or most claims while still before the MDL court.[110] The presence of "repeat players" in leadership roles for various MDLs can also enable low transparency settlement decisions between actors with established relationships, which may dampen the interests of individual plaintiffs to the potential benefit of defendants.[111] Structural elements including reverter clauses and attorney withdrawal provisions can push claimants into defendant-friendly settlements and provide more predictability and lower payouts for defendants, enabling them to recover more easily from these types of mass actions.[112] Ultimately, even if AV personal injury claims consolidate into MDLs, these actions realistically will likely not pose existential threats to larger AV developers.[113]

B. Uncertainty and Causation in AVs

Unlike in many classic mass torts, such as asbestos, AVs create limited potential for latent injury or issues of general causation.[114] The type of uncertainty over injuries can distinguish AVs from other products or settings with greater concern for latent injury. A rather simplistic model of uncertainty and injury describes three categories:

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[110] *See generally* Sherman, *supra* note 88, at 2209–13. *See also* Jan Hoffman, *Can This Judge Solve the Opioid Crisis?*, N.Y. TIMES (Mar. 5, 2018), *archived at* https://perma.cc/HZK9-SQ7Y (describing Judge Polster's attempts to resolve over 400 lawsuits brought against defendants whose conduct allegedly contributed to the national opioid crisis).

[111] *See* Burch, *supra* note 87, at 1863–64 (2015) (providing that "repeat player" defendants can use their experience and power to push for favorable outcomes).

[112] *See* Howard M. Erichson & Benjamin C. Zipursky, *Consent Versus Closure*, 96 CORNELL L. REV. 265, 266–68 (2011) (discussing the effects of reverter clauses and withdrawal provisions on settlements).

[113] *See* Burch, *supra* note 87, at 1856 (describing how there can be a procedural tendency for the dismissal of personal injury claims, to the advantage of defendants).

[114] *See* Vern R. Walker, *Restoring the Individual Plaintiff to Tort Law by Rejecting Junk Logic About Specific Causation*, 56 ALA. L. REV. 381, 383 (2004) ("Specific causation is distinguished from 'general causation,' also called 'generic causation,' which addresses whether there is any causal relationship at all between types of events and types of injuries.").

"known knowns," "known unknowns," and "unknown unknowns."[115] These roughly translate into (1) hazards, where both the type of harm possible and its likelihood are well-defined, (2) risks, where the type of harm is understood but not its probability, and (3) true uncertainty, where even identifying the salient harms becomes challenging and their potential to occur remains obscured.[116]

Previous mass torts over Agent Orange or Bendectin involved true uncertainty, where limited evidence was available on whether those products could have caused cancer, birth defects, or cardiovascular episodes.[117] These mass torts hinged, in part, on the question of general causation, as it was unclear whether the products could plausibly lead to the type of injuries experienced by claimants.[118] Other mass torts including for asbestos or tobacco also posed uncertainty over the probability that exposed but asymptomatic individuals would later develop various disease due to exposure.[119] The risks of latent injury in those mass torts created challenges for courts and parties to estimate how many people may have potentially meritorious claims in the future.[120]

AVs instead have reasonably well-defined safety hazards and most manifest immediately—though the probability of occurrence remains uncertain—thereby largely skirting issues of general causation and latent injury. To be sure, AVs do pose new types of safety concerns, such as occupants losing motivation to wear seatbelts,

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[115] *See* Ray Pawson, Geoff Wong & Lesley Owen, *Known Knowns, Known Unknowns, Unknown Unknowns: The Predicaments of Evidence-Based Policy*, 32 AM. J. EVALUATION 518, 518–19 (2011) (reviewing three different types of uncertainty). *See also* Black, *supra* note 6, at 310.

[116] *See* Seong Dae Kim, *Characterization of Unknown Unknowns Using Separation Principles in Case Study on Deepwater Horizon Oil Spill*, 20 J. RISK RES. 151, 152–53 (2017) (reviewing the models used to classify the nature of risks and uncertainty).

[117] *See* Michael D. Green, *Expert Witnesses and Sufficiency of Evidence in Toxic Substances Litigation: The Legacy of Agent Orange and Bendectin Litigation*, 86 NW. U. L. REV. 643, 643–44 (1992).

[118] *See* Joseph Sanders, *The Bendectin Litigation: A Case Study in the Life Cycle of Mass Torts*, 43 HASTINGS L. J. 301, 368–69, 377 (1992).

[119] *See Amchem Products*, 521 U.S. at 626 (emphasizing the "disparity between the currently injured and exposure-only categories of plaintiffs, and the diversity within each category"); *see also* Castano v. American Tobacco Co., 84 F.3d 734, 747–49 (5th Cir. 1996) (describing an immense class of all "current, former and deceased smokers since 1943.").

[120] *See, e.g.*, *Amchem Products*, 521 U.S. at 628 ("Many persons in the exposure-only category . . . may not even know of their exposure, or realize the extent of the harm they may incur.").

cyberattacks leading to crashes, or how software determines how to respond when a collision becomes unavoidable.[121] However, these concerns ultimately amount to uncertainty in the magnitude and probability of harm, not in the type of harm possible. The types of injury and morbidity already possible from standard motor vehicle crashes have been well documented and characterized, and likely reflect the universe of personal injury harms possible with AVs.[122] Since individuals physically injured by AVs should be readily and immediately identifiable, AV developers have little reason to fear a rising, invisible tide of personal injury claimants observed in other types of mass torts.

In potential torts over AVs, the primary question will instead be one of specific causation, or whether the AV caused or contributed to a specific claimant's injuries.[123] Specific causation still presents evidentiary challenges, and may involve technical examinations of an AV's hardware, software, and design features.[124] However, specific causation is inherently individualized,[125] so AV developers have less to lose when dealing with causation issues in one-on-one disputes.[126] This presents a sharp contrast with many previous mass torts, where defendants definitively losing on general causation could have prompted a tidal wave of claims against them.[127] Overall, AVs have significant differences from previous mass torts which should mitigate

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[121] *See* Taeihagh & Lim, *supra* note 36, at 106–08 (flagging "liability, privacy, cybersecurity, and industry influence" as concerns beyond immediate safety).
[122] *See* CDC, *supra* note 30.
[123] *See, e.g.,* Walker, *supra* note 114 (specifying causation more generally).
[124] *See, e.g.*, Nanci K. Carr, *As the Role of the Driver Changes with Autonomous Vehicle Technology, so, Too, Must the Law Change,* 51 St. Mary's L. J. 811 (2020) (highlighting a case that demonstrates the potential liability of software designers in AV tort claims).
[125] *See* In re Agent Orange Prod. Liab. Litig., 818 F.2d 145, 165 (2d Cir. 1987) (noting, in the context of Agent Orange, "[t]he relevant question, therefore, is not whether Agent Orange has the capacity to cause harm, the generic causation issue, but whether it did cause harm and to whom. That determination is highly individualistic, and depends upon the characteristics of individual plaintiffs (e.g., state of health, lifestyle) and the nature of their exposure to Agent Orange.").
[126] *See* Note, *Causation in Environmental Law: Lessons from Toxic Torts*, 128 HARV. L. REV. 2256, 2274 n.100 (2015) (noting that "[o]ne limitation of a general causation test is that it can be overinclusive, by permitting cases where an action might have the possibility of creating the type of harm but could not have caused the specific harm at issue.").
[127] *See* Francis E. McGovern, *An Analysis of Mass Torts for Judges*, 73 TEX. L. REV. 1821, 1822 (1995).

concerns about "indeterminant plaintiff" problems, latent injury complications, or uncertainty about what types of personal injury claims will be filed against AV developers.

C. Overhype and Emerging Technologies

Looking to how tort liability has played out in other emerging technologies can provide lessons for AVs and liability as well.[128] Nanotechnology, and nanoparticles in particular, garnered substantial concern about mass torts during the 2000s.[129] Predictions about nanotechnology as "the next asbestos" following toxicology studies finding some nanomaterials, including carbon nanotubes, could cause damage to human health through similar pathways as asbestos.[130] These original studies were contested, though the global legal community spent notable energy and resources preparing for "nanotorts" as the next big mass tort.[131] Ultimately, however, the long dreaded nanotorts never arrived, though the possibility of long-term effects should not be dismissed outright.[132] To date, few if any tort claims have been filed in the U.S.[133] In retrospect, commentators note that concern for nanotorts may have arisen more from "the public's fears and sensational media coverage" rather than "actual demonstrated risk."[134]

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[128] *See* J. Philip Calabrese & Stephanie E. Niehuas, *Nano-Torts on the Horizon: A Jack and Jill Story*, 9 NANOTECHNOLOGY L. & BUS. 156, 156 (2012) (discussing how "traditional principles of tort law will be used to frame and resolve disputes involving nanotechnology"); *see also* Gary E. Marchant et al., *Big Issues for Small Stuff: Nanotechnology Regulation and Risk Management*, 52 JURIMETRICS J. 243, 272 (2012) (noting the role of actual versus perceived risk in nanotechnology liability lawsuits).

[129] *See* Calabrese & Niehuas *supra* note 128, at 156.

[130] *See* Maricica Pacurari, Vince Castranova & Val Vallyathan, *Single- and Multi-Wall Carbon Nanotubes Versus Asbestos: Are Carbon Nanotubes a New Health Risk to Humans?*, 73 J. TOXICOLOGY & ENV'T HEALTH, PART A 378 (2010) (speculating that carbon nanotubes could be carcinogenic with prolonged exposure).

[131] *See* Calabrese & Niehuas, *supra* note 128, at 156–57.

[132] *See id*. at 166 (arguing manufacturers should take proactive steps to mitigate their legal exposure in the longer term).

[133] *See* Edward R. Glady, Jr., *Nanotechnology Liability Outlook 2019—Still in the Dark?*, 16 SCITECH LAWYER 20, 23 (2019) ("despite predictions starting many years ago that the nano industry soon would be deluged with lawsuits claiming an untold number of injuries and bankruptcy-inducing-sized damages, the nanotech civil litigation battlefront is still very quiet."). (

[134] *See* Marchant et al., *supra* note 128, at 272.

The communities in and around emerging technologies frequently and synergistically create hype about both the potential benefits and hazards of nascent innovations.[135] Tools including the Gartner Hype Cycle trace hype levels for various emerging technologies, proposing that hype around new technologies grows progressively before falling and stabilizing as real-world outcomes are measured.[136] Nascent technologies which have recently peaked on the Gartner Hype Cycle appear susceptible to hype about tort liability.[137] Beyond nanotechnology, the internet of things provides a recent example of a maturing technology gaining hype about liability, though assessing realistic liability outcomes will require retrospective data.[138]

Lessons from innovation in other spaces suggest that emerging technologies may or may not result in common law liability for developers or end users, yet the extent of liability is frequently less than peak overhype predicts. This caution should apply to AVs as well. Both the benefits and risks of AVs have likely been overhyped at this time, especially for HAVs,[139] and stark liability expectations may require tempering in light of lessons learned from other technologies. While empirical study on how hype and tort liability interact around emerging technologies is lacking, even these general trends should suggest restraint in asserting any particular new technology like AVs will become the "next asbestos."

IV. Values and Regulatory Policy in an AV Administrative Fund

Doctrinal law and available data can provide a picture of whether AV mass torts will likely arise but cannot determine whether

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[135] *See Gartner Hype Cycle*, GARTNER, INC. (Feb 5, 2021), *archived at* https://perma.cc/79RE-2M7M (explaining what the Hype Cycle is and how it is used to analyze future technologies).

[136] *See id*.

[137] *See id.*

[138] *See generally, e.g.,* Jane E. Kirtley & Scott Memmel, Rewriting the Book of the Machine: Regulatory and Liability Issues for the Internet of Things, 19 Minn. J.L. Sci. & Tech. 455 (2018); Dallin Robinson, Click Here to Sue Everybody: Cutting the Gordian Knot of the Internet of Things with Class Action Litigation, 26 Rich. J.L. & Tech. 1 (2020).

[139] *See* Gwyn Topham, *'Peak Hype': Why the Driverless Car Revolution Has Stalled*, GUARDIAN (Jan. 3, 2021), *archived at* https://perma.cc/T4BQ-4YBN (quoting Professor Nick Reed: "The perspectives have changed since 2015, when it was probably peak hype. Reality is setting in about the challenges and complexity.").

that probability justifies preempting tort claims and establishing an administrative fund in its stead. Using a compensation fund instead of the civil justice system, even if paid for by taxing AV developers,[140] would constitute a deliberate reprioritization of values in the governance of AVs and a shift in the regulatory environment the AV industry navigates. This section proceeds by considering the normative and ethical dimensions of selecting a near-exclusive administrative fund over the civil justice system as a policy option for AVs.

A. Governance Values

Professor Burch explains a litany of values accompanies litigation in the civil tort system, including "deterrence, compensation, information production, victim empowerment, public participation in democratic trials, and equity before the law."[141] When run properly, administrative compensation funds can efficiently ensure victim compensation, and could potentially safeguard socially beneficial development in AVs.[142] However, resolving mass torts through an administrative fund will necessarily sacrifice many other values engrained in litigation.[143] Deciding to abandon these other functions of the civil justice system will require normative assessments with attention to the rights and dignity of individuals, not merely economic considerations of efficiency and innovation for society writ large.

Most apparently, virtually exclusive administrative funds lack the civil justice system's ability to foster victim empowerment and promote personal autonomy in the resolution of an individual's claim; interests flowing from fundamental due process norms.[144] While providing compensation, a fund as an exclusive (or nearly exclusive) remedy would deprive an individual of the choice and ability to "have their day in court" and present facts to a jury of their peers.[145] Some claimants do not primarily seek compensation and would deny quick

[140] *See* Pearl, *supra* note 14 (setting forth such proposals); Thierer, *supra* note 14.
[141] *See* BURCH, *supra* note 10.
[142] *See* Rabin, *supra* note 12, at 1868.
[143] *See* BURCH, *supra* note 10 (detailing values promoted by the civil tort system).
[144] *See* Campos, *supra* note 12, at 1061–62.
[145] *See* Fiss, *supra* note 14, at 24 ("Whatever its rationale, the rule foreclosing the claims of the unnamed members of the class on the contingency of a loss by the named plaintiff has become well entrenched and gives rise to the central normative tension in the class action: a conflict with the principle that promises to each person a day in court before his or her claim is foreclosed.").

payments to pursue accountability or retribution for perceived wrongs and public vindication of those wrongs.[146] Similarly, here, a fund with limited access to the civil justice system would disempower victims of AV collisions and remove their autonomy to determine how to pursue a claim over a wrong. While large class actions and MDLs also can limit these values, the above analysis finds large aggregate actions against AV developers unlikely in the short term and should provide some type of opt out structures.[147]

Values associated with democratic governance of private conduct may also suffer should administrative funds provide a near-exclusive remedy to victims of AV collisions. Civil litigation can create highly visible public accountability for private actors and offers the perceived legitimacy of neutral decisionmakers, rather than the technical experts or bureaucratic administrators present in some settlement or administrative funds.[148] Both discovery and trial in tort suits can provide an information production function, revealing to the public and policymakers some potential safety issues with products or services.[149] The civil justice system can also enable public participation in trials, which may be critical when the safety of AVs have consequences that reach far beyond any one dispute between a victim and a developer.[150] Whether a fund for AVs could still promote democratic governance values will depend tightly on the fund's structure, procedures, and personnel, though resolution through both public and private funds have previously been criticized for failing to deliver on these values.[151]

Similar to achieving accountability, the civil justice system can also provide value through deterring irresponsible private conduct and incentivizing developers to create safer products. While empirical evidence is mixed on the extent of deterrence created by tort liability,

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[146] *See* Hadfield, *supra* note 15, at 648–49 (explaining that litigation offers more than material compensation); Relis, *supra* note 15, at 703 (reporting on "plaintiffs' objectives of obtaining admissions of fault, prevention of recurrences, retribution for defendant conduct, answers, apologies and acknowledgments of harm," and "only a minority saying financial compensation was even a secondary aim").

[147] *See supra* Part III.

[148] *See* Mullenix, *supra* note 12, at 882–86, 913 (explaining how administrative funds can lack in transparency and gain less public attention).

[149] *See* Coplan, *supra* note 10, at 121–22, 124.

[150] *See* BURCH, *supra* note 10, at 31–32.

[151] *See generally* Mullenix, *supra* note 12, at 882 (assessing and critiquing the funds used in the past, including the September 11th Victim Compensation Fund and the Gulf Coast Claims Facility).

Popper illustrates how "the actual or potential imposition of civil tort liability changes the behavior of others."[152] Real concern over tort liability by private individuals could create internal pressures within AV developers to build a culture of going "beyond compliance" with government regulatory programs, the absence of which was found to have contributed the 2018 fatal AV collision.[153] Extra deterrence value could come from suits against AV developers because discovery might involve motions or court orders to turn over proprietary software or databases.[154] Fearing such blows to competitiveness in an emerging market may place unique deterrence pressures on AV developers absent from other settings studied empirically. Yet, administrative funds as a virtually exclusive remedy would remove all deterrence value on the AV industry by removing the shadow of liability and could disincentivize developers from prioritizing the safety of their AVs.[155]

Especially in the realm of emerging technologies including AVs, the civil justice system has another unique potential benefit: enforcing otherwise-voluntary regulatory norms.[156] Most norms on AV performance applicable in the U.S. arise from either voluntary government programs, such as the DOT program, or voluntary technical standards from transnational standard-setting bodies, including SAE International.[157] Using nonbinding standards or "soft law" to regulate an emerging technology can provide multiple benefits, such as trialing regulatory norms while retaining flexibility and

[152] *See generally* Popper, *supra* note 10, at 181–82.
[153] *See* News Release, 'Inadequate Safety Culture' Contributed to Uber Automated Test Vehicle Crash – NTSB Calls for Federal Review Process for Automated Vehicle Testing on Public Roads, supra note 91 (concluding that Uber's "inadequate safety culture" contributed to the March 18, 2018 fatal HAV collision).
[154] *See generally* Tejani, *supra* note 10 (exploring how fear of the litigation process can be just as impactful for deterring behavior as fear of liability).
[155] *See* Marchant & Lindor, *supra* note 8, at 1337 ("legislative protection from liability has its downside—it diminishes, if not eliminates, the incentives for manufacturers to make marginal improvements in the safety of their products in order to prevent liability.").
[156] *See* Gary E. Marchant, 'Soft Law' Mechanisms for Nanotechnology: Liability and Insurance Drivers, 17 J. RISK RES. 709 (2014).
[157] *See Taxonomy and Definitions*, *supra* note 38 (describing SAE's technical standards for defining levels of automation); *see also* U.S. DEP'T OF TRANSP., *supra* note 59 (outlining technical standards AV developers should consider adopting on a voluntary basis).

enabling regulators to gather information about novel risks.[158] However, classic compliance mechanisms have little use in enforcing voluntary norms, which can raise accountability and transparency concerns.[159] Instead, civil tort liability offers a nontraditional route of enforcement, by incorporating authoritative voluntary norms into an assessment of duty and breach elements.[160] Federal preemption of state tort claims for AV collisions would hamstring this emerging potential mechanism to enforce "softer" safety or performance norms.

B. Risk Regulation and Equity

Innovation in any technology comes with risks and benefits for different groups.[161] The uncertainties created by innovation and its potential outcomes creates significant regulatory challenges, and regulatory scholars have struggled for decades to assess how oversight can adequately account for innovation.[162]

In the emerging AV sector, the potential benefits of innovation drive arguments for preemption and a compensation fund.[163] However, eliminating civil tort liability to boost innovation would shift the U.S. risk regulation approach in the governance of AVs. While viewing tort law as regulation can provide an awkward theoretical fit,[164] actual civil litigation or its shadow certainly contribute to behavioral modification by private actors and can influence public regulation.[165] Removing civil tort liability would therefore dilute the

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[158] *See* Kenneth W. Abbott, Gary E. Marchant & Elizabeth A. Corley, *Soft Law Oversight Mechanisms for Nanotechnology*, 52 JURIMETRICS J. 279, 300–02 (2012) (noting the benefits of using "soft law" to regulate emerging technology and reviewing the potential strengths of wielding "soft law" in the regulation of emerging technologies).

[159] *See* Marchant, *supra* note 156.

[160] *See id.* at 714 ("Participation in voluntary nanotechnology risk management programs may provide some value to a company defending its nanotechnology practices, whereas the failure of a company to adopt such a risk management program may be used against the company in litigation . . . Compliance with voluntary standards will never provide a complete shield against liability, but can be helpful evidence that the company acted with due care.").

[161] *See generally* Ford, *supra* note 6 (arguing that any innovation creates risk and opportunity).

[162] *See id.* (noting the regulatory challenges posed by innovation).

[163] *See generally* Pearl, *supra* note 14; Thierer, *supra* note 14.

[164] *See* Stapleton, *supra* note 6 (exploring how tort law is different from more classic systems of public regulation).

[165] *See generally* Coplan, *supra* note 10.

overall regulatory landscape around AVs, making a deliberate trade-off between innovation and safety.

Specifically, a near-exclusive administrative fund – or a nonexclusive fund with strong incentives for its use over the civil tort system – would establish a resilience-based approach to risk.[166] Resiliency in risk management involves accepting that some harms will inevitably occur and preparing *ex post* remedies rather than *ex ante* preventative standards.[167] In considering how to regulate risks, critical questions come from not only the magnitude and probability of a hazard but also who bears the risks and whether risks are adopted voluntarily.[168] Yet, the social benefits of AVs will not be widely accessible for some time, and drivers and pedestrians who cannot afford or chose not to use AVs will not have voluntarily undertaken their risks.[169] These disparities may be greatest in dense urban areas, where heavy traffic and residents of lower socioeconomic status may engender higher risks for populations with the least access to AVs.[170] The uneven distribution of AV benefits and involuntarily exposure to risks should cast suspicion on resilience-based approaches to social regulation, including for innovative technologies, which could lead to disparate and inequitable safety outcomes.[171]

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[166] *See* Black, *supra* note 6, at 321 (stating how "public policies often do include aspects of resilience").

[167] *See id.* (adding that "[i]n practice, resilience on its own is not seen as a politically acceptable strategy for managing many risks, particularly catastrophic or irreversible risks."). Additionally, "[w]hilst more attention to resilience may be beneficial in some circumstances, in practice preventive steps are also imposed, and the question in risk governance is always just what those steps should be, and, more particularly, how much should be spent on them and by whom." *Id.*

[168] *See id*. at 311–12 (listing various factors that determine how actors perceive risk). This list includes the familiarity of an actors with an activity, how "in control" the actor feels, the perceived magnitude of the potential harm or benefits, the distribution of the hazard's impact, awareness of the hazard occurring, and the voluntariness of exposure to the risk. *Id.*

[169] *See* Nunes, Harper & Hernandez, *supra* note 13 (concluding that access to AVs, even as a taxi service rather than personal ownership, will be limited by high costs in the short-term and likely lead to inequitable distribution of AV benefits).

[170] *See* Travis J. Crayton & Benjamin Mason Meier, *Autonomous Vehicles: Developing a Public Health Research Agenda to Frame the Future of Transportation Policy*, 6 J. TRANSP. & HEALTH 245, 249–50 (2017) (describing how "[t]he widespread adoption of autonomous vehicles will have significant impacts on how cities are planned and how their built environments are shaped—and thus on the health outcomes of different types of urban environments.").

[171] *See id*.

The role of risk and benefit distribution with early AV uses distinguishes the purposes and governance implications of a near-exclusive AV fund from the National Vaccine Injury Compensation Program.[172] The benefits of vaccines are widely, though not universally, enjoyed in the U.S. through a combination of high effectiveness, simplicity in use, insurance coverage, and herd immunity.[173] Additionally, as a high percentage of individuals receive vaccinations, and do so voluntarily, the slight risks associated with vaccination are borne fairly equally across groups.[174] After juries began awarding substantial damages in vaccine tort suits, Congress established the vaccine fund in the 1980s over concerns that civil tort liability would overwhelm the industry and undercut the social benefits provided by broad immunization.[175] In turn, a high level of regulatory scrutiny for vaccine products ensures these social benefits are delivered with minimal risk.[176] Preserving the widely distributed benefits of vaccines from a maturing mass tort, while acknowledging that voluntarily undertaken and commonly shared risks will continue to manifest in small numbers, justified the use of a compensation fund and circumscription of civil tort liability for manufacturers.[177]

Enacting a virtually exclusive administrative fund for AVs would lack these circumstances and justifications present for vaccines.

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[172] *See National Vaccine Injury Compensation Program*, *supra* note 14 (discussing how "The National Vaccine Injury Compensation Program is a no-fault alternative to the traditional legal system for resolving vaccine injury petitions.").

[173] *See* Sarewitz & Nelson, *supra* note 14, at 871. Of course, whether this dynamic holds true for COVID-19 vaccines remains an open question requiring further empirical research.

[174] *See id*.

[175] *See* Culhane, *supra* note 15, at 1096–97 (recounting a brief history of the National Vaccine Injury Compensation Program).

[176] *See* U.S. Food & Drug Admin., *Vaccine Development – 101,* FDA (Jan. 30, 2018), *archived at* https://perma.cc/JSN8-X2LX (detailing the FDA's regulatory regime for approving vaccines, including the use of risk-benefit analysis for the intended population); Centers for Disease Control and Prevention, *Vaccine Testing and the Approval Process*, CDC (May 1, 2014), *archived at* https://perma.cc/7KYA-U4AZ (outlining the process of developing vaccines and undergoing regulatory approval).

[177] *See* Culhane, *supra* note 15, at 1099–1100 ("Even a thoroughly tested vaccine formula, produced in accordance with strict quality controls, and accompanied by adequate warnings, will nonetheless cause injury or death in a small percentage of those inoculated . . . To the extent that the danger could not have been reduced, the appropriate response to injury is compensation (for the realization of the social risk), *not* liability in tort. As stated above, the Vaccine Program deals with these unavoidable situations.").

No plaintiff has won a verdict against an AV manufacturer on any negligence or strict liability theories in the U.S. at this time, so a potential AV mass tort is far from mature and offers little justification for preventing civil liability for AV collisions at this early stage.[178] The voluntary-only regulatory programs at the federal level for AVs lack the same enforceability and pressures on AV developers to maximize safety that are present in the vaccine regime alongside civil tort preemption.[179] Similarly, the thin profit margins for vaccine manufacturers, which contributed to the risk of overwhelming liability there, will almost certainly not be as low for AV developers over time.[180] More significantly, the more equitable benefit and risk distributions for vaccines will not be present early in AV use cases, so comparisons of AVs to vaccines to support arguments for tort liability preemption become largely inappropriate.

The reality that the more equitable benefit and risk distributions in vaccines will not be present early in the adoption of AVs undermines normative support for advocates' core argument that preemption and a fund would inherently promote the social benefits of AVs. While the benefits of AVs may become more widely accessible in the long term, restricting civil tort liability with a virtually exclusive compensation fund will not remedy the current uneven risk and benefit distributions of AVs, and may instead entrench those inequities.[181] Leaving civil tort liability in place, with its values from deterrence to transparency to accountability, may instead be critical to constructing a regulatory environment for AVs which pressures developers to internalize risk management approaches or reveals to policymakers the need to increase oversight or equitable access to AVs.

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[178] *See generally* Castano v. American Tobacco Co., 84 F.3d 734, 747–49 (5th Cir. 1996) (opining that class certification too early in a potential mass tort is inappropriate given the lack of reliable information about the quality of claims and "the very real possibility that the judicial crisis may fail to materialize").

[179] *See* Leadership in Automated Vehicle (reviewing voluntary guidelines and standards for AVs).

[180] *See* Culhane, *supra* note 15, at 1096 (describing how the "flood" of lawsuits against vaccine manufacturers led to the cost of the diphtheria, pertussis, and tetanus vaccine rising and resulted in manufacturers leaving the market).

[181] *See* Nunes, Harper & Hernandez, *supra* note 13, at 796–97 (arguing that AVs will likely be unaffordable to lower-income populations in the short-term and "[a]bsent willingness to address these impediments, socioeconomic inequalities in health are likely to widen, even if only in relative terms").).

V. Conclusion

Though AVs could create safer roads overall, these technologies will continue to pose risks and hazards in a potentially inequitable way. Rather than treating AVs as a "technological fix" to all motor vehicle crashes, policymakers should recognize that deploying AVs will have complex social ramifications and may shift risk burdens for automotive collisions rather than eliminating them entirely.[182] There will be no one-time, silver bullet solution to striking the right balance between safety and innovation for AVs, including via civil tort preemption and a compensation fund. Instead, complex and ongoing governance decisions will be required to shepherd AVs onto U.S. roads in ways that distribute risks and benefits equitably.

To be clear, this essay does not argue that tort preemption could never be appropriate. AVs could accelerate the adoption of mobility as a service (MaaS), where privately or publicly operated fleets of vehicles serve the public's transportation needs, displacing personal ownership of vehicles.[183] Extensive adoption of shared mobility services to deliver affordable, widespread, and equitable access to autonomous transportation could change the above considerations enough to consider options such as a federal regulatory and certification program, which may merit reconsidering tort preemption.[184] Yet, such a setting represents a far-off, uncertain possibility and cannot serve as justification for preempting civil tort liability now.

At this juncture, however, the low probability of mass torts posing an existential threat to AV developers cannot justify the marginal upsides of a virtually exclusive compensation fund, which itself may disincentivize safety initiatives for AVs. Ultimately, if public health and safety are the primary concerns driving the pressures to immunize AV developers from civil tort liability, then other policy

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[182] *See* Sarewitz & Nelson, *supra* note 14, at 871–72 (exploring how certain fields may benefit from a "technological fix" while others may not). *See also* Brian W. Head & John Alford, *Wicked Problems: Implications for Public Policy and Management*, 47 ADMIN. & SOC. 711, 712–17 (2015) (describing the challenges of addressing "'wicked problems'–those that are complex, unpredictable, open ended, or intractable.").

[183] *See* Goodall et al., *supra* note 26, at 121–22, 125 (describing the mobility as a service (MaaS) model).

[184] *See* Nunes, Harper & Hernandez., *supra* note 13, at 796–97 (arguing that equitable access to AV services could lead to positive public health outcomes).

options with more equitable distributions of risk and benefits merit stronger consideration for now.