Negative Brief: SELF-DRIVE Act

By Jonathan T. Helton

**Resolved: The United States Federal Government should substantially reform the use of Artificial Intelligence technology.**

The AFF case passes the SELF-DRIVE Act in order to standardize autonomous vehicle (AV) regulations. AFF claims the benefits of protecting against cybersecurity threats and creating a solid regulatory environment for AVs to flourish. Your strategy as NEG will be to attack the bill. It has several flaws. The first is its reliance on the NHTSA, an agency with a less-than-perfect track record. Second, the bill does not do enough to regulate the safety of AVs on two fronts: testing and cybersecurity. Most people don’t trust AVs right now and passing the flawed bill in its current form would be undermine future confidence and open America’s roads to unsafe vehicles. A simple hack could create massive amounts of traffic congestion, or worse. If AFF touts the benefits of AVs, there is evidence to rebut them. Your philosophy as NEG is simple: AVs might be good, at some point in the future, but this bill is bad. Revisit this bill once it’s amended, but until then vote NEG.

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Negative: SELF-DRIVE Act

MINOR REPAIR

1. More funding for existing policies

NHTSA is already working on self-driving car regulations, but don’t have any extra funding to expand it

Courtney Rozen 2020 (White House Reporter at Bloomberg Government) “Self-Driving Car Rules Lag for Years as Technology Speeds Ahead” 24 February 2020 <https://about.bgov.com/news/self-driving-car-rules-lag-for-years-as-technology-speeds-ahead/> (accessed 1 June 2021)

Congress has given the agency roughly the same amount of money to work with—about $1 billion adjusted for inflation— since at least 2014, according to Office of Management and Budget records. They received $989 million for fiscal 2020. The majority of that money goes to states, said David Friedman, NHTSA administrator under Obama. The agency then divides what’s left among competing priorities, such as seat belt safety, distracted driving, and “creating smart rules of the road” for self-driving cars, Friedman said. The Department of Transportation’s research arm also does some work on self-driving cars.

HARMS / SIGNIFICANCE

A/T “China” – U.S. still has a substantial lead in AV tech

Larry Mullin 2020 (He is a reporter based in Beijing.) “China’s cities will soon be crawling with self-driving robotaxis” 24 September 2020 <https://www.fastcompany.com/90553995/chinas-cities-will-soon-be-crawling-with-self-driving-robotaxis> (accessed 2 June 2021)

Despite these efforts, a dramatic change in AV development may not be underway, according to Martin Ford, a futurist and the author of Rise of the Robots and Architects of Intelligence. While Ford believes the Chinese government’s investments will majorly impact AV within the country, he is uncertain that they will supercharge China’s advantage against the U.S. That’s because America remains competitive with companies such as Waymo, which began testing autonomous trucks in Texas in late August.

A/T “China” – The U.S. is far ahead of China on AV tech + focus on safety, not profits

Joan Claybrook 2020 (Former Administrator, National Highway Traffic Safety Administration) Statement in Opposition to the SELF DRIVE Act” 23 September 2020 <https://saferoads.org/2020/09/23/self-drive-act/> (accessed 3 June 2021)

“Proponents of the SELF DRIVE Act have been perpetuating myths about threats to U.S. competitiveness by China and other countries as a reason to rush this legislation, which allows for the widespread sale of driverless cars without needed safeguards. However, a recent report ranks the U.S. fourth in the world for AV readiness, whereas China ranks 20th. Instead, we should be concerned about the U.S. significantly falling behind on establishing minimum standards to ensure that AVs will not jeopardize public safety. AVs are a long way down the road by numerous accounts including those of car manufacturer executives. In the short term, Congress should focus on getting the latest proven safety features, meeting a minimum level of performance, into all new cars. I commend the leaders in the U.S. House of Representatives, including Energy and Commerce Committee Chairman Frank Pallone, Jr. (D-NJ) and Consumer Protection and Commerce Subcommittee Chair Jan Schakowsky (D-IL), for including this requirement in the Moving Forward Act (H.R. 2) which was passed by the House on July 1, 2020.”

SOLVENCY

1. Enforcement fail: National Highway Traffic Safety Administration (NHTSA) is ineffective

Lack of technical expertise – the 2012 Toyota scandal

Courtney Rozen 2020 (White House Reporter at Bloomberg Government) “Self-Driving Car Rules Lag for Years as Technology Speeds Ahead” 24 February 2020 <https://about.bgov.com/news/self-driving-car-rules-lag-for-years-as-technology-speeds-ahead/> (accessed 1 June 2021)

Criticism of NHTSA’s technical expertise goes back to 2012, when the National Academy of Sciences reviewed the agency’s investigation into the cause of unintended acceleration in [Toyota Motor Corp.](https://www.bgov.com/core/companies/app/#!/115114) cars. It [raised](http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=13342)questions about whether NHTSA understood electronic throttle control systems that were “simple and mature” compared with rapidly evolving automotive technologies.

Inadequate staffing numbers and staffing technical ability

Courtney Rozen 2020 (White House Reporter at Bloomberg Government) “Self-Driving Car Rules Lag for Years as Technology Speeds Ahead” 24 February 2020 <https://about.bgov.com/news/self-driving-car-rules-lag-for-years-as-technology-speeds-ahead/> (accessed 1 June 2021)

Autonomous cars promise to replace human drivers with computers, forcing the agency with a history of testing mechanical hardware to regulate software. And they’ll have to do it with roughly the same number of engineers NHTSA had in 2014, according to the Office of Personnel Management, prompting safety advocates to push Congress for more staff with technical expertise.

Regulations will take several years to write

Courtney Rozen 2020 (White House Reporter at Bloomberg Government) “Self-Driving Car Rules Lag for Years as Technology Speeds Ahead” 24 February 2020 <https://about.bgov.com/news/self-driving-car-rules-lag-for-years-as-technology-speeds-ahead/> (accessed 1 June 2021)

A self-driving car bill, if it becomes law, would create a framework for NHTSA rulemaking. It could take several years for the agency to write the actual regulations. “This is not the last word with regard to automated vehicles,” said John Bozzella, leader of the Alliance for Automotive Innovation, a group that represents almost all U.S. automakers. “It’s not like Congress would pass this bill and we all go home and everything’s great.”

2. Won’t solve traffic jams

AVs increase evening traffic

Jason Deign 2020 (Jason is a contributing writer for Green Tech Media, focused on global trends in energy storage and wind.) “Why Self-Driving Cars Might Make Traffic Worse” 3 June 2020 <https://www.greentechmedia.com/articles/read/why-a-world-with-self-driving-cars-might-not-be-such-a-great-idea> (accessed 3 June 2021)

In one example, researchers in 2018 tried to mimic the way car owners would use self-driving cars by giving subjects in the San Francisco Bay area a free chauffeur-driven vehicle for a week. The results were hardly encouraging: The arrangement resulted in increases in vehicle-miles traveled and the number of trips, particularly in the evening hours. And a substantial portion of the trips were made on a "zero-occupancy" basis, with no rider in the car. Lead author Mustapha Harb, of the University of California at Berkeley, told GTM that having a privately owned autonomous vehicle might not only encourage people to take the car for trips they would not have bothered with before but could also lead to the rise of what are termed "ghost trips."

AVs may drive in circles to avoid parking fees

Jason Deign 2020 (Jason is a contributing writer for Green Tech Media, focused on global trends in energy storage and wind.) “Why Self-Driving Cars Might Make Traffic Worse” 3 June 2020 <https://www.greentechmedia.com/articles/read/why-a-world-with-self-driving-cars-might-not-be-such-a-great-idea> (accessed 3 June 2021)

Ghost trips would be bad enough if self-driving cars were just heading to and from a pickup point. But more recent research by Adam Millard-Ball, an associate professor of environmental studies at the University of California, Santa Cruz, suggests vehicles may decide to stay on the road for long periods of time simply to avoid paying for parking. Using data from San Francisco, Millard-Ball calculated that autonomous vehicles could lead to a doubling in vehicle travel to, from and within dense urban cores.

3. Lives saved: AVs come with distinct harms

AVs cause accidents, too

Kyle Wiggers 2020 (journalist in New York City) “Waymo’s driverless cars were involved in 18 accidents over 20 months” 30 October 2020 <https://venturebeat.com/2020/10/30/waymos-driverless-cars-were-involved-in-18-accidents-over-20-month/> (accessed 3 June 2021)

Waymo’s driverless cars have driven 6.1 million autonomous miles in Phoenix, Arizona, including 65,000 miles without a human behind the wheel from 2019 through the first nine months of 2020. That’s according to data from a new internal report Waymo published today that analyzed a portion of collisions involving the robo-taxi service Waymo One, which launched in 2018. In total, Waymo’s vehicles were involved in 18 accidents with a pedestrian, cyclist, driver, or other object and experienced 29 disengagements — times human drivers were forced to take control — that likely would have otherwise resulted in an accident.

AV’s lifesaving benefits are decades away – a lot more study is needed before they should be rolled out

Catherine Chase, David Friedman, Jack Gillis, and Jason Levine 2018 (Chase: president, Advocates for Highway and Auto Safety; Friedman: director, Cars and Product, Policy and Analysis, Consumers Union; Gillis: incoming president, Consumer Federation of America; Levine: executive director, Center for Auto Safety.) “Congress is trying to pass legislation to make self-driving cars safer. It doesn't go far enough” 12 June 2018 <https://www.cnbc.com/2018/06/12/self-driving-car-legislation-in-congress-doesnt-go-far-enough.html> (accessed 3 June 2021)

In fact, our organizations have proposed several provisions which provide essential changes to both bills that will encourage new technologies and ensure public safety. Fully self-driving AVs have the long-term potential to reduce the more than 37,000 annual highway deaths, but even auto and tech companies admit that we are still many years, if not decades, away. Therefore, it is critically important that AVs must not be introduced into the market until they are thoroughly tested and proven safe. Rather than rush the sale and deployment of unproven technology, our government should take the time to develop tests and minimum standards to ensure its reliability and lifesaving potential.

4. More ethical study needed

Ethical behavior needs further study

Dr. Janet Fleetwood 2017 (PhD; MPH) Public Health, Ethics, and Autonomous Vehicles, Apr 2017 AMERICAN JOURNAL OF PUBLIC HEALTH <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5343691/> (accessed 13 June 2021)

Because all store sensor data, engineers are able to reconstruct events of a crash and examine what the vehicle sensed through its multiple inputs and analyze the logic it used to determine its course. Manufacturers and software developers can then use this information to modify the car’s program and thereby improve future decisions. Yet each such improvement, every choice, is replete with ethical assumptions. However, machine learning has only begun to explore moral behavior—or ethical crashing algorithms—for autonomous vehicles.  Is it better to kill 2 autonomous vehicle passengers or 2 pedestrians? One person or 1 animal? Collide with a wall or run over a box with unknown contents? Forced choices like these must be programmed in with sophisticated algorithms that, ultimately, rest on fundamental—but largely unarticulated—ethical assumptions.

“They’re going to save lives” doesn’t justify immediate rollout without further study

Dr. Janet Fleetwood 2017 (PhD; MPH) Public Health, Ethics, and Autonomous Vehicles, Apr 2017 AMERICAN JOURNAL OF PUBLIC HEALTH <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5343691/> (accessed 13 June 2021)

The political process includes balancing competing interests and, further, extends to regulating the behavior of others (in this case, autonomous car manufacturers and companies, such as Uber and nuTonomy, which deploy the vehicles) and establishing mechanisms for ongoing transparency and accountability. Although autonomous vehicles may help reduce morbidity and mortality from motor vehicle accidents, their design and use must be tempered by regulations that are devised following an informed, collaborative political process that meets the objectives and aligns with the values of public health.

Need more study for sure: “They’re going to save lives” assumes perfect implementation and that all the ethics have been worked out.

Dr. Janet Fleetwood 2017 (PhD; MPH) Public Health, Ethics, and Autonomous Vehicles, Apr 2017 AMERICAN JOURNAL OF PUBLIC HEALTH <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5343691/> (accessed 13 June 2021)

The projected reductions in morbidity and mortality from autonomous vehicles not only assume a near-ideal implementation, with few if any mechanical or software failures, but they also assume that forced decisions are being made now using solid logic grounded firmly in broadly acceptable ethical precepts. We must deal with these challenges by engaging in informed discussion using well-justified frameworks and accepted principles of public health ethics and by asking the right questions now so that manufacturers, stakeholders, and the government develop guidelines for algorithms, policies, laws, and regulations that promote fairness and equity and align with the values of public health.

Multiple large ethical dilemmas that must be resolved that people today don’t agree on

Dr. Janet Fleetwood 2017 (PhD; MPH) Public Health, Ethics, and Autonomous Vehicles, Apr 2017 AMERICAN JOURNAL OF PUBLIC HEALTH <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5343691/> (accessed 13 June 2021)

Although there are some points of disanalogy that I will not discuss, in its simplest form the trolley problem supposes that there is a runaway trolley on train tracks heading directly for 5 people who are, inexplicably, tied to the tracks. You, the reader, are standing beside a lever that, if pulled, will switch the trolley to a different track that has only 1 person tied to it. You can either do nothing, allowing the speeding trolley to kill the 5 people on the main track, or divert the trolley by pulling the lever, resulting in the death of just 1 person. The thought experiment asks which choice is most ethically justifiable. For US drivers on the horns of this kind of dilemma in the real world, the sudden emergency doctrine and the unavoidable accident doctrine provide legal protection in some states for reasonably prudent human drivers who make questionable choices under very limited and extenuating circumstances.  We must consider whether the decisions made by autonomous vehicles should be legally protected in the same way. Will manufacturers and vehicle owners avoid liability in such situations? Although the need for the implementation of a forced-choice algorithm may arise infrequently on the road, it is important to analyze and resolve such issues as much as possible early in the development phase. Of course, one can simply tally the death toll and argue on a utilitarian basis that the death of 1 person is preferable to the death of 5, or resort to a straightforward rule-based approach that applies a seemingly inviolable rule, such as “do not kill.” Yet, in addition to providing inconsistent directives, such simplistic approaches miss the complexities of forced-choice situations. Is it worse to actively pull the lever to change course than to just let things happen as fate allows? Is it really better to just stand there and watch to avoid breaking a rule? Should we quickly assess the social value of the 5 potential victims versus the 1 victim, noting perhaps that the 5 are wearing Nazi uniforms and the 1 is dressed as a nurse? Would the death of children be more repugnant than the death of elderly adults? Should pregnant women count twice, once for themselves and once for the fetus? Finally, in an accident causing injuries but not fatalities, should algorithms prioritize decisions by the likelihood, severity, and quality of life effects of various types of injuries as well as the number of people injured? Perhaps some data will help. In a recent empirical study of autonomous car ethics, participants were given various hypothetical forced-choice accident scenarios and asked to choose between the death of 1 or more pedestrians and the death of a passenger or several passengers in the autonomous vehicle.  The study found that 76% agreed that the most justified approach was the utilitarian approach in that the autonomous vehicle sacrificed its own passengers if that would result in saving more lives overall (n = 182; 95% confidence interval = 69, 82). However, when it came to purchasing an autonomous vehicle, respondents were significantly less likely to buy an autonomous vehicle if they and their family were the passengers to be sacrificed in a forced-choice accident scenario than if they and their family members were not sacrificed for the greater good (scale = 1–100; median = 19; P < .001).  In short, study participants wanted other people to buy vehicles that made utilitarian choices to preferentially save the most people but preferred to purchase a vehicle that preferentially protected its own passengers.

DISADVANTAGES

1. Masking DA. Distracts us from bigger problems

AVs distract us from bigger traffic safety problems that kill people today

Rosemary Shahan 2020 (President, Consumers for Auto Reliability and Safety) Statement in Opposition to the SELF DRIVE Act” 23 September 2020 <https://saferoads.org/2020/09/23/self-drive-act/> (accessed 3 June 2021)

“This anti-consumer, anti-safety attack on the health and well-being of the American public threatens precious lives. It would treat everyone who shares the roads like guinea pigs in an unregulated experiment. It doesn’t even require AVs to pass a basic driver’s test. Instead of attacking auto safety, Congress should work to protect the public from the tens of millions of dangerous recalled vehicles that are already on the roads today, including closing the loophole in federal law that unscrupulous car dealers are exploiting to sell hazardous recalled used vehicles with defects like catching on fire, bad brakes, loss of steering, sticking accelerator pedals, and ticking time-bomb Takata airbags that continue to maim and kill people.”

2. Safety problems

Link: People are skeptical of AVs

Kyle Wiggers 2020 (journalist in New York City) “Waymo’s driverless cars were involved in 18 accidents over 20 months” 30 October 2020 <https://venturebeat.com/2020/10/30/waymos-driverless-cars-were-involved-in-18-accidents-over-20-month/> (accessed 3 June 2021)

Three independent studies in 2018 — by the Brookings Institution, the think tank HNTB, and the Advocates for Highway and Auto Safety (AHAS) — found that a majority of people aren’t convinced of driverless cars’ safety. And Partners for Automated Vehicle Education (PAVE) reports a majority of Americans don’t think the technology is “ready for prime time.” These concerns are not without reason. In March 2018, Uber suspended testing of its autonomous Volvo XC90 fleet after one of its cars struck and killed a pedestrian in Tempe, Arizona. Separately, Tesla’s Autopilot driver-assistance system has been blamed for a number of fender benders, including one in which a Tesla Model S collided with a parked fire truck. Now the automaker’s Full Self Driving Beta program is raising new concerns.

Internal link: SELF-DRIVE Act “lacks basic safeguards”

Aaron Marsh 2018 (He's written about you-name-it, from transportation and law and the courts to events of all kinds and telecommunications, and landed in trucking when he joined Fleet Owner in July 2015. Long an editorial leader, he's a keeper of knowledge at Fleet Owner ready to dive in on the technical and the topical inside and all around trucking—and still turns a wrench or two.) “Poll: Public concerned about, wants controls on self-driving vehicles” 16 January 2018 <https://www.fleetowner.com/technology/autonomous-vehicles/article/21701767/poll-public-concerned-about-wants-controls-on-selfdriving-vehicles> (accessed 2 June 2021)

Cathy Chase, president of Advocates, claimed that legislation in the U.S. House and Senate seeks "to accommodate the industry's desire to remove regulatory roadblocks and minimize reporting requirements that they find objectionable." She was referring to the House's SELF DRIVE Act, H.R. 3388, and the Senate's AV START Act, S. 1885. The bills "lack basic safeguards," Chase argued, and the U.S. Dept. of Transportation's (DOT) so far only voluntary guidelines issued for driverless vehicles aren't enforceable. Across the nation, according to Advocates' poll of 1,005 adults in the U.S., about 64% said they're concerned about sharing the road with self-driving vehicles.

Internal link: Exemptions undermine safety

Catherine Chase, David Friedman, Jack Gillis, and Jason Levine 2018 (Chase: president, Advocates for Highway and Auto Safety; Friedman: director, Cars and Product, Policy and Analysis, Consumers Union; Gillis: incoming president, Consumer Federation of America; Levine: executive director, Center for Auto Safety.) “Congress is trying to pass legislation to make self-driving cars safer. It doesn't go far enough” 12 June 2018 <https://www.cnbc.com/2018/06/12/self-driving-car-legislation-in-congress-doesnt-go-far-enough.html> (accessed 3 June 2021)

The House and Senate bills have major safety gaps which need to be addressed to allow for the successful deployment of AVs as well as consumer acceptance of AVs, including: The bills allow potentially millions of vehicles to be sold which are exempt from existing safety standards, including those that ensure occupant protection;

Link: No “vision test”

Chris Teale 2020 (journalist) 2 December 2020 “Coalition urges renewed safety focus for AV legislation” <https://www.smartcitiesdive.com/news/coalition-urges-renewed-safety-focus-for-av-legislation/589921/> [note: “group” refers to a coalition of 35 advocacy groups] (accessed 3 June 2021)

With AV technology sometimes failing to recognize pedestrians, including those with darker skin, the group said its proposed "Vision Test" would help ensure accountability as the technology evolves. A federal role would also help in that effort, experts said.

Link: SELF DRIVE blocks states from properly regulating autonomous vehicles

Rodney Dowell 2017 (Senior Fellow at the Conservation Law Foundation) “Bad Policy Could Crash the Achievements of Self-Driving Cars” 20 December 2017 <https://www.clf.org/blog/bad-policy-crash-self-driving-cars/> (accessed 3 June 2021)

In addition, The SELF DRIVE Act actually limits states’ efforts to keep their citizens safe by preempting laws that place an “unreasonable restriction” on the performance of these vehicles. “Performance” is not defined, and could easily be interpreted to restrict states from enforcing laws that could impede performance, including traffic laws, fees for miles traveled, or fees for traveling without passengers. If states cannot use innovative tools to enhance the benefits of self-driving cars, then we lose our ability to improve congestion and reduce harmful greenhouse emissions.

Impact: Traffic fatalities + higher death rates for minorities

Sigal Samuel 2019 (Staff Writer for Vox's Future Perfect. She writes about artificial intelligence, neuroscience, ethics, and the intersection of technology and religion. Previously, she was the Religion Editor at The Atlantic) “A new study finds a potential risk with self-driving cars: failure to detect dark-skinned pedestrians” 6 March 2019 <https://www.vox.com/future-perfect/2019/3/5/18251924/self-driving-car-racial-bias-study-autonomous-vehicle-dark-skin> (accessed 3 June 2021)

If you’re a person with dark skin, you may be more likely than your white friends to get hit by a self-driving car, according to [a new study](https://arxiv.org/pdf/1902.11097.pdf) out of the Georgia Institute of Technology. That’s because automated vehicles may be better at detecting pedestrians with lighter skin tones. The authors of the study started out with a simple question: How accurately do state-of-the-art object-detection models, like those used by self-driving cars, detect people from different demographic groups? To find out, they looked at a large dataset of images that contain pedestrians. They divided up the people using the Fitzpatrick scale, a system for classifying human skin tones from light to dark
**[END QUOTE. She goes on later in the article to write QUOTE:]**
The result? Detection was five percentage points less accurate, on average, for the dark-skinned group. That disparity persisted even when researchers controlled for variables like the time of day in images or the occasionally obstructed view of pedestrians.

NEG advocacy: 40 organizations oppose AV START

Note: AV START was the Senate counterpart to the SELF-DRIVE Act

Catherine Chase, David Friedman, Jack Gillis, and Jason Levine 2018 (Chase: president, Advocates for Highway and Auto Safety; Friedman: director, Cars and Product, Policy and Analysis, Consumers Union; Gillis: incoming president, Consumer Federation of America; Levine: executive director, Center for Auto Safety.) “Congress is trying to pass legislation to make self-driving cars safer. It doesn't go far enough” 12 June 2018 <https://www.cnbc.com/2018/06/12/self-driving-car-legislation-in-congress-doesnt-go-far-enough.html> (accessed 3 June 2021)

[Serious concerns have already been raised](http://saferoads.org/wp-content/uploads/2018/05/Letter-to-Senate-on-AV-START-Act-5-4-18-2.pdf) about flaws in the AV START Act by 40 major safety, consumer, public health, bicyclist, pedestrian, environmental, law enforcement and disability rights organizations as well as families affected by motor vehicle crashes. And they are not alone, as [numerous public opinion polls](http://saferoads.org/wp-content/uploads/2018/06/AV-Public-Opinion-Polls-6-1-18.pdf) show that the public is troubled about taking a hands-off approach to AVs.

NEG advocacy: Consumer Federation of America says SAFE DRIVE Act fails to uphold adequate safety

Jack Gillis 2020 (Executive Director, Consumer Federation of America) “Statement in Opposition to the SELF DRIVE Act” 23 September 2020 <https://saferoads.org/2020/09/23/self-drive-act/> (accessed 3 June 2021)

“Over the years, the misguided support and praise for the SELF DRIVE Act have driven it right into the ground, which is exactly where it should stay. Since its introduction in 2017, pedestrian Elaine Herzberg was killed, numerous fatal crashes with cars with autonomous capabilities have occurred, and the National Transportation Safety Board (NTSB) has issued recommendations. Congress should take heed to what has been playing out in real time on our roadways and advance legislation that ensures the safe introduction of autonomous vehicles (AVs). For AVs to reach their full potential as a lifesaving addition to America’s highways, there must be thoughtful and effective regulatory oversight to adequately protect consumers. This bill fails to do to that on a number of fronts.”

NEG advocacy: League of American Bicyclists—no required vision test

Ken McLeod 2020 (He leads the Bicycle Friendly State program and data.bikeleague.org, provides technical assistance to advocates working on state and local initiatives, and manages policy initiatives to improve bicyclist safety through vehicle technology and other traffic safety advances. Ken joined the League in 2012 after graduating from William & Mary School of Law and he is a licensed attorney in the state of Virginia.) “HELP US DEFEAT THE SELF DRIVE ACT” 23 September 2020 <https://bikeleague.org/content/help-us-defeat-self-drive-act> (accessed 3 June 2021)

The League of American Bicyclists has worked with many stakeholders to identify what an automated vehicle framework should include. The SELF DRIVE Act fails to address those issues. Most important for people who bike and walk, this bill does NOT include a Vision Test, or any other requirement to ensure automated vehicles can detect, identify and respond to pedestrians, bicyclists, or other vulnerable users of all races and ethnicities. The League is opposed to any bill that does not include such a standard.

3. Hacking

Link: AV tech holds a “significant vulnerability”

Alexandra Green 2020 (B.A., University of Washington, 2015. J.D., Santa Clara University School of Law, 2020.) “THE SELF DRIVE ACT: AN OPPORTUNITY TO RE- LEGISLATE A MINIMUM CYBERSECURITY FEDERAL FRAMEWORK FOR AUTONOMOUS VEHICLES” 6 May 2020 <https://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=2895&context=lawreview> (accessed 2 June 2021) (brackets in original)

Hackers have the ability to infiltrate into systems to access unauthorized information, steak bank details, manipulate government websites and numerous other monstrous acts. However, hacking has recently reached new levels; hackers can now target vehicles and use these vehicles like weapons. As more autonomous cars are produced, “hackers could target fleets of cars” where these “fleets [are] comprised of 100s of cars with each car individually having over a 100 million lines of code and all collectively connected and exchanging data.” Therefore, significant vulnerability and risk exists in autonomous vehicles, which leaves cybersecurity as a central challenge.

Link: AVs are vulnerable to cyber criminals

Jim DeLorenzo 2017 (He is a Solutions Marketing Manager at Thales eSecurity.) “Why autonomous vehicles might accelerate the theft of personal information” 19 October 2017 <https://statescoop.com/why-autonomous-vehicles-might-accelerate-the-theft-of-personal-information/> (accessed 2 June 2021)

One study found only 6 percent of U.S. city and regional transportation plans address the potential effects of driverless technology. Self-driving cars stand to benefit societies by potentially reducing traffic accidents, creating better air quality and bringing more productivity to people’s days when they aren’t wasting time stuck behind the wheel. But there’s also a very notable worry that cities can’t afford to ignore. Autonomous cars wield the unintentional capability of introducing new ways for cybercriminals to wreak havoc on a city’s infrastructure and citizens’ personally identifiable information (PII). In a world in which we must now find ways to lock down all digital assets and information, a focus on cybersecurity in regard to self-driving technology is essential.

Link: the SELF-DRIVE Act is “too vague” to protect cyber security

Alexandra Green 2020 (B.A., University of Washington, 2015. J.D., Santa Clara University School of Law, 2020.) “THE SELF DRIVE ACT: AN OPPORTUNITY TO RE- LEGISLATE A MINIMUM CYBERSECURITY FEDERAL FRAMEWORK FOR AUTONOMOUS VEHICLES” 6 May 2020 <https://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=2895&context=lawreview> (accessed 2 June 2021)

The federal government is attempting to establish its position in the future of self-driving cars. Yet, the cybersecurity provisions of the SELF DRIVE Act are too vague. The inaction by the Senate has caused further delay in ensuring a much-needed federal framework for autonomous vehicles. An essential cybersecurity framework for self-driving cars needs to pass from bill into law.

SELF-DRIVE Act is “insufficient” to to support safety from hackers

Alexandra Green 2020 (B.A., University of Washington, 2015. J.D., Santa Clara University School of Law, 2020.) “THE SELF DRIVE ACT: AN OPPORTUNITY TO RE- LEGISLATE A MINIMUM CYBERSECURITY FEDERAL FRAMEWORK FOR AUTONOMOUS VEHICLES” 6 May 2020 <https://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=2895&context=lawreview> (accessed 2 June 2021) (brackets in original)

The SELF DRIVE Act’s requirements are essential but insufficient to support safety in self-driving vehicles. As compared to a typical information technology environment, the SELF DRIVE Act does not adequately protect “the integrity and availability of human life and public safety on highways” because “[t]he operating environment, economics, components, adversaries, consequences, and time scales are very different” than protecting confidentiality of data in information centers. Security vulnerabilities “may exist within a vehicle’s wireless commercial functions, within a mobile device—such as a cellular phone or tablet connected to the vehicle via USB, Bluetooth, or Wi-Fi—or within a third-party device connected through a vehicle diagnostic port.” Therefore, hackers can exploit these vulnerabilities by gaining access to an autonomous vehicle’s control network or data stored within the vehicle. Due to the cyber threats to self-driving vehicles, the United States needs a nationwide policy that will promote uniformity in the safe manufacturing and deployment of autonomous vehicles.

Link: the SELF-DRIVE Act puts personal data at risk

Jim DeLorenzo 2017 (He is a Solutions Marketing Manager at Thales eSecurity.) “Why autonomous vehicles might accelerate the theft of personal information” 19 October 2017 <https://statescoop.com/why-autonomous-vehicles-might-accelerate-the-theft-of-personal-information/> (accessed 2 June 2021)

On the privacy side, the SELF DRIVE Act would require manufacturers to tell consumers how they are gathering and using data on vehicle owners and occupants. However, manufacturers that de-identify, anonymize or encrypt this data are exempt from the privacy plan. In order to truly ensure data privacy, the bill should specify protections for the keys used to encrypt PII. Otherwise, manufacturers will be tempted to take the easy way out on data privacy by using weak encryption processes that won’t provide adequate protection of personal data.

SELF DRIVE Act will not accomplish the goal of safe self-driving cars because it doesn’t solve cybersecurity threats

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Although manufacturers and suppliers in the automobile industry have improved in protecting vehicles from cybersecurity threats, vehicle hacking remains a very real and gradually serious problem as self-driving cars begin connecting to one another. The current version of the SELF DRIVE Act will not accomplish the goal of ensuring self-driving vehicles are safer. The SELF DRIVE Act contains only two out of thirty-six pages that include information about cybersecurity. Much of the bill “focus[es] on defining the [NHTSA’s] role in setting safety standards for autonomous vehicles, while limiting state regulation and waiving some traditional safety regulations during research.” The SELF DRIVE Act would demand that self-driving cars manufacturers implement and comply with a procedure that detects and mitigates reasonably foreseeable vulnerabilities, but the SELF DRIVE Act does not define how this process would begin. While the SELF DRIVE Act does require auto manufacturers “to have cybersecurity managers, training, and intrusion prevention and response systems in place, it doesn’t detail how the companies should follow through on the requirements.”

Impact: Gridlock Manhattan

Jamie Carter 2019 (I'm an experienced science, technology and travel journalist and stargazer writing about exploring the night sky, solar and lunar eclipses, moon-gazing, astro-travel, astronomy and space exploration) “Hacked Driverless Cars Could Cause Collisions And Gridlock In Cities, Say Researchers” 5 March 2019 <https://www.forbes.com/sites/jamiecartereurope/2019/03/05/hacked-driverless-cars-could-cause-collisions-and-gridlock-in-cities-say-researchers/?sh=6fe01c5d2a09> (accessed 2 June 2021)

Even a small scale hack of automated cars could cause collisions and gridlock in Manhattan, hindering emergency services, according to the latest research. Researchers at Georgia Tech and Multiscale Systems Inc. investigated the 'cyber-physical' risks of hacked Internet-connected vehicles, and this week will present their results to the 2019 American Physical Society March Meeting in Boston.

Impact: Paralyze New York City

Jamie Carter 2019 (experienced science, technology and travel journalist) “Hacked Driverless Cars Could Cause Collisions And Gridlock In Cities, Say Researchers” 5 March 2019 <https://www.forbes.com/sites/jamiecartereurope/2019/03/05/hacked-driverless-cars-could-cause-collisions-and-gridlock-in-cities-say-researchers/?sh=6fe01c5d2a09> (accessed 2 June 2021)

The research into how hacks could impact traffic flow in New York City was discovered using percolation theory, a mathematical approach based on the statistical analysis of networks. They identified that as vehicles are hacked, clusters of roads become inaccessible from the other. When somewhere between 10-20% of vehicles at rush hour were hacked, the size of the largest cluster dramatically reduced, and half the city became inaccessible from the rest.

Link & Brink: Even brief hack would cause collisions and gridlock

Jamie Carter 2019 (journalist) “Hacked Driverless Cars Could Cause Collisions And Gridlock In Cities, Say Researchers” 5 March 2019 <https://www.forbes.com/sites/jamiecartereurope/2019/03/05/hacked-driverless-cars-could-cause-collisions-and-gridlock-in-cities-say-researchers/?sh=6fe01c5d2a09> (accessed 2 June 2021)

It's often suggested that we're headed for an 'Internet of Cars', probably using incoming 5G networks. Whereas a 4G has a latency of 40 milliseconds, it's just one or two milliseconds on a 5G connection, making real-time vehicle-to-vehicle communications possible. Cue 5G and sensor-driven collision-avoidance technology, but also vehicle-to-infrastructure communications, so a driverless car could respond to a red light. It could also enable citywide traffic management, with a central hub instructing driverless cars which routes to take to keep traffic flowing across a city. The exchange of information will be so critically important for autonomous cars that a hack, even one that creates just a brief interruption to its link to a 5G network, could in theory cause collisions and gridlock.

Historical example: The 2015 Jeep hack. It could have been worse

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A pertinent example occurred in 2015. Automobile manufacturer Chrysler announced a recall of 1.4 million vehicles when a pair of hackers, Charlie Miller and Chris Valasek, demonstrated their ability to remotely hijack the digital systems of a Jeep through the Internet. The two reported their research of the hack to Chrysler for the company to fix the vehicle’s errors, but they offered a serious lesson to the auto industry: the hack could have been, and in the future could be, much worse.

Details on the Jeep hack: it isn’t the only one

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Miller and Valasek compromised the Jeep through a vulnerability in the vehicle’s Internet-connected entertainment system called Uconnect. Uconnect was flawed because the system permitted anyone with the vehicle’s IP address to obtain access throughout the United States. The two researchers were “then able to send commands to the engine and wheels through the car’s internal Controller Area Network (CAN).” Control of the steering column, electronic brakes, parking assistance, and adaptive cruise control are all handled by the ECUs. Other hackers and security researchers have also demonstrated their capability to remotely hack self-driving vehicles by taking control of essential car functions, like braking and acceleration.