

# Where Are Self-Driving Cars Taking Us?

## *Pivotal Choices That Will Shape DC's Transportation Future*

Self-driving or automated vehicles (AVs) are moving from design and testing to commercial development with a promise to reshape our cities and towns. The technology's effect on people's lives will differ across the country and will depend on public policies that govern vehicles, roads, and transit systems.

AVs deployed primarily as part of a shared service that offers affordable pooled rides and complements a robust mass transit system could provide flexible mobility and access to opportunity for disadvantaged populations not well served by the current transportation system. AVs could accelerate a transition to increased electrification of vehicles, reducing the transportation sector's global warming emissions and local air pollution. However, without appropriate policy interventions, AVs could exacerbate the current transportation system's problems, resulting in increased congestion and pollution while perpetuating access inequities.

To shed light on these challenges and opportunities, the Union of Concerned Scientists partnered with the transportation firm Fehr & Peers to study several scenarios of the effect of AVs on the Washington, DC, metropolitan region transportation system in 2040. Using the travel demand model from the National Capital Region Transportation Planning Board, the regional metropolitan planning organization of the area, we studied how differences in vehicle occupancy and investments in mass transit would affect

congestion and job access for different populations across the region. We compared the effect on low-income neighborhoods and communities of color in the region to understand how AVs may affect transportation equity and environmental justice.

Key findings include the following:

- AVs operated as part of higher-occupancy pooled fleets more than doubled the number of jobs accessible by a 45-minute car trip. In contrast, increased congestion led to a loss of 80 percent of this benefit if AVs were not pooled.
- Investments in a better transit system reduced congestion on roadways and doubled the number of jobs accessible by transit, ensuring that people retained the choice of whether to use a car or mass transit.
- The introduction of AVs caused the total amount of driving to increase by as much as 66 percent relative to the year 2040 with no AVs; however, the increase was only 46 percent in scenarios with policies to encourage pooling and transit investments. In the absence of a rapid transition to electric vehicles (EVs), this increased driving will exacerbate global warming.
- People living in low-income neighborhoods and communities of color were subjected to large increases in congested driving



*At the heart of vibrant urban centers is a multimodal network of transportation options—driving, ride-hailing, public transit, biking, and walking—that enable all residents to access jobs, health care, shopping, and other opportunities in a convenient, affordable, and efficient way.*

in all AV scenarios, with 6 to 12 times as much congested driving as in the projected 2040 regional average. Exposure in these neighborhoods was about 50 percent higher than in the region as a whole.

***Policymakers must act as soon as possible to mitigate the risks and maximize the opportunities of AVs.***

Our findings and other research demonstrate that policymakers must act as soon as possible to mitigate the risks and maximize the opportunities of AVs. The following policy recommendations can steer the DC metro region toward a more equitable, efficient, and clean transportation future:

**To Avoid Congestion, AV Deployment Must Prioritize the Movement of People over Vehicles by Encouraging Pooling**

If AVs fulfill their promise of providing more convenient, affordable transportation to a larger share of the population, they will dramatically increase demand for travel, potentially leading to increases in congestion. AVs deployed predominantly as part of shared transportation services that pool riders going to similar destinations can move more people in fewer vehicle trips than would AVs following today's prevailing single-occupancy usage patterns. Pooling AVs could thus reduce congestion that would otherwise compromise their potential benefits.

**To Maintain Multimodal Access and Improve Equity, Mass Transit Must Be Modernized and Improved**

Although AVs combined with pooling could make car trips more convenient, accessible, and affordable, high-capacity mass transit provides a complementary service, particularly because it would connect dense, urban job and housing centers while facilitating a healthier and affordable multimodal transportation system. Continued investment in and enhancement of high-capacity mass transit can ensure that AVs and mass transit complement one another and support smart growth goals.

**To Reduce Pollution Associated with Increased Driving, AVs Must Be Powered Primarily by Electricity**

In all our scenarios, AVs increased total driving and the increase was especially severe in low-income neighborhoods and communities of color. These increases can be limited by AV pooling and enhancing mass transit, but a rapid transition to EVs is also required to ensure AVs do not undermine efforts to reduce global warming and local air pollution.

*Richard Ezike is the Mobility and Equity Kendall Science Fellow with the UCS Clean Vehicles Program. Jeremy Martin is a senior scientist and director of fuels policy for the program. Katherine Catalano is the national campaign coordinator for the program. Jesse Cohn is senior transportation planner at Fehr & Peers DC.*

**Union of Concerned Scientists**

FIND THE FULL REPORT ONLINE: [www.ucsusa.org/AV-equity](http://www.ucsusa.org/AV-equity)

*The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet's most pressing problems. Joining with people across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future.*

**NATIONAL HEADQUARTERS**

Two Brattle Square  
Cambridge, MA 02138-3780  
Phone: (617) 547-5552  
Fax: (617) 864-9405

**WASHINGTON, DC, OFFICE**

1825 K St. NW, Suite 800  
Washington, DC 20006-1232  
Phone: (202) 223-6133  
Fax: (202) 223-6162

**WEST COAST OFFICE**

500 12th St., Suite 340  
Oakland, CA 94607-4087  
Phone: (510) 843-1872  
Fax: (510) 451-3785

**MIDWEST OFFICE**

One N. LaSalle St., Suite 1904  
Chicago, IL 60602-4064  
Phone: (312) 578-1750  
Fax: (312) 578-1751