Study reveals significant discrepancies in common poverty measurement approaches

February 5 2024

Credit: Pixabay/CC0 Public Domain

Methods commonly used to measure poverty can lead to vastly different conclusions about who actually lives in poverty, according to a new Stanford University-led study. Based on household surveys in sub-Saharan Africa, the first-of-its-kind analysis, published in *Proceedings of*

the National Academy of Sciences, underscores the importance of accurately defining and measuring poverty.

Its findings could help inform how governments, nonprofit organizations, and international development agencies allocate resources and evaluate the effectiveness of [poverty](#)-alleviation policies around the world.

"They say you can't manage what you don't measure," said study senior author Eric Lambin, the George and Setsuko Ishiyama Provostial Professor in the Stanford Doerr School of Sustainability and senior fellow at the Stanford Woods Institute for the Environment.

"In our study, we find how one chooses to measure poverty can completely change the extent to which programs and policies are managed and reach vulnerable populations," said study lead author Christine Pu, a Ph.D. student in environmental engineering at the Stanford Doerr School of Sustainability.

Comparing definitions

Governments around the world want to support households living in poverty, but it's not always easy to determine which households need help. For example, two U.S. families of the same size could be classified as poor—and eligible for public support programs like food assistance and subsidized utility services—because their annual income is less than the federal $31,200 poverty guideline.

In actuality, the families might have dramatically different overall costs or assets. For example, one might own their home and two cars, while the other might rent their home and depend on public transportation.

The study examined four widely used poverty measurement approaches.

Each metric is based on different priorities ranging from reported assets, such as appliances, to self-defined well-being milestones, such as being able to send children to school. Working with colleagues in Ethiopia, Ghana, and Uganda, the Stanford researchers surveyed 16,150 households.

Surprisingly, the research revealed almost no agreement in how these approaches ranked households by poverty status. The lack of agreement persisted even among households classified in the bottom 20% in terms of poverty.

Even after controlling for geographic variability, the study found weak correlations between the measurement approaches, indicating that the discrepancies were not simply due to regional differences. The differences in relative rankings were not small either. On average, households' poverty rankings differed by 25 percentage points. In other words, a household ranked in the 25th percentile by one measurement might be ranked as the most impoverished household or as the median household by another measurement.

"Organizations that adopt a measurement approach without reflecting on how it fits their conception of poverty are, at best, rolling the dice about creating classifications of households that work in alignment with their mission and objectives," the researchers write. "At worst, these organizations are adopting methodologies that may be wholly inappropriate for their poverty alleviation goals."

Choosing wisely

One striking example of this conceptual misalignment is the U.S. government's Demographic and Health Survey (DHS) Program wealth index. The index was designed to explain disparities in health outcomes. However, it is widely used to represent a household's poverty status.

This application can lead to counterintuitive rankings of households. For example, whereas most rural development specialists would consider livestock ownership to be a sign of family wealth, the DHS index lowers the rankings of households for every additional livestock unit that they own because rural households that own livestock typically have limited access to health services.

Given the widespread influence of the DHS wealth index, this measurement problem is being propagated and amplified through many applications and decision-making processes. The issue is not unique to the DHS wealth index, but emblematic of a larger problem embedded in many indices and measurement tools.

Overall, the findings suggest that the choice of a measurement approach can lead to very different conclusions about who qualifies for poverty alleviation programs and policies, and how much these efforts achieve. The authors argue that organizations should carefully consider their definition of poverty and select measurement approaches that align with their specific objectives.