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THE RACE IS ON! REGULATING SELF-DRIVING VEHICLES BEFORE THEY HIT THE STREETS

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THE RACE IS ON! REGULATING SELF-DRIVING VEHICLES BEFORE THEY HIT THE STREETS

ABSTRACT

As the world braces itself for the unveiling of autonomous vehicles, the idea of regulation and oversight has gone largely undetected. Though some states have already begun enacting legislation ahead of the technology's wide release, the regulatory landscape across the country is in disarray. It is imperative that both manufacturers and consumers be given some sort of uniform understanding as to how the automation is overseen throughout the manufacturing process and how liability will be levied in the case of inevitable mistakes on our nation's roadways. This Note proposes that the National Highway Traffic Safety Administration be responsible for providing a fundamental regulatory framework that each state can thereafter build upon as they see fit.

INTRODUCTION

The race to manufacture, market, and ultimately sell the first autonomous vehicle (AV) is well underway.¹ In addition to technological powerhouse, Alphabet's Google,² auto manufacturers such as Volvo, Mercedes Benz, and several others have also devoted time, money, and man-power in hopes of becoming the first to develop safe, ready-to-use vehicles that operate free of human intervention.³ Over the past decade, the auto manufacturing industry has seen a rising number of global companies, with ranging backgrounds and specialties beyond the automotive industry, throw their hats into the growing AV ring.⁴ Though the legal infrastructure pertaining to the use and manufacture of AVs is largely absent, it is imperative that a well-equipped commission is established and assigned the responsibility of creating a strict set of rules that regulate AVs before the unknown materially postpones the unveiling of the next wave of technological change.⁵

This Note magnifies the major developments that will soon change the way in which we travel, or better yet, live our lives in the not-so-distant future. More specifically, this Note will elaborate on the automotive

1. See Claire Cain Miller, *When Driverless Cars Break the Law*, N.Y. TIMES (May 13, 2014), <https://www.nytimes.com/2014/05/14/upshot/when-driverless-cars-break-the-law.html>.

2. See Mark Harris, *Why You Shouldn't Worry About Liability for Self-Driving Car Accidents*, IEEE SPECTRUM (Oct. 12, 2015), <https://spectrum.ieee.org/cars-that-think/transportation/self-driving/why-you-shouldnt-worry-about-liability-for-selfdriving-car-accidents>.

3. See *id.*

4. See Richard A. Walawender, *A Look at Legal Issues for Autonomous Vehicles*, MICH. L. WKLY. (Mar. 17, 2016), <https://milawyersweekly.com/news/2016/03/17/a-look-at-legal-issues-for-autonomous-vehicles/>.

5. See *id.*

industry's current state as it anticipates the approaching arrival of AVs as well as the public's need for AVs.

Part I will provide statistical information about "standard" auto manufacturing, emphasizing its importance to our nation's economy and job force, and introduce the basic legal infrastructure pertaining to automobiles. Part II will focus on the nationwide craze surrounding AVs by explaining the numerous benefits, as well as some of the basic disadvantages that AVs may pose to our society. In doing so, the underlying problem will appear—the lack of uniformity among states regarding legal principles as they relate to the future of transportation. The first major issue addressed is the absent legal framework regarding AVs prior to their wide release, followed by a more procedural concern pertaining to the insufficient process in which AVs are currently overseen and certified before they grace our roadways. Part III puts the onus on the National Highway Traffic Safety Administration (NHTSA) as the most suitable candidate to devise a basic legal framework pertaining to the use and certification of AVs that can thereafter be built upon by the states on a more individualized, case-by-case basis. Part IV looks to other governmental agencies for assistance and guidance as to how they have dealt with increased technology and science in their individual sectors. Lastly, Part V provides several suggestions that NHTSA should consider in regulating AVs, some of which are along the same lines of those implemented by the other government agencies.

I. THE MODERN AUTOMOTIVE INDUSTRY

The automotive industry, excluding AVs, is largely dominated by three major manufacturers—Toyota Motor Company, Volkswagen AG, and General Motors.⁶ Though General Motors once reigned supreme,⁷ Toyota Motor Company has been the leading auto manufacturer worldwide since 2012.⁸ Aside from the dip in numbers experienced by each of the three manufacturers from 2014 to 2015, Toyota still manufactured more than 10 million automobiles in the 2015 fiscal year.⁹ The brief plunge is primarily attributed to the substantially more costly changes currently administered to "smart" cars with new and enhanced functions such as self-braking, self-parking, and automatic cruise control coupled with the widely-anticipated release of completely autonomous vehicles within the next couple of years.¹⁰ Although the benefits of AVs as opposed to human-operated vehicles appear

6. See Bertel Schmitt, *Nice Try VW: Toyota Again World's Largest Automaker*, FORBES (Jan. 27, 2016, 2:11 AM), <http://www.forbes.com/sites/bertelschmitt/2016/01/27/nice-try-vw-toyota-again-worlds-largest-automaker/#3eb527e52b65>.

7. *See id.*

8. *See id.*

9. *Id.*

10. See Evan Hirsch et al., *2016 Auto Industry Trends*, STRATEGY & (Mar. 15, 2016), <https://www.strategyand.pwc.com/reports/2016-auto-industry-trends>.

obvious and endless, the legal framework currently in place is not as clear-cut.

A. DEFICIENCIES IN CURRENT AUTOMOBILES

Even accounting for the dip in production as stated above, the American automotive consumer market set a sale record of just under 17.5 million vehicles sold in 2015.¹¹ This total represents an astounding 5.7% increase from 2014, just topping the previous mark set in 2000 of 17,402,486 vehicles sold.¹² The demand for the next best automobile is evidenced by society's willingness to spend its hard-earned money on the industry's most technologically advanced product.¹³ However, the increase in the sale of cars also represents an increase in accidents; the deaths per 100 million vehicle miles traveled increased by a staggering .05% in 2015.¹⁴ This complex statistic translates to more than one million injuries and over 30,000 deaths on our roads annually.¹⁵ Of that number, human error is the leading cause of injury and death, accounting for approximately 95% of accidents, followed by weather and road conditions representing a mere 2.5%, and technical failure also representing around 2.5%.¹⁶ Considering society's obsession with the fastest, flashiest, and most technologically advanced vehicles, manufacturers and technology companies are hoping that AVs will buck the trend in this unfortunate statistic and remove human error from the road altogether.¹⁷

Aside from reducing the accident and death toll, traffic congestion also proves to be a major driving force behind the development of AVs.¹⁸ An early 2018 article references a statistic that Americans spend a total of 14.5 million hours stuck in traffic each day.¹⁹ This unfathomable total is largely due to the fact that since 1970, "[t]he number of registered vehicles has grown by 90 percent . . . [h]owever, [t]otal number of road miles has grown by only 6

11. *See id.*

12. *See id.*

13. *See id.*

14. *See* U.S. DEP'T OF TRANSP., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES FOR THE FIRST HALF (JAN-JUN) OF 2015 (2015), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812217> [hereinafter EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES].

15. Alan D. Kaplan & Robert Sanzillo, *Driverless Cars*, L. J. NEWSL. (Aug. 2016), <http://www.lawjournalnewsletters.com/sites/lawjournalnewsletters/2016/08/01/driverless-cars/>.

16. Dr. Sven A. Beiker, *Legal Aspects of Autonomous Driving*, 52 SANTA CLARA L. REV. 1145, 1149 (2012).

17. *See id.* at 1150 (citing to a statistic showing that drivers are twenty times more likely to get in a car accident while texting).

18. *See* Laurie Winkless, *Just One Driverless Car Could Ease Traffic Jams*, FORBES (May 26, 2017, 5:59 PM), <https://www.forbes.com/sites/lauriewinkless/2017/05/26/just-one-driverless-car-could-ease-traffic-jams/#5c16b711f9bf>.

19. David Morgan, *The Costs of Highway Congestion*, ABC NEWS (Feb. 15, 2018), <http://abcnews.go.com/US/story?id=94064&page=1>.

percent.”²⁰ The article also references the Texas Transportation Institute’s Annual Mobility Report, which found that riders in the sixty-eight designated urban areas spent more than \$72 billion in “lost time and wasted fuel, or about \$755 annually per driver.”²¹

In her May 2017 *Forbes* article, Laurie Winkless largely attributes congestion to the fact that people naturally drive slower and more cautiously when more cars are present.²² With that said, she includes video footage of the positive impact the lone AV has on the overall congested experimental roadway.²³ The AV, unlike the nineteen human-operated cars, does not decelerate when other cars are present, so “increasing the speed of the autonomous vehicle further to 7m/s, dampens the traffic wave even further. At a speed of 7.5 m/s, optimal dampening is achieved.”²⁴ Winkless concludes that the experiment’s input of “one autonomous car reduces excessive braking events from 8.58 per vehicle per km, to just 0.12/vehicle/km . . . reduces fuel consumption by more than 40%,” and translates to an approximate 14% increase in the average velocity of traffic on the road.²⁵ Therefore, the hope is that roadways dominated by AVs will only multiply the positive impact evidenced by just one AV²⁶ and even assist in harmonizing “traffic flow by controlling individual automobiles more precisely through anticipation and inter-vehicle collaboration,” and thus increase our overall fuel economy.²⁷

Today, young adults are typically driven to school by a parent or elder licensed driver.²⁸ A 2014 NHTSA report found that young drivers²⁹ accounted for 5.5% of 214.1 million licensed drivers in the United States that year, which represented a 7% decrease since 2005.³⁰ Governmental offices in Washington D.C. have promoted carpooling among its employees, which has resulted in about 16% of employees engaging in the practice.³¹

20. *Id.*

21. *Id.*

22. *See* Winkless, *supra* note 18.

23. *See id.*

24. *Id.*

25. *Id.*

26. *See id.*

27. Beiker, *supra* note 16, at 1050–51.

28. *See* EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES, *supra* note 14; *see also* Kelly Clifton, Independent Mobility Among Teenagers: An Exploration of Travel to After-School Activities 9 (Nov. 18, 2003) (unpublished graduate paper, University of Iowa), available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.603.9131&rep=rep1&type=pdf>.

29. “Young driver” is defined as a person aged 15 to 20 operating a motor vehicle. NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., TRAFFIC SAFETY FACTS: YOUNG DRIVERS (May 2016), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812278>.

30. *Id.*

31. *See* Morgan, *supra* note 19.

AV manufacturers are optimistic that the elimination of a human operator will lead to an increase in mobility among all ages.³² AVs will certainly revitalize the lives of the elderly and disabled by providing a more accessible and easier way to remain active, run daily errands, and maintain relationships.³³

B. CURRENT LEGAL FRAMEWORK IN THE AUTOMOTIVE INDUSTRY

Product liability law is the governing law pertaining to remedies of a defective product, in this case a vehicle, that may cause damage or harm to a person or property worthy of a remedy in the form of compensatory damages.³⁴ Injured parties commonly cite to various legal theories to maximize odds of prevailing on a claim and subsequently obtaining a monetary award.³⁵ In a multi-billion-dollar industry like that of the car manufacturing business, a claimant who settles with a company can walk away with enough wealth for a lifetime.³⁶ For the purposes of this Note, the discussed legal theories on which such a claimant may proceed include negligent product design and manufacturing, and strict liability.

A successful negligence claim holds a product manufacturer liable for failing to exercise a duty of reasonable care in the manufacture and design of such product so that the product will remain safe when used in reasonably foreseeable ways.³⁷ Though governed by state tort law, the elements of a negligence claim are largely universal: “the existence of a legal duty; breach of that duty; a causal connection between the defendant’s conduct and the plaintiff’s injury; and damages.”³⁸ Negligent manufacturing is slightly more complex, in that the complainant must prove that the defendant’s negligence resulted in a defect in the product that existed *prior* to leaving the manufacturer.³⁹ But, in the case of a driverless vehicle and the unfortunate, yet inevitable, occurrence of a crash, who is liable? The vehicle’s owner or manufacturer? Questions and concerns continue to pollute the optimism and hope for AVs.

32. See Press Release, RAND Corp., Self-Driving Vehicles Offer Potential Benefits, Policy Challenges for Lawmakers (Jan. 6, 2014), available at <http://www.rand.org/news/press/2014/01/06.html> [hereinafter RAND Corp. Press Release].

33. See Beiker, *supra* note 16, at 1151.

34. See generally JOHN VILLASENOR, PRODUCTS LIABILITY AND DRIVERLESS CARS: ISSUES AND GUIDING PRINCIPLES FOR LEGISLATION 7 (Apr. 2014), https://www.brookings.edu/wp-content/uploads/2016/06/Products_Liability_and_Driverless_Cars.pdf.

35. See *id.*

36. See *id.*; see also Jaclyn Trop, *Toyota Seeks a Settlement for Sudden Acceleration Cases*, N.Y. TIMES (Dec. 13, 2013), <http://www.nytimes.com/2013/12/14/business/toyota-seeks-settlement-for-lawsuits.html>.

37. See VILLASENOR, *supra* note 34, at 7.

38. *In re Toyota Corp. Unintended Acceleration Mktg. Sales Practices & Prods. Liab. Litig.*, 978 F. Supp. 2d 1053, 1100 (C.D. Cal. 2013) (quoting *Seymour Elec. & Air Conditioning v. Statom*, 710 S.E.2d 874 (Ga. Ct. App. 2011)).

39. See *id.*

Car manufacturers are most commonly deemed liable under the theory of products liability.⁴⁰ Under this theory, manufacturers are liable when their products cause or worsen the accident.⁴¹ Courts commonly rely on the Second Restatement of Torts in assigning liability for damages to those sellers “engaged in the business of selling such a product” when their product is sold in a defective condition deemed unreasonably dangerous to the consumer.⁴² Characterized as strictly liable, products liability law imposes accountability on the manufacturers even if they had neither the “intention” nor the “knowledge” that the vehicle produced had a potentially fatal defect.⁴³ Manufacturers, however, are not liable for any damage caused by a vehicle that was subsequently altered in any way after leaving the manufacturer’s possession.⁴⁴ To prevail against a manufacturer with a claim, the aggrieved consumer must succeed in proving that the vehicle was “unreasonably dangerous,” which means that it was “dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics.”⁴⁵

In *Grimshaw v. Ford Motor Co.*, the driver-decedent, traveling with 13-year-old Richard Grimshaw, was fatally burned after her Ford Motor Company (“Ford”) Pinto came to a sudden halt on a highway, was struck from behind by a braking vehicle, and immediately engulfed in flames.⁴⁶ The six-month old Ford Pinto had only endured 3,000 miles, yet had experienced nothing but problems.⁴⁷ The Court deemed that the Ford Pinto was poorly designed in that it allocated far less “crush space” than any other vehicle on the road and, upon impact from behind, the exposed flange and bolts punctured and pressed the gas tank forward.⁴⁸ One high-ranking Ford official testified that “the highest level of Ford’s management made the decision to go forward with the production of the Pinto, knowing that the gas tank was vulnerable to puncture . . . creating a significant risk of death or injury from fire and knowing that ‘fixes’ were feasible at nominal cost.”⁴⁹ Based on this fact, the California Court of Appeals affirmed the lower court’s holding that Ford was liable for defective design even if the manufacturer had taken reasonable precautions to design a safe product, because such precautions “will not preclude the imposition of liability under strict liability principles,

40. See generally VILLASENOR, *supra* note 34.

41. *Automotive Product Liability*, YOUR LEGAL GUIDE, <http://www.yourlegalguide.com/automotive-product-liability/> (last visited Feb. 2, 2018).

42. RESTATEMENT (SECOND) OF TORTS § 402A (AM. LAW INST. 1965).

43. See *id.*

44. See *id.*

45. *Id.*

46. See *Grimshaw v. Ford Motor Co.*, 174 Cal. Rptr. 348, 359 (Cal. Ct. App. 1981).

47. See *id.*

48. See *id.*

49. *Id.*

if, upon hindsight, the trier of fact concludes that the product's design is unsafe to consumers, users, or bystanders."⁵⁰

Common examples of automotive products liability cases include: defective tires, defective airbags, defective seatbelts, and defective door latches, among many others.⁵¹ Among its many objectives, NHTSA is assigned with setting safety standards of new vehicles, the ability to recall any defective vehicles and/or parts, and demand corrective action.⁵² In *Grimshaw*, Ford was liable for the Pinto's poor design, specifically, of the carburetor that caused the car to come to a sudden halt on the busy highway.⁵³ Second, Ford's placement of the fuel tank directly behind the rear axle enabled the bolts to puncture the tank, even in a low-speed, rear-ended crash, and catch fire.⁵⁴ Also, top-ranking Ford executives approved each design decision of the "unreasonably dangerous" vehicle that contradicted a driver's reasonable expectations of not coming to a sudden stop and bursting into flames upon a rear-ended bump.⁵⁵ Shortly thereafter, NHTSA recalled the Ford Pinto fleet of vehicles, as well as levied punitive damages on the car manufacturer for its decision to opt for a cheaper option at the expense of innocent lives.⁵⁶

Relating back to the absent regulation concerning AVs, manufacturers are not provided a blueprint or way to assess *when* an AV is "unreasonably dangerous" for the roadways and therefore unfit for the public's use. On the other hand, however, NHTSA and the *Grimshaw* court were equipped with the necessary tools to conclude that Ford's decision to design and manufacture the Ford Pinto accordingly exceeded the "unreasonably dangerous" threshold and was deemed inadequate and unsafe for consumer use and therefore warranted the line's recall and a hefty fine.⁵⁷

II. WHAT IS AN AUTONOMOUS VEHICLE?

In 2010, Google boasted about its convoy of Toyota Priuses that had operated free of a human operator for 140,000 miles.⁵⁸ Fast forward seven plus years, AV technology has consumed the automotive industry and the minds of drooling consumers.⁵⁹ Today, in the early part of 2018, futuristic

50. *Id.* at 378.

51. See *Automotive Product Liability*, YOUR LEGAL GUIDE, <http://www.yourlegalguide.com/automotive-product-liability/> (last visited Dec. 16, 2016).

52. See *id.*

53. See *id.*; see also *Grimshaw*, 174 Cal. Rptr. at 378.

54. See *Grimshaw*, 174 Cal. Rptr. at 379; see also *Automotive Product Liability*, *supra* note 51.

55. *Automotive Product Liability*, *supra* note 51.

56. See *id.*

57. See *id.*; see also *Grimshaw*, 174 Cal. Rptr. at 380.

58. See Larry Webster, *The Age of the Car That Drives Itself*, POPULAR MECHANICS (Oct. 18, 2010), <http://www.popularmechanics.com/cars/a6240/the-age-of-the-car-that-drives-itself/>.

59. See Nathan A. Greenblatt, *Self-Driving Cars Will Be Ready Before Our Laws Are*, IEEE SPECTRUM (Jan. 19, 2016), <https://spectrum.ieee.org/transportation/advanced-cars/selfdriving-cars-will-be-ready-before-our-laws-are>.

mechanisms and automobile functions assisting drivers behind the wheel are no longer rarities, but instead quite commonplace.⁶⁰ For instance, automated parallel parking is a common function that has been implemented into vehicles for the past decade, yet still requires “cooperation between a driver, who maintains control over the brake and accelerator, and the parking system, which takes over steering control as the vehicle is maneuvered into a parking space.”⁶¹ Though the optimism and buzz surrounding AVs are palpable, particularly across Silicon Valley, the rest of us are left predominantly in the dark until the vehicles are displayed on the showroom floors and available for purchase.⁶² Though the average consumer is unaware of the many intricacies of AV automation and regulation, critics, skeptics, knowledgeable consumers, and the like have voiced concern over the large emptiness that is AV directives for some time.⁶³ However, this absence is still present and becomes only more problematic as AV automation races closer.⁶⁴

A. BENEFITS OF AUTONOMOUS VEHICLES

The potential benefits of autonomous, self-driving vehicles are infinite.⁶⁵ Most obvious, manufacturers and consumers alike anticipate that the future of AVs will bring safer roads and fewer casualties by providing an alternative to human operation.⁶⁶ Charles Rattray of the Australian company, Energy Queensland, has already set his sights on the year 2030 to release his own AV concept—the “Autonomo.”⁶⁷ Most fascinating about the “Autonomo” concept is the computer-wiring that enables AVs to communicate between each other.⁶⁸ This wiring is intended to program AVs to travel in packs depending on the AVs’ destination, largely inspired by the principle of “swarm robotics,” whereby AVs would travel in “clusters that shift their configurations to maintain an uninterrupted flow of traffic while allowing particular vehicles to reach their respective destinations.”⁶⁹ The perceived benefit is that AV self-organization will reduce the energy output and

60. See generally VILLASENOR, *supra* note 34.

61. *Id.* at 5.

62. See Patrick Lin, *The Ethics of Autonomous Cars*, THE ATLANTIC (Oct. 8, 2013), <https://www.theatlantic.com/technology/archive/2013/10/the-ethics-of-autonomous-cars/280360/>.

63. See *id.*

64. News Release, Nev. Dep’t of Motor Vehicles, Regulations Clear the Road for Self-Driving Cars (Feb. 15, 2012), available at <http://www.dmvnv.com/news/12001-regulations-for-self-driving-cars.htm> [hereinafter Nev. DMV News Release].

65. See Webster, *supra* note 58.

66. See Greenblatt, *supra* note 59.

67. See Jan Belezina, *Autonomo—Fully Autonomous Vehicle Designed for the Year 2030*, NEW ATLAS (Nov. 26, 2011), <https://newatlas.com/autonomo-fully-autonomous-vehicle-designed-for-the-year-2030/20529/>.

68. See *id.*

69. *Id.*

highway traffic volume, all while diminishing the fatality and injury rates on roads.⁷⁰

B. ANTICIPATED DISADVANTAGES OF AUTONOMOUS VEHICLES

Even though the idea of reducing the accident rate on our roads resulting from texting and drunk-driving is encouraging,⁷¹ it is also incomprehensible that AVs will be able to assert the “good judgment” that people apply each day on the road.⁷² Drivers are commonly criticized for the boneheaded and poor choices made behind the wheel, but the “good judgment” decisions made by drivers in critical moments to avoid tragedy are very much overlooked.⁷³ Among all the positive buzz concerning AV automation, the technology is also met with a substantial degree of skepticism.⁷⁴ From a legal standpoint, state regulation is largely behind the curve as it relates to the development and testing of manufacturers’ AV technology.⁷⁵ Even some of Google’s notes from their test-driven AVs honestly report the drastic highs and lows for their own AV testing.⁷⁶ Though the public’s initial expectation is largely positive, there are certainly many bumps in the road ahead.

From an unemployment perspective, the implementation of AVs in the ride-sharing/taxi industry, largely dominated by Uber and Lyft, will eliminate many jobs.⁷⁷ From the perspective of billion-dollar Silicon Valley-based taxi service companies, they will no longer have to compensate drivers with a certain percentage of the ride fare because they will have been replaced by technology.⁷⁸ The stark decrease in the number of jobs in transportation will translate to a great increase in the unemployment rate and will have a negative impact on the overall economy.⁷⁹

Unfortunately, being driven by your car will not come cheap.⁸⁰ The addition of “sensors, software, engineering and power and computing

70. See Winkless, *supra* note 18; see also Belezina, *supra* note 67.

71. See Greenblatt, *supra* note 59.

72. See Lin, *supra* note 62.

73. See *id.*

74. See generally RAND Corp. Press Release, *supra* note 32.

75. See Jan Belezina, *Nevada Approves Regulations for Self-Driving Cars*, NEW ATLAS (Feb. 17, 2012), <http://newatlas.com/nevada-autonomous-car-regulations/21507/>.

76. See GOOGLE SELF-DRIVING CAR PROJECT MONTHLY REPORT (Aug. 2016), <https://static.googleusercontent.com/media/www.google.com/en//selfdrivingcar/files/reports/report-0816.pdf>.

77. See Johana Bhuiyan, *Why Uber Has to Be First to Market with Self-Driving Cars*, RECODE (Sep. 29, 2016, 6:00 AM), <http://www.recode.net/2016/9/29/12946994/why-uber-has-to-be-first-to-market-with-self-driving-cars>.

78. See *id.*

79. *Top 20 Pros and Cons Associated with Self-Driving Cars*, AUTO INS. CTR., <http://www.autoinsurancecenter.com/top-20-pros-and-cons-associated-with-self-driving-cars.htm> (last visited Oct. 20, 2016) [hereinafter *Pros and Cons Associated with Self-Driving Cars*].

80. See *Study: Self-Driving Cars Would Eliminate Majority of Traffic Deaths, Congestion*, CBS DC (Oct. 23, 2013, 12:02 PM), <http://washington.cbslocal.com/2013/10/23/study-self-driving-cars-would-eliminate-majority-of-traffic-deaths-congestion/> [hereinafter *Self-Driving Cars Would Eliminate Majority of Traffic Deaths*].

requirements” already exceed \$100,000 per vehicle.⁸¹ Compared to the average transaction price for a light vehicle in the United States of \$33,666 as of March 2016, self-driving cars are expected to surpass that average considerably.⁸² Though the \$100,000 mark has been promised to decrease over time with large-scale production, it will undoubtedly take time before AVs rival the affordable pricing of standard vehicles.⁸³

The software necessary to operate AVs will require a great amount of stored personal information.⁸⁴ Imagine the fear and reluctance of people when asked to store personal and other important information in a computer that they know very little about.⁸⁵ People are unaware that AVs intended to use “machine-to-machine communication” to ensure safety, which requires the implementation of “a million applications,” making consumers and their personal information a vulnerable target to hackers.⁸⁶ Eddie Schwartz, Vice President of Global Security Solutions for Verizon’s enterprise subsidiary, explains that self-driving vehicles will operate by negotiating and exchanging signals with each other.⁸⁷ This, Schwartz says, is intriguing to software hackers.⁸⁸ People are very much unaware of the security threats their devices currently pose, and Schwartz warns that with the advent of AVs and “the growth of new devices and services in the health space the potential for malicious hacks will grow exponentially, including devices that gather intimate personal medical data.”⁸⁹

As for the legal perspective, there is no case law or precedent concerning AVs.⁹⁰ Even in a world where people no longer operate their vehicles but rather vest the responsibility in a software system, accidents are inevitable.⁹¹ Currently, our legal system has yet to take a position as to who is responsible for such accidents. Is it the driver? The deep-pocketed car manufacturer? How about the software developer? Unlike the clear legal ramifications that may result from car accidents today, the legislature has not yet solidified a method or a standard of assigning liability when dealing with AVs.⁹²

81. *Id.*

82. See Press Release, Kelley Blue Book, New-Car Transaction Prices Up 2 Percent in March 2016, Along with Increases in Incentive Spend, According to Kelley Blue Book (Apr. 1, 2016), available at <http://mediaroom.kbb.com/new-car-transaction-prices-up-2-percent-march-2016>.

83. See *Self-Driving Cars Would Eliminate Majority of Traffic Deaths*, *supra* note 80.

84. See *Pros and Cons Associated with Self-Driving Cars*, *supra* note 79.

85. See *id.*

86. Alex Hern, *Self-Driving Cars Irresistible to Hackers, Warns Security Executive*, THE GUARDIAN (Jan. 28, 2014, 5:35 AM), <https://www.theguardian.com/technology/2014/jan/28/self-driving-cars-irresistible-hackers-security-executive>.

87. See *id.*

88. See *id.*

89. *Id.*

90. See *Pros and Cons Associated with Self-Driving Cars*, *supra* note 79.

91. See *id.*

92. See RAND Corp. Press Release, *supra* note 32; see also *Pros and Cons Associated with Self-Driving Cars*, *supra* note 79.

C. PROGRESS IN THE DEVELOPMENT OF AUTONOMOUS VEHICLES

In 2016, Uber partnered with Volvo to unveil its first line of self-driving cars in Pittsburgh.⁹³ Uber expects that self-driving taxis will double the number of rides per hour that a human-operated taxi currently performs.⁹⁴ Also noteworthy, Uber enforces a 12-hour cap on its drivers' workdays, for safety concerns, that would no longer be levied on a software-controlled vehicle.⁹⁵ Instead, self-driving taxis would become full-time, around-the-clock employees as opposed to the 52% of Uber drivers that work on a part-time basis.⁹⁶ Implicit in these statistics and Uber's plans is that the ride-sharing service will no longer be splitting fares with its thousands of drivers worldwide.⁹⁷ In order for Uber to hit these lofty expectations, it must continue to invest billions of dollars in the revolutionary technology to come out ahead of the global arms race even as regulation of these new machines continues to loom overhead.⁹⁸

In March of 2018, news of the first fatality involving an AV shocked consumers and manufacturers alike.⁹⁹ Just weeks after Arizona's governor, Doug Ducey, updated an executive order permitting the use of AVs on state roads without an operator behind the wheel, an Uber SUV struck and killed a pedestrian as the vehicle was going approximately 40 miles per hour in a 35-mile per hour zone.¹⁰⁰ Uber has since halted its AV testing in both the United States and Canada. However, this is not the first time Uber has faced turbulence—in 2017, Uber pulled its test vehicles from roads for a brief period after an AV landed on its side.¹⁰¹ While consumers salivate at the idea of AVs and manufacturers salivate at the anticipated revenues, "skeptics have pointed out that the industry is entering a dangerous phase while the cars are not yet fully autonomous, but human operators are not fully engaged."¹⁰²

As previously mentioned, NHTSA and now the Society of Automotive Engineers have established a classification system for the varying types of human control of vehicles, ranging from zero—complete human control—to

93. See Bhuiyan, *supra* note 77.

94. *See id.*

95. *See id.*

96. *See id.*

97. *See id.*

98. *See id.*

99. See Matt McFarland, *Uber Self-Driving Car Kills Pedestrian in First Fatal Autonomous Crash*, CNN TECH (Mar. 19, 2018, 1:40 PM), <http://money.cnn.com/2018/03/19/technology/uber-autonomous-car-fatal-crash/index.html>.

100. *See id.*

101. *See id.*

102. Sam Levin, *Video Released of Uber Self-Driving Crash that Killed Woman in Arizona*, THE GUARDIAN (Mar. 21, 2018, 9:02 PM), <https://www.theguardian.com/technology/2018/mar/22/video-released-of-uber-self-driving-crash-that-killed-woman-in-arizona>.

five—free of any human intervention.¹⁰³ In its study, Kelley Blue Book found that “consumer interest is currently greatest for Level 4 technology,” which offers drivers complete vehicle autonomy with the option for human input.¹⁰⁴ The fact that AVs have not yet been released to consumers but are already being polled and classified based on their levels of technological autonomy highlights the immediate need for some sort of formal and uniform regulation ahead of their use across the country.

D. CURRENT LEGAL FRAMEWORK CONCERNING AUTONOMOUS VEHICLES

In 2011, Nevada became the first state to regulate the operation of AVs on public roadways.¹⁰⁵ Since its initial acknowledgment of AV operation, Nevada has enacted NRS 482A, groundbreaking legislation that allows for the operation and testing of AVs.¹⁰⁶ In its news release announcing the legislation, Nevada’s Department of Motor Vehicles (DMV) boasted about becoming the first state to “embrace” the future of automobiles and transportation.¹⁰⁷ The state’s legislature originally defined an autonomous vehicle as a “motor vehicle that uses artificial intelligence, sensors and a global positioning system which coordinates to drive itself without the active intervention of a human operator.”¹⁰⁸ The enactment empowered Nevada’s DMV with the ability to implement regulations concerning the operation of AVs on Nevada’s roads.¹⁰⁹

In 2013, New Jersey enacted similar legislation that required the state’s Motor Vehicle Commission (MVC) to adopt regulations regarding AV operation.¹¹⁰ That same year, Arizona and Hawaii also enacted legislation entrusting the role of regulation construction to their respective motor vehicle departments.¹¹¹ Like some other states, the New Jersey legislation required the MVC to impose geographical limitations on the testing of AVs.¹¹² This zoning requirement is particularly prevalent in more densely populated states

103. See Bob Nagy, *KBB Study Finds American Drivers Still Prefer a Hands-On Approach*, KELLEY BLUE BOOK (Sept. 28, 2016, 11:29 AM), <http://www.kbb.com/car-news/all-the-latest/kbb-future-autonomous-vehicle-study-2016/2100001166/#survey>.

104. *Id.*

105. See Nev. DMV News Release, *supra* note 64.

106. See NEV. REV. STAT. §§ 482A.010–482A.200 (2011); see also Jon LeSage, *Nevada Grants First-Ever Autonomous Vehicle Driver’s License*, HYBRID CARS (Sept. 30, 2016), <http://www.hybridcars.com/nevada-grants-first-ever-autonomous-vehicle-drivers-license/>.

107. See Nev. DMV News Release, *supra* note 64.

108. NEV. REV. STAT. § 482A.030 (amended 2013). The statute now defines an “autonomous vehicle” as “a motor vehicle that is equipped with autonomous technology.” *Id.*

109. See *id.*

110. See S. 2898, 215th Leg., 2d Ann. Sess. (N.J. 2013); see also Assemb. 3020, 215th Legis., 1st Ann. Sess. (N.J. 2012).

111. See H.B. 2167, 51st Leg., 1st Reg. Sess. (Ariz. 2013); see also H.B. 1461, 27th Leg., Reg. Sess. (Haw. 2013).

112. See S. 2898, 215th Leg., 2d Ann. Sess. (N.J. 2013); see also Assemb. 3020, 215th Legis., 1st Ann. Sess. (N.J. 2012).

and areas that seek to ensure the safety of AV operation.¹¹³ However, at such a premature stage, testing is likely not committed on the more crowded roadways.¹¹⁴

Since Nevada's groundbreaking legislation, many other states have followed suit.¹¹⁵ Nevada, however, largely remains the trailblazer in AV regulation and has even allowed for the operation of AVs on public roads "so long as a human driver is sitting behind the wheel on alert," while other states permit AV testing only on designated roadways.¹¹⁶ In September 2016, Nevada issued its first AV driver's license to Sam Schmidt, a quadriplegic since a high-speed collision in 2000.¹¹⁷ Thanks to Arrow Electronics technology, Schmidt operates a modified Corvette Z06, dubbed the "SAM," "using his voice, head, and breath to steer, accelerate, and brake."¹¹⁸ Since Schmidt does not completely control the vehicle's operation, the State of Nevada qualifies the vehicle as "autonomous."¹¹⁹ Across the pond, however, the European Union has yet to succumb to the thought of AV technology, and its laws continue to require each driver to remain in full control of their vehicle at all times.¹²⁰ Arizona's amendment to an executive order in March of 2018, which permits AV testing without human operators, only underlines the double-edged sword, supporting the innovation of AVs versus expending time and money to regulating such innovation beforehand, that may cause some pushback from manufacturers.¹²¹ Though the increasing number of state regulation paves the way for the future of the automotive industry, there is an alarming degree of contradiction between the current legal framework among states concerning AV operation.

III. SOLUTIONS TO THE LEGAL PROBLEMS FACING THE FUTURE OF THE AUTOMOTIVE INDUSTRY

The inevitable legal issue soon to address our Nation is *how* to assign blame and liability once an AV, or even an AV manufacturer, commits a

113. See Andrew R. Swanson, Comment, "Somebody Grab the Wheel!": State Autonomous Vehicle Legislation and the Road to a National Regime, 97 MARQ. L. REV. 1085, 1103 (2014).

114. See *id.*

115. California, District of Columbia, Florida, Louisiana, Michigan, Nevada, North Dakota, Tennessee, and Utah have all enacted legislation in some capacity that concerns Autonomous Vehicles. See Gabriel Weiner & Bryant Walker Smith, *Automated Driving: Legislative and Regulatory Action*, CTR. FOR INTERNET & SOC'Y, cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action (last updated Apr. 27, 2017, 1:48 PM).

116. Greenblatt, *supra* note 59.

117. See LeSage, *supra* note 106.

118. *Id.*

119. See *id.*

120. See Ellie Zolfagharifard, *Tesla Battles Google in Race to Get Driverless Cars on the Road: Elon Musk Says Company Will Produce Self-Driving Vehicles by 2015*, DAILY MAIL (Sept. 18, 2013, 6:29 AM), <http://www.dailymail.co.uk/sciencetech/article-2424312/Teslas-Elon-Musk-says-self-driving-cars-produced-2016.html>.

121. See McFarland, *supra* note 99.

mistake.¹²² Though Google has improved the accident rate of their AVs since the inception of such programs, accidents are inevitable and will continue even after human operation has been removed from the equation.¹²³ It is imperative that this legal concern be sorted so that car manufacturers and technological titans alike can continue to invest time and money with the knowledge of when and how they may expose themselves to risk.¹²⁴ As previously mentioned, the current legal framework is a hodgepodge of regulations that differ from state to state with some states choosing to ignore AV automation entirely.¹²⁵ The downside of conflicting regulatory requirements is almost as catastrophic as having none at all since confusion will also diminish from the countless benefits to be had from AV technology.¹²⁶

While society sits back taking pleasure in the billion-dollar arms race, Google, Uber and the like must be provided with some assurance of their investments.¹²⁷ It would be ludicrous for society to expect companies to expend billions of dollars on developing a technology that has not yet been legalized.¹²⁸ The idea of supplanting our products liability law to the realm of AVs would not only confuse individual litigants seeking actual compensation but would also clog our judicial system with the multitude of legal avenues available.¹²⁹ The most obvious fear would arise in the occurrence of a criminal case—how will our courts levy criminal punishment on mere robots?¹³⁰

Many consumers fear that the imposition of strict laws on manufacturers and technological software companies would only deter and impede the process of creating AVs.¹³¹ Regulation and legal accountability, however, can not only provide guidelines to these conglomerates but also relieve a manufacturer of a looming concern ahead of a product's release.¹³² In a product liability lawsuit, the outcome hinges on “whether the product had a

122. See Lin, *supra* note 62.

123. See Ashley Halsey III & Michael Laris, *Self-Driving Cars Reach a Fork in the Road, and Automakers Take Different Routes*, WASH. POST (Aug. 24, 2016), https://www.washingtonpost.com/local/trafficandcommuting/self-driving-cars-reach-a-fork-in-the-road-and-automakers-take-different-routes/2016/08/24/5cdeaba8-63d9-11e6-8b27-bb8ba39497a2_story.html?utm_term=.f1f35b120fe3.

124. See Lin, *supra* note 62.

125. See *Autonomous Vehicles, Self-Driving Vehicles Enacted Legislation*, NAT'L CONF. OF ST. LEGIS. (Jan. 2, 2018), <http://www.ncsl.org/research/transportation/autonomous-vehicles-legislation.aspx> [hereinafter *Self-Driving Vehicles Enacted Legislation*].

126. See RAND Corp. Press Release, *supra* note 32.

127. See Greenblatt, *supra* note 59.

128. See *id.*

129. See Harris, *supra* note 2 (explaining that one can choose from a plethora of avenues to hold a manufacturer liable, such as a negligence, strict liability doctrine, and design or manufacturing defects).

130. See Miller, *supra* note 1.

131. See Greenblatt, *supra* note 59.

132. See *id.*

‘defective condition’ that was unreasonably dangerous,” which depends on whether the product *could* have been made safer at an acceptable cost.¹³³ How are manufacturers of this futuristic technology supposed to gauge the “reasonably safe” standard of AV technology?¹³⁴

An underlying issue in the tug-of-war between regulation and innovation is the process by which AVs become certified and approved for the roadways ahead of their debut.¹³⁵ Current AV procedures allow manufacturers to have a considerable voice in deciding when their own technology is appropriate for the public’s use.¹³⁶ During the creation of Arrow Electronics’ SAM, the state gave great deference and latitude to Arrow Electronics in determining how and when the AV was deemed ready for use in Nevada.¹³⁷ Though Arrow conducted hundreds of miles of test runs, the company and Schmidt worked together tirelessly in “Nevada for the state to revise regulations allowing Schmidt to drive on roads in addition to race tracks.”¹³⁸ Collaborative work is certainly applauded, but there is something to be said when the companies seeking to make money from AVs also have input and influence as to how the technology is regulated.

A. CALLING ON THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION TO FIX THIS PROBLEM

There is currently no governmental agency charged with implementing guidelines to ensure that AVs meet a pre-determined uniform national standard of “fitness.” Even after the first AV fatality in Arizona in March 2018, local prosecutors have disagreed with the local police chief as to the degree of liability to be levied against the ride-sharing conglomerate.¹³⁹ While some local prosecutors contend that Uber can be held criminally liable if the AV is deemed to have negligently killed the pedestrian, local police chief, Sylvia Moir, dismisses the notion of criminal charges.¹⁴⁰ With that said, the following proposed solution is an attempt to combat the absent uniform legal authority concerning AV technology that is far closer than one may think. In a NHTSA report, the governmental agency acknowledges, “there are few barriers for automated vehicles to comply with FMVSS [Federal Motor Vehicle Safety Standards], as long as the vehicle does not significantly diverge from a conventional vehicle design.”¹⁴¹ Pursuant to its

133. *See id.*

134. *See id.*

135. *See* LeSage, *supra* note 106.

136. *See id.*

137. *See id.*

138. *Id.*

139. *See* Levin, *supra* note 102.

140. *See id.*

141. ANITA KIM ET AL., REVIEW OF FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS) FOR AUTOMATED VEHICLES viii (Mar. 2016), available at <https://rosap.nhtl.bts.gov/view/dot/12260>.

congressional power to set the baseline standard for automobiles in states,¹⁴² so too should NHTSA be empowered with the ability to furnish the baseline rules regarding AVs across the country. NHTSA undeniably has a great understanding of our nation's roadways and how to ensure the public's safety, and is therefore most fit to devise a uniform baseline standard that would provide each state with at least some sort of immediate and effective regulation. Putting more on the governmental agency's plate is not unheard of—in 2014, the Motor Vehicle Safety Enhancement Act was passed to amend the national highway law to require NHTSA to implement programs: “(vii) to reduce injuries and deaths to older drivers; (viii) to improve emergency medical services response to crash sites.”¹⁴³ Though NHTSA may be equipped with the many tools necessary to carry out this daunting task, it will also need to look beyond just the automobile industry, where revolutionary technology also took the respective government agencies by surprise, forcing them to act swiftly.

B. NHTSA'S POWER ON DISPLAY

NHTSA was established under the National Traffic and Motor Vehicle Safety Act of 1966 (NTMVSA)¹⁴⁴ and has since been appointed with protecting people on our (sometimes dangerous) roadways.¹⁴⁵ Though many of the safety measures had initially been met with skepticism, these parameters are now widely recognized and second nature.¹⁴⁶ Since its first enactment requiring any restraint in the seats of vehicles in 1968, NHTSA has continued to amend and tinker the rules it deems necessary.¹⁴⁷ NHTSA is amiable in that it seeks to improve glaring issues concerning our roads and vehicles rather than impose baseless regulations and requirements. In summation, the notion that AV regulation exceeds NHTSA's capacity is premature and unfounded.

In *Motor Vehicle Manufacturers Ass'n v. State Farm Mutual Automobile Insurance Co.*, the Supreme Court explained that the requirements imposed by NHTSA are subject to a rather low level of scrutiny—the “arbitrary-and-capricious” standard.¹⁴⁸ In *Motor Vehicles Manufacturers*, NHTSA's effort

142. See 23 U.S.C. § 402 (2012).

143. See Motor Vehicle and Highway Safety Enhancement Act of 2014, S. 2760, 113th Cong. (2016).

144. National Traffic and Motor Vehicle Safety Act of 1966, Pub. L. No. 89-563, 80 Stat. 718.

145. The Act explicitly states that NHTSA should “reduce traffic accidents and death and injuries to person resulting from traffic accidents.” *Id.*

146. See Federal Motor Vehicle Safety Standards; Occupant Crash Protection, 49 C.F.R. § 571.208 (1971).

147. NHTSA has continuously made amendments to this legislation entitled “Occupant Crash Protection.” See *id.*

148. See *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 54 (1983).

to rescind its Standard No. 208 regulation in favor of a more demanding constraint was denied even though the Court recognized that allowing manufacturers to choose between the installation of passive restraints, like airbags and seatbelts, was not a sufficient protective measure as supported by persuasive statistics, and was therefore rendered “arbitrary and capricious.”¹⁴⁹ Though the Court insisted that it may not substitute its own judgment in place of NHTSA’s, the agency failed to procure sufficient evidence to rescind the passive restraint requirement thus causing NHTSA to reconsider the restraint issue entirely or amend the Standard to comply with its supporting evidence.¹⁵⁰ Standard No. 208, which codified the implementation of restraint in vehicles, was revolutionary and has since been amended several times to more effectively protect passengers.¹⁵¹ The most recent amendment required the testing of anthropomorphic dummies in certain testing arrangements “of certain multipurpose passenger vehicles, trucks, and buses,” that included both active and passive restraints.¹⁵²

Another example of NHTSA in action is Standard No. 114, which intends to prevent theft and a vehicle’s rollaway.¹⁵³ Though it has been amended since its debut in 1980, Standard No. 114 still requires that manufacturers of passenger vehicles and trucks deactivate the engine’s normal functions and steering ability once the key has been removed.¹⁵⁴ NHTSA explains that it has the power to enact this imposition on manufacturers in a concerted effort “to reduce the incidence of crashes resulting from theft and accidental rollaway of motor vehicles.”¹⁵⁵

In 2013, NHTSA mandated a quirky regulation, originally filed as 78 FR 2798, which ordered certain vehicles to emit a sound to notify blind and distracted pedestrians of the vehicle’s presence.¹⁵⁶ The alarm was required in “EVs [electric vehicles] and to those HVs [hybrid vehicles] that are capable of propulsion in any forward or reverse gear without the vehicle’s ICE [internal combustion engine] operating.”¹⁵⁷ NHTSA, to prevent an accident in a low-speed maneuver, observed that ICE vehicles emit a louder noise at lower speeds than HVs and EVs, and also noticed that ICEs experience fewer accidents at these speeds.¹⁵⁸ Recognizing the correlation between “sound of

149. See 49 C.F.R. § 571.208; see also *Motor Vehicle Mfrs. Ass’n*, 463 U.S. at 46.

150. See *Motor Vehicle Mfrs. Ass’n*, 463 U.S. at 43.

151. See 49 C.F.R. § 571.208.

152. See *id.* at S2–S3.

153. See Federal Motor Vehicle Safety Standards; Theft Protection and Rollaway Prevention, 49 C.F.R. § 571.114 (1980).

154. See *id.* at S5.1.1.

155. See *id.*

156. Federal Motor Vehicle Safety Standards; Minimum Sound Requirements for Hybrid and Electric Vehicles, 81 Fed. Reg. 90,416, 90,417 (Dec. 14, 2016) (codified at 49 C.F.R. §§ 571, 585).

157. *Id.*

158. *Id.*

vehicle” and “accident rate,” NHTSA sought to alert pedestrians that may not otherwise notice a slowly approaching EV or HV.

Critics may claim that according to the Tenth Amendment, the roadways are to be regulated by state governments under their implicit “state police power.”¹⁵⁹ The Tenth Amendment does admittedly provide the states with a power “not delegated to the United States,” including the ability to establish and enforce laws that protect the welfare, safety, and health of the public.¹⁶⁰ However, Congress’ NTMVSA of 1966 birthed NHTSA with the intention of protecting the public by creating safer roadways across the country.¹⁶¹ Since NHTSA is bequeathed with the broad power of ensuring safety on our country’s roadways,¹⁶² NHTSA is encouraged to tackle the great unknown of AV technology in a manner consistent with the congressional power bestowed upon it decades ago, thereby circumventing any notion that the states have any superior claim to regulate in this regard.

IV. LOOKING TO OTHER AGENCIES FOR GUIDANCE

It would greatly behoove NHTSA to focus solely on the automobile industry. AV automation is just an example of how heightened technology attempts to transform an industry before the industry is prepared with the necessary legal framework. With that said, NHTSA should look to the Food and Drug Administration’s strict review process of the varying types of drugs it oversees and how the Federal Aviation Administration dealt with the staggering increase in drone use.

A. THE FDA’S DRUG APPROVAL PROCESS

The Food and Drug Administration (FDA) is intended “to ensure that the drugs marketed in the United States are safe and effective.”¹⁶³ The FDA’s detailed and rigorous drug approval process expressed in the 1992 Prescription Drug User Fee Act (PDUFA) created a two-tier drug review process to be applied depending on the *type* of drug under review.¹⁶⁴ The “standard review” is a ten-month process, applied to a drug that offers, at most, just a slight improvement in comparison to currently available drugs and therapies.¹⁶⁵ The “priority review” process is applied to proposed drugs

159. U.S. CONST. amend. X.

160. *See generally* *Gibbons v. Ogden*, 22 U.S. 1 (1824).

161. *See* National Traffic and Motor Vehicle Safety Act of 1966, Pub. L. No. 89-563, 80 Stat. 718.

162. *See id.*

163. *Frequently Asked Questions About the FDA Drug Approval Process*, FDA, <http://www.fda.gov/Drugs/ResourcesForYou/SpecialFeatures/ucm279676.htm> (last updated Feb. 7, 2017).

164. *See id.*

165. *See id.*

that offer drastic improvements to existing treatments or prove a treatment not currently available.¹⁶⁶

The FDA's drug review process recently received major backlash when Sarepta Therapeutics' (Sarepta) proposed life-changing drug was delayed for months.¹⁶⁷ Despite the drug's proven wonders, outspoken support, and even congressional support, the FDA remained adamant on subjecting it to its routine rigorous approval process.¹⁶⁸ After the drug was finally approved, opponents felt that the FDA and its Commissioner had become "far too influenced by patient advocates and drug companies, and [had] allowed the delicate balance in drug approvals to tilt toward speedy decisions."¹⁶⁹ The FDA's time-consuming approval process was also on display when Sarepta sought certification of its drug designed to cure muscular dystrophy. Though the drug had provided data instances of its positive effect aiding those living with the crippling disease, the drug remained subject to the strict process.¹⁷⁰

The idea is that if these potentially life-saving drugs are subject to such a strict standard of review, so too should AV automation that does not even have the ability to cure children of debilitating diseases. In addition, the pharmaceutical and auto manufacturer industries are both comprised of billion-dollar companies jostling for market share.¹⁷¹ Though similar in some respects, the FDA and NHTSA vary considerably. Among its many powers, NHTSA oversees the manufacturing process of vehicles and determines what is permitted on the roadways within the confines of its rules and guidelines.¹⁷² The FDA, however, is tasked with reviewing studies and reports conducted by drug manufacturers to aid in the approval determination of a proposed drug.¹⁷³ In seeking the FDA's stamp of approval, drug manufacturers can choose from a variety of applications such as an Investigational New Drug, New Drug Application (NDA), Abbreviated New Drug Application, and Biological License Application, each requiring different research reports and data to qualify for the benefits of that particular application.¹⁷⁴ For example, the NDA requires that the "drug sponsor" submit "data from specific

166. *See id.*

167. *See* Sabrina Tavernise, *F.D.A. Approves Muscular Dystrophy Drug That Patients Lobbied For*, N.Y. TIMES (Sept. 19, 2016), <https://www.nytimes.com/2016/09/20/business/fda-approves-muscular-dystrophy-drug-that-patients-lobbied-for.html>.

168. *See id.*

169. *Id.*

170. *See id.*; *see also* Denise Grady, *F.D.A. Panel Recommends Approval for Gene-Altering Leukemia Treatment*, N.Y. TIMES (July 12, 2017), <https://www.nytimes.com/2017/07/12/health/fda-novartis-leukemia-gene-medicine.html>.

171. *See* Praveen Duddu, *The Top 10 Biggest Pharmaceutical Companies of 2014*, PHARMACEUTICAL TECH. (Oct. 8, 2014), <http://www.pharmaceutical-technology.com/features/features/the-top-10-biggest-pharmaceutical-companies-of-2014-4396561/>.

172. *See* National Traffic and Motor Vehicle Safety Act of 1966, Pub. L. No. 89-563, 80 Stat. 718.

173. *See Frequently Asked Questions About the FDA Drug Approval Process*, *supra* note 163.

174. *See id.*

technical viewpoints for review, including chemistry, pharmacology, medical, biopharmaceutics, and statistics” to market in the United States.¹⁷⁵

NHTSA should take after the FDA’s imposed strict scrutiny of proposed drugs and treatments sought to relieve patients of unbearable and life-threatening illnesses in its own oversight of the manufacture and certification of AV operation. In doing so, NHTSA should consider implementing different standards of review for the varying AV uses or even based on the different types of AV operators.

B. THE FAA’S DRONE REGULATIONS

The Federal Aviation Administration (FAA), established by the Federal Aviation Act of 1958,¹⁷⁶ recently passed regulation concerning small unmanned aircrafts, otherwise known as “drones.”¹⁷⁷ Pursuant to the 1958 Act and the FAA’s purpose “to provide for the regulation and promotion of civil aviation . . . and to provide for the safe and efficient use of the airspace . . .,” the FAA was the appropriate governing agency to oversee drone use.¹⁷⁸

In its press release announcing the drone regulations, the FAA proclaimed that the regulations would open “pathways toward fully integrating UAS [unmanned aircraft systems] into the nation’s airspace” and, more specifically, that the regulations would “work to harness new innovations safely, to spur job growth, advance critical scientific research and save lives.”¹⁷⁹ Though drones continue to be released in all shapes and sizes with varying primary uses, the FAA’s Part 107 regulations govern just those drones weighing less than fifty-five pounds operating for commercial use.¹⁸⁰

Among the changes by the FAA to the Part 107 regulations was the addition of a knowledge test and the necessary certification instead of a mandatory license by any operation.¹⁸¹ This change prohibits operators less than sixteen years of age from qualifying for the remote pilot certificate.¹⁸² Also, remote pilot certificates must be renewed every two years by passing

175. *Id.*

176. *See generally* Federal Aviation Act of 1958, Pub. L. No. 85-726, 72 Stat. 731.

177. *See* Press Release, FAA, DOT and FAA Finalize Rule for Small Unmanned Aircraft Systems (June 21, 2016), *available at* https://www.faa.gov/news/press_releases/news_story.cfm?newsId=20515 [hereinafter FAA Press Release].

178. *See* Federal Aviation Act of 1958.

179. FAA Press Release, *supra* note 177.

180. *See id.*

181. *See* Ben Popper, *New FAA Rules Mean US Companies Can Fly Drones Without a Pilot’s License*, THE VERGE (June 21, 2016, 10:11 AM), <http://www.theverge.com/2016/6/21/11978308/new-faa-rules-mean-us-companies-can-fly-drones-without-a-pilots>.

182. *See Fact Sheet – Small Unmanned Aircraft Regulations (Part 107)*, FAA (June 21, 2016), https://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=20516 [hereinafter *FAA Fact Sheet*]; *see also* Bart Jansen, *FAA Completes Landmark Rules for Commercial Drones*, USA TODAY (June 21, 2016, 7:10 PM), <http://www.usatoday.com/story/news/2016/06/21/faa-commercial-drone-rules/85641170/>.

an aeronautics test.¹⁸³ Companies and operators have celebrated the new certification as a “much cheaper, faster, and simpler path to getting in the air” without removing operators from the equation.¹⁸⁴ As for Amazon’s goal of delivering instantaneous deliveries to your doorstep by drones, Part 107 only governs the use of drones by human operators, so the company’s dream of technologically-operated drones like AV automation without human oversight will have to wait a bit longer.¹⁸⁵ Part 107 also mandates that the operator keep the drone within plain sight without the use of an aid like binoculars or telescope.¹⁸⁶ Also, an operator is required to conduct a “preflight visual and operation check” before using the drone to confirm that the safety-pertinent systems are functioning properly and that the communication and transmittance between drone and operator are active.¹⁸⁷

Since the FAA’s initial drone requisites in early 2015, the agency has added new regulations as it continues to learn more about the commercial use of drones nationwide.¹⁸⁸ Among the “newer” parameters, the FAA permits the commercial use of drones only during daylight hours, that is, thirty minutes before official sunrise to thirty minutes after official sunset.¹⁸⁹ The FAA has also barred any speed exceeding 100 miles per hour groundspeed and drone operation greater than 400 feet above ground level.¹⁹⁰ The FAA has also classified airspace by the area’s relation to mean sea level and flight level to ensure that drone use is even more limited in sensitive and delicate areas (for example, near airports or hospitals).¹⁹¹

Many similarities between the FAA and NHTSA are rather uncanny. In fact, Anthony Foxx, the secretary for the U.S. Department of Transportation, has even attempted to mimic the successful regulations of the FAA and apply it to NHTSA.¹⁹² There is plenty that NHTSA can discern from the way the FAA has handled commercial drone use. Drones remain a relatively recent novelty and the FAA has been ready, willing, and able to adjust its guidelines as it continues to learn more about the small aircrafts.¹⁹³ The FAA’s classification of airspace and its application of heightened restrictions in

183. See *FAA Fact Sheet*, *supra* note 182; see also Jansen, *supra* note 182.

184. See Popper, *supra* note 181.

185. See James Vincent, *FAA Regulations for Commercial Drones Are Now in Effect*, THE VERGE (Aug. 30, 2016 6:50 AM), <http://www.theverge.com/2016/8/30/12707502/drone-regulations-legality-us-faa>.

186. See *id.*

187. See *FAA Fact Sheet*, *supra* note 182.

188. See Vincent, *supra* note 185.

189. See FAA, SUMMARY OF UNMANNED AIRCRAFT RULE (PART 107) (June 21, 2016), available at https://www.faa.gov/uas/media/Part_107_Summary.pdf.

190. See *id.*

191. See Anthony, *An Airspace Lesson for Drone Pilots*, MULTIROTOR USA (Nov. 21, 2015), <http://www.multirotorusa.com/midair-collision-avoidance/>.

192. See Brent Snavely, *FAA and NHTSA Using Similar Regulatory Playbooks*, DETROIT FREE PRESS (Feb. 13, 2016, 10:39 PM), <http://www.freep.com/story/money/cars/2016/02/13/faa-and-nhtsa-using-similar-regulatory-playbooks/79314200/>.

193. See Jansen, *supra* note 182.

certain areas can be directly applied in the AV context. While airspace classification ensures that drones do not interfere with airplanes and air traffic control, the same can be said for AV use on congested roadways near hospitals or high-security areas. On the other hand, the FAA's imposition of liability on drone *operators* would likely do little justice in the AV-context where human operators or owners only sparingly control the vehicle. Most importantly, the FAA noted that the operation of a drone is different than an airplane and, therefore, necessitated its own distinct treatment, i.e., the certification process as opposed to the previous pilot licensing requirement.¹⁹⁴ For that reason, NHTSA should be encouraged to take a step back and identify the differences between AV operation and the current use of a motor vehicles to most effectively administer AV procedures.

V. PROPOSED GUIDELINES TO REGULATE AUTONOMOUS VEHICLES

Both the FAA and FDA demonstrate bright spots that can be emulated by NHTSA as it seeks to regulate a largely unknown animal—AVs. In the Supreme Court's assessment of Standard No. 208, it explains that agencies must be given substantial latitude and freedom to “adapt their rules and policies to the demands of changing circumstances,”¹⁹⁵ which in this case is the increasing knowledge and testing of AV technology. NHTSA is faced with the challenge of implementing a middle ground between the imposition of an overly strict, unchanging set of uniform rules versus granting each state complete reign in the realm of AV automation to implement their own varying regulations if, when, and how they see fit. Between these two extreme ends of the spectrum, NHTSA has an infinite number of potential regulations it can choose to execute. Therefore, it is critical that NHTSA create a basic, uniform baseline of legal infrastructure without impeding on the Tenth Amendment's vesting each state with its own “police power.”

A. SUGGESTIONS FOR NHTSA

Firstly, the FAA's elimination of the pilot license requirement instead of a more specific process that requires each operator to pass a knowledge test and obtain certification *should* be translated to AVs.¹⁹⁶ In addition, by enforcing a two-year renewal policy on certification, AV owners remain up-to-date on any innovation or studies concerning AV automation. Conversely, the FAA's policy that suggests each drone operator conduct a thorough check prior to operation would be impractical to ask of each AV owner. NHTSA must assign the responsibility of ensuring a safely-operated AV to the

194. *See id.*; *see also* Popper, *supra* note 181.

195. *See* Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 42 (1983) (citing Permian Basin Area Rate Cases, 390 U.S. 747, 784 (1968)).

196. *See* Popper, *supra* note 181.

manufacturers rather than to the vehicle's owner. While an owner will be unable to evade liability for operating an AV with blatant or obvious defects, the more discrete and undetected technological malfunctions must be dealt with by those that understand the wiring best—the manufacturers. Without assigning liability to the manufacturers, they would largely escape AV incidents unscathed.

Secondly, similar to the FDA's detailed twelve-step drug certification process,¹⁹⁷ NHTSA should also institute a lengthy supervised process of development before AVs can be sold to the public. In this process, NHTSA should require its own representatives to oversee the process and testing of AV development, just as it has done for years with standard automotive testing.¹⁹⁸ As it stands, AV manufacturers are largely unsupervised and only adhere to the instruction of their superiors.¹⁹⁹ NHTSA must implement a workplace code or standard of conduct to be upheld throughout the development and manufacturing processes.

Finally, NHTSA should impose differing standards of review in the certification process for varying AV uses—similar to how the FDA imposes either a “standard” or “priority” standard of review based on a proposed drug's effect on industry and the several types of applications that can be awarded.²⁰⁰ NHTSA could consequently apply a different criteria of certification for the common consumer that relies on AVs for basic transportation and convenience, like Sam Schmidt, the quadriplegic from Nevada who tested AVs for Arrow Electronics, who hopes to use the AV for “necessity.” This is not to imply that an application for a “necessity” use would be subject to a less detailed or exacting review, but rather a proposal of different criteria for each of the uses that would enable NHTSA to grant certifications in a more efficient manner.

B. FLAWS IN OTHER PROPOSED SOLUTIONS

The discussion of legal complications of AV liability has been ongoing since the idea of AVs first began to buzz, and there has been no shortage of conflicting opinions on the subject. One columnist, Nathan Greenblatt, has been adamant about leveling the playing field between AVs and human-operated vehicles by advocating that the design defect laws do not pervade into the AV universe.²⁰¹ Instead, Greenblatt proposes strictly applying negligence as is applied in standard automotive incidents— “[t]hat is, a

197. See *Frequently Asked Questions About the FDA Drug Approval Process*, *supra* note 163.

198. See Akweli Parker, *How Car Testing Works*, HOWSTUFFWORKS, <http://auto.howstuffworks.com/car-driving-safety/safety-regulatory-devices/car-testing.htm> (last visited Dec. 18, 2016).

199. See *Self-Driving Vehicles Enacted Legislation*, *supra* note 125.

200. See *Frequently Asked Questions About the FDA Drug Approval Process*, *supra* note 163.

201. See Greenblatt, *supra* note 59.

computer driver should be held liable only if a human driver who took the same actions in the same circumstances would be held liable.”²⁰²

Greenblatt’s suggestion of copy-and-paste may supply an easy fix, but over time, as issues regarding AVs become even more complex, the framework needs amending to accommodate the changing technology. Negligence largely requires the factfinder to identify the actor’s scienter.²⁰³ The Second Restatement of Torts Section 283 explains that one can evade liability under a negligence claim by acting in accordance with the “reasonable man standard.”²⁰⁴ Adhering to Greenblatt’s idea would subject the choice made by software to the standard that governs the choices of mere mortals behind the wheel.²⁰⁵ Just as society is prepared to take advantage of the many benefits of an automotive system that cannot text nor drink and drive, so too will society have to accept the flaws, and sometimes questionable decisions, of the software operators. In sum, it is incredibly incongruent to compare apples to oranges or, in this case, software to humans.

Critics will likely turn against the idea of further empowering NHTSA and instead advocate for a new agency altogether to deal with AVs. While this idea should be considered, it is not that easy. It would be incredibly costly and time-consuming to devise an entirely new sector and team of professionals to start from square one rather than continue to inform the professionals currently in place of a new player in the field they already know so much about. The same argument could have been made against empowering the FAA with the oversight of drone regulation, but it is fair to say that the agency has done a fine job of conforming to the rather recent invention.

Others may picket for a stricter set of guidelines rather than the broad safeguards suggested earlier. There are several flaws in this hasty reaction. First, how can we impose such strict constraint to something so unknown? NHTSA would be doing a great disservice to the evolution of technology if it were to impose strict rules that deter companies from ever wanting to take part in its advancement. Second, a major strength of the proposed guidelines is that state governments and legislatures can now more effectively regulate AVs on roads in a more personalized manner. The idea of this lenient baseline is to supply a uniform set of rules to deal with the current absence of any guidelines at all. Though some states have made headway by enacting rules

202. *Id.*

203. *See* RESTATEMENT (SECOND) OF TORTS § 283 (AM. LAW INST. 1965).

204. *See id.*

205. *See* Greenblatt, *supra* note 59.

and legislation concerning AVs,²⁰⁶ each state widely differs from the next thus justifying the need for NHTSA to provide a consistent baseline.

CONCLUSION

As the automotive industry progresses toward a major change in landscape, now is the time for society to prepare for AV automation. Such preparation includes ensuring that roadways, road signs, and drivers are well-informed and properly equipped for such automation, and providing society with a set of rules that directly pertain to AVs. It is equally important, however, that NHTSA remain cognizant that while regulations are necessary, we, as a society, are not yet familiar with AV automation, and such regulations must be amiable and flexible as not to deter the continued global efforts to improve this most fascinating innovation.

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206. See H.B. 2167, 51st Leg., 1st Reg. Sess. (Ariz. 2013); H.B. 1461, 27th Leg., Reg. Sess. (Haw. 2013); S. 2898, 215th Leg., 2d Ann. Sess. (N.J. 2013); NEV. REV. STAT. §§ 482A.010–482A.200 (2011).

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