

## Autonomous Vehicles and Their Recalls

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The concept of a self-driving car has filled the minds of engineers for over 100 years.<sup>1</sup> The realized success though of self-driving cars did not occur until 1995, when the Navlab5 successfully went from Pittsburg to San Diego. Able to steer itself without any additional human input, the car traveled 2000 miles with humans only accelerating and braking the car.<sup>2</sup> The steering was accomplished totally autonomously.<sup>3</sup>

Autonomous vehicles pose inherent road safety problems.<sup>4</sup> While one of the purported advantages of self-driving cars is that their integration in society will lead to increased safety, the reality now is that there are a number of accidents associated with the technology.<sup>5</sup> In 2022, there were over 400 reported accidents involving partially automated vehicles.<sup>6</sup> Nearly 100 percent of these accidents are accidents are due to human error.<sup>7</sup>

In an effort to make AVs safer, states have begun regulating AVs on their roads. As with any regulations, states have first had to grapple with definitions of AVs. California, a state that is often leading state legislative trends, defines AVs by their use of autonomous technology. This technology is a “combination of hardware and software, remote and/or on-board [that] performs [the] dynamic driving task, with or without a natural person actively supervising the...technology’s performance of the dynamic driving.”<sup>8</sup> Dynamic driving tasks refer to all of the “real-time functions required to operate a vehicle in on-road traffic.”<sup>9</sup> These functions include object and event detection and response; steering, turning, and lane changes; and appropriate usage of turn signals.<sup>10</sup>

Other states have adopted industry standards and parameters for their statutory provisions.<sup>11</sup> The Society of Automotive Engineers (SAE) developed their SAE Levels of Driving Automation. The first three levels have a human driving the vehicle, and the driver steers, brakes, and accelerates as needed to maintain vehicle safety. The AV tools in Levels 0 through 2 are limited to providing warnings and only momentary assistance. Conversely, Levels 3 through 6 do not have a driver steering, braking, and accelerating, even if there is a human in the

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<sup>1</sup> The History of Self Driving Cars, Arrow (Ju. 19, 2022), <https://www.arrow.com/en/research-and-events/articles/the-history-of-self-driving-cars>.

<sup>2</sup> *Id.*

<sup>3</sup> *Id.*

<sup>4</sup> Nature Podcast, *How to Make Driverless Cars Safer – Expose Them to Lots of Dangerous Drivers*, NATURE (Mar. 22, 2023), <https://www.nature.com/articles/d41586-023-00867-8>.

<sup>5</sup> *Id.*; *Automated Vehicles for Safety*, NHTSA, <https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety> (last visited Dec. 16, 2023).

<sup>6</sup> *Nearly 400 Car Crashes in 11 Months Involved Automated Tech, Companies Tell Regulators*, NPR (Jun. 15, 2022), <https://www.npr.org/2022/06/15/1105252793/nearly-400-car-crashes-in-11-months-involved-automated-tech-companies-tell-regul>.

<sup>7</sup> Ben Wodecki, *Human Error Causes 99% of Autonomous Vehicle Accidents: Study*, IOT WORLD TODAY (Oct. 20, 2021), <https://www.iotworldtoday.com/transportation-logistics/human-error-causes-99-of-autonomous-vehicle-accidents-study>.

<sup>8</sup> CAL. CODE REGS. tit. 13, § 227.02(a)

<sup>9</sup> CAL. CODE REGS. tit. 13, § 227.02(g)

<sup>10</sup> *Id.*

<sup>11</sup> Justin Banner, *Are Self-Driving Vehicles Legal in My State?*, MOTORTREND (Jan. 6, 2023), <https://www.motortrend.com/features/state-laws-autonomous-self-driving-driverless-cars-vehicles-legal/>.

driver seat.<sup>12</sup> Currently, the highest Level that is available to mass market is Level 3. In June 2023 Mercedes-Benz was approved to sell their Level 3 car, the first of the industry.<sup>13</sup> However, the majority of AVs, including Teslas, are Level 2.<sup>14</sup>

States also differ in their driver requirements.<sup>15</sup> Some states require a licensed driver to be in the car, even if it is fully autonomous. Others require a “driver” but make no mention of licensing requirements.<sup>16</sup> And others do not require a driver.<sup>17</sup> And between these there are combinations, such as no drivers required, but if a driver is there, they have to be licensed.<sup>18</sup> Or there are different requirements for different types of vehicles.<sup>19</sup> License requirements may also vary depending on whether a manufacturer is testing a vehicle or whether it has been fully tested.<sup>20</sup> The likely reason for these driver requirements is to reduce the likelihood of human error.

Tesla is the company that we associate in the United States with autonomous vehicles. In 2014, Tesla released “Autopilot,” which used cameras and sensors positioned around the vehicle that allowed a basic level of self-driving while on highways.<sup>21</sup> Autopilot is a Level 2 automation and is included on each of Tesla’s base models.<sup>22</sup> In addition to Autopilot, Tesla also offers Enhanced Autopilot and Full Self-Driving capability, which are also categorized as Level 2.<sup>23</sup>

Tesla is the most recalled car company in the United States.<sup>24</sup> Most recently, the company issued a recall of 2 million vehicles at the issuance of U.S. National Highway Traffic Safety Administration (NHTSA).<sup>25</sup> A two-year NHTSA investigation found that a component of the Autopilot technology is not working correctly.<sup>26</sup> Part of Autopilot included notifications to drivers when it was sensed that drivers were not paying attention while on the road.<sup>27</sup> Attention was assessed by the amount of torque on the steering wheel, indicating whether or not the driver had their hands on the wheel.<sup>28</sup> However, the NHTSA was unsatisfied with this metric for driver

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<sup>12</sup> *SAE Levels of Driving Automation Refined for Clarity and International Audience*, SAE INTERNATIONAL (May 3, 2021), <https://www.sae.org/blog/sae-j3016-update>.

<sup>13</sup> Brian Silvestro, *Mercedes-Benz Gets Approval to Sell Level 3 Self-Driving Cars in California*, ROAD AND TRACK (Jun. 9, 2023), <https://www.roadandtrack.com/news/a44139131/mercedes-benz-selling-level-3-self-driving-cars-california/>.

<sup>14</sup> Jeff S. Bartlet, *How Much Automation Does Your Car Really Have?*, CONSUMER REPORTS (Nov. 4, 2021), <https://www.consumerreports.org/cars/automotive-technology/how-much-automation-does-your-car-really-have-level-2-a3543419955/>.

<sup>15</sup> Banner, *supra* note 11.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*

<sup>21</sup> *Autopilot and Full Self-Driving Capability*, TESLA, <https://www.tesla.com/support/autopilot> (last visited Dec. 17, 2023).

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> Mark Vaughn, *Tesla is the Most-Recalled Car Brand*, Autoweek (Apr. 18, 2023), <https://www.autoweek.com/news/industry-news/a43625242/tesla-is-the-most-recalled-car-brand/>.

<sup>25</sup> Tom Krisher, *Tesla’s Recall of 2 Million Vehicles to Fix Its Autopilot System Uses Technology That May Not Work*, ASSOCIATED PRESS (Dec. 19, 2023), <https://apnews.com/article/tesla-autopilot-recall-fix-software-9a9bd6fea76a564f417788f1430d5166>.

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

attention.<sup>29</sup> Merely having hands on the wheel does not mean that the driver is paying attention.<sup>30</sup> Out of the accidents that the NHTSA included in its investigation, 86 percent of the accidents occurred while the drivers' hands were on the wheel.<sup>31</sup>

Instead of measuring torque as an indicator of attention, experts have suggested other solutions.<sup>32</sup> Tesla could install additional cameras on the inside of their cars that would track drivers' eye position to ensure they're paying attention.<sup>33</sup> While Tesla has initiated this recall, there has been no indication of what permanent steps Tesla is going to take to remedy the issue. In the short term, it does appear that Tesla has sent a software update and is reserving the option to remotely disengage Autopilot in vehicles where it's been determined drivers are paying insufficient attention.<sup>34</sup>

While this is a fairly large recall, as stated earlier, this is not Tesla's Autopilot's first issue. In February 2023, there was a recall of 363,000 Teslas with the Full Self-Driving (FSD) capability. Another NHTSA report found that FSD-employed vehicles regularly violated traffic laws, including "traveling straight through an intersection while in a turn-only lane, entering a stop sign-controlled intersection without coming to a complete stop, or proceeding into an intersection during a steady yellow traffic signal without due caution."<sup>35</sup>

Despite the frequent recalls though, the NHTSA cannot be responsible for regulating Tesla and other AV companies through reactionary regulations. Instead, states will need to adopt additional regulations to help ensure that the future of AVs brought to market are safe.

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<sup>29</sup> *Id.*

<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> Chris Isidore, Tesla Recalls nearly All 2 Million of Its Vehicles on US Roads, CNN (Dec. 13, 2023), <https://www.cnn.com/2023/12/13/tech/tesla-recall-autopilot/index.html>.

<sup>35</sup> Chris Isidore, Tesla Recalling Nearly 363,000 Vehicles Equipped With 'Full Self-Driving', CNN (Feb. 16, 2023), <https://www.cnn.com/2023/02/16/business/tesla-fsd-recall/index.html>.