Self-driving vehicles are cars or trucks in which human drivers are never required to take control to safely operate the vehicle. Also known as autonomous or “driverless” cars, they combine sensors and software to control, navigate, and drive the vehicle.

## **Layers of autonomy**

Different cars are capable of different levels of self-driving, and are often described by researchers on a scale of 0-5.

* **Level 0**: All major systems are controlled by humans
* **Level 1:** Certain systems, such as cruise control or automatic braking, may be controlled by the car, one at a time
* **Level 2**: The car offers at least two simultaneous automated functions, like acceleration and steering, but requires humans for safe operation
* **Level 3**: The car can manage all safety-critical functions under certain conditions, but the driver is expected to take over when alerted
* **Level 4**: The car is fully-autonomous in some driving scenarios, though not all
* **Level 5**: The car is completely capable of self-driving in every situation

## **Impacts**

The costs and benefits of self-driving cars are still largely hypothetical. More information is needed to fully assess how they’ll impact drivers, the economy, equity, and environmental and public health.

**Safety**is an overarching concern. Many thousands of people die in motor vehicle crashes every year in the United States (more than [30,000 in 2015](https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812332)); self-driving vehicles could, hypothetically, reduce that number—software could prove to be less error-prone than humans—but cybersecurity is still a chief concern.

**Equity**is another major consideration. Self-driving technology could help mobilize individuals who are unable to drive themselves, such as the elderly or disabled. But the widespread adoption of autonomous vehicles could also displace millions of Americans employed as drivers, negatively impact public transportation funding, and perpetuate the current transportation system’s injustices.

**Environmental** impacts are a serious concern, and a major uncertainty. Accessible, affordable, and convenient self-driving cars could increase the total number of miles driven each year. If those vehicles are powered by gasoline, then transportation-related climate emissions could skyrocket. If, however, the vehicles are [electrified](https://www.ucsusa.org/transportation/technologies)—and paired with a [clean electricity grid](https://www.ucsusa.org/energy)—then transportation emissions could drop, perhaps significantly.