

Public transit agencies may need to adapt to the rise of remote work, says new study

April 9 2024



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Remote work could cut hundreds of millions of tons of carbon emissions from car travel—but at the cost of billions lost in public transit revenues, according to a new study.

Using the latest data on [remote work](#) and transportation behavior since the pandemic upended work arrangements, researchers at the University of Florida, the Massachusetts Institute of Technology and Peking University revealed how cities could meet their sustainability goals by promoting remote work.

The researchers found that a 10% increase in remote workers could lead to a 10% drop in [carbon emissions](#) from the transportation sector, or nearly 200 million tons of carbon dioxide a year across the U.S., thanks to fewer car trips. But the same proportion of remote work would reduce transit fare revenue by \$3.7 billion nationally, a whopping 27% drop.

[About 14% of the workforce](#) exclusively works from home, but [as many as half of all workers](#) may work remotely at least part of the time, according to different surveys.

"Transit agencies need to be very concerned," said Shenhao Wang, Ph.D., a professor of urban planning at UF who supervised the new study. "Yet overall we would expect less energy consumption from reduced [car travel](#). So the picture is very complicated, and whether the effects are positive or negative depends on the stakeholder."

Urban planners have long considered remote work as one way to reduce traffic congestion and carbon emissions. But before the COVID-19 pandemic, it was challenging to analyze the effects of remote work, because few employees worked from home. The rapid rise and continued investment in remote work caused by the pandemic finally allowed researchers the chance to see how the trend affects urban mobility.

The new study covered the period from April 2020 to October 2022 and included data from Google on remote work patterns, along with information from the Federal Highway Administration for car travel and

a national database for transit ridership. The researchers correlated transportation behavior with the rise and fall in remote work in different states and [metropolitan areas](#) to uncover the effect of increased remote work on car travel and public transit.

They discovered that public transit ridership fell more than twice as fast as car travel did in response to the same drop in on-site workers.

"People mostly rely on transit to go to work. When people start to work from home, their need to commute is largely reduced. So, a large portion of transit ridership was no longer needed," said Yunhan Zheng, Ph.D., a postdoctoral researcher at MIT and lead author of the new paper.

"On the other hand, many people rely on vehicles for trips other than going to work. They go shopping, they go to restaurants and [leisure activities](#). Those activities may not necessarily disappear when people work from home."

Because of these differences between driving and transit behavior, "this may pose a challenge for [transit agencies](#) in terms of their financial sustainability, so they may need to take some actions to cope with this. For example, they could provide more services during the off-peak hours in residential areas to better serve remote workers," said Zheng.

Zheng, Wang and their collaborators published their [findings](#) on April 9 in *Nature Cities*. The researchers plan to continue analyzing the effects of remote work on urban mobility as new data becomes available and employment trends move further past the immediate effects of the pandemic.

More information: Impacts of remote work on vehicle miles traveled

and transit ridership in the USA, *Nature Cities* (2024). DOI: [10.1038/s44284-024-00057-1](https://doi.org/10.1038/s44284-024-00057-1).
www.nature.com/articles/s44284-024-00057-1

Provided by University of Florida

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