

# Can remote survey methods yield representative samples in LMICs?



## Key Findings

- In-person recruitment remains the best way to yield nationally representative samples.
- Remote recruitment usually over-represents towards educated and urban respondents, which can be partially corrected by reweighting.
- Survey weights have a very limited ability to fix the problem, particularly when the error is large or the target variable is uncorrelated with basic demographic features.
- Given concerns about remote methods, researchers who use them should compare their samples to trusted national data.

## POLICY BRIEF

Remote survey methods can often be deployed faster and at lower cost than traditional in-person surveys, but national samples recruited via remote methods tend to be less representative. Surveys using phone interviews can more reliably estimate basic population statistics when respondents are recruited from a previous in-person sample rather than RDD or social media. Survey weights are not usually sufficient to correct for these biases ex-post.

## Recruiting representative samples

Social scientists rely on national surveys to estimate population statistics. In high-income countries, these are often conducted using remote methods, where individuals are recruited or interviewed using phone or internet platforms. These methods offer significant advantages over in-person surveys, but their adoption has been slow in low- and middle-income countries (LMICs), where limited phone and internet coverage raises concerns about the ability of remote methods to produce nationally representative samples.

During the COVID-19 pandemic, some survey projects continued in-person data collection. Others relied on phone interviews, drawing from pre-existing national samples recruited in person for nationally representative in-person surveys that collected phone numbers, including national Living Standard Measurement Surveys (LSMS). Other studies relied on remote recruitment methods, such as random digit dialing (RDD) or social media sampling. Researchers in LMICs have often been reluctant to rely on remote methods where mobile phone ownership and network coverage are both low and highly correlated with regional and demographic characteristics, resulting in biased samples due to non-response and coverage errors. Our study aimed to quantify the extent of these combined errors using 31 pandemic-era survey samples to see if and when remote surveys can produce nationally representative samples in LMICs.

## Comparing selection bias from different survey methods

We compared 31 survey samples from four multi-national survey projects, each with a different combination of recruitment method and interview mode. Each asked similar questions over roughly the same time period. To provide a benchmark for evaluating how “representative” these samples were, we relied on official, large-scale, nationally-representative in-person surveys, usually the most recent available LSMS dataset. We took the differences between these benchmarks and the estimates from each national survey dataset as a measure of selection bias and compared the benchmarks to both weighted and unweighted averages. The unweighted estimates offer insight into the type of households that were less likely to be recruited in the first place, while the weighted estimates indicate the extent to which this bias can actually be corrected. We considered four sources across nine countries.

Survey Name	Research for Effective Covid Response (RECOVR)	COVID Trends & Impact Survey (CTIS)	Quality of Democracy & Governance	High-Frequency Phone Surveys (HFPS)
Organization	IPA	Facebook	Afrobarometer	World Bank
Recruitment Method	Random Digit Dialing	Self-selection on platform	National household sampling	LSMS respondents
Interview Mode	CATI (Phone interview)	Online, Self- administered	In-person interviews	CATI (Phone interview)
Countries included				
Burkina Faso	✓	✓	✓	✓
Ghana	✓	✓	✓	
Kenya	✓	✓	✓	✓
Nigeria	✓	✓	✓	✓
Rwanda	✓	✓		
Sierra Leone	✓	✓	✓	
Philippines	✓	✓		
Mexico	✓	✓		
Colombia	✓	✓		✓

## Results

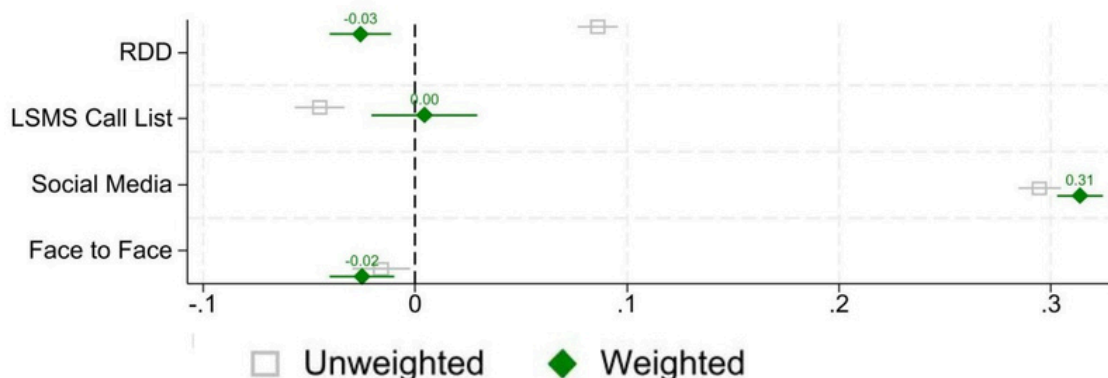
We use pooled results across all nine countries to discuss broad findings about each survey method, but focus heavily on country-level results to emphasize the role of region and context when evaluating different approaches. We compared the sample averages for a range of variables to those of their national benchmark LSMS.

### Demographics

RDD and social media recruitment consistently over-sampled men, younger people, household heads, and urban households. Except for urbanicity, re-weighting did not generally address these imbalances. In-person and call list recruitment, on the other hand, tended to be closer to the national estimates, with the exception of older adults, which remained under-represented.

Remote methods frequently recruited less representative samples overall. As shown below in Figure 1, for example, the gray boxes show that both RDD and social media surveys recruited far more respondents living in urban areas compared to the HFPS and Afrobarometer surveys. While re-weighting resolved a rural bias among the call list samples and came close to adjusting for the bias in RDD samples, it did nothing for the social media samples.

**Figure 1. Percentage of respondents in urban areas by method**



## Education

RDD and social media surveys dramatically under-recruited individuals with less than a basic education (by 20 and 25pp, respectively), with in-person recruitment also under-representing this group, though at a much lesser scale (10pp). For those with basic education, social media recruitment showed an important underestimation of 30pp, while RDD and call lists tend to undersample this group by 9pp. All recruitment methods over-represented respondents with secondary education, ranging from 3 to 12pp, except for the social media sample, which did so by 50pp. In this case, re-weighting did adjust reasonably well for RDD samples, but had no little to no effect for the rest of the recruitment methods.

## Employment

Respondents who are employed or self-employed prior to March 2020 are over-represented on average in RDD recruited samples (8pp), and by fairly small amounts in call list and in-person recruited samples (+2 and -2pp, respectively). Social media studies did not include sufficient employment data. Weighting does not effectively correct for these biases in any of the modalities or samples, and in fact primarily result in increasing the variance of the estimates.

# Lessons for Researchers and Policymakers

## RDD and social media recruitment produce the most biased samples

After analyzing 31 separate survey samples from nine countries using different methodologies, we see that RDD and social media recruited samples tend to see dramatic biases in most, if not all, the parameters of interest. This can be explained by a variety of factors, including coverage and nonresponse bias, but particularly because of the sampling frame in which they are based—active phone and social media users—. Re-weighting did help correct RDD recruited samples and bring them closer to the national benchmarks, but it had practically no effect on social media recruited samples. Call list and face-to-face recruited samples, on the other hand, consistently come much closer to recruiting nationally representative samples before any weights are applied.

## Sampling weights designed with respect to specific outcomes of interest can address

For researchers and policymakers looking into exploring the value and convenience of remote survey methods—particularly those working in LMICs—we can say that, even with their limitations, data from these can still be informative if employed using sampling weights specifically designed with respect to the outcome of interest. However, it is important to note that heavily under-represented subgroups will not be adequately represented if they make up a very small portion of the initial sample, regardless of weighting. This means that a biased recruitment will inevitably lead to biased estimates.

## How accurate do survey estimates need to be?

These results serve to inform expectations of remote methods in new contexts where there is insufficient information on what response rates or sampling biases to expect. The mixed results on re-weighting should not discourage researchers from employing statistical adjustments, but to make sure to use sampling frames that are known to be representative of the community in question and target variables and weighting methods suitable for the context. To appropriately inform research design decisions in a new context, these results must be weighed alongside the cost and difficulty of each approach, as well as careful consideration as to what degree of survey error is likely to be “good enough.”

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This brief highlights key findings from the [research paper](https://poverty-action.org/research-methods), “Representativeness of remote survey methods in LMICs: A cross-national analysis of pandemic-era studies”. The paper is part of a series of research projects assessing remote survey methods during the COVID-19 pandemic. <https://poverty-action.org/research-methods>

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