Development of the IVAP Vulnerability Index

Vulnerability targeting can be controversial in any humanitarian context. What constitutes vulnerability, how it is measured, as well as how it affects assistance is not standardized in humanitarian practice. While there are traditionally accepted vulnerability criteria such as child-headed households, chronically ill, etc, few humanitarian practitioners would state that these specific vulnerability indicators are sufficient for the targeting of life-saving/sustaining assistance. For example, an IDP family of six with two income earners from a traditionally wealthy tribe and one chronically ill child, may be much more adept at meeting their own daily needs than an IDP family of seven with one income earner, from a traditionally impoverished group, but with no specific 'vulnerable' family member.

As a result, the IVAP started the discussion regarding vulnerability ranking among an already vulnerable population by determining the purpose for the ranking, then deciding the definition of vulnerability and methodology to be used. In the case of the IVAP, vulnerability analysis was primarily to allow for targeting of in-kind food and shelter assistance, recognizing that blanket assistance to the entire IDP population would not be sustainable in the near future. Humanitarian actors were aware that the IDP community still had many needs, and rather than stop all assistance, once blanket assistance was no longer possible, there was a consensus that targeted assistance was better than no assistance.

The IVAP chose the definition of vulnerable as "families who are unable to meet their daily food and shelter needs". In no way does the IVAP claim there is a method to categorically state "family A is more vulnerable than family B". This is because, regardless of the number of indicators we collect from each family, the questions asked are preselected by the IVAP, and can never look at every aspect of a family's level of vulnerability. In addition, as with any survey, the IVAP is susceptible to fraud, and while some observation questions are used, it is always possible for respondents to be less than truthful in their answers.

The IVAP vulnerabity index was designed through a consultative process that involved various stakeholders including UN agencies, the Government of Pakistan, various humanitarian practitioners in Pakistan, statisticians and IVAP surveyors.

Many methods for determining vulnerability were tried by the IVAP. After determining all possible indicators of vulnerability included in the IVAP data, the next step was to determine how to target on the basis of vulnerability. There were a number of methods considered including:

1. Equal Weights: by setting equal weights to all questions, it is possible to create a composite score of "vulnerability." However, this was immediately rejected as it assumes that each question points to an equal amount of vulnerability, which is unrealistic.
2. Data Quality: by identifying which indicators are strongest in our survey and are less prone to error, we can give a higher importance to these indicators (or include only them) into a vulnerability score. This was also rejected, as the two "most important" indicators in our survey, food consumption and income both are subject to a large amount of error. The food consumption score is an additional concern as the vast majority of IDPs surveyed are currently receiving food rations from WFP. As such, an inappropriate weight would go to those families who are currently not receiving. As the intention of the vulnerability criteria is to stop blanket assistance, and only assist the "most vulnerable" – food consumption score is not the strongest indicator, as it may simply take food baskets away from those who are currently getting them, and distribute them to those who are not. In addition, the income per family was collected on the basis of categories, not

rupee amounts. As such, it is difficult to create a per/capita income that takes into account family size, so while it is still a good indicator, it cannot be the gold standard. Therefore, if a data quality perspective was taken, vulnerability would need to be based on indicators other than food consumption and income, which were still considered very strong, though imperfect stand-alone indicators.

3. Expert Consultation/Normative Weights: by consulting with experts in the field of vulnerability in Pakistan, it would be possible to set some sort of weighting scheme, or prioritization matrix, which is based on experience in the field. This option was also rejected on the basis that it is entirely subjective. Every expert or non-expert would question the wisdom and accuracy of the matrix, with no method to justify its accuracy.

4. Multivariate Statistical Weighting: several statistical methods exist to create a composite index of various indicators using mathematical principles. The most common is a principle component analysis (PCA) which has been used around the globe to determine levels of poverty in various contexts. The largest concern with a principle component analysis is that it trusts to a statistical process what is really a normative task. That is to say, it only looks at variances in the data, and may result in considering certain indicators as highly important, when from a rational/experienced standpoint; they have little effect on the overall status of vulnerability.

Following consultations with four statisticians from Johns Hopkins School of Public Health, ECHO, the Research and Evaluation Unit of IRC, and the VAM unit of WFP in Pakistan a consensus was reached that the most appropriate way to set an index for vulnerability for the IVAP purposes would be a combination of expert advice and a PCA.

The PCA was a preliminary tool that allowed the IVAP team to take the 17 indicators initially hypothesized to have an impact on a potential latent 'factor' of vulnerability down to seven. A group of humanitarian practitioners in Pakistan then took this list of seven indicators and analyzed them across differing populations of IDPs (those living on camps vs. those off camps, those in rural areas/urban areas, etc). This second expert analysis, using the preliminary findings of the PCA, refined the indicators chosen for the index from seven to four.

After this, there was much debate regarding the most appropriate way to combine the four indicators into one output. Methods of arbitrary weighting, indicator thresholds, and factor analysis were all considered. However, arbitrary weighting was dismissed by all, the threshold method was put forward, but further analysis revealed that it was significantly more exclusive of families who had secondarily verifiable vulnerabilities (such a female headed households, elderly households, families with more than 5 children, families who were described as in 'poor' health or 'poor' living conditions, etc), than the factor analysis, which was eventually chosen.

The factor analysis was computed after removing from the initial indicators those that either:

1. Did not contribute strongly to the index or
2. Did not discriminate between vulnerable and non-vulnerable

This resulted in a factor that broke down into the following percentiles:

Percentile	Family Income	Food Consumption score			Assets		% Vulnerable/ dependent
		Poor	Borderline	Reasonable	No assets	Asset(s)	
	Mean	Row %	Row %	Row %	Row %	Row %	Mean
1	2283 Rp	14.5%	77.1%	8.4%	92.6%	7.4%	46%
2	3158	6.9%	70.3%	22.8%	81.2%	18.8%	33%
3	4199	4.1%	65.5%	30.4%	65.7%	34.3%	29%

| 4 | 5537 | 3% | 55.4% | 41.6% | 50.1% | 49.8% | 25% |
| 5 | 6786 | .8% | 23.2% | 76.0% | 27.5% | 72.5% | 22% |

As a result, the IVAP technical and operational committees (made up of key members from UN agencies, the Government of Pakistan and cluster leads) agreed to test the index created by the factor analysis further, both statistically and physically. Statistically, a comparison of the vulnerability factor with other vulnerabity indictors not included in the index revealed a positive association (to the 10th percentile). Physically, a random double-blind survey was conducted of IDP families to determine if the factor ranking correlated to perceived vulnerability (in terms of food and shelter needs) observed by surveyors at the household level. The results were positive.

The index can be described as a scale of 1-10 with 1 being the most vulnerable. This means the technical and operational committees then needed to work out a threshold for assistance in accordance to the index. After a thorough review of the average household status at each point (1-10) on the index, the committees determined that while on an international standard, the entire population was highly vulnerable and in need of assistance, if forced to cut down assistance, IDP families residing at or below the threshold of 6 on the index were to be considered 'most' vulnerable and the priority for assistance. While those at 7 or above would be considered 'less' vulnerable.

Throughout the entire process of determining a vulnerability criteria, the technical and operational committees were under much pressure to stop blanket assistance to IDPs. Without a viable alternative, the only option was to cut all assistance, to all IDP families. This put the pressure on the IVAP committees to accept that there is currently no gold standard for assessment of vulnerability in terms of in-kind assistance, and that they would never find a 100% perfect method of determining vulnerability. However, they decided that using an imperfect method of determining vulnerability, was better than no method at all, and a ceasing of assistance.

For all of the above reasons, the IVAP has never asserted that the vulnerability index is objectively correct. The essence of a vulnerability index is a tangible science attempting to quantify an intangible concept of 'vulnerability.' All IVAP committee members and partner agencies have struggled ethically on many levels throughout the process of designing the IVAP and determining the vulnerability criteria.

While there is no assertion that the IVAP Vulnerability Index is flawless, it has been tested and proven to be able to distinguish between the 'most' and 'less' vulnerable IDP families, and is therefore put forth as an alternative to targeting assistance on the basis of area of origin, length of displacement, or any other criteria previously used in Pakistan.