

GONE IN SIXTY SECONDS: FADING AUTOMOBILE INSURANCE COSTS IN A DRIVERLESS FUTURE

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I. INTRODUCTION

Automobiles and the art of driving have an important role in the history of the United States. Henry Ford revolutionized the automobile industry with the implementation of his unique managerial methods.¹ Competition between automobile manufacturers has driven the automobile culture to adopt the fastest

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1. Bob Oster, *MDP or UPL—You Decide*, 49 R.I. BUS. J. 3, 3 (2001).

engines and the latest features.² Insurance has been around to protect the dangerous consequences of the widespread acceptance of automobiles.³

But the future of the automobile industry does not look as dangerous. The most recent innovation in the auto industry is the adoption of self-automated, driverless cars.⁴ Industry leaders like Mercedes and Ford, as well as newcomers such as Tesla and Google, are all testing their driverless car software to prepare for the widespread adoption of this new technology.⁵ These automakers are all competing to get their piece of the predicted \$42 billion dollar a year industry by 2025.⁶ This new evolution in automobiles has the potential to eliminate any possibility of a fatal or serious car accident.⁷ In the very near future, the vehicle insurance industry may become unnecessary.⁸ In a 2014 survey conducted by Insurance.com, eighty-six percent of drivers said they would consider purchasing an autonomous car if it meant cheaper insurance policies.⁹

If every car is operated by a computer, vehicle collisions will be extremely rare.¹⁰ Even if accidents are still a common occurrence, the liability may not fall on the owner of the autonomous vehicle, but rather on the automaker through a product liability claim.¹¹ All things considered, the vehicle insurance industry will be undergoing changes based on the needs of the consumers.¹² And these changes will be driven by technological advances in the reporting and understanding of an accident where human error may not be a factor.¹³ If self-driving cars experience a slow level of adoption, insurance companies will be able to appropriately calculate sensible insurance policies at a reasonable cost for autonomous car owners.¹⁴ However, if the rate of adoption is much quicker, the insurance industry may not have enough time to make proper

2. See *The History of the Automobile*, UNIV. COLO. BOULDER, <http://l3d.cs.colorado.edu/systems/agentsheets/New-Vista/automobile/> (last visited Mar. 19, 2018) (detailing the advancement of engine technology during the early history of automobiles).

3. JEFFREY E. THOMAS, *NEW APPLEMAN ON INSURANCE LAW LIBRARY EDITION*, § 61.01 (Lexis 2018).

4. Dee-Ann Durben & Tom Krisher, *What do Tesla, Honda, Volvo, Ford and Subaru Have in Common? Self-Driving Cars on Roads Now*, CHI. TRIB. (Aug. 18, 2016, 11:00 AM), <http://www.chicagotribune.com/classified/automotive/ct-self-driving-cars-now-20160818-story.html>.

5. *Id.* (describing how popular automakers may be overtaken by tech companies in the automobile industry).

6. Alex Davies, *The Very Human Problem Blocking the Path to Self-Driving Cars*, WIRED (Jan. 1, 2017, 7:00 AM), <https://www.wired.com/2017/01/human-problem-blocking-path-self-driving-cars/> (citing Boston Consulting Group's estimation of the autonomous car industry in 2025).

7. Nedra Pickler, *'Smart Car' Tech Encouraged in U.S.*, ABC NEWS (July 19, 2000), <http://abcnews.go.com/Technology/story?id=119657&page=1>.

8. *Background on: Self-Driving Cars and Insurance*, INS. INFO. INST. (July 1, 2016), <http://www.iii.org/issue-update/self-driving-cars-and-insurance> [hereinafter *Self-Driving Cars and Insurance*].

9. *Autonomous Cars: Bring 'Em On, Drivers Say in Insurance.com Survey*, INSURANCE.COM (July 28, 2014) <http://www.insurance.com/about-us/news-and-events/2014/07/autonomous-cars-bring-em-on-drivers-say-in-insurance.com-survey.html> [hereinafter *Insurance.com Survey*].

10. *Self-Driving Cars and Insurance*, *supra* note 8.

11. *Id.* (predicting a reduction of accident claims in favor of a higher percentage of product liability claims).

12. John Cusano & Michael Costonis, *Driverless Cars Will Change Auto Insurance. Here's How Insurers Can Adapt*, HARV. BUS. REV. (Dec. 5, 2017), <https://hbr.org/2017/12/driverless-cars-will-change-auto-insurance-heres-how-insurers-can-adapt>.

13. *Id.*

14. *Id.*

readjustments.¹⁵ Instead, they may need to find a new and indirect way to offer insurance coverage.

Furthermore, autonomous car owners will face many other legal implications. Like current automobiles, autonomous cars will need to undergo regular maintenance to ensure all important systems are working correctly.¹⁶ This burden may not be felt by the general public, as many ridesharing service companies are seeking to have a fleet of autonomous cars instead of human drivers.¹⁷

This Note will describe the current possibilities of what automobile insurance can look like with current and soon-to-be-implemented technologies. These possibilities will be analyzed and compared to other similar models to understand the pros and cons with each possibility. And finally, recommendations to the automobile insurance industry will be provided based on the analysis of these possibilities and the positive impact that would result for the general public.

II. BACKGROUND

A. *Vehicle Insurance in the United States of America*

The first automobile accident occurred in 1891; the first insurance policy was written in 1897.¹⁸ Current vehicle insurance in the United States deals with the financial liability, or loss, an owner of a vehicle may face if his or her vehicle is involved in an accident resulting in compensable damage.¹⁹ Vehicle insurance laws vary state from state, with very few states that do not require vehicle insurance at all.²⁰ Instead, New Hampshire and Virginia allow drivers to pay a no-insurance fee or post a cash bond for the minimum coverage requirements.²¹ The privileges and immunities clause of Article IV of the United States Constitution allows a citizen of one state to have his or her automobile insurance respected when driving through other states.²²

The insurance policies themselves usually cover bodily injury or property damage, with usual limits on how much an insurance company will pay for either bodily injury or property damage.²³ In its early history, in order to hold drivers

15. *Id.*

16. Sasha Kucharczyk, *How Will Maintenance Change with the Autonomous Vehicle?*, READWRITE (Apr. 18, 2017), <https://readwrite.com/2017/04/18/maintenance-and-the-autonomous-vehicle-t1/>.

17. *See infra* note 193.

18. Heidi Wallis, *The Surprisingly Fascinating History of (U.S.) Car Insurance*, ESURANCE BLOG, <http://blog.esurance.com/the-surprisingly-fascinating-history-of-us-car-insurance/> (last visited Mar. 19, 2018).

19. *Id.*

20. Richard J. Peltz-Steele, *Wrongs, Rights, and Remedies: A Yankee Romp in Recent European Tort Law*, 26 IND. INT'L & COMP. L. REV. 102, 130 (2016).

21. *See Car Insurance in New Hampshire*, DMV.ORG, <http://www.dmv.org/nh-new-hampshire/car-insurance.php>; *Car Insurance in Virginia*, DMV.ORG, <http://www.dmv.org/va-virginia/car-insurance.php> (detailing the requirements for New Hampshire and Virginia drivers to defer the purchase of automobile insurance).

22. U.S. CONST. art. IV.

23. *See Auto Insurance Buying Guide*, PROGRESSIVE, <https://www.progressive.com/answers/auto-101> (providing a general overview of the terms of an auto insurance policy) (last visited Mar. 19, 2018).

liable for their misconduct in anti-collision, courts applied the tort ideology of a right of action for plaintiffs injured as a result of a statute violation.²⁴ In order to succeed on such a claim, the injured party needs to show that the statute was intended to protect such class of plaintiffs from a specified class of defendants.²⁵

The Supreme Court recognized this ideology as a means for a plaintiff to prove liability in 1984, leading to nationwide adoption of this basis for liability.²⁶ However, unless a jurisdiction has enacted laws for all possible instances of how an automobile accident can occur, there may be liability issues in cases where no statute is violated and liability is difficult to prove.²⁷ Eventually, the auto industry attributed deaths and incidents from vehicle collisions to the “unpredictable ‘human factor.’”²⁸ This notion evolved into the implementation of no-fault insurance within state government, thereby allowing drivers to receive the benefits of insurance without regard to the tort liability.²⁹

B. *The Evolution of the Driverless Car*

In regard to the actual definition, the term “driverless car” has been used in the legal insurance context since long before the modern meaning became widespread. For example, in 1971, driverless cars were defined as “an automobile of the commercial type including trailers and semi-trailers while rented without the named insured or a chauffeur of the named insured in attendance.”³⁰ This antiquated definition, however, no longer fits the modern interpretation of a driverless car.

Technology and cars have a long history together. From seatbelts, to windshield wipers, to car radios, technological advancements have always impacted the automobile industry.³¹ The modern technological development that helped push the concept of autonomous driving began when Lexus introduced the self-parking LS 460 at the Detroit International Auto Show in 2006.³² This advanced into automatic braking, a more recent development.³³ Automated driving uses the same idea of having sensors that detect nearby

24. McCracken v. Walls-Kaufman, 717 A.2d 346, 354 (D.C. 1998).

25. *Id.*

26. Shahtout v. Emco Garbage Co., 695 P.2d 897, 899 (Or. 1985).

27. *Id.*

28. Joan Claybrook & David Bollier, *The Hidden Benefits of Regulation: Disclosing the Auto Safety Payoff*, 3 YALE J. REG. 87, 92 (1985) (citing MARK V. NADEL, *THE POLITICS OF CONSUMER PROTECTION* 138 (1971)).

29. Gary T. Schwartz, *Auto No-Fault & First-Party Insurance: Advantages & Problems*, 73 S. CAL. L. REV. 611, 616 (2000).

30. *Transp. Ins. Co. v. Employers Cas. Co.*, 470 S.W.2d 757, 759 (Tex. Civ. App. 1971).

31. *A Chronology of the U.S. Auto Industry*, CHI. TRIB. (June 16, 1996), http://articles.chicagotribune.com/1996-06-16/travel/9606160396_1_four-wheel-drive-first-auto-cadillac.

32. Stephanie Levis, *Look, Ma, No Hands: Parking Technology Takes the Wheel*, GEICO (May 5, 2016), <https://www.geico.com/more/driving/auto/car-safety-insurance/look-ma-no-hands-parking-technology-takes-the-wheel/>.

33. Charles Fleming, *Automakers are Rolling Out Features En Route to Self-Driving Cars*, L.A. TIMES (Nov. 20, 2014, 10:12 AM), <http://www.latimes.com/business/autos/la-fi-hy-1121-la-auto-show-autonomous-cars-20141121-story.html>.

obstructions as well as a computer that reads these sensors and operates the vehicle along a route while avoiding these obstacles.³⁴

However, with all of these advancements, the modern technology for self-driving cars is not consistent among all major manufacturers.³⁵ Autonomous vehicles that are currently being built are classified into six distinct levels of automation, ranging from zero to five.³⁶ Level 0 is full human control over the vehicle.³⁷ Level 1 is the automation of one function, such as steering or acceleration, with the remainder controlled by a human.³⁸ An example of an automated function is cruise control or lane-centering.³⁹ Level 2 is defined as the automation of at least two primary control functions of an autonomous vehicle whereby the human driver does not need to operate the steering wheel and the gas pedal at the same time, such as when a driver uses lane-centering and cruise control at the same time.⁴⁰ Level 3 is very limited self-driving where the human driver does not need to monitor the vehicle, but may intervene when necessary.⁴¹ Level 4 is full autonomous driving for driving scenarios covered under the “operational design domain” of the vehicle.⁴² Lastly, Level 5 automation covers all functions for a vehicle to be driven, regardless of the driving scenario.⁴³ These different levels require different levels of engagement from drivers, and some automobile manufacturers are skipping over Levels 1, 2, and 3, and are developing vehicles that fall under the category of fully autonomous driving (Levels 4 and 5).⁴⁴

Consumers interested in self-driving cars will need to do research to understand what exactly is required of a human driver to operate these vehicles.⁴⁵ There is a growing interest amongst consumers to finally be able to have transportation where they are not in control.⁴⁶ Specifically, there is a growing need for the elderly to own these types of vehicles, as well as ridesharing services.⁴⁷

Currently, there are no blanket federal laws regulating autonomous driving.⁴⁸ However, some states already have legislation that does not interfere

34. John P. Pullen, *You Asked: How Do Driverless Cars Work?*, TIME (Feb. 24, 2015), <http://time.com/3719270/you-asked-how-do-driverless-cars-work/>.

35. See Hope Reese, *Updated: Autonomous Driving Levels 0 to 5: Understanding the Differences*, TECHREPUBLIC (Jan. 20, 2016, 10:47 AM), <http://www.techrepublic.com/article/autonomous-driving-levels-0-to-5-understanding-the-differences/> (documenting the varying technologies being used).

36. *Id.*

37. *Id.*

38. *Id.*

39. *Id.*

40. *Id.*

41. *Id.*

42. *Id.*

43. *Id.*

44. *Id.*

45. Mary M. Chapman, *Self-Driving Cars Could Be Boon for Aged, After Initial Hurdles*, N.Y. TIMES (Mar. 23, 2017), <https://www.nytimes.com/2017/03/23/automobiles/wheels/self-driving-cars-elderly.html>.

46. *Id.*

47. *Id.*

48. Kurt M. Gosselin, *Navigating the Policy Landscape to Bring Autonomous Vehicle Legislation to Your State*, N.Y.U. J. LEGIS. & PUB. POL'Y QUORUM 85, 95 (2015).

with the ability of individuals to own and operate autonomous vehicles.⁴⁹ Nevada permitted autonomous driving on public roads in 2012 and, since then, California, Florida, and Michigan have passed similar laws.⁵⁰ A growing number of states have proposed legislation regulating autonomous vehicles.⁵¹ Technically, even states without laws regulating autonomous driving are not banning autonomous driving within their states; it just has not been regulated yet.⁵² Therefore, every state that actively or passively declares autonomous cars street legal, is prepared for insurance companies to provide coverage for these vehicles. The most basic coverage policies available today can be applied to self-driving vehicles.⁵³

The average car owner knows his or her rights and responsibilities in regards to the ownership of the car.⁵⁴ The basic upkeep of a car requires regular maintenance checkups at local garages or manufacturers' garages.⁵⁵ The average consumer spends \$8,698 annually for fuel, insurance, maintenance, financial charges, license and registration fees, tires, and depreciation just for owning and operating a vehicle.⁵⁶ While self-driving cars will not eliminate all of these costs, the first of these costs to be reduced due to autonomous cars will be insurance costs.⁵⁷ Annually, the average customer pays \$1,115 for insurance coverage for his or her vehicle,⁵⁸ the cost of which is highly dependent on the demographic of each specific customer, such as age, gender, and the state the customer resides in.⁵⁹ With the advent of a new way for consumers to get from point A to point B, the responsibilities of a self-driving car owner will not be the same for a human-operated car owner.⁶⁰

Insurance costs are one of many major considerations an individual makes when shopping for a new car,⁶¹ and the average consumer is eager to see the

49. *Id.* at 86–87.

50. *Id.* at 87.

51. *Id.* at 95–96.

52. *Id.* at 96.

53. See *Self-Driving Cars and Insurance*, *supra* note 8 (describing the background of insurance for self-driving vehicles).

54. See *Annual Costs to Own and Operate a Vehicle Falls to \$8,698, Finds AAA*, AAA NEWSROOM (Apr. 18, 2015) [hereinafter *Annual Costs*] (finding an average car owner is paying \$8,968 per year to own and operate a car).

55. See *Auto Warranties & Routine Maintenance*, FED. TRADE COMM'N (May 2015), <https://www.consumer.ftc.gov/articles/0138-auto-warranties-routine-maintenance> (“An independent mechanic, a retail chain shop, or even you yourself can do routine maintenance and repairs on your vehicle,” in addition to the dealer).

56. *Annual Costs*, *supra* note 54. Numbers are based on a typical sedan, driven 15,000 miles annually.

57. See *Self-Driving Cars and Insurance*, *supra* note 8 (“[A]s crash avoidance technology gradually becomes standard equipment, insurers will be able to better determine the extent to which these various components reduce the frequency and cost of accidents.”).

58. *Annual Costs*, *supra* note 54. Data from 2015 was used.

59. See *id.* (discussing inconsistencies in state insurance regulations); *Self-Driving Cars and Insurance*, *supra* note 8 (“Insurance rates vary widely by driver, driving habits, insurance company and geographical area.”).

60. See *Self-Driving Cars and Insurance*, *supra* note 8 (“As cars are become increasingly automated the onus might be on the manufacturer to prove it was not responsible for what happened in the event of a crash.”).

61. Doug DeMuro, *Buying a Car: What Factors Affect Your Car Insurance Rate*, AUTOTRADER (Nov. 2015), <http://www.autotrader.com/car-shopping/buying-a-car-what-factors-affect-your-car-insurance-rate-246708>.

adoption of autonomous vehicles with the promise of lower insurance costs.⁶² But the exact format of automobile insurance in a driverless future is not set in stone.⁶³ The days of having car owners paying differing costs on car insurance based on their state of residence, driving history, occupation, living situation, and other demographics are fleeting.⁶⁴ However, depending on the specific technology used for each self-driving car, an insurance company may still decide to charge certain customers an added or reduced premium for certain individual vehicle characteristics.⁶⁵

Furthermore, insurance policies are not the only thing a responsible self-driving car owner should be concerned about.⁶⁶ Applying current automobile collision legal theories to vehicle accidents caused by autonomous cars is not a perfect fit. However, the application of common legal theories to the legal policies of autonomous driving can help predict how this revolutionary product will be regulated. With most jurisdictions adopting the legal standard of negligence *per se* based on what the government regulates,⁶⁷ it is important to determine the compatibility between driverless cars and modern insurance standards. With the changing landscape of vehicle insurance, insurance companies may be looking for alternative ways to provide coverage to owners of self-driving vehicles.

C. *Autonomous Insurance Using Current Insurance Policies*

1. *Unique Factors that Insurance Companies May Consider*

Vehicular insurance in the United States consists of five main and accepted policies: (1) liability insurance covers the costs of an accident caused by the insured up to a coverage limit;⁶⁸ (2) collision coverage is for accidents not caused by the insured and allows the insured to recover up to the total value of the car in the collision;⁶⁹ (3) comprehensive coverage is for situations that do not involve accidents, such as weather damage and theft of the car;⁷⁰ (4) personal injury protection covers medical bills of the insured and their passengers will be

62. *Insurance.com Survey*, *supra* note 9.

63. *See Self-Driving Cars and Insurance*, *supra* note 8 (“Except that the number of crashes will be greatly reduced, the insurance aspects of this gradual transformation are at present unclear.”); *see generally* Carrie Schroll, *Splitting the Bill: Creating a National Car Insurance Fund to Pay for Accidents in Autonomous Vehicles*, 109 NW. U.L. REV. 803, 823 (2015) (discussing the uncertain future of insurance policies regulating self-driving cars).

64. Schroll, *supra* note 63.

65. *Annual Costs*, *supra* note 54.

66. *See, e.g.*, Andy Greenberg, *The Jeep Hackers Are Back to Prove Car Hacking Can Get Much Worse*, WIRED (Aug. 1, 2016, 3:30 PM), <https://www.wired.com/2016/08/jeep-hackers-return-high-speed-steering-acceleration-hacks/> (describing how car hacking is an additional problem with self-driving cars aside from insurance coverage).

67. *What Is “Negligence Per Se?”*, ROTTENSTEIN L. GRP. LLP, <http://www.rotlaw.com/legal-library/what-is-negligence-per-se/> (last visited Mar. 18, 2018).

68. *5 Types of Car Insurance Coverage Explained*, 21ST CENTURY INS. (Jan. 2012), <http://www.21st.com/insurance-newsletters/2012/01/5-types-of-car-insurance-coverage.htm>.

69. *Id.*

70. *Id.*

paid, regardless of where liability lies;⁷¹ and (5) the last type of insurance is for accidents involving uninsured or underinsured parties who are liable for the accident yet their coverage will not be able to pay for their legally responsible damages.⁷²

Of these insurance types, comprehensive coverage and collision coverage are the most relevant to self-driving cars. Personal injury protection may be applicable, but it serves more as individual health insurance coverage rather than a vehicle insurance policy.⁷³ Theft and weather damage may still be a potential harm in the future, as well as other new, foreseeable harms.⁷⁴ The more interconnected vehicles are to other systems, the more likely they are to be hacked and taken control of by someone else.⁷⁵

Some factors that are already considered for insurance purposes include the type of car, the gender and age of the driver, and the driver's occupation and state of residence.⁷⁶ The type of car driven already plays a big role in insurance rates, and this may be more visible if certain manufacturers are known to be safer or more reliable.⁷⁷ Furthermore, certain driver demographics, such as gender and age, are no longer applicable, because these characteristics do not play a factor for how an autonomous vehicle will operate.⁷⁸ Demographics like occupation and state of residence may still play a role.⁷⁹ For example, a project manager for a general contracting company may have different requirements when choosing an autonomous car than an office worker. The project manager may be visiting multiple different construction sites in a day and may be driving on rough terrain or newly developed roads that are unrecognized on the vehicle's navigation system. The office worker probably commutes on the same road to and from work every day.

On the opposite end of the spectrum, the need for individuals to pay for their own insurance may be completely unnecessary in the near future. The principal reason individuals buy insurance is to account for the risk of having an accident while operating a vehicle.⁸⁰ The accident is usually a result of human error, so when a computer program can read the roads better and make smarter decisions than humans, an accident can only occur when a computer makes an

71. *Id.*

72. *Id.*

73. *See id.* (“With this coverage, your medical bills along with those of your passengers will be paid, no matter who is at fault for an accident.”).

74. *See Self-Driving Cars and Insurance, supra* note 8 (“Coverage for physical damage due to a crash and for losses not caused by crashes but by wind, floods and other natural elements and by theft (comprehensive coverage) is less likely to change . . .”).

75. Greenberg, *supra* note 66.

76. Schroll, *supra* note 63.

77. *See Annual Costs, supra* note 54 (“While premium calculations are confidential, this modest increase of \$7.67 per month may be due in part to high-cost modern vehicle features such as infotainment systems, advanced safety features and lightweight materials that can be more expensive to repair and, therefore, insure.”).

78. *See id.* (“Insurance rates vary widely by driver, driving habits, insurance company and geographical area.”).

79. *Id.*

80. *See, e.g., 5 Reasons You Need Car Insurance, ESURANCE, <https://www.esurance.com/info/car/5-reasons-you-need-car-insurance>* (last visited Mar. 19, 2018) (explaining why drivers need car insurance).

error or a part of the automobile malfunctions.⁸¹ Current insurance laws, however, still require mandatory vehicle insurance,⁸² which may result in an imperfect fit between the insurance and automotive industries.

Since the car owner is not the one responsible for these mistakes, who should be held liable? For software and decision-making errors, the software team behind the operating system of the vehicle could be held liable for the accident. For an accident caused by a physical flaw in the car, the manufacturers should also be held liable. Unless the owner tampers with the inner workings of the vehicle, which will be discussed in the next Section,⁸³ the manufacturer should be held liable.

In order to adequately attach liability to each responsible party, the investigation of an accident involving self-driving cars requires access to a wide range of information. Informally known as black boxes, Event Data Recorders (EDR) are present in approximately ninety-six percent of cars made during 2013 and in every car sold after 2013.⁸⁴ In its simplest form, an EDR can record moments before, during, and after an accident.⁸⁵ Yet, many EDRs scan even more information, such as the speed of the vehicle, which seatbelts were buckled, and GPS location.⁸⁶ Currently, this information has been used for investigation purposes by law enforcement, accident reconstruction companies, and insurance companies.⁸⁷

Another important instrument in the understanding of car accidents is the dashboard camera. Originally popularized in Russia due to prevalent vehicle insurance fraud, dashboard cameras have been rising in popularity.⁸⁸ In the United Kingdom, insurance providers offer discounts if customers install dashboard cameras in their vehicles.⁸⁹ However, even though there are many direct benefits of installing a dashboard camera in the United States, insurance discounts are not one of them.⁹⁰ Holly Anderson, a spokeswoman for State Farm Insurance, explains that State Farm provides discounts for driving behavior that “will lower our claims costs, such as a customer’s driving history that indicates

81. See Pullen, *supra* note 34 (describing how self-driving cars can often be better than people at evaluating roads and choosing the best path); see also *Top 20 Pros & Cons Associated with Self-Driving Cars*, AUTO INS. CTR., <https://www.autoinsurancecenter.com/top-20-pros-and-cons-associated-with-self-driving-cars.htm> (last visited Mar. 19, 2018) (indicating that eighty-one percent of accidents are caused by human error and also describing instances in which automated car technology could malfunction).

82. *5 Reasons You Need Car Insurance*, *supra* note 80.

83. *Infra* p. 232.

84. Kim Komando, *Your Car’s Hidden ‘Black Box’ and How to Keep It Private*, USA TODAY (Dec. 26, 2014, 7:00 AM), <http://www.usatoday.com/story/tech/columnist/komando/2014/12/26/keep-your-car-black-box-private/20609035/>.

85. Thayer Case, *Putting the Brakes on Driver Privacy: Black Boxes, Data Collection, and the Fourth Amendment*, 21 WASH. & LEE J. CIVIL RTS. & SOC. JUST. 156, 160–61 (2014).

86. *Id.*

87. Mary-Rose Abraham, *Is That a ‘Black Box’ in Your Car?*, ABC NEWS (Feb. 22, 2010), <http://abcnews.go.com/Technology/MelodyHobson/car-black-box-records-key-data/story?id=9814181>.

88. Patrick Allan, *Will a Dash Cam Actually Help You After a Car Accident*, LIFE HACKER (Sept. 21, 2015, 11:00 AM), <http://lifehacker.com/will-a-dash-cam-actually-help-you-after-a-car-accident-1732054157>.

89. *Id.*

90. See Penny Gusner, *7 Reasons to Use a Dashboard Camera*, INSURANCE.COM (Aug. 3, 2017), <http://www.insurance.com/auto-insurance/claims/7-reasons-to-use-a-dash-cam.html> (explaining certain benefits of owning a dashboard camera).

he or she is a safe driver.”⁹¹ While she does believe that dashboard cameras provide useful information about why a crash occurred, “it is not a device that is designed to inhibit the crash from happening in the first place.”⁹² This opinion may change as human drivers are replaced with computer drivers, where passengers may have been inattentive during the moments leading up to an accident and a thorough visual recollection of the incident will prove valuable for insurance companies.⁹³

In addition, cameras may be used within the car to monitor the awareness of the human driver in Level 2 and Level 3 autonomous vehicles.⁹⁴ At these levels, the human driver has the ability to take control of the vehicle, either during emergencies or at will, and these driver-facing cameras will scan for facial readings to interpret the attentiveness of the human driver.⁹⁵ This camera, similar to the technology used in Ford’s computer to scan road conditions,⁹⁶ requires a lot of physical space, such as in-cabin camera and computer hardware that is able to read and store all the footage recorded.⁹⁷

Overall, more accident-reporting devices in self-driving vehicles should be encouraged by insurance companies. These devices can determine the nature of accidents and provide valuable information that would help insurance companies assess accidents.⁹⁸ The best way to encourage this behavior is the same way insurance companies encourage such behavior today: by providing discounts for safe and responsible drivers.⁹⁹

2. *No Need for Car Insurance*

Automakers are choosing to create fully automated cars for most road conditions over semi-automated cars that can be controlled by a human at certain times.¹⁰⁰ The technologies required to allow a human driver to take control of the vehicle are sometimes more complex than a fully autonomous driving system.¹⁰¹ Human drivers are horrible backups to take control of the wheel at a moment’s notice, and “[t]hat problem’s just too difficult.”¹⁰² This “jump” from having self-driving car passengers being back-ups to allowing them to be inattentive will push the liability of having a safe drive solely on the operating

91. Allan, *supra* note 88 (quoting Holly Anderson).

92. *Id.*

93. 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/>.

94. Tarek El Dokor, *Autonomous Vehicles Need In-Cabin Cameras to Monitor Drivers*, IEEE SPECTRUM (Oct. 4, 2016, 1:00 PM), <http://spectrum.ieee.org/cars-that-think/transportation/self-driving/autonomous-vehicles-need-incabin-cameras-to-monitor-drivers>.

95. *Id.*

96. Tuan Huynh, *Can a Self-Driving Car Handle Winter? Snooooo Problem!*, TECHRADAR (Mar. 10, 2016), <http://www.techradar.com/news/car-tech/can-a-self-driving-car-handle-winter-snooooo-problem-1316700>.

97. El Dokor, *supra* note 94.

98. Abraham, *supra* note 87.

99. *See Self-Driving Cars and Insurance*, *supra* note 8 (providing that holding manufacturers liable will lower drivers’ accident risk).

100. Davies, *supra* note 6.

101. *Id.*

102. *Id.* (quoting Erik Coelingh, formerly Volvo’s head of safety and driver assist technologies).

functions of the self-driving vehicle.¹⁰³ Yet, the technology is not fully there just yet, and over the course of about 350,000 miles, the Google's Level 4 autonomous vehicle needed a human driver to overtake the controls sixty-three times in 2017.¹⁰⁴

Snow tires, event data recorders, and dashboard cameras are all opportunities for the owner of a self-driving car to lower their liability if an accident were to occur.¹⁰⁵ However, it is up to the insurance companies to ensure that careful consumers are compensated.¹⁰⁶ When the vast majority of cars on the road are programmed at Level 4 of autonomous driving, and therefore require little to no human intervention, driver insurance may become obsolete.¹⁰⁷ Any collision that occurs will most likely be caused by outside sources, a manufacturing error, or a software problem.¹⁰⁸

If an accident were to occur and a self-driving vehicle was at fault, the source of the error would need to be determined.¹⁰⁹ As mentioned earlier, the source of error may come from either a manufacturing error in regard to the physical attributes of the vehicle or a software error due to a bug in the code or a logical fallacy.¹¹⁰

The bigger issue that will need to be addressed is the software, because that is what the general public fears most about self-driving vehicles.¹¹¹ Between September 2014 and November 2015, Google's self-driving car had experienced 272 failures and thirteen incidents where there would have been an accident had a human driver not intervened.¹¹² A "failure" was defined as whenever the car detected an internal communication error or a strange sensor reading in a critical vehicle system, such as steering or braking.¹¹³ Google's self-driving vehicle was operating at Level 3 of autonomous driving, and was reliant on the need for human involvement when errors can lead to accidents.¹¹⁴ Many drivers that were initially afraid of autonomous driving and tested a Level 3 autonomous driving began to trust the software system running the car and became comfortable taking over when necessary.¹¹⁵ Yet, if these errors were to occur

103. El Dokor, *supra* note 94.

104. *Disengagement Report*, WAYMO (Dec. 29, 2017), <https://www.dmv.ca.gov/portal/wcm/connect/42aff875-7ab1-4115-a72a-97f6f24b23cc/Waymofull.pdf?MOD=AJPERES>.

105. *Supra* text pp. 8–9.

106. Gusner, *supra* note 90.

107. See *Self-Driving Cars and Insurance*, *supra* note 8.

108. See *infra*, note 170.

109. Srikanth Saripalli, *Redefining "Safety" for Self-Driving Cars*, SCI. AM. (Nov. 29, 2017), <https://www.scientificamerican.com/article/redefining-lldquo-safety-rdquo-for-self-driving-cars/>.

110. *Id.*

111. Jeremy Hsu, *75% of U.S. Drivers Fear Self-Driving Cars, but It's an Easy Fear to Get Over*, IEEE SPECTRUM (Mar. 7, 2016, 3:01 PM), <http://spectrum.ieee.org/cars-that-think/transportation/self-driving/driverless-cars-inspire-both-fear-and-hope>.

112. Mark Harris, *Google Reports Self-Driving Car Mistakes: 272 Failures and 13 Near Misses*, GUARDIAN (Jan. 12, 2016, 5:00 PM), <https://www.theguardian.com/technology/2016/jan/12/google-self-driving-cars-mistakes-data-reports>.

113. *Id.*

114. *Id.*

115. Hsu, *supra* note 111.

with a Level 4 autonomous vehicle, there may not be an opportunity for a human driver to react and take over control.¹¹⁶

The debate about whether Level 2, Level 3, or Level 4 autonomous driving is the safest form of driving is yet to be settled.¹¹⁷ But if and when fully autonomous, Level 4 driving becomes the norm in society, human drivers may not be responsible at all for the accidents that occur because of these vehicles.¹¹⁸ Individual liability for accidents will no longer be a factor because the individual had no role in the accident.¹¹⁹ Yet, there are also many other considerations all car owners, whether owning a modern car or a self-driving car, should acknowledge that they may be liable for.

Overall, there are two possible outcomes for insurance policies in the case of the widespread adoption of the self-driving car,¹²⁰ one of which is a much-reduced insurance policy based on fewer, different factors.¹²¹ The traditional methods of determining the risk of a driver will be overlooked in order to place importance on different criteria related to autonomous vehicles.¹²² The other method is the removal of car insurance required for car owners and instead place that financial burden on car manufacturers.¹²³

Furthermore, there are indications that the way we think about personal liability over automobiles and ridesharing as a whole can change due to the self-driving technology.¹²⁴ The course of the automobile industry and all its sub-categories is highly dependent on how fast the self-driving technology can become the norm for all drivers.¹²⁵ But with the way current insurance policies and personal liability theories are right now, we can predict what role this technology will have in these areas.¹²⁶

III. ANALYSIS

The role of insurance and personal liability laws in a driverless future is unclear.¹²⁷ Yet, the blueprint from today's insurance coverage and liabilities laws can help envision the final product. The first step is to see how current

116. *Id.*

117. Chris Perkins, *Google Self-Driving Boss Says Tesla Crash Proves Need for Fully Autonomous Cars*, R&T (Aug. 8, 2016), <http://www.roadandtrack.com/new-cars/news/a30307/google-self-driving-boss-tesla-crash/>.

118. Mark Schaub & Atticus Zhao, *Self-Driving Cars: Who Will Be Liable?*, KING & WOOD MALLESONS (Aug. 29, 2017), <http://www.kwm.com/en/knowledge/insights/self-driving-cars-who-will-be-liable-20170829>.

119. *Id.*

120. *See generally Marketplace of Change: Automobile Insurance in the Era of Autonomous Vehicles*, KPMG (Oct. 2015), <https://assets.kpmg.com/content/dam/kpmg/pdf/2016/06/id-market-place-of-change-automobile-insurance-in-the-era-of-autonomous-vehicles.pdf> (explaining in part the need for insurance companies to develop policy coverage to protect both the legal responsibilities of manufacturers of vehicles and individual owners).

121. *Id.*

122. *Id.*

123. *Id.*

124. *Id.*

125. *Id.*

126. *Id.*

127. *Background on: Self-driving Cars and Insurance*, INS. INFO. INST. (July 1, 2016), <https://www.iii.org/article/background-on-self-driving-cars-and-insurance>.

insurance laws could work practically in a self-driving community. The second step is to see what would happen if self-driving car owners no longer had an obligation to pay for vehicle insurance. In this scenario, manufacturers may need to establish a connection with insurance companies to properly assess what liabilities a manufacturer may have. Third, the ridesharing industry is already having complications with automobile insurance, and the addition of self-driving vehicles to this industry can lead to further difficulties.

A. *Current Automobile Liability Laws*

1. *Individual Liability over a Driverless Car*

Alongside insurance policies, consumers as well as manufacturers should be concerned about other potential financial liabilities that comes with driverless cars. Traffic tickets, illegal alterations to a vehicle, and having someone other than the owner operating a driverless car can still reflect similar liability issues present with current automobiles.¹²⁸

For example, imagine that in a driverless society, speed limits are raised to ninety miles per hour on major highways. If a speed camera captures an autonomous car going above this speed limit, it will issue a ticket on the owner based on the license plate.¹²⁹ If the autonomous car was going above the speed limit due to a problem within the main computing module, can the owner get reimbursed for the ticket fee from the automobile manufacturer? If the autonomous vehicle was speeding because of an alteration caused by the owner of the vehicle, such as adjusting the software to automatically go ten miles per hour faster than the speed limit,¹³⁰ then the automobile manufacturer has no fault and technically could not be held liable. Instead, the car owner, or the individual responsible for this alteration, should be held liable for putting the lives of others in danger.

Generally speaking, the owner of a vehicle is usually held responsible for all financial incidents occurring after the purchase of a vehicle.¹³¹ This concept does fit into self-driving vehicles easily enough due to the logical nature of holding the owner responsible for incidents involving a vehicle when the manufacturer was not involved. When a self-driving vehicle is speeding, it is rational to put the blame on the owner or the driver of the self-driving vehicle.¹³² Depending on the Level of the self-driving vehicle, the driver has different levels of control over the vehicle, and creating a blanket precedent in regards to

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

129. *Id.*

130. See Joe Miller, *Google's Driverless Cars Designed to Exceed Speed Limit*, BBC NEWS: TECH. (Aug. 19, 2014), <http://www.bbc.com/news/technology-28851996> (showing the possibility to adjust the maximum speed of a self-driving car using software code).

131. David A. Fischer, *Products Liability—The Meaning of Defect*, 39 MISS. L. REV. 339, 348–50 (1974).

132. Ashley Halsey III, *When Driverless Cars Crash, Who Gets the Blame and Pays the Damages?* WASH. POST (Feb. 25, 2017), https://www.washingtonpost.com/local/trafficandcommuting/when-driverless-cars-crash-who-gets-the-blame-and-pays-the-damages/2017/02/25/3909d946-f97a-11e6-9845-576c69081518_story.html?utm_term=.c3a534431b15.

speeding tickets across all Levels of self-driving vehicles will be problematic.¹³³ A Level 5 self-driving vehicle (that does not require human interference for any of its actions) that was speeding could not have possibly occurred due to the passengers of the vehicle.¹³⁴ The speeding may have occurred due to an internal malfunction, either due to an error from the manufacturer, software developer (if separate from the manufacturer), the owner of the vehicle incorrectly maintaining the vehicle, or from a third-party tortfeasor.¹³⁵

An analogy that can apply to a speeding self-driving vehicle is a human-driven vehicle that has broken brakes. To some degree, drivers still have control over a vehicle because they can still steer the vehicle away from certain obstacles.¹³⁶ However, in terms of speed and avoiding an imminent crash, the driver has no control.¹³⁷ With a faulty-brake accident, an insurance company cannot decisively put the blame solely on the driver of the vehicle until it discovers what exactly caused the brakes to malfunction.¹³⁸ This principle of understanding the reasoning behind accidents should remain vital in proper allocation of damages, including accidents involving self-driving vehicles.¹³⁹

Tying this back to liability in an accident, if drivers are not responsible, they should not be forced to pay for the damages incurred. Furthermore, if they are never able to be liable (i.e., they are driving a Level 4 or Level 5 self-driving vehicle), then there is no real need for an individual to take out insurance.¹⁴⁰ This becomes a huge plus for the self-driving automobile industry and its consumers, at the cost of insurance companies whose large percentage of income comes from automobile insurance.¹⁴¹ However, this may not be the definitive way insurance policies will be carried out once self-driving cars become widespread. The best way to preserve the vehicle insurance industry is to continue to provide insurance services tailor made to self-driving vehicles.¹⁴² Specifically, insurance companies can still play a role in providing customers a service worth paying for. Like in the faulty brakes example, when there is an accident, insurance companies are usually the ones leading the investigations.¹⁴³ By determining the root cause of the accident, the insurance company can pursue the claim against the proper party, whether that is the manufacturer, a third-party, or even the owner of the car for improper maintenance of the vehicle.¹⁴⁴

133. See Reese, *supra* note 35 (suggesting that because different levels of autonomous vehicles require different levels of human control assigning blanket liability for speeding would be improper).

134. *Id.*

135. See *id.* (asserting that, because the human does not have any control of a Level 5 autonomous vehicle, the error must have been caused by something or someone else).

136. *What to Do if Your Brakes Fail*, DEFENSIVE DRIVING, <https://www.defensivedriving.com/safe-driver-resources/what-to-do-if-your-brakes-fail/> (last visited Mar. 19, 2018).

137. See *id.* (explaining the level of control a driver has when their brakes are not functioning).

138. SAMANTHA KLEINBERG, *WHY: A GUIDE TO FINDING AND USING CAUSES* 171 (O'Reilly Media 2016).

139. *Id.*

140. *Self-Driving Cars and Insurance*, *supra* note 8.

141. *Id.*

142. *Id.*

143. *How Car Insurance Companies Investigate Accident Claims*, DAVIS L. GRP., P.S. (2013), <https://www.injurytriallawyer.com/blog/how-car-insurance-companies-investigate-accident-claims.cfm>.

144. *Id.*

The truth of the matter, however, is that with fully autonomous self-driving technology, most cases will end up showing that the driver was not responsible.¹⁴⁵ Outside influences may become the primary causes for accidents, and car owners may start to recognize that there is no reason for states to require vehicle insurance for a self-driving car.¹⁴⁶ This idea may eventually crawl its way up to state legislatures and may be the driving force behind the idea of owning a vehicle without the need for owning insurance.¹⁴⁷

The reduction of the normal idea of vehicle insurance does not mean that insurance companies will be unable to provide valuable services to their customers.¹⁴⁸ The advent of self-driving technology also brings the chaotic nature of interconnected devices.¹⁴⁹ Cars today which contain sophisticated technology for a better driving experience and assisted driving features can be hacked from miles away.¹⁵⁰ The hacking of these cars can lead to cutting off the transmission of the vehicle, taking control of the steering, as well as complete takeover of other features of the vehicle.¹⁵¹ In the unfortunate case that an accident were to occur due to a third-party's hacking into a vehicle's internal systems, insurance companies can step in and offer protection to consumers.¹⁵² Many insurance firms offer "cyberliability" insurance to businesses where the insurance companies cover some of the monetary damages after a business's data has been breached.¹⁵³ These types of insurance policies can be carried out and implemented the same general way vehicle insurance has been.¹⁵⁴

For Level 4 and 5 self-driving vehicles, insurance companies can provide insurance for accidents that occurred due to a hacker, thereby giving drivers peace of mind that they will not be left financially unstable due to an incident like this and the insurance companies can pursue further actions against the hacker.¹⁵⁵ The availability of such insurance depends on whether any evidence that indicates a hacker was involved is left behind in an accident.¹⁵⁶ Furthermore, these instances would need to occur fairly often to encourage drivers to purchase such insurance.¹⁵⁷ Lastly, insurance companies would need to charge a reasonable price for this insurance, which may not be the case, due to the difficulty of finding hackers after an accident has occurred.¹⁵⁸ Thus, insurance companies can still provide worthwhile services to consumers if the

145. *Self-Driving Cars and Insurance*, *supra* note 8.

146. *See id.* (suggesting that manufacturers might be solely liable so individuals will not purchase insurance as they will not be liable).

147. *Id.*

148. *Id.*

149. *Id.*

150. Greenberg, *supra* note 66.

151. *Id.*

152. *Id.*

153. Karen E. Klein, *Insurance for When You Get Hacked*, BLOOMBERG (Aug. 28, 2014, 4:42 AM), <https://www.bloomberg.com/news/articles/2014-08-28/cyberliability-insurance-for-when-your-business-gets-hacked>.

154. *Id.*

155. Larry Greenemeier, *Seeking Address: Why Cyber Attacks Are So Difficult to Trace Back to Hackers*, SCI. AM. (June 11, 2011), <https://www.scientificamerican.com/article/tracking-cyber-hackers/>.

156. *Id.*

157. *Id.*

158. *Id.*

companies can provide a reasonable solution to the imminent problem of hackers overtaking self-driving vehicles.

Regardless of what level of autonomous driving a car owner has, certain characteristics of the vehicle will always be in control of the owner. A broken headlight and incorrectly tinted windows are both examples of how the owner of any type of car can still be responsible for certain car features. These examples pale in comparison to what physical damages in an accident may actually be, but they are an important reference as to what a future car owner may need to be on notice about. Furthermore, human-driven vehicles can be controlled and maintained with faulty equipment.¹⁵⁹ For example, an incorrect speedometer that does not accurately report the speed does not always allow a driver to avoid a speeding ticket.¹⁶⁰ The driver should still be aware of how fast they are going relative to traffic, as well as the expectations of a driver on certain roads.¹⁶¹

In October 2017, Tesla announced a partnership with Liberty Mutual to create a customized insurance package called InsureMyTesla.¹⁶² This plan is cheaper than current insurance plans because it takes into consideration the Autopilot safety features of certain Tesla Models.¹⁶³ This insurance package has already been available in Hong Kong and Australia, but will now be available in all fifty states.¹⁶⁴ The National Highway Traffic Safety Administration reported that the crash rates for Tesla vehicles dropped forty percent after the new Autopilot safety features were installed.¹⁶⁵ Tesla's vice president, Jon McNeill, hopes to one day bundle the costs of the car, maintenance, and insurance into a single price that the consumer pays up front.¹⁶⁶

Is it possible for an inattentive passenger to be held negligently liable for a self-controlled vehicle? The operation of a self-driving vehicle requires a different level of attentiveness than that required for a human-operated car. A more efficient means of ensuring that legal issues will be justly decided would be for state and federal statutes to provide guidelines for when the manufacturer or owner of a self-driving car should be held liable. This may result in changing the current landscape of the insurance industry, where vehicle insurance is no longer mandatory, and products liability takes the role that vehicle insurance once had. Establishing a standard of how aware drivers should be when they need to take over control of the vehicle can help narrow down where liability in an accident should fall. Otherwise, if the governmental regulations and insurance policies do not fit the actual usage of a self-driving vehicle, anticipatory consumers may be unwilling to adopt a new technology early on.

159. Jeffery Mackowski, *Good but Not Great: Autonomous Vehicles and the Law in Florida*, 11 FLA. INT'L U.L. REV. 221, 249 (2015).

160. *Id.*

161. *Id.*

162. Danielle Muoio, *Tesla Strikes Another Deal that Shows it's About to Turn the Car Insurance World Upside Down*, BUS. INSIDER (Oct. 21, 2017, 1:32 PM), <http://www.businessinsider.com/tesla-liberty-mutual-create-customize-insurance-package-2017-10?r=US&IR=T>.

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.*

2. *Corporate Automobile Liability*

Currently, states have statutes limiting how much car owners can alter their cars. From the tint of the windows to the exhaust system, a car owner transgressing such laws will be liable for fines.¹⁶⁷ Usually, standard adjustments are made to a wide range of cars when they are used for commercial purposes, such as a courier service that owns its vehicles.¹⁶⁸ In the age of self-driving cars, large corporations may be purchasing a massive number of vehicles with certain alterations to fit the needs of their businesses.¹⁶⁹ When a corporate vehicle is bought through these methods and gets into an accident, liability can fall on either the manufacturer or the corporation itself.¹⁷⁰

Using the standard set out in *Shahtout v. Emco Garbage Co.*, an accident does not leave the owner liable unless the owner violated a statute by adjusting the properties of the car and the victim falls under the class of people the statute was designed to protect.¹⁷¹ In *Shahtout*, the plaintiff was seeking compensatory damage for being injured when a garbage truck struck her while it was backing up.¹⁷² The plaintiff's claim against the defendant rested on whether the court would accept application of a statute meant to protect employees to include the general public.¹⁷³ Therefore, a violation of this provision under the Employer's Liability Act would create a right of action for anyone, not just other employees, to seek damages from the alleged tortfeasor.¹⁷⁴

A jury trial found that the defendant was not negligent and the plaintiff appealed, claiming an erroneous ruling due to the truck's lack of an alarm to signal backing up.¹⁷⁵ The appellate court affirmed the jury's decision.¹⁷⁶

The Oregon Supreme Court held that negligence *per se*—the kind the plaintiff was claiming the truck driver committed by not having an audio signal for backing up—was not enough by itself to show liability for damages.¹⁷⁷ Additionally, the plaintiff needed to show that the statute that the defendant

167. See, e.g., 625 ILL. COMP. STAT. 5/12-602 (“No person shall modify the exhaust system of a motor vehicle in a manner which will amplify or increase the noise of such vehicle above that emitted by the muffler originally installed on the vehicle, and such original muffler shall comply with all the requirements of this Section.”); 625 ILL. COMP. STAT. 5/12-503 (“No person shall drive a motor vehicle with . . . tinted film upon the front windshield, except that a nonreflective tinted film may be used along the uppermost portion of the windshield if such material does not extend more than 6 inches down from the top of the windshield.”).

168. See Liam Tungh, *Now It's Google's Driverless Delivery Trucks: Patent Shows Courier Services Concept*, ZDNET (Feb. 10, 2016, 1:18 PM), <http://www.zdnet.com/article/now-its-googles-driverless-delivery-trucks-patent-shows-courier-services-concept/> (quoting Google's patent which discloses that the two largest US commercial courier services have over 100,000 vehicles).

169. *Id.* (“Alongside its expanding autonomous vehicle trial, Google has been busy exploring how its technology could be exploited for a last-mile courier service.”).

170. See Muoio, *supra* note 162 (providing an example of a manufacturer assuming liability in the form of insurance).

171. See generally *Shahtout v. Emco Garbage Co.*, 695 P.2d 897 (Or. 1985) (establishing a rule for liability).

172. *Id.* at 898.

173. *Id.* at 898, 900.

174. *Id.*

175. *Id.* at 898.

176. *Id.*

177. *Id.* at 900.

violated created a legal cause of action.¹⁷⁸ The court held that the plaintiff failed to show that the Employers' Liability Act should apply to her, even if the truck driver did remove the legally required backing-up alarm.¹⁷⁹

The legal reasoning behind *Shahtout* is the common application of deciding whether certain conduct counts as negligence *per se*.¹⁸⁰ The common-law theories of liability are not fully prepared to be associated with autonomous cars because of the lack of specific laws that are tailor-made for self-driving cars. However, the use of data can help figure out the best way to normalize self-driving conduct and find instances of individuals acting negligently with self-driving cars. For example, Otto, a self-driving trucking company owned by Uber, is an example of a company that will soon be able to address these issues.¹⁸¹ Anthony Levandowski, co-founder of Otto, stated that electronic data stored at the moment of the accident will help determine liability to combat common-law negligence claims.¹⁸²

An example of the manufacturer taking responsibility for the injuries caused by its vehicle is Ford and their infamous Pinto cases.¹⁸³ These cases pertained to the issues regarding other forms of liability for self-driving cars in the sense that improper manufacture of these types of vehicles, designed and praised for being safer for individuals, can lead to similar consequences that Ford faced with the Pinto.¹⁸⁴ For example, in *Grimshaw v. Ford Motor Co.*, the state appellate court found that Ford was maliciously disregarding safety protocols when manufacturing and selling the Ford Pinto.¹⁸⁵ Ford settled most of the cases brought to them after the *Grimshaw* case in order to avoid similar punitive damage costs for their vehicle.¹⁸⁶ The Ford Pinto case is not an isolated incident; many car manufacturers have since also been found to be severely lacking in proper auto-making procedures.¹⁸⁷

General Motors has similar manufacturing issues as Ford Motors did in the Ford Pinto case.¹⁸⁸ The gas tank on the 1979 Chevrolet Malibu was eleven inches from the rear bumper, which can cause gas fires in minor bumper-to-bumper accidents.¹⁸⁹ Even though GM provided evidence to the jury that the

178. *Id.*

179. *Id.* at 901.

180. *See id.* (holding, after analyzing the parties' arguments, that a breach of the statute at issue would not establish negligence *per se*); *see also* Abraham v. T. Henry Constr., Inc., 217 P.3d 212, 217 (2009) (citing *Shahtout* as the controlling reasoning for determining negligence *per se*).

181. Clarissa Hawes, *Otto Founder Pushes Deeper into Self-Driving Truck Development*, TRUCKS.COM (Oct. 7, 2016), <https://www.trucks.com/2016/10/07/self-driving-truck-car-development-otto/>.

182. *Id.*

183. *See* *Grimshaw v. Ford Motor Co.*, 119 Cal. App. 3d 757 (1981) (charging Ford Motor Company for liability for the death of the plaintiff, and awarding plaintiff with excessive punitive damages).

184. *See id.* (finding Ford liable for improper manufacturing of the Ford Pinto).

185. *Id.* at 814, 816.

186. Robert Sherefkin, *Lee Iacocca's Pinto: A Fiery Failure*, AUTO. NEWS (June 16, 2003, 12:01 AM), <http://www.autonews.com/article/20030616/SUB/306160770/lee-iacoccas-pinto%3A-a-fiery-failure>.

187. *See, e.g.*, Andrew Pollack, *\$4.9 Billion Jury Verdict in GM Fuel Tank Case*, N.Y. TIMES (July 10, 1999), <http://www.nytimes.com/1999/07/10/us/4.9-billion-jury-verdict-in-gm-fuel-tank-case.html> (discussing a verdict that General Motors failed to address a known car design defect).

188. *Id.*

189. *Id.*

other driver was drunk, GM was forced to pay \$4.9 billion in a jury verdict.¹⁹⁰ Using these as examples, a manufacturer of a self-driving car may face similar penalties for accidents that were caused by a third party. The manufacturer of self-driving cars can still be held liable to the same extent as GM and Ford if the reason for the severity of the damages exist because of a design flaw in the manufacturing process of the vehicle.¹⁹¹ Furthermore, this flaw needs to be one that is caused by an oversight by the manufacturer, especially if there were tests and reports detailing the design flaws during the manufacturing process.¹⁹²

3. *Self-Driving Ridesharing*

This lack of car insurance for car owners will translate to a higher price for a self-driving vehicle due to this added benefit.¹⁹³ An alternative result may be that since there are fewer drivers, there are fewer car owners. Especially if insurance costs are still paid by owners of self-driving cars, individuals may instead choose to rely more on car services, such as Uber, which has announced its intention to buy all of Tesla's self-driving cars in 2020.¹⁹⁴ However, Tesla is disallowing their self-driving cars to be used for any taxi-services, except for its own, new service called the "Tesla Network."¹⁹⁵

This can set a precedent for automobile manufacturers to have an exclusive car-sharing service that specialized with their certain brand of vehicles. Customers may choose to subscribe from their smartphone application to a Tesla Network service that would provide a different type of self-driving vehicle.¹⁹⁶ If a few friends are going out to a restaurant, they may need a simple, self-driving sedan. However, if the same group of friends are going camping, they may need a bigger self-driving vehicle, perhaps an SUV with off-road capabilities, to fit in all of their supplies and passengers.

Another sub-industry that will be affected by the self-driving industry is the ride-sharing industry. If the cost of self-driving vehicles becomes too high, it may deter individuals from buying into this new technology.¹⁹⁷ An alternative option for a subset of consumers may be to rely on ridesharing services as their primary means of transportation. Especially in urban environments, the benefits

190. *Id.*

191. *Id.*

192. See *Grimshaw v. Ford Motor Co.*, 119 Cal. App. 3d 757, 813 (1981) (criticizing Ford Motors Company for failing to appropriately address crash results, indicating the volatile nature of the fuel tanks and rear structure of the Ford Pinto).

193. Robert Harrow, *How Self-Driving Will Impact Your Auto Insurance*, FORBES (Mar. 1, 2016, 9:52 AM), <https://www.forbes.com/sites/robertharrow/2016/03/01/how-self-driving-cars-will-impact-your-auto-insurance/#74d4e2675592>.

194. Lucas Mearian, *Uber Will Buy All the Self-Driving Cars that Tesla Can Build in 2020*, COMPUTERWORLD (July 8, 2015, 1:37 PM), <http://www.computerworld.com/article/2945817/telematics/uber-will-buy-all-the-self-driving-cars-that-tesla-can-build-in-2020.html>.

195. Ted Ranosa, *No Ridesharing: Tesla Bans Drivers from Using Tesla Cars for Uber or Lyft*, TECH TIMES (Oct. 22, 2016, 1:59 PM), <http://www.techtimes.com/articles/183320/20161022/no-ridesharing-tesla-bans-drivers-from-using-tesla-cars-for-uber-or-lyft.htm>.

196. See *id.* (discussing Tesla's intention to create a network of self-driving cars for ridesharing).

197. See Caitlin Huston, *Driverless Cars Could Cost 35 Cents Per Mile for the Uber Customer*, MARKETWATCH (Sept. 19, 2016, 11:42 AM), <https://www.marketwatch.com/story/demand-for-driverless-cars-could-boost-uber-to-2016-09-19> (discussing how automated rideshare will be a cheaper option for consumers).

of ridesharing include no parking fees, no need to navigate traffic, and consumers may carpool within these ridesharing services to cut down in overall congestion.¹⁹⁸ Uber, one of the most popular ridesharing services, is continually expanding into new territory in this emerging industry.¹⁹⁹ One of these territories is the driverless ridesharing industry.²⁰⁰

Ridesharing services have similar liabilities that autonomous vehicle manufacturers or individual autonomous vehicle owners will face.²⁰¹ Ridesharing companies, such as Uber and Lyft, are not always regulated by the same laws as taxi and limousine services in the same area.²⁰² For example, ridesharing companies are regulated at a statewide level in California by the California Public Utilities Commission, whereas taxis are regulated by local city municipalities.²⁰³ And this mismatch over two nearly identical industries created inconsistent insurance requirements.²⁰⁴ Taxi operators are required to have comprehensive commercial insurance at all times of operation.²⁰⁵ Ridesharing services are also required to have commercial coverage, but their insurance limits are often far below the limits of taxi services.²⁰⁶

The most striking difference between ridesharing and taxi insurance is that ridesharing services have a specific degree of insurance coverage based on which “period” a ridesharing customer and driver are in when the accident has occurred.²⁰⁷ Furthermore, insurance for taxi drivers tends to be several times more expensive than for non-commercial drivers.²⁰⁸ The reasoning behind this increased cost is because taxi cars are solely used for taxi services at all hours of operation.²⁰⁹ Compared to a taxi cab, a vehicle being used for ridesharing services has the ability to stop operation to be used for personal purposes.²¹⁰ Furthermore, the visual differences between yellow or green taxi cabs and a car used for Uber help explain why there is a difference between the insurance costs for these two sub-industries.²¹¹ Thus, insurance coverage for ridesharing

198. See Orly Lobel, *The Law of the Platform*, 101 MINN. L. REV. 87, 107–11 (2016) (discussing the effect of a shift from ownership to access).

199. See *id.* (mentioning Uber’s newer projects, such as UberRUSH, a delivery service, and UberBOAT, a water taxi service).

200. John Biggs, *Uber Opening Robotics Research Facility in Pittsburgh to Build Self-Driving Cars*, TECHCRUNCH (Feb. 2, 2015), <https://www.techcrunch.com/2015/02/02/uber-opening-robotics-research-facility-in-pittsburgh-to-build-self-driving-cars>.

201. See Seth Birnbaum, *The Insurance Impact of Self-Driving Cars and Shared Mobility*, TECHCRUNCH (Nov. 8, 2016), <https://techcrunch.com/2016/11/08/the-insurance-impact-of-self-driving-cars-and-shared-mobility/> (discussing how insurance coverage is shifted away from the driver).

202. See generally NAT’L ASS’N OF INS. COMM’RS, TRANSPORTATION NETWORK COMPANY INSURANCE PRINCIPLES FOR LEGISLATOR & REGULATORS, 2 (2015), http://www.naic.org/documents/committees_c_sharing_econ_wg_exposure_adopted_tnc_white_paper_150331.pdf?1430061828513 (discussing how the regulations of taxis and limousines are more developed than transportation network companies such as Uber).

203. *Id.*

204. *Id.*

205. *Id.*

206. *Id.* at 3–4.

207. *Id.* at 4–5.

208. Amanda Kelly, *Closing the App Gap with Insurance Requirements for Transportation Network Companies*, 46 MCGEORGE L. REV. 399, 416–17 (2014).

209. *Id.*

210. *Id.*

211. *Id.*

services uses the period system to help transition a normal, non-commercial vehicle into a “taxi-like” vehicle with enhanced insurance coverage.²¹²

Yet, this three-period system that differentiates the different points at which a ridesharing driver is covered leaves gaps that can lead to inadequate insurance coverage.²¹³ Period 1 is the time at which the driver logs onto a ridesharing application, such as Uber or Lyft.²¹⁴ Period 2 is when a ridesharing customer has been matched with a ridesharing driver, but the customer has not yet entered the vehicle.²¹⁵ Usually at this point, the customer is out on the sidewalk while the driver is arriving at the pick-up location. Lastly, Period 3 is when the driver has picked up the passenger and the passenger is physically within the vehicle.²¹⁶

The insurance policies for ridesharing services during Periods 2 and 3 include general commercial auto liability and uninsured and underinsured motorist coverage up to \$1 million and contingent collision and comprehensive coverage.²¹⁷ Meanwhile, Period 1 contains only contingent liability, which has a maximum coverage ceiling of \$100,000.²¹⁸ Therefore, if a driver for a ridesharing service opens the ridesharing application to find customers in Period 1 and hits another motorist, the ridesharing company will only provide up to \$100,000, contingent on the facts of the accident.²¹⁹ In this situation, if the total amount of damages equals \$200,000, the driver for the ridesharing service will have his insurance pay for the remaining damages, or he would need to pay it himself.²²⁰

Meanwhile, if the driver is on route to pick a passenger up, insurance coverage has increased to a maximum of \$1 million.²²¹ This also applies when the driver is dropping a passenger off at a destination.²²² This vast difference in coverage amounts can leave a driver in a drastically worse scenario when in Period 1 rather than Periods 2 or 3.²²³ These disparate costs are arguably justified due to the extra risk of driving a vehicle that will need to pull over to pick up and drop off passengers.²²⁴ Drivers in Period 1 are not engaged in looking for pick up and drop off locations.²²⁵ However, Period 1 drivers are still exposed to increased risk due to the nature of being in that period.²²⁶ Drivers are looking at their cellphones to see if they have been matched with a passenger and to respond accordingly.²²⁷ A counterargument to this assertion is that a

212. NAT'L ASS'N OF INS. COMM'RS, *supra* note 202 at 5.

213. *Id.*

214. *Id.* at 4–5.

215. *Id.*

216. *Id.*

217. *Id.* at 6.

218. *Id.*

219. *Id.* at 5–6.

220. *Id.*

221. *Id.*

222. *Id.*

223. *Id.*

224. *Id.*

225. *Id.*

226. *Id.*

227. *Id.*

driver in Period 1 can choose to park and wait for a passenger to match with them instead of driving and looking for a match.²²⁸ Furthermore, during sporting events and concerts in dense, urban environments, a ridesharing vehicle is more prone to accidents regardless of which period it is in.²²⁹

With this period scheme in mind, insurance for self-driving vehicles will have a different application in this format. At the forefront, a self-driving car looking for passengers may not even need to be driving around and looking for matches. Instead, the vehicle can be parked and scanning for matches. Even if a driverless ridesharing car was moving about, it is trivial to state that a self-driving car looking for passengers is at a higher risk of an accident than a self-driving car that already has a matched passenger.²³⁰ Furthermore, it is consistent with the period scheme that a self-driving car in Period 2 or 3 may be facing a higher risk of accident due to the nature of pulling over to find pick up and drop off locations.²³¹

However, a self-driving ridesharing car may be more similar to a modern taxi cab than to a modern ridesharing driver. A self-driving ridesharing car owned solely by the ridesharing service will have no other function that to serve as a taxi. Therefore, a ridesharing company operating with self-driving vehicles should insure its vehicles using the taxi standard rather than the period standard currently used by ridesharing services.²³²

IV. RECOMMENDATION

A. *The Persistence of Insurance Companies*

The success of the automobile insurance industry in the United States of America instills a sense of prominence that the insurance industry will follow forth with driverless vehicles.²³³ In 2015, the insurance industry collected \$200 billion from premiums.²³⁴ Consultants predict that the industry may be losing eighty percent—\$160 billion—from the breakthrough technology of the driverless car.²³⁵ In order to maintain relevance, the automobile insurance industry should prepare for the adoption of this technology by looking for new ways to distribute insurance prices to the individual rather than the manufacturer. Especially during the adoption phase of self-driving cars, there will be opportunities for insurance companies to create new factors for insurance policies with this new technology.

One possible avenue insurance industries can consider is assessing the customer's neighborhood and how well these neighborhoods are prepared for

228. *Id.*

229. *Id.*

230. *Id.*

231. *Id.*

232. *Id.*

233. Leslie Scism, *Driverless Cars Threaten to Crash Insurers' Earnings*, WALL ST. J. (July 26, 2016, 11:04 AM), <https://www.wsj.com/articles/driverless-cars-threaten-to-crash-insurers-earnings-1469542958>.

234. *Id.*

235. *Id.*

the acceptance of driverless cars. For example, highways with lanes dedicated solely for self-driving cars may reduce accidents for autonomous cars.²³⁶ An automobile insurance company may choose to charge residents in a state with no lanes for self-driving cars more for insurance than residents in a state that mandates that every highway must have a self-driving vehicle lane due to the added safety benefit for all drivers because of these lanes.

Another consideration is the percentage of drivers in a region who are still driving non-autonomous cars. Drivers may be subjected to higher insurance rates on their self-driving car if ninety percent of cars in their state are non-autonomous vehicles compared to a state where non-autonomous cars make up forty percent of the driving population.

This can be further analyzed by actual products. Installing snow tires on a self-driving car during the winter may come with the benefit of a reduced insurance cost compared to an owner who chooses not to change the tires.²³⁷ Ford is working on software that will read weather conditions and operate the automobile more precisely to avoid accidents.²³⁸ However, these readings acquire information at a rate of 600GB per hour and require a lot of physical space in a vehicle, and therefore, are much more burdensome than the installation of snow tires during the appropriate seasonal periods.²³⁹ The snow tire is a simple example of how insurance policies can change based on how individual autonomous car owners maintain and responsibly upgrade their vehicles. Currently, car owners can save money on insurance costs by equipping their car with an anti-theft device or safety features, such as motorized seat belts and anti-lock brake systems.²⁴⁰

With these factors in consideration, insurance companies need to ensure, overall, that self-driving car owners are guaranteed to pay less in premiums than non-autonomous car owners. The cost of vehicle insurance is an important consideration for consumers when presented with the opportunity to purchase self-driving cars.²⁴¹ Failure to incentivize consumers to transition to this technology can hinder the safety and efficiency breakthrough provided to the general public by this revolutionary product. Most importantly, insurance costs must be logically based on tested statistical evidence rather than the numbers that have traditionally been used with human-driven vehicles.

If research concludes that self-driving lanes actually cause more accidents because of human-drivers improperly using the lane, then more self-driving lanes in a state should increase the costs of insurance for those self-driving car owners. Proper use of such data to determine insurance costs will help promote safety and encourage governments to step in and take action when a new road

236. *Self-Driving Cars and Insurance*, *supra* note 8.

237. Tuan Huynh, *Can a Self-Driving Car Handle Winter? Snooooo Problem!*, TECHRADAR (Mar. 10, 2016), <http://www.techradar.com/news/car-tech/can-a-self-driving-car-handle-winter-snooooo-problem-1316700>.

238. *Id.*

239. *Id.*

240. *6 Car Insurance Discounts That May Save You Money*, ALLSTATE, <https://www.allstate.com/tools-and-resources/car-insurance/tips-for-car-insurance-discounts.aspx> (last updated Oct. 2016).

241. *Insurance.com Survey*, *supra* note 9.

law for self-driving cars is more detrimental than beneficial.²⁴² Insurance companies have already been providing discounts for individuals who are considered safer drivers and are more responsible for the maintenance of their vehicle.²⁴³ These discounts should still be provided in the early stages of self-driving car adoption to ensure individuals will still see the value in having an insurance policy.

However, these aspects creating insurance premiums for customers may not last long if the adoption of driverless cars is quicker than expected. Under these circumstances, the insurance industry may not have time to implement new formulas for insurance premiums. If self-driving cars dominate the market before the insurance industry can adapt, insurance costs for driverless automobiles may fall on the manufacturer of the automobile. This rapid rate of adoption is possible if consumers value the depletion of insurance costs.²⁴⁴ Eliminating automobile insurance would strongly encourage other individuals to begin using driverless cars and move toward this technology.

B. *The Disappearance of Consumer Car Insurance*

This omission of insurance may lead to a readjustment of the sales price of automobiles, since owners are fronting the cost of manufacturing and software error. To benefit from the full capabilities of this new insurance format, laws that govern EDRs and dashboard cameras should be revisited to ensure they fit the scheme of modern day vehicles. Furthermore, mandatory insurance laws will need to be changed to prepare for the driverless future.

While these devices may lead to privacy violations on the information collected, it is crucial to accurately investigate an accident involving a self-driving car. Any individual wishing to avoid having extensive personal information recorded may be hesitant to purchase a self-driving vehicle. Since self-driving cars are more efficient when more individuals adopt them, inconsiderate privacy policies may hinder the adoption of self-driving vehicles.

Failure to adopt autonomous driving as the standard will cost more for human drivers as well as self-driving car owners who may have to pay more insurance due to the chance that another human driven car may cause an accident.²⁴⁵ Full adoption of self-driving vehicles is the most affordable option because it gets rid of the potential human error in insurance costs, but it is a large hurdle to overcome.

To better understand the widespread implementation of autonomous cars and the liabilities a manufacturer faces when its products are used by the public,

242. See *Self-Driving Cars and Insurance*, *supra* note 8 (discussing the use of data in determining insurance costs).

243. *Id.*

244. *Id.*

245. *How Autonomous Vehicles Will Grow Insurance Before Shrinking It*, INSURANCE J. (May 19, 2017), <https://www.insurancejournal.com/news/national/2017/05/19/451621.htm>. *Contra* Danielle Muoio, *Tesla is Already Showing How the Insurance Industry Will be Disrupted by Self-Driving Cars*, BUS. INSIDER (Feb. 26, 2017, 5:44 PM), <http://www.businessinsider.com/driverless-cars-could-negatively-affect-insurance-industry-2017-2>.

it is important to compare to a current widespread product, like a smartphone. Two main issues arise after a smartphone reaches the public market: software bugs and manufacturer defects.²⁴⁶ Software bugs can be fixed via over-the-air software updates sent to consumers' phones and installed from there.²⁴⁷ Manufacturer defects usually are problems caused by the material and parts actually used in the creation of the flaws and need to be fixed at a repair store or sent to a manufacturer to be repaired or replaced.²⁴⁸ A recent example of issues within a smartphone is the Samsung Galaxy Note 7, which is considered both a manufacturing process problem and a software problem.²⁴⁹ Generally speaking, if smartphone users change certain aspects of their phone by opening it up to replace the internal battery or installing certain third-party software, for example, the warranty on the phone expires and the user cannot contact the manufacturer to have their problems fixed.²⁵⁰

Autonomous car manufacturers should be prepared to implement similar policies for their vehicles. The Samsung Galaxy Note 7 and the Ford Pinto controversy are both examples of a serious recall for the protection of consumers and the general public.²⁵¹ Even though these examples are on the extreme ends of widespread products liability, they show that recurrent issues caused by an error from an automobile manufacturer will hold that manufacturer liable to recall or replace the defective vehicle.²⁵² In addition, even after what can be considered brand-ruining incidents, a company can still recover from such incidents by adequately responding to these incidents quickly and efficiently.²⁵³

Furthermore, the implementation of uniform laws governing autonomous vehicles could be a road bump for the adoption of this technology. Ideally, a federal agency, such as the Department of Transportation, should help alleviate possible tensions by gaining the ability to enforce nationwide regulations on this industry. These regulations should include a specification framework for manufacturers to design and model their autonomous cars within. In addition, these regulations should severely limit the potential for self-driving car owners to change the key properties of the car.

246. PATTERN INSIGHT, SMARTPHONE SOFTWARE QUALITY: DETECTING AND ELIMINATING BUGS CRITICAL TO USER SATISFACTION, 2–3 (2011), http://patterninsight.com/fileadmin/PI/products/downloads/Pattern_Insight_Mobile_White_Paper_final.pdf.

247. *Id.*

248. *Id.*

249. Lisa Eadicicco, *Samsung's Galaxy Note 7 Problems May be Far from Over*, TIME (Oct. 6, 2016), <http://time.com/4521104/samsung-galaxy-note-7-recall-problems/>.

250. See generally *Apple One (1) Year Limited Warranty*, APPLE INC., <http://www.apple.com/legal/warranty/products/ios-warranty-document-us.html> (last visited Mar. 19, 2018) (stating that opening the device may result in loss of coverage under warranty).

251. Jefferson Graham, *Samsung Galaxy Note 7 Joins the Ford Pinto Club*, USA TODAY, <http://www.usatoday.com/story/tech/news/2016/10/11/samsung-galaxy-note-7-joins-ford-pinto-club/91900128/> (last updated Oct. 12, 2016, 9:02 AM).

252. *Id.*

253. See Jethro Mullen, *What Note 7 Crisis? Samsung Stock Hits New High*, CNN MONEY (Oct. 6, 2016, 6:11 AM), <http://money.cnn.com/2016/10/06/investing/samsung-stock-note-7/> (detailing how Samsung managed to bounce back after grappling with an embarrassing recall of one of its flagship smartphones).

C. A Dominant Ridesharing Industry

As previously mentioned, an alternative to these approaches might be to see what car-fetching services like Uber and Lyft are trying to implement with autonomous driving. Uber recently made an announcement stating that it is planning to purchase every self-driving car Tesla will make in 2020, as soon as they become available.²⁵⁴ This announcement was counteracted by Tesla stating that ride-sharing services conducted with their automobiles must be done with Tesla's own service, the "Tesla Network."²⁵⁵ This response to Uber's excitement with the autonomous car industry indicates that the demand for self-driving cars may not be about the ownership of these vehicles but rather the convenience of them.

Owning a self-driving car still requires supplemental attention and care, just like ownership of a regular car. Having a broken headlight is grounds for a police ticket with a fee in most jurisdictions,²⁵⁶ so a self-driving car owner who rarely performs maintenance on his or her autonomous vehicle may be liable for similar police tickets. By relying on a ridesharing service, consumers will be relieved of their obligations to the maintenance and upkeep of their vehicles.

A self-driving car service allows consumers to enjoy the comfort of a self-driving car, without worrying about the smaller details, such as making sure it parks properly and the general maintenance of the vehicle. Furthermore, insurance, maintenance, and fuel costs will fall upon the provider of the ride-sharing service, with the consumer paying a fee for the service, which could reflect the service provider's operational costs. As indicated by the Tesla Network, future self-driving cars may provide their own, brand-specific ridesharing services.²⁵⁷ This may turn into a subscription-based service, similar to Internet services like Spotify and Netflix.²⁵⁸ Both Uber and Lyft have tested the idea of a subscription-based ridesharing service where users pay a heavily discounted flat fee or no fee (depending on membership type) for a monthly payment.²⁵⁹ Even though this change may be a departure from the typical idea of ownership over a vehicle, it is still foreseeable based on the explosive popularity of these ridesharing services in cities.²⁶⁰

One can only wonder if the self-driving car and the ride-sharing services will boost the popularity of each other simultaneously. But given modern lifestyles, a series of self-driving car services can serve as a more precise means of public transportation. It is difficult to imagine future car buyers considering

254. Mearian, *supra* note 194.

255. Ranosa, *supra* note 195.

256. See, e.g., Howard Fischer, *New AZ Law Means All Brake, Tail Lights Must Work*, TUCSON (May 17, 2016), http://tucson.com/news/local/new-az-law-means-all-brake-tail-lights-must-work/article_b7e5d261-33fb-55bf-8569-150e1840b059.html (citing an Arizona law requiring cars to be equipped with working stop or brake lights).

257. Tajha Chappellet-Lanier, *Would You Use Lyft as a Subscription Service?*, TECHNICALLY (Oct. 26, 2016, 7:23 AM), <http://technical.ly/dc/2016/10/26/lyft-subscription-service/>; see Ranosa, *supra* note 195 (discussing Tesla's announcement banning Tesla cars from being used in ridesharing services).

258. Chappellet-Lanier, *supra* note 257.

259. *Id.*

260. *Id.*

the legal liabilities of certain self-driving cars as opposed to using a self-driving car service for transportation. The very near future will most likely show the trendsetting consumers purchasing self-driving cars for their own personal uses. The far-reaching future may show those living in the city, where car ownership becomes even more difficult, exchanging their parking passes and high car maintenance costs for subscriptions to ride-sharing services.

V. CONCLUSION

The insurance industry is operated by the probability of injury amongst drivers.²⁶¹ When a revolutionary technology that will make that probability nearly reach zero is on the verge of widespread adoption, it may be difficult to figure out how it would be best to operate and prepare insurance policies. One suggestion leads insurance companies to specifically choose characteristics of self-driving cars. Another suggestion involves insurance companies working directly with automakers to provide a fair assessment of the probability of an accident occurring with specific models of cars.

Thereby, insurance costs are reflective of the manufacturers' traits instead of those of individual, self-driving car owners. For consumers, this adjustment in pricing costs may be a positive thing. A car with better safety and crash avoidance systems will have lower insurance rates and therefore a lower cost. This contention depends on having a sensible insurance policy with substantially lower prices for the early adopters of self-driving technology. Insurance companies need to be quick to adjust, because the self-driving automobile industry is fast approaching.

Another way to avoid dealing with these difficulties is to understand the needs of the consumer over the upcoming years. Now that companies like Uber and Lyft are looking into acquiring a large number of autonomous cars for their taxi-services,²⁶² the idea of owning a self-driving car may instead be replaced with the idea of households buying subscriptions to driving services that they can fetch through their mobile devices.²⁶³ With these pieces in place, liability and thorough insurance coverage costs will fall upon the corporations running these ridesharing services.

Manufacturers know that the best way for widespread adoption of a product is for that product to have a lower price. Automobile manufacturers and drivers will both see the benefit of the elimination of driver-owned insurance in place of a manufacturer's insurance. This adoption, however, depends on the implementation of compatible and uniform insurance laws throughout the country that encourage lower-to-no liability on the driver; however, insurance

261. Allison Klein, *How Car Insurance Works*, HOW STUFF WORKS, <https://auto.howstuffworks.com/buying-selling/car-insurance.htm> (last visited Feb. 18, 2018); *Insurance and Imperfect Information*, PRINCIPLES OF ECON. 16.2 ("The insurance company prices these premiums based on the probability of certain events occurring among a pool of people.").

262. Samuel Gibbs, *Uber Plans to Buy 24,000 Autonomous Volvo SUVs in Race for Driverless Future*, GUARDIAN (Nov. 20, 2017, 10:54 AM), <https://www.theguardian.com/technology/2017/nov/20/uber-volvo-suv-self-driving-future-business-ride-hailing-lyft-waymo>.

263. Chappellet-Lanier, *supra* note 257.

providers can still benefit in the driverless future by preparing policies that logically fit with the nature of accidents with driverless cars. By cooperating with the elements of the self-driving car industry, automobile insurance companies can still play an important role in the advancement of the autonomous technology.

Furthermore, if manufacturers, insurance companies, and local and federal governments agree that the safety of drivers and passengers is the most important factor in ground transportation, there should be harmonious movement towards the advancement of autonomous driving. If it comes to the point where the vehicular insurance industry will need to disappear in order to adopt full Level 4 self-driving technology, the advantages and disadvantages of autonomous driving will need to be weighed against the importance and impact of the vehicle insurance industry. With that in mind, it is likely that a future with no accidents comes at the cost of a future with no vehicle insurance.