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The Friday Night "Who Is Driving?" Debate Will Soon Come to an End: How Autonomous Vehicles Are Changing Our Lives and Societal Norms

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THE FRIDAY NIGHT "WHO IS DRIVING?" DEBATE WILL SOON COME TO AN END: HOW AUTONOMOUS VEHICLES ARE CHANGING OUR LIVES AND SOCIETAL NORMS

*By Nicholas Calabria**

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I. INTRODUCTION

Drones, life-size robots, genetic engineering, and renewable energy are a few of the greatest technological advancements the world has seen within the past quarter-century.[1] Among these great advancements lies self-driving, autonomous vehicles.[2] Tesla, Uber, and Google are a few of the top leading autonomous car manufacturers in recent news.[3] As Neil Armstrong once said, "[t]hat's one small step for a man, one giant leap for mankind."[4] However, futuristic technology, such as autonomous cars, comes with some risks; they range from accidents and malfunctions to radiation exposure or even death.[5] With new advancements and uncertain outcomes, it is important to determine who becomes liable when someone gets hurt,[6] whether autonomous vehicles benefit society[7] and how the government and lawmakers should regulate this new growing trend. In an opinion by the Court of Special Appeals of Maryland, Judge Arthur Graeff wrote:

> [u]ntil we enter the era of self-driving or autonomous vehicles, with a 360-degree range of "vision" (and therefore no need to divert their attention from the traffic ahead in order to merge safely with traffic on the left), collisions like the one in this case may occur without the fault of either the human beings who are driving the cars involved.[8]

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*I would like to thank both my parents, Carolyn and Thomas Calabria, as well as my brother, Michael Calabria, for their everlasting support.

[1] E. Weaver, *25 Life-Changing Technological Advances The last decade Has Seen*, LIST25 (Dec. 1, 2016), https://list25.com/25-life-changing-technological-advances-the-last-decade-has-seen/.

[2] *Id*.

[3] Reinhardt Krause, *How Google Can Race Ahead Of The Pack In Self-Driving Cars*, INVESTOR'S BUSINESS DAILY), https://www.investors.com/news/technology/self-driving-car-waymo/ (last visited Apr. 16, 2018).

[4] *Neil Armstrong Quotes*, BRAINYQUOTE, https://www.brainyquote.com/quotes/neil_armstrong_101137 (last visited Nov. 25, 2019).

[5] *Top 3 Possible Dangers Of Self-Driving Cars*, VEST, http://www.vesttech.com/top-3-possible-dangers-of-self-driving-cars/ (last visited Nov. 25, 2019).

[6] Matt McFarland, *Who's responsible when an autonomous car crashes?*, CNN TECH, (July 7, 2016), http://money.cnn.com/2016/07/07/technology/tesla-liability-risk/index.html.

[7] Mike Brown, *5 Huge Benefits of Self-Driving Cars*, INVERSE (June 9, 2018), https://www.inverse.com/article/44173-benefits-of-self-driving-cars.

[8] *Grant v. Newman*, No. 404305-V, 2017 WL 4251755, at *6 (Md. Ct. Spec. App. Sept. 26, 2017).

This Note will address several topics, such as public policy arguments for and against autonomous vehicles, outdated vehicle and traffic laws, criminal and civil liability regarding the use of autonomous vehicles, a discussion on the legal standard for autonomous vehicles, and a civil tort analysis under the laws of New York State. Autonomous technology can save, simplify, and ease the lives of Americans by reducing automobile collisions, alleviating the stress of commuting, expanding productivity time, and reducing our society's carbon footprint.[9] The incorporation of such technology is not an easy task for the American legal system due to various complexities and the functionality of our society.

With all the benefits that autonomous vehicles have to offer,[10] passing legislation should not thwart the process of incorporating these vehicles into our lives. The court system has not been confronted with the many issues autonomous technology can create, but as the technology becomes more prominent the legal system will need to catch up with the new advancements.

II. OVERVIEW OF AUTOMATED CAR TECHNOLOGY AND ITS BENEFITS

A. What is Automated Car Technology and How does it Work?

Autonomous vehicles are vehicles that can operate on public roadways without humans dictating the control of the vehicle's operation.[11] Some autonomous vehicles may require human intervention if confronted with an unknown obstacle, but others may not even have standard driving equipment (i.e., steering wheel or foot pedals).[12] Autonomous vehicles utilize a combination of sensors, lasers, radars, cameras, sonar, and algorithmic software to navigate its movement.[13] One type of sensor is a lidar sensor, short for light

[9] *See infra notes* 29-85 and all accompanying text discussing all the ways society can benefit from autonomous technology.

[10] *See supra* note 9.

[11] *Self-Driving Cars Explained*, *How do self-driving cars work-and what do they mean for the future?*, UNION OF CONCERNED SCIENTISTS, https://www.ucsusa.org/clean-vehicles/how-self-driving-cars-work (last revised Feb. 21, 2018).

[12] *Id*.

[13] *Id*.

detection and ranging sensor.[14] The lidar sensor uses pulses of light to measure the distance of objects within close proximity of the vehicle.[15] The lidar sensor alone cannot guide the autonomous vehicle safely due to its limited range.[16] It also uses a camera to recognize traffic lights, street signs, and roadway markings the car needs to consider during operation.[17] The most recently developed device for an autonomous vehicle uses an assortment of lasers that transmit a constant stream of light to measure distance more precisely and to calculate velocity.[18] This device allows for further range and resolution than current lidar sensors, and is better equipped to handle weather, reflective objects, and avoid interference by other sensors.[19] Each piece of equipment attached to an autonomous vehicle fills a void that other hardware attachments cannot fulfill.[20] Collectively, the wide array of hardware attached to one vehicle synchronizes together to process data more proficiently to identify pedestrians, vehicles, and other objects.[21]

As the autonomous system is utilized more frequently, the software collects more information to improve its internal map.[22] The software uses the vehicle's various hardware components to process and input data to maintain an internal map of the vehicle's surroundings.[23] Once the software builds an internal map, the software sends instructions to the vehicle's operating system, which controls the vehicle's operation.[24] One aspect of the software's algorithm uses predictive modeling and object discrimination to identify specific

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[14] Cade Metz, *How Driverless Cars See the World Around Them*, N.Y. TIMES, (Mar. 19, 2018), https://www.nytimes.com/2018/03/19/technology/how-driverless-cars-work.html. (Self-driving cars are attached with various technological systems, such as: a lidar unit which uses lasers to generate a 360-degree image of the cars surroundings; cameras that use parallax from multiple images to find the distance to various objects, detect traffic lights and signs, and help recognize moving objects; radar sensors to measure the distance between the car and an obstacle; and the main computer to analyze and read data received by the sensors to assess current conditions, which is also compressed and stored into the computers mapping system. Developers of this technology rely on machine learning, which enables the system to learn the behaviors of the road through analyzing large amounts of data).

[15] *Id*.

[16] *Id*.

[17] *Id*.

[18] *Id*.

[19] *Id*.

[20] *Id*.

[21] *Id*.

[22] *Id*.

[23] *Id*.

[24] *Id*.

objects and distinguish different roadway obstacles.[25] Some autonomous vehicles can communicate or connect with other vehicles or infrastructure to transmit data between each other to assist the self-driving operation.[26] Developers of this technology rely on machine learning processes to analyze large amounts of data that will enable the system to adapt to different roadway behaviors.[27]

B. Benefits of Automated Car Technology

Autonomous vehicles provide various societal benefits.[28] These benefits include increasing work productivity, curbing negative health side effects, preventing collisions, reducing accidents and deaths caused by drunk driving, and minimizing distractions and other forms of human error. A recent study shows that an average American spends over 100 hours commuting to work per year.[29] For an average American, that is about 25 minutes each way, almost an hour a day.[30] One hour may not seem like a lot of time, but on the road, one hour can equate to thousands of potential accidents.[31]

1. Reducing Accidents and Deaths Caused by Drunk Driving

In recent years, the number of fatalities caused by motor vehicle accidents has been on the rise.[32] According to the National Highway Traffic Safety Administration ("NHTSA"), approximately 37,000 people were killed in motor vehicle accidents in 2017.[33] With major advancements in automotive technology, the number of vehicular deaths should be declining. New safety features, such as

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[25] *Id*.

[26] *Id*.

[27] *Id*.

[28] *See* Brown, *supra* note 7.

[29] Robert Longley, *Americans Spend Over 100 Hours a Year Commuting*, THOUGHTCO. (July 29, 2017), https://www.thoughtco.com/americans-commuting-over-100-hours-yearly-3320980.

[30] *Id*.

[31] *How Many Car Accidents Are There in the USA Per Day?*, THE BRANNON LAW FIRM (Sept. 18, 2017), http://branlawfirm.com/many-car-accidents-usa-per-day/.

[32] U.S. DEPARTMENT OF TRANSPORTATION, EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES FOR THE FIRST QUARTER OF 2018 (CRASH·STATS), NHTSA, (June 2018), https://crashstats.nhtsa.dot.gov/#/PublicationList/51.

[33] *Id*.

automatic emergency braking, blind-spot detection, lane departure warning, and adaptive cruise control should minimize collisions and deaths.[34] But since 2014, the fatality rates have risen according to the NHTSA.[35] Unfortunately, technology does not change the fact that more than half of the accidents in America are caused by human error.[36] Recent studies have shown that autonomous vehicles, at a minimum, are 10 percent safer than human drivers.[37] Over the course of three studies, autonomous vehicles can be up to 90 percent safer than human drivers.[38] One study predicts that perfecting and implementing autonomous vehicles by the year 2040 can save approximately 600,000 lives by 2070.[39] Although looking into the future does not help the lives of today, it is a good place to start because societal awareness will drive autonomous vehicles into our society.

More concerningly, the NHTSA claims that approximately 29 people are killed every day from drunk driving accidents.[40] That means one person dies every 50 minutes, equaling over 10,000 deaths per year.[41] Aside from the fatalities, a DWI arrest could cost a first-time offender up to $10,000 in legal fees.[42] Repeat offenders risk losing their licenses and a possible jail sentence.[43] By providing society with a means of self-driving transportation, the reduction in drunk driving accidents could be significant.[44] This inference is drawn from The National Transportation Commission's ideology that a human poses no safety risk in connection with drinking and driving

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[34] Peter Lyon, *The Top 7 Car Safety Features You Cannot Do Without*, FORBES, (May 31, 2018, 11:01 PM), https://www.forbes.com/sites/peterlyon/2018/05/31/the-top-7-car-safety-features-you-cannot-do-without/#33f990135fc0.

[35] *Automated Vehicles for Safety,* NATIONAL HIGHWAY TRANSPORTATION SAFETY ADMINISTRATION, https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety (last visited Sept. 16, 2018).

[36] Aarian Marshall, *To Save The Most Lives, Deploy (Imperfect) Self-Driving Cars ASAP*, WIRED (Nov. 7, 2017, 12:01 AM), https://www.wired.com/story/self-driving-cars-rand-report/.

[37] *Id*.

[38] *Id*.

[39] *Id*.

[40] U.S. DEPARTMENT OF TRANSPORTATION, *Drunk Driving*, NHTSA, https://www.nhtsa.gov/risky-driving/drunk-driving (last visited July 7, 2018).

[41] *Id*.

[42] *Id*.

[43] *Id*.

[44] Alasdair Wilkins, *Will Self-Driving Cars Mean the End of DUI? Lawyers Weigh In*, INVERSE, (Oct. 5, 2017), https://www.inverse.com/article/37156-self-driving-car-dui-automation.

while inside of a dedicated autonomous vehicle.[45] The National Transportation Commission supports legalizing operators under the influence of drugs or alcohol to operate their vehicle while it is in full autonomy mode.[46] The commission argues that an autonomous vehicle should be treated in the same way as a taxi so long as the impaired operator does not interfere with its operation while under the influence.[47] It reasons that the individual becomes a passenger of the vehicle, not the driver, which is equivalent to an ordinary taxi.[48] Opponents contend that self-driving technology is not fully developed to guarantee a safe journey.[49] Occasionally, an autonomous vehicle will not be able to monitor the terrain in front of it, thus requiring the operator to intervene and safely guide the car until it is able to take over again.[50] In this situation, impaired drivers could create a greater hazard had the impaired drivers not used an autonomous vehicle.[51] Drivers who plan on drinking and having their car drive them home will most likely overindulge and become further incapacitated than normal.[52] By doing so, an emergency or system malfunction in an autonomous vehicle will require an impaired operator not only to break the law but to place multiple lives at risk simultaneously.

2. Minimizing Distractions and other forms of Human Error

This raises the question of who would be better equipped to handle an emergency, an autonomous vehicle that cannot read a terrain or an intoxicated operator. In an emergency an autonomous vehicle would be a safer option because the vehicle could force itself to pull over and reassess the situation in a safe and harmless manner, or stop

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[45] *Id*.; *See* McGowan, *infra* note 46.

[46] Michael McGowan, *Drink-driving in a driverless car should be legal, expert body says*, THE GUARDIAN (Oct. 4, 2017), https://www.theguardian.com/technology/2017/oct/05/push-for-drink-driving-law-exemption-for-those-in-automated-cars.

[47] *Id*.

[48] *Id*.

[49] Ian J. Faulks, *Self-driving cars will not help the drinking driver*, THE CONVERSATION (Oct. 22, 2014), https://theconversation.com/self-driving-cars-will-not-help-the-drinking-driver-31747.

[50] Popular Mechanics Editors, *Will We Be Allowed to Drink in Self-Driving Cars?*, POPULAR MECHANICS (Feb. 5, 2018), https://www.popularmechanics.com/cars/car-technology/a15895557/drinking-self-driving-cars/.

[51] *Id*.

[52] *Id*.

itself in place and engage hazard signals to warn other drivers. By giving an intoxicated operator control, the possibility of a collision or fatalities could dramatically increase. The intoxicated driver may be unaware of the circumstances when forced to override autonomous mode, causing him or her to crash into another vehicle or object, leading to harm to all persons involved. Furthermore, allowing such a possibility will subject the operator to criminal and civil liability for driving while intoxicated. As technology evolves and adapts, so do the autonomous vehicles, which can recognize, understand, and remember hand signals of bicyclists, ensuring smooth navigation around them to prevent collisions.[53] With frequent technological breakthroughs, the chance of unmanageable terrains will be remote.[54]

3. Increasing Work Productivity

An autonomous vehicle can provide its operator with additional time to be more productive. While driving a car is technically engaging in an activity, those wasted minutes, even hours, could be utilized more productively than navigating traffic. New Yorkers are more likely to be considered "mega-commuters" than any other state resident.[55] A mega-commuter is a commuter who travels at least 90 minutes, and over 50 miles, to get to work.[56] Accordingly, New Yorkers, on average, could be spending 3 hours per day going to and

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[53] Johana Bhuiyan, *Google's robot cars recognize cyclists' hand signals – better than most cyclists*, RECODE, (July 5, 2016), https://www.recode.net/2016/7/5/12101360/google-self-driving-car-cyclist-bike-handsignals-report.

[54] When an autonomous vehicle encounters an unmanageable terrain, the vehicle will alert the operator to take control, disable autonomous mode, and then allow the operator to resume traditional driving functions. An unmanageable terrain could arise when the autonomous system is overly stimulated by abnormal traffic conditions. (For example, a four-way intersection controlled by a traffic light loses power during a snowstorm and the vehicle needs to make a right turn to arrive at its destination. Other traditional drivers are passing through the powerless intersection as if the intersection was regulated by stop signs to continue their trip. However, the autonomous vehicle approaching the intersection has an internal mapping, which is consistent with the local law, that this particular four-way intersection does not allow a right turn at a red light, but since the traffic light lost power, the vehicle is unable to recognize the signaled instruction from the traffic light all while the car detects other traditional vehicles passing through the intersection at their own leisure. This scenario may create an unmanageable terrain for the autonomous system).

[55] Longley, *supra* note 29. The data collected from the U.S. Census Bureau focuses on commuters who drive to and from work, although individuals who utilize an alternative form for transportation (i.e. public transit, walking, or cycling) do make up for a small part of the total data.

[56] *Id*.

from work.[57] Americans find themselves working longer hours than they would like.[58] An autonomous vehicle could help them spend their time completing excess work on their commute home.[59] This would help commuters, especially New Yorkers, use their time more productively on their 3-hour commute. Research has shown that when a parent works long hours, it can have a negative impact on the parent's family life.[60] The American Psychological Institute indicates that work-family conflicts arise when either parent has copious amounts of work to complete in a short timeframe.[61] With an autonomous vehicle, parents are afforded extra time to complete certain tasks and alleviate work-family stress.[62]

4. Curbing Negative Health Side Effects

Sitting in traffic and commuting to work may also cause negative side effects on one's health, such as an increase in blood pressure.[63] Stressful situations are a cause of short-term spikes in blood pressure.[64] A main source of stress is driving, especially in

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[57] *Id*.

[58] G.E. Miller, *The U.S. is the Most Overworked Developed Nation in the World*, 20 SOMETHING FINANCE, https://20somethingfinance.com/american-hours-worked-productivity-vacation/ (last updated Jan. 2, 2018).

[59] *See infra* note 62.

[60] N. Crawford, *Employees' longer working hours linked to family conflict, stress-related health problems*, AMERICAN PSYCHOLOGICAL ASSOCIATION (June 2002), http://www.apa.org/monitor/jun02/employees.aspx. After surveying approximately 510 employees from a Fortune 500 company, research has shown a direct work-family conflict between an employee's hours and workload regardless of scheduling flexibility and in-home responsibilities. As a result, this conflict resulted in employee's facing depression, and other stress-health related issues.

[61] *Id*.

[62] For many professionals, their jobs quite often require them to work excess hours in order to complete assignments by certain deadlines, or act diligently within their profession. One example would be an attorney who has a deadline to submit a brief by the end of the week, accompanied by other duties, such as meeting with clients and conducting research. A sole practitioner may have to work late hours on this particular brief because most of his day is filled with client calls, meetings, depositions, or other related legal tasks. If this attorney has a one hour commute, each way, to and from the office, he could find himself leaving work earlier and utilizing his weekly 10 hour commute to draft the brief that must be submitted to the Court, as opposed to staying late to complete such assignment.

[63] Carolyn Kylstra, *10 Things Your Commute Does to Your Body*, TIME HEALTH (Feb. 26, 2014), http://time.com/9912/10-things-your-commute-does-to-your-body/.

[64] Mayo Clinic Staff, *Stress and high blood pressure: What's the connection?*, MAYO CLINIC (Jan. 9, 2019), https://www.mayoclinic.org/diseases-conditions/high-blood-pressure/in-depth/stress-and-high-blood-pressure/art-20044190.

traffic-congested areas.[65] A leading report indicates that longer commutes in heavy traffic result in higher stress levels that lead to a rise in blood pressure.[66] Although stress from commuting raises blood pressure in the short-term, over time it could lead to long-term, permanent, high blood pressure.[67] High blood pressure puts individuals at risk for heart attacks and stroke.[68] Autonomous vehicles could very easily take the stress out of commuting and reduce road rage.[69] The days of road rage, shifting gears, changing lanes, and stop-and-go will be over, as well as the dreadful 6 A.M. morning drive allowing more time to sleep.[70] Reducing stress during commuting is simply overall better for one's health.

5. Benefiting the Environment

Autonomous vehicles go further than just saving human lives; self-driving technology can also help save the planet. The drive towards saving the environment via auto-manufacturing is now globally recognized by numerous countries that plan on banning the manufacturing and sale of internal combustion vehicles between the years 2020 and 2040.[71] However, simply swapping gas vehicles for electric ones is not the solution: autonomous vehicles are.[72] Researchers were able to demonstrate how self-driving cars can reduce and prevent traffic congestion, even when only a few vehicles are integrated into traffic.[73] In fact, one self-driving car alone can reduce

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[65] *Id*. Christine M. Hoehner, Carolyn E. Barlow, Peg Allen & Mario Schootman, *Commuting Distance, Cardiorespiratory Fitness, and Metabolic Risk*, NCBI (June 1, 2013), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3360418/.

[66] Hoehner, *supra* note 65.

[67] Hoehner, *supra* note 65; Mayo Clinic Staff, *supra* note 64.

[68] American Heart Association, *How High Blood Pressure Can Lead to a Heart Attack*,) https://www.heart.org/en/health-topics/high-blood-pressure/health-threats-from-high-blood-pressure/how-high-blood-pressure-can-lead-to-a-heart-attack (last updated Oct. 31, 2016).

[69] Lance Eliot, *Road Rage and AI Self-Driving Cars*, AITRENDS, (Mar. 9, 2018), https://aitrends.com/ai-insider/road-rage-and-ai-self-driving-cars/.

[70] Jack Stewart, *IT TAKES A SINGLE AUTONOMOUS CAR TO PREVENT PHANTOM TRAFFIC JAMS*, WIRED, (May 16, 2018), https://www.wired.com/story/one-autonomous-car-prevent-traffic-jams/.

[71] Enrique Dans, *Sure, its not easy changing out outlook on the environment, but we really have no choice*, MEDIUM, (Nov. 18, 2018), https://medium.com/enrique-dans/sure-its-not-easy-changing-our-outlook-on-the-environment-but-we-really-have-no-choice-7daa8bb9ac08.

[72] *Id*.

[73] Jeanne Leong, *Study shows autonomous vehicles can help improve traffic flow*, PHYS ORG, (Feb. 20, 2018), https://phys.org/news/2018-02-autonomous-vehicles-traffic.html.

traffic congestion by influencing at least 20 traditionally driven cars around it.[74] For example, researchers were able to control the pace of traffic using autonomous technology to remove the stop-and-go oscillations that are typically caused by human drivers.[75] Eliminating stop-and-go oscillations by keeping traffic moving at a constant speed[76] can reduce total fuel consumption by up to 40 percent and braking events by 99 percent.[77] Approximately 80 to 90 percent of a single vehicle's environmental impact is caused by fuel consumption and emissions.[78] Thus, the Earth can benefit from the implementation of autonomous vehicles into society as part of a global initiative towards a cleaner planet.

6. Potential Economic Impacts

Autonomous vehicles can pave new roads for different facets of economic growth and entrepreneurship. This notion goes far beyond the obvious realm of innovating taxi services. Autonomous technology can create new ways for retailers to put their products in front of a consumer. Robomart is tapping into this market by creating the "world's most accessible grocery store."[79] Robomart has deployed a fleet of autonomous vans containing food for their customers, making them feel as if they were at the grocery store.[80] Consumers, from their phone, can order a vehicle to their house, go into the van outside and pick out and pay for various groceries as if they actually went to the store.[81] Once complete, the van continues on to its next summoned location.[82] Amazon recently released a new delivery

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[74] Dalvin Brown, *How self-driving car or adaptive cruise control could ease traffic jams*, USA TODAY, (July 3, 2018), https://www.usatoday.com/story/money/2018/07/03/self-driving-reduces-traffic-jams-study-says/741985002/.

[75] Leong, *supra* note 73.

[76] Brown, *supra* note 74.

[77] Leong, *supra* note 73.

[78] *Car Buying* Guide, NATIONAL GEOGRAPHIC, https://www.nationalgeographic.com/environment/green-guide/buying-guides/car/environmental-impact/ (last visited Oct. 7, 2018).

[79] Carolyn Fortuna, *Amazon Scout Enters the Autonomous Delivery Market – Several Others Currently Being Tested*, CLEANTECHNICA (Jan. 28, 2019), https://1.next.westlaw.com/Document/I37e4810022c311e9b9fdb8b351d4ee83/View/FullText.html?transitionType=UniqueDocItem&contextData=(sc.Default)&userEnteredCitation=2019+WLNR+2764647.

[80] *Id*.

[81] *Id*.

[82] *Id*.

method to transport shipments to your front door.[83] In the Washington suburbs, Amazon is testing delivery devices that roll up and down the sidewalk at a walking pace and deposit your package at your door.[84] This device employs autonomous technology that can detect pedestrians, pets, and other obstacles to ensure the safety of your package and others around the device.[85]

It is evident from all aspects of our modern society that autonomous vehicles can have a profound impact on our everyday lives. If this level of sophisticated technology is prepared to take on our private and commercial industries, it could revolutionize almost every aspect of life as we know it.

III. CURRENT STATUTORY SCHEMES

In some states, by engaging the autonomous mode of a self-driving vehicle, a driver could violate various laws.[86] However, the

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[83] And no, we are not talking about drones. Fortuna, *supra* note 79.

[84] *Id*.

[85] *Id*.

[86] A man was arrested for DUI charges while sleeping behind the wheel of his Tesla; even though the system was engaged in autopilot, the man still was arrested for his blood alcohol content being twice the legal limit. Madison Dapcevich, *Man Blames DUI Charge on "Self-Driving" Car*, IFLSCIENCE!, (Jan. 25, 2018), https://www.iflscience.com/technology/man-blames-dui-charge-on-selfdriving-car/. Distracted driving has been major cause for automobile fatalities. One form of distracted driving is texting while driving, which is prohibited in 47 out of 50 states. As complications rise with combating distracted driving, one identifiable solution is, level 5, fully autonomous vehicles, which would be capable of taking a human on a cross-country road trip without any driver intervention. Founder and CEO of Tesla, Inc., Elon Musk, predicts that level 5 autonomy will be available between the years of 2019 and 2020. As attempts to curb distracted driving draw great concern, "when cars operate themselves, we'll be able to give our mobile devices the attention the deserve." Theo Miller, *Distracted Driving Will Stop When Cars Drive Themselves*, FORBES, (Dec. 5, 2017), https://www.forbes.com/sites/theodorecasey/2017/12/05/distracted-driving-will-stop-when-cars-drive-themselves/#5333999a6c15. It is evident that self-driving cars will be incorporated into modern society, but the progression of how quickly such implementations will be adopted is unpredictable. One proposed timeline believes that by the year 2030, auto manufactures will have equipped all lines of vehicles with highly autonomous features and law makers will begin to geo-fence traditional driving, and as a result, all traditional driving will be phased out by 2045, along with infrastructure related to traditional driving, including traffic signs and stop lights. Johana Bhuiyan, *The Complete timeline to self-driving cars*, RECODE, (May 16, 2016), https://www.recode.net/2016/5/16/11635628/self-driving-autonomous-cars-timeline. Modernizing American driving schemes appears to be a revolutionary idea, it can be predicted that any proposition to phase out traditional driving will be encountered by backlash, specifically foreseeable by owners or members of any classic car community, who can be found in any of the 50 states. Jim Gorzelany, *The Most-Popular Classic Cars In The U.S.*, FORBES, (Jul. 13, 2018), https://www.forbes.com/sites/jimgorzelany/2018/07/13/the-most-popular-classic-cars-in-the-u-s/#1efaae5b70c8.

definitions of state statutes and classifying "autonomous vehicle owners" also raises questions. Vehicle and Traffic laws typically have provisions to the effect that *some such person or another shall not operate a vehicle* but it is unclear as to whether a person sitting in the driver seat of an autonomous vehicle should be deemed an "*operator*" or a "*passenger*".[87] Such a distinction could have a drastic effect on evaluating one's liability. For example, New York State's Vehicle and Traffic laws have direct and indirect conflicts with the use of autonomous vehicles.[88]

Section 1226 of New York Vehicle & Traffic Law ("N.Y. V.T.L.") states that "[n]o person shall operate a motor vehicle without having at least one hand . . . on the steering mechanism at all times when the motor vehicle is in motion."[89] The current statutory language is unclear as to whether this statute will have the same effect on an autonomous vehicle as compared to a traditional vehicle. Even more so, the statute does not define the word "operate" and how that may apply to the user of an autonomous vehicle. If left unchanged, this statute would also prohibit the owner of an autonomous vehicle from sleeping behind the wheel, thus requiring travelers to stop at rest areas on a lengthy interstate road trip.[90]

N.Y. V.T.L. § 1225-d restricts persons from operating a car while using any portable electronic device while the vehicle is in motion.[91] However, if this statute is not amended, it would criminalize an operator's use of electronic devices even if the automobile is in full autonomy mode.[92] Since assignments often require the use of laptops, cell phones or other forms of electronic devices, this statute would

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[87] *See infra* notes 89, 91, and 94.

[88] *See infra* notes 89-95 and accompanying text (discussing how N.Y.V.T.L. statutes oriented towards traditional vehicles will not be compatible with self-driving cars).

[89] N.Y. VEH. & TRAF. LAW § 1226 (McKinney 2019).

[90] Chris Ziegler, *What happens if you fall asleep in a self-driving car? Audi knows*, THE VERGE, (Jan. 8, 2014), https://www.theverge.com/2014/1/8/5286598/what-happens-if-you-fall-asleep-in-a-self-driving-car-audi-knows. (Legislative resistance is the biggest detriment to incorporating self-driving cars, primarily because of liability issues. Operators still retain final control of autonomous vehicles are allowing an operator to fall asleep removes that control).

[91] N.Y. VEH. & TRAF. LAW § 1225-d(1) (McKinney 2019).

[92] National Transport Commission, *Changing driving laws to support automated vehicles*, (Oct. 2017), https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Discussion%20Paper%20-%20Changing%20driving%20laws%20to%20support%20automated%20vehicles.pdf. ("To hold the human responsible may restrict the introduction of automated vehicles. . . and unnecessarily deny or delay the many potential benefits of the technology").

limit an operator's productivity.[93] Such a law counteracts one of the major benefits of automated vehicle technologies.

Another example of an incompatible law would be N.Y. V.T.L. § 1163, which states that "[n]o person shall so turn any vehicle without giving an appropriate signal . . ." [94] Although an autonomous vehicle will engage with the use of turning signals whenever possible, it is unclear as to whether the operator is violating the law for not activating the turning signal him or herself. The statute also requires that the turning signal be engaged at least one hundred feet prior to making the turn.[95] It is also unclear as to whether one might violate the law if the vehicle does not comply with the statutory minimum, or how these vehicles will comply with similar statutes of other states. For example, Indiana's turn signal law requires drivers to engage their signal for at least two hundred feet prior to making a turn.[96] These questions may remain unanswered unless the legislature begins to amend traditional vehicles and traffic laws by adding exceptions for autonomous vehicles.

Following the logic of the National Transport Commission that person would be defined as a "passenger."[97] However, auto manufacturers would support classifying that person as an "operator" if he or she is the one to set the vehicle in autonomous mode.[98] Florida's legislature recently amended its motor vehicle law to classify autonomous vehicles as the operators while autonomy is engaged, regardless of whether a person is physically present in the vehicle.[99] The Michigan legislature has also classified the autonomous driving system to be the operator of the vehicle while the system is engaged.[100]

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[93] *See generally supra* notes 55-62.

[94] N.Y. VEH. & TRAF. LAW § 1163(a) (McKinney 2019).

[95] VEH. & TRAF § 1163(b).

[96] IND. CODE. ANN. § 9-21-8-25 (West 2019).

[97] National Transport Commission, s*upra* note 92.

[98] Telegraph Reporters, *Tesla owner who turned on car's autopilot then sat in passenger seat while travelling on the M1 banned from* driving, THE TELEGRAPH, (Apr. 28, 2018, 1:03 PM), https://www.telegraph.co.uk/news/2018/04/28/tesla-owner-turned-cars-autopilot-sat-passenger-seat-travelling/. (Tesla stated that its autonomous technology is a feature intended to provide assistance to a fully-attentive driver, and that the driver should always watch the road, be prepared to override the system, and never depend on the system to slow down while operating the vehicle. Tesla's statement was made in response to the prosecution of a man who engaged his Tesla Model S in autonomous mode, removed himself from the driver seat, and reclined in the passenger seat while driving on a highway at approximately 40 miles per hour).

[99] FLA. STAT. ANN. § 316.85(3)(a) (West 2019).

[100] S.B. 995, 98th Leg. Reg. Sess. (Mich. 2016); S.B. 996, 98th Leg. Reg. Sess. (Mich. 2016).

These approaches are more beneficial than classifying the individual as the operator because it provides a framework that will allow society to reap the benefits of the autonomous technology. By the vehicle itself being deemed the operator, the individual is essentially a passenger, and although he or she may sit in the driver seat, that individual can engage in any activity he or she wishes without violating the law.

IV. LEGISLATIVE ATTEMPTS TO HANDLE THE ISSUE

A. Bills Before Congress

Two major pieces of legislation for the deployment of autonomous vehicles are currently before Congress. The first is the Self Drive Act,[101] and the second is the American Vision for Safer Transportation Through Advancement of Revolutionary Technologies Act ("AV Start Act").[102] Both legislative materials expressly preempt the states from enacting laws regarding autonomous vehicles.[103] Furthermore, both acts: (1) provide a framework for ensuring public safety through the testing and deployment of autonomous vehicles; (2) require manufacturers to set forth cybersecurity and privacy plans to minimize the risk posed to motor vehicle's safety by the developing technology; and (3) establish a council or committee to further research the safety risks imposed by autonomous technology or means to use such technology to benefit the underserved population.[104] In addition, the Self Drive Act requires the Department of Transportation to inform consumers of autonomous vehicles of the capabilities and limitations the technology can offer.[105] Furthermore, the Self Drive Act leaves liability to be determined by the courts through common law tort

[101] SELF DRIVE Act, H.R. Res. 3388, 115th Cong. (1st Sess. 2017-2018) (as referred in Senate, Sept. 7, 2017).

[102] AV START Act, S. 1885, 115th Cong. (1st Sess. 2017-2018) (as reported to Senate, Nov. 28, 2017).

[103] The SELF DRIVE Act allows for the states to enact legislation that is identical to the standards prescribed under the act. The AV START Act prohibits states from enacting legislation with respect to the proposed requirement of autonomous vehicle manufactures to provide written safety evaluation reports. Neither Act restricts the states from enforcing legislation regarding the sale, distribution, repair, or service of autonomous vehicles by dealer, manufacture, or distributor.

[104] *Supra* notes 101-102.

[105] *Supra* note 101.

system, and does not preempt any common law claims or exempt any person from liability.[106]

Both the Self Drive Act and the AV Start Act have been stalled in Congress due to autonomous vehicle safety concerns by a few congressional leaders and the American Association of Justice.[107] Although much support has rallied behind the two bills, this criticism was met by the Competitive Enterprise Institute's claim that the American Association of Justice was putting its interests over the interests of American road users.[108] The League of American Bicyclists has also spoken out against the AV Start Act, demanding that the bill include a requirement for autonomous vehicles to pass a "vision test," which would be used to demonstrate whether the car can accurately detect bicyclists and pedestrians.[109] Aside from the criticism and political slow down, passing these two bills will help save the lives of Americans who fall to human error behind the wheel, and give our country a competitive edge in the newly developed autonomous vehicle industry.[110]

1. Classifications of Autonomy

Congress should incorporate the autonomous vehicle classification system established by the National Highway Transportation into either the Self Drive Act or the AV Start Act Safety Administration.[111] This classification system would help establish guidelines for various capabilities among different autonomous vehicles and will help Congress mold federal regulations pertaining to autonomous vehicles. The scale begins with level 0 autonomy, which is a traditional vehicle with no autonomous functions and requires full human interaction.[112] Level 1 classification indicates a vehicle

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[106] H.R. Res. 3388 § 3(2)(e).

[107] Chris Teale, *Federal AV legislation to go no further in Congress*, SMARTCITIESDIVE, (Dec. 21, 2018), https://www.smartcitiesdive.com/news/AV-START-Act-autonomous-vehicle-legislation/544907/.

[108] *Id*.

[109] Caron Whitaker, *Why The League Is Opposed To The AV Start Act*, THELEAGUE, (Oct. 17, 2018), https://bikeleague.org/content/why-league-opposed-av-start-act.

[110] *U.S. Senate Can Make History and Save Lives by Passing the AV START Act*, PR NEWSWIRE, (Sept. 6, 2018), https://www.prnewswire.com/news-releases/us-senate-can-make-history-and-save-lives-by-passing-the-av-start-act-300708244.html, https://www.cnbc.com/2018/06/05/us-needs-to-pass-self-driving-car-legislation-now.html.

[111] *Supra* note 35.

[112] *Id*.

equipped with driver assistance technology; it will assist with steering, or braking and acceleration, but not both simultaneously.[113]

Level 2 classification identities a vehicle that can control both steering and braking or acceleration mechanisms simultaneously under certain circumstances.[114] A level 2 autonomous vehicle would be a vehicle that is equipped with automatic emergency braking, lane departure assists, and adaptive cruise control.[115] Automatic emergency braking uses sensors to track slowing or stopped traffic and urgently apply the brakes if the driver fails to respond to an impending crash.[116] Lane departure assist can detect lane markers and alert drivers when the vehicle's tire touches the marker, and guide the vehicle back into the lane if the driver does not respond in time.[117] Adaptive cruise control automatically speeds up or slows down a car to maintain a specific following distance relative to the car ahead of it.[118] The capabilities provided by the technology in level 2 autonomous vehicles are merely to supplement or assist with the driving function, rather than to establish an autonomous system to take over the traditional driving and decision-making functions. Such low levels of autonomy still require a dominant level of human interaction.[119]

Level 3 autonomous vehicles can perform all the tasks of driving in certain situations but always requires the driver to remain attentive and ready to assume control when necessary.[120] Level 3 will be vastly similar to Tesla's current autopilot function.[121] Tesla's autopilot system can match speed to traffic conditions, keep the vehicle within the lane and change lanes, transition between and exit freeways when near the desired location, self-park near a parking spot, and be

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[113] *Id*.

[114] *Id*.

[115] *Id*.

[116] National Safety Council, The University of Iowa, *Automatic Emergency Braking*, MYCARDOESWHAT, https://mycardoeswhat.org/safety-features/automatic-braking/ (last visited Aug. 21, 2019).

[117] National Safety Council, The University of Iowa, *Lane Departure Warning*, MYCARDOESWHAT, https://mycardoeswhat.org/deeper-learning/lane-departure-warning/ (last visited Aug. 21, 2019).

[118] National Safety Council, The University of Iowa, *Adaptive Cruise Control*, MYCARDOESWHAT, https://mycardoeswhat.org/safety-features/adaptive-cruise-control/ (last visited Aug. 21, 2019).

[119] *Supra* note 35.

[120] *Id*.

[121] Tesla, https://www.tesla.com/autopilot (last visited Aug. 21, 2019).

summoned to and from a parking garage.[122] The vehicle's navigation system can suggest lane changes to decrease route duration and adjust to current traffic conditions by avoiding slow drivers and automatically steering toward highway interchanges and exits.[123] Also, Tesla's system just introduced the new stop-light warning function, which alerts drivers if the vehicle believes it is about to run a red light.[124] The system will not stop the car, but it uses the internal mapping data to identify the location of the stop-light, and then use the camera system to recognize red light.[125]

Level 4 and 5 autonomous vehicles are equipped with an Automated Driving System, which can perform all the driving tasks and monitor the driving environment.[126] The only disparity between level 4 and level 5 autonomy is the attentiveness of the operator. Level 4 autonomy requires a minimal level of human attention for rare circumstances, while level 5 requires no human attention and considers all occupants "passengers."[127] These high-level autonomous systems will be capable of transporting a person on either a short- or long-term trip with no interaction needed from the person in the driver seat, which Tesla described as:

> [a]ll you will need to do is get in and tell your car where to go. If you don't say anything, the car will look at your calendar and take you there as the assumed destination or just home if nothing is on the calendar. Your Tesla will figure out the optimal route, navigate urban streets (even without lane markings), manage complex intersections with traffic lights, stop signs and roundabouts, and handle densely packed freeways with cars moving at high speed. When you arrive at your destination, simply step out at the entrance and your car will enter park seek mode, automatically search for a spot and park itself. A tap on your phone summons it back to you.[128]

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122 *Id*.
123 *Id*.
124 *Id*.
125 *Id*.
126 *Supra* note 35.
127 *Id*.
128 *Supra* note 121.

B. State Attempts

Several states have enacted legislation concerning the use of autonomous vehicles on public roadways.[129] Specifically in 2017, New York State Governor Andrew Cuomo enacted Senate Bill 7508C and announced that the state will begin autonomous vehicle testing, which was allowed on public roadways until April 1, 2019.[130] The bill allowed autonomous vehicle manufacturers to continue testing their technology in many of New York's most populated areas under the direct supervision of the New York State and City Police.[131] The requirements of the bill mandate constant state police supervision, which severely hampered New York's autonomous testing project.[132] As a result of the stringency, many automakers, such as Audi, have suspended their testing because the manufacturer is responsible for the cost of the police escorts.[133] Cruise Automation, a subsidiary of General Motors, was scheduled to begin testing in early 2018 in New York City but suspended its project due to the difficulties of complying with the requirements of the bill.[134] In addition to strict compliance, the bill mandates a minimum of a five million dollar insurance policy for an autonomous vehicle during testing.[135] A newly proposed Senate Bill also gives some new insight into New York's outlook towards self-driving vehicles by proposing to amend N.Y. V.T.L. § 1226 to carve out an exclusion for autonomous vehicles.[136] Specifically, the new amendment will read "[n]o person shall operate a motor vehicle without having at least one hand . . . on the steering mechanism at all times when the motor vehicle is in motion unless driving technology is engaged to perform the steering function".[137] Other bills relating to

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[129] *Autonomous Vehicles Self-Driving Vehicles Enacted Legislation*, NATIONAL CONFERENCE OF STATE LEGISLATURES, (Mar. 26, 2018), http://www.ncsl.org/research/transportation/autonomous-vehicles-self-driving-vehicles-enacted-legislation.aspx.

[130] S.B. S7508C 2017-2018 Leg. Sess. (N.Y. 2018); *Governor Cuomo Announces Autonomous Vehicle Testing to Begin in New York* State, (May 10, 2017), https://www.governor.ny.gov/news/governor-cuomo-announces-autonomous-vehicle-testing-begin-new-york-state.

[131] N.Y. S.B. S7508C.

[132] Basir Khan, *Where Are New York's Self-Driving Cars?*, THEDRIVE, (Apr. 1, 2018), http://www.thedrive.com/tech/19818/where-are-new-yorks-self-driving-cars.

[133] *Id*.

[134] *Id*.

[135] N.Y. S.B. S7508C.

[136] S.B. S7879, 2015-2016 Leg. Sess. (N.Y. 2016).

[137] *Id*.

the operation of motor vehicles with autonomous technology are currently pending before New York's Senate Transportation Committee.[138]

On the other hand, Florida has embraced autonomous vehicles by permitting their use on the roads through legislative regulation.[139] Originally, Florida's statute was similar to New York's in that it limited testing to certain operators of autonomous vehicles.[140] Testing operators were strictly classified as employees, contractors, or any designated person by the manufacturer of the technology.[141] As of 2019, Florida now permits any person, regardless of whether that person holds a valid driver's license, to legally use self-driving technology.[142] The law's minimum requirements mandate that the vehicle have a safety mechanism that alerts the operator when the autonomous mode fails, notifies the operator to take control or achieve a minimal risk condition, which means bringing the vehicle to reasonably safe state, and operates as a vehicle under applicable state and federal regulation.[143]

Florida lawmakers are moving more progressively than New York lawmakers when regulating autonomous vehicles because Florida now permits an autonomous system to be deemed the operator of an autonomous vehicle while the autonomous system is engaged .[144] The new law, which took effect July 1, 2019, allows occupants to be exempt from laws prohibiting texting and driving, as well as other

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[138] S.B. S8396, 2017-2018 Leg. Sess. (N.Y. 2018); S.B. S7360, 2017-2018 Leg. Sess. (N.Y. 2018) (proposing that "operator" be defined as any person who has control over the autonomous vehicle, which would be the exact opposite approach of what Florida and Michigan have enacted); S.B. S2234A, 2017-2018 Reg. Sess. (N.Y. 2017)).

[139] John W. Terwilleger, *Navigating The Road Ahead: Florida's Autonomous Vehicle Statute And Its Effect On Liability*, FLA. B. J., (July-Aug. 2015), https://www.floridabar.org/the-florida-bar-journal/navigating-the-road-ahead-floridas-autonomous-vehicle-statute-and-its-effect-on-liability/.

[140] *Id*.

[141] *Id*.

[142] STAT. § 316.85(1).

[143] A minimal risk condition has been statutorily interpreted to mean bringing the vehicle to a complete stop during failure and activating the vehicle's hazard lights. The statute further distinguishes between semi-autonomous and fully-autonomous systems, in that a fully autonomous system must achieve a minimal risk condition in the event of a system failure, while a semi-autonomous system must either achieve a minimal risk condition, or require the human operator to take control. FLA. STAT. ANN. § 319.145 (West 2019).

[144] STAT. § 316.85(3)(a); *supra* note 130.

distractions.[145] Jason Fischer,[146] stated that "[f]lorida [is] pioneering the most exciting innovations in transportation. . . this bill on self-driving cars will usher in a new era of smart cities that will not only expand our economy but increase road safety and decrease traffic congestion".[147] As the technology improves, autonomous vehicles still have unique and challenging hurdles to overcome in New York City, such as snow, ice, flooding, massive waves of human traffic, unchartered bike lanes, jaywalkers, and taxis imitating bumper cars.[148] Unlike Florida, the sporadic climate changes in New York can be far more dramatic.[149] One day can be warm and sunny; the following could be a snowstorm leaving behind six inches of snow.[150] New Yorkers are used to constant change; however, an autonomous vehicle might not share that same New York defiance.

As autonomous vehicles weather the storm of altering terrains, the question of liability in autonomous vehicle accidents remains unanswered until legislators act and issues are brought before the courts.[151] More in-depth questions remain as to how courts will interpret various levels of liability for autonomous vehicles depending on the accident.[152] For instance, will manufacturers be more or less liable for collisions with a traditional vehicle compared to a pedestrian? Will manufacturers be more or less liable in hazardous weather conditions? These factors are considered when dealing with human operators, but it is unclear if the legal system can expect lifeless technology to conform to New York norms.

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[145] Stephanie Mlot, *New Florida Law Nixes Need for Autonomous Vehicle Operators*, GEEK, (June 17, 2019), https://www.geek.com/tech/new-florida-law-nixes-need-for-autonomous-vehicle-operators-1792254/.

[146] Jason Fischer is a Florida State Representative for Duval County.

[147] Mlot, s*upra* note 145.

[148] Paul Keller, *How to get things rolling in the Empire State: Autonomous vehicle testing in New York*, NORTON ROSE FULBRIGHT, (Dec. 21, 2017), http://www.nortonrosefulbright.com/knowledge/publications/161274/how-to-get-things-rolling-in-the-empire-state-autonomous-vehicle-testing-in-new-york.

[149] James Barron & Henry Fountain, *Polar Vortex: Temperatures Fall Far, Fast*, N.Y. TIMES, (Jan. 6, 2014), https://www.nytimes.com/2014/01/07/nyregion/in-new-york-temperatures-fall-far-fast.html.

[150] *Id*.

[151] Ryan Calo, *The Courts Can Handle the Deadly Uber Self-Driving Car Crash*, SLATE, (Mar. 23, 2018, 1:35 PM), https://slate.com/technology/2018/03/the-deadly-uber-self-driving-car-crash-is-just-the-beginning.html.

[152] *Id*.

Several scholars have made assertions about how courts could analogize liability issues involving autonomous vehicles.[153] One suggestion was to treat the manufacturer of the autonomous vehicle as a common carrier.[154] The vital connection is based on the assumption that the means or control of travelling is stripped from the occupant and placed into the hands of the manufacturer, its programmers and developers.[155] The development, design, and overall success of the technology are at the hands of the manufacturer; thus that entity should be responsible for the safety of others while an autonomous mode is engaged.[156]

Another proposition was the elevator theory, where a landlord that owns and controls an elevator is liable for most injuries sustained during a passenger's use of the elevator because the owner is expected to inspect, maintain, and repair their elevator to ensure safe operation.[157] The analogy is based on the fact that technology controls the vehicles' movements, even though an elevator goes up and down on a track, it can illustrate a potential product or strict liability analysis.[158] Another scholar advocated that autopilot systems in airplanes and vessels be used as an analogy to autonomous vehicles.[159] Since autopilot systems are comprised of computers, sensing hardware, and guidance programs, an autopilot system will generate

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[153] Dylan LeValley, *Autonomous Vehicle Liability—Application of Common Carrier Liability*, 36, SEATTLE U. L. REV., 5, (2013) (Discussing the application of a common carrier standard for autonomous vehicles). Jessica S. Brodsky, *Autonomous Vehicle Regulation: How an Uncertain Legal Landscape May Hit The Brakes on Self-Driving Cars*, 31, BERKELEY TECH. L.J., 851, 861, (2016) (Discussing expert and scholarly suggestions for accident liability under tort and contract law will rest on products liability of the manufacturer or assumption of risk with the driver).

[154] Levalley, *supra* note 153 at 20. A common carrier is defined as a commercial enterprise that holds itself out to the public as offering to transport freight or passengers for a fee. *Carrier*, BLACK'S LAW DICTIONARY (11th ed. 2019).

[155] LeValley*, supra* note 153 at 25.

[156] *Accord* Omri Ben-Shahar, *Should Carmakers Be Liable When A Self-Driving Car Crashes?*, FORBES, (Sept. 22, 2016, 11:36 AM), https://www.forbes.com/sites/omribenshahar/2016/09/22/should-carmakers-be-liable-when-a-self-driving-car-crashes/#4998982b48fb. ("The answer our legal system would provide is predictable: carmakers would have to take the blame. State courts adjudicating future products liability lawsuits against automakers may be easily seduced by a simple logic leading to this conclusion. These cars will be fully equipped with autonomous driving capability and marketed as substitute to human driving. There will be no drivers to blame, and the only remaining culprit would be the technology").

[157] Kyle Colonna, *Autonomous Cars and Tort Liability*, 4 CASE W. RES. J. L. TECH. & INT. 81, 93 (2012).

[158] *Id*. at 93.

[159] *Id* at 94.

and analyze information when the system is engaged, utilizing the surrounding environment to adjust and make changes based on the vehicle's course of action in reaching the final destination.[160] However, human monitoring and intervention is still required while any autopilot function is engaged for manual overrides of system errors.[161]

It has also been proposed that liability for autonomous vehicles should be analogized to horses because both can perceive their environment, misunderstand their surroundings, and make dangerous maneuvers, all independent of the human operator's will.[162] The advocator sets forth the notion that autonomous vehicles have the ability to think and act on their own, similar to a horse pulling a carriage.[163]

It is difficult to predict how New York courts will choose to analogize common law tort principles to autonomous vehicle accidents. Although many standards have been proposed, none of the propositions are flawless, and until a New York court is faced with this issue specifically, it is unlikely that a clear answer will present itself.

V. INSURANCE LIABILITY ISSUES

The major consideration for an underwriter in insuring an autonomous vehicle will rest on the distribution of liability between motorists and manufacturers.[164] In the event of a collision, if one, even both, of the vehicles are autonomous, it is unclear how liability will be apportioned.[165] Many of the additional questions in this regard remain unanswered in that it is unclear which insurer will pay for property damage, or how the manufacturer of the autonomous vehicle will be responsible for who gets sued. Such prevalent issues will remain unresolved until the courts or legislatures intervene, and personal

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[160] *Id*.

[161] *Id*. at 96-97. Autopilot is rarely at fault for airplane crashes, and human error causes far more accidents than autopilot technology.

[162] David King, *Putting the Reins on Autonomous Vehicle Liability: Why Horse Accidents Are the Best Common Law Analogy*, 19 N.C. J.L. & TECH. 127, 145 (2018).

[163] *Id*. at 146.

[164] David Gutman, *Whose Fault Is an Autonomous Vehicle Crash?*, FUTURESTRUCTURE, (June 19, 2017), http://www.govtech.com/fs/Whos-Fault-is-an-Autonomous-Vehicle-Crash.html.

[165] *Id*.

injury lawyers have a lot to consider before taking on these particular clients.[166]

Uber's and Google's subsidiary companies[167] will be no stranger to lawsuits when it comes to their autonomous technology. In March 2018, one of Uber's self-driving vehicles struck and killed a woman crossing a dark street in Arizona.[168] Reports indicated that the woman suddenly stepped into traffic.[169] Regardless of the woman's contributory negligence, one could argue that the car was negligently designed because it could not do what a human driver could, says David Logan.[170] Litigation of autonomous vehicle accidents could create the legal standard for autonomous technology, leaving open the possibility that the courts could adopt Logan's theory or create their own standard.[171]

A. Debating the Legal Standard

The question lingers of what the legal standard against an operator, whether it be the owner or manufacturer, of an autonomous vehicle in the event of a collision should be. The legal standard that should apply to autonomous vehicle litigation is dependent on the vehicle's level of autonomy. The distinction between standards should be drawn on the issue of whether the operator, within the autonomous vehicle, is predominately situated as a driver or a passenger. If the operator is predominantly situated as a passenger, the legal standard

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[166] *Id*.

[167] Tom Randall, *Waymo to Start First Driverless Car Service Next Month*, BLOOMBERG, (Nov. 13, 2018), https://www.bloomberg.com/news/articles/2018-11-13/waymo-to-start-first-driverless-car-service-next-month. Google is the parent company of Waymo, a self-driving car company, but both companies are conglomerates of another company that is currently unknown to the public, but yet claimed to be in competition with Uber and Lyft for ride hailing. *Id*. Ride hailing is the idea that customers hire drivers to take them exactly where they need to go, like hailing a taxi from the street, but calling the car service from a phone, or virtually hailing a car and driver from a phone application. Julia Eddington, *Ride-sharing vs. Ride-hailing: What's the Difference?*, THE ZEBRA, (Apr. 13, 2016), https://www.thezebra.com/insurance-news/2811/ride-sharing-vs-ride-hailing/.

[168] Margaret Cronin Fisk, *Uber's Liability in Deadly Crash May Turn on Victim's Steps*, BLOOMBERG, (Mar. 20, 2018), https://www.bloomberg.com/news/articles/2018-03-20/uber-s-liability-in-deadly-crash-may-turn-on-pedestrian-s-steps.

[169] *Id*.

[170] *Id*. David Logan is a law professor in Rhode Island.

[171] Kevin Dean, an attorney specializing in auto-product defects, believes that Uber will at least be partly liable since the vehicle did not attempt to brake or make evasive moves, hinting that such measures could be used as balancing factors in determining an autonomous vehicle's potential defects. Cronin Fisk, *supra* note 168.

should be the utmost care.[172] In these situations, the operator is in no better position than a passenger on an aircraft and is not poised to exercise control over the vehicle's maneuvers.[173] As a matter of public policy, when a vehicle can transport persons with little to no human interaction, these systems must operate flawlessly.[174] If the operator is situated as a driver of the autonomous vehicle, the legal standard should be a reasonableness standard. But the reasonableness of a human or an autonomous vehicle?[175] Whether the standard of reasonableness applies to the human or autonomous vehicle will be determined by what each state deems to be the operator.[176] Thus, depending on the jurisdiction a collision may occur, liability could attach to either the human or the vehicle. A segment of our legal system has been built on a reasonably prudent *person* standard, but it must be apparent that an autonomous vehicle is not a person.[177] Instinctively, the concept of a reasonable autonomous vehicle standard should be the solution, but what would be considered reasonable for a technology that our society has never been confronted with? One suggestion is to develop a two-stage approach.[178] In the beginning years of development and litigation, the initial approach would be to compare the reasonableness of an autonomous vehicle to the reasonableness of a human driver under the same circumstances.[179] Until these systems reach perfection, the lower leveled autonomous systems could save lives in many ways, but one system malfunction could cause an accident that no human driver would.[180] As autonomous vehicles become more common and a basic understanding of autonomous decision making is established, the better approach would be to compare the reasonableness of the autonomous vehicle in

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[172] Utmost care is defined as "[t]he degree of care that a prudent person exercises in dealing with important personal affairs [or] the degree of care exercised in a given situation by someone in the business or profession of dealing with the situation". *Care*, BLACK'S LAW DICTIONARY (11th ed. 2019).

[173] Zach Adams, Jon Feczko, and guest commentator Marc Hoag, *Legal Standards for Autonomous Vehicles*, DRIVERLESS, (Jan. 30, 2019) https://soundcloud.com/user-127886587/legal-standards-for-autonomous-vehicles.

[174] *Id*.

[175] *Id*.

[176] *See supra* note 87.

[177] Adams, Feczko, Hoag, s*upra* note 173.

[178] *Id*.

[179] *Id*.

[180] *Id*.

question to other autonomous systems.[181] This standard would evaluate the decision making and "thinking" process of various autonomous systems, and determine whether the autonomous system acted in some reasonable manner as to what similar systems would have done.[182] If an autonomous vehicle is involved in an accident, and it is later determined that the vehicle's autonomous system was not making reasonable "decisions" as compared to what other competing autonomous vehicle's would have done given the circumstances; then the autonomous vehicle manufacturer will be held liable for releasing an unreasonably hazardous product into the public sphere.

The courts should also consider the safety procedures in place at the time of an autonomous vehicle crash in evaluating whether the implementation of a safe procedure could have prevented this or a similar accident. In March of 2019, the Yavapai County Attorney's Office determined that Uber was not criminally liable for an Arizona woman's death.[183] Yavapai County's report did not provide any reason for its findings; however, Uber could face civil consequences.[184] After the accident, Uber suspended its self-driving program for a short duration but has since revived it and noted key changes.[185] These changes cover a wide area of Uber's push for improved safety, such as consulting on safety policies externally, improving software designs, and implementing an automatic emergency braking system.[186] Although autonomous vehicle companies are more likely to settle claims involving a potential product defect, the courts should consider the complexity in perfecting autonomous safety systems and acknowledge that discovering flaws in the vehicle's safety system will typically arise from accidents.

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[181] *Id*.

[182] *Id*.

[183] David Shepardson, Heather Somerville, *Uber not criminally liable in fatal 2018 Arizona self-driving crash: prosecutors*, REUTERS, (Mar. 5, 2019), https://www.reuters.com/article/us-uber-crash-autonomous/uber-not-criminally-liable-in-fatal-2018-arizona-self-driving-crash-prosecutors-idUSKCN1QM2O8.

[184] *Id*.

[185] Kinsey Grant, *Uber Restarts Self-Driving Program*, MORNING BREW, (Nov. 2, 2018), HTTPS://WWW.MORNINGBREW.COM/STORIES/UBER-RESTARTS-SELF-DRIVING-PROGRAM/.

[186] Uber ATG Safety Report Supplement, Internal and External Safety Reviews, (2018), https://uber.app.box.com/v/UberATGSafetySupplement.

B. Legislative Progress

Michigan has begun paving the way into the unchartered territory of autonomous vehicle legislation.[187] Michigan is the first state to pass legislation that addresses self-driving cars and their liability.[188] The final legislative Senate Bills 995-998 concerning self-driving vehicles were shaped by the leading autonomous car manufacturers including Fiat Chrysler, General Motors, Toyota, and Google, as well as transportation companies such as Uber and Lyft.[189] Michigan enacted four statutes that address and contain requirements for autonomous vehicle testing and use on Michigan roadways, collectively known as the Save Act.[190] The rapid growth of technology has provided a basis for support to pass these laws because current regulations cannot keep up with new advancements.[191]

The first legislative bill passed was Senate Bill 995.[192] This bill added new, and amended pre-existing, sections of Michigan's Vehicle Code in order to conform to the use of autonomous vehicles, including the establishment of new parameters for the vehicles' use.[193] The first section of the bill repealed section 663 of Michigan's Vehicle Code, which generally prohibited a person from engaging the autonomous mode in an autonomous vehicle.[194] The bill also defines an autonomous vehicle as an "automated driving system" which includes hardware and software that are collectively capable of performing all aspects of the dynamic driving task for a vehicle on a part-time or full-time basis without any supervision by a human operator.[195]

Michigan's House Fiscal Agency analyzed a distinction between operational and tactical aspects of autonomous vehicles.[196] It

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[187] Kirsten Korosec, *Michigan Just Passed the Permissive Self-Driving Car Laws in the Country*, FORTUNE, (Dec. 9, 2016), http://fortune.com/2016/12/09/michigan-self-driving-cars/.

[188] *Id*.

[189] *Id*.

[190] Mich. S.B. 995; Mich. S.B. 996; S.B. 997, 98th Leg., Reg. Sess. (Mich. 2016); S.B. 998, 98th Leg., Reg. Sess. (Mich. 2016).

[191] Josh Roesner, 2015 Legis. Bill Hist. MI S.B. 995, House Fiscal Agency Staff (2016).

[192] Mich. S.B. 995.

[193] *Id*.

[194] *Id*.

[195] *Id*.

[196] Roesner, *supra* note 191. The House Fiscal Agency is a nonpartisan agency within the Michigan House of Representatives.

determined operational aspects to include steering, braking, accelerating, and monitoring the vehicle on a roadway while finding tactical aspects to include responding to events, determining when to change lanes, turning, using signals, and other similar actions.[197] The agency's analysis was not intended to constitute any form of legislative intent.[198] However, it could create guidelines and parameters for a court's analysis in deciding liability implications between an operator and the manufacturer in the event of a collision.

A court could possibly find an auto manufacturer liable for damages caused by operational aspects because the nature of those aspects is fundamental to autonomous technology, while tactical aspects require real-time situational decision making, thus holding the operator liable for a collision caused by them. Other pertinent definitions added are "[o]n-demand automated motor vehicle network" and "Save project."[199]

The "Save project" is an initiative that authorizes eligible motor vehicles to make the on-demand automated vehicle networks available to the public.[200] Automakers that participate in the Save project help encourage and promote the use of autonomous vehicles throughout the state, as well as gaining incentives under the Save Act.[201]

An on-demand automated vehicle network is "a digital network or software application used to connect passengers to automated motor vehicles . . . in participating fleets for transportation between points chosen by passengers, for transportation between locations chosen by the passenger when the automated motor vehicle is operated by the automated driving system."[202] Such a network could be operated on a highway, road, or street without local government imposing a fee upon such a network.[203] Additionally, this network would exempt the vehicle code's prohibition on texting while operating a motor vehicle.[204]

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197 *Id*.
198 *Id*.
199 *Supra* note 192; Mich. S.B. 996.
200 Mich. S.B. 996.
201 *See also* Roesner, *supra* note 191.
202 *Supra* note 192.
203 *Id*.
204 Roesner, *supra* note 191.

This bill creates endless opportunities for auto manufacturers. Specifically, Ford Motor Company believes that with the passing of Senate Bill 995, it will allow Ford to deliver fully autonomous vehicles, without human-operated breaking or steering mechanisms, for commercial use by the year 2021.[205] The bill clarifies that when the automated driving system is engaged and operational without a human operator, the system itself will be considered the operator of the vehicle for purposes of abiding by the traffic and motor vehicle codes.[206]

Nevertheless, Bryant Walker Smith[207] states that the language of Senate Bill 995 is unclear as to its purpose and only complicates matters through its attempt to define an operator under the applicable vehicle code.[208] Smith sets forth many assertion for why the law is unclear, some specifically being that the law does not address whether automated driving is lawful only in the context of research and development and the on-demand networks, or whether automated driving is generally permitted and the on-demand networks are subject to more restrictive requirements.[209] Smith criticized the bills, stating that the "provision says nothing about who or what the driver is for purposes of determining liability for a violation of those laws, particularly when there is no crash".[210] Smith proposed that Michigan either wholly revise the vehicle and traffic codes to accommodate automated and conventional driving, or wholly exempting automated driving and regulate it under a separate statutory scheme.[211] The better approach would be to exempt automated driving from the traditional vehicle and traffic code and implement a new article regulating automated driving because it will allow manufacturers and developers of automated technology a more concise and rationalized approach to comply with the law, rather than maneuvering statutory exceptions.

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[205] Korosec, *supra* note 187.

[206] Roesner, *supra* note 191. *See supra* note 192.

[207] Bryant Walker Smith is an assistant professor of law and engineering at the University of South Carolina and a scholar at the Center for Internet and Society at Stanford Law School.

[208] Korosec, *supra* note 187.

[209] Bryant Walker Smith, *Michigan's Automated Driving Bills*, THE CENTER FOR INTERNET AND SOCIETY, (Sept. 6, 2016), https://cyberlaw.stanford.edu/blog/2016/09/michigans-automated-driving-bills.

[210] *Id*. Excluding Mich. S.B. 996 which provides that the manufacturer shall assume liability for each incident where the automated driving system is at fault. *See supra* note 200.

[211] Walker Smith, *supra* note 209.

The second legislative bill passed was Senate Bill 996.[212] This bill allows motor vehicle manufacturers to self-certify their participation in Michigan's Save project.[213] By doing so, the auto manufacturer would assume liability for every accident that is caused by the fault of the automated driving system while it is in control of the vehicle.[214] However, it immunizes auto manufacturers from liability for automated technology accidents caused by the system that has been modified by any person without the consent of the manufacturer.[215] However, other developers of autonomous technology, such as Google and Uber, opposed the enactment of Senate Bill 996, claiming anti-tech protectionism, meaning that since the bill only allows auto manufacturers to enroll in the Save project, the bill restrains Uber and Google's ability to deploy a network of on-demand autonomous taxis, which thereby shields the manufacturers from economic competition.[216] Uber urged other states which are seeking to propose similar legislation to refrain from modeling their laws after Michigan's.[217] However, Uber believes that Senate Bill 995 resolved many of Uber's issues in attempting to develop an on-demand autonomous taxi service because Senate Bill 995 broadened the scope of the term "on-demand automated vehicle networks" to include those in which a manufacturer merely supplies or control the vehicles being used.[218]

The other two legislative bills passed were Senate Bill 997 and Senate Bill 998.[219] Senate Bill 997 allows a municipality to contract with an owner of a private roadway that is accessible to the public, to be excluded from Michigan's Vehicle Code while under the control of a mobility research center.[220] Senate Bill 995 defined a mobility research center as, among other things, a facility for testing advanced transportation systems, including automated technology and driving systems to increase mobility options.[221] It is presumed that the purpose of Senate Bill 997 is to ensure adequate and effective testing of

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212 *Supra* note 200.
213 S*upra* note 192.
214 Drew Krogulecki, 2015 Legis. Bill Hist. MI S.B. 996, Senate Fiscal Analysis (2016).
215 *Id*.
216 Korosec, *supra* note 187.
217 *Id*.
218 *Id*.
219 *Supra* note 200; Mich. S.B. 998.
220 *Supra* note 192.
221 *Id*.

autonomous technology without subjecting any manufacturers or operators to vehicle and traffic law infractions.

Senate Bill 998 grants civil immunity to vehicle mechanics and repair facilities from product liability actions when damages result from repairs that are conducted according to manufacturer specifications.[222] The law also extends immunity to auto manufacturers whose vehicles have been equipped with autonomous technology by any person that is not the manufacturer, unless the defects that resulted in damages were present prior to any modifications.[223] Furthermore, manufacturers of the parts for autonomous vehicles are immune from product liability actions if modifications are made to the equipment by any person unless those parts were defective when they were installed.[224]

The Michigan legislature is attempting to welcome the use and operation of autonomous technology into the state through the Save Act.[225] By providing limited immunity from liability to manufacturers and repair facilities, Michigan's incentives to test and introduce self-driving cars are more desirable than those proposed by New York.[226] Michigan's laws "get the government out of the way of technology . . . allow[ing] technology to move forward at the pace of development," says Kirk Steudle.[227] Although there are issues with the statutory construction of Michigan's laws pertaining to autonomous vehicles, Michigan's attempt does allow for the use of autonomous technology in the public sphere which will allow autonomous technology to improve more rapidly. However, the current legal framework does not make clear how individual owners of self-driving, fully autonomous vehicles, should protect themselves from liability if they crossing state lines.

New York, Florida, and Michigan currently have different viewpoints and legislative intents in their current laws regulating such

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222 Mich. S.B. 998.

223 *Id*.

224 *Id*. Krogulecki, *supra* note 214.

225 *See supra* note 200.

226 *Supra* note 222; s*upra* note 130, 138.

227 Kirk Steudle is the director of Michigan's Department of Transportation. Greg Tasker, *Michigan continues to take the lead in autonomous vehicle* legislation, DRIVEN, (Mar. 6, 2018), http://www.detroitdriven.us/features/Michigan-continues-to-take-the-lead-in-autonomous-vehicle-legislation.aspx.

technology.[228] What may be legal in one state may be illegal in another. Therefore, the federal government should consider preempting state regulation of autonomous vehicles to ensure consumers are protected in all states and have a basic understanding of what type of liability they may face regardless of state jurisdiction. As it is unclear what liability a consumer could face under current law, the federal government should consider the levels of autonomy when looking to protect consumers, and whether autonomy was engaged during an accident or violation.

VI. TORT CLAIMS

A. Common-Law Negligence

Under New York law, to establish a prima facie case for negligence, a plaintiff must show that the defendant owed a duty of reasonable care, breached that duty, and the breach was the proximate cause of the plaintiff's injury.[229] The threshold issue in any negligence action is whether the tortfeasor owed a duty of care to the injured party.[230] It is the role of the court first to determine whether a duty of care exists between a tortfeasor and an injured party, and any such duty of care varies with the foreseeability of the possible harm, taking into consideration the reasonable expectations of the parties and society in general.[231] Determining whether a duty exists involves a balancing of logic, common sense, science, and public policy; however, foreseeability defines the boundaries of one's duty, it not will create a duty where no such duty exists.[232] An injured plaintiff must demonstrate that the tortfeasors owe a specific duty to him, and not just a general duty to society.[233]

Consider the following factual situation. The owner of a highly autonomous vehicle is situated inside his vehicle and is traveling forty

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[228] N.Y. S.B. S7879; STAT. § 316.85 (West 2019); STAT. § 319.145 (West 2019); Mich. S.B. 995; Mich S. B. 996; Mich. S.B. 997; Mich. S.B. 998.

[229] *Elmaliach v. Bank of China Ltd.*, 110 A.D.3d 192, 199 (N.Y. App. Div. 2013). *See Hyatt v. Metro-North Commuter R.R.*, 16 A.D.3d 218, 218 (N.Y. App. Div. 2005) (the traditional common-law elements of negligence are duty, breach, damages, causation and foreseeability).

[230] *Elmaliach*, 110 A.D.3d at 199-200.

[231] *Id*. at 200.

[232] Blye v. Manhattan and Bronx Surface Transit Operating Authority, 124 A.D.2d 106, 109 (N.Y. App. Div. 1987).

[233] Lauer v. City of New York, 95 N.Y.2d 95, 100 (2000).

miles per hour on a three-lane highway and, on the vehicle's own initiative while autonomy is engaged, decides to change lanes, maneuvering from the left lane to the center lane. Upon making its maneuver, the autonomous vehicle does not identify that another, traditional vehicle, is traveling in the center lane, and continues making the lane change causing an accident where the driver of the traditional vehicle suffers personal injury. The driver of the traditional vehicle brings a negligence claim against the autonomous vehicle owner, and the manufacturer of the autonomous vehicle.

In a negligence action, the court must first determine whether a legal duty exists between the driver and the owner, and the driver and the manufacturer, applying logic, common sense, science, and public policy.[234] It will be difficult to predict whether the court will create a legal duty between a traditional driver and the occupant of a highly autonomous vehicle. Weighing the factors of the court, if society accepts the public policy considerations for autonomous vehicles, there is a strong potential that a court could find the occupant does not owe a legal duty to the driver.[235] Although one can argue that it is foreseeable that an autonomous vehicle can cause an accident and lead to injury of another, foreseeability is not the determinative factor to create a legal duty. In further support of not creating a legal duty between the occupant and driver, public policy demonstrates that utilizing autonomous technology is a safer mode of transportation than traditional driving. Weighing the factors of common sense and logic in terms of public policy considerations, it would not make sense to find that an occupant of a highly autonomous vehicle owes a legal duty to another traditional driver because it would undermine the societal benefits these vehicles can provide.

However, if a court does find that an occupant of a highly autonomous vehicle does owe a legal duty to other traditional drivers, a negligence action will be handled in the same manner as any other traditional motor vehicle accident.[236] Yet, if this legal duty does not

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[234] *Blye*, 124 A.D.2d at 109.

[235] It is important for a court to keep in mind the levels of autonomy different vehicles may possess. It would be difficult to imagine a court will find that an occupant of a level 2 autonomous vehicle does not owe a traditional driver a legal duty, however, it is highly probable that an occupant of a level 4 or level 5 autonomous vehicle will not owe a legal duty to a traditional driver.

[236] An analysis for breach of duty between two traditional drivers is not necessary for the purpose of this note.

exist, the owner and operator of a highly autonomous vehicle cannot be held liable to a traditional driver in a negligence action.[237]

It is highly probable that a court will find that a legal duty exists between a traditional driver and the manufacturer of autonomous vehicles. Weighing the factors to find a legal duty, common sense and logic would support this proposition because the manufacturer is the entity releasing the autonomous vehicle into the stream of commerce. Public policy would also support this proposition because it is more logical to hold the creator of such technology liable for the injuries it causes rather than a consumer utilizing the product. Although a legal duty may exist between the manufacturer and a traditional driver, most lawsuits for injuries caused by an autonomous vehicle will be litigated as a strict products liability claim.[238]

B. Strict Products Liability

Under New York law, manufacturers may be liable for injuries caused by their defective products regardless of privity, foreseeability, or reasonable care.[239] If the product was being used in the manner intended, the defect was not reasonably discoverable by the user of the product who could not perceive the danger of the defect, and the person injured could not have avoided the injury with reasonable care, the manufacturer will be liable.[240] Under strict products liability, a defective product allegation can be asserted because of a mistake during the manufacturing process, a defective or improper design, or failure to provide adequate warnings concerning the use of the product.[241]

In New York, manufacturers are strictly liable for design defects—regardless of actual knowledge—because the manufacturer is in a better position to discover the defect and make changes to the design before releasing the product to the public.[242] If the product design was not reasonably safe and created an unreasonable risk of

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[237] Avi Kaye, *Self Driving Cars: Negligence, Products Liability and Warranties*, NYU (Apr. 20, 2018) https://blog.jipel.law.nyu.edu/2018/04/self-driving-cars-negligence-product-liability-and-warranties/.

[238] *Id*.

[239] Sprung v. MTR Ravensburg Inc., 99 N.Y.2d 468, 472 (2003).

[240] Voss v. Black & Decker Mfg. Co., 59 N.Y.2d 102, 106 (1983).

[241] *Id*. at 106-07. *Sprung*, 99 N.Y.2d at 472.

[242] *Voss*, 59 N.Y.2d at 107.

harm to the user, the manufacturer is liable.[243] To establish a prima facia case in strict liability for design defects, a plaintiff must demonstrate that the manufacturer breached its duty to market safe products when it marketed a product designed so that it was not reasonably safe and that the defective design was a substantial factor in causing the injury.[244]

Deciding whether an autonomous vehicle is or is not reasonably safe, and whether it creates an unreasonable risk of harm, will be difficult. Aside from the fact the car drives itself, it must still meet the same federal equipment safety standards as any other vehicle. Theoretically, a plaintiff could establish a prima facia case for the design of the physical vehicle being unreasonably dangerous, but the gravamen of a products liability claim against an autonomous vehicle manufacturer will most likely be linked with the autonomous technology or its software as opposed to the hardware. The more likely question in this scenario would be whether autonomous technology is unreasonably dangerous. This notion furthers the idea that a strict products liability claim will most likely be derived from a defective or improper design, as opposed to a mistake in the manufacturing process. A mistake in the manufacturing process would be no different from a products liability claim against a non-autonomous vehicle concerning its hardware, while a claim against the software aspect would fall into a design defect.

The first issue in a defective or improper design defect claim should be determining what autonomous technology is. Autonomous technology can be classified as technology that can operate, develop, and expand its functionality without any human intervention.[245] Autonomous vehicle technology is comprised of a large scheme of algorithms.[246] The second issue should be determining whether the algorithmic system is the defective product. New York courts have yet to rule on whether a computer algorithm is a product for a defective design suit; however, the United States District Court in South

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[243] *Id*. at 107-08.

[244] *Id*.

[245] *See* Section II(A) above *What is Automated Car Technology and How does it Work*. To put it simply, autonomous technology is machine learning. *See* LANGDON WINNER, AUTONOMOUS TECHNOLOGY: TECHNICS-OUT-OF-CONTROL AS A THEME IN POLITICAL THOUGHT, 30-31 (1978).

[246] Anil Gupta, *Machine Learning Algorithms in Autonomous Driving*, IIOTWORLD, https://iiot-world.com/machine-learning/machine-learning-algorithms-in-autonomous-driving/ (last visited Aug. 21, 2019).

Carolina has been presented with the issue and found that it is, or at least a component of, the autonomous technology.[247]

In *Wickersham v. Ford Motor Company*, the plaintiff asserted a claim for defective product design based on a vehicle's algorithm in the airbag deployment system.[248] Under South Carolina law, the standard for products liability differs from that in New York.[249] In South Carolina, a plaintiff bears the burden of showing a feasible alternative design that would have prevented the product from being unreasonably dangerous.[250] In *Wickersham*, plaintiff's expert alleged that the algorithm for the vehicle's airbag system was not calibrated to account for the specific crash and could have been better calibrated in a variety of ways, by proposing different programming options already used within the industry.[251] Defendant-Ford Motor Company alleged that plaintiff could only prevail by showing an actual algorithm that could have been used, and that proposing a strategy for production is not an alternative design, citing a previous ruling that "a conceptual design is insufficient to establish a reasonable alternative design."[252]

The court ruled that the plaintiff's proposal for implementation constituted a design because other manufacturers have successfully implemented their proposal, thus making it reasonable for Ford to have done the same.[253] The court continued by stating that "the algorithm is better understood as the product, or at least, a component thereof. The algorithm is used to perform a function . . . [i]t is a system of information, much like a physical product may be a system of tubes, iron, wires, etc."[254]

If the New York courts follow *Wickersham* and decide that an algorithm is a product similar to a physical one, then plaintiffs can plead successful claims against autonomous vehicle manufactures for a design defect in the autonomous system.[255] Naturally, the creation

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[247] *Wickersham v. Ford Motor Company*, 194 F.Supp.3d 434 (D. S.C. 2016).

[248] *Id*. at 438.

[249] *See supra* notes 230, 231, 238.

[250] *Wickersham*, 194 F.Supp.3d at 438.

[251] *Id.* at 439.

[252] *Id*. (*citing* Holland ex rel. Knox v. Morbark, Inc. 407, S.C. 227, 754 S.E.2d 714, 720 (S. C. Ct. App. 2014)).

[253] *Wickersham*, 194 F.Supp.3d at 440.

[254] *Id*.

[255] Autonomous algorithms are just one component that comprise of an autonomous system. These algorithms are created during the manufacturing process, and any claim for a defective design would necessitate from said manufacturing process. Any assertion of products liability under design defect will be an assertion of a mistake made during the manufacturing process.

of an autonomous algorithm will be during the manufacturing process, and any claim for a defective design would be derived from that process. If a similar application is adopted in New York, according to *Voss v. Black & Decker Mfg. Co.*[256] the manufacturer does not need actual knowledge that the algorithm used in an autonomous vehicle is defective. The mere fact that the algorithm is defective makes the manufacturer liable because the manufacturer's software engineers would be in a superior position to discover the defect before selling its vehicles to consumers.

Manufacturers, including casual manufacturers, have a duty to warn users of known defects in their products, which are not obvious or apparent, and a failure to provide adequate warnings will make the manufacturer liable.[257] Failure to warn cases are governed by negligence principles, and in deciding such a case, the court must first decide whether a duty to warn is owed by the manufacturer to the injured party.[258] In deciding whether the duty exists, the court must balance the

> risks, burdens, and costs among the parties and within society, account for the economic impact of a duty, pertinent scientific information, the relationship between the parties the identity of the person or entity best positioned to avoid the harm in question, the public policy served by the presence or absence of a duty and the logical basis of a duty.[259]

New York has held that manufacturers have to warn against "latent dangers resulting from foreseeable uses of its products which it knew or should have known;" "dangers arising from the product's intended use or a reasonably foreseeable unintended use;" and "foreseeable uses of the product about which the manufacturer learns after the sale of the product."[260]

New York courts have not been confronted with the question of whether autonomous vehicle manufacturers need to warn consumers of the dangers associated with self-driving technology, but it can be argued that a manufacturer's duty to warn would depend on the level of autonomy of the vehicle being operated. Manufacturers of cars with

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256 *Supra* note 240.

257 Gebo v. Black Clawson Co., 92 N.Y.2d 387, 392, 394-95 (1998).

258 In re New York City Asbestos Litigation, 27 N.Y.3d 765, 787 (2016).

259 *Id*. at 788.

260 *Id*.

lower levels of autonomy, such as adaptive cruise control or brake assist, would presumably need not warn against the dangers involved with drinking and driving or sleeping and driving while the car operates itself because it cannot be foreseeable that the vehicle equipped with limited autonomy could navigate on its own without human intervention. However, highly autonomous vehicles with capabilities to navigate with little to no human intervention would presumably need to warn against the dangers of many non-traditional driving activities because of the foreseeability that the public would engage in such behaviors. Presumably, the biggest question a court will have to grapple with is whether the functionality and ability of an autonomous vehicle to navigate roadways with no human intervention is a latent danger. Manufacturers will certainly argue that there is no latency at all, and all the dangers associated with the self-driving activity are evident. On the other hand, plaintiffs will argue that the dangers of self-driving activity cannot be easily perceived by a lay person, and the responsibility to inform consumers of all potential dangers are within the hands of the manufacturer.

New York courts may not be presented with this issue for some time, but assume the tragic case of Joshua Brown, the man who lost his life in an autonomous Tesla Model S.[261] The deceased had engaged the semi-autonomous autopilot system on a Florida highway, and during the 37-minute trip, he had only placed his hands on the steering wheel for 25 seconds.[262] During that trip, the autonomous system had sent out warning signals seven times throughout the car that his hands were required to be on the steering wheel, and his hands were not detected.[263] A lawsuit has not been filed against Tesla with regard to this incident, but had a products liability claim been asserted, would the estate succeed in a claim for failure to warn?

Tesla knew, or undoubtedly should have known, that users of its autopilot feature would allow the vehicle to perform most, if not all, of the driving tasks. But the question for the courts to consider is whether the warning signals emitted by the autonomous technology on seven different occasions constituted a sufficient warning of the dangers associated with the foreseeable use of its product and whether

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[261] *Man Killed in Tesla 'Autopilot' crash got numerous warnings: Report*, CNBC, https://www.cnbc.com/2017/06/20/man-killed-in-tesla-autopilot-crash-got-numerous-warnings-report.html (last updated Jun. 20, 2017, 10:10 AM).

[262] *Id*.

[263] *Id*.

Tesla's notification system had met its duty in providing a reasonable, non-negligent, warning.

VII. CONCLUSION

Inevitably, autonomous vehicles are the present and the future. Whether an individual personally owns or summons one from a cell-phone, autonomous vehicles as a mode of transportation provide revolutionary-style benefits to humanity and our planet. It is imperative for the federal government to precisely craft legislation that will not only propel the use of autonomous vehicles into America but also improve the safety and confidence of consumers in the process. Any effort that is made will bring great change and benefits to the ecosystem, which indirectly benefits humanity through cleaner air, easing financial obligations, and through the alleviation and reduction of stress in American lives.