It may seem that the advancement towards self-driving cars started just a few years ago when the first Tesla with Autopilot rolled off the assembly line. Believe it or not, the “driverless dream” began not long after the birth of automobiles. In 1925 inventor Francis Houdina demonstrated a radio controlled vehicle without anyone at the wheel down the streets of Manhattan. Despite the strides that have been made towards autonomous operation over the last 100 years, we are still many years away from a world where self-driving cars are commonplace.

There is currently no vehicle for sale that is fully automated.

The majority of modern vehicles include advanced driver-assistance systems (ADAS). However, ADAS are not a substitute for an attentive human driver. Moreover, while self-driving vehicles are being tested on public roads, there is currently no vehicle for sale that is fully automated. What are the challenges facing an autonomous future? Besides the serious technical and safety factors to overcome, there are other significant obstacles related to consumer attitudes, government regulation and insurance liability. The bottom line, as stated by Mary Barra, chairman and CEO of General Motors, “Transitioning to a self-driving society will take time, and will require cooperation and collaboration by the private and public sectors.”

Changing Consumer Sentiment

The future of transportation may seem like it’s straight out of a science fiction movie, and there are those that think it should stay there. In fact, one of the biggest barriers to widespread adoption of fully autonomous vehicles is the shifting consumer sentiment about self-driving cars.

The 2019 Deloitte Global Automotive Consumer Study surveyed 25,000 consumers in twenty countries to
explore opinions regarding the development of advanced automotive technology. One critical insight is that the closer autonomous vehicle (AV) technology gets to reality, the more consumers are ‘pumping the brakes.’ The study found that “Consumers are questioning if autonomous vehicles are safe, which is causing some people to take a more cautious approach to the idea.”

73\% of drivers report they would be too afraid to ride in a fully self-driving vehicle, up significantly from 63\%.

Similarly, a new report from AAA indicates that consumer trust has eroded over the past year. In 2018, three-quarters of American drivers reported they would be too afraid to ride in a fully autonomous vehicle, up 10\% from an earlier survey. Additionally, two-thirds reported, “they would actually feel less safe sharing the road with a self-driving vehicle while walking or riding a bicycle.”

The U.S. Transportation Secretary recently echoed this view. She remarked that despite the potential of self-driving cars to dramatically reduce crashes, the “public has legitimate concerns about the safety, security, and privacy of automated technology.”

Accidents Happen
In 2015, Google revealed that one of its Lexus SUV self-driving cars had been involved in the first crash to injure a person during testing. Over the past few years, there has been more than one fatal Tesla crash linked to misuse of Autopilot technology. In addition, the first pedestrian fatality resulting from self-driving technology occurred when an autonomous Uber vehicle struck a woman in Tempe, Arizona on March 2018. As the number of semi-autonomous vehicles on the road grows, the number of collisions increases, as do the articles written about these crashes. Deloitte links news coverage directly to the change in public sentiment, claiming that “reports of accidents involving AVs have had a significant impact on consumers’ view of the technology.” Sixty-five percent of U.S. consumers feel that the news stories of AV accidents have made them more cautious.

This concern may be leading the majority of consumers to look to their governments to increase regulation. In the U.S., 87\% of Deloitte’s survey respondents want the government to exert oversight over the development and use of AVs.

Defining Rules and AV Policy
In addition to consumer attitudes, proposed rules and regulations of the road (or lack thereof) are another challenge. On the federal level, the NHTSA released new federal guidelines for automated driving systems
which give voluntary guidance and technical assistance to the states. Rather than enacting laws or regulations, the federal approach to shaping policy provides guidance that prioritizes safety as well as embraces the freedom of Americans to drive their own cars. The NHTSA is also moving ahead to revise safety rules that bar fully self-driving cars without “equipment such as steering wheels, pedals, and mirrors.” At this time, there are nearly 75 auto safety standards that automakers must meet, “many of which were written with the assumption that a licensed driver will be in control of the vehicle,” states Reuters.

The national magazine Government Technology likens federal AV regulation to a game of whack-a-mole. “The rapid proliferation of autonomous vehicle technology has outpaced the federal government’s ability to lay down the law, opening the door for state and local regulators to step in.” To date, twenty-nine states have enacted AV policies. With limited direction from federal and state governments, some cities have taken the lead in regulation with fifty percent of large American cities deliberating AV integration with local transportation.

Insuring Autonomy
Another roadblock is the unanswered question about how to assign liability. There is no industry consensus as to who will bear the risk and pay the claims when there is a crash. Insurance rates are now calculated mostly based on the attributes of drivers. Insurance Business Magazine hypothesizes that in the future compensation may be sought from the insurer who would then seek recovery from the vehicle manufacturer, who would then seek recovery from the software developer. In this scenario, premiums would be based on the risk profile of the vehicle instead of the risk of the driver.

Self-driving tests will need to prove with 80% confidence that autonomous vehicles are 90% safer than human drivers.

No Smooth Path to Autonomy
Mobility researchers at the University of Michigan say that for consumers to accept driverless vehicles, self-driving tests will need to prove with 80 percent confidence that autonomous vehicles are 90 percent safer than human drivers. Winning public trust by developing safer vehicles is only half the challenge,
will be impossible to achieve total automation without also creating a legal, liability and regulatory framework to govern their use. There’s one thing for certain, the road on the way to a “driverless dream” will continue to be a bumpy one.

4. 2019 Deloitte Global Automotive Consumer Study Advanced vehicle technologies and multimodal transportation Global