

VULNERABILITY ASSESSMENT METHODS

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Introduction

In the development community, vulnerability has become an important concept used to guide the design, evaluation, and targeting of programs. In southern Africa, for instance, governments, NGOs, UN agencies, and other groups formed country-level Vulnerability Assessment Committees starting in 1999 to harmonize and improve methods of assessing vulnerability, with a focus on food aid (Frankenberger, Mock, & Jere, 2005). As the concept has matured, practitioners have given greater emphasis to the multidimensionality of vulnerability, working with a variety of measures to capture its complexity. In this brief, we use the broad and established definition of vulnerability in sustainability science as “the degree to which a system, subsystem, or system component is likely to experience harm due to exposure to a hazard, either a perturbation or stress/stressor” (Turner et al., 2003, p. 74). This brief reviews the different methods of assessing vulnerability within the sector of economic strengthening.

VULNERABILITY IN ECONOMIC STRENGTHENING

The concept of vulnerability has emerged across various disciplines, ranging from engineering to psychology, and its definition varies accordingly. However, most of the literature characterizes vulnerability according to the basic formula: Risk + Response = Vulnerability, or, as articulated in Holzmann et al.'s guidelines on the Household Economy Approach (2008), “Baseline + Hazard + Response = Outcome (v).”

The definition of risk will depend on the purpose of conducting a vulnerability assessment and the definition of vulnerability. In order for vulnerability analysis to be useful,

it is helpful to begin with the question, “Vulnerable to what?” This could be just one variable, or many variables. Several vulnerability frameworks, discussed in the next section, provide a systematic understanding of vulnerability dynamics that can be used to identify specific risks.

The response variable, or means of coping with a risk, is understood across these frameworks through the lens of sustainable livelihoods. Chambers and Conway's oft-cited definition states that:

“A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to their livelihoods at the local and global levels and in the short and long term” (1991:6).

The sustainable livelihoods framework is influenced by the work of economist Amartya Sen, whose conception of “entitlements” laid the ground-work for asset-based analysis focused on livelihoods (Alwang, Siegel, & Jørgensen, 2001). Assets include items such as labor, human capital, housing, household relations, and social capital (Moser, 1998). All of these items contribute to a household's means of coping with risk.

Hoddinott and Quisumbing (2003) pose five questions that a vulnerability assessment should ultimately answer (p. 46):

- 1) What is the extent of vulnerability?
- 2) Who is vulnerable?
- 3) What are the sources of vulnerability?
- 4) How do households respond to shocks?
- 5) What gaps exist between risks and risk management mechanisms?

Vulnerability Assessment Methods

Ultimately, selecting vulnerability assessment methods will depend on the purpose and focus of the vulnerability assessment. This will also affect the level of analysis required. Population level measures, used to segment a population into different categories of vulnerability, are useful for policy, planning, and project design. When used with participative methods, they can also be useful for community mobilization. For project targeting, household level methods will be required.

MEASURES USED FOR POLICY AND PROJECT PLANNING AND STRATEGY

This section features vulnerability assessment approaches used to create a comprehensive baseline for analysis based on population level data. They provide overall guidelines for assessing vulnerability from the macro to micro levels, for both segmenting the population by levels of vulnerability and targeting individuals or households. They employ mixed methods and tend to be resource intensive, requiring large amounts of data in order to capture the complexity of vulnerability.

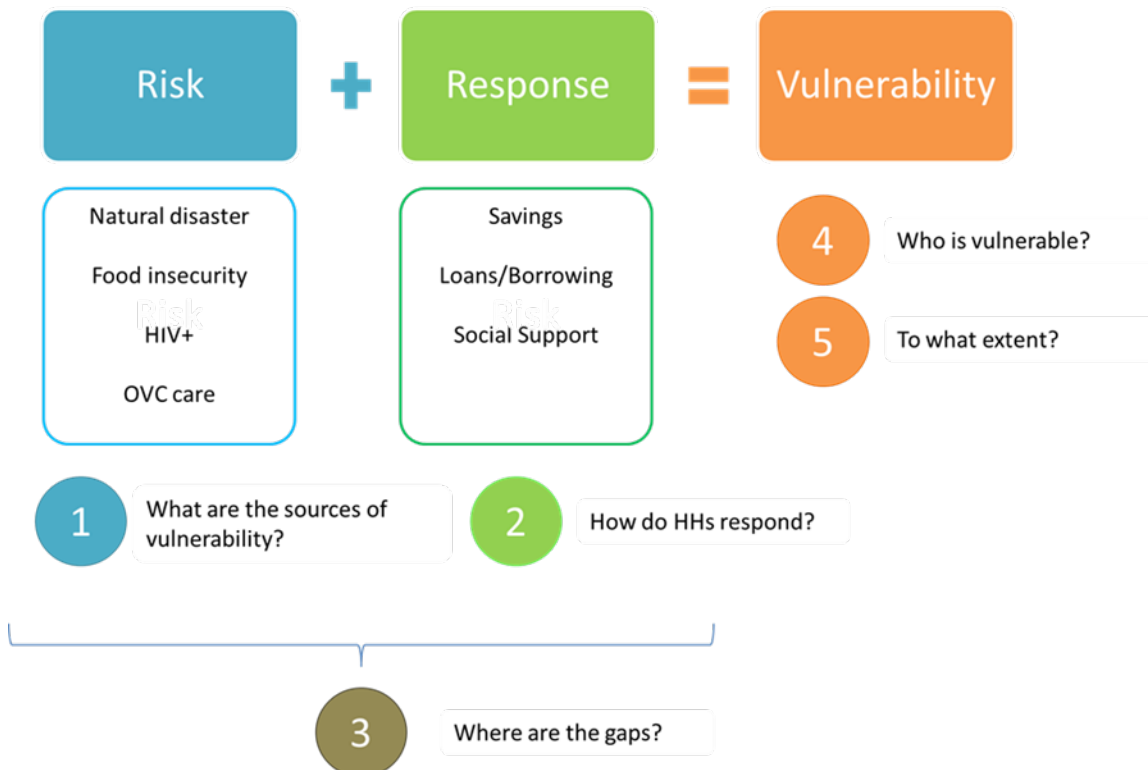
Household Economy Approach (HEA)

Overview:

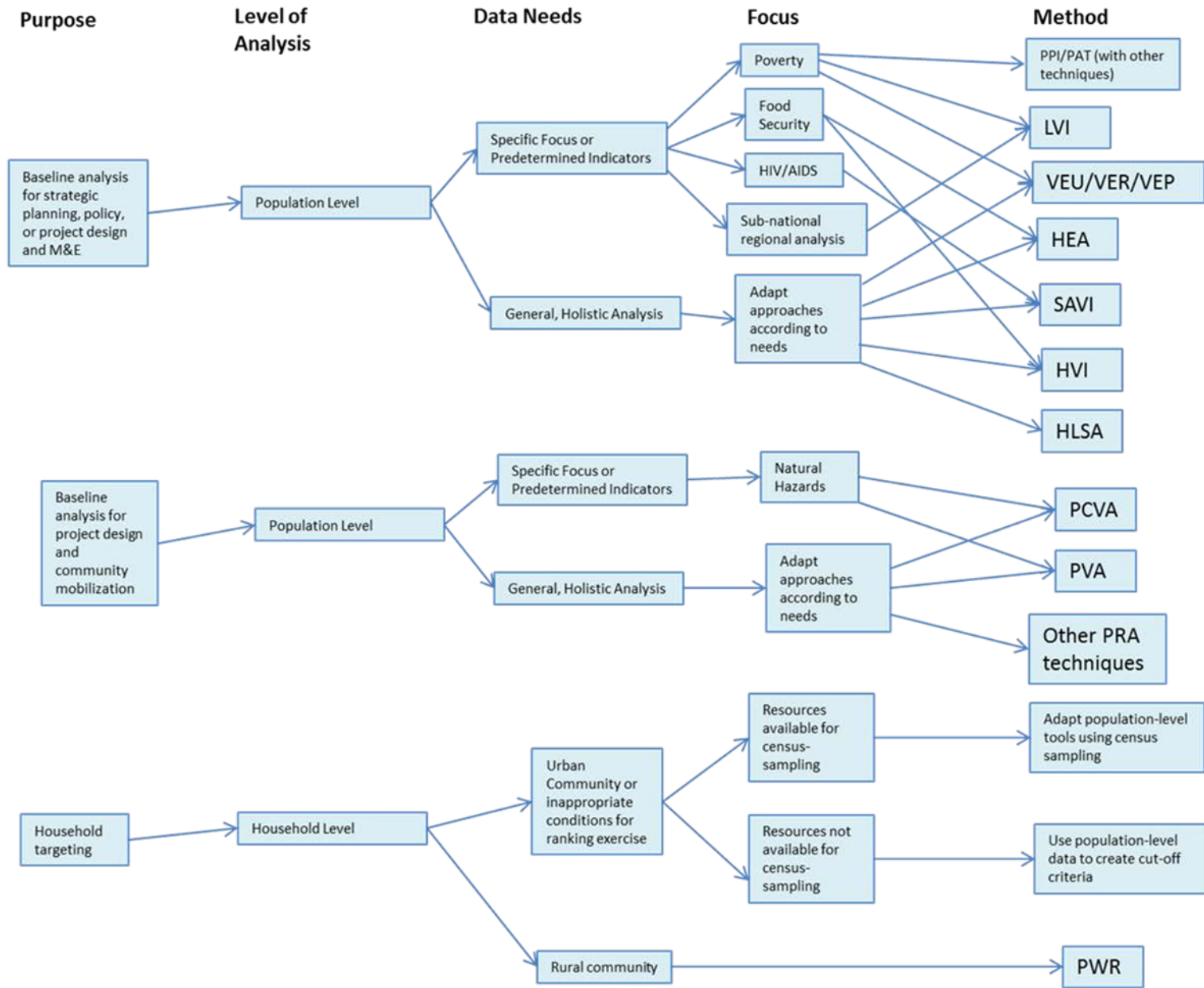
The Household Economy Approach is a livelihoods-based analytical framework developed by Save the Children UK in the early 90s designed to obtain information on how people access food and cash based on multi-level analysis (Lawrence et al., 2008). Amartya Sen's work on famines is a strong influence on the framework (Sen, 1981). Sen argued that famines do not emerge simply from food shortages, but that underlying systems of inequality prevent certain groups from accessing food. The HEA seeks to understand these systems and set a baseline measure for livelihoods under normal conditions to better predict how they are affected by shocks. HEA uses mixed methods, which can include analysis of secondary data, quantitative primary data, and participatory and qualitative approaches.

Used For:

HEA is primarily used to predict the impact of national-level shocks and disasters across different wealth groups, seeking to answer the following questions: "Where is assistance needed, and of what type? Who needs it? How much is needed, when and for how long?" (Lawrence et al., 2008, ch. 1 p.2).



Selecting Vulnerability Assessment Methods



It was initially developed to “provide large-scale (e.g. national) predictions of food emergencies,” but has since been adapted to assess an array of shocks (Petty & Seaman, 2004, p. 10) and is used by most National Vulnerability Assessment Committees in southern Africa (SADC FANR Vulnerability Committee, 2004).

Pros and Cons:

HEA provides rich, comprehensive baseline information. However, it can also be resource intensive. Unless modified using the Individual Household Model (IHM), HEA data does not reach the household level. It is therefore more appropriate for large-scale segmentation across defined vulnerability categories.

Individual Household Model (IHM):

The Individual Household Model (IHM) is a disaggregated version of HEA designed to provide more detailed vulnerability analysis at the household level (Holzmann et al., 2008). Though it operates according to the same framework as HEA, IHM employs different field methods. Instead of interviewing individual households as representatives of a larger wealth group, IHM utilizes semi-structured interviews with individual households selected using statistical sampling methods. Another difference is that the results of IHM analysis are expressed in terms of household disposable income rather than access to food and other resources (Petty & Seaman, 2004).

Household Livelihood Security Analysis (HLSA)

Overview

Like HEA, Household Livelihood Security Analysis (HLSA) is rooted in the sustainable livelihoods tradition of the economics and anthropology and sociology literature. Introduced in 1994, a Household Livelihood Security (HLS) approach has “become CARE’s basic framework for program analysis, design, monitoring and evaluation” (Frankenberger, Luther, Becht, & McCaston, 2002, p. 1). HLSA is an asset-based, multidisciplinary framework with the intention of better understanding the broader systems that affect livelihoods based on gathering three types of data: quantitative, qualitative, and analytic (causal) (Cannon, Twigg, & Rowell, 2005). It looks specifically at the dimensions of economic security, food security, health security, educational security, and empowerment (Lindenberg, 2002).

Used For:

HLSA was originally a primarily participatory method used to inform program design, drawing on both Participatory

Rapid Appraisal (PRA) and Rapid Rural Appraisal (RRA) techniques, which can incorporate ranking exercises for household targeting. An alternative approach is to use the same conceptual framework of Household Livelihood Security (HLS) to develop quantitative surveys for population level segmentation.

Pros and Cons:

HLSA is a comprehensive approach that uses mixed methods, with qualitative methods contributing to a fuller understanding of how vulnerability is perceived at the community level. However, it is resource-intensive. When conducted using PRA and RRA methods, HLSA is not a statistically accurate method for segmenting the population into vulnerability groups, although this can be accomplished using quantitative survey methods.

Household Vulnerability Index (HVI)

Overview:

The Household Vulnerability Index (HVI) is a statistical index developed by the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) in 2004 to measure household vulnerability. The index is part of the sustainable livelihoods and food security traditions of the economics literature on vulnerability. As a product of southern Africa, the index examines household vulnerability through the lens of the influence of “HIV and AIDS pandemic on household agriculture and food security” (FANRPAN, 2011). The HVI is concerned with the following two questions: “How can the ‘most vulnerable’ be identified and assisted?” and “How can the impact of the epidemic on household food security be monitored and evaluated over time?” (Kureya, 2013, p. 5). It defines vulnerability as the “presence of factors that place households at risk of becoming food insecure or malnourished,” which is assessed on the levels of “‘external vulnerability’, which refers to exposure to external shocks or hazards; and ‘internal vulnerability’, which refers to the capacity to cope with or withstand those shocks (resilience)” (2013, p. 6).

Used For:

The HVI is primarily focused on agriculture and food security. Using sampling methods, the HVI can be used for population level analysis. It can also be used as a census-type instrument for either population level analysis or individual and household level monitoring and targeting.

Pros and Cons:

The HVI provides a statistically validated tool that measures both risks and coping, using the sustainable

livelihoods framework. Its focus on food security and agriculture, however, may not be appropriate for all projects. Furthermore, the tool does not emphasize community participation, which may result in limited community perspective and input.

Southern Africa Vulnerability Initiative (SAVI) Framework

Overview:

The Southern African Vulnerability Initiative (SAVI) framework is a conceptual approach that emphasizes interconnections of multiple stressors, including HIV/AIDS, that was developed by group of scientists in 2004 (O'Brien, Quinlan, & Ziervogel, 2009). Though it does not provide a toolkit or instructions for the selection of instruments for measuring vulnerability, the SAVI framework provides a set of research questions that can be used to drive the development of an assessment.

Used For:

The SAVI framework is not a tool, but a framework used to inform vulnerability assessment tool selection. It is especially useful for strategic planning, project design, and policy. It was intended for use by VACs to examine vulnerability beyond the concept of food security.

Pros and Cons:

The framework's focus on the interaction of multiple stressors is based on the premise that ignoring these interactions hides certain vulnerabilities (O'Brien et al., 2009). Instead of conceiving of vulnerability as an "end-point" of an assessment, as many assessments in the hazards literature, the SAVI approach encourages examination of the dynamism of vulnerability, including how coping mechanisms and responses change vulnerability (Casale, Drimie, Quinlan, & Ziervogel, 2010, p. 159). Though it provides a theoretically subtle framework, SAVI does not provide methodological instruction for conducting vulnerability analysis.

Econometric Methods (VER, VEU, VEP)

Overview:

In the poverty dynamics strand of the economics literature on vulnerability, three econometric measures appear repeatedly: the Vulnerability as Expected Poverty (VEP), Vulnerability as Expected Utility (VEU), and Vulnerability as Uninsured Exposure to Risk (VER) measures all provide models to assess vulnerability to poverty (Hoddinott & Quisumbing, 2003; Naudé, Santos-Paulino, & McGillivray, 2009). VEP and VEU produce individual

level measures which can be aggregated to the population level (Hoddinott & Quisumbing, 2003, p. 12). Like PPI and PAT, although it is possible but not recommended to use VEP and VEU for the purposes of individual level targeting, as these measures are much less accurate than when used at the aggregate level (Bérgolo, Cruces, & Ham, 2012). Although panel data are recommended to generate the most accurate results using econometric methods, it is often difficult to access in developing countries (Jha & Dang, 2009).

Used For:

Econometrics can be used to quantitatively model vulnerability. Hoddinott and Quisumbing (2003) point out that all three measures can be mixed and matched, and that the definition of risk in terms of consumption or income can be replaced by health, education or other indicators of wellbeing. Additionally, there is no one method for using these tools, and the literature contains various approaches. Data can be acquired from questionnaires at the individual, household, and community levels, such as the World Bank's LSMS (Jha & Dang, 2009).

Pros and Cons:

Each measure has its relative advantages: VEU examines poverty and risk, where VEP provides less insight on risk and can actually lead to perverse policy outcomes that increase risk for households (Hoddinott & Quisumbing, 2003). However, VEP can be measured using cross-sectional data, where VEU's reliance on panel data makes it difficult to calculate. VER is not a predictive tool, but instead measures actual changes in welfare due to a given risk. It is easy to calculate and can attribute welfare loss to either idiosyncratic or covariate risks. Additionally, as quantitative tools, each of these measurements relies on a predetermined definition of vulnerability, which may or may not line up with perceptions of vulnerability at the community level. The richness of these measures can be enhanced when combined with qualitative methods.

Poverty Measures: Poverty Assessment Tools (PAT) and the Progress out of Poverty Index (PPI)

Overview:

Poverty Assessment Tools and the Progress out of Poverty Index are simple tools designed to help microfinance institutions (MFIs) target poor or extremely poor clients in response to congressional requirements for poverty targeting. Among poverty assessments used by MFIs, only PAT and PPI "are directly derived from

international or national poverty lines, have known levels of accuracy, and are relatively simple to administer” (The SEEP Network Social Performance Working Group, 2008, p. 181).

Used For:

These tools were designed for MFIs to determine whether their clients include the poorest of the poor. Although the developer of the PPI has stated that the tool can be used for project targeting, this use is not recommended due to the likelihood of statistical error. To be useful in vulnerability assessment, the PPI and PAT should be used to complement other vulnerability measures.

Pros and Cons:

Both PPI and PAT are simple to use, tested tools for assessing poverty incidence. However, they only measure poverty ex post, rather than examining ex ante vulnerability. PPI and PAT measures have been developed for a limited number of countries, not all of which have updated measures.

PROJECT DESIGN AND COMMUNITY MOBILIZATION

Population level assessments that can both inform project design and mobilize community-based action typically use participatory methods. There are two featured here, but many more exist, especially among methods focused on informing climate change interventions.

Participatory Vulnerability Analysis (PVA) and Participatory Capacity and Vulnerability Analysis (PVCA)

Overview:

Participatory Vulnerability Analysis (PVA) and Participatory Vulnerability and Capacity Analysis (PVCA) are based on PRA methods specialized to assess vulnerability. In addition to the sustainable livelihoods literature, they are both influenced by the disaster management literature and were originally developed for the intended use in natural disaster contexts, although both also assess other types of shocks.

PVA is a rights-based approach developed by Action Aid in 2000 with a focus on action-planning (Chiwaka & Yates, 2004). Like other participatory methods, it mobilizes community information about vulnerability and facilitates the process of making plans to address it. It distinguishes itself as a “multi-level, multi-stakeholder approach,” whereby long-term action planning flows up from the community level all the way to international level policy.

It is important to note that poverty level is not interchangeable with vulnerability. Although poverty measurements are frequently used as a proxy for vulnerability levels in economic strengthening projects, poverty measurements are backwards-looking and static, while vulnerability measurements assess risk, and are therefore forward-looking and dynamic.

PVCA is a similar, action-oriented approach to vulnerability assessment, developed by Christian Aid. The additional letter in its acronym signals a greater focus on understanding the capacity of a target population, also called coping or resilience.

Used For:

PVA can be used to complement a baseline analysis or to gather information for targeting, with three specific uses:

- “1) to diagnose vulnerability as well as its causes (this may be done as a baseline that takes a broad view of vulnerable situations);*
- 2) to focus on specific vulnerable groups, hazards or locations; or*
- 3) to inform better emergency preparedness, mitigation and response as well as better development work (this may be for a new or existing programme or overall strategy)” (Chiwaka & Yates, 2004, p. 15).*

PVCA includes additional provisions regarding the potential for scale-up, which includes activities such as assessing the capacity of Christian Aid’s local NGO partners and mapping existing initiatives and baseline studies (Christian Aid, 2011). Christian Aid advises against using the PVCA to conduct a large-scale research project, although it can inform one. It also notes that it should not be used as “an extractive research method,” but rather as an action-planning tool (p. 5). It should not be used in conflict situations.

Pros and Cons:

Both PVC and PVCA use participatory methods to define vulnerability to gain a more nuanced understanding of how it is experienced locally. This information can be particularly valuable in informing more quantitative measures of vulnerability, and, by incorporating ranking exercises, can facilitate individual and household

targeting. However, participatory methods require time and financial investment and can be biased by community power dynamics or facilitator input. Participant disappointment is a risk mentioned by Christian Aid, as many participants will expect interventions that can address the problem they express following a participatory exercise.

TARGETING AT THE HOUSEHOLD LEVEL

Accurate project targeting at the household level can involve either conducting quantitative surveys for every household in a population, or using community ranking exercises, where by community members meet and rank each household according to perceived vulnerability. The first option, depending on census sampling, is time and resource-intensive, and may not be feasible for all projects. The second option can be a good alternative, but may not be feasible in environments where community-members do not know one another or there is little trust, such as in rural areas or in conflict environments. In this case, population-level survey methods can be modified for household targeting, as described below.

Participatory Wealth/Well-being Ranking (PWR)

Overview:

Community ranking exercises are considered a best practice for individual level targeting. Generally, Participatory Wealth Ranking involves facilitation of a discussion with community members to come up with a definition of the topic of analysis (Simanowitz & Nkuna, 1998).

Though the exercise was originally used for wealth ranking, conceptions of wealth can be extended to vulnerability, with the facilitator ensuring that both risk and coping mechanisms are considered by participants in their criteria for vulnerability. Next, a process of community mapping and ranking of individual households is facilitated. This can involve defining levels of wealth or vulnerability. The entire process is often repeated with reference groups as well to compare findings and ensure consistency. PWR can be conducted as a public exercise or with key informants.

Used For:

In addition to being useful for individual or household level targeting, PWR helps illuminate community perceptions of vulnerability, which can later be incorporated into quantitative measures for population level analysis. It can also be used in addition to other PRA exercises to facilitate community mobilization.

Pros and Cons:

There are several benefits associated with using PWR. First, community developed indicators for wealth ranking provide insight into perceptions of poverty that goes beyond measures of income or consumption. Second, it is useful for targeting, as it is difficult to determine relative poverty levels without community participation. PWR tends to be accurate and generally corresponds with measures of absolute poverty, matching LSMS scores 70-79% of the time (Zeller, Feulefack, & Neef, 2006). Some authors recommend against conducting the ranking as a public exercise, given the potential for stigmatization (Rennie & Singh, 1995). Moreover, for some interventions, targeting at the household level is simply unnecessary, and it will be preferable to target beneficiaries by population-level categories.

Modified Population Level Measures

Overview:

PWR is not appropriate for all environments, particularly those where community members are not familiar with one another and there is little trust. Where it is not possible to conduct a survey with the entire population, an alternative method of targeting involves using statistical methods to identify which variables in a population level survey (using sampling methods) have the greatest predictive value for determining vulnerability. This information can be used to determine cut-off criteria for program targeting.

Used For:

Modified population level measures can be useful for project targeting where PWR and census data collection are not feasible.

Pros and Cons:

Statistical error is a major risk in applying population level measures to the household level. This is why it is not recommended to use the PAT for targeting purposes. However, error can be offset by introducing subjective criteria into the survey itself. AVSI's Sustainable Comprehensive Responses for Vulnerable Children and their Families (SCORE) Project, for instance, uses a quantitative Vulnerability Assessment Tool (VAT) that also features a section where the data collector can add an additional score based on their observation of vulnerability in a survey household. This way, if a household does not measure up to a given cutoff point due to statistical error but is still obviously needy, there is room to adjust the final score. SCORE then follows up the VAT with a needs assessment.

Conclusion

For economic strengthening practitioners, vulnerability assessment can provide powerful data useful for policy, project design, strategic planning, and project targeting. Vulnerability assessments should assess risk as well as coping to be forward-looking, dynamic measures. The way vulnerability is measured and conceptualized will depend on the purpose of conducting an assessment, and there are a variety of tools and frameworks available to inform the process. Vulnerability assessments should never utilize “off-the-shelf” tools, but must be tailored to specific contexts. The best way to do this is to mix quantitative and qualitative methods, incorporating community perspectives and definitions of vulnerability.

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