Opinion **Technology**

Living in remote areas shouldn't be a death sentence

Mobile phone usage patterns can help to predict poverty and target service delivery in hard to reach places

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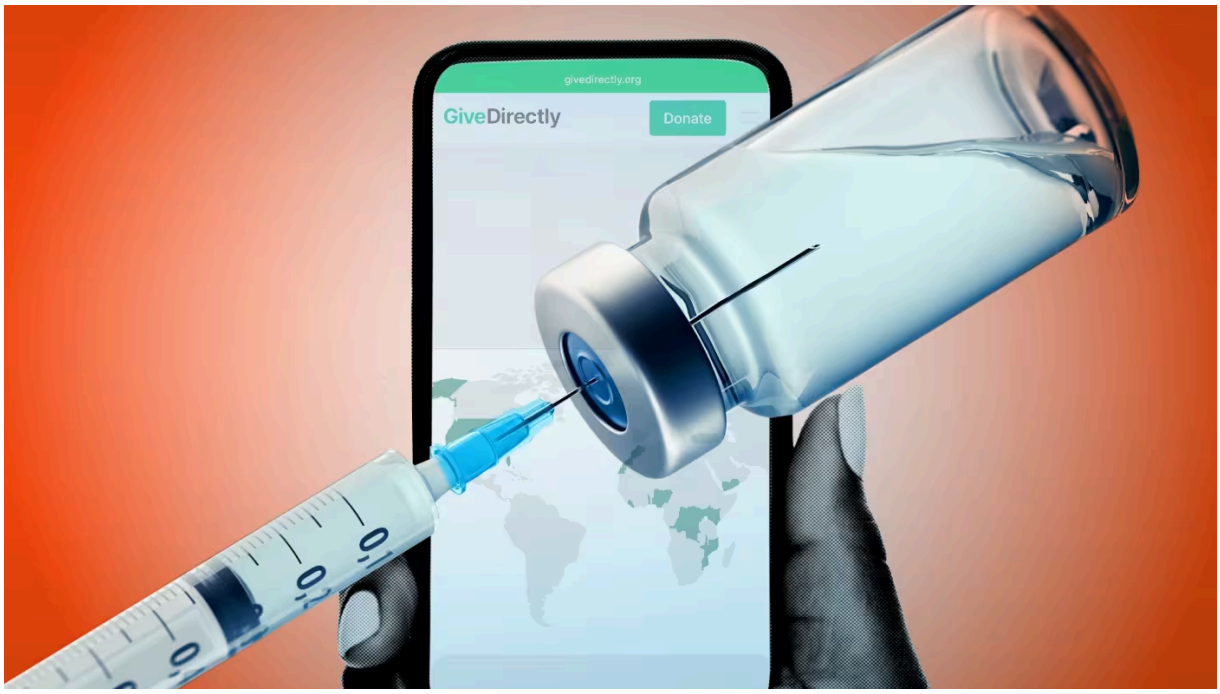

The Covid-19 pandemic suddenly made everyone 'remote', catalysing new innovations to deliver services © FT montage/Getty/Dreamstime

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In late 2021, about a year after the first Covid-19 vaccines came to market, vaccination rates remained disturbingly low in many African countries. As the months passed, the gap in vaccine coverage increased. When asked why Africa was not receiving the vaccine while North America and Europe were getting saturated with excess doses, some pharmaceutical executives blamed vaccine hesitancy. Lack of doses was not the constraint, they argued; hesitancy kept supplied doses from being used before they expired.

My colleagues and I sought to evaluate this claim. Co-ordinated surveys of vaccine hesitancy across 10 countries in the global south plus the US and Russia revealed that residents of nearly all nations in our sample were more willing to take the vaccine than Americans or Russians. The reason for low vaccine coverage was more mundane: a simple lack of access.

For the average rural person in Sierra Leone, getting to the nearest vaccine centre would require a 7-hour round-trip and cost them 10-12 days of wages. The fundamental problem here is remoteness. People live in areas that are difficult to reach, and where it is expensive to deliver public services like clinics, schools or banks. About 15-20 per cent of west Africans live at least an hour away from towns of 20,000 or more people — assuming they have access to transport.

This remoteness undermines public service delivery and is predictive of worse educational, economic and health outcomes. Even when governments place schools and clinics in remote places, the skilled staff who prefer to live near cities don't show up; there are high rates of teacher and health worker absenteeism. Banks avoid such places because the small deposits they collect don't justify the costs of maintaining a branch. Agricultural extension workers do not spend as much time in remote villages to teach farmers about new technologies, and crop productivity remains low. The Covid-19 pandemic suddenly made everyone "remote", catalysing new innovations to deliver services remotely. When people live in areas that are hard to reach physically, technology can offer cost-effective alternatives. A group at Oxford experimented with delivering one-on-one tutoring to primary school students in five developing countries over mobile phones. The sessions consistently and significantly improved learning outcomes.

During the pandemic, sending financial relief to people who rely on current income to feed their families was a relatively straightforward task in the US; the government sent cheques based on tax return data. But how do you identify the poor in Togo or Bangladesh, where almost no one who needs that support submits tax returns? Not only are these places hard to reach, we also know much less about them, and that prevents states from delivering services efficiently.

Policymakers can rely on a key insight to target services to those who need them most: rich and poor people use their phones differently and their phone usage patterns leave clues about their level of poverty. For example, poor people tend to top-up their phone credit more frequently in smaller increments, and richer people use mobile data more often and have wider networks of call contacts. Mobile operators could use machine learning to predict people's poverty based on phone usage patterns and then run the model on their entire subscriber base to give the government "predicted poverty" rates.

Togo successfully implemented it during the pandemic, and in Bangladesh we tested the procedure's accuracy relative to popular paradigms for poverty targeting. While it was not more accurate than a proxy means test, the mobile phone approach is much cheaper to implement at scale because it avoids expensive surveys. The NGO GiveDirectly used our phone-based algorithm to deliver targeted transfers to the poorest households in communities hosting Rohingya refugees in Bangladesh.

Mobile phones would not have solved Africa's vaccine access problem, which requires physical delivery. But it did spark other new post-pandemic innovations, such as delivering bundles of needed health services using mobile clinics. Such services can also tailor advice to farmers based on local weather conditions and pests.

When a place is hard to reach, service quality tends to be low and delivery expensive. China has encouraged people to move to places where services are easier to provide. So, another way to deal with rural poverty is to get rid of poor, remote places altogether. But short of paying people to move, mobile phone targeting is a promising path to poverty alleviation.

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