Preparing for the Next Crisis by Harmonizing Measures of Food Security

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A best practice is a method or technique that has been generally accepted as superior to any alternatives because it produces results that are superior to those achieved by other means or because it has become a standard way of doing things. This document is one of a series of reports from the Food Security Portal on best practices for emerging topics in agriculture and food security policy.

Introduction

This short brief reflects on research generated during the first year of the COVID-19 pandemic and highlights three key limiting problems that emerged. These problems motivate three best practices that research and policy communities should consider when designing questionnaires and implementing surveys. These best practices will help us be better prepared and equipped to generate rapid and policy-relevant research when the next crisis occurs.

In the immediate aftermath of the onset of the COVID-19 pandemic, the nature of a possible spike in food insecurity was an urgent question facing policymakers around the world. Researchers quickly conducted analysis and wrote papers assessing changes in food security from before and after the onset of the pandemic (Abay et al., 2023; Adjognon et al., 2021; Aggarwall et al., 2020; Amare et al., 2020; Ceballos et al., 2020; Hirvonen et al., 2020; Kansiime et al., 2021; Mahmud and Riley, 2021). This work represents a tremendous effort on behalf of researchers to quickly adjust and adapt data collection efforts to the complicated and dynamic first few months of pandemic and required the implementation of phone surveys, often following up on a set of households surveyed sometime prior to the onset of the pandemic. A set of authors later followed up on this work and published “longer term” analysis extending trends in measures of food insecurity for the entire first year of the pandemic across four African countries (Rudin-Rush et al. 2022).

Bloem and Farris (2022) documented six early lessons from the microeconomic literature studying trends in food security amid the COVID-19 pandemic. These lessons include the following:

1. Most, but not all, studies find evidence of increasing food insecurity amid the COVID-19 pandemic.
2. Increased food insecurity appears to be associated with pandemic-related disruptions in food markets and earned income.
3. Despite evidence of pandemic-related disruptions across all studies, there is evidence of resilience among some subpopulations.
4. Studies that compare changes in food insecurity over time between rural and urban areas find conflicting results.

5. Studies that compare changes in food insecurity over time between socio-economic groups find conflicting results.
6. Studies that examine the role of social protection programs find that these programs help mitigate the observed adverse change in food insecurity associated with the COVID-19 pandemic.

Bloem and Farris (2022) also identified four points of caution regarding this literature. These points include the following:

1. Existing microeconomic data are limited in geographic scope.
2. The studies exclusively examine immediate or short-term changes in food insecurity associated with the COVID-19 pandemic.
3. Each study possesses critical limitations, as the widespread consequences of the COVID-19 pandemic make finding a valid comparison group within the available data difficult.
4. The outcome variable measuring food insecurity differs across many studies, complicating direct comparisons across studies.

In this brief, I will review three fundamental problems limiting the literature studying changes in food security amid the COVID-19 pandemic and discuss how we can be better prepared for the next crisis by following three best practices.

Limiting Problems

The analysis of Bloem and Farris (2022) revealed at least three problems related to how researchers measure food security and how that affects our ability to inform rapid and policy-relevant responses amid crises.

First, some studies conduct rapid analysis of trends in food security amid the pandemic but do not have access to panel data dating back to before the pandemic.

One of the first instincts many researchers had when the COVID-19 pandemic began was to implement a rapid and remote data collection effort to measure food security, among other things. For example, Mueller et al. (2021) combine data from Bangladesh, Kenya, and Nigeria from October 2020 through April 2021. Additionally, Dasgupta and Robinson (2022) use data from Armenia, Cambodia, Chad, Djibouti, Ethiopia, Kenya, Malawi, Mali, Nigeria, South Africa, and Uganda and do not include ‘‘pre-pandemic’’ data in their analysis. Finally, Maredia et al. (2022) study Kenya, Zambia, Mali, Nigeria, and Senegal from September through November 2020.

Ultimately, results from these studies are unable to make comparisons to pre-pandemic measures of food security. This is a critical limitation. As noted by Bloem and Farris (2022), one of the most consistent findings across studies that have access to pre-pandemic measures of food security and assess changes in these measures during the first few months after the onset of the pandemic is a dramatic spike in food insecurity. Without comparisons to pre-pandemic data, studies that only assess trends in food security after the onset of the pandemic are not able to account for any dramatic and immediate changes in food security. This could lead to misleading conclusions if trends observed only after the onset of the pandemic are effectively rebounding from an initial (and unobserved) dramatic spike in food insecurity.

Second, measures of food security included in surveys before the onset of the pandemic often did not align with the measures included in surveys conducted during the pandemic.

Differences included inconsistent timeframes for assessing food security dimensions (i.e., in the last 12 months vs. in the last 30 days vs. in the last seven days) and truncated survey modules included in phone surveys relative to in-person surveys. Rudin-Rush et al. (2022) take stock of the data collected via the World Bank's Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) project. In May 2020, the LSMS-ISA team pivoted to conduct rapid phone surveys using a sampling frame based on the pre-pandemic in-person surveys. Ultimately, Rudin-Rush et al. (2022) are only able to use data from Burkina Faso, Ethiopia, Malawi, and Nigeria. Although the World Bank also collected high frequency phone survey data from Chad, Djibouti, Georgia, India, Kenya, and Uganda, the data from these countries lack pre-pandemic information on food security.

Even though pre-pandemic data exist and can be matched at the household level with data collected via the high-frequency phone surveys in Burkina Faso, Ethiopia, Malawi, and Nigeria, challenges relating to the comparability of these measures of food security persist. Each of these surveys aim to measure food security with the food insecurity experience scale (FIES), which includes eight survey questions about a respondent's experience in various domains of food insecurity at the household level. These eight questions generally include the following items:

- FS1: Have household members been worried that they will not have enough to eat because of a lack of money or other resources?
- FS2: Have household members been worried that they cannot eat nutritious foods because of lack of money or other resources?
- FS3: Have household members had to always eat the same thing because of lack of money or other resources?
- FS4: Have household members had to skip a meal because of lack of money or other resources?
- FS5: Have household members had to eat less than they should because of lack of money or other resources?
- FS6: Have household members found nothing to eat at home because of lack of money or other resources?
- FS7: Have household members been hungry but did not eat because of lack of money or other resources?
- FS8: Have household members not eaten all day because of lack of money or other resources?

In Burkina Faso, these eight questions were asked in the pre-pandemic survey and COVID-19 surveys, but the reference period differed. In the pre-pandemic survey, the reference period for all eight questions was the previous 12 months so that the measurement could capture the seasonal nature of food insecurity for agricultural households. However, the COVID-19 phone surveys implemented in Burkina Faso used a 30-day reference period. In Ethiopia and Malawi, by contrast, the pre-COVID survey asked about food insecurity using a seven-day reference

period. In the COVID-19 phone surveys, the reference period is the previous 30 days, as survey rounds occurred roughly 30 days apart. Additionally, in Malawi, FS3 and FS8 were not included in the pre-pandemic survey. Ultimately, only in Nigeria were all eight FIES questions phrased in the same way and with the same recall period for the pre-pandemic survey and COVID-19 phone surveys.

Rudin-Rush et al. (2022) addressed these inconsistencies by constructing a standardized measure of the raw FIES score. Specifically, for each household in each country in each round, the authors counted the number of affirmative answers to each of the FIES questions. They then standardized this variable such that the variable has a mean of zero and a standard deviation of one. They generated this standardized variable separately for each country for the pre-pandemic surveys. For the COVID-19 phone survey data, the authors standardized by country across all survey rounds, as the questions and reference period were the same throughout all COVID-19 phone survey waves. This approach allowed the authors to compare trends in deviations from the average number of affirmative answers to the FIES questions within each country in the pre-pandemic survey data and the high-frequency phone survey data collected after the onset of the pandemic, but it also complicated the interpretation of the results from their analysis.

There were, of course, practical reasons for making these changes. The desire for high-frequency monitoring amid a crisis and the need for a short questionnaire for a phone survey were most certainly key factors leading to these changes in measurement. However, these inconsistencies complicated, if they did not entirely prevent, the ability of researchers to conduct sound research.

Third, measures of food insecurity differed across surveys, limiting researchers' ability to generate generalizable knowledge from the literature that quickly emerged in the first year of the COVID-19 pandemic.

Food security is a complex concept. The United Nations Food and Agriculture Organization (FAO) uses a broad definition of food security that highlights the multidimensional nature of the concept. According to the FAO, food security exists when "all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy lifestyle" (FAO, 1996; FAO, 2009). Although this definition of food security is widely accepted, challenges persist in consistently measuring food security across time and space (Carletto et al., 2013).

Bloem and Farris (2022) showed that studies in the literature studying trends in food security amid the COVID-19 pandemic use different measures of food security. For example, some studies use the FIES (Adjognon et al., 2021; Amare et al., 2020; Kansiime et al., 2021). Other studies use a variety of indicators that ultimately serve as a proxy for food insecurity, such as the amount of dietary diversity and food consumption (Aggarwal et al., 2020; Hirvonen et al., 2020), food expenditures (Mahmud and Riley, 2021), the food gap (Abay et al., 2023), and food access (Ceballos et al., 2020). The variety of survey tools used to measure food insecurity make clear comparisons between studies challenging.

Without knowing how each of these measures relate to each other, it is ultimately impossible to draw general conclusions from this literature, despite the massive amount of effort that went into producing these studies in such a short amount of time. Instead, generalizable conclusions can only consider the direction of changes and cannot reasonably reflect on the magnitude of the changes in measures of food security across these studies.

Best Practices

These three problems embedded in the literature studying changes in food insecurity associated with the COVID-19 pandemic motivate three corresponding best practices for researchers, and anyone who helps design and manage data collection efforts, to consider in preparation for the next crisis.

First, ensure a reliable measure of food security is included in ongoing surveys.

Much of the data available in the immediate aftermath of the onset of the COVID-19 pandemic did not include a reliable measure of food security, hindering the ability of researchers to account for immediate changes in measures of food security compared to before the onset of the pandemic. Given the importance of food security amid crises, it is imperative that ongoing surveys—such as the World Bank's LSMS-ISA surveys— include a reliable measure of food security. We must learn from the experience of the COVID-19 pandemic and include a set of questions measuring important dimensions of welfare, including food security.

Second, harmonize at least one measure of food security across all ongoing surveys.

Despite the complexity of food security on a conceptual level, researchers need to come to a consensus about what measure (or measures) of food security are reliable in a wide range of contexts. Ensuring that we use the same measure of food security across surveys will enable comparisons of results across surveys and contexts. This will help researchers and policymakers draw more generalizable conclusions when the next crisis occurs. We can, of course, include multiple measures of food security in our surveys, but influential organizations—such as the FAO, IFPRI, and the World Bank—need to come together to generate consensus and harmonize a measure of food security included in all surveys.

Third, when a crisis occurs, use the same measure of food security in rapid data collection efforts.

When the next crisis occurs, we must maintain the details of how we measure food security in any sort of rapid or high-frequency data collection efforts with how we measure food security before the onset of the crisis. As noted previously, there are practical considerations relating to constraints on the length of the questionnaire and a plausible reference period. We must learn from the experience of the COVID-19 pandemic and consider these practical constraints now, before the next crisis, when we are building consensus and harmonizing a reliable measure of food security to use in our data collection work.

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