

CityLab

## That Uber or Lyft Trip May Be Worse for the Planet Than Driving Yourself

A new study adds up the external costs that ride-hailing trips generate and finds them to be higher than those taken in a private vehicle.

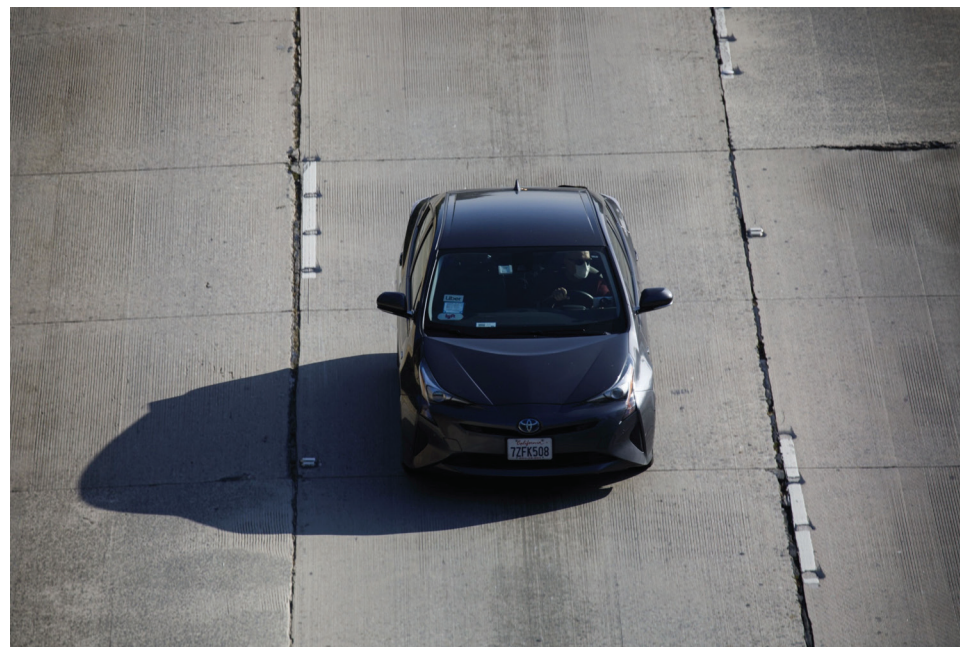
By Laura Bliss  
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A decade ago, Uber Technologies Inc. and Lyft Inc. charged into cities with a promise: By reducing personal car trips, ride-hailing businesses could both ease traffic and bolster the use of public transit. What happened was the reverse: A host of pre-pandemic research linked the rise of these services to sharp upticks in traffic and waning ridership on buses and trains.

Now a new study puts a price on the external costs that come with switching from a personal vehicle to one from a transportation network company (or TNC): about 35 cents per trip on average. And it finds that even a fully electrified fleet of ride-hailing cars may not fully mitigate the extra toll they exact on society compared to driving yourself.

“Even if you clean up the vehicles, it’s still not going to solve the problem of all the extra driving, which still costs others on the road,” said Jeremy J. Michalek, a professor of engineering and public policy at Carnegie Mellon University and one of the study authors.

In economic terms, “externalities” are the costs or benefits of a particular good that are borne by others, rather than by the individual making or purchasing it, and which are generally not accounted for in the price of the good. To determine the role that ride-hailing plays in generating these often-hidden effects, Michalek and his co-authors simulated replacing 100,000 private passenger vehicle trips with TNC trips in six U.S. cities, using publicly available ride-hailing data from New York City, Austin, Chicago and the state of California. Through a review of other studies that have quantified the externalities of driving in general, such as local air pollution, greenhouse gas emissions and traffic deaths, they approximated the dollar amounts that society saves or spends



A ride-hailing vehicle on the freeway in Los Angeles. *Photographer: Patrick T. Fallon/Bloomberg*

when travelers choose Uber or Lyft over their own automobiles.

Ride-hailing helps on at least one front, the researchers found: air pollution. When a fuel-combustion engine starts cold, it releases more particulate matter and other pollutants than a warm engine does, because its catalytic converter isn’t operating efficiently yet. Since ride-hailing vehicles are in use more of the time than privately owned cars, their trips reduce the air pollutants associated with ignition. That, in addition to the fact that TNC vehicles are newer and lower emitting than passenger vehicles on average, meant that the simulated TNC shift brought a 50% to 60% decrease in local air pollution costs.

But that benefit was undone by the negative impacts of deadheading, or the time in between trips when drivers are travel-

ing passenger-free to their next pickup. A 2019 report from Uber and Lyft showed that deadheading accounted for roughly 40% of all TNC miles across six U.S. cities. The Carnegie Mellon researchers found that the added vehicle travel from TNC deadheading increased fuel consumption and its associated greenhouse gas emissions by roughly 20%, and drove up social costs linked to congestion, crashes and noise by 60%.

All told, switching from a private car to a TNC increased net external costs by 30% to 35%, or about 35 cents per trip.

“Just by avoiding starting up your personal vehicle, you’re avoiding some air pollutants when you take a TNC trip,” said Michalek. “But that’s not enough to make up for all the driving to and from passengers that vehicle is doing.”

The costs to society tripled when the shift was from public transportation to a ride-hailing vehicle, the researchers found. Those impacts are in line with what previous studies have found about ride-hailing's effects on traffic congestion and deaths. More surprising is that when Michalek and his collaborators simulated a fleet of 100% zero-emission TNC vehicles – charged by a zero-carbon grid – the external costs of ride-hailing only dropped by 16% to 17%.

In other words, even a fully electrified ride-hailing industry – the likes of which Uber and Lyft have both promised by 2030 – would not be enough to make up for the congestion and deaths created by the added TNC miles. The only way to counteract those effects was by sharing trips, the researchers found: If an individual ride was pooled, it could have lower external costs than a personal car. (But that's still worse than taking public transit.)

Asked for comment, a communica-

tions manager at Lyft pointed to personal vehicle trips as the biggest contributor to transportation's greenhouse gas emissions, and said that Lyft is working on technology improvements to increase driver utilization and reduce deadheading while also bringing back shared rides, which were eliminated during the pandemic. He also referenced the company's investments in U.S. bikeshare systems. Uber did not respond to a request for comment.

Yet the new study's findings raise the question of whether policymakers ought to do more to mitigate the consequences of ride-hailing – for example, by pricing it accordingly, Michalek said. But it can be tricky to tax only certain types of vehicle travel, when all of its forms cost society something for which drivers don't currently pay.

“What the economists would like to do is estimate the external costs of all modes of transportation, including transit, the personal car and TNCs, and then add that

to their cost,” Michalek said. “But in the absence of that, it does look like there's justification to encourage pooling and discourage displacement of transit.”

As one model, the city of Chicago now charges an additional fee to TNC trips traveling into the dense downtown core, but a slightly lower one if they are pooled. New York City is working to implement congestion pricing in Manhattan, while the San Francisco Bay Area's express lanes charge drivers to ease traffic.

Gregory Erhardt, a professor of engineering at the University of Kentucky who has studied the effects of ride-hailing on public transit, praised the new research and agreed that cities should do more to mitigate the industry's negative impacts while taking advantage of the positive ones, such as by providing late-night transportation services and reducing drunk driving. “There's really a need to think about incentive structures here to try and squeeze some benefit out of it where we can,” he said.