

Rideshares outperform taxis in an emergency, shows study

April 21 2023



Credit: Unsplash/CC0 Public Domain

Urban disasters bring uncertainties to society, urban transportation systems, and businesses. In a new study, researchers examined urban emergencies such as terrorist attacks and subway shutdowns to compare

how a traditional taxi system and a ridesharing platform performed afterwards. The study found that the ridesharing platform significantly outperformed the taxi system in coping with emergencies, largely due to the benefits of technology.

The study, by researchers at Carnegie Mellon University (CMU) and Peking University, appears in *Information Systems Research*.

"Our study offers important insights into the design of platform strategies, especially for stimulating labor supply and providing incentives for urban transportation systems to adopt and use technology in response to urban emergencies," says Beibei Li, associate professor of IT and management at CMU's Heinz College, who coauthored to the study.

Emergencies in urban settings can result in significant human and economic loss if they are not handled properly. While research has focused on developing and evaluating technology for [emergency management](#), the field lacks solid evidence about how technology-initiated digital systems perform under such stressors.

Since urban transportation systems are a crucial part of cities' [emergency preparedness](#), in this study, researchers sought to understand how technology-equipped transportation services (i.e., ridesharing platforms such as Uber) cope with uncertainty and help facilitate emergency relief. Researchers collected [taxi](#) and for-hire vehicle records in New York City from January 2015 to December 2017.

They considered how the services performed in multiple types of urban disasters, including [terrorist attacks](#), subway shutdowns, and car crashes, measuring platform-level use based on the hourly number of trips.

Ridesharing platforms outperformed taxi companies after urban

emergencies. For example, while both taxis and ridesharing services saw a decline in the use of their services after the September 17, 2016 bombing and the October 31, 2017 truck attack in New York City, the ridesharing platforms experienced a smaller decline. Several possibilities explain the better performance of ridesharing platforms, chief among them the effect of technology used in rideshare platforms and the elasticity of supply of rideshare vehicles and drivers.

The study also found that locations with higher densities of people were less affected by urban emergencies than those with lower densities. And the decrease in individuals' use of taxis at such times was smaller during rush hours and evenings than at midnight and during the daytime. In contrast to this fluctuation in taxi use, daily use of ridesharing platforms was relatively stable.

"Disasters are critical threats to the stability of urban transportation systems," suggests Yingjie Zhang, assistant professor of marketing at Peking University's Guanghua School of Management, who led the study. "Our work sheds light on how technology supports emergency management, as well as how the public reacts to the adoption of technology during an urban crisis."

Among the limitations of the study, the authors point out that the data they used allowed them to examine only successfully fulfilled trips. In addition, they were unable to consider confounding factors, such as traffic that had been reallocated after an emergency or the redistribution of drivers away from an attack.

"In light of our findings, service providers and [city planners](#) should reevaluate and improve their mobility platform, particularly under emergencies, disasters and hazards," urges Sean Qian, professor of Civil and Environmental Engineering and Heinz College at CMU, who coauthored the study. "Also, passengers with an urgent need to get

someplace during emergencies may want to consider a [ridesharing](#) or ridehailing service first, provided that they have relatively stable supply and technological support."

More information: Yingjie Zhang et al, Ridesharing and Digital Resilience for Urban Anomalies: Evidence from the New York City Taxi Market, *Information Systems Research* (2023). [DOI: 10.1287/isre.2023.1212](#)

Provided by Carnegie Mellon University

Citation: Rideshares outperform taxis in an emergency, shows study (2023, April 21) retrieved 11 December 2023 from <https://techxplore.com/news/2023-04-rideshares-outperform-taxis-emergency.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.