

AUTONOMOUS VEHICLES AND PUBLIC HEALTH

The development of self-driving cars, or autonomous vehicles (AVs), offers the potential to dramatically affect public health. Yet technological changes as potentially transformational as AVs can be accompanied by a plethora of unintended consequences.

Altarum Institute is initiating efforts to understand the ways in which the introduction of AVs are likely to affect public health. We also aim to raise awareness in the public health community about the importance of engaging in legislative, regulatory, and business decisions that will shape the future of AVs—decisions that are already being made.

What Are AVs?

The phrase “autonomous vehicles” encompasses a continuum of technologies, ranging from vehicles in which the driver can cede control of specific safety or driving functions to fully self-driving vehicles in which the only function of the “driver” is to provide destination information.

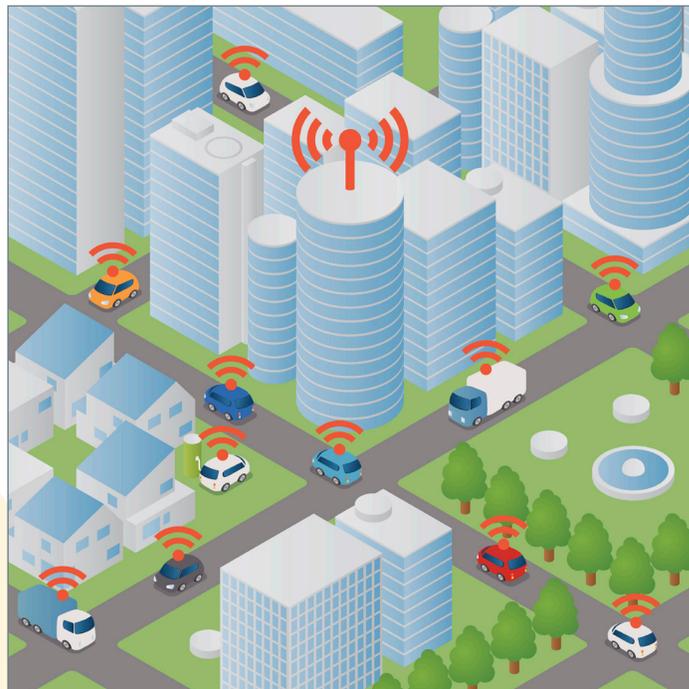
Potential Public Health Benefits of AV Technology

AVs might affect public health in a number of ways. Altarum aims to support those making decisions about the future of AVs to ensure the desired benefits are realized.

Motor Vehicle Safety. More than 30,000 Americans die each year in motor vehicle crashes, and more than 2 million are injured. Human error contributes to more than 90% of these crashes. AV technology has the potential to significantly reduce motor vehicle crashes caused by human error.

Environment. The adverse health effects of tailpipe emissions are well-documented—higher incidence of respiratory disease, cardiovascular disease, and adverse pregnancy outcomes, to name a few. AV technology offers the potential for a cleaner environment and less pollution-related disease through more efficient driving. The environmental benefits could be offset, however, if the introduction of AVs encourages even more automobile use.

Land Use and Urban Design. Parking spaces occupy about 4,360 square miles in the United States and a third of all land area in some cities. With AVs able to drop off their owners and



then park themselves at remote locations, much of this space may be used for other purposes. Cities could become more compact, thereby improving walkability and opportunities for active transportation.

Stress. Studies have found that traffic congestion and delays are associated with high blood pressure and decreased job performance. AV “drivers” may experience lower levels of stress due to smoother traffic flow, less stop-and-go driving, and fewer accident-caused traffic jams. They may be able to enjoy their rides and even be productive while in the car.

Health Equity. At this early stage of development, no one knows for sure who will reap the greatest benefits from this new technology and, conversely, who will benefit the least. Historically, low income and underserved populations are the last to benefit from new technologies. It will be important to ensure not only that no subgroups are left behind but that attention and resources devoted to AVs do not detract from other services and systems that disproportionately affect underserved populations, such as mass transit.



Potential Negative Health Impacts of AV Technology

While numerous public health benefits could be realized with the introduction of AVs, negative consequences may also result. For example, "driving" a car may become so easy or even pleasurable that it discourages healthy behaviors such as walking or biking. Additionally, a reliance on AVs could contribute to the expansion of urban sprawl, discouraging such activities.

Why Should Public Health Engage Now?

The level of activity regarding AV technology is already frenetic. Nearly every major automobile manufacturer is planning for the emergence of AVs. Several have announced plans to have commercially viable AVs by 2020. States have already begun

passing laws regulating the testing of AVs, and the U.S. Department of Transportation has issued initial policy guidance.

Currently, few public health professionals are focused on the profound impact that AVs may have on public health. Altarum looks forward to supporting the public health community in becoming an influential voice in decisionmaking processes that, in many instances, are already underway.

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