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Driverless Cars: The Legal Landscape

Panel 3: Liability & Insurance

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Autonomous Vehicles

Researchers estimate that autonomous vehicles can reduce accident rates by up to 90%,¹ which would save over 30,000 lives each year² and avoid millions of injuries on American roads. As General Motors Chairman Bob Lutz said, “The autonomous car doesn’t drink, doesn’t do drugs, doesn’t text while driving, and doesn’t get road rage. Autonomous cars don’t race other autonomous cars, and they don’t go to sleep.”³ But technology is not perfect. Though people may be much safer in a driverless car than a traditional vehicle, it is still likely that accidents will occasionally occur due to a failure in technology, the human driver-car interface, maintenance, or other factors. There is a vigorous debate over how to fairly apportion liability in these situations without chilling life-saving technology.

The human health and safety benefits of autonomous vehicles (AVs), also known as driverless cars, are broadly hailed. A 2013 study by the Eno Center for Transportation found that if only 10% of the cars on the road were self-driving, 1,000 lives and \$18 billion would be saved each year.⁴ When 90% of the cars are autonomous, those numbers jump to 22,000 lives and \$350 billion.⁵ In a widely cited study on the auto insurance industry, audit company KPMG found that autonomous technology will reduce accident frequency by 80% by 2040.⁶

In addition, driverless cars are expected to have broader societal benefits, including easing traffic congestion, moving people

to destinations more quickly, burning less fuel, and lowering emissions.⁷ They also can provide mobility to seniors, people with vision problems, and others who cannot drive on their own.⁸ It is widely expected that cities will be stocked with fleets of shared driverless cars and that people who spend long stretches of time on the road will be able to do so more efficiently. In short, driverless cars promise to fundamentally change the way people get around. Auto travel will be significantly safer with benefits that ripple throughout society.

The National Highway Transportation and Safety Administration (NHTSA), in an effort to facilitate the advancement and development of automated car technology,

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issued the Federal Automated Vehicles Policy in September 2016. The guidance, titled “Accelerating the Next Revolution in Roadway Safety,”⁹ recognizes that autonomous car technology will be introduced in stages. Already, many features, such as front-end collision, lane assist and modified cruise control, are having an impact. To assist the progression toward fully autonomous cars, NHTSA provides a framework for data sharing, privacy and cyber security, ethics, and other issues likely to arise in the next few years.

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NHTSA’s report identifies liability—and the resulting insurance implications for consumers and manufacturers—as a major issue that needs to be addressed. However, it recognizes that, at least to this point, liability and insurance issues have largely been left to the states under a patchwork of negligence, product liability, and insurance laws. NHTSA guidance advises states to consider how to appropriately allocate

liability among automated vehicle owners, operators, passengers, manufacturers, and others.¹⁰ The agency suggests that, given the complexity of these issues and the need for a certain level of uniformity, “[i]t may be desirable to create a commission to study liability and insurance issues and make recommendations to states.”¹¹

Autonomous Car Technology

When people refer to autonomous cars, they are largely referring to technology that exists within each car that allows the car to read its surroundings and make driving decisions based on those readings. The Society of Automobile Engineers (SAE International) has developed a taxonomy and definitions for terms related to these systems that have become widely used. SAE identified six automation levels, from Level 0 (no automation) to Level 5 (full automation).¹²

A key distinction exists between SAE’s Levels 2 and 3. Level 2 is called “partial automation,” and the human driver remains responsible for monitoring the environment and performing key driving tasks. When a car reaches Level 3 automation, which SAE calls “conditional automation,” the automated car performs all of the dynamic driving tasks, with the human driver acting as the fallback option.

As indicated, cars operating at Level 3 are equipped with computer mapping systems, radar, cameras, sensors and other technologies that allow them to read their

environment, including the shape of the roads, traffic and driving conditions, and perform key dynamic driving tasks. Yet, these cars are not fully automated. They ultimately require human control and may have features, such as steering wheel sensors, to require the human driver to stay alert and engaged. It is anticipated that the automated features may work only when the driver's hands are on the wheel because the system anticipates the driver will take control of the car in certain situations.

Highly automated vehicles (Level 4), which in most environments are fully autonomous, are anticipated to be widely available by 2025.¹³ Between 2025 and 2040, experts expect that vehicles will move towards Level 5—a “new normal” of integrated driving in which there is communication between vehicles and infrastructure and vehicles can operate without any driver present.¹⁴

Vehicle-to-vehicle communication (V2V) will rely on short-range radio devices to transmit vehicle speed, direction, braking and other key data points between vehicles. The benefit of this technology is that it will allow a car to “see” around corners and through traffic so that it can better anticipate when it needs to brake and avoid potential collisions. In early stages of automation, this information can be given to human drivers to make their own decisions. NHTSA, which is developing standards for V2V communication, estimates that this technology can eliminate 81% of all crashes.¹⁵

Congress has also funded NHTSA's research into vehicle-to-infrastructure communication (V2I) networks, whereby cars receive data from roadways and traffic lights. Such data may include bad weather conditions, the shape of the road and whether there are any steep curves ahead,

the nature of any construction zones, and when lights are about to turn red. Rather than accelerate through a yellow light, as many humans do, the car could anticipate the red light sooner and slow down more safely and comfortably.

The greatest safety gains will be made when all three of these technologies work together.

The Race to Autonomous Driving

About 20 companies are developing self-driving cars, including traditional auto manufacturers, technology companies, and ride-sharing services.¹⁶ Several of them have test cars on the road and are collecting data on the ability of the cars to properly read the environment and make the right driving decisions. Humans can repeat mistakes over and over again, but the goal for automated cars is to be programmed to learn from and not repeat mistakes. To this end, NHTSA is working on a data-sharing program, which it hopes to have in place by the end of 2017, so that companies can learn from each other and accelerate the elimination of errors.

Among the more well-known self-driving features is Tesla's “autopilot” technology, which is intended to guide drivers on highways. In May 2016, a driver was killed when he reportedly relied entirely on the autopilot system to drive his Model S, which was not its intended use.¹⁷ The car crashed into the side of a truck that was crossing the highway. Tesla found that the autopilot did not recognize “the white side of the tractor against a brightly lit sky.”¹⁸ In January 2017, NHTSA completed its investigation, concluding that there was no defect in the design or performance of Tesla's autopilot system.¹⁹ The agency recognized that since autopilot is not cross-traffic aware, it requires a driver's “continual

and full attention to monitor the traffic environment,” and the driver had sufficient time to brake to avoid the accident.²⁰

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Nevertheless, the incident has been a touchpoint for liability discussions. Was the driver to blame for not being attentive? Does Tesla have liability because the car did not stop on its own? Or is responsibility shared? If shared, then how is that responsibility divided?

Google has also received significant attention for its autonomous car program, which is not yet available to the public. Google first retrofitted existing cars with its driverless technology, but has since developed its own “bubble car.” Collectively, Google’s cars have more than two million miles of driving data.²¹ Google’s vision is to have no steering wheels, brakes or any other human controls to avoid confusion in the human-car interface.

A minor accident occurred when a Google car, which had a human engineer inside, was negotiating merging traffic. Both the car and the engineer thought a bus would let them in, but the bus continued and the

Google car sideswiped the bus.²² No one was injured in the February 2016 collision.

The ride-sharing service Uber began test-driving its autonomous cars in Pittsburgh in September 2016. Consumers have the option to choose an autonomous car, which has a driver ready to take control along with an engineer in the passenger seat. The Pennsylvania Insurance Department is treating the cars’ self-driving features in the same way it treats cruise control, meaning the human driver is fully responsible for accidents under a negligence standard. Uber announced that it has \$1 million in third-party liability insurance and \$5 million in total coverage per incident.²³

California took a different approach, requiring a special permit for autonomous cars and instructing Uber to stop its self-driving car service in San Francisco until it did so.²⁴ Uber took the position that its cars did not need the permit because each car had a driver behind the wheel, ready to take control. The state then revoked the registration of 16 Uber-owned vehicles in December 2016.²⁵ Uber’s San Francisco program lasted only a week before the company loaded its vehicles on a flatbed and moved them to Arizona.²⁶ Arizona Governor Doug Ducey welcomed the program with “open arms and wide open roads.”²⁷

Major auto manufacturers, which have been incorporating elements of self-driving technology into cars, are also heavily investing in research and development toward fully autonomous vehicles. In February 2017, Ford announced plans to invest \$1 billion over the next five years in start-up company Argo AI, with a goal of producing self-driving cars for ride-sharing services by 2021.²⁸ General Motors made a similar investment in Cruise Automation and the ride services company Lyft. It

is anticipated that ride-sharing services such as Uber and Lyft will be the way that most people will be introduced to autonomous vehicles.

The Vigorous Debate Over the Liability Framework for Injuries Involving Autonomous Vehicles

While heavy-handed regulation can quickly drive out autonomous vehicles, the area with the greatest potential “to derail this important technology” is excessive litigation.²⁹ Outsized liability, particularly in the early development and deployment stages, “could seriously undermine this potentially unprecedented public health success story.”³⁰ It “could delay or even wipe out the vision of driverless cars gaining widespread consumer use.”³¹

LIABILITY BASED ON A FAILURE IN THE HUMAN-CAR INTERFACE

The immediate question for Congress, state legislatures, and courts to decide is how to treat liability over the next twenty or so years as society transitions to widespread use of fully-automated cars. During this period, humans and cars’ self-driving technology will share the roads and responsibility and control over driving decisions. Therefore, as the Brookings Institution’s Center for Technology Innovation found in a 2014 study, there will be “complex questions of liability shared by both the human driver and autonomous vehicle technology providers.”³²

Industry experts broadly agree with both the complexity and importance of getting the liability right during this phase-in period. “We’re entering a whole new world of assessing who’s at fault in an accident and where the ultimate liability and risk ultimately falls,” explained Joe Schneider, an insurance analyst with KPMG.³³ David Strickland, a former NHTSA Administrator, echoed this point: “There is going to be a moment in time when there’s going to be a crash and it’s going to be undetermined who or what was at fault. . . . That’s where the difficulty begins.”³⁴

States are beginning to tackle these liability issues. California and Nevada law explicitly places liability for any accident on the “operator” of the autonomous vehicle, defining the operator as the person behind the controls or who “causes the technology to engage.”³⁵ Under general tort law principles, the element of control is likely to be determinative in other states as well. “Suppose you’re in a driverless car, and you see that you’re about to rear-end another car. Whether you bear some responsibility for the crash may ultimately turn on the degree of *control* you had over the car. Could you have reasonably prevented the accident, or not?”³⁶ One question that has arisen is whether this test can be applied fairly when the human “driver” has a disability, such as blindness, and cannot take control.

Other questions also arise: What happens if a driver falls asleep and the vehicle had driver monitoring systems that failed to

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wake up the driver? Can a driver legally rely on this feature (or lane or brake assist) and sue the manufacturer when the car did not alert him or her of a hazard? Should the driver be absolved of his or her own negligence? Can a manufacturer be subject to liability for not preventing an accident, even though its technology did not cause the harm?

As a legal matter, complete reliance on such prophylactic safety devices is likely to be seen as unreasonable. It also does not make practical sense to subject manufacturers to liability just because their safety devices were not able to prevent harm in every instance. Even if a preventative safety device avoids harm 20% of the time, it still offers improved safety over vehicles without that technology. Excessive liability for the remainder of the cases could delay their introduction or stop these technologies from being improved over time. If the device did not cause harm, there should be no liability under commonsense and traditional tort principles.

Novel liability issues will arise when accidents occur between human drivers and autonomous cars. For example, there may be differences between how humans and autonomous cars drive.³⁷ Autonomous cars may be programmed to drive in 100% compliance with the law. They may drive at the speed limit on a highway where the traffic customarily moves significantly faster, come to a full stop and pause at a stop sign, or stop at a yellow light where most drivers would have continued through. People who are unaccustomed to such “safe” driving could rear-end an autonomous vehicle. Finally, when a fender bender involves a human driver and a fully-autonomous vehicle, should the law recognize a presumption that the accident occurred as a

result of human error absent a showing of a defect in the autonomous vehicle?

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NEGLIGENCE VS. PRODUCT LIABILITY

Courts will be faced with determining the appropriate standard of care for evaluating whether an autonomous-vehicle manufacturer is subject to liability for a car accident. Traditionally, car accidents are assessed through the lens of driver negligence, with the potential for product liability only when a defect in the car causes the accident or is alleged to have exacerbated the injuries. A manufacturer has never had a duty “to design an accident-proof or fool-proof vehicle.”³⁸

Legal scholars suggest that negligence should continue governing liability for car accidents, whether due to the decision-making of autonomous vehicles or human drivers. They explain that these situations differ from traditional product harms because of the huge safety gains: “Holding computer-generated torts to a negligence standard will result in an improved outcome; it will accelerate the adoption of automation” and thereby reduce accidents.³⁹

A negligence assessment would focus on whether the car’s decision or act showed a lack of due care under the circumstances, not whether the computer was improperly designed or marketed.⁴⁰ In the accident

between Google's autonomous car and the bus, the inquiry would be whether it was negligent to merge into traffic given the speed of the bus, distance between the bus and car in front of it, and other such factors. The car's programming can then be updated to account for any new information gained as a result of the incident to help the cars make better decisions going forward.

"Personal injury attorneys fearing that their business may dry up with the adoption of driverless cars," however, are looking for ways to pursue "autonomous-vehicle makers and their deep pockets."⁴¹ They want to shift liability away from negligence claims against drivers with liability insurance limits to product liability lawsuits targeting car manufacturers, software designers, and component makers.⁴²

To this end, the American Association of Justice (AAJ), the national plaintiffs' lawyer organization, issued a report in February 2017, advocating that manufacturers should bear the burden of car injuries.⁴³ While AAJ acknowledged the "revolutionary impact" that so-called "robot cars" will have on public safety,⁴⁴ it asserted that imposing strict liability on automakers "may eventually be the most appropriate approach to liability."⁴⁵ Under AAJ's approach, "manufacturers would accept responsibility for all crashes caused by their cars."⁴⁶

ALTERNATIVE LIABILITY THEORIES

The desire to provide compensation for people injured in autonomous cars without chilling the advancement of this life-saving technology has led legal scholars to consider alternatives to traditional tort liability. Two oft-mentioned options are no-fault insurance and a victim compensation fund. Both have precedent and both can be shaped to address the specific needs of the autonomous vehicle market.

The RAND Corporation found that rather than shift liability from the driver to the auto manufacturer, as AAJ suggests, it would be more beneficial for drivers to carry no-fault liability insurance.⁴⁶ A dozen states have used no-fault liability since the 1970s. The benefit of this system is that drivers maintain their own insurance and are compensated up to a certain level regardless of whether anyone, including the driver, was legally at fault. Lessons can be learned from current no-fault systems so that one can be tailored to autonomous cars to maximize efficiency.

Another option is for states or the federal government to establish a fund to compensate those who are injured, much like the National Childhood Vaccine Injury Fund. Congress established the Vaccine Fund in 1986 when liability concerns threatened public health by jeopardizing access to vaccines. Under this system, anyone injured by a vaccine can apply to the Fund for fair compensation without having to establish fault. The trust fund is financed through a nominal (\$0.75) excise tax on each dose of vaccine routinely administered to children to prevent disease.⁴⁷ As a result of the Fund, immunizations have increased, supplies have remained stable, and prices have decreased. A fund tailored to the autonomous car market could have a comparable effect—assuring that those who are injured in accidents receive compensation while not allowing excessive liability to impede the development and advancement of technology that makes the roads safer for everyone.

Federal preemption of state tort claims in conjunction with either of these no-fault regimes "could speed the development and utilization of this technology and should be considered, if accompanied by a comprehensive federal regulatory regime."⁴⁸

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The Road Forward

Consumers, manufacturers, and insurers need to feel they are treated fairly in the event of a crash. Developing confidence in the safety of autonomous vehicles and the availability of a just remedy should an injury occur is important to gaining acceptance of the new technology.

Understanding this need, some manufacturers have said that they will accept liability for accidents involving their fully-autonomous cars. Erik Coelingh, Volvo’s senior technical leader for safety and drive support technologies, explained that when the company’s fully-autonomous system debuts as anticipated in 2020, its vehicles will include several redundancies to avoid accidents and eliminate human

error: “Whatever system fails, the car should still have the ability to bring itself to a safe stop.”⁴⁹

Tesla has stated that it will accept liability if an accident is “endemic to our design.”⁵⁰ Tesla’s Elon Musk said that “point of views on autonomous cars are much like being stuck in an elevator in a building. Does the Otis [Elevator Company] take responsibility for all elevators around the world, no they don’t.”⁵¹ But they do when an incident is their fault. Tesla has shared information with NHTSA showing that crash rates involving its vehicles dropped nearly 40% since autopilot came online.⁵²

In the short term, courts will need to work through these thorny issues, and determine and allocate liability, on a case-by-case basis.