ROBOTS ON THE ROAD: FOURTH AMENDMENT IMPLICATIONS OF STOPPING AND SEARCHING AN AUTONOMOUS VEHICLE

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INTRODUCTION

Ten years from now you could be hailing a driverless Uber after a late night out with your friends. For the most part, the autonomous vehicle ("AV") will seamlessly navigate the city streets, though at times you might find that it hugs the curb or drives a little too close to parked cars on the side of the road.[1] At one point during your trip, the autonomous technology realizes that the vehicle has moved too close to another car and jerks back into its lane. However, it overcorrects and nearly crosses the center line. Luckily, the technology recognizes the lane markings and veers back into the center of the lane. No harm, no foul.

Still, a police officer happens to be on patrol and spots this movement from a few cars back. Suspecting that the driver might be impaired, he pulls you over. He explains to you that he pulled the vehicle over because he observed some reckless driving, and asks if you have been drinking. You respond, "Yes, sir, but it wasn't my fault. The robot did it." The officer notices that the indicator light in the AV is on, signaling to him that the AV is operating in fully autonomous mode. Nonetheless, he asks that you step out of the vehicle, and proceeds to search the AV. He confiscates drugs from under the passenger seat of the AV and arrests you.

Scenarios like this raise many interesting legal questions. Can the occupant of the AV be issued a ticket for any traffic violations the AV commits? Was the occupant "driving" while intoxicated? Should the officer be able to stop an AV at all?[2] Whose interests were invaded by the search of the Uber

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[1] Those who experienced a ride in an AV remarked that the vehicles often drive "unsettlingly close" to the side of the road. *See* Mike Isaac, *What It Feels Like to Ride in a Self-Driving Uber*, N.Y. TIMES (Sept. 14, 2016), https://www.nytimes.com/2016/09/15/technology/our-reporter-goes-for-a-spin-in-a-self-driving-uber-car.html; Mike Murphy & Alison Griswold, *This Is What It's Like to Ride in a Self-Driving Uber*, QUARTZ (Sept. 14, 2016), https://qz.com/780717/this-is-what-its-like-to-ride-in-a-self-driving-uber.

[2] One commentator has even questioned, in passing, whether a warrant would be required for an officer to send a signal to an AV to pull over to the side of the road. *See* Dorothy J. Glancy, *Autonomous and Automated and Connected Cars—Oh My! First Generation Autonomous Cars in the Legal Ecosystem*, 16 MINN. J.L. SCI. & TECH. 619, 665 (2015).

AV? If the AV had crashed into a car parked on the street, or struck a passenger getting out of her car, who is responsible?

The courts and most legislatures have not yet grappled with these and other legal questions raised by the accelerating introduction of AVs. While much of the concern in the legal literature focuses on protecting data privacy and understanding how to apportion liability between manufacturers and operators of AVs,[3] less analysis has been committed to how this new technology will alter our notions of criminal responsibility on the road. Even fewer commentators have explicitly analyzed how the use of AVs will alter law enforcement's ability to stop and search a vehicle under the Fourth Amendment.[4] Undertaking such an analysis is particularly important given that nearly half of the public's contact with the police occurs in the context of a traffic stop.[5]

Accordingly, this Comment assesses the ability of law enforcement to stop an AV under current Fourth Amendment jurisprudence, and an occupant's standing to challenge a subsequent search of that vehicle. Part I begins by surveying the evolution of automated technology and discussing the operation of different types of AVs the public and police might encounter on the road. Part II then compares how states and the federal government have attempted to prepare for the introduction of this technology by analyzing recently enacted state legislation. Part III lays the foundation for a Fourth Amendment analysis by examining the development of an individual's right to privacy under the Fourth Amendment, giving particular attention to one's expectation of privacy in an automobile. This Part then discusses the concept of standing to assert a Fourth Amendment violation and exclude any evidence unlawfully obtained, focusing particularly on the so-called bright-line rule of *Rakas v. Illinois*,[6] which denies standing to mere passengers in a vehicle.

By analyzing these laws, Part IV predicts what traffic stops will look like in the era of AVs. Most commentators argue that, because AVs promise to vastly reduce traffic violations, police officers will lose the ability to conduct routine traffic stops and "pretext" stops. However, this Part argues that AVs will remain stoppable, at least the first-generation AVs that do not completely eliminate the possibility that a human driver may operate the vehicle.

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3 *See, e.g.*, Frank Douma & Sarah Aue Palodichuk*, Criminal Liability Issues Created by Autonomous Vehicles*, 52 SANTA CLARA L. REV. 1157, 1169 (2012) (discussing the apportionment of criminal liability between AV manufacturers and drivers); Michael I. Krauss, *Freedom from Control, Freedom from Choice? How Will Tort Law Deal with Autonomous Vehicles?*, 25 GEO MASON L. REV. 20, 27–32 (2017) (proposing various levels of tort liability for manufacturers); Peter J. Pizzi, *Connected Cars and Automated Driving: Privacy Challenges on Wheels*, 84 DEF. COUNSEL J. 1, 7 (2017) (discussing the privacy implications of merging drivers' digital world and means of transportation).

4 For one approach to analyzing this issue, see Glancy, *supra* note 2.

5 BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, CONTACTS BETWEEN THE POLICE AND THE PUBLIC, 2015, at 4 (2018), https://www.bjs.gov/content/pub/pdf/cpp15.pdf.

6 439 U.S. 128 (1978).

Having established that an AV can lawfully be stopped, Part V then assesses whether an occupant of an AV, especially one who does not own the AV, may raise a Fourth Amendment challenge if the AV is unlawfully searched. Most commentators are strongly inclined to view AV occupants as mere passengers in the vehicle—and this view is especially appealing in the context of criminal liability—but a problem arises when this reasoning is extended to the Fourth Amendment context. By construing the AV occupant as a passive passenger, like in a taxicab, the *Rakas* rule threatens to deny such occupants a Fourth Amendment interest in the vehicle, and thus the ability to contest any illegal search. However, this Part argues that both the *Katz* reasonable-expectation-of-privacy analysis and the rationale for the exclusionary rule justify granting standing to the occupant-passenger of an AV. Ultimately, this Comment asserts that, while it is tempting to view occupants and users of AVs as mere passengers who exercise no control over the vehicle, courts should refrain from construing the relationship in such a way as to leave occupants of AVs with little to no privacy protection. It is important to define the user or occupant of an AV as more than a mere passenger to avoid any further erosion of the Fourth Amendment's protections on the road.

I. THE EVOLUTION OF AUTONOMOUS VEHICLE TECHNOLOGY

Every person believes that he or she is a good driver.[7] But even the best drivers make mistakes. The average motorist will likely be involved in at least one car accident by the time he is thirty-four, and by the time his driving days are over he can expect to experience at least two more.[8] Of those accidents that turn out to be fatal, an overwhelming majority are the direct result of human error.[9] Thankfully, we have robots to fix that. Because AVs are programmed to obey all traffic laws, including speed limits, road signs, and the like,[10] researchers and commentators expect the introduction of AVs to markedly increase road safety.[11]

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7 *See* Tia Ghose, *Everyone Thinks They Are Above Average*, CBS NEWS (Feb. 7, 2013, 12:25 PM), https://www.cbsnews.com/news/everyone-thinks-they-are-above-average; *When It Comes to Driving, Most People Think Their Skills Are Above Average*, ASS'N FOR PSYCHOLOGICAL SCIENCE (Aug. 28, 2014), https://www.psychologicalscience.org/news/motr/when-it-comes-to-driving-most-people-think-their-skills-are-above-average.html.

8 Des Toupes, *How Many Times Will You Crash Your Car?*, FORBES (July 27, 2011, 6:50 PM), https://www.forbes.com/sites/moneybuilder/2011/07/27/how-many-times-will-you-crash-your-car.

9 Nat'l Highway Traffic Safety Admin., *Automated Vehicles for Safety*, https://www.nhtsa.gov/technology-innovation/automated-vehicles (last visited Oct. 12, 2017) (reporting that "94 percent of serious crashes are due to human error").

10 Glancy, *supra* note 2, at 653–54.

11 See, e.g., Jeffrey K. Gurney, *Driving into the Unknown: Examining the Crossroads of Criminal Law and Autonomous Vehicles*, 5 WAKE FOREST J.L. & POL'Y 393, 402 (2015).

While you may not find an AV in your dealer's showroom anytime soon, automated driver-assistance technologies are already available in most cars today, including adaptive cruise control, automatic emergency braking, lane-keeping support, blind spot detection, and others.[12] The autonomous technology might not be fully developed or ready for mass use yet, but AVs are coming.[13] Accordingly, this Part first explores the evolution of the technology that has developed into AVs, and discusses how familiar technologies have combined to bring us semi- and fully autonomous vehicles, before turning to an evaluation of our current stage of AV development.

A. *From Driver-Assistance to Vehicle Autonomy: The Technological Development of AVs*

Our current taxonomy of vehicle automation originated in 2014, when SAE International—a professional organization of automotive engineers—published its standard J3016 defining six levels of possible vehicle automation, ranging from no driving automation to full driving automation.[14] The National Highway Traffic Safety Administration ("NHTSA") recently adopted that standard in *A Vision for Safety*, its policy guidance for the implementation of automated driving systems, as a clear and consistent definition of the various forms of vehicle automation.[15]

The six recognized levels of automation range from level zero to level five. At level zero (no driving automation), the human driver performs all aspects of the driving task.[16] At lower levels such as levels one (driver assistance) and two (partial driving automation), a driver-assistance system may control some functions such as steering or speed, but the human driver must perform all other aspects of the driving task while continuing to monitor the

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12 *See* Nat'l Highway Traffic Safety Admin., *Advancing Automation for Safer Roads* (Sept. 12, 2017), https://www.nhtsa.gov/automated-vehicles/vision-safety.

13 Rachel Roseman, Comment, *When Autonomous Vehicles Take Over the Road: Rethinking the Expansion of the Fourth Amendment in a Technology-Driven World*, 20 RICH. J.L. & TECH. 3, 32 (2014); *see also* Enrique Dans, *Autonomous Vehicles: Moving Forward*, FORBES (July 5, 2017, 8:34 AM), https://www.forbes.com/sites/enriquedans/2017/07/05/autonomous-vehicles-moving-forward/#10 4996a94626 (suggesting AVs could hit the road as early as 2020).

14 Lindsay Brooke, *U.S. DoT Chooses SAE J3016 for Vehicle-Autonomy Policy Guidance*, SAE INT'L (Sept. 20, 2016), https://www.sae.org/news/2016/09/us-dot-chooses-sae-j3016-for-vehicle-autonomy-policy-guidance. SAE International has continued to revise that standard, most recently in June 2018, though the six levels of automation have remained unchanged. *See* SAE INT'L, J3016: SURFACE VEHICLE RECOMMENDED PRACTICE 2 (2018), https://saemobilus.sae.org/content/j3016_201806.

15 NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., AUTOMATED DRIVING SYSTEMS 2.0: A VISION FOR SAFETY 19 (2017), https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13069a-ads2.0_090617_v9a_tag.pdf.

16 *See id.* at 4; SAE INT'L, *supra* note 14, at 19 & tbl.1.

environment and the automated systems.[17] Even at level three (conditional driving automation), where an automated driving system performs all aspects of the driving task, the human operator is still expected to intervene when alerted to do so by the system.[18] By level four (high driving automation), the automated driving system is capable of performing all aspects of the driving task, even if a human driver does not respond to requests to intervene.[19] Ultimately, at level five (full driving automation), the automated driving system assumes full-time performance of all aspects of the driving task under all roadway and environmental conditions, replacing the human driver altogether.[20]

While achieving level five full driving automation may still seem "impossibly futuristic,"[21] most of the technology that makes such automation possible has been around since long before this taxonomy. For example, the first cruise control systems originated in as early as 1945, and the invention was commercialized in 1958.[22] These conventional systems control the speed of the vehicle by adjusting the accelerator position just as a human driver would adjust the pedal.[23] Instead of keeping his foot on the pedal, the driver engages the cruise control with the simple push of a button.[24] More advanced cruise control systems, such as adaptive cruise control ("ACC") systems, not only maintain the constant speed set by the driver, but they also maintain a preset distance behind the vehicle immediately in front of it and can adjust the speed of the vehicle as needed to maintain that distance.[25] These more advanced systems allow for use in stop-and-go traffic or rush hour

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17 *See* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *supra* note 15, at 4; SAE INT'L, *supra* note 14, at 19 & tbl.1.

18 *See* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *supra* note 15, at 4; SAE INT'L, *supra* note 14, at 19 & tbl.1.

19 *See* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *supra* note 15, at 4; SAE INT'L, *supra* note 14, at 19 & tbl.1.

20 *See* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *supra* note 15, at 4; SAE INT'L, *supra* note 14, at 19 & tbl.1.

21 *A Brief History of Autonomous Vehicle Technology*, WIRED, https://www.wired.com/brandlab/2016/03/a-brief-history-of-autonomous-vehicle-technology (last visited Sept. 1, 2018).

22 *Id.*; *see also* Ishan Daftardar, *How Does the Cruise Control System in Cars Work?*, SCIENCEABC, https://www.scienceabc.com/innovation/what-is-cruise-control-system-cars-work.html (last visited Sept. 1, 2018) (noting that a version of cruise control allowing "steam engines to maintain a constant speed up and down inclines" was developed as early as the 17th century, with cruise control "as we know it" being invented in the 1940s); Dean Gibson, *Cruise Control and Adaptive Cruise Control: The Complete Guide*, AUTO EXPRESS (Jan. 9, 2017), https://www.autoexpress.co.uk/car-tech/98225/cruise-control-and-adaptive-cruise-control-the-complete-guide (last visited Sept. 1, 2018).

23 Daftardar, *supra* note 22.

24 *Id.* A "SET/ACCEL" knob sets the speed of the car, and the driver can adjust that speed by tapping the knob to accelerate or decelerate the vehicle in one-mile-per-hour increments. *Id.*

25 Larry Carley, *Active Safety Technology: Adaptive Cruise Control, Lane Departure Warning & Collision Mitigation Breaking*, IMPORT CAR (June 16, 2009, 12:00 AM), http://www.import-car.com/active-safety-technology-adaptive-cruise-control-lane-departure-warning-collision-mitigation-braking.

commuting, where road speeds can vary from sixty miles per hour to a standstill.[26] Most ACC systems use a small radar unit behind the front grill or under the front bumper of the vehicle while others, such as those in Subaru vehicles, employ cameras.[27] Today, nearly all vehicles employ some form of cruise control system.[28]

ACC systems are often paired with forward collision warnings,[29] or collision mitigation braking ("CMB") systems, which use radars and lasers to monitor the proximity of the preceding vehicle.[30] Earlier, more basic versions of CMB warn the driver when the car is approaching a vehicle in front of it too quickly and then lightly preload the brakes to reduce the reaction time and stopping distance needed to stop the vehicle, as well as the severity of the impact.[31] More advanced versions are capable of bringing the car to a complete stop, though only at modest speeds.[32]

Other driver-assistance technologies such as lane-keeping support ("LKS") and blind spot detection ("BSD") also utilize cameras and radar sensors to monitor the vehicle's relation to its surroundings.[33] If the LKS system detects that a vehicle is drifting over the painted lane markings on the road, or changing lanes without a turn signal, the system releases an audible and visual warning to the driver.[34] Similarly, BSD systems use radar sensors to detect when vehicles or other objects are in the driver's blind spot, and give visual and audible warnings to alert the driver to a vehicle located in his blind spot.[35] Together, BSD and LKS systems can signal a distracted driver to

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26 *See* Bill Howard, *What Is Adaptive Cruise Control, and How Does It Work?*, EXTREMETECH (June 4, 2013, 2:19 PM), https://www.extremetech.com/extreme/157172-what-is-adaptive-cruise-control-and-how-does-it-work.

27 *See id.*

28 *See* Gibson, *supra* note 22.

29 *Id.*

30 Julie Goodrich, Comment, *Driving Miss Daisy: An Autonomous Chauffeur System*, 51 HOUS. L. REV. 265, 269 (2013).

31 Carley, *supra* note 25.

32 *See* Jeff S. Bartlett, *Forward Collision Warning with Braking to Become Standard*, CONSUMER REPORTS, https://www.consumerreports.org/cro/cars/why-forward-collision-warning-and-automatic-emergency-braking-ne (last updated Sept. 11, 2015). For example, the Mercedes PRE-SAFE Braking system will only intervene at speeds under 43 miles per hour. Carley, *supra* note 25; *see also* Jeremy Laukkonen, *What Is an Automatic Braking System?*, LIFEWIRE (June 24, 2018), https://www.lifewire.com/what-is-automatic-braking-system-534823 ("Some automatic braking systems can prevent collisions altogether, but most of them are designed to simply reduce the speed of a vehicle before it hits something.").

33 *See Aftermarket Tech: Bringing Your Car's Safety into the 21st Century*, MYCARDOESWHAT.ORG (Feb. 29, 2016), https://mycardoeswhat.org/aftermarket-tech-bringing-your-cars-safety-into-the-21st-century; Carley, *supra* note 25; Goodrich, *supra* note 30, at 272.

34 Carley, *supra* note 25.

35 *Aftermarket Tech: Bringing Your Car's Safety into the 21st Century*, *supra* note 33. Generally, when a vehicle is detected in the blind spot, a warning indicator will appear on the driver's side-view mirrors. *Id.* More advanced versions of BSD will give an audible warning if the driver uses his turn signal while a vehicle is in his blind spot. *Id.*

regain control of his vehicle and avoid a collision if the vehicle is unsafely drifting or changing lanes.[36]

Overall, these automated vehicle systems already operate semi-autonomously, although the technology is limited to particular driving operations, such as accelerating or braking, or in specific environments.[37] For example, cruise control is generally limited to highway driving, and it requires a human driver to operate the vehicle when transitioning from highway to residential roadways.[38] Thus, these types of driver-assistance technologies likely fall into automation levels one or two,[39] where advanced driver-assistance systems take over certain vehicle functions while the human driver continues to monitor the environment and performs all other driving tasks.[40] Nevertheless, AVs are only one technological step beyond automated driver-assistance technologies.[41]

B. *Current Development of Autonomous Vehicles and the Road Ahead*

The ultimate goal, of course, in the development of autonomous vehicle technology is to achieve level four (high automation) or level five (full automation).[42] At full automation, human occupants are mere passengers that need not be involved in any aspect of the driving.[43] In fact, this minimal level of human interface with full automation AVs might consist of nothing more than the decision to use the AV or not.[44] As the technology advances, the human occupant might fine-tune the AV's operation in advance by, for example, commanding the AV to "get there fastest" or by setting a specified arrival time.[45] However, for first generation AVs the only control an occupant will likely have over the vehicle is essentially an "on-off" switch.[46]

To function at full automation, AVs employ many technologies, including cameras, light detection and ranging unites ("LIDARs"), radars, GPS,

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36 Goodrich, *supra* note 30, at 272.

37 Glancy, *supra* note 2, at 628.

38 *See id.*

39 *See* Todd Litman, *Victoria Transport Policy Institute: Autonomous Vehicle Implementation Predictions* 4 (July 24, 2018), https://www.vtpi.org/avip.pdf.

40 *See* Nat'l Highway Traffic Safety Admin., *Automated Vehicles for Safety*, *supra* note 9.

41 *See* Glancy, *supra* note 2, at 628.

42 *See* Nat'l Highway Traffic Safety Admin., *Automated Vehicles for Safety*, *supra* note 9. High Automation contemplates the vehicle's capability of "performing all driving functions under certain conditions" whereas Full Automation would allow the vehicle to perform "all driving functions under all conditions." *Id.*

43 *Id.*

44 Glancy, *supra* note 2, at 634.

45 *Id.* at 635.

46 *See id.* at 634. ("[The human-machine] interface may take the form of a fob, a push-button, a biometric sensor, or other on-off control.").

and wheel encoders.[47] The "heart" of the system is the LIDAR unit mounted on the top of the vehicle,[48] which "uses laser beams to generate a 360-degree image of the car's surroundings."[49] By combining these measurements with high-resolution maps, the unit allows the AV to avoid obstacles while adhering to all traffic laws, thus enabling the AV to drive autonomously.[50] The AV also uses radars, cameras, and GPS and wheel encoders, which measure the car's distance from other obstacles, track the vehicle's location and movements, and detect moving objects, traffic lights, and signs.[51] Together, these sensors enable the vehicle to "see" the world around it.[52]

The vehicles will also need to be "connected to an external system that feeds it information about surrounding vehicles, traffic conditions, road work and the like."[53] In contrast to self-contained AVs, which rely "solely on information generated from onboard the vehicle," interconnected AVs will be connected to a wireless communications network, allowing the vehicle to both send and receive vehicle sensor information with other similarly connected AVs.[54] This process is called vehicle-to-vehicle ("V2V") communication.[55] Among other things, V2V communication allows AVs to coordinate their movements with other vehicles to ensure traffic flows smoothly.[56] Importantly, the benefits of V2V communication and the necessary infrastructure cannot fully be realized until enough vehicles are equipped with the software.[57]

One of the most well-known AVs is the Google Car.[58] In keeping with the goal of reaching level five full automation, Google's vehicle is designed to be completely self-driving, so it will eventually be designed without a steering wheel, accelerator pedal, or brake pedal.[59] Google first revealed that

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47 *See* Guilbert Gates et al., *The Race for Self-Driving Cars*, N.Y. TIMES (June 6, 2017), https://www.nytimes.com/interactive/2016/12/14/technology/how-self-driving-cars-work.html; Erico Guizzo, *How Google's Self-Driving Car Works*, IEEE SPECTRUM (Oct. 18, 2011, 9:00 AM), https://spectrum.ieee.org/automaton/robotics/artificial-intelligence/how-google-self-driving-car-works.

48 *See* Guizzo, *supra* note 47.

49 Gates et al., *supra* note 47.

50 Guizzo, *supra* note 47.

51 Gates et al., *supra* note 47; Guizzo, *supra* note 47.

52 Roseman, *supra* note 13, at 10 (citing Guizzo, *supra* note 47).

53 Dave Guilford, *Like EVs, Self-Guided Cars Need Infrastructure*, AUTOMOTIVE NEWS (Mar. 10, 2014, 12:01 AM), http://www.autonews.com/article/20140310/OEM06/303109959/like-evs-self-guided-cars-need-infrastructure.

54 Dorothy J. Glancy, *Privacy in Autonomous Vehicles*, 52 SANTA CLARA L. REV. 1171, 1176–78 (2012).

55 *Id.* at 1178.

56 Goodrich, *supra* note 30, at 274.

57 *Id.*

58 Roseman, *supra* note 13, at 9.

59 *See* Chris Urmson, *Just Press Go: Designing a Self-Driving Vehicle*, GOOGLE OFFICIAL BLOG (May 27, 2014), http://googleblog.blogspot.com/2014/05/just-press-go-designing-self-driving.html.

it had been developing an AV back in 2010,[60] and its vehicles now collectively boast over eight million self-driven miles.[61] Plenty of other major automakers have since joined the "race" for self-driving cars, including General Motors, Ford, Tesla, and Volvo.[62] In 2016, General Motors invested $500 million in the ride-sharing company Lyft to develop "an on-demand network of self-driving cars" and "a series of short-term car rental hubs" for potential Lyft users.[63] That same year, Ford announced its intent to introduce fully autonomous vehicles for ride-hailing or ride-sharing services as early as 2021.[64] Ford's AVs are already roaming the streets of Pittsburgh, Pennsylvania.[65] In Pittsburgh, certain Uber users now have the option to hail a self-driving vehicle.[66] Waymo's own fleet of self-driving vehicles is currently being offered up for public use through the company's "Early Rider" program in Phoenix, Arizona.[67] By November 2017 it had begun testing the vehicles without any backup driver present,[68] and in March 2018 the company announced its plan to implement a fleet of 20,000 Jaguar cars for a driverless ride-hail service within the next five years.[69] Most recently, Waymo has teamed up with

60 *Look, No Hands*, THE ECONOMIST (Apr. 20, 2013), https://www.economist.com/news/special-report/21576224-one-day-every-car-may-come-invisible-chauffeur-look-no-hands.

61 David Silver, *Waymo Has the Most Autonomous Miles, by a Lot*, FORBES (July 26, 2018), https://forbes.com/sites/davidsilver/2018/07/26/waymo-has-the-most-autonomous-miles-by-a-lot/#769bd1c67ee5. In 2016, Google's self-driving car division transformed into its own company, Waymo: a subsidiary of Alphabet. *See* Alex Hern, *Google Spins off Self-Driving Car Division, Signaling New Direction*, THE GUARDIAN (Dec. 14, 2016, 6:57 AM), https://www.theguardian.com/technology/2016/dec/14/waymo-google-self-driving-car-division.

62 *See* Gates et al., *supra* note 47 (naming General Motors, Ford, Tesla, Fiat Chrysler, Honda, and Volvo as among those having invested major resources in trying to become leaders in autonomous technology).

63 Mike Isaac, *General Motors, Gazing at Future, Invests $500 Million in Lyft*, N.Y. TIMES (Jan. 4, 2016), https://www.nytimes.com/2016/01/05/technology/gm-invests-in-lyft.html.

64 Mark Fields, *Ford's Road to Full Autonomy*, MEDIUM (Aug. 16, 2016), https://medium.com/self-driven/fords-road-to-full-autonomy-36cb9cca330.

65 *See* Signe Brewster, *Uber Starts Self-Driving Car Pickups in Pittsburgh*, TECHCRUNCH (Sept. 14, 2016), https://techcrunch.com/2016/09/14/1386711 ("[T]his is the first time the world has seen such a large fleet in one city.").

66 *See id.* Uber does not suggest that its current AVs are ready to "roll out to the masses." *Id.* Rather, the program is essentially a research exercise aimed at testing public reaction to the vehicles and logging miles. *Id.* The AVs are still occupied by two researchers or engineers, who assume control of the AV under certain conditions. *See id.*

67 *Early Rider FAQ*, WAYMO, https://waymo.com/apply/faq (last visited Jan. 5, 2018). Though Waymo's vehicles are aimed at being fully autonomous, a test driver will "monitor[] the rides at all times" during this early trial. *Id.*; *see Waymo Testing Self-Driving Car Ride Service in Arizona*, REUTERS (Apr. 25, 2017, 3:12 AM), http://www.reuters.com/article/us-alphabet-fiat-chrysler-autonomous/waymo-testing-self-driving-car-ride-service-in-arizona-idUSKBN17R0MZ.

68 Daisuke Wakabayashi, *Waymo's Autonomous Cars Cut Out Human Drivers in Road Tests*, N.Y. TIMES (Nov. 7, 2017), https://www.nytimes.com/2017/11/07/technology/waymo-autonomous-cars.html.

69 Johana Bhuiyan, *Alphabet Will Operate a Fleet of 20,000 Jaguar Cars for Its Driverless Ride-Hail Service by 2022*, RECODE (Mar. 27, 2018, 11:41 AM), https://www.recode.net/2018/3/27/17167906/alphabet-waymo-self-driving-jaguar-electric-ride-hail.

Walmart to chauffeur Walmart's grocery customers in Chandler, Arizona from their homes to the store in one of Waymo's self-driving vehicles.[70]

Many commentators are encouraged by predictions that the public could begin reaping the benefits of AVs as early as 2020.[71] The primary benefit of AVs is increased road safety.[72] Every year, more than 300,000 Americans die in motor-vehicle-related crashes, and of those serious crashes, 94% are due to human error.[73] Because AVs largely remove human error from the equation, "researchers predict fatality rates could ultimately fall to 1% of current rates."[74] Additionally, AVs have the potential to significantly increase mobility among those who cannot drive themselves safely, including the elderly or disabled citizens.[75] In one instance, an AV successfully took a blind man to buy Taco Bell and pick up his dry cleaning.[76] The prospect of removing drunk drivers from the road is also one of the most prominent benefits of this technology.[77]

While there are many potential uses for AVs—including individually owned personal or family cars, small-scale local commercial delivery services, and rental cars for short-term mobility and transportation needs[78]—consumers often cite on-demand personal mobility services or online ride services as the application of AVs they would like to see available first.[79] AV manufacturers have already responded to this desire by teaming up with ride-sharing services such as Lyft and Uber to implement AVs.[80] As AVs infiltrate the ride-sharing service industry, users can expect transportation to be "more reliable and private" and to have "more personal space than current varieties of ride services that employ human drivers."[81] First generation AVs thus have the potential to radically transform our expectation of personal mobility,

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70 Matt McFarland, *Walmart Will Chauffeur Shoppers in Self-Driving Waymo Cars*, CNN (July 25, 2018, 11:58 AM), https://money.cnn.com/2018/07/25/technology/waymo-walmart-groceries/index.html.

71 *See, e.g.*, Dans, *supra* note 13 (suggesting it might be time for skeptics to rethink their positions). *But see* Litman, *supra* note 39, at 13 (remaining skeptical about this prediction and instead projecting that "[a]utonomous vehicle implementation will probably take several decades").

72 Gurney, *supra* note 11, at 402.

73 Nat'l Highway Traffic Safety Admin., *Automated Vehicles for Safety*, *supra* note 9.

74 Neal Katyal, *Disruptive Technologies and the Law*, 102 GEO. L.J. 1685, 1688 (2014).

75 *See* Gurney, *supra* note 11, at 402; Bryant Walker Smith, *Managing Autonomous Transportation Demand*, 52 SANTA CLARA L. REV 1401, 1412 (2012) ("Self-driving cars that do not need human drivers or monitors may substantially increase mobility for those who cannot (legally) drive themselves because of youth, age, disability, or incapacitation.").

76 *Look, No Hands*, *supra* note 60.

77 Frank Douma & Sarah Aue Palodichuk, *Criminal Liability Issues Created by Autonomous Vehicles*, 52 SANTA CLARA L. REV. 1157, 1163 (2012).

78 Glancy, *supra* note 2, at 623.

79 *Id.* at 625.

80 *See supra* notes 63–67 and accompanying text.

81 Glancy, *supra* note 2, at 626.

outside of owning a car, and "could well become the expected mode of on-demand personal transport."[82]

II. REGULATING AUTONOMOUS VEHICLES

As usual, the law has struggled to keep pace with the advancement of this technology.[83] For example, although Arizona and Pennsylvania are among the first states to make AVs available to the public for testing,[84] neither state has implemented significant legislation to regulate AV testing or use.[85] Meanwhile, other states without AV laws on the books will need to reconsider existing traffic laws that could complicate, or even effectively prevent, the use of AVs on the roads.[86] This Part examines both the current laws that AVs might face, as well as the AV-specific legislation that has been enacted to regulate the new technology.

In an attempt to keep up with the pace of AV technology, some states have enacted legislation to deal with the questions posed by the introduction of AVs.[87] Since Nevada passed the first state legislation in 2011,[88] approximately twenty-eight more states have enacted meaningful AV legislation,

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82 *Id.*; *see also* Bhuiyan, *supra* note 69 ("The industry expects personal car ownership to decrease with the proliferation of self-driving cars."); Antonio Loro, *Driverless Taxis: The Next Next Big Thing in Urban Transportation?*, PLANETIZEN (May 6, 2014, 6:00 AM), https://www.planetizen.com/node/68657 ("Driverless taxis (or automated cars in car-sharing fleets) are widely expected to play a central role in this revolution [in urban transportation].").

83 *See* Sven A. Beiker, *Legal Aspects of Autonomous Driving*, 52 SANTA CLARA L. REV. 1145, 1149–52 (2012) (detailing challenges associated with advancements in safety, efficiency, and mobility); Lyria Bennett Moses, *Recurring Dilemmas: The Law's Race to Keep up with Technological Change*, 2 U. ILL. J.L. TECH. & POL'Y 239, 239 (2007).

84 *See supra* notes 65–70 and accompanying text.

85 Rather, because Pennsylvania's transportation rules did not explicitly ban driverless cars as long as someone was behind the wheel to take over if needed, officials interpreted this apparent silence on driverless technology as a green light. Cecilia Kang, *No Driver? Bring It on. How Pittsburgh Became Uber's Testing Ground*, N.Y. TIMES (Sept. 10, 2016), https://www.nytimes.com/2016/09/11/technology/no-driver-bring-it-on-how-pittsburgh-became-ubers-testing-ground.html.

86 For example, a New York law declares 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," creating an obvious problem for AVs that do not require human steering, or that have no steering mechanism at all. N.Y VEH. & TRAF. LAW § 1226 (McKinney 1971); *see also* Andrew Dalton, *A 45-year-old New York Law Is Holding up Autonomous Vehicles*, ENGADGET (May 31, 2016), https://www.engadget.com/2016/05/31/new-york-law-holding-up-autonomous-vehicles.

87 *See, e.g.*, CAL. VEH. CODE § 38750 (West 2017); D.C. CODE § 50-2353 (2013); FLA. STAT. § 319.145 (2016); NEV. REV. STAT. § 482A.080 (2017).

88 *Autonomous Vehicles: Self-Driving Vehicles Enacted Legislation*, NAT'L CONF. OF STATE LEGISLATURES, http://www.ncsl.org/research/transportation/autonomous-vehicles-self-driving-vehicles-enacted-legislation.aspx (last visited Mar. 18, 2019).

and another four are considering it.[89] While most of the regulation is expected to occur at the state level,[90] the federal government has taken steps to increase its role in AV regulation.[91]

NHTSA's policy guidance on AVs, *A Vision for Safety*, outlines twelve suggested safety design elements for best practices in the design, development, testing, and deployment of AV technology.[92] However, the guidelines are strictly voluntary and are solely intended to aid designers in identifying and resolving safety considerations before deployment.[93] The U.S. House of Representatives took a slightly more involved approach to AV regulation in its proposed SELF DRIVE Act.[94] That bill purports to expand federal jurisdiction beyond its traditional role in establishing safety standards to encompass the regulation of AV operations.[95]

Nonetheless, current AV legislation has largely been pioneered by the states. While current state AV laws primarily address only the testing of AVs, they do provide some insight into what states might require in the future.[96] Thus, it is important to examine the three most common state provisions currently in force: (1) indicator provisions, (2) override or disengage provisions, and (3) "operator" provisions.

The most basic of these is the indicator provision. This provision simply requires that an AV employ some sort of mechanism to visually indicate when the vehicle is operating in autonomous mode,[97] or when the autonomous technology is engaged.[98]

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89 Tracy Hresko Pearl, *Fast & Furious: The Misregulation of Driverless Cars*, 73 N.Y.U. ANN. SURV. AM. L. 19, 44–45 (2017). For up-to-date information on federal and state AV regulation, see NAT'L CONF. OF STATE LEGISLATURES, *supra* note 88.

90 Pearl, *supra* note 89, at 44; *see also id.* at 47 (explaining NHTSA's approach as an effort to maintain the traditional balance of power between the federal government, which historically controls how cars are *made*, and the states, which regulate how cars *behave*).

91 *See* H.R. 3388, 115th Cong. (2017).

92 NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., AUTOMATED DRIVING SYSTEMS 2.0: A VISION FOR SAFETY 1 (2017), https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13069a-ads2.0_090617_v9a_tag.pdf.

93 *Id.*

94 *See* H.R. 3388, 115th Cong. (2017).

95 *Info Alert: House Passes Autonomous Vehicle Bill Expanding Federal Pre-emption*, NAT'L CONF. STATE LEGISLATURES: OFF. STATE-FEDERAL REL. (Sept. 6, 2017), http://www.ncsl.org/Portals/1/Documents/standcomm/scnri/House_AV_Bill_25672.pdf. The Senate shortly thereafter unveiled its own version of AV legislation, the AV START Act, which includes a few significant differences such as federal involvement in licensing requirements. *Info Alert: Senate Releases Bipartisan Autonomous Vehicle Legislation That Pre-empts States*, NAT'L CONF. STATE LEGISLATURES: OFF. STATE-FEDERAL REL. (Sept. 29, 2017), http://www.ncsl.org//Portals/1/Documents/standcomm/scnri/senate_commerce_ads_1_25672.pdf.

96 Gurney, *supra* note 11, at 397.

97 FLA. STAT. § 319.145(1)(b) (2016).

98 CAL. VEH. CODE § 38750(c)(1)(B) (West 2017).

The override or disengage provisions require that the AV have some mechanism, accessible to the operator, by which the operator may disengage the autonomous technology.[99] In the case of a malfunction or other failure of the technology, California and Florida laws require the AV to alert the operator to such failure, and then mandate either that the operator take manual control of the AV or, when the operator is unable to assume control, that the AV must be capable of coming to a complete stop.[100] The law is slightly different in Nevada and Tennessee in that, for fully autonomous vehicles (those operating at level four or five),[101] the AV must be capable of achieving a "minimal risk condition"[102]—a reasonably safe state that might include bringing the AV to a complete stop.[103]

The most important provisions for purposes of criminal liability and the Fourth Amendment are the so-called "operator" provisions, which attempt to define who is the "driver" or "operator" of the AV and determine whether an individual does more than merely occupy the vehicle.[104] These provisions are integral in amending vehicle laws that currently assume that the person in the driver seat is in control of the vehicle.[105] Defining the "operator" of the AV specifies who will be liable in the case of injury, damage, or a traffic violation.[106]

Some states have followed traditional definitions focusing on control over the vehicle, and accordingly define the "operator" of the AV as the individual who is either sitting in the driver's seat or who engages the autonomous technology.[107] For example, California and Washington, D.C. both require that there be a human driver sitting in the driver's seat, prepared to assume control over the AV at any time.[108] Other states that do not require

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99 *See* CAL. VEH. CODE § 38750(c)(1)(A) (West 2017); D.C. CODE § 50-2352(1) (2013) (permitting an AV to operate on a public roadway provided that it has a "manual override feature that allows a driver to assume control of the autonomous vehicle at any time"); FLA. STAT. § 319.145(1)(a) (2016); NEV. REV. STAT. § 482A.080 (2017).

100 CAL. VEH. CODE § 38750(c)(1)(C) (West 2017); FLA. STAT. § 319.145(1)(a) (2016).

101 NEV. REV. STAT. AB 69, § 2.5 (2017); *cf.* NEV. REV. STAT. § 482A.030 (2017) (defining "autonomous vehicle" as a vehicle designed to function at levels 3, 4, or 5, including a fully autonomous vehicle).

102 NEV. REV. STAT. § 482A.080(2)(b) (2017); TENN. CODE ANN. § 55-30-103(2) (West 2017).

103 NEV. REV. STAT. AB 69, § 2.7 (2017); TENN. CODE ANN. § 55-30-103(2) (West 2017).

104 *See, e.g.*, CAL. VEH. CODE § 38750(a)(4) (West 2017) (defining "operator" as "the person who is seated in the driver's seat, or . . . causes the autonomous technology to engage"); D.C. CODE § 50-2351(2) (2013) (defining "driver" as "a human operator of a motor vehicle with a valid driver's license").

105 Douma & Palodichuk, *supra* note 77, at 1158.

106 *See, e.g.*, TENN. CODE ANN. § 55-30-106(b) (West 2017).

107 *See, e.g.*, CAL. VEH. CODE § 38750(a)(4) (West 2017).

108 CAL. VEH. CODE § 38750(b)(2) (West 2017) ("The driver shall be seated in the driver's seat, monitoring the safe operation of the autonomous vehicle, and capable of taking over immediate manual control of the autonomous vehicle . . . ."); D.C. CODE § 50-2352 (2013) ("An autonomous vehicle may operate on a public roadway provided that the vehicle . . . [h]as a driver seated in the control seat of the vehicle while in operation who is prepared to take control of the autonomous vehicle at any moment.").

that there be a human operator in the vehicle define the "operator" of the AV as the individual who causes the autonomous technology to engage, regardless of whether that individual is physically present in the AV.[109] Nevada generally follows the latter approach for autonomous vehicles, but it created an exception for *fully* autonomous vehicles: those operating at level four or five.[110] In the case of a *fully* autonomous vehicle, "a natural person who causes the automated driving system of the fully autonomous vehicle to engage" is not considered the "driver" of the vehicle, unless that person is the owner of the vehicle.[111] Thus, the individual who engages the technology would likely not be liable for any traffic violations committed by the AV.[112] Notably, Nevada created an exception to its law prohibiting texting while driving, stating that a person should not be deemed to be operating the vehicle if the autonomous technology is legally engaged; in other words, an individual does not violate the law when he texts while the vehicle is operating autonomously.[113]

Two of the more recent states to enact AV legislation adopted the latter approach and do not consider the individual who engages the autonomous technology to be the operator of the AV.[114] Both Michigan and Tennessee permit AVs to be operated without a human driver.[115] Most importantly, both the Michigan and Tennessee statutes explicitly state that, when engaged, the automated driving system is the "driver" or "operator" of the vehicle for

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But see CAL. VEH. CODE § 38755 (West 2017) (authorizing a pilot program for the testing of autonomous vehicles without a driver in the driver's seat).

109 FLA. STAT. § 316.85(2) (2016) ("[A] person shall be deemed to be the operator of an autonomous vehicle operating in autonomous mode when the person causes the vehicle's autonomous technology to engage, regardless of whether the person is physically present in the vehicle while the vehicle is operating in autonomous mode."); GA. CODE. ANN. § 40-8-11 (2018) (suggesting that a person is always operating an autonomous vehicle).

110 *See* NEV. REV. STAT. § 484A.080(3) (2017).

111 *Id.*

112 *Cf.* NEV. ADMIN. CODE § 482A.030(2) (2018) ("For the purpose of enforcing the traffic laws and other laws applicable to drivers and motor vehicles operated in this State, the operator of an autonomous vehicle that is operated in autonomous mode shall be deemed the driver of the autonomous vehicle regardless of whether the person is physically present in the autonomous vehicle while it is engaged.").

113 *See* NEV. REV. STAT. § 484B.165(7) (2017).

114 *See* MICH. COMP. LAWS § 257.665(5) (2016); TENN. CODE ANN. § 55-30-106(b) (West 2017). The federal government has also suggested that, at least for Google's AV, which lacks any steering wheel or pedal and thus has no need for a human "driver" in the traditional sense, it would consider the automated technology to be the driver under federal law, and not any of the vehicle's human occupants. David Shepardson & Paul Lienert, *Exclusive: In Boost to Self-Driving Cars, U.S. Tells Google Computers Can Qualify as Drivers*, REUTERS (Feb. 9, 2016, 7:14 PM), https://www.reuters.com/article/us-alphabet-autos-selfdriving-exclusive/exclusive-in-boost-to-self-driving-cars-u-s-tells-google-computers-can-qualify-as-drivers-idUSKCN0VJ00H.

115 *See* MICH. COMP. LAWS § 257.665(5) (2016); TENN. CODE ANN. § 55-30-103 (West 2017).

purposes of determining conformance to traffic or motor vehicle laws and other vehicle liability.[116]

Other than these statutes specifically addressing AVs, the laws first generation AVs will encounter will be, for the most part, those that already apply to conventional vehicles.[117] Because most current vehicle laws do not differentiate between AVs and traditional vehicles, either in favor of or against AVs, the majority of traffic laws will likely remain unchanged.[118] AVs will be required to abide by all of these existing traffic and motor vehicle laws.[119]

III. FOURTH AMENDMENT BACKDROP

As legislators have recognized in drafting these statutes, the introduction of AVs will raise several new legal issues. Many commentators have focused on the potential liabilities manufacturers or operators of AVs might face,[120] while even more are concerned with data privacy issues.[121] Far fewer authors have discussed the implications for criminal liability and, particularly, how AVs will fare under the Supreme Court's current Fourth Amendment jurisprudence.[122] After a brief discussion of the Court's Fourth Amendment jurisprudence and its specific treatment of automobiles, this Part explores the standards courts employ to determine whether an officer's stop and subsequent search of a vehicle satisfies the Fourth Amendment's requirements.

A. *Fourth Amendment Jurisprudence, Generally*

The Fourth Amendment protects the people's right to be free from unreasonable government intrusion.[123] Any Fourth Amendment analysis essentially begins with what is known as the "reasonable expectation of privacy" test, which emerged from the Supreme Court's 1967 decision in *Katz v.*

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116 MICH. COMP. LAWS § 257.665(5) (2016); TENN. CODE ANN. § 55-30-106(b) (West 2017).

117 Glancy, *supra* note 2, at 648.

118 *Id. But see supra* note 86 and accompanying text.

119 *See, e.g.*, NEV. REV. STAT. § 482A.080(2) (2017) ("[A]n autonomous vehicle shall not be tested or operated on a highway within this State unless the autonomous vehicle is capable of operating in compliance with the applicable motor vehicle laws and traffic laws of this State . . . .").

120 *See, e.g.*, Douma & Palodichuk, *supra* note 77, at 1163.

121 See, e.g., Peter J. Pizzi, Connected Cars and Automated Driving: Privacy Challenges on Wheels, 84 DEF. COUNSEL J. 1, 14 (July 2017).

122 *See generally* Roseman, *supra* note 13, at 16 (discussing the effects of AVs on law enforcement during drug-related stops in the context of the Fourth Amendment).

123 *See* U.S. CONST. amend. IV ("The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.").

United States.[124] In ruling that the Fourth Amendment "protects people, not places," the Court in *Katz* rejected the notion that an individual sheds his constitutional privacy protections when in public.[125] Rather, the Court employs a two-part test to determine whether a Fourth Amendment search has occurred, requiring "first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'"[126] Any government intrusion that invades an individual's reasonable expectation of privacy is a search subject to the Fourth Amendment's protections.

B. *Automobiles, in Particular*

Any search conducted without prior approval by a neutral magistrate—in other words, without a warrant—is presumed to be unreasonable.[127] However, the Supreme Court has carved out several exceptions to the warrant requirement, including one for automobiles. The Court has long reasoned that an individual enjoys less privacy in his automobile than he does in his home.[128] It first recognized the "necessary difference" between searching a dwelling house and searching a vehicle in *Carroll v. United States*,[129] in which the Court reasoned that securing a warrant to search a vehicle would be impracticable because the vehicle can be quickly moved out of the jurisdiction in which the warrant is sought.[130] It was out of this notion of mobility that the automobile exception was born.[131]

Even after *Katz*, the Court reaffirmed this principle in holding that, aside from the element of mobility, the automobile exception to the warrant requirement is also justified on the lessened expectation of privacy in automobiles.[132] The reduced expectation of privacy in one's automobile arose from the government's pervasive regulation of vehicles capable of traveling on

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124 389 U.S. 347 (1967).

125 *Id.* at 351–52. Thus, the government performed an unlawful search on the petitioner when it electronically listened to and recorded his words through a device attached to the outside of a public telephone booth, because it violated the privacy on which the petitioner justifiably relied while using the booth. *Id.* at 353. Though it was a public space, the enclosed nature of the phone booth entitled him to assume that what he said would not be broadcast to the world. *Id.* at 352.

126 *Id.* at 361 (Harlan, J., concurring).

127 *See* Arizona v. Gant, 556 U.S. 332, 338 (2009); *Katz*, 389 U.S. at 357.

128 *See* Roseman, *supra* note 13, at 17.

129 267 U.S. 132, 153 (1925).

130 *Id.* at 153. Having established that a warrant is not required to search the vehicle, the Court went on to explain that the police may make a search or seizure so long as they have probable cause to believe that the vehicle was being used to commit a crime. *Id.* at 156.

131 California v. Carney, 471 U.S. 386, 390 (1985).

132 *Id.* at 391.

public highways.[133] Even a mobile home, though possessing many attributes of a residence, fell squarely within the scope of the automobile exception under this rationale.[134] It was readily mobile and, because it was licensed for transportation on public streets, was subject to extensive regulation and inspection.[135] The Court has routinely upheld this diminished expectation of privacy in mobile vehicles.[136] In doing so, it has given police greater authority to conduct searches of automobiles by eliminating the need for a neutral magistrate to verify that the officer indeed has probable cause prior to the search.[137]

C. *Probable Cause to Search*

Although an officer does not need a warrant to search a vehicle under the automobile exception, he must still establish probable cause.[138] Probable cause requires that the searching officer have individualized suspicion that the vehicle contains evidence of a crime.[139] Whether an officer has the requisite individualized suspicion to justify a search is a "commonsense, practical question" into whether there is probable cause to believe that the area searched contains contraband or evidence.[140] The Court explicitly rejected any rigid standards or specific tests for establishing probable cause, electing instead to adopt a "totality-of-the-circumstances" approach.[141] Under this fluid standard, probable cause to search might be based on the officer's own

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133 *Id.* at 392. ("The public is fully aware that it is accorded less privacy in its automobiles because of this compelling governmental need for regulation."). In his concurrence in *Rakas v. Illinois*, Justice Powell also articulated reasons for the diminished expectation of privacy: "Automobiles operate on public streets; they are serviced in public places; they stop frequently; they are usually parked in public places; their interiors are highly visible; and they are subject to extensive regulation and inspection." Rakas v. Illinois, 439 U.S. 128, 154 n.2 (1978) (Powell, J., concurring).

134 *Carney*, 471 U.S. at 393.

135 *Id.* at 393.

136 *See, e.g.*, United States v. Knotts, 460 U.S. 276, 281 (1983) ("A person travelling in an automobile on public thoroughfares has no reasonable expectation of privacy in his movements from one place to another."); *Rakas*, 439 U.S. at 153–54 (1978) (Powell, J., concurring) ("Nothing is better established in Fourth Amendment jurisprudence than the distinction between one's expectation of privacy in an automobile and one's expectation when in other locations.").

137 *See* Roseman, *supra* note 13, at 18.

138 Glancy, *supra* note 54, at 1224 ("Importantly, law enforcement agents searching stopped vehicles have to establish and document probable cause before any warrantless vehicle search.").

139 *See* City of Indianapolis v. Edmond, 531 U.S. 32, 37 (2000) ("A search or seizure is ordinarily unreasonable in the absence of individualized suspicion of wrongdoing."); Carroll v. United States, 267 U.S. 132, 149 (1925) ("[I]f the search and seizure without a warrant are made upon probable cause, that is, upon a belief, reasonably arising out of circumstances known to the seizing officer, that an automobile or other vehicle contains that which by law is subject to seizure and destruction, the search and seizure are valid.").

140 Illinois v. Gates, 462 U.S. 213, 230 (1983).

141 *Id.* at 230–31.

perceptions, including a scent or objects observed in plain view,[142] or on an informant's tip, even if it is anonymous.[143]

Probable cause to arrest is distinct from probable cause to search. Even if an officer initially stops a vehicle based on probable cause that the driver has committed a crime (i.e., probable cause to *arrest*), he must further establish probable cause that the vehicle contains evidence of a crime to justify a warrantless search (i.e., probable cause to *search*).[144] When an officer stops or arrests a driver solely for a traffic violation, the officer will likely have no reasonable basis to believe that the vehicle contains evidence of the crime of arrest (a mere traffic violation), and thus a search of the vehicle would not be reasonable unless other facts and circumstances justify a belief that evidence of that crime or another crime is located in the vehicle.[145] The officer must show objective facts amounting to probable cause that the lawfully stopped vehicle contains evidence of criminal activity or contraband.[146] However, once an officer establishes probable cause to justify a warrantless search, he may search the vehicle and all containers in it that may contain the contraband or evidence.[147]

D. *Stops and Seizures Based on Reasonable Suspicion*

While automobile *searches* require probable cause, certain Fourth Amendment *seizures*, including traffic stops, are often justified on less than probable cause. A person is seized within the meaning of the Fourth Amendment when a law enforcement officer restrains that individual's movement such that a reasonable person, in the totality of the circumstances, would believe he or she is not free to leave.[148] The "free to leave" test does not make all encounters with the police a seizure. Even though most people do in fact

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142 *See* Roseman, *supra* note 13, at 22–23.

143 *See* Illinois v. Gates, 462 U.S. 213, 232 (1983).

144 *See* Arizona v. Gant, 556 U.S. 332, 344–45 (2009). While the Court in *Gant* specifically considered the search-incident-to-arrest exception to the warrant requirement, the analysis is nonetheless helpful here in distinguishing between probable cause to arrest and probable cause to search. In applying the search-incident-to-arrest exception, the Court held that "circumstances unique to the vehicle context justify a search incident to a lawful arrest when it is 'reasonable to believe evidence relevant to the crime of arrest might be found in the vehicle.'" *Id.* at 343 (quoting Thornton v. United States, 541 U.S. 615, 632 (2004) (Scalia, J., concurring in judgment)).

145 *Id.* at 343–44 (holding that a search of the vehicle was unreasonable when the driver was lawfully arrested for driving with a suspended license, because the police could not reasonably have believed that evidence of that offense might have been found in the vehicle). While the police had probable cause to believe he committed the offense of arrest, they did not have probable cause to believe that evidence of that crime would be found in the vehicle. *Id.* at 344.

146 Glancy, *supra* note 54, at 1224.

147 California v. Acevedo, 500 U.S. 565, 580 (1991).

148 Brendlin v. California, 551 U.S. 249, 254–55 (2007); United States v. Mendenhall, 446 U.S. 544, 554 (1980); Terry v. Ohio, 392 U.S. 1, 16 (1968).

stop to engage with an approaching officer, when an officer attempts to stop an individual to question him, the individual is free to decline to answer and walk away.[149]

Nonetheless, it is well settled that the Fourth Amendment is implicated when a law enforcement officer stops a vehicle.[150] An officer performing a traffic stop undoubtedly "seizes" all passengers in the vehicle.[151] The stop curtails an individual's movements to the extent that no reasonable person would feel free to leave without police permission.[152] In general, a traffic stop will be reasonable under the Fourth Amendment if the "police have probable cause to believe that a traffic violation has occurred."[153]

However, stops can be, and often are, justified on less than probable cause.[154] When an officer reasonably suspects that "criminal activity may be afoot," that officer is justified in stopping the suspected individual in order to make a further inquiry necessary for the protection of himself and others.[155] This standard of reasonable suspicion is an explicitly lower standard than the traditional requirement of probable cause,[156] but it still requires that the officer identify "specific and articulable facts" which, combined with "rational inferences drawn from those facts, reasonably warrant [the officer's conduct]."[157]

Under this standard, even seemingly innocent activity can amount to reasonable suspicion when considered in the aggregate.[158] In *Terry v. Ohio*,[159] for example, an officer observed two men taking turns walking an identical route down a street, each time staring into the same store window.[160] The officer, believing them to be casing the store for a potential robbery, stopped the two men and patted them down.[161] Although walking down a street and looking in a store window are innocent acts when viewed in isolation, the totality of the circumstances justified the officer in suspecting the men were

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149 Florida v. Royer, 460 U.S. 491, 497–98 (1983).

150 *Brendlin*, 551 U.S. at 255; Delaware v. Prouse, 440 U.S. 648, 653 (1979) ("[S]topping an automobile and detaining its occupants constitute a 'seizure . . . .'").

151 *Brendlin*, 551 U.S. at 255; Whren v. United States, 517 U.S. 806, 809–10 (1996) ("Temporary detention of individuals during the stop of an automobile by the police, even if only for a brief period and for a limited purpose, constitutes a 'seizure' of 'persons' within the meaning of [the Fourth Amendment].").

152 *Brendlin*, 551 U.S. at 257.

153 *Whren*, 517 U.S. at 810.

154 *E.g.*, Terry v. Ohio, 392 U.S. 1, 27 (1968).

155 *Id.* at 30.

156 *See, e.g.*, Alabama v. White, 496 U.S. 325, 330 (1990) (explaining that reasonable suspicion is a less demanding standard than probable cause).

157 *Terry*, 392 U.S. at 21.

158 Roseman, *supra* note 13, at 20.

159 392 U.S. 1 (1968).

160 *Id.* at 6.

161 *Id.* at 6–7.

engaging in potentially dangerous criminal activity, and thus the stop and search were lawful.[162]

Reasonable suspicion can also arise from an informant's tip that a suspect is engaged in criminal activity, even if that information is less reliable than what is required for probable cause.[163] Tips that predict an individual's future behavior[164] or that claim eyewitness knowledge[165] are especially likely to generate reasonable suspicion. For example, in *Navarette v. California*,[166] the Court held that an anonymous tip that a drunk driver ran someone off the road raised enough suspicion to justify stopping the vehicle described by the tipster.[167] In so holding, the Court reasoned that behaviors such as weaving back and forth over the roadway and crossing the center line would give an officer reason to suspect drunk driving and thus reasonable suspicion to stop the vehicle.[168] While the behavior might have an innocent explanation, such as other distractions, the mere possibility of innocent conduct does not negate an officer's initial reasonable suspicion.[169]

However, the Court has also recognized that people are not stripped of all Fourth Amendment protection "when they step from their homes onto the public sidewalks[,] [n]or are they shorn of those interests when they step from the sidewalks into their automobiles."[170] Thus, in *Delaware v. Prouse*,[171] the Court held that a stop was unreasonable when officers pulled over a vehicle

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162 *Id.* at 28 ("We think on the facts and circumstances Officer McFadden detailed before the trial judge a reasonably prudent man would have been warranted in believing petitioner was armed and thus presented a threat to the officer's safety while he was investigating his suspicious behavior. The actions of Terry and Chilton were consistent with McFadden's hypothesis that these men were contemplating a daylight robbery—which, it is reasonable to assume, would be likely to involve the use of weapons—and nothing in their conduct from the time he first noticed them until the time he confronted them and identified himself as a police officer gave him sufficient reason to negate that hypothesis.").

163 Alabama v. White, 496 U.S. 325, 330 (1990) ("Reasonable suspicion is a less demanding standard than probable cause not only in the sense that reasonable suspicion can be established with information that is different in quantity or content than that required to establish probable cause, but also in the sense that reasonable suspicion can arise from information that is less reliable than that required to show probable cause."). In *Alabama v. White*, the police received an anonymous tip that a woman would leave a specified apartment to head to Dobey's Motel in a brown Plymouth station wagon with the right taillight broken, carrying a brown case containing cocaine. *Id.* at 327. The officer corroborated this tip when he observed the suspect leave the apartment, get in the described vehicle, and drive the most direct route to Dobey's Motel. *Id.* When the officer stopped the vehicle just short of Dobey's Motel, his action was backed by reasonable suspicion based on the corroborated tip. *Id.* at 332.

164 *Id.* at 332; Illinois v. Gates, 462 U.S. 213, 245–46 (1983) (finding that an anonymous letter's ability to predict certain future behavior offered a sufficient basis for establishing probable cause).

165 Navarette v. California, 572 U.S. 393, 399 (2014).

166 572 U.S. 393 (2014).

167 *Id.* at 404.

168 *Id.* at 402.

169 *Id.* at 403.

170 Delaware v. Prouse, 440 U.S. 648, 663 (1979).

171 440 U.S. 648 (1979).

to check the driver's license and registration.[172] The officers had neither probable cause to believe the driver was violating any traffic law, nor reasonable suspicion that the driver was unlicensed or his vehicle unregistered.[173] Therefore, while a stop of a vehicle might be justified on a lesser standard than probable cause, the Fourth Amendment still requires that the officer be able to articulate a reasonable basis for a suspicion of illegal activity.[174]

E. *Asserting a Fourth Amendment Violation: Standing*

When an officer either stops a vehicle without reasonable suspicion or searches a vehicle without probable cause, courts require that any evidence obtained by virtue of the illegal search or seizure be excluded from use at trial against the party aggrieved.[175] The Fourth Amendment itself is silent as to the appropriate remedy for a person whose Fourth Amendment rights have been violated.[176] Rather, this exclusionary rule emerged as a judicially created remedy.[177] The overriding purpose of the exclusionary rule is not to vindicate individual rights but to deter police misconduct.[178] In other words, it is aimed at preventing future violations rather than at correcting past unlawful conduct.[179]

To be entitled to the exclusion of evidence against him, an individual must establish that his own personal rights were violated by the unlawful search or seizure; this concept is referred to as standing.[180] A person who is aggrieved by an illegal search and seizure only through the introduction of damaging evidence obtained through a search of another person's property

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172 *Id.* at 661; *see* Terry v. Ohio, 392 U.S. 1, 20–21 (1968) (balancing the government's interests against the individual's interest to determine whether it was reasonable for the officer to have interfered with the citizen's personal security).

173 *Prouse*, 440 U.S. at 661.

174 *See id.*

175 WAYNE R. LAFAVE, 1 SEARCH & SEIZURE § 1.6 (5th ed. 2017).

176 *See* U.S. CONST. amend. IV.

177 The rule was established in *Weeks v. United States*, 232 U.S. 383, 398 (1914), that any evidence obtained in violation of the Fourth Amendment must be excluded in federal courts. The exclusionary rule was later incorporated against the states in *Mapp v. Ohio*, 367 U.S. 643, 660 (1961).

178 *See* United States v. Leon, 468 U.S. 897, 906 (1984) ("The [exclusionary] rule thus operates as 'a judicially created remedy designed to safeguard Fourth Amendment rights generally through its deterrent effect, rather than a personal constitutional right of the party aggrieved.'" (quoting United States v. Calandra, 414 U.S. 338, 348 (1974))).

179 Herring v. United States, 555 U.S. 135, 141 (2009) ("We have repeatedly rejected the argument that exclusion is a necessary consequence of a Fourth Amendment violation. Instead we have focused on the efficacy of the rule in deterring Fourth Amendment violations in the future." (citations omitted)).

180 *See* Rakas v. Illinois, 439 U.S. 128, 140 (1978) ("[T]he question is whether the challenged search and seizure violated the Fourth Amendment rights of a criminal defendant who seeks to exclude the evidence obtained during it. That inquiry in turn requires a determination of whether the disputed search and seizure has infringed an interest of the defendant which the Fourth Amendment was designed to protect.").

has not had any of his personal Fourth Amendment rights infringed.[181] The rule, as announced in *Rakas v. Illinois*, did away with the Supreme Court's prior approach of automatic standing, which would have allowed a defendant to move to suppress evidence whenever he was the victim of a search or seizure, or the "one against whom the search was directed."[182] A defendant must do more than prove that a constitutional violation occurred; he "may only claim the benefits of the exclusionary rule if [his] own Fourth Amendment rights have in fact been violated."[183]

In the automobile context, the Court in *Rakas* applied these principles to create a so-called bright-line rule denying standing to passengers in a vehicle.[184] It not only rejected the "target" theory of standing but also held that being "legitimately on [the] premises" was insufficient to invoke the protections of the Fourth Amendment and the exclusionary rule.[185] Rather, the Court established that questions of standing would turn on whether an individual had a reasonable expectation of privacy in the invaded area.[186] And individuals do not have a legitimate expectation of privacy in a vehicle in which they are "merely passengers."[187]

In elucidating this rule, the Court relied heavily on the deterrence rationale for the exclusionary rule. It explained that the marginal benefits of extending the exclusionary rule to other defendants, in this case passengers, would not justify the costs of extending the exclusionary rule.[188] The driver of the vehicle—the individual whose personal rights were actually infringed by the search of the vehicle—had "ample motivation" to move to suppress the evidence, so extending the rule would have only a marginal deterrent

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181 *Id.* at 133–34 ("Fourth Amendment rights are personal rights which . . . may not be vicariously asserted.").

182 Jones v. United States, 362 U.S. 257, 261 (1960), *overruled by* United States v. Salvucci, 448 U.S. 83 (1980). This approach was known as the "target" theory. *See Rakas*, 439 U.S. at 134–35.

183 United States v. Salvucci, 448 U.S. 83, 85 (1980).

184 *Rakas*, 439 U.S. at 165 (White, J., dissenting) ("Insofar as the Court's rationale is concerned, no passenger in an automobile, without an ownership or possessory interest and regardless of his relationship to the owner, may claim Fourth Amendment protection against illegal stops and searches of the automobile in which he is rightfully present."); *see also* Sarah L. Dickey, Comment, *The Anomaly of Passenger "Standing" to Suppress All Evidence Derived from Illegal Vehicles Seizures Under the Exclusionary Rule: Why the Conventional Wisdom of the Lower Courts Is Wrong*, 82 MISS. L.J. 183, 191 (2013).

185 *Rakas*, 439 U.S. at 142 (majority opinion).

186 *Id.* at 143.

187 *Id.* at 148–49. In that case, police officers pulled over a vehicle that matched the description of a getaway car used in a recent robbery. *Id.* at 130. They ordered all occupants out of the car and conducted a search of the vehicle during which they found a box of rifle shells in the locked glove compartment, and a sawed-off rifle under the front passenger seat. *Id.* The Court held that the passengers' motion to suppress was rightfully denied because they asserted neither a property nor possessory interest in the car or the evidence seized, and made no showing that they had a legitimate expectation of privacy in the particular areas searched. *Id.* at 148.

188 *Rakas*, 439 U.S. at 137.

effect on police misconduct.[189] Such marginal deterrence does not justify the added social costs of exclusion of relevant evidence that might aid the trier of fact in its search for "truth."[190]

This is not to say that a passenger in a vehicle will never have standing. Where a passenger asserts a personal interest in containers or other property located in the vehicle, he may contest the lawfulness of the seizure or search of his own property.[191] Moreover, as the Court clarified almost thirty years later, a passenger will have standing to challenge the initial stop of the vehicle as a seizure of his person.[192] Because a passenger is seized at the moment the car comes to a halt, that passenger has standing to challenge the constitutionality of his own seizure and any evidence obtained as a result of it.[193]

IV. WHEN AVS HIT THE STREETS: THE EFFECT ON ROUTINE TRAFFIC STOPS

The introduction of AVs will undoubtedly alter our legal landscape, not only at the legislative level,[194] but also at the law enforcement level.[195] For instance, many commentators suggest that, because AVs will be programmed to obey all traffic laws and signs, law enforcement's use of "pretext" traffic stops will become rare as AVs become a fixture on highways.[196] AVs will reduce the need for the type of traffic enforcement conducted by police today, and will thus diminish the capacity for police to detect and deter crime.[197] Without the ability to perform routine stops, the government arguably loses an important mechanism to prevent crimes like drug trafficking, and in turn smugglers will largely be able to avoid detection and investigation.[198]

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189 *Id.* at 134.

190 *Id.* at 137.

191 *Id.* ("The Supreme Court's decision in *Rakas v. Illinois*, rejecting the notion that a passenger gains standing to object to search of a car merely by his lawful presence and adopting instead a narrower expectation-of-privacy test, does not conflict with the notion that, at least in some circumstances, a person may have standing by virtue of the fact that *his* personal property is in the car, when the objected-to intrusion involves a seizure of or search *within* that property." (footnotes omitted)).

192 Brendlin v. California, 551 U.S. 249, 251 (2007).

193 *Id.* at 263 (leaving for state courts to decide whether suppression turns on any other issue); Dickey, *supra* note 184, at 192.

194 *See* discussion *supra* Part II.

195 *See generally* Aristotle Wolfe, Unstoppable? The Gap Between Public Safety and Traffic Safety in the Age of Driverless Cars (March 2017) (unpublished M.A. thesis, Naval Postgraduate School), https://www.hsaj.org/articles/13969.

196 *See* Glancy, *supra* note 2, at 663; Gurney, *supra* note 11, at 413 ("[O]nce autonomous vehicles become prevalent, traffic law violations will be minimal.").

197 Wolfe, *supra* note 195, at 70; Glancy, *supra* note 2, at 663 ("Th[e] reduction in the number of stops for traffic violations could have a profound effect on police staffing, deployment, and practices.").

198 Roseman, *supra* note 13, at 29; Wolfe, *supra* note 195, at 71–72.

But the change might not be as dramatic as originally thought. AVs still can, and will, break the law,[199] and law enforcement will retain the ability to conduct these routine traffic stops. AVs' ability to effectively reduce traffic violations will largely depend on the level of detail and sophistication in the programming.[200] AVs are designed to eliminate or significantly reduce human error from driving, and yet some academic experts in robotics still caution that "it will be decades until they can perform as well as human drivers in all situations—if they ever do at all."[201] Because the world is constantly changing, these vehicles cannot rely solely on preprogrammed maps and information but must be able to adapt to new and temporary environments such as construction zones.[202] In so adapting, human drivers largely rely on "social cues" such as eye contact with other drivers to make decisions while on the road; an AV, even if it can recognize something, will hardly be able to understand the social context in which an event occurs, so it cannot make the sort of subjective determinations and predictions that human drivers routinely make.[203] For example, a human driver understands that she must drive more cautiously on certain residential roads on Halloween night, and even distinguishes between young trick-or-treaters and mischievous teenagers to adjust her predictions and thus her behavior accordingly.[204] Human drivers also often make split-second ethical decisions, such as choosing between striking a child who dashes unexpectedly into the street or veering off the road and thereby putting the occupants' safety at risk.[205] Unless and until autonomous technology is able to grapple with such subjective evaluations, AVs will drive recklessly at times.

Even if AVs prove to effectively reduce traffic violations, such violations are only one of many reasons for an officer to stop an AV. Law

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199 Gurney, *supra* note 11, at 410 ("No matter how perfectly an autonomous vehicle is programmed, it will violate traffic laws, drive recklessly at times, and cause fatal accidents.").

200 Todd Litman, *The Many Problems with Autonomous Vehicles*, PLANETIZEN (Oct. 23, 2017, 11:00 AM), https://www.planetizen.com/blogs/95445-many-problems-autonomous-vehicles (noting that, because of the diversity of possible interactions, driving in traffic requires far more decisions and thus far more complex software than even flying an airplane).

201 Lee Gomes, *Urban Jungle a Tough Challenge for Google's Autonomous Cars*, MIT TECH. REV. (July 24, 2014). Gomes is primarily concerned with Google's AV, which lacks a steering wheel or pedal, and thus removes *all* human interaction from the driving operation. *Id.*

202 *Id.*

203 *Id.*; *see* Neal E. Boudette, *5 Things that Give Self-Driving Cars Headaches*, N.Y. TIMES (June 4, 2016), https://www.nytimes.com/interactive/2016/06/06/automobiles/autonomous-cars-problems.html (discussing five subjective situations which are difficult for AVs to currently handle, including reacting to reckless and unpredictable drivers, bad weather, detours and rerouted roads, potholes, and ethical decisions).

204 *See* Litman, *supra* note 200. Litman calls this type of problem the "Zombie Kangaroo Costume Challenge." *Id.* Human drivers know to drive defensively in certain situations, and so if a human driver is told to "watch out for teenagers in zombie kangaroo costumes" he will understand what to do. *Id.* On the other hand, a computer will likely be confused by such an unusual direction. *Id.*

205 Boudette, *supra* note 203.

enforcement officers may still rely on informants' tips, especially those that predict future activity. Suppose, for example, that an officer receives an anonymous tip that an individual has been employing AVs to deliver drugs from his home, and that the suspect planned one such delivery for the next day. The tipster informs the officer that the suspect will summon an Uber AV, place a large brown suitcase in the back of the vehicle, and then send it to a local motel. Suppose further that the officer decides to investigate this tip and does in fact observe a man emerge from the described house, approach the Uber AV idling at the curb, and place a brown suitcase in the back seat. The officer then follows the vehicle for a few blocks and decides to pull the AV over once it turns onto the street where the motel is located. At that point, the facts known to the officer would certainly amount to enough reasonable suspicion to stop the vehicle, regardless of whether anyone was occupying the AV at the time.[206] The tip and the corroborating circumstances would give the officer reason to suspect that "criminal activity may be afoot."[207] For anonymous tips, then, the factors relevant to establishing reasonable suspicion are virtually the same as those currently examined by courts.[208]

Moreover, while AVs might *reduce* traffic infractions, it is unlikely that they will entirely *eliminate* them. Not only might AVs operate recklessly at times as they struggle to adapt to new situations, but they are also at risk of malfunctioning. Tesla's fatal crash is perhaps the most noteworthy example of such a malfunction. In May 2016, Joshua Brown died when his vehicle, driving on autopilot, passed right under a truck without braking after failing to recognize that the truck had made a left turn in front of it.[209] The National Transportation Safety Board found that Tesla's Autopilot played a "contributing role" in the crash.[210] More recently, autonomous technology might be to blame for a fatal accident in Arizona, where an Uber AV operating in semiautonomous mode struck and killed a pedestrian, despite having detected the pedestrian as early as six seconds before the fatal crash.[211] Even rather routine

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206 *See supra* note 163 and accompanying text (discussing *Alabama v. White*, the case on which this hypothetical is based). On similar facts, the Supreme Court in *Alabama v. White* held that the officer had enough reasonable suspicion to stop the vehicle. Alabama v. White, 496 U.S. 325, 332 (1990). The distinction between traditional vehicles and AVs would not lead to different results in such a case.

207 Terry v. Ohio, 392 U.S. 1, 30 (1968).

208 *See* Roseman, *supra* note 13, at 27.

209 Danielle Muoio, *Tesla's Autopilot System Is Partially to Blame for a Fatal Crash, Federal Investigators Say*, BUSINESS INSIDER: FINANCE (Sept. 12, 2017, 11:39 AM), https://www.businessinsider.com/tesla-autopilot-fatal-crash-ntsb-2017-9. Even the worst human driver would probably be able to avoid such an accident, or at least would be able to see the truck in front of it and attempt to brake.

210 *Id.*

211 *See* Johana Bhuiyan, *Uber's Self-Driving Software Detected the Pedestrian in the Fatal Arizona Crash but Did Not React in Time*, RECODE (May 7, 2018, 4:00 PM), https://www.recode.net/2018/5/7/17328104/uber-self-driving-crash-arizona-software-elaine-herzberg; Devin Coldewey, *Uber in Fatal Crash Detected Pedestrian but Had Emergency Braking Disabled*, TECHCRUNCH (May 24, 2018),

driving decisions present problems for AVs. For example, during one trip an AV slowed unexpectedly because it was confused by a shadow on the road ahead created by an overpass.[212] Others who rode in AVs noted that the vehicles often hug the side of the road,[213] which could potentially cause the AV to drift within its lane.

An officer's observation of similarly unusual driving might provide him with reason to stop the AV. The hypothetical scenario posed in the Introduction is illustrative. If an officer had observed an ordinary vehicle operating in such a way, that officer would have reason to suspect that the driver is impaired and thus could lawfully pull the vehicle over. The observed behavior might indicate lane-positioning problems and impaired vision or judgment, both of which are recognized cues of drunk driving.[214] In addition, the accumulated experience of officers suggests that a driver who almost strikes a vehicle or another object is likely intoxicated.[215] Therefore, in the hypothetical scenario, an officer's observation that the vehicle almost hit a parked car and then veered back into its lane could give him reasonable suspicion of drunk driving: both behaviors are documented indicia of impaired driving.[216]

That reasonable suspicion is not negated merely because the vehicle is an AV. While it is possible that the vehicle is being operated by the autonomous technology at the time, and not a human driver, the officer could just as reasonably presume that an (intoxicated) individual is driving the vehicle; given that current laws require AVs to be equipped with disengage functions, individuals in first generation AVs will likely have the ability to assume control of the AV and drive it as a normal vehicle.[217] Most importantly, an occupant-passenger of an AV need not actually be engaging in illegal activity—

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https://techcrunch.com/2018/05/24/uber-in-fatal-crash-detected-pedestrian-but-had-emergency-braking-disabled.

212 Boudette, *supra* note 203.

213 *See* Isaac, *supra* note 1.

214 *See* Navarette v. California, 572 U.S. 1683, 403 (2014).

215 *Id.* In *Navarette*, the officers did not even observe this behavior first-hand. *See id.* at 395. Rather, the reasonable suspicion to stop the defendants' vehicle was based solely on an anonymous 911 call that the defendants' vehicle had just driven the caller's vehicle off the road. *Id.* at 401–04. The Supreme Court held that this was enough to establish reasonable suspicion, even though the officers did not observe such driving behavior when they pulled the defendants over. *See id.*

216 Repeated weaving within a single lane alone might not give an officer enough reasonable suspicion to stop a vehicle, but driving need not be erratic, unsafe, or illegal in order to generate reasonable suspicion. *E.g.*, State v. Post, 733 N.W.2d 634, 641 (Wis. 2007). For example, the Wisconsin Supreme Court rejected a bright-line rule that weaving within a single lane alone was sufficient to establish reasonable suspicion, but nonetheless held that the officer had reasonable suspicion to stop the defendant for driving while intoxicated. *Id.* at 644. When considered in the totality, each individual circumstance accumulated to create reasonable suspicion. *Id.* The officer's observation of weaving which continued in an S-type pattern for two blocks at nighttime was enough to justify an investigative stop under *Terry*. *Id.* at 643–44.

217 *But see* Urmson, *supra* note 59 (describing that Google's AVs will be designed without a steering wheel, accelerator pedal, or brake pedal, and so there is no possibility of human take-over).

here, drunk driving—to justify an officer's stop of the AV. Reasonable suspicion might be based on purely innocent activity that, in the totality of the circumstances, is suspicious.[218] The possibility of an innocent explanation—that the AV was in fact driving and merely experienced a minor malfunction—will not negate a finding of reasonable suspicion.[219] It would therefore also not matter if it is legally permissible for an occupant to use or engage an AV while intoxicated or if an occupant is not legally responsible for any traffic violations or injuries caused by the technology[220] because, at least in first generation AVs, an officer can just as reasonably suppose that an individual is operating the vehicle and not the autonomous technology. This sort of erratic behavior associated with drunk driving is enough to generate reasonable suspicion of ongoing criminal activity, regardless of whether the occupant was actually exercising control of the vehicle at the time.

Based on the totality of the circumstances, an officer has sufficient reasonable suspicion to initially stop the vehicle. Only once the officer approaches the vehicle and views the required indicator light will he be able to ascertain whether the vehicle is being driven by a human or by the technology, and then either confirm or disprove his suspicion of drunk driving.[221]

Therefore, while establishing reasonable suspicion to stop an AV might become more difficult as traffic violations decrease,[222] first generation AVs do not "make motorists unstoppable."[223] Officers are still justified in stopping AVs based on information gleaned from informants' tips and an officer's own observations of suspicious activity. This even includes apparent traffic violations such as impaired driving, since a reasonable officer could justifiably suspect that an individual, and not the autonomous technology, is operating the vehicle.

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218 *Supra* Section III.D.

219 *Cf. Navarette*, 572 U.S. at 403 (explaining that even if the reported behavior of drunk driving "might also be explained by . . . an unruly child or other distraction[,] . . . reasonable suspicion need not rule out the possibility of innocent conduct").

220 *E.g.*, MICH. COMP. LAWS § 257.665 (2016); TENN. CODE ANN. § 55-30-106 (West 2017).

221 Of course, a savvy individual might just flick the indicator switch to self-driving mode upon being stopped to avoid a potential DUI. While the indicator light might not be a full-proof method of determining who (or what) was driving the vehicle at the time that the officer observed the suspicious driving behavior, in the context of a routine traffic stop this indicator light is likely all the officer has to go on when making an assessment of whether reasonable suspicion warrants further investigation. Only the data contained in an AV's "black box" could confirm for certain whether the vehicle was operating autonomously or not at a particular moment in time, and this information will likely require a search warrant or other court order to obtain. *See* Glancy, *supra* note 54, at 1202–03 (discussing legislation that limits the disclosure of data stored by event data recorders in vehicles).

222 Roseman, *supra* note 13, at 27.

223 Wolfe, *supra* note 195, at 94.

V. MORE THAN A MERE PASSENGER: ESTABLISHING STANDING IN AN AUTONOMOUS VEHICLE

When an AV is stopped and searched, evidence will be suppressed only if the vehicle's occupants had their personal constitutional rights violated by either the unlawful stop of the AV or a subsequent illegal search.[224] Given that it *is* possible for a law enforcement officer to lawfully stop an AV and consequently seize its occupants, in those cases an individual seeking to suppress evidence found in the vehicle must challenge the constitutionality of the subsequent *search* of the vehicle.[225] Assuming that an AV is lawfully stopped, the vehicle would be subject to a warrantless search under current interpretations of the automobile exception if sufficient objective facts exist to allow an officer to determine that there is probable cause that evidence of a crime will be found in the AV.[226] For example, the AV search in the hypothetical posed in the Introduction, based on nothing more than the officer's observation of reckless driving, would not be lawful. No probable cause would have existed to search the vehicle, especially once the officer could readily determine that the autonomous technology, and not the intoxicated occupant, was operating the AV. Any suspicion the officer might have had would be dispelled by the indicator light, which made clear that the occupant was not driving the vehicle.

However, even though the officer failed to establish probable cause, and the occupant can show that an illegal search occurred, the occupant must also prove that he has standing to invoke the exclusionary rule in the first place. He must show that his personal rights were violated. The *Rakas* analysis of passenger standing is most important in this context, especially because of the temptation to view occupants and users of AVs as mere passengers in another's vehicle, who would ordinarily lack standing.[227]

On the one hand, the standing inquiry is virtually unchanged in the case of personally owned AVs; if the occupant in the Introduction's hypothetical had used his own personal AV, instead of an Uber AV, he would undoubtedly have standing to contest the unlawful search. While AVs might be viewed by consumers as personal taxicabs,[228] this does not render the occupant a mere passenger of the vehicle for standing purposes. For one, states like California

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224 *Supra* Section III.E.

225 Though he would have standing to challenge the stop of the vehicle and thus his person, his motion to suppress would ultimately be denied since the vehicle was lawfully stopped. Thus, for the purposes of the following discussion on standing to contest a *search* of an AV, where a motion to suppress based on the initial *stop* would be unsuccessful, this Comment assumes that the initial stop of the AV was lawful for one of the reasons discussed in Part IV.

226 Glancy, *supra* note 54, at 1224.

227 *See infra* note 232.

228 Jeffery Mackowski, Comment, *Good but Not Great: Autonomous Vehicles and the Law in Florida*, 11 FLA. INT'L U. L. REV. 221, 247 (2015).

and Florida readily recognize that the occupant is more than a mere passenger by designating him as the "driver" of the AV for legal purposes.[229] But these definitions aside, the occupant—or, if none is present, the engager of the technology—will still have standing to contest a search as the owner of the property searched.[230] Because he owns the vehicle, his *personal* property rights would have been invaded. Thus, an operator-owner of an AV will have standing to contest the search of his own vehicle as he can show a property or possessory interest in his own AV.[231]

On the other hand, the more interesting cases—and the ones this Comment is primarily concerned with—are those in which the person using the AV is not the owner of the AV, as is the case with short-term rental vehicles and commercial ride-sharing services like Uber and Lyft. Given that such services are likely to be the public's and law enforcement's first major encounter with AVs, early interpretations of an occupant's rights in such AVs have the potential to shape our understanding of AVs going forward. Whether the occupant of an AV deployed by Uber or Lyft will have standing to challenge a search of that vehicle will turn on the extent of the occupant's interest in the vehicle, namely, his expectation of privacy in the area searched. This Part undertakes this analysis and ultimately concludes that an occupant of an AV should have standing to contest the search of the AV because, unlike the quintessential passenger in *Rakas*, he has a reasonable expectation of privacy in the vehicle, and extending standing to occupant-passengers of AVs serves the primary purpose of the exclusionary rule to deter police misconduct.

A. *A Reasonable Expectation of Privacy in Uber's AVs*

Many articles discussing AVs assume that, in general, the occupant of the AV is a mere passenger.[232] In particular, AV users are analogized to passengers in taxicabs: much like taxi passengers do not "operate" the vehicle merely because they tell the driver where to go, AV users do not operate or control the vehicle in any meaningful way.[233] However, these arguments fail to account for the greater degree of autonomy that an AV affords its users, and the significant control that occupants exercise over the AV in comparison to taxis.[234] This Section argues that Uber AV riders should not be analogized

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229 *See* CAL. VEH. CODE § 38750(a)(4) (West 2015); FLA. STAT. § 316.85(2) (2016).

230 *Cf.* NEV. REV. STAT. § 484A.080(3) (2017).

231 Mackowski, *supra* note 228, at 252 (arguing that the owner-operator of an AV will have standing to challenge a search of the vehicle, regardless of whether he is present or not).

232 *See* Douma & Palodichuk, *supra* note 77, at 1163 (suggesting that an "I'm drunk, take me home" button could transform an individual's own car into a personal taxi); Goodrich, *supra* note 30, at 266 (describing the autonomous vehicle as a "chauffeur"); Mackowski, *supra* note 228, at 254 (arguing that an operator of an AV may actually be a mere passenger).

233 *See* Mackowski, *supra* note 228, at 247.

234 Glancy, *supra* note 54, at 1190 (discussing individual autonomy in the use of AVs).

to mere passengers because they exercise greater control in an AV than in a taxi, and they have a greater expectation of privacy in an Uber AV than in a taxi. Thus, AV occupants are sufficiently different from ordinary passengers that we should avoid any construction that threatens to bring AV occupants within the *Rakas* rule against passenger standing.

An AV user is more than a mere passenger, as in a taxicab. By removing the human operator, the passenger exerts greater control and choice over the operation of the vehicle than she would if a human driver were controlling the vehicle. Unlike a taxi rider, who has virtually no ability to control the actions of a human driver, other than telling him where she wants to go, an AV user does more than simply get in and input her destination. While the individual delegates some choices to the vehicle, others are retained by the user. She might specify the route she wants to travel, the speed she wants to travel at, or how aggressively she wants the vehicle to drive, among other things.[235] Eventually, AVs may be programmed to provide a variety of user choices beyond the standard programming to allow the AV to operate according to its user's preferences, thereby increasing an individual's autonomy and individual choice in an AV.[236] In this sense the AV user can, and does, exert control over a significant amount of the vehicle's operation. Though it is tempting to view the AV occupant as relinquishing all control over the ride, in reality she determines every aspect of the trip except the actual physical operation of the vehicle. The Uber AV passenger thus exercises greater dominion over the AV than she would over a traditional Uber or taxi driver, despite not actually controlling the driving operation. In this way, Uber's AVs more closely resemble short-term rental vehicles, over which the lawful user exercises a more significant possessory interest for the period of the rental,[237] than they resemble taxis.

This level of control is highlighted by the various state laws enacted regarding AVs. Various disengage provisions require that a human occupant be able to assume control over the vehicle in the case of a malfunction, and the provisions list only as a second alternative that the vehicle itself perform a safe course of action when there is no human occupant or when that occupant is unable to assume control of the vehicle himself.[238] This apparent preference for human control in an AV demonstrates that most legislatures assume that the occupant has both the ability and the responsibility to maintain control of the vehicle.

The preference for human control is more than just implicit. Several states have explicitly required that the occupant be held responsible for controlling an AV.[239] Even though in reality Uber users likely would not be expected to take control over a malfunctioning Uber vehicle, at the very least

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235 *See* Glancy, *supra* note 2, at 635.

236 *See id.*

237 *See, e.g.*, United States v. Russell, 847 F.3d 616, 618–19 (8th Cir. 2017).

238 *See* CAL. VEH. CODE § 38750(c)(1)(C) (West 2015); FLA. STAT. § 319.145(1)(a) (2016).

239 *See supra* notes 108–109 and accompanying text.

these provisions recognize that the individual who engages the autonomous technology does exercise—or at least has the potential to exercise—a considerable amount of control over the vehicle.

This notion of control proved important to the *Rakas* Court in distinguishing that case from *Katz* and *Jones*, in which reasonable expectations of privacy were found.[240] Jones could legitimately expect privacy in his friend's apartment because, "except with respect to his friend, [he] had complete dominion and control over the apartment and could exclude others from it."[241] Likewise, Katz could reasonably expect privacy in a public phone booth when he shut the door to exclude all others and paid the toll, which entitled him to assume that his conversation would not be overheard.[242] An AV passenger is most like the defendants in *Katz* and *Jones* in that the occupant exercises near complete dominion over the vehicle for the period during which he or she "rents" it.[243] Again, the enhanced ability of an AV user to control the vehicle and exclude others makes an Uber AV more akin to a short-term rental vehicle than to a taxi.

Those critics opposed to defining the AV user as the legal "operator" of the vehicle share the concern that such a definition would unfairly attribute criminal and civil liability to an individual who is not actively involved in much of the driving operation that is the cause of a traffic violation or accident.[244] They point to the benefits lost by holding the engager of the autonomous technology responsible for any laws the AV breaks.[245] Holding AV users accountable as operators would defeat one of the major benefits of AV use: increased mobility to those for whom it is otherwise unsafe to permit to drive, such as intoxicated individuals, the elderly, or young children.[246] Perhaps the greatest benefit lost would be the prospect of removing drunk drivers from the road, since those who choose to take a ride home in an AV might still be held responsible as if they were driving while intoxicated.[247] These concerns are embodied in the most recently enacted AV legislation, which explicitly immunizes the human user of the AV from legal responsibility for

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240 *See* Rakas v. Illinois, 439 U.S. 128, 149 (1978).

241 *Id.* In *Jones*, the defendant Jones had been given a key and permission to use his friend's apartment. At the time of the search, Jones had spent at least one night there and was the sole occupant of the apartment. *Id.* at 141 (citing Jones v. United States, 362 U.S. 257, 259 (1960)).

242 *Rakas*, 439 U.S. at 149.

243 *See id.* at 154 (Powell, J., concurring) (distinguishing "between the Fourth Amendment rights of passengers and the rights of an individual who has exclusive control of an automobile or of its locked compartments").

244 *See, e.g.*, Gurney, *supra* note 11, at 414.

245 *E.g.*, Sarah Aue Palodichuk, *Driving Into the Digital Age: How SDVs Will Change the Law and Its Enforcement*, 16 MINN. J.L. SCI. & TECH. 827, 830 (2015); Gurney, *supra* note 11, at 415.

246 Palodichuk, *supra* note 245, at 830.

247 *See* Gurney, *supra* note 11, at 420–21; Mackowski, *supra* note 228, at 247.

the vehicle's operation in the case of malfunction, accident, or other liability.[248]

It might seem unfair to punish an individual for engaging an AV while intoxicated, especially because he is not actually controlling the driving operation and likely chose to use an AV as a safer alternative to driving himself home. However, our DUI laws have never assumed that a person must actually be driving the vehicle to be held accountable.[249] The definition of "operating" a vehicle while drunk is broader than that of driving; "operating" a vehicle includes being in actual physical control of a motor vehicle regardless of whether the vehicle is moving or has been moved.[250] It is the *potential* for the individual to operate the vehicle, and not the vehicle's actual movement, that is determinative.[251] Accordingly, DUI laws have been routinely applied to convict intoxicated individuals who were sleeping in parked vehicles, regardless of if the engine was even running.[252]

If the potential for operation is what courts and legislatures are concerned with, these issues are equally implicated when an individual uses an AV while intoxicated.[253] As discussed previously, various AV laws already assume that the human occupant asserts a certain degree of physical control over the operation of the vehicle.[254] Most first generation AVs will also

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248 MICH. COMP. LAWS § 257.665(5) (2016); TENN CODE. ANN. § 55-30-106 (West 2017).

249 Gurney, *supra* note 11, at 420–21.

250 *See, e.g.*, Patricia C. Kussmann, Annotation, *What Constitutes Driving, Operating, or Being in Control of a Motor Vehicle for Purposes of Driving While Intoxicated Statute, Regulation or Ordinance—Being in Physical Control or Actual Physical Control—General Principles*, 92 A. L. R. 295 (2014); 1 FLEM K. WHITED III, DRINKING/DRIVING LITIGATION: CRIMINAL AND CIVIL § 2.4 (2d ed. 2018).

251 *See* WHITED III, *supra* note 250, at § 2.4.

252 *See, e.g.*, City of Naperville v. Watson, 677 N.E.2d 955 (Ill. 1997) (holding that a driver with an alcohol consumption above the legal limit, taking a nap in the passenger of his car pulled over to the side of the road, with his keys in his pocket, had "control" of the vehicle for purposes of DUI); State v. Haight, 903 A.2d 217, 221 (Conn. 2006) ("The act of inserting the key into the ignition and the act of turning the key within the ignition are preliminary to starting the vehicle's motor. Each act, in sequence with other steps, 'will set in motion the motive power of the vehicle.' Each act therefore constitutes 'operation' of the vehicle . . . ." (citations omitted)). In *Haight*, the defendant was found sleeping in the driver's seat of his legally parked vehicle, with the key in the ignition and the headlights illuminated, but without the motor running. 903 A.2d at 218.

253 Of course, those who note this also advocate for changing the DUI laws as AVs become more prevalent, so that more people are able to take advantage of the technology to avoid driving while intoxicated, and thereby increasing road safety. *See* Douma & Palodichuk, *supra* note 77, at 1163 (suggesting that an exemption should be created for AVs since under current DUI law an occupant who engages the AV technology would be considered to be in control of the vehicle); Gurney, *supra* note 11, at 423 ("This Article simply suggests that at a certain point it will be inefficient for society to prohibit people from using their autonomous vehicles to chauffeur them."). Even so, this argument could also stand for the proposition that those who choose to sleep it off in their cars should not be liable, a proposition which has routinely been rejected by courts.

254 *See, e.g.*, *supra* Part II.

permit the human occupant to drive the AV as a traditional vehicle through the AV's disengage function.[255]

These critics' concerns about inefficiency or loss of utility on their own do not warrant such a significant change in our DUI jurisprudence, given that these laws have been permissibly applied to those engaging in far less dangerous conduct. At the very least, it is not clear that such criminal liability is *never* permissible. There is little reason to think that an individual who decides to sleep it off in the passenger seat of his parked vehicle is any more culpable than an individual who engages an advanced piece of machinery—autonomous vehicles—on public roadways while drunk. If anything, the sleeping drunk is *less* culpable than an individual who engages such sophisticated technology on the road while impaired. Defining an AV occupant as the "operator" of the vehicle might indeed reduce AVs' ability to provide certain benefits, such as a safe alternative to drunk driving, but if criminal law is truly concerned with culpability, it is not clear that intoxicated AV users should be afforded any more protection under DUI laws than those who are already legally held accountable for less culpable conduct.

Though a more thorough discussion of potential criminal liability is beyond the scope of this Comment, this brief analysis demonstrates that it is not entirely clear that, as critics suggest, AV users should not be held liable for merely engaging an AV. If it is permissible for an individual to be held legally responsible for the vehicle and its operation in certain situations, as discussed above, that individual should also be recognized as having a legally protected interest in the AV. Both the enhanced level of control that AV users exercise over AVs, and the resultant expectation that AV users could justifiably be held criminally liable for so operating the AV, suggest that AV users have an interest in an AV that is worthy of legal protection.

In addition to legislative designations and the enhanced physical control over an AV, the passenger experience in an AV is much more private than it is in a taxi. As a passenger in a taxi or traditional Uber, the individual is always accompanied by at least one other person: the driver of the vehicle, who is often a stranger. The passenger's words and actions are always readily observable by this person, so a passenger in a taxicab or Uber would have no reasonable expectation that any conversations or other actions in the vehicle are done privately from others.[256] The opposite is true in an AV. Much like Uber users can currently choose whether to pool with others in the area or be the sole customer-occupant,[257] individuals summoning an Uber AV will also likely have the ability to restrict others' access to the vehicle for the duration

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255 *But see* Douma & Palodichuk, *supra* note 77, at 1163 (suggesting that an "I'm drunk, take me home" button should not have an override option).

256 *See, e.g.*, Katz v. United States, 389 U.S. 347, 351–52 (1967) ("What a person knowingly exposes to the public . . . is not a subject of Fourth Amendment protection.").

257 *UberPool: Together, We Save*, UBER, https://www.uber.com/ride/uberpool (last visited Dec. 29, 2017) (describing how to UberPool with others).

of their trip. This factor—the ability to restrict—was found to be important in *Rakas* in rejecting the passengers' expectation of privacy.[258] In such cases individuals will have almost complete privacy since no one else is in the vehicle to immediately observe their actions or overhear their conversations. The occupant is as alone in the vehicle as if she had chosen to drive herself. In this way, the Uber AV experience will afford its users more privacy than any currently available services.[259]

Even if vehicle occupants in general might have a lesser expectation of privacy, "that does not mean that no expectations of privacy on public roads are ever reasonable, or worthy of legal protection."[260] The Supreme Court has recognized that "[a]n individual operating or traveling in an automobile does not lose all reasonable expectation of privacy simply because the automobile and its use are subject to government regulation."[261] *Katz*'s focus on the individual as the basis for privacy rights, rather than where the individual is located, suggests that the Fourth Amendment protects AV users.[262] Though the AV might deserve less protection than a home, individuals do enjoy a greater expectation of privacy and autonomy in an AV than they do in traditional vehicles. Moreover, recent court decisions have increasingly suggested an enhanced expectation of privacy in the context of roadways, vehicles, and technologically enhanced searches.[263] Since AVs will implicate all of these factors, "privacy expectations in autonomous vehicles should be protected under the Fourth Amendment."[264]

Surely, with increased AV implementation will come increased regulation. This is already evident as more and more states consider enacting AV legislation.[265] But increased AV implementation will just as surely bring "a greater sense of security and privacy" than other modes of travel,[266] as individuals will be able to exercise a significant degree of personal control over and autonomy in an Uber AV and be able to enjoy a more private travel experience. Ultimately, these factors suggest that an individual will have a reasonable expectation of privacy in an AV that is worthy of legal protection under the Fourth Amendment. Because a passenger can establish a

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258 *See supra* notes 240–243.

259 *See* Glancy, *supra* note 2, at 626. An AV affords individuals more privacy than even in a friend's vehicle. While the driver is not a stranger, as in a taxicab or Uber, the passenger's words and actions are still always observable by the driver, and thus the passenger lacks an expectation of privacy in those words and actions. *See supra* note 256 and accompanying text.

260 Glancy, *supra* note 54, at 1219.

261 Delaware v. Prouse, 440 U.S. 648, 662 (1979).

262 Glancy, *supra* note 54, at 1218.

263 *Id.* at 1225.

264 *Id.*; *see also id.* at 1218–19 ("[E]xpansion of Fourth Amendment protection for people in vehicles on public roadways is a noticeable trend in court decisions over the past fifteen years. By the time autonomous vehicles become accepted consumer products, recognition of reasonable expectations of privacy related to persons in vehicles on public roadways may well be unquestioned.").

265 *See Autonomous Vehicles*, *supra* note 88.

266 *Prouse*, 440 U.S. at 662.

reasonable expectation of privacy in an AV, even an Uber AV, he should not be denied standing to invoke the exclusionary rule to exclude evidence obtained through an illegal search of that AV. Accordingly, in this Comment's hypothetical, the occupant of the AV should be able to exclude the drug evidence against him.

B. *The Rationale for the Exclusionary Rule Justifies Granting Standing to AV Occupants*

Not only does an occupant of an Uber AV have a reasonable expectation of privacy in that vehicle, but the rationale in *Rakas* for restricting a vehicle passenger's standing to contest an unlawful search does not apply in the AV context. In denying standing to the passengers of a vehicle, the Court in *Rakas* explained that a weighing of the costs and benefits of the exclusionary rule did not justify the exclusion of the relevant evidence against them.[267] Extending the exclusionary rule to permit the passengers to exclude the evidence would have only a marginal deterrent effect on police misconduct, given that the owner of the vehicle searched would have "ample motivation" to move to suppress the evidence.[268] Even if the owner were not a defendant in the present action, he could still seek redress against the offending officers under Section 1983, or under a state action for invasion of privacy or trespass.[269] The potential for such recourse is probably sufficient to deter officers from performing unconstitutional searches.[270]

The same rationale does not apply in the case of an AV where the non-owner "passenger" is the only occupant of the vehicle, especially when that vehicle is owned by a commercial entity like Uber. Uber does not have a comparable incentive to contest unconstitutional law enforcement activity or to move to suppress evidence as an ordinary citizen vehicle owner would have; the likelihood that evidence found in the AV would actually be used against Uber in a criminal prosecution is minimal. For example, even if drugs were found in the AV, Uber would likely not be the target of prosecution for drug trafficking or possession based on that evidence. Additionally, any injury to the Uber company itself will likely be minimal, so any incentive to seek the civil remedies described in *Rakas* is correspondingly slight. Thus, from a law enforcement perspective, there is little expectation that the party aggrieved will seek recourse for the officers' actions, and so there is little to deter those actions.

Moreover, in most cases an officer conducting an illegal search of an Uber AV would not be motivated by a desire to obtain evidence against Uber but by a desire to obtain evidence against the occupant of the vehicle.

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267 Rakas v. Illinois, 439 U.S. 128, 137 (1978).

268 *Id.* at 134.

269 *Id.*

270 *See id.* at 137.

Allowing the occupant of the Uber AV to invoke the exclusionary rule would thus have a considerable deterrent effect on police misconduct, as an illegal search would prevent the police from using any obtained evidence against that occupant. If the passenger could not contest the search, officers would have little reason to refrain from engaging in patently unreasonable searches whenever they recognized the vehicle as an AV belonging to Uber or some other commercial ride-sharing service, given that any evidence found and seized could lawfully be used against the passenger.[271] On the one hand, in most cases Uber has no incentive to contest a search of its AV because it will not face liability for the contraband found in the vehicle. On the other hand, in most cases the police are not even concerned with obtaining evidence against Uber, so the prospect that evidence might be suppressed against Uber if sought to be used cannot sufficiently deter police misconduct.

Importantly, extending the exclusionary rule in this way would not make *all* passengers of AVs entitled to standing under the Fourth Amendment. Returning to the example of personal AV use, suppose that an individual offers to drive his friend to the airport in his AV. He doesn't come along for the ride but instead puts his friend in the back seat of his AV, inputs the airport address, and hits "Go." If the AV is lawfully stopped, the passenger in this situation would justifiably lack standing to contest a subsequent search of that AV. In the case of a personal AV, the situation is identical to *Rakas*, so the current application of the exclusionary rule should provide sufficient deterrence against police misconduct. As in *Rakas*, the owner-operator of the AV has sufficient incentive to object to the unlawful search of his own vehicle, especially because, unlike for Uber, it is more likely that such evidence could also be used against him.[272] Thus, giving the passenger standing in addition to the AV's owner will have only a marginal deterrent effect, which does not outweigh the social costs of exclusion.

Of course, such an approach to standing and its ability to achieve a balance between under- and over-deterrence assumes an officer's ability to distinguish between these two passenger characterizations ex ante when he seeks to conduct the search. An officer must be able to recognize at the outset that, for the non-owner passenger of an Uber AV, evidence might be suppressed, but in a personal AV, it will not be. But such an observation is possible because Uber AVs and the like will likely be readily distinguishable from personal AVs. Much like Uber and Lyft drivers currently display an Uber sticker on their vehicles, Uber AVs currently operating in Pittsburgh prominently (and proudly) display the company's name on the side of the

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271 *See id.* at 168–69 (White, J., dissenting) (arguing that the majority's decision invites police to engage in patently unreasonable searches every time a vehicle contains more than one occupant because, should something be found, only the owner of the vehicle will have standing to seek suppression and the evidence can still be used against the other occupants).

272 *See* Maryland v. Pringle, 540 U.S. 366, 373 (2003) (noting that it is reasonable for an officer to infer that a car passenger is engaged in a common enterprise with the car driver).

vehicle.[273] Combined with visual indicators to signal when an AV is operating in autonomous mode, this information will adequately apprise the officer of the information needed to deter him from engaging in an unlawful search of the AV before he acts.

Therefore, extending the exclusionary rule to the limited category of non-owner passengers in Uber's AVs will provide much-needed deterrence against police misconduct, without extending the rule so far as to generate substantial social costs.

CONCLUSION

AVs promise mobility, autonomy, and—perhaps most importantly—safety. As the introduction of AVs on the roads continues to increase, and human error is removed from the driving operation, supporters of the technology are optimistic that accidents and traffic violations will markedly decrease. Despite the attractiveness of this prediction, AVs will not drastically reduce the public's contact with law enforcement on the road. Especially in first generation AVs, law enforcement officers still have several justifiable reasons to stop an AV, including even perceived traffic violations—the very violations many argue will become extinct.

Although the introduction of AVs will not significantly change an AV user's contact with law enforcement, it does threaten to significantly change an AV user's legal status in the vehicle. Many commentators and legislators are already considerably altering our understanding of the legal "operator" of a vehicle by defining the computers and automated technology as the legal driver of an AV. On the positive side, these definitions serve to insulate AV users from criminal and other liability and arguably promote the implementation of AVs on the road. On the other hand, reducing an AV user to a "mere passenger" threatens to reduce his legal interests, especially under the Fourth Amendment. Defining an AV occupant as a passenger threatens to bring an AV user squarely within the *Rakas* rule, which would effectively deny him the ability to contest a search of the vehicle in most situations. Traffic stops will not decrease, but an individual's Fourth Amendment rights during those stops will. Therefore, it is important to reconsider the concept of passenger standing in the age of autonomous vehicles.

Such a reconsideration does not require a major overhaul of our Fourth Amendment jurisprudence. A minor extension of the *Rakas* rule regarding a passenger's standing to contest a search of the vehicle suffices to protect the interests of AV users. This Comment's proposed extension recognizes that an AV user has an increased expectation of privacy in an autonomous vehicle, beyond what a passenger in a traditional vehicle would have. In other words, it recognizes that AV users are not analogous to ordinary passengers. Granting standing to AV "passengers" will also effectuate the primary

273 See Brewster, *supra* note 65, for an image of what Uber's Pittsburgh fleet looks like.

purpose of the exclusionary rule: to deter police misconduct. Interpreting an AV user's status in this way is essential to preventing technological advances from eroding our conceptions of privacy and thus enabling unwarranted government intrusions, especially on the road.