Grameen Foundation submission to USAID:
Progress out of Poverty Index (PPI) for the Philippines

Accuracy

1. Overall approach to tool development
The GFUSA PPI, or scorecard, for the Philippines is an easy-to-use, objective tool that estimates the probability that a client is among the poorest half of those whose income is below the national poverty line (Schreiner, 2006a). This annual per capita "extreme" poverty line is, on average, 9,060 pesos per person per year. The PPI can help development projects to report on participants' poverty rates, target services, and track changes in poverty over time.

The tool estimates a poverty likelihood, that is, the probability that a client is very poor. It does not directly estimate income. This approach builds on decades of experience in credit scoring (where lenders estimate the probability of falling into x days of arrears) and the World Bank's "proxy means tests" that estimate poverty likelihoods.

While the tool is accurate, its design emphasizes "practicality". In particular, it is:

- Short and simple for both staff and clients
- Easy to collect and analyze data
- Low risk of misreporting or manipulation

This is accomplished via a scorecard (Figure 1, Annex) with the following features:

- 10 indicators, all observable in a short visit to the client's home
- All categorical indicators ("Does you own a *sala* set?", not "What is the value of your *sala* set?")
- Only math is addition (no ratios, squares, logarithms, or exponents)
- All points are either zero or positive integers (no negatives or decimals)
- All scores between 0 (most-likely very poor) and 100 (least-likely very poor)

Field workers can compute scores by hand, in the field, in real time, without calculators or software. Scores are converted to poverty probabilities via a simple table (Figure 2).

Overall, this design facilitates both predictive accuracy and organizational "buy-in".

2. Data source
The tool is constructed using the 38,014 households in the 2002 Annual Poverty Indicators Survey (APIS). The 2002 APIS measures only income, not expenditure.

3. Process of indicator selection
Indicators were selected to be:

- Inexpensive to collect, easy to answer, and simple to verify
- Strongly correlated with poverty
- Liable to change as poverty status changes over time

About 500 indicators were tested, with categories including (Schreiner, 2006a):

*   Household and housing characteristics (such as cooking fuel and type of floor)
*   Individual characteristics (such as age and highest grade completed)
*   Household consumption (such as spending on non-alcoholic drinks)
*   Household durable goods (such as electric fans and telephones)

About 100 indicators were selected after a basic screen for predictive power using the uncertainty coefficient of Goodman and Kruskal (1979). These were narrowed to 10 in a stepwise Logit regression. At each step, selection was based on the judgment of an analyst with expertise in both microfinance and scoring who considered both raw predictive power (as measured by "c", the logit analog to R^2) as well as:

* Simplicity and cost of collection
* Verifiability and susceptibility to strategic falsification
* Contrast/variety vis-à-vis previously selected indicators
* Likelihood of varying as poverty status changes over time
* "Face validity" for users (experience, theory, and common sense)

Expert judgment is part of all statistical analysis; its use here is not *ad hoc*, nor are indicators selected *a priori*. By documenting the use of judgment, the process is more rigorous (susceptible to replication, critique, and improvement) than if there were no acknowledgement of the presence of judgment.

Measures of accuracy
Please see "Additional Issues" and Schreiner (2005 and 2006b).

Philippines ("extreme" poverty line is 9,060 pesos per month per person, see Schreiner 2006a) Poverty Rate: 17.0, year 2002	Total Accuracy	Poverty Accuracy	Under-coverage	Leakage	PIE	BPAC
Logit	83.8	61.2	38.8	47.9	9.1	43.7

The score cut-off is 30–34.

	Predicted Very Poor	**Predicted Not Very Poor**
"True" Very Poor	10.4	9.6
"True" Not Very Poor	6.6	73.4

The score cut-off is 30–34. Figures normalized by the population of the Philippines so that the sum of the four cells is 100.

4.   Estimating poverty likelihoods
PPI weights (Figure 1) come from logit coefficients (Figure 3). Logit is the scoring industry standard because it is simple, easy-to-explain, and robust. For ease-of-use, the logit coefficients were transformed to non-negative integers such that scores range from 0 to 100. The scores are converted to poverty likelihoods via a simple look-up table (Figure 2). It bears repeating that scores can be computed by hand, in the field, in real time.

Figure 4 is from an out-of-sample bootstrap (Efron and Tibshirani, 1993). It is "out-of-sample" because it uses households not used to build the scorecard. It is a "bootstrap" because 10,000 samples were drawn with replacement. The poverty likelihood associated with a given score is the average (across 10,000 samples) share of households with a given score who are poor.

To understand this, consider an example with two bootstrapped samples. The first sample has two households with scores of 0–4, one of them very poor. The second sample has three households with scores of 0–4, all of them very poor. Overall, the poverty likelihood for scores of 0–4 is then 75 percent (the average of 50 percent in sample 1 and 100 percent in sample 2).

The logit regression and the out-of-sample bootstrap ensure that the estimated poverty likelihoods are objective; they are derived directly from data in the Philippines' 2002 APIS.

Misuse and misreporting is inhibited by transparency. For example, the scorecard is freely available at http://www.microfinance.com/English/Papers/Scoring_Poverty_Philippines.pdf.
If an employee tried to manipulate points, it could be detected because the true points are public knowledge. Furthermore, clients are unlikely to misreport because the indicators are easy to verify. Of course, employees can "cook" indicator values regardless of transparency; the only training and follow-up can mitigate this.

5.   Decision rule for classification as very poor or not very poor
The tool associates each household with a poverty probability. In this sense, it does not classify a household as either 100-percent very poor or 100-percent not very poor.

The portfolio poverty rate (a.k.a. "head count index" or "share of clients who are very poor") is the average of all clients' poverty likelihoods. Suppose 100 clients have scores of 10 (and poverty likelihoods of 61.9 percent, Figure 2), 100 have scores of 30 (poverty likelihoods of 35.2 percent), and 100 have scores of 50 (poverty likelihoods of 12.6 percent). The portfolio poverty rate is the average poverty likelihood of 36.6 percent.

This approach estimates that 36.6 percent of clients are very poor, although—like the direct-income approach—it does not reveal with certainty exactly who is very poor.

If a program wants to use scores for targeting, it could select a cut-off score, for example, 30–34 or below (poverty likelihoods of 35.2 percent or more). For program purposes, these applicants with scores below the selected cut-off are labeled "qualified" (rather than "very poor").

Of course, this does not mean that programs set their own poverty lines. Rather, it means that programs choose—based on their own mission and values—their desired mix of very poor and not very poor clients. The poverty line used to derive poverty likelihoods in Figure 2 is fixed by the government of the Philippines and does not depend on how a program uses poverty likelihoods for its own purposes.

For example, suppose a program has 100 applicants with scores of 10 (poverty likelihoods of 61.9 percent), 100 with scores of 30 (poverty likelihoods of 35.2 percent), and 100 with scores of 50 (poverty likelihoods of 12.6 percent). If the score cut-off is 30, then the program accepts 200 applicants with an average poverty likelihood of 48.6 percent. That is, it accepts 91 very poor clients (income below the "extreme" poverty line), and 103 not very poor clients (income above the "extreme" poverty line). If the score cut-off were lowered to 10, then the program would accept 100 applicants with an average poverty likelihood of 61.9 percent, 62 of them with income below the "extreme" poverty line, and 38 with income above the "extreme" poverty line.

Implementation

We have chosen the household survey and intake survey methodologies for implementing the PPI.

Attached as an annex to this document is GF's training manual for using the PPI.

1. Implementation strategy and data collection methodology:
   - Sampling strategy is outlined in the training manual on page 2 in the section: <u>Whom to Sample: Defining the Population, Sample Size and Confidence Intervals</u>
   - Delivering the survey is outlined on p. 4 in the section: <u>Guidelines for Training and Delivering the survey</u>.
   - Adapting the survey to the institutions is covered in the manual on p.6 in the section: <u>Adapting the survey to the institution</u>.
   - Additional issues related to implementation strategy and data collection include the importance of planning for doing the work and pre-testing the PPI on a sample of clients. The details for this are outlined in the manual on p.1 <u>Preparing to Use the PPI</u> and p.6 <u>Pre-test</u>.

2. Costs in time and money to utilize the tool:
   - Staff time required for delivering the tool, entering data and analysis, auditing and management is covered in the section on p. 7 bginning with the table: <u>Time required to administer PPI</u>.
   - Costs incurred to use the tool are outlined in the section: <u>Cost of administering the PPI (excluding salaries)</u> on p. 8.
   - The time required of project beneficiaries (MFI clients) is outlined in the table on p. 7 <u>Time required to administer PPI</u> and in the paragraphs following the table.
   - Other costs are required or may be incurred to utilize this tool are outlined in the section on p.8 <u>Cost of administering the PPI (excluding salaries)</u>.
   - The costs for data entry are outlined in the section on p. 7 <u>Time required to administer PPI</u> and in the following sections.

3. Data processing and analysis process:
   - The software and equipment requirements, quality control measures, data entry and cleaning processes and calculation of aggregate poverty level are outlined in the section on p.8 <u>Data collection, processing and analysis</u>.

4. Risk Management and Mitigation (covered in the manual on p.8 in the section "Risk Management and Mitigation").

5. On-going issues (covered in the manual on p.9 in the section "On-going issues").

<u>Additional Issues</u>

As explained in Schreiner (2005 and 2006b), PIE and BPAC are new measures of accuracy, previously unknown in the scoring industry.

How to un-reinvent the wheel? There are three types of accuracy that are relevant:

- Accuracy for portfolio poverty rates
- Accuracy for poverty likelihoods
- Concentration of the very poor in low scores

The standard indicator of accuracy for statistics (such as the portfolio poverty rate) is the confidence interval (http://en.wikipedia.org/wiki/Confidence_interval). Confidence intervals are well-understood by lay people and are relevant for both the poverty-likelihood and direct-income approach.

For the Philippines tool, out-of-sample bootstrap tests show that, with 99-percent confidence, the estimated portfolio poverty rate is within +/– 1.0 percentage points of the true poverty rate (Schreiner, 2007).

Confidence intervals are also the standard indicator of accuracy of poverty likelihoods. The average 99-percent interval for the Philippines is +/–3.6 percentage points (Figure 4).

Finally, accuracy increases as the very poor are more concentrated among low scores. The standard measure for this is the area under the Receiver Operator Characteristic (ROC) curve (http://en.wikipedia.org/wiki/Receiver_operating_characteristic). The greater the area, the better the concentration. For the Philippines, this area is 73.4 (out of a possible 100, Figure 5).

Use of the area under ROC as a measure of accuracy assumes equal costs for errors of undercoverage and leakage. BPAC makes precisely this assumption (IRIS, 2005). If these costs are not equal (and in general they are not equal), then the standard technique involves benefit-cost matrices, as described for the Philippines in Schreiner (2006a).

Annex

Figure 1: GFUSA Poverty Tool for the Philippines

Indicator	Values				Points
1. How many people in the family are aged 0 to 17?	≥5 0	3 or 4 7	1 or 2 16	Zero 27	
2. Does the family own a gas stove or gas range?			No 0	Yes 13	
3. How many television sets does the family own?		Zero 0	1 9	≥2 18	
4. What are the house's outer walls made of?		Light (cogon , nipa , or sawali , bamboo, anahaw) 0		Strong (iron, aluminum, tile, concrete, brick, stone, wood, asbestos) 4	
5. How many radios does the family own?		Zero 0	1 3	≥2 10	
6. Does the family own a sala set?			No 0	Yes 9	
7. What is the house's roof made of?		Light (Salvaged, makeshift, cogon , nipa , or anahaw) 0		Strong (Galvanized iron, aluminum tile, concrete, brick, stone, or asbestos) 2	
8. What kind of toilet facility does the family have?		None, open pit, closed pit, or other 0		Water sealed 3	
9. Do all children in the family of ages 6 to 11 go to school?		No 0	Yes 4	No children ages 6-11 6	
10. Do any family members have salaried employment?			No 0	Yes 6	

Source: Calculations based on the 2002 APIS.   Total:

Figure 2: Scores and corresponding poverty likelihoods

Score	Poverty likelihood for people with score in range (%)	% of people < = score who are poor	% of people > score who are non-poor
0-4	85.0	85.0	83.5
5-9	79.7	81.3	84.4
10-14	61.9	71.3	85.6
15-19	70.5	71.0	87.0
20-24	53.2	65.4	88.4
25-29	42.4	58.3	90.0
30-34	35.2	52.1	91.7
35-39	23.8	44.8	93.2
40-44	22.2	40.1	94.9
45-49	16.5	36.3	96.1
50-54	12.6	32.4	97.5
55-59	8.4	30.5	98.0
60-64	4.7	26.8	98.6
65-69	2.5	23.5	99.0
70-74	1.7	21.4	99.2
75-79	1.6	19.8	99.6
80-84	0.7	18.1	100.0
85-89	0.0	17.5	100.0
90-94	0.0	17.3	100.0
95-100	0.0	17.0	0.0
Total:	17.0		

Surveyed cases weighted to represent the Philippines' population.

Source: Calculations based on the 2002 APIS.

Figure 3: Raw results from Logit regression

The LOGISTIC Procedure

```
                        Response Profile
 Ordered                        Total          Total
   Value      x27             Frequency         Weight
       1        1                 5936         6960.662
       2        0                12910        11885.338
Probability modeled is x27='0'.
        Model Fit Statistics
                                Intercept
                  Intercept        and
Criterion          Only        Covariates
AIC               24826.168      15224.886
SC                24834.013      15350.391
-2 Log L          24824.168      15192.886
R-Square     0.4001    Max-rescaled R-Square     0.5465
                                Analysis of Maximum Likelihood Estimates
                            Standard        Wald
Parameter      DF    Estimate    Error    Chi-Square    Pr > ChiSq    Label
Intercept       1     -4.0342    0.1156    1216.9215     <.0001      Intercept: x27=1
x7         1    1      0.9207    0.0569     262.2668     <.0001      People in the family of ages 0 to 17: 1
x7         2    1      1.9460    0.0673     836.3198     <.0001      People in the family of ages 0 to 17: 2
x7         3    1      2.6223    0.0981     714.6374     <.0001      People in the family of ages 0 to 17: 3
x18        1    1      1.1623    0.0487     569.0252     <.0001      Family owns a gas stove: 1
x16        1    1      0.8355    0.0513     265.1764     <.0001      TVs owned by family: 1
x16        2    1      1.6583    0.1491     123.6360     <.0001      TVs owned by family: 2
x14        1    1      0.4283    0.0591      52.5757     <.0001      Type of construction materials for walls: 1
x15        1    1      0.3303    0.0504      42.9129     <.0001      Radios owned by family: 1
x15        2    1      1.0257    0.1078      90.5926     <.0001      Radios owned by family: 2
x17        1    1      0.8423    0.0473     317.3524     <.0001      Family owns a sala set: 1
x13        1    1      0.1747    0.0623       7.8627     0.0050      Type of construction materials for roof: 1
x21        1    1      0.3271    0.0511      40.8979     <.0001      Type of toilet facility: 1
x10        1    1      0.3845    0.0983      15.2882     <.0001      School attendance of children of the family of ages 6 to 11: 1
x10        2    1      0.5539    0.1076      26.4991     <.0001      School attendance of children of the family of ages 6 to 11: 2
x12        1    1      0.6394    0.0431     220.2544     <.0001      Number of household members with salaried employment: 1
Association of Predicted Probabilities and Observed Responses
Percent Concordant        87.8    Somers' D     0.759
Percent Discordant        11.9    Gamma         0.762
Percent Tied               0.3    Tau-a         0.328
Pairs                 76633760    c             0.880
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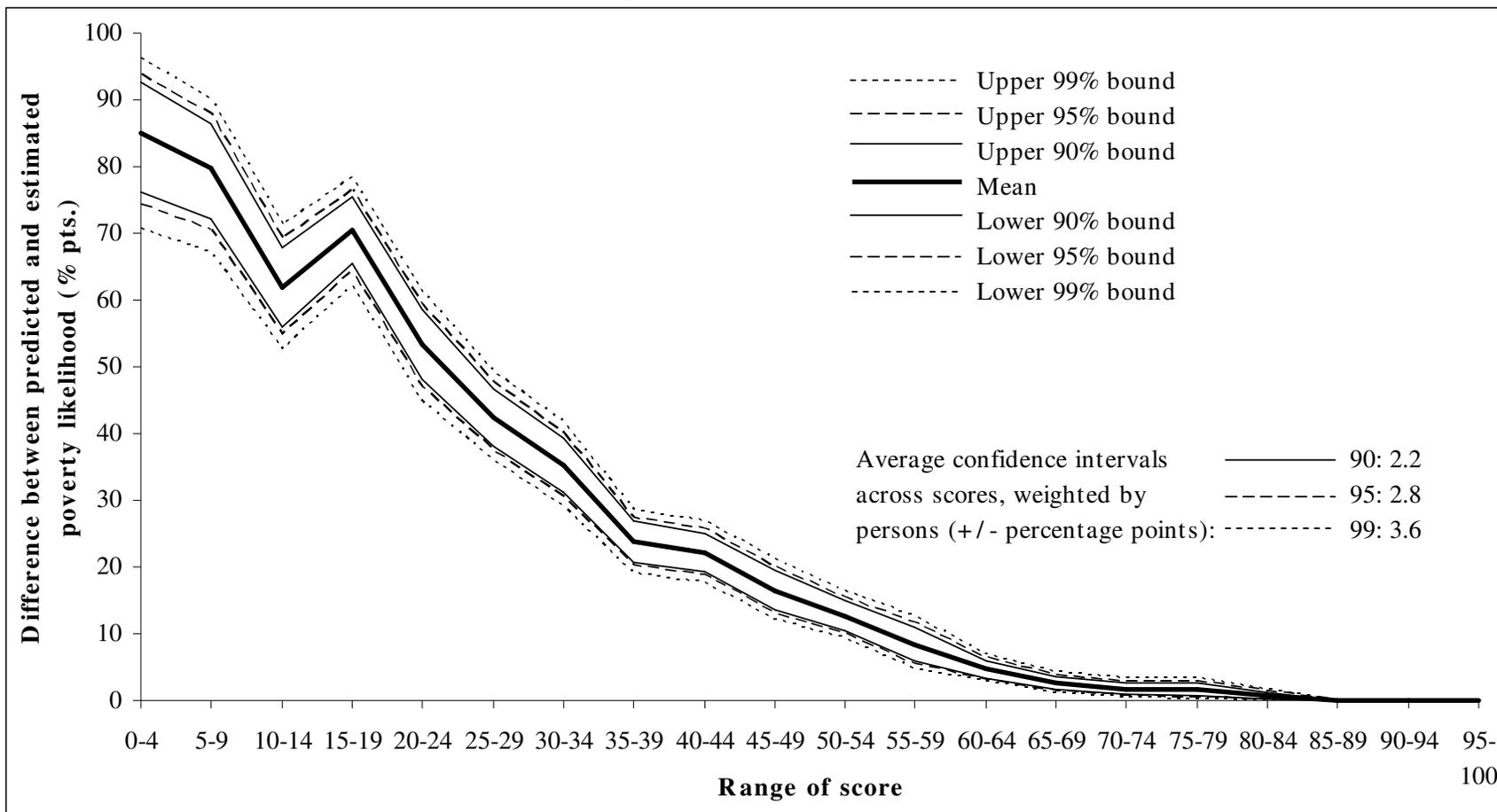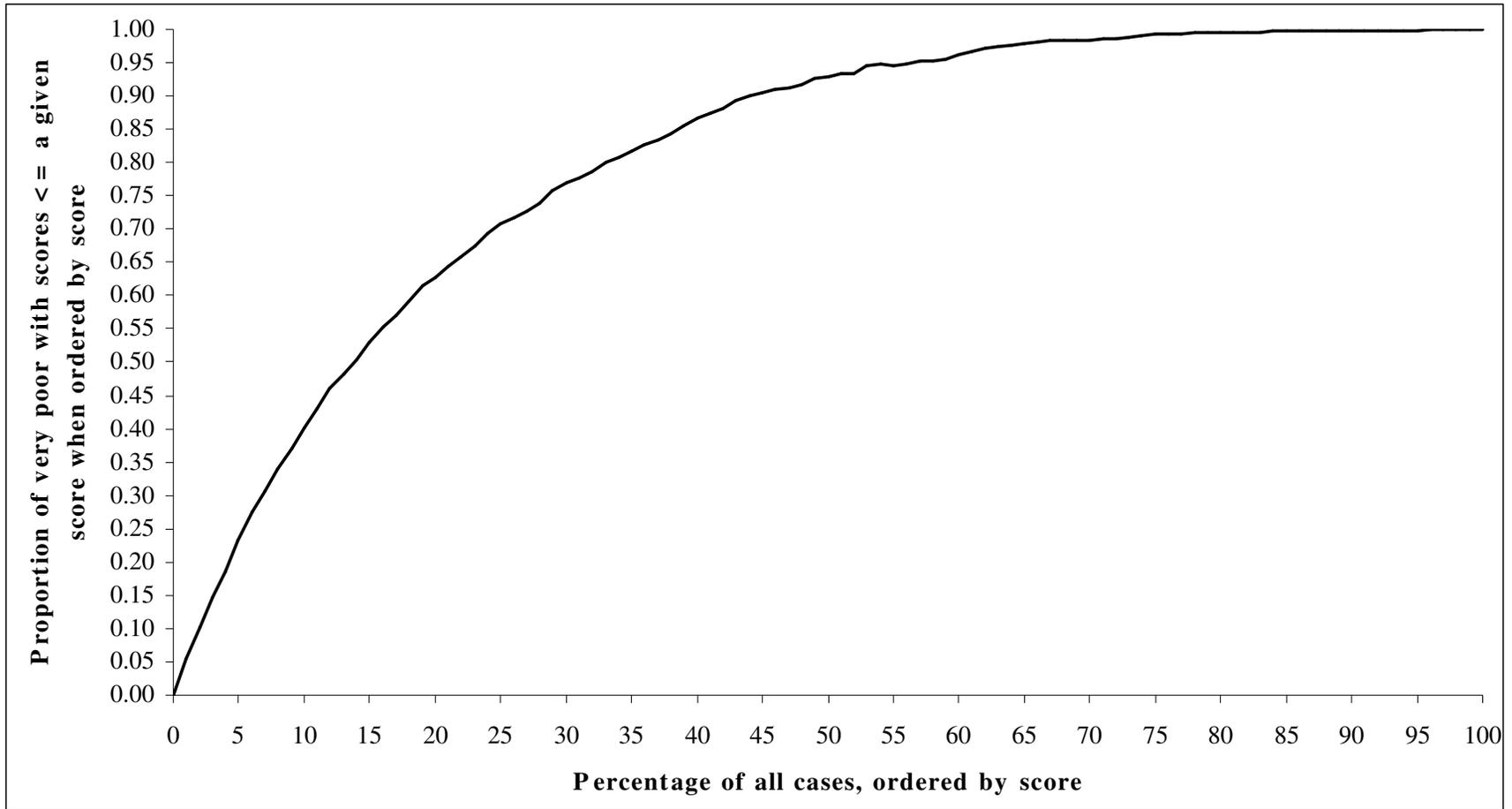
Figure 4: Confidence intervals for poverty likelihoods

Figure 5: ROC curve indicating concentration of very poor among low scores

Grameen Foundation Training Manual for Using the PPI

Introduction

In 2000, the United States Congress passed the Microenterprise for Self-Reliance Act, which requires that half of all the microenterprise development funds provided by USAID must reach the "very poor" defined as those living on less than $1 a day (adjusted for purchasing power parity), or those living in the bottom 50% of those below their own country's poverty line. All microenterprise development organizations that receive USAID funding must regularly report to USAID the percentage of their clients who are "very poor."

Grameen Foundation (GF) has developed the Progress out of Poverty Index (PPI), a tool that MFIs can use to measure the poverty levels of their clients, understand how these levels change over time and analyse their operations so that more clients improve their living conditions (and thus leave poverty) faster. The PPI was designed with the USAID requirements in mind, so that it can serve as a practical and effective tool for USAID funding recipients to report on the poverty levels of their clients to USAID.

This document explains how the PPI can be used by MFIs to report the poverty levels of their clients to USAID. It does *not* explain how the PPI can be used to help MFIs translate their social objectives (helping clients leave poverty) into practice, targeting clients or understanding changes in client poverty levels. For further information on the use of the PPI for this, please contact Grameen Foundation directly or visit its website at: http://www.GrameenFoundation.org.

Preparing to use the PPI

One PPI desgn goal is to limit the costs and time required for MFIs to use the PPI. Considering the following in advance will allow for an efficient and cost- effective process. Planning the sampling of MFI clients will help ensure that the information collected is accurate and on time. Different issues that are important to consider prior to sampling clients are:

- Setting a schedule for sampling the clients;
- Integrating the PPI into client intake forms;
- Defining the population to be surveyed;
- Constructing the sample frame;
- Selecting the sample;
- Training field staff to administer the survey;
- Conducting and assessing pre-test of the survey:
- Administering the PPI while taking care of supervision and quality control;
- Processing and analyzing the data.

This document covers all of these themes and is sufficient for any organisation that wishes to use the PPI to report on poverty levels of clients. This document is intended to be used with the PPI file for the country where the MFI operates. The PPI file contains more information on tool accuracy, how to use it, etc.

Scheduling

Setting the survey schedule is important for ensuring that it is completed on time. Below is a list of activities that need to be included in the scheduling process, along with rough estimates of the time required to complete each one.

Set project implementation plan	½ day
Define sample and generate list of clients for survey	1 day
Train field staff	3-4 days
Integrate PPI into client intake forms	1 hour
Translate PPI to local language as necessary	½ day
Pre-test and review of pre-test results	1 day
Prepare PPIs for field staff	1 hour
Conduct client interviews and supervise field staff	during one year
Enter data into excel sheet and analyse it	1 day
Prepare report for USAID	½ day
Total	**One year**

When to Administer the PPI: At Client intake

Although the PPI can be administered using the On-Going Monitoring methodology, Grameen Foundation recommends that the PPI be administered to new borrower households at the time of client intake. This is also a household survey, as the field staff will visit the client in her home. To administer the PPI at client intake, the MFI incorporates the PPI into its existing entry forms (often these will be the means test or loan application form). This form can then be used on the sample of intake clients to be surveyed. A word of caution, however: experience has shown that it is important to explain clearly the purpose of administering the PPI and each question in order to minimize the likelihood that respondents provide inaccurate responses. The PPI is advantageous in this regard as many of the indicators are verifiable by visual inspection, for example, by looking at the housing materials, the number of televisions (or other household assets) or the type of cooking fuel used. More on this in the section "Delivering The Survey".

Whom to Sample: Defining the Population, Sample Size and Confidence Intervals

The relevant population for the PPI surveys comprises all new or intake clients served by the MFI during a specified time period, usually one year. PPI surveys administered to samples drawn from this population will provide data that accurately measure poverty status of the MFI's intake clients.

Sample Frame and Selection

GF recommends that MFIs incorporate the PPI into their intake forms and use it with all incoming clients. Then, it could simply take the average poverty level of incoming clients over the year and report that to USAID. In cases where the MFI wishes to sample clients, the sample frame will consist of 200 randomly selected intake clients. (For sample size specification, see

Sample Size and Confidence Intervals, below.) The sampling time frame will be the entire year, so as to minimize the likelihood results being affected by seasonal changes in client status.

Respondents will be randomly selected for inclusion in the sample according to one of the following methods:
1. Sampling method if MFI expects to serve at least 400 new/intake clients during the year: MFI will select every nth intake client during the two month period, where n = (total number of anticipated intake clients during the two month period) divided by 200. For example, if the MFI expects to serve about 600 new clients over two months, n will equal 3, and the MFI will select every third intake client for the PPI sample frame.

Sample Size and Confidence Intervals

In order to generate accurate information on incoming client poverty levels, the MFI needs to bear in mind that the sample must be truly representative of the client population, in this case, total intake clients during a specified time period. This means that the sample must be large enough to be statistically significant and randomly selected so that it is representative of all intake clients that the MFI serves. Guidelines on how to determine sample size are below.

In order to meet USAID's information requirements on client poverty levels, samples of MFI clients interviewed for the PPI surveys need to be large enough to yield data that can be projected to the total population of the MFI's intake clients, within specified confidence levels. The margin-of-error formula is as follows.

> Margin-of-error **= (Square Root (SQRT) of (p x q)/N)) x 2**, where:
> **p** = percent of respondents answering "yes" (where "p" is estimated or assumed)
> **q** = 1 – p
> **N** = sample size, or number of respondents in the sample.

The confidence interval for a statistic derived from the sample, for example the mean or average response to a specific question, equals the sample statistic +/- the margin-of-error. The larger the sample size (N), the smaller the margin-of-error. But that relationship is neither proportional nor linear. The following table illustrates the relationship between sample sizes and confidence intervals. The third column, Confidence Interval, is based, for illustrative purposes only, on an assumption that the percent of sampled respondents who are classified as poor equals 36%.

Table 1. Example of Sample Sizes and Confidence Intervals

Sample Size (N)	Margin of Error	95% Confidence Interval (mean poverty score = 36%)
200	7.1%	28.9% to 43.1%
300	5.8%	30.2% to 41.8%
400	5.0%	31.0% to 41.0%
500	4.5%	31.5% to 40.5%
900	3.3%	32.7% to 39.3%

We can interpret a statistic, such as mean poverty score = 36%, derived from a sample of 500 randomly selected respondents as follows: 95 times out of 100, the "true" score for the total

population from which the sample was drawn will fall between 31.5% and 40.5%. Note that tripling the sample size from 300 to 900 results in the margin-of-error decreasing by 43% from 5.8% to 3.3%.

MFIs may use this table to determine how large their samples need to be relative to confidence intervals they wish to achieve. For the purposes of reporting to USAID on the poverty levels of clients, it is generally accepted that a sample size of at least 200 clients will meet accuracy requirements.

Guidelines for Training and Delivering the survey

The loan officer supervisor/ branch manager, or someone that this person delegates, will perform the training of the interviewers over a one-day period no more than one week prior to implementing the survey. The PPI will be administered to randomly selected samples of new, intake clients when field staff visits these clients' homes. It is important that the MFI adhere to the following interview procedures:
1. Administer PPI in clients' homes.
2. Strictly adhere to the PPI questions and format. Do not embellish, modify or vary the questions in any way. Make sure every question is answered, either by inspection or by verbal response.
3. Record and submit PPI for any missed clients, that is, one who is scheduled to be interviewed, but, for whatever reason, was not interviewed.

MFI field staff can practically administer the PPI as they frequently visit client households and are known to them. Furthermore, the PPI indicator questions are straightforward, easy to administer and often verifiable by inspection. The steps for the delivering the survey are described below.

Introduction
MFI field staff must interview the actual client when administering the PPI. Make the introduction simple, clear and concise. For example, start with an informal dialogue to make the client comfortable and build rapport with them. Sample questions:

> How are you?
> How's your family?
> How's your business?

It is important to introduce the purpose of the interview to the client. This is an opportunity to emphasize the fact that the PPI results will not affect the service that the client receives in any way. An example of the introduction is below.

"Good morning/afternoon.. We at [MFI name] always want to know if we are helping our clients.. that's why I am here. I would like to ask you 10 questions that can help us see how our services are helping you. Don't worry, this won't take more than 10 minutes of your time, and it will not affect your relationship with us."

Reducing Bias

The PPI uses 10 different indicators to capture the likely poverty situation of a respondent. To facilitate uniform understanding, the client would be asked to choose from a set of pictures to answer some of the questions. Some of the questions can be verified by the Loan Officer through direct observation.

Definition of Household Based on Country Survey

Household refers to all family members who are still living with the family in the house, or are working in another place with the sole purpose of earning money to send to support the family. Do not include family members who have already left home/independent and are earning solely to support themselves.

Indicators

For questions that have to do with housing materials:

I.) Consider the materials only
II.) Start rating as you approach the house
III.) If still not sure, walk around the house for further verification
IV.) Verify again inside by observation

For questions that have to do with household assets:

I.) Make sure that the field staff has pictures for the different kinds of household assets, such as a television set or radio.
II.) Lay down on the table the set of pictures of household assets that appear in the PPI (gas stove, TV, radio, refrigerator, washing machine) and have the client choose which of these they have/own.

For each particular asset the client picks, such as a TV or radio, the loan officer should ask how many functional units does she own.

Note: In case the client feels uncomfortable at any point, go back to an informal dialogue to make her feel relaxed and at ease.

After conducting the interview, field staff should review its work to ensure that none of the questions have been left out. The field staff supervisor should review the first three completed PPIs by each staff member to ensure that the completed PPI forms are legible and complete.

Supervision and quality control

Credibility of the PPI survey data will depend on applying a rigorous verification process. Survey data need to be verified in order to insure that the data collected were in fact collected and that they are accurate. It is also important to verify that samples of intake clients to whom PPI interviews are administered are representative of all of the MFI's intake clients.

GF recommends verifying approximately 10% of PPI interviews by re-conducting those interviews with an independent interviewer. The re-conducted PPI interviews should take place

within a week of the first interview. For example, within a week after PPI surveys have been completed and the survey data processed, a field supervisor or an independent agency would randomly select 10% (20) of the MFI's PPI surveys and re-conduct the PPI interview. This process is time-consuming and costly, but it is the only way to verify that the survey is yielding accurate data. Interviewers should be fully informed about the verification procedure.

Pre-test

In order to ensure the reliability and effectiveness of the survey instruments, a pre-test of the PPI questionnaire should be conducted prior to implementing the survey. Traditionally, the PPI should be pre-tested among 5-10% of the total sample size (10 to 20 households), amongst intake households, and this should be done prior to determining the sample households. The field staff that has just been trained will administer the pre-test. This gives the field staff some hands-on practice in administering the PPI and also helps identify questions that need clarification prior to implementing the survey.

It is possible that the field staff will have identified questions that are not clear. For questions that are related to the national household survey, the supervisor can refer to the national household survey website for clarification of the questions.

Adapting the survey to the institution

The PPI is designed so that practitioners can incorporate it directly into existing surveys and processes, particularly client intake forms. The tool is applicable to the country for which it is designed. Additionally, GF tested the PPI in two markets, India and Mexico, to compare accuracy in rural and urban contexts. The outcome of this analysis indicates that there is no significant advantage from using the country level PPI against using urban PPIs in urban settings and rural PPIs in rural settings. GF thus concluded that the country level PPI was sufficient to use in the entire country. The tool is only applicable in the country for which it is designed. The indicators cannot be changed or adjusted by the MFI using the PPI.

Most of the cost to utilize the tool will be required for field staff to visit borrower homes to apply the survey. It is most practical and inexpensive for a loan officer to visit the borrower home as part of a routine visit when the loan officer is in the borrower's community. This reduces the time required for transportation to the borrower's home (as it is a trip the field staff would have taken anyway). The PPI contains 10 indicators and results from field-testing show that it takes from five to eight minutes to administer in a household. Data entry takes less than one minute for each borrower tested: all that needs to be entered into the spreadsheet is the borrower name and her score on the PPI, as well as the time the PPI was administered. This data can be entered into a simple excel spreadsheet. The total time allocations will be:

Time required to administer PPI

Activity	Staff level	Time (hours/min)
Preparing the sample frame	Manager	1/0
Training loan officers in administering the PPI	Manager	24/0
	Field	4/0 per Loan

		Officer
Visiting borrower household to apply PPI (as part of routine loan officer business): 200*8 minutes= 1.600 minutes,	Field	**26/40 (during one year)**
Data entry for 200 PPI surveys:200*1minute	Field	**3/20**
Analysis (referencing the PPI scores on an Excel table):	Manager	**4/0**
Auditing (one visit by supervisor to 10% of households surveyed): 20*30 minutes	Manager	**10/0**
Prepare report for USAID	Executive	**4/0**
Clients		**0/8**

GF has written these guidelines with a goal of making the administration of the PPI a task that the MFI can perform without outside help. There is thus no need for outside help to be contracted to assist in this process unless the MFI uses an external agency to test a sample of PPI results. This cuts down on costs to the MFI but could result in additional workload for MFI staff. The MFI will need to consider the additional workload when it is planning for the PPI administration and ensure that staff is able to adjust its regular work.

As the data is entered into a spreadsheet for analysis, it is assumed that the MFI can use existing equipment for analysis. This means that there will be no additional expenses incurred to buy or rent computers or software. It is assumed that field staff will administer the PPI as part of its regular work. The supervision costs are usually not part of the normal work plan and will be the most significant expense.

The PPI will be administered at the client household. Experience shows that it takes 5-8 minutes to administer the PPI. There are no additional costs to the client for transportation, etc.

Cost of administering the PPI (excluding salaries)
The costs of administering the PPI, outside of salaries, will be mostly for transportation to and from client households. As this is part of the field staff's regular work there should be no additional cost there, but for the supervision of field staff's work, the manager will need to get to and from borrower households. This cost will vary depending on the location of the clients, and the costs will be required for visiting 20 households (10% of the sample).

There will be an additional cost for office supplies (pens, papers, copies) for the pre-test and survey that will likely be less than USD 100.

GF recommends that this PPI survey not be tied to incentives to minimize the likelihood of distorting data. Since the PPI data will be entered into a simple spreadsheet, there will be no need for computer and software costs.

Data collection, processing and analysis

How the PPI works
In the PPI, each indicator response is assigned a value; the sum of the values for all the (usually 10 to 15) indicators is then the PPI *score* for the household. The PPI score reflects the *probability* that the household is very poor, moderately poor, or non-poor. This index then serves as a baseline from which client progress vis-à-vis the poverty line is measured (Please refer to the slides in Appendix A). A score is not a poverty likelihood (that is, the estimated probability of

being poor), but each score is associated with a poverty likelihood (in the field or back at the office) via simple tables[1]. So, for example, in the 10-indicator scorecard in the appendix, scores of 0–4 correspond with poverty likelihoods of 98.7 percent.

Calculation of aggregate poverty level
A portfolio's estimated poverty rate is the average of the poverty likelihoods of individual clients. For example, suppose a microlender had three clients on Jan. 1, 2006 who, by the Philippines's 10-indicator PPI, had scores of 20, 30, and 40, corresponding to poverty likelihoods of 80.7, 61.7, and 32.9 percent. The poverty rate in this portfolio is the clients' average poverty likelihood, that is, $(80.7 + 61.7 + 32.9) \div 3 = 58.4$ percent.

As mentioned earlier in this document, the calculation can be done by simply entering the PPI scores into a spreadsheet and comparing the scores to their corresponding poverty likelihoods using a simple lookup function (this is a command in MS Excel: see spreadsheet in Appendix B).

The PPI is designed so that field staff can do data input and managers can perform the analysis. There is no need to rent computers or hire people to enter data. Experience has shown that it can take from 20 seconds to one minute to enter the data into a spreadsheet for each client.

Risk Management and Mitigation

Data manipulation by loan officers should be mitigated by implementing a random check of 10% of PPIs by supervisors or outside consultants. GF recommends that for the purposes of USAID reporting that there be no staff incentives tied to PPI scores.

At the client level, when the PPI is introduced to clients, clients should be instructed that the PPI score has no relevance to their relationship with the MFI. This will prevent clients' manipulation of scores. Client misunderstanding of questions is mitigated by a thorough explanation of what each question means. This detail is available from the national household survey organisation (ENIGH in Mexico, APIS in the Philippines, etc.).

This manual attempts to minimize the possibilities of deliberate or accidental misreporting of data on the part of the institution through the institutions of spot checks by MFI supervisors, the ransomisation of the survey to represent all the MFI clients, the adequate training of field staff to use the PPI, not linking incentives to the PPI results and providing a clear explanation to MFI clients as to the PPI's purpose. GF expects that this should be sufficient to ensure the quality of the data. However, in cases where the organisations involved are unsure of the accuracy of the data, USAID field staff can visit the MFI and verify some of the results themselves.

On-going issues
Practitioners that choose to use the PPI for USAID purposes can contact GF is they have any concers with the issues discussed in this manual. As PPIs are updated, GF will circulate them and post them on the GF website.

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[1] Refer to Appendix A

Appendix A

The PPI: What does it look like?

Sample PPI for Pakistan

Indicator	Attributes			Points
1. Do all children of ages 6 to 17 attend school?	No	Yes	No children this age	
	0	13	23	
2. In the past two weeks, did anyone in the household eat any chicken?		No	Yes	
		0	8	
3. What is the household's main source of drinking water?		Hand pump	Any other source	
		0	4	
4. In the past two weeks, did anyone in the household eat any curd or yoghurt?		No	Yes	
		0	7	
5. Does the household own a refrigerator or freezer?		No	Yes	
		0	10	
6. In the past month, did anyone in the household spend anything on telegraph, postal, fax, e-mail, internet, etc.?		No	Yes	
		0	11	
7. In the past two weeks, did anyone in the household eat any mutton?		No	Yes	
		0	8	
8. What type of toilet is used by the household?	All others	Flush connect to pipe	Flush connected to public sewerage	
	0	5	8	
9. In the past two weeks, did anyone in the household eat any Desi ghee?		No	Yes	
		0	13	
10. In the past two weeks, did anyone in the household eat any tomatoes?		No	Yes	
		0	8	

Source: Calculations by Microfinance Risk Management, L.L.C. based on the 2001 PIHS.   Total:

The PPI: How does it work?

PPI Score

0 - 4
5 - 9
10 - 14
15 - 19
20 - 24
25 - 29
30 - 34
35 - 39
40 - 44
45 - 49
50 - 54
55 - 59
60 - 64
65 - 69
70 - 74
75 - 79
80 - 84
85 - 89
90 - 94
95 - 100
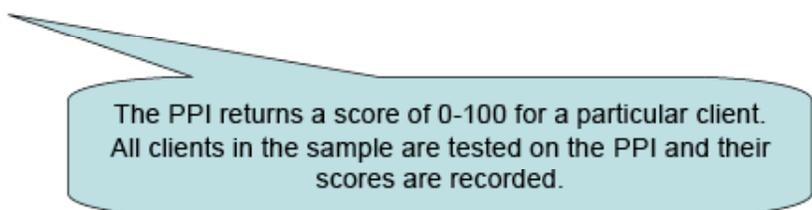
The PPI returns a score of 0-100 for a particular client. All clients in the sample are tested on the PPI and their scores are recorded.

The PPI: What do I do with it?
Aggregate Portfolio Monitoring

PPI Score	Very Poor	Moderately Poor	Non Poor
0 - 4	82.5%	16.2%	1.3%
5 - 9	84.1%	12.9%	3.0%
10 - 14	68.3%	26.9%	4.7%
15 - 19	61.4%	29.5%	9.1%
20 - 24	42.0%	38.7%	19.3%
25 - 29	34.0%	38.4%	27.5%
30 - 34	24.8%	36.8%	38.3%
35 - 39	13.3%	29.2%	57.5%
40 - 44	9.6%	23.3%	67.1%
45 - 49	4.7%	16.4%	78.9%
50 - 54	2.5%	10.8%	86.7%
55 - 59	0.8%	9.2%	90.0%
60 - 64	0.3%	3.0%	96.7%
65 - 69	0.1%	1.4%	98.5%
70 - 74	0.0%	0.6%	99.4%
75 - 79	0.0%	0.1%	99.9%
80 - 84	0.0%	0.6%	99.4%
85 - 89	0.0%	0.7%	99.3%
90 - 94	0.0%	0.0%	100.0%
95 - 100	0.0%	0.0%	100.0%

A PPI Score of 52 means a 2.5% likelihood that the household is Very Poor, 10.8% Moderately Poor and 86.7% Non-Poor. The average poverty likelihoods for all households sampled in a portfolio yields the poverty distribution within the portfolio

Appendix B: Sample lookup table using Excel spreadsheet

Client ID	PPI Score	Probability of being: Very poor	Mod Poor	Non Poor
1	18	61.4%	29.5%	9.1%
2	48	4.7%	16.4%	78.9%
3	30	24.8%	36.8%	38.3%
4	44	9.6%	23.3%	67.1%
5	35	13.3%	29.2%	57.5%
6	46	4.7%	16.4%	78.9%
7	42	9.6%	23.3%	67.1%
8	38	13.3%	29.2%	57.5%
9	18	61.4%	29.5%	9.1%
10	20	42.0%	38.7%	19.3%
11	47	4.7%	16.4%	78.9%
12	33	24.8%	36.8%	38.3%
13	43	9.6%	23.3%	67.1%
14	9	84.1%	12.9%	3.0%
15	62	0.3%	3.0%	96.7%
16	44	9.6%	23.3%	67.1%
17	56	0.8%	9.2%	90.0%
18	21	42.0%	38.7%	19.3%
19	13	68.3%	26.9%	4.7%
20	48	4.7%	16.4%	78.9%
21	49	4.7%	16.4%	78.9%
22	19	61.4%	29.5%	9.1%
23	31	24.8%	36.8%	38.3%
24	33	24.8%	36.8%	38.3%
25	38	13.3%	29.2%	57.5%
26	42	9.6%	23.3%	67.1%
27	18	61.4%	29.5%	9.1%
28	24	42.0%	38.7%	19.3%
29	30	24.8%	36.8%	38.3%
30	69	0.1%	1.4%	98.5%
32	37	13.3%	29.2%	57.5%
33	21	42.0%	38.7%	19.3%
34	43	9.6%	23.3%	67.1%
35	54	2.5%	10.8%	86.7%
…	…	…	…	…
196	26	34.0%	38.4%	27.5%
197	34	24.8%	36.8%	38.3%
198	41	9.6%	23.3%	67.1%
199	63	0.3%	3.0%	96.7%
200	23	42.0%	38.7%	19.3%

Table of client PPI scores and poverty likelihoods:

Lookup table for PPI scores:

PPI Score	Probability of being: Very poor	Mod Poor	Non Poor
0	82.5%	16.2%	1.3%
1	82.5%	16.2%	1.3%
2	82.5%	16.2%	1.3%
3	82.5%	16.2%	1.3%
4	82.5%	16.2%	1.3%
5	84.1%	12.9%	3.0%
6	84.1%	12.9%	3.0%
7	84.1%	12.9%	3.0%
8	84.1%	12.9%	3.0%
9	84.1%	12.9%	3.0%
10	68.3%	26.9%	4.7%
11	68.3%	26.9%	4.7%
…	…	…	…
…	…	…	…
94	0.0%	0.0%	100.0%
95	0.0%	0.0%	100.0%
96	0.0%	0.0%	100.0%
97	0.0%	0.0%	100.0%
98	0.0%	0.0%	100.0%
99	0.0%	0.0%	100.0%
100	0.0%	0.0%	100.0%

References

Efron, Bradley; and Robert J. Tibshirani. (1993) *An Introduction to the Bootstrap*, New York, NY: Chapman and Hall, ISBN 0–412–04231–2.

Goodman, L.A.; and Kruskal, W.H. (1979) Measures of Association for Cross Classification, New York, NY: Springer-Verlag, ISBN 0–38–790443–3.

IRIS Center. (2005) "Notes on Assessment and Improvement of Tool Accuracy", http://www.povertytools.org/documents/Assessing%20and%20Improving%20Accuracy. pdf.

Schreiner, Mark. (2006a) "A Simple Poverty Scorecard for the Philippines", report to Grameen Foundation U.S.A., http://www.microfinance.com/English/Papers/Scoring_Poverty_Philippines.pdf.

_____. (2006b) "A Simple Poverty Scorecard for India", report to Grameen Foundation U.S.A., http://www.microfinance.com/English/Papers/Scoring_Poverty_India.pdf.

_____. (2005) "IRIS questions on poverty scorecards", memo for Grameen Foundation U.S.A., http://www.microfinance.com/English/Papers/Scoring_Poverty_Response_to_IRIS.pdf.