

EMBARGOED UNTIL 30 JANUARY 2020 18.01 EST

Autonomous Vehicles Could Benefit Health If Cars Are Electric and Shared

A new ISGlobal study analyses the potential health impact of self-driving cars—the transport of the future

Barcelona, 31 January 2020. What impact will self-driving cars have on public health? The Barcelona Institute for Global Health ([ISGlobal](#)), an institute supported by "la Caixa", has taken part in a study that analysed the **potential risks and benefits of autonomous vehicles for public health**. The conclusions of the study, published in the *Annual Review of Public Health*, indicate that this new type of mobility could benefit public health if **the cars are electric and the model used is based on ridesharing**.

Forecasts indicate that, in 2020, **5% of car sales will involve self-driving vehicles** and that this figure could rise to 40% by 2030 (fully autonomous vehicles). 'Autonomous technology' refers to technology that can drive a vehicle without the need for any active physical control or monitoring by a human driver. Car autonomy is classified on a six-level scale starting at zero—a vehicle with no automation in which the driver performs all operating tasks and controls the driving environment—and going up to level five— a fully autonomous, completely automated vehicle.

David Rojas, first author of the paper and a researcher at ISGlobal and Colorado State University, explains the current situation: "At the international level, we are still seeing very little research or planning by the authorities in anticipation of the advent of these new transport technologies, despite the fact that autonomous vehicles have the potential to **significantly modify our cities and the way we travel. And this innovative autonomous technology will also have an impact on public health.**"

The authors of the study synthesised data from published research to identify the possible **direct and indirect** health impacts of autonomous vehicles on the population. The study also includes a series of **recommendations** aimed at policy makers, health professionals and researchers in the field.

"The advent of autonomous vehicles may result in either **health benefits or risks** depending on a number of factors, such as how the technology is implemented, what fuel and engines are used, how self-driving cars are used and how they are integrated with other modes of transport," asserts Rojas.

The use of autonomous vehicles is likely to reduce the number of road accidents. **One of the studies discussed in this paper estimated that if 90% of the cars in the United States were to become fully autonomous, an estimated 25,000 lives could be saved every year**, with economic savings estimated at over \$200 billion a year.

As well as providing benefits in terms of road safety, autonomous vehicles would also offer major opportunities for public health if the vehicles are **electric** and are used in a **ridesharing format** and integrated into a model that also prioritises **public transport, cycling and walking**. Such a model would promote physical activity, reduce air and noise pollution, and provide more public space for a healthy urban design.

However, self-driving vehicles could have a negative impact on public health if the future model is based on **fossil fuel engines and individual ownership**, leading to an increase in motorised traffic, greater sedentarism and worse air quality.

Author **Mark J. Nieuwenhuijsen**, researcher and Director of [ISGlobal's Urban Planning, Environment and Health Initiative](#), concludes: "We need to start planning the implementation of autonomous technology as soon as possible so as to minimise the risks and maximise the health benefits. This technology should be used to **support public and active transport, prioritising the most disadvantaged communities** and contributing to a shift in urban planning and transport models that will lead to a **healthier urban environment**."

Reference

David Rojas-Rueda, Mark J. Nieuwenhuijsen, Haneen Khreis and Howard Frumkin. Autonomous Vehicles and Public Health. *Annual Review of Public Health* 2020. <https://doi.org/10.1146/annurev-publhealth-040119-094035>

Graphic Material



A framework of autonomous vehicles and health determinants. Figure 2 from the study by Rojas-Rueda et al. Annual Review of Public Health 2020. <http://bit.ly/AutonomousVehiclesandPublicHealth>

About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between "la Caixa" and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the institute's Education and Policy and Global Development departments. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA programme of the Generalitat de Catalunya.

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