

Left behind: How disruptive technology may choose society's winners and losers

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New platforms like home- and ride-sharing services often are praised for leveling the playing field, cutting out the middle man and boosting the economy.

It's difficult to fully understand their impact, however, as new products

and services hit the market nearly every day. What if the explosion of disruptive technology is exploiting our biases, rather than helping us overcome them?

"Ultimately, we think that some of these technological platforms are global solutions," said Mohammad Rahman, a professor in Purdue University's Krannert School of Management who studies digital transformations, "but we often forget that we interact with them in a very localized context."

This phenomenon is highlighted by new findings in a [working paper](#) by Rahman and doctoral student Mohammed Alyakoob, who analyzed 10 years of Airbnb and Yelp reviews, as well as employment data from the U.S. Bureau of Labor Statistics, to determine Airbnb's impact on local restaurants in New York City.

The researchers found that Airbnb guests in majority black neighborhoods were less likely to spend money at nearby restaurants and were half as likely to return compared to predominantly white areas. The guests were more likely to leave reviews with keywords such as dangerous, shady or risky, Rahman said, although their perceptions of safety were significantly worse than the actual reported crime statistics.

"The review contents reveal that Airbnb visitors are more likely to discuss negative aspects of a local area that relate to safety if they are staying in a predominately black zipcode," Rahman said. "Airbnb visitors may come to a black area without fully understanding the demographic makeup of a specific location. Over 60% of Airbnb hosts in predominately black areas, for example, are not black themselves."

Overall, average neighborhoods with a rise in Airbnb activity also enjoyed a spike in restaurant employment and Yelp visitor reviews among nearby restaurants, translating to an estimated \$1 million in

additional [tourism](#) activity, according to the study. This spillover effect was not realized, however, in neighborhoods where 50 percent or more residents were black or Hispanic.

"Airbnb has made repeated claims that it helps the local economy in black neighborhoods, especially in New York City," Rahman said. "We do not find any evidence of that [economic spillover](#) effect."

Complementary technologies could make matters worse. When visitors consult Google for the highest rated restaurants and hail an Uber to get there, they are missing an opportunity to engage with the community in which they're staying, Rahman said.

"Technology allows us to find a lot more nuanced information about areas before we go there, and when you take a collection of technologies, then it becomes even more challenging," he said. "We're lowering the cost of error with all these technologies, but in the process, we're also losing the serendipity of unknown, of giving someone a chance. That's out, that's gone or that's minimized today."

Just as humans are imperfect, so is their technology. The oncoming wave of self-driving cars and other digital assistants, relying on [artificial intelligence](#) to choose where to get groceries or stop for gas, likely will imitate their users' prejudices, Rahman said.

"Digital assistants are going to have a lot of say in influencing the purchases people make, and the data you feed into AI is going to dictate the kind of suggestions these systems are going to offer to people," he said. "If there is a lot of bias in training these AI solutions, we're going to see a lot of bias in terms of consumption. A lot of these biases we have—the neighborhoods where we choose to eat or stop for gas—could be systematically injected into our preferences in a much bolder way than today."

Rahman's work aligns with Purdue's Giant Leaps celebration, acknowledging the university's global advancements made in artificial intelligence as part of Purdue's 150th anniversary. This is one of the four themes of the yearlong celebration's Ideas Festival, designed to showcase Purdue as an intellectual center solving real-world issues.

More information: Mohammed Alyakoob et al. Shared Prosperity (or Lack Thereof) in the Sharing Economy, *SSRN Electronic Journal* (2018). [DOI: 10.2139/ssrn.3180278](https://doi.org/10.2139/ssrn.3180278)

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