Simple Poverty Scorecard®
Haiti

Mark Schreiner

14 May 2016

Ou ka jwenn dokiman sa a an Kreyòl sou sit `SimplePovertyScorecard.com`.
Ce document est disponible en Français sur `SimplePovertyScorecard.com`
This document and related tools are in English at `SimplePovertyScorecard.com`.

Abstract

The Simple Poverty Scorecard® uses eleven low-cost indicators from Haiti's 2012 Post-Earthquake Living Standards Survey to estimate the likelihood that a household has consumption below a given poverty line. Field workers can collect responses in about ten minutes. Accuracy is reported for a range of poverty lines. The scorecard is a practical way for pro-poor programs in Haiti to measure poverty rates, to track changes in poverty rates over time, and to segment clients for differentiated services.

Version note

This paper uses 2012 data, replacing Schreiner (2006a), which uses 2001 data. The new 2012 scorecard here should be used from now on. The two scorecards use different definitions of *poverty*, so their estimates are not comparable.

Acknowledgements

This paper was funded by Grameen Foundation (GF). Data are from the *Observatoire National de la Pauvreté et de l'Exclusion Sociale* and the *Institut Haïtien de Statistique et d'Informatique.* Thanks go to Shirley Augustin, FONKOZE, KNFP, Federica Marzo, Julie Peachey, Sharada Ramanathan, Carine Roenen, Thiago Scot, and Schmied St. Fleur. The Simple Poverty Scorecard® is also known as the Progress out of Poverty Index®. GF manages and promotes the PPI® as a tool to help organizations measure the poverty of their participants so as to achieve their social objectives more effectively. PPI learning materials and resources are at `progressoutofpoverty.org`.

Author

Mark Schreiner directs Microfinance Risk Management, L.L.C. He is also a Senior Scholar at the Center for Social Development at Washington University in Saint Louis.

Simple Poverty Scorecard®

			Name	Identifier
Interview ID:				
Interview date:		Participant:		
Country:	HTI	Field agent:		
Scorecard:	002	Service point:		
Sampling wgt.:		Number of household members:		

Indicator	Response	Points	Score
1. In which department does the household live?	A. Ouest, or Grand'Anse	0	
	B. Centre, or Nord-Est	3	
	C. Nord-Ouest, or Sud	4	
	D. Artibonite, or Nippes	7	
	E. Nord, or Sud-Est	10	
2. How many members does the household have?	A. Eight or more	0	
	B. Seven	4	
	C. Six	9	
	D. Five	9	
	E. Four	14	
	F. Three	18	
	G. One, or two	32	
3. How many household members who are 10-years-old or older worked for at least one hour in the past week?	A. None	0	
	B. One	2	
	C. Two or more	4	
4. In the past week, did the female head/spouse work for at least one hour?	A. No	0	
	B. Yes	4	
	C. No female head/spouse	7	
5. Does the female head/spouse know how to read and write?	A. No, or no female head/spouse	0	
	B. Yes	3	
6. Does the male head/spouse know how to read and write?	A. No	0	
	B. No male head/spouse	2	
	C. Yes	4	
7. What is the main material of the roof?	A. No roof (camp), or thatch/straw	0	
	B. Metal sheets, or plastic	4	
	C. Cement/concrete, tile/slate, or other	12	
8. What is the main source of drinking water for the household?	A. Spring, surface water (stream, lake, pond, river, dam/canal), artesian well or borehole, rainwater, public standpipe, or untreated water (truck, bottle, bag, bucket, or jerrycan)	0	
	B. Well, private faucet/DINEPA, or treated water (kiosk, truck, bottle, bag, bucket, or jerrycan)	7	
9. What is the main source of energy for cooking?	A. Wood/straw, or other	0	
	B. Charcoal, solar, propane, electricity, or kerosene	8	
10. Does the household or a household member have a stove (wood/charcoal)?	A. No	0	
	B. Yes	6	
11. Does the household or a household member have a radio?	A. No	0	
	B. Yes	7	

Score:

Back-page Worksheet:
Household Members, Ages, and Work Status

In the scorecard header, write the interview's unique identifier (if known), the interview date, and the sampling weight of the participant (if known). Then record the name and unique identification number of the participant (who may differ from the respondent), of yourself as the field agent, and of the service point that the participant uses.

For the first scorecard indicator, mark the department where the household lives.

Next, introduce yourself to the household head and say: *Please tell me the first name and age of each person who lives permanently with this household, starting with yourself. A* household *is a person or group—regardless of blood or marital relationship—who normally live in the same residence, pool resources, share meals, and recognize the same head. To be a* household member*, a person must have lived with the household (or plan to live from now on) for at least six months. Someone who has been absent for more than three months no longer counts as a* household member*.*

Write down the first name (or nickname) and the age of each member, noting for your own future use the name of the male head/spouse and of the female head/spouse. In the header under "Number of household members:", record the total number of members. Also mark the response that corresponds to the second scorecard indicator.

For each member, mark whether he/she is 10-years-old or older. For each member 10-years-old or older, ask "Did <name> work for at least one hour in the past week?" Count the number of workers, and mark the third indicator.

Finally, mark the fourth indicator based on the work status of the female head/spouse.

Always keep in mind the full definitions in the "Guidelines for the Interpretation of Scorecard Indicators" for *household*, *household member*, and *work*.

First name or nickname	Age	Is <name > 10-years-old or older ?		If <name> is 10-years-old or older, did he/she work at least 1 hour in the past week?		
1.		No	Yes	Age < 10	No	Yes
2.		No	Yes	Age < 10	No	Yes
3.		No	Yes	Age < 10	No	Yes
4.		No	Yes	Age < 10	No	Yes
5.		No	Yes	Age < 10	No	Yes
6.		No	Yes	Age < 10	No	Yes
7.		No	Yes	Age < 10	No	Yes
8.		No	Yes	Age < 10	No	Yes
9.		No	Yes	Age < 10	No	Yes
10.		No	Yes	Age < 10	No	Yes
11.		No	Yes	Age < 10	No	Yes
12.		No	Yes	Age < 10	No	Yes
# members:				**# members who work:**		

Look-up table to convert scores to poverty likelihoods:

	Poverty likelihood (%)								
	National poverty lines				Poorest half	2005 PPP poverty lines			
Score	**Food**	**100%**	**150%**	**200%**	**<100% Natl.**	**$1.25**	**$2.00**	**$2.50**	**$5.00**
0–4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
5–9	87.4	100.0	100.0	100.0	83.7	87.4	100.0	100.0	100.0
10–14	83.8	97.3	99.7	100.0	83.3	85.5	97.3	97.3	100.0
15–19	62.9	95.8	99.4	100.0	69.9	70.3	93.8	96.8	100.0
20–24	56.5	94.4	99.4	99.8	61.6	61.4	88.4	96.6	99.8
25–29	51.5	94.0	98.8	99.6	55.2	54.0	87.9	96.6	99.6
30–34	32.8	83.6	95.5	98.7	38.8	35.6	72.0	86.8	99.1
35–39	22.0	76.5	93.8	98.1	32.3	27.3	62.0	79.8	99.1
40–44	13.7	62.7	90.7	96.3	20.2	15.9	47.6	69.7	97.9
45–49	7.9	44.8	77.2	90.0	15.0	10.4	30.8	49.6	92.8
50–54	5.3	40.1	72.3	89.4	12.6	6.6	26.4	47.6	89.6
55–59	1.6	27.7	65.8	80.7	7.5	2.2	19.3	31.6	82.8
60–64	0.5	16.4	48.8	71.9	2.9	1.0	8.1	20.1	74.3
65–69	0.0	8.8	28.4	54.4	1.8	0.0	4.9	11.6	60.3
70–74	0.0	4.7	16.5	42.8	1.8	0.0	1.9	5.2	47.8
75–79	0.0	2.2	11.8	35.5	0.2	0.0	1.8	2.2	38.8
80–84	0.0	0.0	8.0	17.5	0.0	0.0	0.0	0.0	22.7
85–89	0.0	0.0	3.1	6.2	0.0	0.0	0.0	0.0	10.6
90–94	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	7.0
95–100	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	7.0

Simple Poverty Scorecard®
Haiti

1. Introduction

This paper presents the Simple Poverty Scorecard®. Pro-poor programs in Haiti can use it to estimate the likelihood that a household has consumption below a given poverty line, to measure groups' poverty rates at a point in time, to track changes in groups' poverty rates over time, and to segment participants for differentiated services.

The direct approach to poverty measurement via consumption surveys is difficult and costly. As a case in point, Haiti's 2012 Post-Earthquake Living Standards Survey (*Enquête sur les Conditions de Vie des Ménages Auprès du Seisme*, ECVMAS) has 47 pages and includes more than 500 questions, most of which may be asked multiple times (for example, for each household member or for each consumption item).

In comparison, the indirect approach of the Simple Poverty Scorecard® is quick and low-cost. It uses 11 verifiable indicators (such as "What is the main material of the roof?" and "Does the household or a household member have a radio?") to get a score that is correlated with poverty status as measured by the exhaustive ECVMAS survey.

The Simple Poverty Scorecard® differs from "proxy-means tests" (Coady, Grosh, and Hoddinott, 2004) in that it is transparent, it is freely available,[1] and it is tailored to the capabilities and purposes not of national governments but rather of local, pro-poor

[1] The Simple Poverty Scorecard® is not, however, in the public domain. Copyright is held by the sponsor and by Microfinance Risk Management, L.L.C.

organizations. The feasible poverty-measurement options for local organizations are typically blunt (such as rules based on land ownership or housing quality) or subjective and relative (such as participatory wealth ranking facilitated by skilled field workers). Poverty measures from these approaches may be costly, their accuracy is unknown, and they are not comparable across places, organizations, nor time.

Poverty scoring can be used to measure the share of a program's participants who are below a given poverty line (for example, Haiti's national line). USAID microenterprise partners in Haiti can use scoring with the line that marks the poorest half of people with consumption below 100% of the national poverty line to report how many of their participants are "very poor".[2] Scoring can also be used to measure net movement across a poverty line over time. In all these applications, the scorecard provides a consumption-based, objective tool with known accuracy. While consumption surveys are costly even for governments, some local pro-poor organizations may be able to implement a low-cost scorecard to help with monitoring poverty and (if desired) segmenting clients for differentiated services.

The statistical approach here aims to be understood by non-specialists. After all, if managers are to adopt poverty scoring on their own and apply it to inform their decisions, then they must first trust that it works. Transparency and simplicity build

[2] USAID defines a household as *very poor* if its daily per-capita consumption is less than the highest of the $1.25/day 2005 PPP line (HTG44.83, Table 1) or the line (HTG50.52) that marks the poorest half of people below 100% of the national line. USAID (2014, p. 8) has approved the Simple Poverty Scorecard®—branded as a Progress Out of Poverty Index®—for use by its microenterprise partners.

trust. Getting "buy-in" matters; proxy-means tests and regressions on the "determinants of poverty" have been around for decades, but they are rarely used to inform decisions by local, pro-poor organizations. This is not because they do not work, but because they are often presented (when they are presented at all) as tables of regression coefficients incomprehensible to non-specialists (with cryptic indicator names such as "`LGHHSZ_2`" and with points with negative values and many decimal places). Thanks to the predictive-modeling phenomenon known as the "flat maximum", simple, transparent approaches are usually about as accurate as complex, opaque ones (Schreiner, 2012a; Caire and Schreiner, 2012).

Beyond its low cost and transparency, the technical approach of the Simple Poverty Scorecard® is innovative in how it associates scores with poverty likelihoods, in the extent of its accuracy tests, and in how it derives formulas for standard errors. Although the accuracy tests are simple and commonplace in statistical practice and in the for-profit field of credit-risk scoring, they have rarely been applied to poverty measurement via scorecards.

The Simple Poverty Scorecard® is based on data from the 2012 ECVMAS from the *Institut Haïtien de Statistique et d'Informatique* (IHSI). Indicators are selected to be:

- Inexpensive to collect, easy to answer quickly, and simple to verify
- Strongly correlated with poverty
- Liable to change over time as poverty status changes
- Applicable in all regions in Haiti

All points in the scorecard are non-negative integers, and total scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line). Non-specialists can collect data and tally scores on paper in the field in about ten minutes.

Poverty scoring can be used to estimate three basic quantities. First, it can estimate a particular household's *poverty likelihood*, that is, the probability that the household has per-capita consumption below a given poverty line.

Second, poverty scoring can estimate the poverty rate of a group of households at a point in time. This estimate is the average of poverty likelihoods among the households in the group.

Third, poverty scoring can estimate the annual rate of change in the poverty rate. With two independent samples from the same population, this is the difference in the average poverty likelihood in the baseline sample versus the average likelihood in the follow-up sample, divided by the difference (in years) between the average interview date in the baseline sample and the average interview date in the follow-up sample. With one sample in which each household is scored twice, the estimate is the sum of each household's change in its poverty likelihood from baseline to follow-up, divided by the sum the years that passed between each household's two interviews (Schreiner, 2014a).

Poverty scoring can also be used to segment participants for differentiated services. To help managers choose appropriate targeting cut-offs for their purposes, several measures of targeting accuracy are reported for a range of possible cut-offs.

This paper presents a single scorecard whose indicators and points are derived with the national poverty line applied to data from the 2012 ECVMAS. Scores from this one scorecard are calibrated with data from the 2012 ECVMAS to poverty likelihoods for nine poverty lines.

The scorecard is constructed using half of the data from the 2012 ECVMAS. That same half of the 2012 data is also used to calibrate scores to poverty likelihoods for nine poverty lines. The other half of the 2012 ECVMAS data is used to validate the scorecard's accuracy for estimating households' poverty likelihoods, for estimating groups' poverty rates at a point in time, and for segmenting participants.

All three scoring-based estimators (the poverty likelihood of a household, the poverty rate of a group of households at a point in time, and the annual rate of change in the poverty rate) are *unbiased*. That is, they match the true value on average in repeated samples when constructed from (and applied to) a single, unchanging population in which the relationship between scorecard indicators and poverty is unchanging. Like all predictive models, the scorecard is constructed from a single sample and so misses the mark to some unknown extent when applied (as in this paper) to a validation sample. Furthermore, it makes errors when applied (in practice) to a

different population or when applied before or after 2012 (because the relationships between indicators and poverty change over time).[3]

Thus, while the indirect scoring approach is less costly than the direct survey approach, it makes errors when applied in practice. (Estimates from the direct survey approach are correct by definition.) There are errors because scoring necessarily assumes that future relationships between indicators and poverty in all possible groups of households will be the same as in the construction data. Of course, this assumption—inevitable in predictive modeling—holds only partly.

On average across 1,000 bootstraps of $n = 16{,}384$ from the validation sample, the difference between scorecard estimates of groups' poverty rates versus the true rates at a point in time for 100% of the national poverty line is –0.2 percentage points. Across all nine poverty lines, the average absolute difference is about 1.7 percentage points, and the maximum average absolute difference is 3.8 percentage points. These differences reflect estimation errors due to sampling variation, not bias; the average difference would be zero if the whole 2012 ECVMAS survey were to be repeatedly re-fielded and divided into sub-samples before repeating the entire process of constructing and validating scorecards.

With $n = 16{,}384$, the 90-percent confidence intervals are ± 0.7 percentage points or less. For $n = 1{,}024$, the 90-percent intervals are ± 2.8 percentage points or less.

[3] Important cases include nationally representative samples at a later point in time or sub-groups that are not nationally representative (Diamond *et al.*, 2016; Tarozzi and Deaton, 2009).

Section 2 below documents data and poverty lines. Sections 3 and 4 describe scorecard construction and offer guidelines for implementation. Sections 5 and 6 tell how to estimate households' poverty likelihoods and groups' poverty rates at a point in time. Section 7 discusses estimating changes in poverty rates over time. Section 8 covers targeting. Section 9 places the scorecard here in the context of a related exercise for Haiti. The last section is a summary.

The "Guidelines for the Interpretation of Scorecard Indicators" tells how to ask questions (and how to interpret responses) so as to mimic practice in Haiti's 2012 ECVMAS as closely as possible. These "Guidelines" (and the "Back-page Worksheet") are integral parts of the Simple Poverty Scorecard®.

2. Data and poverty lines

This section presents the data used to construct and validate the Simple Poverty Scorecard®. It also documents the nine definitions of *poverty* to which scores are calibrated.

2.1 Data

Indicators and points for the scorecard are selected (*constructed*) based on a random half of the data from the 4,930 households in the 2012 ECVMAS, Haiti's first national consumption survey since 2001.

The half of the 2012 data that is used in scorecard construction is also used to associate (*calibrate*) scores to poverty likelihoods for all poverty lines.

The other half of the 2012 data is used to test (*validate*) scorecard accuracy *out-of-sample*, that is, with data that is not used in construction/calibration.

Interviews for the 2012 ECVMAS took place from 8 August 2012 to 31 December 2012.[4] Consumption is in units of HTG per person per day in average prices for Haiti as a whole in October 2012.

[4] This comes from the dates of interviews as recorded in the microdata.

2.2 Poverty rates at the household, person, or participant level

A *poverty rate* is the share of units in households in which total household consumption (divided by the number of household members) is below a given poverty line. The unit of analysis is either the household itself or a person in the household. By assumption, each household member has the same poverty status (or estimated poverty likelihood) as the other members in that same household.

To illustrate, suppose a program serves two households. The first household is poor (its per-capita consumption is less than a given poverty line), and it has three members, one of whom is a program participant. The second household is non-poor and has four members, two of whom are program participants.

Poverty rates are in terms of either households or people. If the program defines its *participants* as households, then the household level is relevant. The estimated household-level poverty rate is the weighted[5] average of poverty statuses (or estimated poverty likelihoods) across households with participants. This is $\frac{1 \cdot 1 + 1 \cdot 0}{1 + 1} = \frac{1}{2} = 0.5 = 50$ percent. In the "$1 \cdot 1$" term in the numerator, the first "1" is the first household's weight, and the second "1" is the first household's poverty status (poor). In the "$1 \cdot 0$" term in the numerator, the "1" is the second household's weight, and the "0" is the second household's poverty status (non-poor). The "$1 + 1$" in the

[5] The example here assumes simple random sampling at the household level. This means that each household has the same weight, taken here to be one (1).

denominator is the sum of the weights of the two households. Household-level weights are used because the unit of analysis is the household.

Alternatively, a person-level rate is relevant if a program defines all people in households that benefit from its services as *participants*. In the example here, the person-level rate is the household-size-weighted[6] average of poverty statuses for households with participants, or $\frac{3 \cdot 1 + 4 \cdot 0}{3 + 4} = \frac{3}{7} = 0.43 = 43$ percent. In the "$3 \cdot 1$" term in the numerator, the "3" is the first household's weight because it has three members, and the "1" is its poverty status (poor). In the "$4 \cdot 0$" term in the numerator, the "4" is the second household's weight because it has four members, and the zero is its poverty status (non-poor). The "$3 + 4$" in the denominator is the sum of the weights of the two households. A household's weight is its number of members because the unit of analysis is the household member.

As a final example, a program might count as *participants* only those household members who directly participate in the program. For the example here, this means that some—but not all—household members are counted. The person-level rate is now the participant-weighted average[7] of the poverty statuses of households with participants, or $\frac{1 \cdot 1 + 2 \cdot 0}{1 + 2} = \frac{1}{3} = 0.33 = 33$ percent. The first "1" in the "$1 \cdot 1$" in the

[6] Given simple random sampling at the household level, a household's person-level weight is the number of people in the household.
[7] Given simple random sampling at the household level, a household's participant-level weight is the number of participants in the household.

numerator is the first household's weight because it has one participant, and the second "1" is its poverty status (poor). In the "$2 \cdot 0$" term in the numerator, the "2" is the second household's weight because it has two participants, and the zero is its poverty status (non-poor). The "$1 + 2$" in the denominator is the sum of the weights of the two households. Each household's weight is its number of participants because the unit of analysis is the participant.

To sum up, estimated poverty rates are weighted averages of households' poverty statuses (or estimated poverty likelihoods), where—assuming simple random sampling—the weights are the number of relevant units in the household. When reporting, organizations should make explicit the unit of analysis—household, household member, or participant—and explain why that unit is relevant.

Table 1 reports poverty lines and poverty rates for households and people in the 2012 ECVMAS for Haiti as a whole, for Haiti's five poverty-line regions, for the construction/calibration sample, and for the validation sample.

Household-level poverty rates are reported because—as shown above—household-level poverty likelihoods can be straightforwardly converted into poverty rates for other units of analysis. This is also why the Simple Poverty Scorecard® is constructed, calibrated, and validated with household weights. Person-level poverty rates are also included in Table 1 because these are the rates reported by the government of Haiti. Furthermore, popular discussions and policy discourse usually proceed in terms of

person-level rates, and the goal of local pro-poor programs is helping people (not households) to progress out of poverty.

2.3 Definition of *poverty*, and the national poverty line

A household's *poverty status* as poor or non-poor depends on whether its per-capita consumption is below a given poverty line. Thus, a definition of *poverty* is the combination of a poverty line along with a measure of consumption.

Marzo and Backiny-Yetna (2014) document the derivation—based on data from the 2012 ECVMAS—of Haiti's national poverty line, and Backiny-Yetna and Marzo (2014) document the derivation of aggregate household consumption. Theirs is Haiti's first official definition of *poverty*. As noted in World Bank (2014), Pedersen and Lockwood (2001) used an unofficial line—based on consumption and the cost-of-basic-needs approach—with the 1999/2000 *Enquête Budget et Consommation des Ménages*. Sletten and Egset (2004) used an income-based unofficial line of $1.08/person/day 1993 PPP with the 2001 *Enquête des Conditions de Vie en Haïti*.[8]

Haiti's definition of *poverty* follows the cost-of-basic-needs approach of Ravallion (1998). It begins with the cost of a single all-Haiti food basket that provides 2,300 Calories. The shares of items in the basket are those in the 2012 ECVMAS for people in

[8] Haiti's old 2001 scorecard uses Sletten and Egset's (2004) line (Schreiner, 2006a). There is no way to make the income-based estimates with that line and the old 2001 scorecard comparable with the consumption-based estimates and the poverty lines supported for the new 2012 scorecard.

the 20th to 60th percentiles of total per-capita consumption (Backiny-Yetna and Marzo, 2014; Marzo and Backiny-Yetna, 2014). In each of the five poverty-line regions, this food component of the national poverty line is defined as the cost of the food basket in the given region. The five monetary values of the food component are put in units of HTG in October 2012 using Haiti's official monthly regional food price indexes. Haiti's official "food" poverty line is equal to this food component. On average for Haiti overall, it is HTG42.49 per person per day (Table 1). This line corresponds with a household-level poverty rate of 18.2 percent and a person-level poverty rate of 23.8 percent.

For the non-food component of the national poverty line, Marzo and Backiny-Yetna (2014) find the average non-food consumption for households in the 2012 ECVMAS whose observed *food* per-capita consumption is within 90 to 110 percent of the food line. The single, all-Haiti non-food component is adjusted for price differences across regions, but not for price differences across the months when the 2012 ECVMAS was in the field.

Haiti's national (food-plus-non-food) poverty line (usually called here "100% of the national line") is defined the food component, plus the non-food component. On average for Haiti as a whole, the national line is HTG83.39 per person per day, giving a household-level poverty rate of 49.3 percent and a person-level poverty rate of 58.5 percent (Table 1).[9]

[9] The person-level rates match World Bank (2014, p. 2), suggesting that this paper uses the same data as World Bank and replicates its derivation of households' poverty

2.4 Supported poverty lines

Because pro-poor organizations in Haiti may want to use different or various poverty lines, this paper calibrates scores from its single scorecard to poverty likelihoods for nine lines:

- Food
- 100% of national
- 150% of national
- 200% of national
- Line marking the poorest half of people below 100% of the national line
- $1.25/day 2005 PPP
- $2.00/day 2005 PPP
- $2.50/day 2005 PPP
- $5.00/day 2005 PPP

The lines for 150% and 200% of the national line are multiples of 100% of the national line.

The line that marks the poorest half of people below 100% of the national line is defined as the median aggregate household per-capita consumption of people (not households) below 100% of the national line (U.S. Congress, 2004).

---

status. The food and national lines here (HTG42.49 and HTG83.39) do not match World Bank (HTG41.7 and HTG82.2) because World Bank puts regional price deflation in consumption while this paper puts it in poverty lines. This leads to different lines—without changing poverty rates—because the average person-weighted regional price deflator is 1.0203842, not 1.00.

The $1.25/day 2005 PPP line is derived from:

- 2005 PPP exchange rate for Haiti for "individual consumption expenditure by households" (Sun and Swanson, 2009): HTG19.365 per $1.00
- Average Consumer Price Index (CPI) for all of Haiti:[10]
  - Calendar-year 2005: 113.396
  - October 2012: 210.025
- 100% of the national line in each of the five poverty-line regions used with the 2012 ECVMAS[11]
- Person-weighted average of 100% of the national line for all-Haiti: 83.38676

Given this, the average $1.25/day 2005 PPP line in average prices in Haiti in October 2012 is (Sillers, 2006):

$$(\text{2005 PPP factor}) \cdot \$1.25 \cdot \left(\frac{\text{CPI}_{\text{Oct12}}}{\text{CPI}_{2005}}\right) = \left(\frac{\text{HTG19.365}}{\$1.00}\right) \cdot \$1.25 \cdot \left(\frac{210.025}{113.396}\right) = \text{HTG44.83}.$$

This $1.25/day 2005 PPP line cannot be compared with that of the World Bank's PovcalNet because PovcalNet only reports such a line for 2001.[12]

The other 2005 PPP lines are multiples of the $1.25/day line.

The 2005 PPP lines in the top three rows of Table 1 are all-Haiti averages. For a given poverty-line region, the $1.25/day line is the all-Haiti $1.25/day line, multiplied 100% of the national line in that region, and divided by 100% of the national line for Haiti as a whole (HTG83.38676).

---

[10] `ihsi.ht/produit_economie_ind_con_ipc_quid.htm`, retrieved 12 May 2016.
[11] Regional lines are derived by applying regional price deflators—provided with 2012 ECVMAS data—to the published all-Haiti national line.
[12] `iresearch.worldbank.org/PovcalNetPPP2005/`, retrieved 12 May 2016

For example, the regional $1.25/day 2005 PPP line for Artibonite and Centre is the all-Haiti $1.25/day line (HTG44.83), multiplied by 100% of the national line in Artibonite and Centre (HTG81.15, Table 1), and divided by 100% of the national line for Haiti as a whole (HTG83.38676). This is 44.83 x 81.15 ÷ 83.38676 = HTG43.63.

Microenterprise programs in Haiti who use the Simple Poverty Scorecard® to report the number of their participants who are "very poor" to USAID should use the line that marks the poorest half of people below 100% of the national line. This is because USAID defines the "very poor" as those people in households whose daily per-capita consumption is below the highest of the following two poverty lines:

- The line that marks the poorest half of people below 100% of the national line (HTG50.52, with a person-level poverty rate of 29.2 percent, Table 1)
- $1.25/day 2005 PPP (HTG44.83, with a person-level poverty rate of 26.0 percent)

3. Scorecard construction

For Haiti, about 80 candidate indicators are initially prepared in the areas of:

- Household composition (such as the number of members)
- Education (such as whether the female head/spouse knows how to read and write)
- Housing (such as the main material of the roof)
- Ownership of durable assets (such as stoves or radios)
- Employment (such as the number of household members who work)
- Agriculture (such as the number of household members working in agriculture)

Table 2 lists the candidate indicators, ordered by the entropy-based "uncertainty coefficient" (Goodman and Kruskal, 1979) that measures how well a given indicator predicts poverty status on its own.[13]

One possible application of the scorecard is to measure *changes* in poverty through time. Thus, when selecting indicators—and holding other considerations constant—preference is given to more sensitive indicators. For example, the ownership of a radio is probably more likely to change in response to changes in poverty than is whether the female head/spouse knows how to read and write.

The scorecard itself is built using 100% of the national poverty line and Logit regression on the construction sub-sample. Indicator selection uses both judgment and statistics. The first step is to use Logit to build one scorecard for each candidate indicator. Each scorecard's power to rank households by poverty status is measured as "c" (SAS Institute Inc., 2004).

[13] The uncertainty coefficient is not used to help select scorecard indicators; it is just a way to order the candidate indicators listed in Table 2.

One of these one-indicator scorecards is then selected based on several factors (Schreiner *et al.*, 2014; Zeller, 2004). These include improvement in accuracy, likelihood of acceptance by users (determined by simplicity, cost of collection, and "face validity" in terms of experience, theory, and common sense), sensitivity to changes in poverty, variety among indicators, applicability across regions, tendency to have a slow-changing relationship with poverty over time, relevance for distinguishing among households at the poorer end of the distribution of consumption, and verifiability.

A series of two-indicator scorecards are then built, each adding a second indicator to the one-indicator scorecard selected from the first round. The best two-indicator scorecard is then selected, again using judgment to balance statistical accuracy with the non-statistical criteria. These steps are repeated until the scorecard has 11 indicators that work well together.[14]

The final step is to transform the Logit coefficients into non-negative integers such that total scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line).

This algorithm is similar to common R^2-based stepwise least-squares regression. It differs from naïve stepwise in that the selection of indicators considers both statistical[15] and non-statistical criteria. The use of non-statistical criteria can improve

[14] For Haiti, indicator selection was also informed by feedback from a field test by Fondasyon Kole Zèpol (FONKOZE) and Konsèy Nasyonal Finansman Popilè (KNFP).
[15] The statistical criterion for selecting an indicator is not the p values of its coefficients but rather the indicator's contribution to the ranking of households by poverty status.

robustness through time and helps ensure that indicators are simple, common-sense, and acceptable to users.

The single Simple Poverty Scorecard® here applies to all of Haiti. Tests for Indonesia (World Bank, 2012), Bangladesh (Sharif, 2009), India and Mexico (Schreiner, 2006b and 2005a), Sri Lanka (Narayan and Yoshida, 2005), and Jamaica (Grosh and Baker, 1995) suggest that segmenting scorecards by urban/rural does not improve targeting accuracy much. In general, segmentation may improve the accuracy of estimates of poverty rates (Diamond *et al.*, 2016; Tarozzi and Deaton, 2009), but it may also increase the risk of overfitting (Haslett, 2012).

4. Practical guidelines for scorecard use

The main challenge of scorecard design is not to maximize statistical accuracy but rather to improve the chances that the scorecard is actually used (Schreiner, 2005b). When scoring projects fail, the reason is not usually statistical inaccuracy but rather the failure of an organization to decide to do what is needed to integrate scoring in its processes and to train and convince its employees to use the scorecard properly (Schreiner, 2002). After all, most reasonable scorecards have similar targeting accuracy, thanks to the empirical phenomenon known as the "flat maximum" (Caire and Schreiner, 2012; Hand, 2006; Baesens *et al.*, 2003; Lovie and Lovie, 1986; Kolesar and Showers, 1985; Stillwell, Barron, and Edwards, 1983; Dawes, 1979; Wainer, 1976; Myers and Forgy, 1963). The bottleneck is less technical and more human, not statistics but organizational-change management. Accuracy is easier to achieve than adoption.

The scorecard here is designed to encourage understanding and trust so that users will want to adopt it on their own and use it properly. Of course, accuracy matters, but it must be balanced with simplicity, ease-of-use, and "face validity". Programs are more likely to collect data, compute scores, and pay attention to the results if, in their view, scoring does not imply a lot of additional work and if the whole process generally seems to them to make sense.

To this end, Haiti's scorecard fits on one page. The construction process, indicators, and points are simple and transparent. Additional work is minimized; non-specialists can compute scores by hand in the field because the scorecard has:

- Only 11 indicators
- Only "multiple-choice" indicators
- Only simple points (non-negative integers, and no arithmetic beyond addition)

The scorecard (and its "Back-page Worksheet") is ready to be photocopied. A field worker using Haiti's scorecard would:

- Record the interview identifier, interview date, country code ("HTI"), scorecard code ("002") and the sampling weight assigned by the organization's survey design to the household of the participant
- Record the names and identifiers of the participant (who may not be the same as the respondent), field agent, and relevant organizational service point
- Mark the response to the first scorecard indicator based on the department in which the sampled household lives
- Complete the "Back-page Worksheet" with each household member's first name, age, and work status in the past week
- Record household size in the scorecard header next to "Number of household members:"
- Record the response to the second scorecard indicator based on the number of household members listed on the "Back-page Worksheet"
- Based on the responses recorded on the "Back-page Worksheet", mark the response to the third scorecard indicator for the number of household members who worked in the past week
- Based on the response recorded for the female head/spouse (if she exists) on the "Back-page Worksheet", record the response for the fourth scorecard indicator for whether the female head/spouse worked in the past week
- Read the fifth and sixth scorecard indicators to the respondent one at a time, and record each of the responses
- Do *not* read the seventh scorecard indicator to the respondent. Instead, record an answer after carefully observing the roof yourself and determining what material accounts for the largest share of its construction
- Read each of the remaining four questions one-by-one from the scorecard, drawing a circle around the relevant responses and their points, and writing each point value in the far right-hand column
- Add up the points to get a total score
- Implement targeting policy (if any)
- Deliver the paper scorecard to a central office for data entry and filing

Of course, field workers must be trained. The quality of outputs depends on the quality of inputs. If organizations or field workers gather their own data and believe that they have an incentive to exaggerate poverty rates (for example, if managers or funders reward them for higher poverty rates), then it is wise to do on-going quality

control via data review and random audits (Matul and Kline, 2003).[16] IRIS Center (2007a) and Toohig (2008) are useful nuts-and-bolts guides for budgeting, training field workers and supervisors, logistics, sampling, interviewing, piloting, recording data, and controlling quality.

In particular, while collecting scorecard indicators is relatively easier than alternative ways of measuring poverty, it is still absolutely difficult. Training and explicit definitions of terms and concepts in the scorecard are essential, and field workers should scrupulously study and follow the "Guidelines for the Interpretation of Scorecard Indicators" found at the end of this paper, as these "Guidelines"—along with the "Back-page Worksheet"—are integral parts of the Simple Poverty Scorecard®.[17]

For the example of Nigeria, one study (Onwujekwe, Hanson, and Fox-Rushby, 2006) found distressingly low inter-rater and test-retest correlations for indicators as seemingly simple as whether a household owns an automobile. At the same time, Grosh and Baker (1995) suggest that gross underreporting of assets does not affect targeting. For the first stage of targeting in a conditional cash-transfer program in Mexico,

---

[16] If a program does not want field workers and respondents to know the points associated with responses, then it can use a version of the scorecard that does not display the points and then apply the points and compute scores later at a central office. Even if points are hidden, however, field workers and respondents can apply common sense to guess how response options are linked with poverty. Schreiner (2012b) argues that hiding points in Colombia (Camacho and Conover, 2011) did little to deter cheating and that, in any case, cheating by the user's central office was more damaging than cheating by field workers and respondents.

[17] The guidelines here are the only ones that organizations should give to field workers. All other issues of interpretation should be left to the judgment of field workers and respondents, as this seems to be what Haiti's IHSI did in the ECVMAS.

Martinelli and Parker (2007, pp. 24–25) find that "underreporting [of asset ownership] is widespread but not overwhelming, except for a few goods . . . [and] overreporting is common for a few goods". Still, as is done in Mexico in the second stage of its targeting process, most false self-reports can be corrected (or avoided in the first place) by field workers who make a home visit. This is the recommended procedure for organizations who use scoring for targeting in Haiti.

In terms of implementation and sampling design, an organization must make choices about:

- Who will do the interviews
- How responses and scores will be recorded
- What participants will be interviewed
- How many participants will be interviewed
- How frequently participants will be interviewed
- Whether scoring will be applied at more than one point in time
- Whether the same participants will be scored at more than one point in time

In general, the sampling design should follow from the organization's goals for the exercise, the questions to be answered, and the budget. The main goal should be to make sure that the sample is representative of a well-defined population and that poverty scoring will inform an issue that matters to the organization.

The non-specialists who apply the scorecard with participants in the field can be:

- Employees of the organization
- Third parties

Responses, scores, and poverty likelihoods can be recorded on:

- Paper in the field, and then filed at a central office
- Paper in the field, and then keyed into a database or spreadsheet at a central office
- Portable electronic devices in the field, and then uploaded to a database

Given a population of participants relevant for a particular business question, the participants to be scored can be:

- All relevant participants (a census)
- A representative sample of relevant participants
- All relevant participants in a representative sample of relevant field offices and/or a representative sample of relevant field agents
- A representative sample of relevant participants in a representative sample of relevant field offices and/or a representative sample of relevant field agents

If not determined by other factors, the number of participants to be scored can be derived from sample-size formulas (presented later) to achieve a desired confidence level and a desired confidence interval. To have a chance to meaningfully inform questions that matter to the organization, however, the focus should not be on having a sample size large enough to achieve some arbitrary level of statistical significance but rather on having a representative sample from a well-defined population that is relevant for a issue that matters to the program.

The frequency of application can be:

- As a once-off project (precluding measuring change)
- Every two years (or at any other fixed or variable time interval, allowing measuring change)
- Each time a field worker visits a participant at home (allowing measuring change)

When a scorecard is applied more than once in order to measure change in poverty rates, it can be applied:

- With a different set of participants from the same population
- With the same set of participants

An example set of choices is illustrated by BRAC and ASA, two microfinance organizations in Bangladesh who each have about 7 million participants and who declared their intention to apply a Simple Poverty Scorecard® (Schreiner, 2013a) with a sample of about 25,000. Their design is that all loan officers in a random sample of branches score all participants each time they visit a homestead (about once a year) as part of their standard due diligence prior to loan disbursement. They record responses on paper in the field before sending the forms to a central office to be entered into a database and converted to poverty likelihoods.

5. Estimates of a household's poverty likelihood

The sum of scorecard points for a household is called the *score*. For Haiti, scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line). While higher scores indicate less likelihood of being poor, the scores themselves have only relative units. For example, doubling the score decreases the likelihood of being below a given poverty line, but it does not cut it in half.

To get absolute units, scores are converted to *poverty likelihoods*, that is, probabilities of being below a poverty line. This is done via simple look-up tables. For the example of 100% of the national line, scores of 40–44 have a poverty likelihood of 62.7 percent, and scores of 45–49 have a poverty likelihood of 44.8 percent (Table 3).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 40–44 are associated with a poverty likelihood of 62.7 percent for 100% of the national line but 15.9 percent for the $1.25/day 2005 PPP line.[18]

5.1 Calibrating scores with poverty likelihoods

A given score is associated ("calibrated") with a poverty likelihood by defining the poverty likelihood as the share of households in the calibration sub-sample who have the score and who have per-capita consumption below a given poverty line.

[18] From Table 3 on, many tables have nine versions, one for each of the nine poverty lines. To keep them straight, they are grouped by definition. Single tables pertaining to all definitions appear with the first group of tables for 100% of the national line.

For the example of 100% of the national line (Table 4), there are 9,288 (normalized) households in the calibration sub-sample with a score of 40–44. Of these, 5,822 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 40–44 is then 62.7 percent, because 5,822 ÷ 9,288 = 62.7 percent.

To illustrate with 100% of the national line and a score of 45–49, there are 9,095 (normalized) households in the calibration sub-sample, of whom 4,078 (normalized) are below the line (Table 4). The poverty likelihood for this score range is then 4,078 ÷ 9,095 = 44.8 percent.

The same method is used to calibrate scores with estimated poverty likelihoods for all nine poverty lines.[19]

Even though the scorecard is constructed partly based on judgment related to non-statistical criteria, the calibration process produces poverty likelihoods that are objective, that is, derived from quantitative poverty lines and from survey data on consumption. The calibrated poverty likelihoods would be objective even if the process of selecting indicators and points did not use any data at all. In fact, objective scorecards of proven accuracy are often constructed using only expert judgment to select indicators and points (Fuller, 2006, for Haiti; Caire, 2004; Schreiner *et al.*, 2014).

[19] To ensure that poverty likelihoods never increase as scores increase, likelihoods across series of adjacent scores are sometimes iteratively averaged before grouping scores into ranges. This preserves unbiasedness while keeping users from balking when sampling variation in score ranges with few households would otherwise lead to higher scores being linked with higher poverty likelihoods.

Of course, the scorecard here is constructed with both data and judgment. The fact that this paper acknowledges that some choices in scorecard construction—as in any statistical analysis—are informed by judgment in no way impugns the objectivity of the poverty likelihoods, as their objectivity depends on using data in score calibration, not on using data (and nothing else) in scorecard construction.

Although the points in the Haiti scorecard are transformed coefficients from a Logit regression, (untransformed) scores are not converted to poverty likelihoods via the Logit formula of $2.718281828^{\text{score}} \times (1 + 2.718281828^{\text{score}})^{-1}$. This is because the Logit formula is esoteric and difficult to compute by hand. Non-specialists find it more intuitive to define the poverty likelihood as the share of households with a given score in the calibration sample who are below a poverty line. Going from scores to poverty likelihoods in this way requires no arithmetic at all, just a look-up table. This approach to calibration can also improve accuracy, especially with large samples.

5.2 Accuracy of estimates of households' poverty likelihoods

As long as the relationships between indicators and poverty do not change over time, and as long as the scorecard is applied to households who are representative of the same population from which the scorecard was originally constructed, then this calibration process produces unbiased estimates of poverty likelihoods. *Unbiased* means that in repeated samples from the same population, the average estimate matches the true value. Given the assumptions above, the scorecard also produces unbiased estimates of poverty rates at a point in time and unbiased estimates of changes in poverty rates between two points in time.[20]

Of course, the relationships between indicators and poverty do change to some unknown extent over time and also across sub-national groups in Haiti's population. Thus, the scorecard will generally be biased when applied after December 2012 (the last month of fieldwork for the 2012 ECVMAS) or when applied with sub-groups that are not nationally representative.

[20] This is because these estimates of groups' poverty rates are linear functions of the unbiased estimates of households' poverty likelihoods.

How accurate are estimates of households' poverty likelihoods, given the assumption of unchanging relationships between indicators and poverty over time and the assumption of a sample that is representative of Haiti as a whole? To find out, the scorecard is applied to 1,000 bootstrap samples of size $n = 16{,}384$ with the validation sample. Bootstrapping means to:

- Score each household in the validation sample
- Draw a bootstrap sample *with replacement* from the validation sample
- For each score, compute the true poverty likelihood in the bootstrap sample, that is, the share of households with the score and with consumption below a poverty line
- For each score, record the difference between the estimated poverty likelihood (Table 3) and the true poverty likelihood in the bootstrap sample
- Repeat the previous three steps 1,000 times
- For each score, report the average difference between estimated and true poverty likelihoods across the 1,000 bootstrap samples
- For each score, report the two-sided intervals containing the central 900, 950, and 990 differences between estimated and true poverty likelihoods

For each score range and for $n = 16{,}384$, Table 5 shows the average difference between estimated and true poverty likelihoods. It also shows confidence intervals for the differences.

For the 100% of the national line, the average poverty likelihood across bootstrap samples for scores of 40–44 in the validation sample is too high by 4.5 percentage points. For scores of 35–39, the estimate is too low by 12.9 percentage points.[21]

[21] These differences are not zero, in spite of the estimator's unbiasedness, because the scorecard comes from a single sample. The average difference by score would be zero if samples were repeatedly drawn from the population and split into sub-samples before repeating the entire process of scorecard construction/calibration and validation.

The 90-percent confidence interval for the differences for scores of 40–44 is ±2.4 percentage points (Table 5). This means that in 900 of 1,000 bootstraps, the average difference between the estimate and the true value for households in this score range is between +2.1 and +6.9 percentage points (because +4.5 – 2.4 = +2.1, and +4.5 + 2.4 = +6.9). In 950 of 1,000 bootstraps (95 percent), the difference is +4.5 ± 2.8 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is +4.5 ± 3.7 percentage points.

Many of the absolute differences between estimated poverty likelihoods and true values in Table 5 for 100% of the national line are large. There are differences because the validation sample is a single sample that—thanks to sampling variation—differs in distribution from the construction/calibration sub-samples and from Haiti's population. For targeting, however, what matters is less the difference in all score ranges and more the differences in the score ranges just above and below the targeting cut-off. This mitigates the effects of bias and sampling variation on targeting (Friedman, 1997). Section 8 below looks at targeting accuracy in detail.

In addition, if estimates of groups' poverty rates are to be usefully accurate, then errors for individual households' poverty likelihoods must largely balance out. As discussed in the next section, this is generally the case for nationally representative samples, although it holds less well for sub-national groups.

Another possible source of differences between estimates and true values is overfitting. The scorecard here is unbiased, but it may still be *overfit* when applied after

the end of the ECVMAS fieldwork in December 2012. That is, the scorecard may fit the data from 2012 so closely that it captures not only some real patterns but also some random patterns that, due to sampling variation, show up only in the 2012 ECVMAS data but not in the overall population of Haiti. Or the scorecard may be overfit in the sense that it is not robust when relationships between indicators and poverty change over time or when the scorecard is applied to samples that are not nationally representative.

Overfitting can be mitigated by simplifying the scorecard and by not relying only on data but rather also considering theory, experience, and judgment. Of course, the scorecard here does this. Combining scorecards can also reduce overfitting, at the cost of greater complexity.

Most errors in individual households' likelihoods do balance out in the estimates of groups' poverty rates for nationally representative samples (see the next two sections). Furthermore, at least some of the differences in change-over-time estimates come from non-scorecard sources such as changes in the relationships between indicators and poverty, sampling variation, changes in poverty lines, inconsistencies in data quality across time, and imperfections in price adjustments across time and across geographic regions. These factors can be addressed only by improving the availability, frequency, quantity, and quality of data from national consumption surveys (which is beyond the scope of the scorecard) or by reducing overfitting (which likely has limited returns, given the scorecard's parsimony).

6. Estimates of a group's poverty rate at a point in time

A group's estimated poverty rate at a point in time is the average of the estimated poverty likelihoods of the individual households in the group.

To illustrate, suppose a program samples three households on 1 January 2016 and that they have scores of 20, 30, and 40, corresponding to poverty likelihoods of 94.4, 83.6, and 62.7 percent (100% of the national line, Table 3). The group's estimated poverty rate is the households' average poverty likelihood of (94.4 + 83.6 + 62.7) ÷ 3 = 80.2 percent.

Be careful; the group's poverty rate is *not* the poverty likelihood associated with the average score. Here, the average score is 30, which corresponds to a poverty likelihood of 83.6 percent. This differs from the 80.2 percent found as the average of the three individual poverty likelihoods associated with each of the three scores. Unlike poverty likelihoods, scores are ordinal symbols, like letters in the alphabet or colors in the spectrum. Because scores are not cardinal numbers, they cannot meaningfully be added up or averaged across households. Only three operations are valid for scores: conversion to poverty likelihoods, analysis of distributions (Schreiner, 2012a), or comparison—if desired—with a cut-off for targeting. There are some cases when the analysis of scores is appropriate, but, in general, the safest rule to follow is: if you are not completely sure what to do, then use poverty likelihoods, not scores.

Scores from the new 2012 scorecard are calibrated with data from the 2012 ECVMAS for all nine poverty lines. The process of calibrating scores to poverty likelihoods and the approach to estimating poverty rates is exactly the same for all poverty lines. For users, the only difference is in the specific look-up table used to convert scores to poverty likelihoods.

6.1 Accuracy of estimated poverty rates at a point in time

For the new 2012 scorecard applied to 1,000 bootstraps of $n = 16{,}384$ from the validation sample and 100% of the national poverty line, the average difference between the estimated poverty rate at a point in time versus the true rate is –0.2 percentage points (Table 7, summarizing Table 6 across all poverty lines). Across all nine poverty lines in the validation sample, the maximum average absolute difference is 3.8 percentage points, and the average absolute difference is about 1.7 percentage points. At least part of these differences is due to sampling variation in the division of the 2012 ECVMAS into sub-samples.

When estimating poverty rates at a point in time for a given poverty line, the average error reported in Table 7 should be subtracted from the average poverty likelihood to give a corrected estimate. For the example of the new 2012 scorecard and 100% of the national line in the validation sample, the error is –0.2 percentage points, so the corrected estimate in the three-household example above is 80.2 – (–0.2) = 80.4 percent.

In terms of precision, the 90-percent confidence interval for a group's estimated poverty rate at a point in time with $n = 16{,}384$ is ± 0.7 percentage points or better for all poverty lines (Table 7). This means that in 900 of 1,000 bootstraps of this size, the estimate (after correcting for the known average error) is within 0.7 percentage points of the true value.

For example, suppose that the (uncorrected) average poverty likelihood in a sample of $n = 16{,}384$ with the new 2012 scorecard and 100% of the national line is 80.2 percent. Then estimates in 90 percent of such samples would be expected to fall in the range of $80.2 - (-0.2) - 0.7 = 79.7$ percent to $80.2 - (-0.2) + 0.7 = 81.1$ percent, with the most likely true value being the corrected estimate in the middle of this range, that is, $80.2 - (-0.2) = 80.4$ percent. This is because the original (uncorrected) estimate is 80.2 percent, the average error is –0.2 percentage points, and the 90-percent confidence interval for 100% of the national line in the validation sample with this sample size is ± 0.7 percentage points (Table 7).

6.2 Formula for standard errors for estimates of poverty rates

How precise are the point-in-time estimates? Because these estimates are averages, they have (in "large" samples) a Normal distribution and can be characterized by their average difference vis-à-vis true values (*error*), together with their standard error (*precision*).

Schreiner (2008) proposes an approach to deriving a formula for the standard errors of estimated poverty rates at a point in time from indirect measurement via scorecards. It starts with Cochran's (1977) textbook formula of $\pm c = \pm z \cdot \sigma$ that relates confidence intervals with standard errors in the case of direct measurement of ratios, where:

$\pm c$ is a confidence interval as a proportion (*e.g.*, 0.02 for ±2 percentage points),

z is from the Normal distribution and is $\begin{cases} 1.04 \text{ for confidence levels of 70 percent} \\ 1.28 \text{ for confidence levels of 80 percent} \\ 1.64 \text{ for confidence levels of 90 percent} \end{cases}$,

σ is the standard error of the estimated poverty rate, that is, $\sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \phi$,

$\hat{p}$ is the estimated proportion of households below the poverty line in the sample,

ϕ is the finite population correction factor $\sqrt{\frac{N - n}{N - 1}}$,

N is the population size, and

n is the sample size.

For example, Haiti's 2012 ECVMAS gives a direct-measurement estimate of the household-level poverty rate for 100% of the national line in the validation sample of $\hat{p}$ = 49.3 percent (Table 1). If this estimate came from a sample of n = 16,384 households from a population N of 2,260,092 (the number of households in Haiti in 2012 according to the ECVMAS sampling weights), then the finite population correction ϕ is $\sqrt{\frac{2{,}260{,}092 - 16{,}384}{2{,}260{,}092 - 1}} = 0.9964$, which close to $\phi = 1$. If the desired confidence level is 90-percent (z = 1.64), then the confidence interval $\pm c$ is

$$\pm\, z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.493 \cdot (1 - 0.493)}{16{,}384}} \cdot \sqrt{\frac{2{,}260{,}092 - 16{,}384}{2{,}260{,}092 - 1}} = \pm 0.638$$

percentage points. (If ϕ were taken as 1, then the interval is ±0.641 percentage points.)

Unlike the 2012 ECVMAS, however, the Simple Poverty Scorecard® does not measure poverty directly, so this formula is not applicable. To derive a formula for the new 2012 scorecard, consider Table 6, which reports empirical confidence intervals $\pm c$ for the differences for the scorecard applied to 1,000 bootstraps of various sizes from the validation sample. For example, with n = 16,384 and 100% of the national line in the validation sample, the 90-percent confidence interval is ±0.686 percentage points.[22]

Thus, the 90-percent confidence interval with n = 16,384 is ±0.686 percentage points for Haiti's new 2012 scorecard and ±0.638 percentage points for direct measurement. The ratio of the two intervals is 0.686 ÷ 0.638 = 1.08.

[22] Due to rounding, Table 6 displays 0.7, not 0.686.

Now consider the same exercise, but with $n = 8{,}192$. The confidence interval under direct measurement and 100% of the national line in the validation sample is $\pm 1.64 \cdot \sqrt{\frac{0.493 \cdot (1 - 0.493)}{8{,}192}} \cdot \sqrt{\frac{2{,}260{,}092 - 8{,}192}{2{,}260{,}092 - 1}} = \pm 0.904$ percentage points. The empirical confidence interval with Haiti's new 2012 scorecard (Table 6) is ± 0.998 percentage points. Thus for $n = 8{,}192$, the ratio of the two intervals is $0.998 \div 0.904 = 1.10$.

This ratio of 1.10 for $n = 8{,}192$ is not far from the ratio of 1.08 for $n = 16{,}384$. Across all sample sizes of 256 or more in Table 6, these ratios are generally close to each other, and the average of these ratios in the validation sample turns out to be 1.05, implying that confidence intervals for indirect estimates of poverty rates via Haiti's new 2012 scorecard and 100% of the national line are—for a given sample size—about 5-percent wider than confidence intervals for direct estimates via the 2012 ECVMAS. This 1.05 appears in Table 7 as the "α factor for precision" because if $\alpha = 1.05$, then the formula for confidence intervals c for the new 2012 scorecard is $\pm c = \pm z \cdot \alpha \cdot \sigma$. That is, the formula for the standard error σ for point-in-time estimates of poverty rates via scoring is $\alpha \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}}$.

In general, α can be more or less than 1.00. When α is greater than 1.00, it means that the scorecard is less precise than direct measurement. It turns out that α is more than 1.00 for five of the nine poverty lines in Table 7.

The formula relating confidence intervals with standard errors for poverty scoring can be rearranged to give a formula for determining sample size before measurement. If $\tilde{p}$ is the expected poverty rate before measurement, then the formula for sample size n from a population of size N that is based on the desired confidence level that corresponds to z and the desired confidence interval $\pm c$ is

$n = N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p})}{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p}) + c^2 \cdot (N - 1)} \right)$. If the population N is "large" relative to the sample size n, then the finite-population correction factor ϕ can be taken as one (1), and the formula becomes $n = \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \tilde{p} \cdot (1 - \tilde{p})$.

To illustrate how to use this, suppose the population N is 2,260,092 (the number of households in Haiti in 2012), suppose $c = 0.05272$, $z = 1.64$ (90-percent confidence), and the relevant poverty line is 100% of the national line so that the most sensible expected poverty rate $\tilde{p}$ is Haiti's overall poverty rate for that line in 2012 (49.3 percent at the household level, Table 1). The α factor is 1.05 (Table 7). Then the sample-size formula gives

$$n = 2{,}260{,}092 \cdot \left(\frac{1.64^2 \cdot 1.05^2 \cdot 0.493 \cdot (1 - 0.493)}{1.64^2 \cdot 1.05^2 \cdot 0.493 \cdot (1 - 0.493) + 0.05272^2 \cdot (2{,}260{,}092 - 1)} \right) = 267,$$

which is not far from the sample size of 256 observed for these parameters in Table 6

for 100% of the national line. Taking the finite population correction factor ϕ as one (1) gives the same result, as $n = \left(\frac{1.05 \cdot 1.64}{0.05272}\right)^2 \cdot 0.493 \cdot (1 - 0.493) = 267.$[23]

Of course, the α factors in Table 7 are specific to Haiti, its poverty lines, its poverty rates, and this scorecard. The derivation of the formulas for standard errors using the α factors, however, is valid for any poverty-measurement tool following the approach in this paper.

In practice after the end of fieldwork for the ECVMAS in December 2012, a program would select a poverty line (say, 100% of the national line), note its participants' population size (for example, $N = 10{,}000$ participants), select a desired confidence level (say, 90 percent, or $z = 1.64$), select a desired confidence interval (say, ±2.0 percentage points, or $c = \pm 0.02$), make an assumption about $\widetilde{p}$ (perhaps based on a previous measurement such as the household-level poverty rate for 100% of the national line for Haiti of 49.3 percent in the 2012 ECVMAS in Table 1), look up α (here, 1.05 in Table 7), assume that the scorecard will still work in the future and for

[23] Although USAID has not specified confidence levels nor intervals, IRIS Center (2007a and 2007b) says that a sample size of $n = 300$ is sufficient for USAID reporting. USAID's microenterprise partners in Haiti should report using the line marking the poorest half of people below 100% of the national line. Given the α factor of 0.95 for this line in 2012 (Table 7), an expected before-measurement household-level poverty rate of 23.2 percent (the all-Haiti rate for this line in 2012, Table 1), and a confidence level of 90 percent ($z = 1.64$), then $n = 300$ implies a confidence interval of $\pm 1.64 \cdot 0.95 \cdot \sqrt{\frac{0.232 \cdot (1 - 0.232)}{300}} = \pm 3.8$ percentage points.

sub-groups that are not nationally representative,[24] and then compute the required sample size. In this illustration,

$$n = 10{,}000 \cdot \left(\frac{1.64^2 \cdot 1.05^2 \cdot 0.493 \cdot (1 - 0.493)}{1.64^2 \cdot 1.05^2 \cdot 0.493 \cdot (1 - 0.493) + 0.02^2 \cdot (10{,}000 - 1)} \right) = 1{,}564.$$

[24] This paper reports accuracy for the scorecard applied to its validation sample, but it cannot test accuracy for later years or for sub-groups. Performance after December 2012 will resemble that in the 2012 ECVMAS with deterioration over time to the extent that the relationships between indicators and poverty status change.

7. Estimates of changes in poverty rates over time

The change in a group's poverty rate between two points in time is estimated as the change in the average poverty likelihood of the households in the group.

Because the definition of *poverty* in the data from the 2012 ECVMAS used here to construct the new 2012 scorecard differs from the definition of *poverty* in the data used by Schreiner (2006a) to construct the old 2001 scorecard, and because the indicators in the new 2012 scorecard were asked differently (or not at all) in the data used by Schreiner (2006a) for the old 2001 scorecard, this paper cannot test estimates of change over time for Haiti, and it can only suggest approximate formulas for standard errors. Nonetheless, the relevant concepts are presented here because, in practice, pro-poor organizations in Haiti can apply the scorecard to collect their own data and measure change through time.

7.1 Warning: *Change* is not necessarily *impact*

Scoring can estimate change. Of course, poverty could get better or worse, and scoring does not indicate what caused change. This point is often forgotten or confused, so it bears repeating: poverty scoring simply estimates change, and it does not, in and of itself, indicate the reason for the change. In particular, estimating the impact of participation requires knowing what would have happened to participants if they had not been participants. Knowing this requires either strong assumptions or a control group that resembles participants in all ways except participation. To belabor the

point, poverty scoring can help estimate the impact of participation only if there is some way to know—or explicit assumptions about—what would have happened in the absence of participation. And that information must come from beyond poverty scoring.

7.2 Estimating changes in poverty rates over time

Consider the illustration begun in the previous section. On 1 January 2016, an organization samples three households who score 20, 30, and 40 and so have poverty likelihoods of 94.4, 83.6, and 62.7 percent (100% of the national line, Table 3). Correcting for the known average error in the validation sample of –0.2 percentage points (Table 7), the group's corrected baseline estimated poverty rate is the households' average poverty likelihood of [(94.4 + 83.6 + 62.7) ÷ 3] – (–0.2) = 80.4 percent.

After baseline, two sampling approaches are possible for the follow-up round:

- Score a new, independent sample from the same population
- Score the same sample that was scored at baseline

By way of illustration, suppose that two years later on 1 January 2018, the organization samples three additional households who are in the same population as the three original households and finds that their scores are 25, 35, and 45 (poverty likelihoods of 94.0, 76.5, and 44.8 percent, 100% of the national line, Table 3). Adjusting for the known average error, the average poverty likelihood at follow-up is [(94.0 + 76.5 + 44.8) ÷ 3] – (–0.2) = 72.0 percent, an improvement of 80.4 – 72.0 = 8.4

percentage points.[25] Supposing that exactly two years passed between the average baseline interview and the average follow-up interview, the estimated annual rate of decrease in poverty is 8.4 ÷ 2 = 4.2 percentage points per year. About one in 12 participants in this hypothetical example cross the poverty line in 2016/8.[26] Among those who start below the line, about one in ten (8.4 ÷ 80.4 = 10.4 percent) on net end up above the line.[27]

Alternatively, suppose that the three original households who were scored at baseline are scored again on 1 January 2018. Given scores of 25, 35, and 45, their follow-up poverty likelihoods are 94.0, 76.5, and 44.8 percent. The average across households of the difference in each given household's baseline poverty likelihood and its follow-up poverty likelihood is [(94.4 – 94.0) + (83.6 – 76.5) + (62.7 – 44.8)] ÷ 3 = 8.4 percentage points.[28] Assuming in this example that there are exactly two years between each household's interviews, the estimated annual decrease in poverty is (again) 8.4 ÷ 2 = 4.2 percentage points per year.

[25] Of course, such a huge reduction in poverty in two years is highly unlikely, but this is just an example to show how poverty scoring can be used to estimate change.
[26] This is a net figure; some start above the line and end below it, and vice versa.
[27] Poverty scoring does not reveal the reasons for this change.
[28] In this case, the error for this line in Table 7 should *not* be subtracted off.

Given the assumptions of poverty scoring, both approaches to estimating change through time are unbiased. In general (and unlike in the simple example here), however, they will give different estimates due to differences in the timing of interviews, in the composition of the samples, and in the nature of two samples being scored once versus one sample being scored twice (Schreiner, 2014a).

7.3 Precision for estimates of change in two samples

For two equal-sized independent samples, the same logic as in the previous section can be used to derive a formula relating the confidence interval $\pm c$ with the standard error σ of a poverty-assessment tool's estimate of the change in poverty rates over time:

$$\pm\, c = \pm z \cdot \sigma = \pm z \cdot \alpha \cdot \sqrt{\frac{2 \cdot \hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}}\,.$$

Here, z, c, $\hat{p}$ and N are defined as above, n is the sample size at both baseline and follow-up,[29] and α is the average (across a range of bootstrapped sample sizes) of the ratio of the observed confidence interval from a scorecard and the theoretical confidence interval under direct measurement.

[29] This means that—for a given level of precision—estimating the change in a poverty rate between two points in time requires four times as many interviews (not twice as many) as does estimating a poverty rate at a point in time.

As before, the formula for standard errors can be rearranged to give a formula for sample sizes before indirect measurement via a poverty-assessment tool, where $\tilde{p}$ is based on previous measurements and is assumed equal at both baseline and follow-up: $n = 2 \cdot N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p})}{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p}) + c^2 \cdot (N - 1)} \right)$. If ϕ can be taken as one, then the formula becomes $n = 2 \cdot \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \tilde{p} \cdot (1 - \tilde{p})$.

This α has been measured for 14 countries (Schreiner, 2016, 2015a, 2015b, 2015c, 2015d, 2013a, 2013b, 2012c, 2010, 2009a, 2009b, 2009c; Schreiner and Woller (2010); and Chen and Schreiner, 2009). The simple average of α across countries—after averaging α across poverty lines and survey years within each country—is 1.08. This rough figure is as reasonable as any to use for Haiti.

To illustrate the use of this formula to determine sample size for estimating changes in poverty rates across two independent samples, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is ± 2 percentage points ($\pm c = \pm 0.02$), the poverty line is 100% of the national line, $\alpha = 1.08$, $\hat{p} = 0.493$ (the household-level poverty rate in 2012 for 100% of the national line in Table 1), and the population N is large enough relative to the expected sample size n that the finite population correction ϕ can be taken as one (1). Then the baseline sample size is $n = 2 \cdot \left(\frac{1.08 \cdot 1.64}{0.02} \right)^2 \cdot 0.493 \cdot (1 - 0.493) \cdot 1 = 3{,}921$, and the follow-up sample size is also 3,921.

7.4 Precision for estimated change for one sample, scored twice

Analogous to previous derivations, the general formula relating the confidence interval $\pm c$ to the standard error σ when using a scorecard to estimate change for a single group of households, all of whom are scored at two points in time, is:[30]

$$\pm\, c = \pm z \cdot \sigma = \pm z \cdot \alpha \cdot \sqrt{\frac{\hat{p}_{12} \cdot (1 - \hat{p}_{12}) + \hat{p}_{21} \cdot (1 - \hat{p}_{21}) + 2 \cdot \hat{p}_{12} \cdot \hat{p}_{21}}{n}} \cdot \sqrt{\frac{N - n}{n - 1}},$$

where z, c, α, N, and n are defined as usual, $\hat{p}_{12}$ is the share of all sampled households that move from below the poverty line to above it, and $\hat{p}_{21}$ is the share of all sampled households that move from above the line to below it. With the available data for Haiti, it is not possible to estimate values of α here.

The formula for confidence intervals can be rearranged to give a formula for sample size before measurement. This requires an estimate (based on information available before measurement) of the expected shares of all households who cross the poverty line $\tilde{p}_{12}$ and $\tilde{p}_{21}$. Before measurement, a conservative assumption is that the change in the poverty rate will be zero, which implies $\tilde{p}_{12} = \tilde{p}_{21} = \tilde{p}_{*}$, giving:

$$n = 2 \cdot \left(\frac{\alpha \cdot z}{c}\right)^2 \cdot \tilde{p}_{*} \cdot \sqrt{\frac{N - n}{n - 1}}.$$

[30] See McNemar (1947) and Johnson (2007). John Pezzullo helped find this formula.

Because $\widetilde{p}_*$ could be anything between 0 and 0.5, more information is needed to apply this formula. Suppose that the observed relationship between $\widetilde{p}_*$, the number of years y between baseline and follow-up, and $p_{\text{pre-baseline}} \cdot \left(1 - p_{\text{pre-baseline}}\right)$ is—as in Peru (Schreiner, 2009d)—close to:

$$\widetilde{p}_* = -0.02 + 0.016 \cdot y + 0.47 \cdot [p_{\text{pre-baseline}} \cdot (1 - p_{\text{pre-baseline}})].$$

Given this, a sample-size formula for a group of households to whom the new 2012 scorecard for Haiti is applied twice (once after December 2012 and then again later) is

$$n = 2 \cdot \left(\frac{\alpha \cdot z}{c}\right)^2 \cdot \left\{[-0.02 + 0.016 \cdot y + 0.47 \cdot [p_{\text{pre-baseline}} \cdot \left(1 - p_{\text{pre-baseline}}\right)]\right\} \cdot \sqrt{\frac{N - n}{n - 1}}.$$

In Peru (the only source of a data-based estimate, Schreiner, 2009d), the average α across years and poverty lines is about 1.30.

To illustrate the use of this formula, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is ±2.0 percentage points ($\pm c = \pm 0.02$), the poverty line is 100% of the national line, the sample will first be scored in 2016 and then again in 2019 ($y = 3$), and the population N is so large relative to the expected sample size n that the finite population correction ϕ can be taken as one (1). The pre-baseline poverty rate p_{2016} is taken as 49.3 percent (Table 1), and α is assumed to be 1.30. Then the baseline sample size is

$n = 2 \cdot \left(\frac{1.30 \cdot 1.64}{0.02}\right)^2 \cdot \left\{-0.02 + 0.016 \cdot 3 + 0.47 \cdot [0.493 \cdot (1 - 0.493)]\right\} \cdot 1 = 3{,}307$. The same group of 3,307 households is scored at follow-up as well.

8. Targeting

When a program uses scoring for segmenting clients for differentiated services (*targeting*), households with scores at or below a cut-off are labeled *targeted* and treated—for program purposes—as if they are below a given poverty line. Households with scores above a cut-off are labeled *non-targeted* and treated—for program purposes—as if they are above a given poverty line.

There is a distinction between *targeting status* (scoring at or below a targeting cut-off) and *poverty status* (having consumption below a poverty line). Poverty status is a fact that is defined by whether consumption is below a poverty line as directly measured by a survey. In contrast, targeting status is a program's policy choice that depends on a cut-off and on an indirect estimate from a scorecard.

Households who score at or below a given cut-off should be labeled as *targeted*,[31] not as *poor*. After all, unless all targeted households have poverty likelihoods of 100 percent, some of them are non-poor (their consumption is above a given poverty line). With scoring, the terms *poor* and *non-poor* have specific definitions. Using these same terms for targeting status is incorrect and misleading.

[31] A label is acceptable as long as it describes the segment and does not confuse targeting status (having a score below a program-selected cut-off) with poverty status (having consumption below an externally-defined poverty line). Examples of acceptable labels include *Groups A, B, and C*; *Households scoring 29 or less, 30 to 69, or 70 or more*; and *Households who qualify for reduced fees, or do not qualify for reduced fees.*

Targeting is successful when households truly below a poverty line are targeted (*inclusion*) and when households truly above a poverty line are not targeted (*exclusion*). Of course, no scorecard is perfect, and targeting is unsuccessful when households truly below a poverty line are not targeted (*undercoverage*) or when households truly above a poverty line are targeted (*leakage*).

Table 8 depicts these four possible targeting outcomes. Targeting accuracy varies by the cut-off score; a higher cut-off has better inclusion (but worse leakage), while a lower cut-off has better exclusion (but worse undercoverage).

Programs should weigh these trade-offs when setting a cut-off. A formal way to do this is to assign net benefits—based on a program's values and mission—to each of the four possible targeting outcomes and then to choose the cut-off that maximizes total net benefits (Adams and Hand, 2000; Hoadley and Oliver, 1998).

Table 9 shows the distribution of households by targeting outcome for Haiti. For an example cut-off of 44 or less, outcomes for 100% of the national line in the validation sample are:

- Inclusion: 35.5 percent are below the line and correctly targeted
- Undercoverage: 13.8 percent are below the line and mistakenly not targeted
- Leakage: 7.7 percent are above the line and mistakenly targeted
- Exclusion: 43.0 percent are above the line and correctly not targeted

Increasing the cut-off to 49 or less improves inclusion and undercoverage but worsens leakage and exclusion:

- Inclusion: 39.3 percent are below the line and correctly targeted
- Undercoverage: 10.0 percent are below the line and mistakenly not targeted
- Leakage: 13.0 percent are above the line and mistakenly targeted
- Exclusion: 37.7 percent are above the line and correctly not targeted

Which cut-off is preferred depends on total net benefit. If each targeting outcome has a per-household benefit or cost, then total net benefit for a given cut-off is:

Benefit per household correctly included	x	Households correctly included	–
Cost per household mistakenly not covered	x	Households mistakenly not covered	–
Cost per household mistakenly leaked	x	Households mistakenly leaked	+
Benefit per household correctly excluded	x	Households correctly excluded.	

To set an optimal cut-off, a program would:

- Assign benefits and costs to possible outcomes, based on its values and mission
- Tally total net benefits for each cut-off using Table 9 for a given poverty line
- Select the cut-off with the highest total net benefit

The most difficult step is assigning benefits and costs to targeting outcomes. A program that uses targeting—with or without scoring—should thoughtfully consider how it values successful inclusion and exclusion versus errors of undercoverage and leakage. It is healthy to go through a process of thinking explicitly and intentionally about how possible targeting outcomes are valued.

A common choice of benefits and costs is the "hit rate", where total net benefit is the number of households correctly included or correctly excluded:

Hit rate =	1	x	Households correctly included	–
	0	x	Households mistakenly undercovered	–
	0	x	Households mistakenly leaked	+
	1	x	Households correctly excluded.	

Table 9 shows the hit rate for all cut-offs for the new 2012 scorecard. For 100% of the national line in the validation sample, total net benefit—under the hit rate—is greatest (78.5) for a cut-off of 44 or less, with more than three in four households in Haiti correctly classified.

The hit rate weighs successful inclusion of households below the line the same as successful exclusion of households above the line. If a program values inclusion more (say, twice as much) than exclusion, then it can reflect this by setting the benefit for inclusion to 2 and the benefit for exclusion to 1. Then the chosen cut-off will maximize (2 x Households correctly included) + (1 x Households correctly excluded).[32]

[32] Figure 9 also reports BPAC, the Balanced Poverty Accuracy Criteria adopted by USAID for certifying poverty scorecards. IRIS Center (2005) made BPAC to consider accuracy in terms of the bias of estimated poverty rates and in terms of targeting inclusion. BPAC = (Inclusion – |Undercoverage – Leakage|) x [100 ÷ (Inclusion + Undercoverage)]. Schreiner (2014b) explains why BPAC does not add any useful information over-and-above that provided by the other, more-standard measures here.

As an alternative to assigning benefits and costs to targeting outcomes and then choosing a cut-off to maximize total net benefits, a program could set a cut-off to achieve a desired poverty rate among targeted households. The third column of Table 10 ("% targeted HHs who are poor") shows, for the new 2012 scorecard applied to the validation sample, the expected poverty rate among households who score at or below a given cut-off. For the example of 100% of the national line, targeting households in the validation sample who score 44 or less would target 43.2 percent of all households (second column) and would be associated with a poverty rate among those targeted of 82.2 percent (third column).

Table 10 also reports two other measures of targeting accuracy. The first is a version of coverage ("% poor HHs who are targeted"). For the example of 100% of the national line with the validation sample and a cut-off of 44 or less, 72.0 percent of all poor households are covered.

The final targeting measure in Table 10 is the number of successfully targeted poor households for each non-poor household mistakenly targeted (right-most column). For 100% of the national line with the validation sample and a cut-off of 44 or less, covering 4.6 poor households means leaking to 1 non-poor household.

9. The context of poverty-measurement tools in Haiti

This section discusses an existing poverty-measurement tool for Haiti in terms of its goals, methods, definition of *poverty*, data, indicators, bias, precision, and cost. In general, the advantages of the Simple Poverty Scorecard® are its:

- Use of data from the most recent available nationally representative consumption survey
- Fewer and lower-cost indicators
- Use of a consumption-based definition of *poverty* that is widely understood and that is used by government of Haiti
- Reporting of errors and precision for estimates of poverty rates at a point in time from out-of-sample tests, including formulas for standard errors
- Reporting targeting accuracy, and having targeting accuracy that is likely similar to that of alternative approaches
- Feasibility for pro-poor programs in Haiti, due to its low cost and transparency

Gwatkin *et al.* (2007) construct a poverty-measurement tool for Haiti with an approach that they use in 56 countries with Demographic and Health Surveys (Rutstein and Johnson, 2004). They use Principal Components Analysis to make an asset index from simple, low-cost indicators available for the 9,595 households in Haiti's 2000 DHS.[33] The PCA index is like the scorecard here except that, because the DHS does not collect data on consumption, the index is based on a different conception of *poverty*, its accuracy vis-à-vis consumption-based poverty is unknown, and it can only be assumed

[33] All DHS datasets for Haiti since 1994/5 include each household's asset-index score (`dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm`, retrieved 13 May 2016).

to be a proxy for long-term wealth/economic status.[34] Well-known examples of the PCA asset-index approach include Stifel and Christiaensen (2007), Zeller *et al.* (2006), Sahn and Stifel (2003 and 2000), Henry *et al.* (2003), and Filmer and Pritchett (2001).

Most of the 17 indicators in Gwatkin *et al.* are similar to those in the Simple Poverty Scorecard® in terms of their simplicity, low cost, and verifiability:

- Characteristics of the residence:
  - — Tenancy status
  - — Source of electricity
  - — Type of floor
  - — Type of cooking fuel
  - — Source of drinking water
  - — Type of toilet arrangement
- Ownership of consumer durables:
  - — Radios
  - — Televisions
  - — Refrigerators
  - — Telephones
  - — Stoves
  - — Beds
  - — Horses or mules
  - — Bicycles
  - — Motorcycles or scooters
  - — Cars
- Whether any member of the household works their own or family's agricultural land

[34] Nevertheless, the indicators are similar and the "flat maximum" is important, so carefully built PCA indexes and consumption-based scorecards may pick up the same underlying construct (perhaps "permanent income", see Bollen, Glanville, and Stecklov, 2007), and they may rank households much the same. Comparisons of rankings of households by PCA indexes, directly-measured consumption, and consumption-based scorecards include Filmer and Scott (2012), Howe *et al.* (2009), Lindelow (2006), Sahn and Stifel (2003 and 2000), Wagstaff and Watanabe (2003), and Montgomery *et al.* (2000).

Gwatkin *et al.* suggest three possible uses for their index:

- Segmenting households by the quintile of their index to see how health varies with socio-economic status
- Monitoring (via exit surveys) how well local health-service posts reach the poor
- Measuring local coverage of health services via small-scale surveys

The first goal is segmentation, and the last two goals deal with performance monitoring, so the asset index would be used much like the scorecard here.

Still, the Gwatkin *et al.* index is more costly and difficult-to-use than the Simple Poverty Scorecard®. The index has 17 indicators (versus 11), and while the scorecard requires adding up 11 integers (some of them usually zeroes), Gwatkin *et al.*'s index requires adding up 100 numbers, each with five decimal places and half with negative signs.

A strength of asset indexes is that, because they do not require consumption data, they can be constructed from data from a wide array of "light" surveys such as censuses, Demographic and Health Surveys, Welfare Monitoring Surveys, and Core Welfare Indicator Questionnaires. In comparison, the Simple Poverty Scorecard® is linked directly to a consumption-based poverty line. Thus, while both approaches can rank households, only the scorecard can estimate consumption-based poverty status. Like an asset index, the scorecard can be applied to data from a "light" survey that does not collect consumption as long as the "light" survey collects indicators that match those in the scorecard (Schreiner, 2011).

In essence, Gwatkin *et al.*—like all asset indexes—define *poverty* in terms of the indicators and the points in the index itself. Thus, the index is not a proxy standing in for something else (such as consumption); rather, it is a direct measure of a non-consumption-based definition of *poverty*. There is nothing wrong—and a lot right—about defining *poverty* in this way, but it is not as common as a consumption-based definition. It also means that ranks from different asset indexes are not comparable, because the definition of *poverty* is based on a specific index's indicators and points, not on an external standard.

In general, the asset-based approach defines people as *poor* if their assets (physical, human, financial, and social) fall below a threshold. Arguments for an asset-based view of development include Carter and Barrett (2006), Schreiner and Sherraden (2006), Sahn and Stifel (2003), and Sherraden (1991). The main advantages of the asset-based view are that:

- Asset ownership is easier to measure accurately than consumption
- Access to resources in the long term—and thus capacity to produce income and to consume—depends on the control of assets
- Assets get at capability more directly, the difference between, say, "Would income allow for adequate sanitation?" versus "Does the toilet drain to a septic tank?"

While the asset view and the income/consumption view are distinct, they are also tightly linked. After all, income and consumption are flows of resources received/consumed from the use of stocks of assets. Both views are low-dimensional simplifications—due to practical limits on definitions and measurement—of a higher-dimensional and more complete conception of the production of human well-being.

10. Conclusion

Pro-poor programs in Haiti can use the Simple Poverty Scorecard® to segment clients for differentiated services as well as to estimate:

- The likelihood that a household has consumption below a given poverty line
- The poverty rate of a population at a point in time
- The change in the poverty rate of a population between two points in time

The scorecard is inexpensive to use and can be understood by non-specialists. It is designed to be practical for local, pro-poor organizations in Haiti that want to improve how they monitor and manage their social performance.

The scorecard is constructed with half of the data from Haiti's 2012 ECVMAS. Its scores are then calibrated with that same data to poverty likelihoods for nine poverty lines. The accuracy of the scorecard is tested out-of-sample on data that is not used in scorecard construction. Errors and precision are reported for estimates of households' poverty likelihoods, populations' poverty rates at a point in time, and changes in populations' poverty rates over time. Of course, the scorecard's estimates of change are not necessarily the same as estimates of program impact. Targeting accuracy is also reported.

When the scorecard is applied to the nine poverty lines in the validation sample, the maximum absolute error for estimates versus true poverty rates for groups of households at a point in time is 3.8 percentage points, and the average absolute error is about 1.7 percentage points. Corrected estimates may be had by subtracting the known average error for a given poverty line from the original, uncorrected estimates.

For $n = 16{,}384$ and 90-percent confidence, the precision of point-in-time estimates of poverty rates is ± 0.7 percentage points or better. With $n = 1{,}024$, the 90-percent confidence intervals are ± 2.8 percentage points or better.

If an organization wants to use the Simple Poverty Scorecard® for segmenting clients for differentiated services, then the results here provide useful information for selecting a targeting cut-off that fits its values and mission.

Although the statistical technique is innovative, and although technical accuracy is important, the design of the scorecard focuses on transparency and ease-of-use. After all, accuracy is irrelevant if an organization's managers feel so daunted by a scorecard's complexity or its cost that they do not even try to use it.

For this reason, the Simple Poverty Scorecard® uses 11 indicators that are straightforward, low-cost, and verifiable. Points are all zeros or positive integers, and scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line). Scores are converted to poverty likelihoods via simple look-up tables, and targeting cut-offs are likewise straightforward to apply. The design attempts to facilitate voluntary adoption by helping managers to understand and trust scoring and by allowing non-specialists to add up scores quickly in the field.

In summary, the Simple Poverty Scorecard® is a practical, objective way for pro-poor programs in Haiti to estimate consumption-based poverty rates, track changes in poverty rates over time, and segment participants for differentiated services. The same approach can be applied to any country with similar data.

References

Adams, Niall M.; and David J. Hand. (2000) "Improving the Practice of Classifier Performance Assessment", *Neural Computation*, Vol. 12, pp. 305–311.

Backiny-Yetna, Prospère; and Federica Marzo. (2014) "Pauvreté en Haïti : Note Méthodologique sur l'Agregat de Consommation Basée sur l'ECVMAS 2012", `ihsi.ht/pdf/ecvmas/ecvmas_seuil/METHO_2_Agr+%C2%ACgat_de_consommation.pdf`, retrieved 12 May 2016.

Baesens, Bart; Van Gestel, Tony; Viaene, Stijn; Stepanova, Maria; Suykens, Johan A.K.; and Jan Vanthienen. (2003) "Benchmarking State-of-the-Art Classification Algorithms for Credit Scoring", *Journal of the Operational Research Society*, Vol. 54, pp. 627–635.

Bollen, Kenneth A.; Glanville, Jennifer L.; and Guy Stecklov. (2007) "Socio-Economic Status, Permanent Income, and Fertility: A Latent-Variable Approach", *Population Studies*, Vol. 61, No. 1, pp. 15–34.

Caire, Dean. (2004) "Building Credit Scorecards for Small-Business Lending in Developing Markets", `microfinance.com/English/Papers/Scoring_SMEs_Hybrid.pdf`, retrieved 13 May 2016.

_____; and Mark Schreiner. (2012) "Cross-Tab Weighting for Credit Scorecards in Developing Markets", `business-school.ed.ac.uk/crc/conferences/conference-archive?a=46055`, retrieved 13 May 2016.

Camacho, Adriana; and Emily Conover. (2011) "Manipulation of Social-Program Eligibility", *American Economic Journal: Economic Policy*, Vol. 3, No. 2, pp. 41–65.

Carter, Michael R.; and Christopher B. Barrett. (2006) "The Economics of Poverty Traps and Persistent Poverty: An Asset-Based Approach", *Journal of Development Studies,* Vol. 42, No. 2, pp. 178–199.

Chen, Shiyuan; and Mark Schreiner. (2009) "Simple Poverty Scorecard®: Vietnam", `simplepovertyscorecard.com/VNM_2006_ENG.pdf`, retrieved 13 May 2016.

Coady, David; Grosh, Margaret; and John Hoddinott. (2004) *Targeting of Transfers in Developing Countries*, `hdl.handle.net/10986/14902`, retrieved 13 May 2016.

Cochran, William G. (1977) *Sampling Techniques, Third Edition*, Wiley.

Dawes, Robyn M. (1979) "The Robust Beauty of Improper Linear Models in Decision-Making", *American Psychologist*, Vol. 34, No. 7, pp. 571–582.

Diamond, Alexis; Gill, Michael; Rebolledo Dellepiane, Miguel Angel; Skoufias, Emmanuel; Vinha, Katja; and Yiqing Xu. (2016) "Estimating Poverty Rates in Target Populations: An Assessment of the Simple Poverty Scorecard® and Alternative Approaches", World Bank Policy Research Working Paper No. 7793, `hdl.handle.net/10986/25038`, retrieved 11 January 2017.

Filmer, Deon; and Lant Pritchett. (2001) "Estimating Wealth Effects without Expenditure Data—or Tears: An Application to Educational Enrollments in States of India", *Demography*, Vol. 38, No. 1, pp. 115–132.

_____; and Kinnon Scott. (2012) "Assessing Asset Indices", *Demography*, Vol. 49, pp. 359–392.

Friedman, Jerome H. (1997) "On Bias, Variance, 0–1 Loss, and the Curse-of-Dimensionality", *Data Mining and Knowledge Discovery*, Vol. 1, pp. 55–77.

Fuller, Rob. (2006) "Measuring the Poverty of Microfinance Clients in Haiti", `microfinance.com/English/Papers/Scoring_Poverty_Haiti_Fuller.pdf`, retrieved 13 May 2016.

Goodman, Leo A.; and Kruskal, William H. (1979) *Measures of Association for Cross Classification*.

Grosh, Margaret; and Judy L. Baker. (1995) "Proxy-Means Tests for Targeting Social Programs: Simulations and Speculation", World Bank LSMS Working Paper No. 118, `go.worldbank.org/W9OWN57PD0`, retrieved 13 May 2016.

Gwatkin, Davidson R.; Rutstein, Shea; Johnson, Kiersten; Suliman, Eldaw; Wagstaff, Adam; and Agbessi Amouzou. (2007) "Socio-Economic Differences in Health, Nutrition, and Population: Haiti", World Bank Country Reports on HNP and Poverty, `go.worldbank.org/T6LCN5A340`, retrieved 13 May 2016.

Hand, David J. (2006) "Classifier Technology and the Illusion of Progress", *Statistical Science*, Vol. 22, No. 1, pp. 1–15.

Haslett, Stephen. (2012) "Practical Guidelines for the Design and Analysis of Sample Surveys for Small-Area Estimation", *Journal of the Indian Society of Agricultural Statistics*, Vol. 66, No. 1, pp. 203–212.

Henry, Carla; Sharma, Manohar; Lapenu, Cecile; and Manfred Zeller. (2003) "Microfinance Poverty Assessment Tool", CGAP Technical Tool No. 5, cgap.org/publications/microfinance-poverty-assessment-tool, retrieved 13 May 2016.

Hoadley, Bruce; and Robert M. Oliver. (1998) "Business Measures of Scorecard Benefit", *IMA Journal of Mathematics Applied in Business and Industry*, Vol. 9, pp. 55–64.

Howe, Laura D.; Hargreaves, James R.; Gabrysch, Sabine; and Sharon R.A. Huttly. (2009) "Is the Wealth Index a Proxy for Consumption Expenditure? A Systematic Review", *Journal of Epidemiology and Community Health*, Vol. 63, pp. 871–880.

IRIS Center. (2007a) "Manual for the Implementation of USAID Poverty Assessment Tools", povertytools.org/training_documents/Manuals/USAID_PAT_Manual_Eng.pdf, retrieved 13 May 2016.

_____. (2007b) "Introduction to Sampling for the Implementation of PATs", povertytools.org/training_documents/Sampling/Introduction_Sampling.ppt, retrieved 13 May 2016.

_____. (2005) "Notes on Assessment and Improvement of Tool Accuracy", povertytools.org/other_documents/AssessingImproving_Accuracy.pdf, retrieved 13 May 2016.

Johnson, Glenn. (2007) "Lesson 3: Two-Way Tables—Dependent Samples", onlinecourses.science.psu.edu/stat504/node/96, retrieved 13 May 2016.

Kolesar, Peter; and Janet L. Showers. (1985) "A Robust Credit-Screening Model Using Categorical Data", *Management Science*, Vol. 31, No. 2, pp. 124–133.

Lindelow, Magnus. (2006) "Sometimes More Equal Than Others: How Health Inequalities Depend on the Choice of Welfare Indicator", *Health Economics*, Vol. 15, pp. 263–279.

Lovie, Alexander D.; and Patricia Lovie. (1986) "The Flat-Maximum Effect and Linear Scoring Models for Prediction", *Journal of Forecasting*, Vol. 5, pp. 159–168.

Martinelli, César; and Susan W. Parker. (2007) "Deception and Misreporting in a Social Program", *Journal of the European Economic Association*, Vol. 4, No. 6, pp. 886–908.

Marzo, Federica; and Prospère Backiny-Yetna. (2014) "Pauvreté à Haïti: Eléments Méthodologiques", ihsi.ht/pdf/ecvmas/ecvmas_seuil/METHO_1_Seuils%20de%20pauvret+%C2%AC.pdf, retrieved 12 May 2016.

Matul, Michal; and Sean Kline. (2003) "Scoring Change: Prizma's Approach to Assessing Poverty", Microfinance Centre for Central and Eastern Europe and the New Independent States Spotlight Note No. 4, mfc.org.pl/sites/mfc.org.pl/files/spotlight4.PDF, retrieved 13 May 2016.

McNemar, Quinn. (1947) "Note on the Sampling Error of the Difference between Correlated Proportions or Percentages", *Psychometrika*, Vol. 17, pp. 153–157.

Montgomery, Mark; Gragnolati, Michele; Burke, Kathleen A.; and Edmundo Paredes. (2000) "Measuring Living Standards with Proxy Variables", *Demography*, Vol. 37, No. 2, pp. 155–174.

Myers, James H.; and Edward W. Forgy. (1963) "The Development of Numerical Credit-Evaluation Systems", *Journal of the American Statistical Association*, Vol. 58, No. 303, pp. 779–806.

Narayan, Ambar; and Nobuo Yoshida. (2005) "Proxy-Means Tests for Targeting Welfare Benefits in Sri Lanka", World Bank Report No. SASPR–7, documents.worldbank.org/curated/en/2005/07/6209268/proxy-means-test-targeting-welfare-benefits-sri-lanka, retrieved 13 May 2016.

Onwujekwe, Obinna; Hanson, Kara; and Julia Fox-Rushby. (2006) "Some Indicators of Socio-Economic Status May Not Be Reliable and Use of Indexes with These Data Could Worsen Equity", *Health Economics*, Vol. 15, pp. 639–644.

Pedersen, Jon; and Kathryn Lockwood. (2001) "Determination of a Poverty Line for Haiti", FAFO Institute of Applied International Studies, fafo.no/ais/other/haiti/poverty/PoveryLineForHaiti.pdf, retrieved 16 May 2012.

Ravallion, Martin. (1998) "Poverty Lines in Theory and Practice", World Bank LSMS Working Paper No. 133, go.worldbank.org/8P3IBJPQS1, retrieved 13 May 2016.

Rutstein, Shea Oscar; and Kiersten Johnson. (2004) "The DHS Wealth Index", DHS Comparative Reports No. 6, measuredhs.com/pubs/pdf/CR6/CR6.pdf, retrieved 13 May 2016.

Sahn, David E.; and David C. Stifel. (2003) "Exploring Alternative Measures of Welfare in the Absence of Expenditure Data", *Review of Income and Wealth*, Series 49, No. 4, pp. 463–489.

_____. (2000) "Poverty Comparisons over Time and across Countries in Africa", *World Development*, Vol. 28, No. 12, pp. 2123–2155.

SAS Institute Inc. (2004) "The LOGISTIC Procedure: Rank Correlation of Observed Responses and Predicted Probabilities", *SAS/STAT User's Guide, Version 9*, `support.sas.com/documentation/cdl/en/statug/63033/HTML/default/viewer.htm#statug_logistic_sect035.htm`, retrieved 13 May 2016.

Schreiner, Mark. (2016) "Simple Poverty Scorecard®: India", `SimplePovertyScorecard.com/IND_2011_ENG.pdf`, retrieved 31 May 2016.

_____. (2015a) "Simple Poverty Scorecard®: Ghana", `SimplePovertyScorecard.com/GHA_2012_ENG.pdf`, retrieved 13 May 2016.

_____. (2015b) "Simple Poverty Scorecard®: Bolivia", `SimplePovertyScorecard.com/BOL_2013_ENG.pdf`, retrieved 13 May 2016.

_____. (2015c) "Simple Poverty Scorecard®: Malawi", `SimplePovertyScorecard.com/MWI_2010_ENG.pdf`, retrieved 13 May 2016.

_____. (2015d) "Simple Poverty Scorecard®: Cambodia", `simplepovertyscorecard.com/KHM_2011_ENG.pdf`, retrieved 13 May 2016.

_____. (2014a) "The Process of Poverty-Scoring Analysis", `simplepovertyscorecard.com/Process_Poverty_Scoring_Analysis.pdf`, retrieved 13 May 2016.

_____. (2014b) "How Do the Poverty Scorecard and the PAT Differ?", `microfinance.com/English/Papers/Scorecard_versus_PAT.pdf`, retrieved 13 May 2016.

_____. (2013a) "Simple Poverty Scorecard®: Bangladesh", `SimplePovertyScorecard.com/BGD_2010_ENG.pdf`, retrieved 13 May 2016.

_____. (2013b) "Simple Poverty Scorecard®: Nicaragua", `simplepovertyscorecard.com/NIC_2009_ENG.pdf`, retrieved 13 May 2016.

_____. (2012a) "An Expert-Based Poverty Scorecard for Rural China", microfinance.com/English/Papers/Scoring_Poverty_China_EN.pdf, retrieved 13 May 2016.

_____. (2012b) "Simple Poverty Scorecard®: Colombia", simplepovertyscorecard.com/COL_2009_ENG.pdf, retrieved 13 May 2016.

_____. (2012c) "Simple Poverty Scorecard®: Peru", SimplePovertyScorecard.com/PER_2010_ENG.pdf, retrieved 13 May 2016.

_____. (2011) "Estimating Expenditure-Based Poverty in the Demographic and Health Surveys".

_____. (2010) "Simple Poverty Scorecard®: Honduras", simplepovertyscorecard.com/HND_2007_ENG.pdf, retrieved 13 May 2016.

_____. (2009a) "Simple Poverty Scorecard®: Philippines", simplepovertyscorecard.com/PHL_2004_ENG.pdf, retrieved 13 May 2016.

_____. (2009b) "Simple Poverty Scorecard®: Pakistan", simplepovertyscorecard.com/PAK_2005_ENG.pdf, retrieved 13 May 2016.

_____. (2009c) "Simple Poverty Scorecard®: Mexico", simplepovertyscorecard.com/MEX_2008_ENG.pdf, retrieved 13 May 2016.

_____. (2009d) "Simple Poverty Scorecard®: Peru", SimplePovertyScorecard.com/PER_2007_ENG.pdf, retrieved 13 May 2016.

_____. (2008) "Simple Poverty Scorecard®: Peru", SimplePovertyScorecard.com/PER_2003_ENG.pdf, retrieved 13 May 2016.

_____. (2006a) "Simple Poverty Scorecard®: Haiti", SimplePovertyScorecard.com/HTI_2001_ENG.pdf, retrieved 31 May 2016.

_____. (2006b) "Is One Simple Poverty Scorecard® Enough for India?", microfinance.com/English/Papers/Scoring_Poverty_India_Segments.pdf, retrieved 13 May 2016.

_____. (2005a) "Índice de Calificación de la Pobreza™: México", simplepovertyscorecard.com/MEX_2002_SPA.pdf, retrieved 13 May 2016.

_____. (2005b) "IRIS Questions on the Simple Poverty Scorecard®", microfinance.com/English/Papers/Scoring_Poverty_Response_to_IRIS.pdf, retrieved 13 May 2016.

_____. (2002) *Scoring: The Next Breakthrough in Microfinance?* CGAP Occasional Paper No. 7, microfinance.com/English/Papers/Scoring_Breakthrough_CGAP.pdf, retrieved 13 May 2016.

_____; Matul, Michal; Pawlak, Ewa; and Sean Kline. (2014) "The Simple Poverty Scorecard®: Lessons from a Microlender in Bosnia-Herzegovina", *Poverty and Public Policy*, Vol. 6, No. 4, pp. 407–428.

_____; and Michael Sherraden. (2006) *Can the Poor Save? Saving and Asset Accumulation in Individual Development Accounts.*

_____; and Gary Woller. (2010) "Simple Poverty Scorecard®: Guatemala", simplepovertyscorecard.com/GTM_2006_ENG.pdf, retrieved 13 May 2016.

Sharif, Iffath Anwar. (2009) "Building a Targeting System for Bangladesh Based on Proxy-Means Testing", World Bank Social Protection Discussion Paper No. 0914, siteresources.worldbank.org/SOCIALPROTECTION/ Resources/SP-Discussion-papers/Safety-Nets-DP/0914.pdf, retrieved 13 May 2016.

Sherraden, Michael. (1991) *Assets and the Poor: A New American Welfare Policy.*

Sillers, Don. (2006) "National and International Poverty Lines: An Overview", pdf.usaid.gov/pdf_docs/Pnadh069.pdf, retrieved 13 May 2016.

Sletten, Pål; and Willy Egset. (2004) "Poverty in Haiti", FAFO Paper No. 2004:31, fafo.no/~fafo/media/com_netsukii/755.pdf, retrieved 13 May 2016.

Stifel, David; and Luc Christiaensen. (2007) "Tracking Poverty over Time in the Absence of Comparable Consumption Data", *World Bank Economic Review*, Vol. 21, No. 2, pp. 317–341.

Stillwell, William G.; Barron, F. Hutton; and Ward Edwards. (1983) "Evaluating Credit Applications: A Validation of Multi-Attribute Utility-Weight Elicitation Techniques", *Organizational Behavior and Human Performance*, Vol. 32, pp. 87–108.

Sun, Changqing; and Eric Swanson. (2009) "Estimation of PPPs for Non-Benchmark Economies for the 2005 ICP Round", *ICP Bulletin*, Vol. 6, No. 1, pp. 20–23.

Tarozzi, Alessandro; and Angus Deaton. (2009) "Using Census and Survey Data to Estimate Poverty and Inequality for Small Areas", *Review of Economics and Statistics*, Vol. 91, No. 4, pp. 773–792.

Toohig, Jeff. (2008) "PPI Pilot Training Guide", `microfinancegateway.org/sites/default/files/mfg-en-paper-progress-out-of-poverty-index-ppi-pilot-training-mar-2008.pdf`, retrieved 13 May 2016.

USAID. (2014) *Microenterprise Results Reporting: Annual Report to Congress, Fiscal Year 2013*, `usaid.gov/sites/default/files/documents/1865/MRR.FY13.pdf`, retrieved 13 May 2016.

United States Congress. (2004) "Microenterprise Results and Accountability Act of 2004 (HR 3818 RDS)", November 20, `smith4nj.com/laws/108-484.pdf`, retrieved 13 May 2016.

Wagstaff, Adam; and Naoko Watanabe. (2003) "What Difference Does the Choice of SES Make in Health-Inequality Measurement?", *Health Economics*, Vol. 12, No. 10, pp. 885–890.

Wainer, Howard. (1976) "Estimating Coefficients in Linear Models: It Don't Make No Nevermind", *Psychological Bulletin*, Vol. 83, pp. 223–227.

World Bank. (2014) *Investing in People to Fight Poverty in Haiti: Reflections for Evidence-Based Policy-Making*, Report No. 94430, `documents.worldbank.org/curated/en/2014/01/24142063/investing-people-fight-poverty-haiti-reflections-evidence-based-policy-making`, retrieved 12 May 2016.

_____. (2012) *Targeting Poor and Vulnerable Households in Indonesia*, `documents.worldbank.org/curated/en/2012/01/15879773/targeting-poor-vulnerable-households-indonesia`, retrieved 13 May 2016.

Zeller, Manfred. (2004) "Review of Poverty Assessment Tools", `pdf.usaid.gov/pdf_docs/PNADH120.pdf`, retrieved 13 May 2016.

_____; Sharma, Manohar; Henry, Carla; and Cécile Lapenu. (2006) "An Operational Method for Assessing the Poverty Outreach Performance of Development Policies and Projects: Results of Case Studies in Africa, Asia, and Latin America", *World Development*, Vol. 34, No. 3, pp. 446–464.

Guidelines for the Interpretation of Scorecard Indicators

The following comes from:

Institut Haïtien de Statistique et d'Informatique. (2012) "Manuel de l'Agent Enqueteur : Enquête sur les Conditions de Vie des Ménages Après le Séisme (ECVMAS Haïti 2012)", Port-au-Prince : Ministère de l'Economie et des Finances. [the *Manual*]

and

Institut Haïtien de Statistique et d'Informatique. (2012) "Questionnaire Ménage : Enquête sur les Conditions de Vie des Ménages Après le Séisme (ECVMAS Haïti 2012)", Port-au-Prince : Ministère de l'Economie et des Finances. [the *Questionnaire*]

Interview Procedure

Fill out the scorecard header and the "Back-page Worksheet" first, following the directions on the "Back-page Worksheet".

In the scorecard header, fill in the number of household members based on the list you compiled as part of the "Back-page Worksheet".

If you are completely certain of the appropriate response to the first scorecard indicator ("In which department does the household live?"), then you do not need to ask it of the respondent. Just fill it in based on what you already know. Ask the respondent only if you are not completely certain of the department in which the household lives.

Do not ask the second scorecard indicator directly ("How many members does the household have?"). Instead, fill in the appropriate response based on the total number of household members that you listed on the "Back-page Worksheet".

In the same way, do not ask the third scorecard indicator directly ("How many household members who are 10-years-old or older worked for at least one hour in the past week?"). Instead, fill in the appropriate response based on the number of household members 10-years-old or older who worked as recorded on the "Back-page Worksheet".

Finally, mark the response to the fourth scorecard indicator ("In the past week, did the female head/spouse work for at least one hour?") based on the response that you have already collected on the "Back-page Worksheet".

Do ask the fifth and sixth scorecard indicators directly of the respondent ("Does the female head/spouse know how to read and write?" and "Does the male head/spouse know how to read and write?").

Do *not* ask the seventh scorecard indicator directly of the respondent ("What is the main material of the roof?"). Instead, answer it yourself after carefully observing the roof and determining what material accounts for the largest share of its construction.

After that, *do* ask the eighth, ninth, tenth, and eleventh scorecard indicators directly of the respondent.

General Advice

Study these "Guidelines" carefully, and carry them with you while you work.

Note that the respondent need not be the same person as the household member who is a participant with your organization.

Read each question word-for-word, in the order presented.

When an issue arises that is not addressed here, its resolution should be left to the unaided judgment of the enumerator, as that apparently was the practice of Haiti's IHSI in the 2012 ECVMAS. That is, an organization using the Simple Poverty Scorecard® should not promulgate any definitions or rules (other than those in these "Guidelines") to be used by all its field agents. Anything not explicitly addressed in these "Guidelines" is to be left to the unaided judgment of each individual enumerator.

Except for questions 8, 9, and (if needed) question 7, do not read the response options to the respondent. Simply read the question, and then stop; wait for a response. If the respondent asks for clarification or otherwise hesitates or seems confused, then read the question again or provide additional assistance based on these "Guidelines" or as you, the enumerator, deem appropriate.

You should read the response options for question 8 ("What is the main source of drinking water for the household?"), for question 9 ("What is the main source of energy for cooking?"), and, if needed, for question 7 ("What is the main material of the roof?").

In general, you should accept the responses given by the respondent. Nevertheless, if the respondent says something—or if you see or sense something—that suggests that the response may not be accurate, that the respondent is uncertain, or that the respondent desires assistance in figuring out how to respond, then you should read the question again and provide whatever help you deem appropriate based on these "Guidelines".

While most indicators in the Simple Poverty Scorecard® are verifiable, you do not—in general—need to verify responses. You should verify a response only if something suggests to you that the response may not be accurate and thus that verification might improve data quality. For example, you might choose to verify if the respondent hesitates, seems nervous, or otherwise gives signals that he/she may be lying or be confused. Likewise, verification is probably appropriate if a child in the household or a neighbor says something that does not square with the respondent's answer. Verification is also a good idea if you can see something yourself—such as a consumer durable that the respondent avers not to possess, or a child eating in the room who has not been counted as a member of the household—that suggests that the response may not be accurate.

According to p. 13 of the *Manual*, "You should make sure that the respondent has understood the question. You can re-word the question as long as you maintain its original meaning. It is your responsibility to ensure that the respondent understands, and then it is his/her responsibility to provide an appropriate response. It is not your job to judge the quality of the response. Nevertheless, you should ask for clarification if a response is inconsistent with a previous response. In such a case, you should go back to the previous question and make sure it was understood by the respondent, and then return to the current question and make sure that it also is understood by the respondent. You should always feel free to repeat or re-state a question if it seems to you that the respondent does not understand it or if you see or hear of something that seems to indicate that a response is not accurate. For example, if the respondent avers not to own any livestock, but you can plainly see animals tied up in the household's compound where you are having the interview, then you should politely inquire about who owns the livestock right here in the yard in front of you."

In general, the application of the Simple Poverty Scorecard® should mimic as closely as possible the application of the 2012 ECVMAS. For example, poverty-scoring interviews should take place in respondents' homesteads because the 2012 ECVMAS took place in respondents' homesteads.

Questionnaire Translation:
The IHSI did interviews for the 2012 ECVMAS in Creole. Likewise, all interviews for the Simple Poverty Scorecard® in Haiti should be done in Creole.

These "Guidelines"—and this document in general—exist in Creole, French, and English and are available at `SimplePovertyScorecard.com`. These are the translations that should be used.

Who to interview:
Note that the respondent need not be the same person as the household member who is a participant with your organization.

According to p. 12 of the *Manual*, "The respondent should be the head of the household, his/her spouse/conjugal partner, or any other adult member of the household. In general for a given question, the respondent should be the member of the household who is best-informed and who can provide the most accurate response."

According to p. 5 of the *Manual*, you should "seek responses mainly from the head of the household and from other well-informed household members. . . . The main respondent should be the member of the household who knows the most and who is best able to respond accurately. . . . Of course, other household members can participate, chipping in with clarifications and complementary information."

According to p. 3 of the *Manual*, "The data will come from the head of the household and/or from other household members."

According to p. 11 of the *Manual*, "Ideally, the main respondent is the head of the household or his/her spouse/conjugal partner."

According to p. 21 of the *Manual*, "The *head of the household* is the member of the household whom the other members of the household recognize as the head. He or she generally wields the greatest power in terms of finances and in terms of general decision-making."

Enumerator responsabilities

According to p. 3 of the *Manual*, "The success of the [use of the Simple Poverty Scorecard®] depends fundamentally on the quality of data collected. You must collect the data carefully and accurately. Of course, you as the enumerator must master all the questions, their responses, and their interpretations."

According to p. 4 of the *Manual*, "These [Guidelines] are your instruction manual for filling out the questionnaire. You must master all the concepts and definitions that appear here. For example, you must be completely clear concerning how a *household* is defined. Some concepts are simple or common-sense, and some are more complex and may not be what you would have expected, but in all cases, you must follow the rules set down in these [Guidelines], and not rely on your own judgment or experience. After all, this is the purpose for which these [Guidelines] were written, so you are not to ignore them."

If a situation arises—and it often will—for which these "Guidelines" are silent, incomplete, or contradictory, then you should rely solely on your own judgment. In particular, your organization should not promulgate any rules nor teach any practices to you and your fellow enumerators concerning how to ask questions and interpret responses for the Simple Poverty Scorecard® other than those included in these "Guidelines".

Advice for conducting the interview

According to pp. 8–10 of the *Manual*, "To obtain high-quality information, you (the enumerator) should be polite, respectful, patient, and calm. When you first introduce yourself to the household, explain to them the goals of the survey and reassure them that all responses will be kept strictly confidential and will be used only for statistical purposes. Show that you are serious about confidentiality by not talking about other interviews in front the household whom you are currently interviewing. Likewise, never show a completed questionnaire to anyone who is not part of the survey team, and even then, only do so when you are in your office.

"Build an atmosphere of trust right from the start. The respondent's first impression of the survey strongly influences his or her willingness to cooperate. Dress appropriately, and be friendly when you introduce yourself. Show the respondent your badge that proves that you are a legitimate employee of [your organization].

"Avoid discussing politics.

"Interviewing is an art, not a mechanical algorithm. Each interview is unique, so do your best to make each one interesting and pleasant.

"An interview is not a police inquiry but rather a conversation between yourself —the enumerator—and the respondent.

"Choose when and how you ask questions with care so as to obtain accurate responses. Sometimes, you will need to explain a question to the respondent in your own words, always being careful to hew closely to the spirit of the relevant concepts and definitions in these 'Guidelines'.

"Before agreeing to participate, respondents may sometimes ask you about the survey or about why his or her household was chosen to participate. Answer politely and frankly. Respondents may also worry about the length of the interview. Tell them that you are perfectly willing to come back at a better time if he or she is unavailable to answer questions right now.

"Following the principles below can help to improve the quality of the interview:

"*Confidentiality*. Interviewing in the presence of third parties who are not members of the household can lead to the respondent's giving less-than-frank answers. Do the interview in private, out of ear-shot of third parties.

"*Neutrality*. Most people are polite and tend to try to give the response that they think that you, as the enumerator, wants to hear. In order to avoid this, be completely neutral in the interview. Take care not to give the respondent the impression—whether by your facial expression or by the tone of your voice—that a response strikes you as 'good' or 'bad'.

"Avoid seeming to approve or disapprove of any response. If the respondent fails to give a clear, relevant response, do not try to steer him or her by saying something like "I guess that what you mean to say is . . . . Right?" The respondent will often agree, even if, in fact, you did not correctly divine what he or she meant. Instead, re-read the question, adding more explanation as you see fit. [For questions 8 and 9—and if necessary, question 7,] you can also read off the list of response options.

"*Tact*. Sometimes, a respondent simply says, 'I do not know', gives an irrelevant response, seems bored or uninterested, contradicts something that he or she has said before, or flat-out refuses to respond. Before asking the next question, try to revive his or her interest in the conversation. Take a few moments to chat about something that has nothing to do with the survey (for example, the respondent's town or village where he or she grew up, sports, the weather, his or her daily activities, and so on).

"If the respondent gives frivolous or contradictory answers, do not harshly shut him or her up. Listen politely, and then gently point out that the answer is frivolous or inconsistent. Whatever you do, do not embarrass the respondent.

"*Open mindedness*. Clear your mind of preconceived ideas about what the respondent knows or can do. At the same time, keep in mind that differences between you and the respondent can influence the interview. Always seek to speak and act so as to help the respondent feel comfortable and at-ease.

"*Rhythm*. Do not rush the interview, just as you do not rush a conversation with a friend. Read the questions slowly so the respondent understands what you are asking. After you read a question, stop; give the respondent time to reflect. If the respondent feels so rushed that he or she cannot come up with a proper response, then he or she might just give up and say whatever or 'I do not know'. If you suspect that the respondent is answering without thinking just to get the interview over with, then tell him or her: 'There is no hurry. Your response matters; take all the time you need to answer carefully.'

"When the interview is over and before you take your leave from the household, double-check that all [scorecard indicators] were asked and that all responses are marked. [Also, make sure that the scorecard header has been filled out to the extent possible.]"

According to p. 12 of the *Manual*, "The survey aims for high-quality data. Some respondents—if interviewed in public or in ear-shot of third parties who are not members of the household—may give inaccurate answers. . . . In general, avoid interviewing in the presence of on-lookers who are not members of the household. . . . If third parties are present, then politely ask them to give you and the responding household some privacy, or, as a last resort, move to a different room or area of the compound."

According to p. 13 of the *Manual*, "To get high-quality data, treat the respondent respectfully, eschewing all condescension. Judging the respondent's answers is disrespectful and will make the respondent uncomfortable. Remember that the trust that you build with the respondent is fundamental for getting high-quality data. Do not re-interpret the respondent's answers.

"Sometimes, a respondent will refuse to answer a question. You should gently remind him or her that [your organization] keeps all responses strictly confidential and that is it very important that all questions be answered."

According to p. 14 of the *Manual*, "Sometimes a respondent's first answer is 'I do not know.' Do not be satisfied with this; probe for a better response. Some cases are:

- The respondent is trying to buy time to reflect and to come up with a better response. If so, then encourage him or her to take the time required
- The respondent is not sure how to respond
- The respondent is not the household member who is most-able to answer this question. If so, then seek out the more-appropriate respondent, and ask him or her the question"

Guidelines for specific scorecard indicators

1. In which department does the household live?
    A. Ouest, or Grand'Anse
    B. Centre, or Nord-Est
    C. Nord-Ouest, or Sud
    D. Artibonite, or Nippes
    E. Nord, or Sud-Est

Do not ask this question directly of the respondent, unless you as the enumerator are not completely certain of what department the household lives in.

2. How many members does the household have?
    A. Eight or more
    B. Seven
    C. Six
    D. Five
    E. Four
    F. Three
    G. One, or two

Do not ask this question directly of the respondent. Instead, mark the response based on the information your already gathered about household members on the "Back-page Worksheet".

According to pp. 6–7 of the *Manual*, a *household* "is a person or group—regardless of blood or marital relationship—who normally live in the same residence, pool resources, share meals, and recognize the same head.

"A household may be made up of just one person (for example, a student who rents a room alone) or more than one person. The typical example of a multi-person household is made up of a husband, his wife (or wives), their children, as well as other people who are in the care of the head of the household (family members, friends, domestic servants, and so on). A household may also be made up of a number of people who live together without any blood or marital ties (for example, two bachelors who rent an apartment together).

"Do not confuse the concept of *household* with the concept of *family*. Social structures can be complex. For example, a family can be made up of various households. Here are some examples:

- A member of the immediate family of the members of a household (say, an adult child who is a college student) does not live in the same residence with the head of the household (his or her parent), although he or she does visit sometimes to eat dinner with them. This adult child is not counted as a member of his or her parents' household
- An adult son, along with his wife, live in the same compound with his father, but they manage their resources apart from his father, and they normally eat separately, even though they sometimes eat together. The adult son and his wife are a distinct household from that of his father
- Continuing the previous example, if the adult son and his wife pool their resources with their father and normally eat with him, then the three of them count as a single household

- A single adult son lives in a compound along with his father and mother. The father and mother normally eat with their son, so the three of them together count as a single household
- If two or more adult sons live in the compound with their father and mother, and if all the adult sons normally eat with their parents, then all of them together are a single household
- Two brothers, along with each of their wives and children, live in a compound. They do not pool their resources to cook, but the two wives take turns cooking for both families, with each wife cooking food provided by her own husband. Even if the two families eat their meals together, they count as two distinct households
- Single people who live together in the same residence and who share meals are counted as a single household. (The exception are members of the armed forces living in barracks and students living in student hostels. These are not counted together as a single household.) If the single people who share a residence do not share meals, then each person counts as a distinct household
- A man has two wives, each living in a different compound. The two wives (together with their children) count as two distinct households, and the husband is counted as a member in only one of the two wives' households

"Since the earthquake, the social structure of some households in Port-au-Prince has become more complex. Sometimes some household members stay in the camps in order to access services and to receive free goods. Others rent their ration card to third parties or pay someone to stay in the camps to receive free goods to be turned over to the card-holder. Furthermore, the lack of title deeds to real property leads households to send a member to keep watch over destroyed or partially destroyed residences [to prevent their being occupied by squatters].

"A *household member* is someone who normally lives with the household. This means that the person lives with the household now and either:

- Has lived with the household for at least six months, or
- Plans to live with the household for a total of at least six months

"For example:

- The interview takes place in November. Pierre joined the household in September, and he plans to stay until the end of the school year. He has only lived with the household for two months, but he counts as a *household member* because he plans to stay for at least six months
- Marie lived in Saint-Marc until her marriage two weeks before the interview with Alexis, who lives in Port-au-Prince. Marie is a member of the same household as Alexis in Port-au-Prince, even though she has there for only two weeks, because she plans to remain in the household for more than six months

"Someone who currently lives with the household but who plans to stay for a total of less than six months counts as a *visitor*, not as a *household member*. Continuing the example above, the mother of Marie comes to Port-au-Prince to help her daughter set up housekeeping, staying for three weeks. Marie's mother is a visitor in Marie's household, not a household member.

According to question E3 in the *Questionnaire*, anyone who has been away from the household for more than three months is not to be counted as a *household member*.

The rules above are insufficient to determine household membership in some common cases. Discussion of such cases with the IHSI implied some additional rules:

- A person is a member of one (and only one) household
- Children who eat or sleep (but not both) in the household of their parents/adult guardians are members of the household of their parents/adult guardians
- A person who has slept and ate in more than one multi-person household in the past three months is a member of the household to which he/she has provided the most economic support or from which he/she has received the most economic support
- A person who usually lives and eats alone or in non-household arrangements—such as military barracks, student dormitories, or boarding houses—and who provides economic support to (or receives economic support from) another household with whom the person has blood or marital ties is a member of the household to which he/she has such ties
- A person who does not normally sleep and eat with a household is a member of that household only if all of the following hold:
    - He/she provides economic support for the household, *or* he/she receives economic support from the household
    - He/she is not a member of another household and is not individually independent/self-sufficient
    - He/she has been physically present in the residence of the household at least once in the past three months

Below, these rules are applied to some example cases.

- An adult from a household in a rural area works in Port-au-Prince, where he/she sleeps and eats at a boarding house. He/she sends money home to support the rural "sending" household. He/she also sometimes visits the rural "sending" household for up to a week before returning to work in Port-au-Prince. He/she counts as a member of the rural "sending" household as long as he/she has been there in the past three months
- A domestic servant eats and sleeps in the household where he/she works during the week, but on Sundays he/she returns to the household where the rest of his/her family lives. He/she gives some of her pay to his/her family's household. He/she counts as a member of the "Sunday" household, not of the employing household
- A child goes to boarding school in Port-au-Prince, but his/her parents live in a smaller town 50km away. The child stays with an aunt Port-au-Prince, visiting his/her parents during school breaks. His/her parents pay for the child's school fees and give some money to the aunt to help with the child's room and board. The child counts as a member of his/her parent's household, not of his/her aunt's household
- A man has two wives, and the wives live in separate households. The man contributes to both households. He visits both households on most days and eats some meals in both households, but he sleeps exclusively in the residence of one of the wives. The man is a household member in the household where he both eats and sleeps, and he is not a household member in the household where he only eats
- A child regularly eats with one household in the neighborhood, but he/she returns to the household of his/her parents each night to sleep. He/she counts as a member of his/her parents' household, not of the other household where he/she regularly eats
- An adult child moved abroad to work and has not returned for two years. He/she often sends money to support the "sending" household in Haiti. He/she is not a member of the "sending" household because he has not been there for three months
- An adult child moved from a rural area to Port-au-Prince, where he/she found work, got married, and started a family. He/she sends money every month or so to support the rural "sending" household. On the day of the scorecard interview, he/she happens to be visiting the rural "sending" household. He/she is not a member of the "sending" household because he/she is a member of another household

3. How many household members who are 10-years-old or older worked for at least one hour in the past week?
    A. None
    B. One
    C. Two or more

Do not ask this question directly of the respondent. Instead, mark the response based on the information your already gathered about the work status of each household member who is 10-years-old or older, one-by-one, on the "Back-page Worksheet".

According to p. 76 of the *Manual*, "*Work* is the performance of an economic activity."

According to p. 70 of the *Manual*, "*Work* is economic activity. According to the International Labour Office, *economic activity* is the provision of labor in the production of goods or services. The goal of economic activity is 'to produce goods or services (for sale or for own consumption), in exchange for remuneration (in-cash or in-kind) or for the benefit of the household'."

According to p. 71 of the *Manual*, "The table below classifies example activities as either *economic activity* (that is, *work*) or *not economic activity* (that is, *not work*).

Economic activity (work)	**Not economic activity (not work)**
Paid domestic service	Unpaid housework/chores
Collecting recyclables to sell	Unpaid care for the elderly, infirm, ill, or infants in one's own household or family
Bagging purchases or carrying loads for clients in exchange for tips	Begging or any other gift-seeking activity
Unpaid (other than meals) farm work such as planting or harvesting as part of a *konbit* or a *envitasyon*	Receipt of investment income (rent from a house or field, interest on a personal loan, dividend from a business firm) without doing anything active other than collecting the income
Paid farm work as part of a work-group (*eskwad*, *ranpono*, *douvanjou*, *sori*)	Selling or pawning assets
Unpaid work in an internship (such as medical students' social service)	Constructing or repairing one's own residence
Farm work whose output is consumed by the farming household itself	Unpaid community service
Prostitution	Extortion, fraud, or kidnapping for ransom

Do not unnecessarily limit the activities that fall under this definition of *work*. For example, do not assume that a productive activity counts as *work* only if it is remunerated with cash. Careful reading and logical thinking about the above rules leads to the conclusion that, for the purposes here, all of the following count as *work*:

- Commerce/trade activities (such as running a shop of any size)
- Self-employment (in agriculture or non-agriculture)
- Unpaid work in a family business (such as son/daughter who works as a cashier in the family's shop without any explicit remuneration)
- Apprenticeships/internships
- Seasonal or intermittent work or businesses (if pursued in the past seven days)

According to p. 54 of the *Manual*, "Age is measured in terms of completed years, that is, in terms of the person's age as of his/her most-recent birthday."

Do not require certainty nor proof when asking about ages. For the purposes of this question, accuracy matters only for household members who may be close to 10-years-old. The age of such children is usually known with certainty by both the children themselves and by their adult guardians.

4. In the past week, did the female head/spouse work for at least one hour?
    A. No
    B. Yes
    C. No female head/spouse

Do not ask this question directly of the respondent. Instead, mark the response based on the information your already gathered about the work status of the female head/spouse on the "Back-page Worksheet".

According to p. 21 of the *Manual*, "The *head of the household* is the member of the household whom the other members of the household recognize as the head. He or she generally wields the greatest power in terms of finances and in terms of general decision-making."

For the purposes of the Simple Poverty Scorecard®, the *female head/spouse* is defined as:

- The household head, if the head is female
- The spouse/conjugal partner of the household head, if the head is male
- Non-existent, if the head is male and if he does not have a spouse/conjugal partner who is a member of the interviewed household

According to p. 76 of the *Manual*, "*Work* is the performance of an economic activity."

According to p. 70 of the *Manual*, "*Work* is economic activity. According to the International Labour Office, *economic activity* is the provision of labor in the production of goods or services. The goal of economic activity is 'to produce goods or services (for sale or for own consumption), in exchange for remuneration (in-cash or in-kind) or for the benefit of the household'."

According to p. 71 of the *Manual*, "The table below classifies example activities as either *economic activity* (that is, *work*) or *not economic activity* (that is, *not work*).

Economic activity (work)	**Not economic activity (not work)**
Paid domestic service	Unpaid housework/chores
Collecting recyclables to sell	Unpaid care for the elderly, infirm, ill, or infants in one's own household or family
Bagging purchases or carrying loads for clients in exchange for tips	Begging or any other gift-seeking activity
Unpaid (other than meals) farm work such as planting or harvesting as part of a *konbit* or a *envitasyon*	Receipt of investment income (rent from a house or field, interest on a personal loan, dividend from a business firm) without doing anything active other than collecting the income
Paid farm work as part of a work-group (*eskwad*, *ranpono*, *douvanjou*, *sori*)	Selling or pawning assets
Unpaid work in an internship (such as medical students' social service)	Constructing or repairing one's own residence
Farm work whose output is consumed by the farming household itself	Unpaid community service
Prostitution	Extortion, fraud, or kidnapping for ransom

Do not unnecessarily limit the activities that fall under this definition of *work*. For example, do not assume that a productive activity counts as *work* only if it is remunerated with cash. Careful reading and logical thinking about the above rules leads to the conclusion that, for the purposes here, all of the following count as *work*:

- Commerce/trade activities (such as running a shop of any size)
- Self-employment (in agriculture or non-agriculture)
- Unpaid work in a family business (such as son or daughter who works as a cashier in the family's shop without any explicit remuneration)
- Apprenticeships/internships
- Seasonal or intermittent work or businesses (if pursued in the past seven days)

5. Does the female head/spouse know how to read and write?
    A. No, or no female head/spouse
    B. Yes

According to p. 51 of the *Manual*, "The [female head/spouse] should actually be able to read, and not merely recite a memorized text."

Based on logic/common sense and feedback from IHSI, here are additional guidelines:

- In general (as for all scorecard questions), you should accept the respondent's answer without any particular suspicion or judgment
- If the respondent seems not to understand or if he/she does not give a clear answer (for example, not saying "No" or "Yes" but rather "I can write my name" or just shyly chuckling without saying anything), then ask : "If a friend sent you a short note or letter, could you read it? And could you write a short note or letter back to your friend?" If the response is anything other than "Yes" and "Yes", then count the person as not being able to read and write
- To count as "Yes", the person must be able to read *and* write both, not just one or the other (but not both)
- While being able to read does not necessarily imply being able to write, being able to write does imply being able to read. Thus, if the respondent says that the person can read, you should also ask if he/she can also write, but if the respondent says that the person can write, you can go ahead and assume that he/she can also read
- Being able to write one's name does not necessarily imply that one can write, just as being able to hum a single note need not imply that one can sing. Being able to write implies more than just being able to scratch out a few memorized words
- The question asks about *current* ability to read and write. Do not assume that a person can read and write today just because they went to school or took literacy classes in the past
- When in doubt, ask whether the person can read a short letter from a friend and whether the person can write a short response back. Just ask if the person can do this, hypothetically; do not require them to read and write actual sample letters right then and there

According to p. 21 of the *Manual*, "The *head of the household* is the member of the household whom the other members of the household recognize as the head. He or she generally wields the greatest power in terms of finances and in terms of general decision-making."

For the purposes of the Simple Poverty Scorecard®, the *female head/spouse* is defined as:

- The household head, if the head is female
- The spouse/conjugal partner of the household head, if the head is male
- Non-existent, if the head is male and if he does not have a spouse/conjugal partner who is a member of the interviewed household

Remember that you already know the name of the female head/spouse (and whether she exists) from the notes you took for your own use while compiling the "Back-page Worksheet". Thus, if there is a female head/spouse, do not mechanically ask, "Does the female head/spouse know how to read and write?". Instead, use the actual name of the female head/spouse, for example: "Does Marie know how to read and write?" If there is no female head/spouse, then do not read the question at all; just mark "A. No female head/spouse" and proceed to the next indicator.

6. Does the male head/spouse know how to read and write?
    A. No
    B. No male head/spouse
    C. Yes

According to p. 51 of the *Manual*, "The [male head/spouse] should actually be able to read, and not merely recite a memorized text."

Based on logic/common sense and feedback from IHSI, here are additional guidelines:

- In general (as for all scorecard questions), you should accept the respondent's answer without any particular suspicion or judgment
- If the respondent seems not to understand or if he/she does not give a clear answer (for example, not saying "No" or "Yes" but rather "I can write my name" or just shyly chuckling without saying anything), then ask : "If a friend sent you a short note or letter, could you read it? And could you write a short note or letter back to your friend?" If the response is anything other than "Yes" and "Yes", then count the person as not being able to read and write
- To count as "Yes", the person must be able to read *and* write both, not just one or the other (but not both)
- While being able to read does not necessarily imply being able to write, being able to write does imply being able to read. Thus, if the respondent says that the person can read, then you should also ask if he/she can also write, but if the respondent says that the person can write, then you can assume that he/she can also read
- Being able to write one's name does not necessarily imply that one can write, just as being able to hum a single note need not imply that one can sing. Being able to write implies more than just being able to scratch out a few memorized words
- The question asks about *current* ability to read and write. Do not assume that a person can read and write today just because they went to school or took literacy classes in the past
- When in doubt, ask whether the person can read a short letter from a friend and whether the person can write a short response back. Just ask if the person can do this, hypothetically; do not require them to read and write actual sample letters right then and there

According to p. 21 of the *Manual*, "The *head of the household* is the member of the household whom the other members of the household recognize as the head. He or she generally wields the greatest power in terms of finances and in terms of general decision-making."

For the purposes of the Simple Poverty Scorecard®, the *male head/spouse* is defined as:

- The household head, if the head is male
- The spouse/conjugal partner of the household head, if the head is female
- Non-existent, if the head is female and if she does not have a spouse/conjugal partner who is a member of the interviewed household

Remember that you already know the name of the male head/spouse (and whether he exists) from the notes you took for your own use while compiling the "Back-page Worksheet". Thus, if there is a male head/spouse, do not mechanically ask, "Does the male head/spouse know how to read and write?". Instead, use the actual name of the male head/spouse, for example: "Does Pierre know how to read and write?" If there is no male head/spouse, then do not read the question at all; just mark "B. No male head/spouse" and proceed to the next indicator.

7. What is the main material of the roof?
    A. No roof (camp), or thatch/straw
    B. Metal sheets, or plastic
    C. Cement/concrete, tile/slate, or other

According to p. 32 of the *Manual*, "Do not ask this question directly of the respondent; you as the enumerator should choose a response option based on your own observations of the roof.

"After carefully observing the residence, identify the main material of the roof, where *main* means 'the material that accounts for the largest share of the roof's construction'. . . .

"The response *Other* should be marked only when it is not possible to identify the main material of the residence's roof with one of the response options that is explicitly listed."

If the household lives in a camp (be it in a tent or in a temporary shelter), then mark the response "A. No roof (camp), or thatch/straw", regardless of the actual material of the roof of the residence.

If you must ask the respondent this question, then note that—like questions 8 and 9 but unlike all other questions—you can read the response options word-for-word to the respondent if you think that that will help to obtain more accurate data (p. 40 of the *Manual*).

According to p. 14 of the *Manual*, "For some questions, the respondent makes a choice from a pre-coded list. Let the respondent choose. In particular, you as the enumerator should not suggest—explicitly nor implicitly—a response to the respondent.

"If the respondent hesitates or seems unable to make a choice, then you should read the list of response options to him or her a second time. Then ask the respondent which option is appropriate. Read all of the response options, not just some of them, as reading only some could lead to low-quality data."

8. What is the main source of drinking water for the household?
    A. Spring, surface water (stream, lake, pond, river, dam/canal), artesian well or borehole, rainwater, public standpipe, or untreated water (truck, bottle, bag, bucket, or jerrycan)
    B. Well, private faucet/DINEPA, or treated water (kiosk, truck, bottle, bag, bucket, or jerrycan)

Unlike all other questions (except for question 9, and—if necessary—question 7), you can read the response options word-for-word to the respondent if you think that will help to obtain more accurate data (p. 40 of the *Manual*).

According to p. 14 of the *Manual*, "For some questions, the respondent makes a choice from a pre-coded list. Let the respondent choose. In particular, you as the enumerator should not suggest—explicitly nor implicitly—a response to the respondent.

"If the respondent hesitates or seems unable to make a choice, then you should read the list of response options to him or her a second time. Then ask the respondent which option is appropriate. Read all of the response options, not just some of them, as reading only some of them could lead to low-quality data."

According to pp. 36–37 of the *Manual*, "*Drinking water* is that water meant for the direct consumption of members of the household or for use with cooking.

"This question seeks the main type of source or the main place from which water is obtained. *Main* means 'the one used most often or for the largest number of days in a year'.

"The response options are defined as follows:

- *Spring*: Point where water reaches the surface of the earth from an underground aquifer
- *Surface water (stream, lake, pond, river, dam/canal)*: Water collected from the surface in receptacles
- *Artesian well or borehole*: A mechanically drilled well from which water gushes under its own pressure
- *Rainwater*: Rainwater collected in receptacles
- *Public standpipe*: Water supplied via a public spigot from which water flows into a tub or basin. The distribution point is put in place by non-governmental organizations or by government enterprises (CAMEP, POCHEP, SNEP, or FAES)
- *Untreated water (truck, bottle, bag, bucket, or jerrycan)*: Water that has not had any special treatment to make it potable
- *Well*: Well dug down to the water table
- *Private faucet/DINEPA*: Water supplied by a public network of pipes (for example, CAMEP, POCHEP, or SNEP)
- *Treated water (kiosk, truck, bottle, bag, bucket, or jerrycan)*: Water that has been treated to make it biologically and chemically pure. It is sold by itinerant vendors, from retail businesses that specialize in treated water, or from businesses that treat water. The treatment itself may include distillation, microfiltration, deionization, ozonation, reverse osmosis, and so on"

According to the IHSI, a *public standpipe* is any water distribution point supplied by a public network. In Kréyol, this water source is often called *tiyo publik* or *tuyau public*.

9. What is the main source of energy for cooking?
    A. Wood/straw, or other
    B. Charcoal, solar, propane, electricity, or kerosene

According to p. 40 of the *Manual*, "A household may use more than one source of energy for cooking food. Therefore, you should read-off all the response options and—based on what the household says—mark the response that corresponds to the main source."

According to p. 32 of the *Manual*, "The response *Other* should be marked only when it is not possible to identify the household's main source of energy for cooking with one of the response options that is explicitly listed."

Unlike all other questions (except for question 8, and—if necessary—question 7), you can read the response options word-for-word to the respondent if you think that that will help to obtain more accurate data (p. 40 of the *Manual*).

According to p. 14 of the *Manual*, "For some questions, the respondent makes a choice from a pre-coded list. Let the respondent choose. In particular, you as the enumerator should not suggest—explicitly nor implicitly—a response to the respondent.

"If the respondent hesitates or seems unable to make a choice, then you should read the list of response options to him or her a second time. Then ask the respondent which option is appropriate. Read all of the response options, not just some of them, as reading only some could lead to low-quality data."

10. Does the household or a household member have a stove (wood/charcoal)?
    A. No
    B. Yes

The *Manual* provides no additional information about this indicator. In particular, the *Manual* and the IHSI do not report any rules applied in the 2012 ECVMAS that would dictate whether a broken or out-of-order stove (wood/charcoal) would count for the purposes of this question. Thus, this decision is left to the judgement of each individual enumerator, case-by-case.

11. Does the household or a household member have a radio?
    A. No
    B. Yes

The *Manual* provides no additional information about this indicator. In particular, the *Manual* and the IHSI do not report any rules applied in the 2012 ECVMAS that would dictate whether a broken or out-of-order radio would count for the purposes of this question. Thus, this decision is left to the judgement of each individual enumerator, case-by-case.

Table 1: Poverty lines, poverty rates (for households and people), and sample sizes for all of Haiti, its five poverty-line regions, and for the construction and validation samples

	Line or	HHs or	HHs	Poverty lines (HTG per person per day) and rates (%)								
				National poverty lines				Poorest half	2005 PPP poverty lines			
Region	**Rate**	**People**	**Surveyed**	**Food**	**100%**	**150%**	**200%**	**<100% Natl.**	**$1.25**	**$2.00**	**$2.50**	**$5.00**
All of Haiti												
	Line	People		42.49	83.39	125.08	166.77	50.52	44.83	71.73	89.67	179.33
	Rate	HHs	4,930	18.2	49.3	70.5	81.8	23.2	20.2	40.3	53.1	83.6
	Rate	People		23.8	58.5	78.7	88.1	29.2	26.0	48.8	62.1	89.6
Aire Metropolitan												
	Line	People		40.27	79.02	118.54	158.05	59.55	42.49	67.98	84.98	169.95
	Rate	HHs	1,794	3.5	24.2	51.2	66.8	11.9	4.5	17.1	28.4	69.9
	Rate	People		4.6	29.2	59.0	73.7	14.6	6.0	20.6	34.0	76.4
Artibonite, and Centre												
	Line	People		41.35	81.15	121.72	162.30	47.53	43.63	69.81	87.26	174.52
	Rate	HHs	707	20.4	55.0	75.3	85.0	26.1	22.3	44.8	59.8	86.1
	Rate	People		26.2	64.7	84.3	91.7	32.3	28.0	54.0	69.1	92.5
Ouest Rural, and Sud-Est												
	Line	People		42.81	84.01	126.01	168.02	55.00	45.17	72.27	90.34	180.67
	Rate	HHs	759	15.9	48.2	70.3	82.3	23.2	18.0	36.7	50.5	83.4
	Rate	People		20.1	57.8	78.2	89.4	28.9	22.7	44.7	59.9	90.2
Nord, Nord-Est, and NordOuest												
	Line	People		43.93	86.22	129.32	172.43	41.44	46.35	74.17	92.71	185.42
	Rate	HHs	880	31.8	65.3	81.8	89.6	29.4	33.8	57.6	68.1	91.6
	Rate	People		40.5	75.2	89.2	94.3	37.6	42.5	67.7	77.7	96.0
Grand'Anse, Nippes, and Sud												
	Line	People		45.18	88.67	133.00	177.33	48.60	47.67	76.28	95.34	190.69
	Rate	HHs	790	24.7	62.1	80.0	90.2	28.6	27.8	53.3	66.5	91.8
	Rate	People		29.9	69.8	85.2	93.7	34.9	33.7	61.9	74.3	94.8
Construction and calibration (Selecting indicators and points, and associating scores with poverty likelihoods)												
	Rate	HHs	2,513	18.1	49.3	70.3	82.2	23.2	20.1	40.4	53.0	84.0
Validation (Measuring accuracy)												
	Rate	HHs	2,417	18.4	49.3	70.7	81.5	23.2	20.2	40.2	53.1	83.2

Source: 2012 ECVMAS.

Poverty lines are in units of daily per-capita HTG in average prices for all of Haiti in October 2012.

Table 2: Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
1,469	What is the main source of energy for cooking? (Wood/straw, or other; Charcoal, solar, propane, electricity, or kerosene)
1,195	How many household members are 15-years-old or younger? (Four or more; Three; Two; One)
1,191	Does the household or a household member have a television? (No; Yes)
1,180	What is the main source of drinking water for the household? (Spring, surface water (stream, lake, pond, river, dam/canal), artesian well or borehole, rainwater, public standpipe, or untreated water (truck, bottle, bag, bucket, or jerrycan); Well, private faucet/DINEPA, or treated water (kiosk, truck, bottle, bag, bucket, or jerrycan))
1,141	How many household members are 13-years-old or younger? (Four or more; Three; Two; One)
1,139	How many household members are 16-years-old or younger? (Four or more; Three; Two; One)
1,134	How many household members are 17-years-old or younger? (Four or more; Three; Two; One)
1,111	How many household members are 14-years-old or younger? (Four or more; Three; Two; One)
1,100	How many household members are 18-years-old or younger? (Five or more; Four; Three; Two; One)
1,096	What is the main material of the floor? (No floor (camp); Packed dirt, or other; Cement, or wood/planks; Unbroken tile/marble, or broken tile)
1,093	How many household members are 12-years-old or younger? (Four or more; Three; Two; One)
1,066	What is the main material of the walls? (Wicker; Dirt; Bricks/rocks; Wood/planks; Metal sheets; Cardboard/plastic, or other; Cement/cinder blocks; No walls (camp))
1,047	What toilet arrangement does the household usually use? (None; unimproved pit latrine (public or shared); Hole in the yard/buried; unimproved pit latrine (private or not shared); Improved pit latrine (public or shared); Improved pit latrine (private or not shared); Flush toilet)
1,003	What is the highest grade completed by the female head/spouse? (None; Pre-school or kindergarten, A.F. primary 1 to 6, or A.F. secondary 7 or 8; No female head/spouse; Secondary 8, 9, or 10; Secondary rhetoric, secondary philosophy; or post-secondary studies)
1,003	In what region does the household live? (Rural; Other urban; Port-au-Prince metro area)
981	How many members does the household have? (Eight or more; Seven; Six; Five; Four; Three; One, or two)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
968	What is the highest grade completed by the male head/spouse? (None; Pre-school or kindergarten, A.F. primary 1 to 4; A.F. primary 5 or 6 (certificate), or A.F. secondary 7; No male head/spouse; A.F. secondary 8, 9, or 10, or secondary rhetoric; Secondary philosophy, or post-secondary studies)
964	How many household members are 12-years-old or younger? (Three or more; Two; One)
839	Does the household or a household member have a fan? (No; Yes)
786	What is the main material of the roof? (No roof (camp), or thatch/straw; Metal sheets, or plastic; Cement/concrete, tile/slate, or other)
773	In what poverty-line region does the household live? (Port-au-Prince metro area; Artibonite, and Centre; Ouest rural, and Sud-Est; Nord, Nord-Est, and Nord-Ouest; Grand'Anse, Nippes, and Sud)
756	Does the household or a household member have a stove (wood/charcoal)? (No; Yes) Le ménage ou un membre du ménage dispose-t-il d'un réchaud (charbon/bois) ? (Non ; Oui)
721	How many household members are 6-years-old or younger? (Two or more; Two; One)
711	Does the female head/spouse know how to read and write? (No, or no female head/spouse; Yes)
692	Does the household or a household member have a refrigerator/freezer? (No; Yes)
688	Among the household members who worked in the past week, how many were, in their main occupation, working in the agricultural sector? (Two or more; One; None)
684	How does the household usually dispose of its waste water? (Yard; Ditch, ravine, or vacant land, or river or stream; Sewer system/SMCRS, or gutter; Septic tank)
655	How does the household usually dispose of its garbage? (Dumped in vacant lot, empty fields, backyard, and so on; Incineration, buried, or other; Dumped in a ditch, sewer system, street, or ocean; City-government garbage truck; Collection by a private service)
645	Do all household members ages 6 to 18 currently go to school? (No; Yes; No household members in the age range)
629	What is the main lighting source used in the residence? (Kerosene lamp, candles, none, pirated electricity, or other; Electricity from ED'H (individual or shared meter), generator, or solar panel)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
616	In which department does the household live? (Ouest, or Grand'Anse; Centre, or Nord-Est; Nord-Ouest, or Sud; Artibonite, or Nippes; Nord, or Sud-Est)
613	Do all household members ages 6 to 13 currently go to school? (No; Yes; No household members in the age range)
600	Does the household or a household member have a radio? (No; Yes)
600	Do all household members ages 6 to 15 currently go to school? (No; Yes; No household members in the age range)
581	Do all household members ages 6 to 14 currently go to school? (No; Yes; No household members in the age range)
577	If any household members in their main occupation in the past week worked in agriculture as self-employed people, bosses, or owners, then did any member of the household during the past year raise any horses or donkeys? (Someone worked in agriculture as self-employed people, bosses, or owners, but no one raised any horses or donkeys; Someone worked in agriculture as self-employed people, bosses, or owners, and someone raised horses or donkeys; No one worked in agriculture as self-employed people, bosses, or owners)
574	If any household members in their main occupation in the past week worked in agriculture as self-employed people, bosses, or owners, then did any member of the household during the past year raise any cattle, horses, or donkeys? (Someone worked in agriculture as self-employed people, bosses, or owners, but no one raised any cattle, horses, or donkeys; Someone worked in agriculture as self-employed people, bosses, or owners, and someone raised cattle, horses, or donkeys; No one worked in agriculture as self-employed people, bosses, or owners)
568	If any household members in their main occupation in the past week worked in agriculture as self-employed people, bosses, or owners, then did any member of the household during the past year raise any cattle? (Someone worked in agriculture as self-employed people, bosses, or owners, but no one raised any cattle; Someone worked in agriculture as self-employed people, bosses, or owners, and someone raised cattle; No one worked in agriculture as self-employed people, bosses, or owners)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
566	If any household members in their main occupation in the past week worked in agriculture as self-employed people, bosses, or owners, then did any member of the household during the past year raise any pigs? (Someone worked in agriculture as self-employed people, bosses, or owners, but no one raised any pigs; Someone worked in agriculture as self-employed people, bosses, or owners, and someone raised pigs; No one worked in agriculture as self-employed people, bosses, or owners)
563	If any household members in their main occupation in the past week worked in agriculture as self-employed people, bosses, or owners, then did any member of the household during the past year raise any pigs, goats, or sheep? (Someone worked in agriculture as self-employed people, bosses, or owners, but no one raised any pigs, goats, or sheep; Someone worked in agriculture as self-employed people, bosses, or owners, and someone raised pigs, goats, or sheep; No one worked in agriculture as self-employed people, bosses, or owners)
563	If any household members in their main occupation in the past week worked in agriculture as self-employed people, bosses, or owners, then did any member of the household during the past year raise any cattle, horses, donkeys, pigs, goats, or sheep? (Someone worked in agriculture as self-employed people, bosses, or owners, but no one raised any cattle, horses, donkeys, pigs, goats, or sheep; Someone worked in agriculture as self-employed people, bosses, or owners, and someone raised cattle, horses, donkeys, pigs, goats, or sheep; No one worked in agriculture as self-employed people, bosses, or owners)
563	If any household members in their main occupation in the past week worked in agriculture as self-employed people, bosses, or owners, then did any member of the household during the past year raise any goats or sheep? (Someone worked in agriculture as self-employed people, bosses, or owners, but no one raised any goats or sheep; Someone worked in agriculture as self-employed people, bosses, or owners, and someone raised goats or sheep; No one worked in agriculture as self-employed people, bosses, or owners)
563	Among the household members who worked in the past week, how many, in their main occupation, worked in agriculture as self-employed people, bosses, or owners? (One or more; None)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
558	Do all household members ages 6 to 12 currently go to school? (No; Yes; No household members in the age range)
547	Do all household members ages 6 to 17 currently go to school? (No; Yes; No household members in the age range)
540	Does the male head/spouse know how to read and write? (No; No male head/spouse; Yes)
533	Do all household members ages 6 to 16 currently go to school? (No; Yes; No household members in the age range)
527	Does the household or a household member have a cellular telephone? (No; Yes)
507	Do all household members ages 6 to 11 currently go to school? (No; Yes; No household members in the age range)
491	Does the household or a household member have a stove (electric or gas)? (No; Yes)
468	Is agriculture the sector of the activity of the male head/spouse in his main occupation in the past week? (Yes; No male/head spouse; No)
447	In the past 12 months, has any member of the household sent money to family/friends, or others? (No; Yes)
433	What is the status of the female head/spouse in her main occupation in the past week? (Unpaid family worker, or intern/apprentice; Does not work; Self-employed, owner, or employer; Semi-skilled employee, or manual wage laborer; No female head/spouse; Upper manager, professional or similar, middle managers or white-collar worker, or skilled employee)
399	Does the household or a household member have a computer? (No; Yes)
397	What is the status of the male head/spouse in his main occupation in the past week? (Unpaid family worker, or intern/apprentice; Does not work; Self-employed, owner, or employer; Semi-skilled employee, or manual wage laborer; No male head/spouse; Upper manager, professional or similar, middle managers or white-collar worker, or skilled employee)
391	Does the household or a household member have a car or truck? (No; Yes)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
309	Among the household members who worked in the past week, how many were, in their main ooccupation, upper managers, professionals, or similar, middle managers or white-collar workers, or skilled employees? (None; One or more)
275	What is the marital status of the female head/spouse? (Informally married (*placée*), separated after legal marriage, or divorced; Cohabiting; Legally married; Widower; Separated after informal marriage (*plaçage*); No female head/spouse; Single, never-married)
252	Does the household or a household member have an electrical inverter? (No; Yes)
248	What is the marital status of the male head/spouse? (Informally married (*placé*); Widower, separated after informal marriage (*plaçage*), separated after legal marriage, or divorced; Legally married; No male head/spouse; Cohabiting; Single, never-married)
237	Does the household or a household member have a car or truck? (Yes; No)
203	What is the status of the household in its residence? (Owner; Farmer; Living rent-free, or squatter; Renter)
190	Does the female head/spouse have a national identity card (CIN) or a taxpayer number (NIF)? (No, and never had one (for those 18-years-old or older), or not relevant (less than 18-years-old); Yes, but it is lost, or yes, but not renewed; Yes; No female head/spouse)
187	What is the structure of household headship? (Both male and female heads/spouses; Only female head/spouse; Only male head/spouse)
185	Is agriculture the sector of the activity of the female head/spouse in her main occupation in the past week? (Yes; No; No female head/spouse)
183	In the past week, did the female head/spouse work for at least one hour? (No; Yes; No female head/spouse)
161	Does the household or a household member have a stereo system? (No; Yes)
156	In the past week in their main occupation, was the male head/spouse or the female head/spouse self-employed outside of agriculture? (No; Yes)
148	Among the household members who worked in the past week, how many were, in their main ooccupation, wage or salaried employees? (None; One or more)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
142	Does the male head/spouse have a national identity card (CIN) or a taxpayer number (NIF)? (No, and never had one (for those 18-years-old or older), or yes, but not renewed; Yes, but it is lost; Yes, or not relevant (less than 18-years-old); No male head/spouse)
136	Did the household live in this same residence before the earthquake? (Yes; No)
129	Does the household or a household member have a bicycle? (No; Yes)
110	Among the household members who worked in the past week, how many were, in their main ooccupation, self-employed in non-agriculture? (None; One or more)
107	How many dining rooms or living rooms does the residence have? (One; Two; Three or more; None, because lives in a camp)
95	The work that the female head/spouse did in her main occupation in the past week is . . .? (Irregular; Regular; No female head/spouse)
83	In the past 12 months, has any member of the household received money from family/friends, or others? (No; Yes)
76	Does the household or a household member have a motorcycle? (No; Yes)
67	Does the household or a household member have a sewing machine? (No; Yes)
58	The work that the male head/spouse did in his main occupation in the past week is . . .? (Irregular; Regular; No male head/spouse)
45	In the past week, did the male head/spouse work for at least one hour? (No; Yes; No male head/spouse)
44	Among the household members who worked in the past week, how many were, in their main ooccupation, working in a non-permanent position? (One or more; None)
35	How many rooms in the residence are used for sleeping? (One; Two; Three; Four or more)
22	In the past month, how many household members have earned income? (Two or more; One; None)
5	How many household members who are 10-years-old or older worked for at least one hour in the past week? (None; One; Two or more)
2	Does the household or a household member have a kettle? (Yes; No)

Source: 2012 ECVMAS and 100% of the national poverty line

Tables for
100% of the National Poverty Line

(and tables pertaining to all poverty lines)

Table 3 (100% of the national line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	97.3
15–19	95.8
20–24	94.4
25–29	94.0
30–34	83.6
35–39	76.5
40–44	62.7
45–49	44.8
50–54	40.1
55–59	27.7
60–64	16.4
65–69	8.8
70–74	4.7
75–79	2.2
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 4 (100% of the national line): Derivation of estimated poverty likelihoods associated with scores

Score	Households in range and < poverty line		All households in range		Poverty likelihood (%)
0–4	0	÷	0	=	100.0
5–9	481	÷	481	=	100.0
10–14	1,258	÷	1,293	=	97.3
15–19	3,443	÷	3,595	=	95.8
20–24	4,664	÷	4,940	=	94.4
25–29	6,837	÷	7,273	=	94.0
30–34	7,353	÷	8,798	=	83.6
35–39	5,740	÷	7,508	=	76.5
40–44	5,822	÷	9,288	=	62.7
45–49	4,078	÷	9,095	=	44.8
50–54	4,354	÷	10,865	=	40.1
55–59	3,072	÷	11,095	=	27.7
60–64	1,376	÷	8,379	=	16.4
65–69	593	÷	6,733	=	8.8
70–74	268	÷	5,636	=	4.7
75–79	61	÷	2,772	=	2.2
80–84	0	÷	1,201	=	0.0
85–89	0	÷	605	=	0.0
90–94	0	÷	441	=	0.0
95–100	0	÷	0	=	0.0

Number of all households normalized to sum to 100,000.

Table 5 (100% of the national line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	–2.7	1.4	1.4	1.4
15–19	–1.2	1.1	1.3	1.8
20–24	–0.5	1.3	1.5	2.0
25–29	+1.0	1.1	1.4	1.9
30–34	–5.9	3.6	3.7	3.9
35–39	–12.9	7.2	7.3	7.5
40–44	+4.5	2.4	2.8	3.7
45–49	+14.0	2.4	3.0	4.0
50–54	+6.3	2.3	2.8	3.8
55–59	+3.0	2.2	2.6	3.3
60–64	–20.7	12.2	12.4	13.3
65–69	+1.2	1.3	1.6	2.2
70–74	+2.1	0.8	1.0	1.2
75–79	+0.3	0.8	0.9	1.2
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 6 (100% of the national line): Average differences between estimated poverty rates and true values for a group at a point in time, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.4	61.3	76.2	92.6
4	+1.6	35.7	42.8	53.7
8	+0.6	27.2	32.2	42.4
16	+0.4	20.2	24.1	31.2
32	–0.1	14.6	17.3	23.4
64	0.0	10.7	12.1	16.4
128	0.0	7.5	9.1	12.0
256	–0.1	5.3	6.7	9.0
512	–0.1	3.7	4.5	6.3
1,024	–0.2	2.7	3.3	4.3
2,048	–0.2	1.9	2.3	2.8
4,096	–0.2	1.3	1.6	2.1
8,192	–0.2	1.0	1.2	1.5
16,384	–0.2	0.7	0.8	1.1

Table 7: Average differences between estimates and true values for poverty rates of a group of households at a point in time, precision, and the α factor for precision, 2012 scorecard applied to the 2012 validation sample

	Poverty lines								
	National poverty lines				Poorest half	2005 PPP poverty lines			
	Food	**100%**	**150%**	**200%**	**<100% Natl.**	**$1.25**	**$2.00**	**$2.50**	**$5.00**
Estimate minus true value	+1.3	–0.2	+0.4	+1.6	+2.9	+1.6	+3.8	–0.8	+2.4
Precision of difference	0.5	0.7	0.7	0.6	0.5	0.5	0.6	0.7	0.6
α factor for precision	0.93	1.05	1.23	1.18	0.95	0.99	0.97	1.11	1.23

Results pertain to the 2012 scorecard applied to the 2012 validation sample.

Differences between estimates and true values are displayed in units of percentage points.

Precision is measured as 90-percent confidence intervals in units of ± percentage points.

Differences and precision estimated from 1,000 bootstraps with $n = 16{,}384$.

α is estimated from 1,000 bootstrap samples of $n = 256$, 512, 1,024, 2,048, 4,096, 8,192, and 16,384.

Table 8 (All poverty lines): Possible targeting outcomes

		Targeting segment	
		Targeted	**Non-targeted**
True poverty status	**Below poverty line**	**Inclusion** Below poverty line correctly targeted	**Undercoverage** Below poverty line mistakenly non-targeted
	Above poverty line	**Leakage** Above poverty line mistakenly targeted	**Exclusion** Above poverty line correctly non-targeted

Table 9 (100% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	49.3	0.0	50.7	50.7	–100.0
≤9	0.5	48.9	0.0	50.7	51.1	–98.0
≤14	1.8	47.6	0.0	50.7	52.4	–92.8
≤19	5.2	44.1	0.1	50.5	55.8	–78.5
≤24	9.9	39.4	0.4	50.3	60.2	–59.0
≤29	16.4	33.0	1.2	49.5	65.8	–31.2
≤34	23.8	25.5	2.6	48.1	71.9	+1.7
≤39	30.0	19.3	3.9	46.8	76.8	+29.5
≤44	35.5	13.8	7.7	43.0	78.5	+59.5
≤49	39.3	10.0	13.0	37.7	77.0	+73.7
≤54	43.7	5.7	19.5	31.2	74.8	+60.5
≤59	46.5	2.8	27.7	23.0	69.5	+43.9
≤64	48.5	0.9	34.1	16.5	65.0	+30.8
≤69	49.0	0.3	40.3	10.3	59.4	+18.3
≤74	49.2	0.1	45.7	4.9	54.2	+7.3
≤79	49.3	0.0	48.4	2.2	51.6	+1.9
≤84	49.3	0.0	49.6	1.0	50.4	–0.5
≤89	49.3	0.0	50.2	0.4	49.8	–1.8
≤94	49.3	0.0	50.7	0.0	49.3	–2.7
≤100	49.3	0.0	50.7	0.0	49.3	–2.7

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 (100% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	100.0	1.0	Only poor targeted
≤14	1.8	100.0	3.6	Only poor targeted
≤19	5.4	97.7	10.6	42.8:1
≤24	10.3	96.1	20.1	24.8:1
≤29	17.6	93.2	33.2	13.6:1
≤34	26.4	90.3	48.3	9.3:1
≤39	33.9	88.6	60.9	7.8:1
≤44	43.2	82.2	72.0	4.6:1
≤49	52.3	75.2	79.7	3.0:1
≤54	63.1	69.2	88.5	2.2:1
≤59	74.2	62.7	94.3	1.7:1
≤64	82.6	58.7	98.2	1.4:1
≤69	89.3	54.9	99.4	1.2:1
≤74	95.0	51.8	99.8	1.1:1
≤79	97.8	50.5	100.0	1.0:1
≤84	99.0	49.9	100.0	1.0:1
≤89	99.6	49.6	100.0	1.0:1
≤94	100.0	49.3	100.0	1.0:1
≤100	100.0	49.3	100.0	1.0:1

Tables for the Food Poverty Line

Table 3 (Food line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	87.4
10–14	83.8
15–19	62.9
20–24	56.5
25–29	51.5
30–34	32.8
35–39	22.0
40–44	13.7
45–49	7.9
50–54	5.3
55–59	1.6
60–64	0.5
65–69	0.0
70–74	0.0
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 5 (Food line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	+19.7	9.7	11.9	16.1
10–14	+12.6	5.3	6.4	8.4
15–19	–0.9	3.8	4.4	6.1
20–24	–2.5	3.1	3.7	4.6
25–29	+11.7	3.0	3.6	4.8
30–34	+5.6	2.3	2.8	3.5
35–39	+4.8	2.0	2.4	3.1
40–44	–0.9	1.7	2.0	2.6
45–49	+0.3	1.4	1.6	2.2
50–54	+1.2	0.9	1.1	1.5
55–59	–4.4	2.8	2.9	3.1
60–64	–0.4	0.4	0.4	0.5
65–69	–0.1	0.1	0.1	0.1
70–74	0.0	0.0	0.0	0.0
75–79	0.0	0.0	0.0	0.0
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 6 (Food line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.3	64.7	69.3	88.0
4	+1.5	28.8	37.1	52.0
8	+0.8	21.7	27.2	38.8
16	+1.1	15.1	18.5	24.6
32	+1.3	10.6	12.9	17.8
64	+1.3	7.5	8.9	11.3
128	+1.3	5.2	6.2	8.5
256	+1.3	3.6	4.2	5.6
512	+1.3	2.7	3.1	4.4
1,024	+1.3	1.8	2.3	3.1
2,048	+1.3	1.3	1.5	2.1
4,096	+1.3	0.9	1.1	1.6
8,192	+1.3	0.7	0.8	1.0
16,384	+1.3	0.5	0.6	0.8

Table 9 (Food line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	18.4	0.0	81.6	81.6	–100.0
≤9	0.3	18.0	0.2	81.5	81.8	–95.6
≤14	1.2	17.1	0.5	81.1	82.3	–83.6
≤19	3.7	14.6	1.6	80.0	83.7	–50.4
≤24	6.6	11.7	3.7	77.9	84.5	–7.8
≤29	10.1	8.2	7.4	74.2	84.3	+51.0
≤34	13.0	5.3	13.4	68.3	81.3	+27.2
≤39	14.9	3.5	19.0	62.6	77.5	–3.5
≤44	16.4	2.0	26.8	54.9	71.3	–45.8
≤49	17.1	1.2	35.2	46.5	63.6	–91.5
≤54	17.6	0.7	45.5	36.1	53.7	–147.9
≤59	18.2	0.1	56.0	25.6	43.8	–205.1
≤64	18.3	0.0	64.3	17.4	35.7	–250.1
≤69	18.4	0.0	71.0	10.7	29.0	–286.7
≤74	18.4	0.0	76.6	5.0	23.4	–317.4
≤79	18.4	0.0	79.4	2.2	20.6	–332.5
≤84	18.4	0.0	80.6	1.0	19.4	–339.0
≤89	18.4	0.0	81.2	0.4	18.8	–342.3
≤94	18.4	0.0	81.6	0.0	18.4	–344.7
≤100	18.4	0.0	81.6	0.0	18.4	–344.7

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 (Food line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	66.0	1.7	1.9:1
≤14	1.8	69.8	6.7	2.3:1
≤19	5.4	69.5	20.3	2.3:1
≤24	10.3	64.1	36.0	1.8:1
≤29	17.6	57.7	55.2	1.4:1
≤34	26.4	49.3	70.9	1.0:1
≤39	33.9	43.9	81.1	0.8:1
≤44	43.2	38.0	89.4	0.6:1
≤49	52.3	32.7	93.2	0.5:1
≤54	63.1	27.9	96.0	0.4:1
≤59	74.2	24.5	99.2	0.3:1
≤64	82.6	22.2	99.9	0.3:1
≤69	89.3	20.5	100.0	0.3:1
≤74	95.0	19.3	100.0	0.2:1
≤79	97.8	18.8	100.0	0.2:1
≤84	99.0	18.6	100.0	0.2:1
≤89	99.6	18.4	100.0	0.2:1
≤94	100.0	18.4	100.0	0.2:1
≤100	100.0	18.4	100.0	0.2:1

Tables for
150% of the National Poverty Line

Table 3 (150% of the national line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	99.7
15–19	99.4
20–24	99.4
25–29	98.8
30–34	95.5
35–39	93.8
40–44	90.7
45–49	77.2
50–54	72.3
55–59	65.8
60–64	48.8
65–69	28.4
70–74	16.5
75–79	11.8
80–84	8.0
85–89	3.1
90–94	0.0
95–100	0.0

Table 5 (150% of the national line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	–0.3	0.2	0.2	0.2
15–19	–0.4	0.3	0.3	0.3
20–24	+1.0	0.8	1.0	1.3
25–29	+0.8	0.6	0.7	1.0
30–34	–2.1	1.3	1.4	1.5
35–39	–1.0	1.1	1.3	1.6
40–44	+8.7	2.0	2.4	3.3
45–49	+21.1	3.4	4.2	5.5
50–54	–10.6	6.1	6.2	6.5
55–59	+16.7	2.6	3.1	4.4
60–64	–22.4	12.4	12.6	12.9
65–69	–7.8	5.3	5.7	6.6
70–74	–7.8	5.4	5.7	6.5
75–79	+1.6	2.0	2.4	3.6
80–84	+6.3	1.1	1.3	1.7
85–89	+0.4	1.6	2.0	2.9
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 6 (150% of the national line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+2.2	61.8	81.2	89.5
4	+2.5	38.7	46.1	57.3
8	+0.8	29.0	33.7	44.3
16	+1.0	21.0	24.5	30.5
32	+0.4	15.6	18.1	23.7
64	+0.5	11.1	13.5	18.5
128	+0.4	8.0	9.4	13.0
256	+0.3	5.6	6.8	9.2
512	+0.5	4.2	5.0	6.7
1,024	+0.4	2.8	3.3	4.3
2,048	+0.4	2.1	2.5	3.2
4,096	+0.5	1.5	1.7	2.3
8,192	+0.4	1.0	1.2	1.7
16,384	+0.4	0.7	0.9	1.1

Table 9 (150% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	70.7	0.0	29.3	29.3	–100.0
≤9	0.5	70.2	0.0	29.3	29.8	–98.6
≤14	1.8	68.9	0.0	29.3	31.1	–95.0
≤19	5.3	65.3	0.0	29.3	34.6	–84.8
≤24	10.2	60.5	0.1	29.2	39.5	–71.0
≤29	17.3	53.4	0.3	29.0	46.3	–50.7
≤34	25.7	44.9	0.6	28.7	54.4	–26.3
≤39	32.8	37.9	1.1	28.2	61.0	–5.7
≤44	40.7	30.0	2.5	26.8	67.5	+18.7
≤49	47.5	23.2	4.8	24.5	72.0	+41.1
≤54	55.5	15.2	7.6	21.7	77.2	+67.9
≤59	61.7	9.0	12.5	16.8	78.5	+82.3
≤64	66.5	4.2	16.1	13.2	79.7	+77.2
≤69	68.7	2.0	20.6	8.7	77.4	+70.8
≤74	70.1	0.6	24.9	4.4	74.6	+64.8
≤79	70.6	0.1	27.2	2.2	72.8	+61.6
≤84	70.6	0.0	28.3	1.0	71.6	+59.9
≤89	70.7	0.0	28.9	0.4	71.1	+59.2
≤94	70.7	0.0	29.3	0.0	70.7	+58.5
≤100	70.7	0.0	29.3	0.0	70.7	+58.5

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 (150% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	100.0	0.7	Only poor targeted
≤14	1.8	100.0	2.5	Only poor targeted
≤19	5.4	99.6	7.6	259.6:1
≤24	10.3	99.2	14.5	121.7:1
≤29	17.6	98.3	24.4	56.4:1
≤34	26.4	97.6	36.4	40.2:1
≤39	33.9	96.7	46.4	29.7:1
≤44	43.2	94.3	57.6	16.4:1
≤49	52.3	90.8	67.1	9.9:1
≤54	63.1	87.9	78.5	7.3:1
≤59	74.2	83.1	87.3	4.9:1
≤64	82.6	80.5	94.1	4.1:1
≤69	89.3	76.9	97.2	3.3:1
≤74	95.0	73.8	99.2	2.8:1
≤79	97.8	72.2	99.9	2.6:1
≤84	99.0	71.4	99.9	2.5:1
≤89	99.6	71.0	100.0	2.4:1
≤94	100.0	70.7	100.0	2.4:1
≤100	100.0	70.7	100.0	2.4:1

Tables for
200% of the National Poverty Line

Table 3 (200% of the national line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	100.0
20–24	99.8
25–29	99.6
30–34	98.7
35–39	98.1
40–44	96.3
45–49	90.0
50–54	89.4
55–59	80.7
60–64	71.9
65–69	54.4
70–74	42.8
75–79	35.5
80–84	17.5
85–89	6.2
90–94	5.5
95–100	5.5

Table 5 (200% of the national line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0
20–24	+1.5	0.8	1.0	1.3
25–29	+0.5	0.5	0.6	0.7
30–34	–0.5	0.4	0.4	0.5
35–39	–1.5	0.8	0.8	0.9
40–44	+3.4	1.1	1.3	1.8
45–49	–2.6	1.8	1.9	2.1
50–54	–3.5	2.2	2.3	2.5
55–59	+14.8	2.7	3.2	4.2
60–64	–11.0	6.4	6.6	7.0
65–69	+1.1	3.2	3.7	4.8
70–74	+11.4	3.3	3.9	5.2
75–79	–0.9	5.0	5.9	7.1
80–84	+11.4	2.2	2.6	3.7
85–89	+2.3	2.0	2.4	3.3
90–94	–13.5	11.2	12.5	14.3
95–100	0.0	0.0	0.0	0.0

Table 6 (200% of the national line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+2.2	63.1	73.3	80.9
4	+2.6	32.7	40.5	51.1
8	+1.9	22.7	29.2	37.9
16	+2.0	17.4	21.5	28.2
32	+1.5	12.4	15.2	20.3
64	+1.7	8.9	10.5	13.6
128	+1.6	6.3	7.5	10.0
256	+1.6	4.4	5.4	7.1
512	+1.7	3.3	3.8	5.3
1,024	+1.7	2.2	2.6	3.4
2,048	+1.7	1.6	2.0	2.6
4,096	+1.7	1.2	1.4	1.9
8,192	+1.6	0.8	1.0	1.3
16,384	+1.6	0.6	0.7	0.8

Table 9 (200% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	81.5	0.0	18.5	18.5	–100.0
≤9	0.5	81.0	0.0	18.5	19.0	–98.8
≤14	1.8	79.7	0.0	18.5	20.3	–95.6
≤19	5.4	76.1	0.0	18.5	23.9	–86.8
≤24	10.2	71.2	0.1	18.5	28.7	–74.8
≤29	17.5	64.0	0.1	18.4	35.8	–57.0
≤34	26.1	55.4	0.3	18.3	44.4	–35.6
≤39	33.5	47.9	0.3	18.2	51.7	–17.2
≤44	42.1	39.4	1.1	17.4	59.6	+4.7
≤49	50.3	31.2	2.0	16.5	66.8	+25.8
≤54	59.8	21.7	3.3	15.2	75.0	+50.9
≤59	68.0	13.5	6.2	12.3	80.3	+74.5
≤64	74.3	7.2	8.4	10.2	84.4	+89.7
≤69	77.9	3.6	11.5	7.0	84.9	+85.9
≤74	80.1	1.4	14.9	3.6	83.7	+81.7
≤79	81.2	0.3	16.6	2.0	83.1	+79.7
≤84	81.3	0.1	17.6	0.9	82.2	+78.4
≤89	81.4	0.1	18.1	0.4	81.8	+77.7
≤94	81.5	0.0	18.5	0.0	81.5	+77.3
≤100	81.5	0.0	18.5	0.0	81.5	+77.3

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 (200% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	100.0	0.6	Only poor targeted
≤14	1.8	100.0	2.2	Only poor targeted
≤19	5.4	100.0	6.6	Only poor targeted
≤24	10.3	99.4	12.6	161.5:1
≤29	17.6	99.3	21.4	132.6:1
≤34	26.4	99.0	32.1	103.0:1
≤39	33.9	99.0	41.2	96.7:1
≤44	43.2	97.5	51.7	39.5:1
≤49	52.3	96.2	61.7	25.0:1
≤54	63.1	94.7	73.4	18.0:1
≤59	74.2	91.6	83.4	10.9:1
≤64	82.6	89.9	91.1	8.9:1
≤69	89.3	87.1	95.5	6.8:1
≤74	95.0	84.3	98.3	5.4:1
≤79	97.8	83.1	99.6	4.9:1
≤84	99.0	82.2	99.8	4.6:1
≤89	99.6	81.8	99.9	4.5:1
≤94	100.0	81.5	100.0	4.4:1
≤100	100.0	81.5	100.0	4.4:1

Tables for the Line Marking the Poorest Half of People below 100% of the National Poverty Line

Table 3 (Poorest half below 100% of the national line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	83.7
10–14	83.3
15–19	69.9
20–24	61.6
25–29	55.2
30–34	38.8
35–39	32.3
40–44	20.2
45–49	15.0
50–54	12.6
55–59	7.5
60–64	2.9
65–69	1.8
70–74	1.8
75–79	0.2
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 5 (Poorest half below 100% of the national line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	+9.6	9.1	11.0	14.4
10–14	+2.7	4.7	5.5	6.7
15–19	–1.4	3.6	4.3	5.7
20–24	–1.4	2.9	3.5	4.6
25–29	+10.8	3.1	3.7	4.8
30–34	+6.2	2.6	3.0	3.7
35–39	+9.6	2.2	2.7	3.5
40–44	+0.5	1.8	2.2	2.8
45–49	+3.0	1.6	1.9	2.7
50–54	+4.8	1.1	1.3	1.8
55–59	+0.6	1.2	1.4	1.9
60–64	–4.6	3.2	3.4	3.7
65–69	+0.9	0.4	0.5	0.6
70–74	+1.8	0.1	0.1	0.1
75–79	+0.2	0.0	0.0	0.0
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 6 (Poorest half below 100% of the national line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.7	67.5	73.3	89.0
4	+2.6	32.7	39.4	51.8
8	+2.3	24.1	29.7	39.4
16	+2.7	16.9	20.1	25.6
32	+2.9	11.7	14.1	18.5
64	+2.9	8.0	9.7	12.8
128	+3.0	5.7	6.7	8.8
256	+2.9	4.0	4.7	6.1
512	+2.9	2.9	3.5	4.6
1,024	+2.9	2.1	2.4	3.3
2,048	+2.9	1.5	1.8	2.3
4,096	+2.9	1.1	1.3	1.8
8,192	+2.9	0.7	0.9	1.1
16,384	+2.9	0.5	0.6	0.9

Table 9 (Poorest half below 100% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	23.1	0.0	76.8	76.8	–100.0
≤9	0.4	22.7	0.1	76.7	77.1	–96.3
≤14	1.4	21.7	0.4	76.4	77.8	–86.3
≤19	4.1	19.0	1.3	75.5	79.6	–59.1
≤24	7.1	16.0	3.2	73.6	80.7	–24.6
≤29	11.0	12.1	6.6	70.2	81.2	+23.8
≤34	14.4	8.7	12.0	64.8	79.2	+48.1
≤39	16.8	6.2	16.9	59.9	76.7	+26.6
≤44	19.0	4.1	24.1	52.7	71.7	–4.4
≤49	20.4	2.7	31.8	45.0	65.4	–37.7
≤54	21.7	1.4	41.4	35.4	57.1	–79.4
≤59	22.5	0.6	51.6	25.2	47.7	–123.8
≤64	23.0	0.1	59.6	17.3	40.2	–158.1
≤69	23.1	0.0	66.2	10.6	33.7	–186.9
≤74	23.1	0.0	71.8	5.0	28.1	–211.2
≤79	23.1	0.0	74.6	2.2	25.3	–223.2
≤84	23.1	0.0	75.8	1.0	24.1	–228.4
≤89	23.1	0.0	76.4	0.4	23.5	–231.1
≤94	23.1	0.0	76.8	0.0	23.1	–233.0
≤100	23.1	0.0	76.8	0.0	23.1	–233.0

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 (Poorest half below 100% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	75.4	1.6	3.1:1
≤14	1.8	78.1	6.0	3.6:1
≤19	5.4	75.9	17.7	3.1:1
≤24	10.3	68.9	30.8	2.2:1
≤29	17.6	62.4	47.6	1.7:1
≤34	26.4	54.6	62.4	1.2:1
≤39	33.9	49.7	73.0	1.0:1
≤44	43.2	44.0	82.3	0.8:1
≤49	52.3	39.0	88.4	0.6:1
≤54	63.1	34.3	93.9	0.5:1
≤59	74.2	30.3	97.5	0.4:1
≤64	82.6	27.8	99.5	0.4:1
≤69	89.3	25.8	99.9	0.3:1
≤74	95.0	24.3	100.0	0.3:1
≤79	97.8	23.6	100.0	0.3:1
≤84	99.0	23.3	100.0	0.3:1
≤89	99.6	23.2	100.0	0.3:1
≤94	100.0	23.1	100.0	0.3:1
≤100	100.0	23.1	100.0	0.3:1

Tables for
the $1.25/day 2005 PPP Poverty Line

Table 3 ($1.25/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	87.4
10–14	85.5
15–19	70.3
20–24	61.4
25–29	54.0
30–34	35.6
35–39	27.3
40–44	15.9
45–49	10.4
50–54	6.6
55–59	2.2
60–64	1.0
65–69	0.0
70–74	0.0
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 5 ($1.25/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	+13.4	9.1	11.0	14.4
10–14	+12.6	5.2	6.3	8.7
15–19	+6.6	3.8	4.4	6.1
20–24	–0.4	3.0	3.5	4.7
25–29	+12.3	3.0	3.7	5.0
30–34	+7.1	2.4	2.8	3.5
35–39	+8.3	2.1	2.5	3.2
40–44	–1.0	1.8	2.1	2.6
45–49	+1.2	1.5	1.7	2.3
50–54	+0.9	1.0	1.2	1.5
55–59	–3.8	2.5	2.6	2.8
60–64	–5.8	3.8	4.1	4.3
65–69	–0.7	0.5	0.6	0.6
70–74	0.0	0.0	0.0	0.0
75–79	–1.1	0.9	1.0	1.1
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 6 ($1.25/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.3	63.4	72.8	91.6
4	+1.9	30.3	38.1	53.9
8	+1.4	23.8	29.3	39.8
16	+1.7	16.6	19.8	26.9
32	+1.7	11.8	13.7	18.6
64	+1.7	8.0	9.5	12.2
128	+1.7	5.5	6.5	8.5
256	+1.6	4.0	4.6	6.1
512	+1.7	2.8	3.4	4.4
1,024	+1.6	2.0	2.4	3.1
2,048	+1.6	1.5	1.7	2.2
4,096	+1.6	1.0	1.2	1.7
8,192	+1.6	0.7	0.8	1.1
16,384	+1.6	0.5	0.6	0.9

Table 9 ($1.25/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	20.2	0.0	79.8	79.8	–100.0
≤9	0.4	19.9	0.1	79.6	80.0	–95.8
≤14	1.3	18.9	0.5	79.3	80.6	–84.7
≤19	3.8	16.4	1.6	78.2	82.0	–54.7
≤24	6.9	13.4	3.4	76.3	83.2	–15.2
≤29	10.6	9.6	7.0	72.8	83.4	+39.2
≤34	13.6	6.6	12.7	67.0	80.7	+37.1
≤39	15.7	4.5	18.2	61.6	77.3	+10.2
≤44	17.5	2.8	25.7	54.1	71.5	–26.9
≤49	18.5	1.8	33.8	45.9	64.4	–67.0
≤54	19.2	1.0	43.9	35.8	55.0	–116.9
≤59	19.8	0.4	54.4	25.3	45.1	–168.8
≤64	20.1	0.1	62.5	17.3	37.4	–208.5
≤69	20.2	0.0	69.1	10.6	30.8	–241.5
≤74	20.2	0.0	74.8	5.0	25.2	–269.3
≤79	20.2	0.0	77.5	2.2	22.5	–282.8
≤84	20.2	0.0	78.7	1.0	21.3	–288.7
≤89	20.2	0.0	79.3	0.4	20.7	–291.7
≤94	20.2	0.0	79.8	0.0	20.2	–293.8
≤100	20.2	0.0	79.8	0.0	20.2	–293.8

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 ($1.25/day line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	75.4	1.8	3.1:1
≤14	1.8	74.2	6.5	2.9:1
≤19	5.4	70.9	18.8	2.4:1
≤24	10.3	66.6	33.9	2.0:1
≤29	17.6	60.3	52.4	1.5:1
≤34	26.4	51.7	67.4	1.1:1
≤39	33.9	46.4	77.6	0.9:1
≤44	43.2	40.5	86.3	0.7:1
≤49	52.3	35.3	91.1	0.5:1
≤54	63.1	30.4	94.9	0.4:1
≤59	74.2	26.7	97.8	0.4:1
≤64	82.6	24.4	99.5	0.3:1
≤69	89.3	22.6	99.8	0.3:1
≤74	95.0	21.3	99.8	0.3:1
≤79	97.8	20.7	100.0	0.3:1
≤84	99.0	20.5	100.0	0.3:1
≤89	99.6	20.3	100.0	0.3:1
≤94	100.0	20.2	100.0	0.3:1
≤100	100.0	20.2	100.0	0.3:1

Tables for
the $2.00/day 2005 PPP Poverty Line

Table 3 ($2.00/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	97.3
15–19	93.8
20–24	88.4
25–29	87.9
30–34	72.0
35–39	62.0
40–44	47.6
45–49	30.8
50–54	26.4
55–59	19.3
60–64	8.1
65–69	4.9
70–74	1.9
75–79	1.8
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 5 ($2.00/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	+3.8	3.1	3.7	4.7
15–19	–0.8	1.5	1.8	2.4
20–24	–3.8	2.7	2.9	3.2
25–29	–0.5	1.5	1.8	2.4
30–34	–11.5	6.6	6.7	7.1
35–39	+22.9	3.0	3.5	4.8
40–44	+9.0	2.5	3.0	3.7
45–49	+9.5	1.9	2.4	3.3
50–54	+6.8	1.8	2.2	2.8
55–59	+5.4	1.6	1.9	2.3
60–64	–3.3	2.6	2.8	3.2
65–69	+0.7	1.0	1.2	1.7
70–74	+0.7	0.5	0.6	0.8
75–79	+0.6	0.7	0.8	1.0
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 6 ($2.00/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.4	67.8	76.4	93.1
4	+2.9	34.3	42.6	55.6
8	+3.0	26.2	31.3	40.2
16	+3.2	19.1	22.5	28.2
32	+3.6	13.8	16.1	20.4
64	+3.8	9.7	11.1	15.5
128	+3.9	6.5	7.8	11.3
256	+3.7	4.8	5.6	7.1
512	+3.7	3.3	3.9	5.0
1,024	+3.7	2.3	2.7	3.4
2,048	+3.7	1.7	2.0	2.5
4,096	+3.7	1.2	1.4	1.8
8,192	+3.7	0.8	1.0	1.2
16,384	+3.8	0.6	0.7	0.9

Table 9 ($2.00/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	40.2	0.0	59.8	59.8	–100.0
≤9	0.5	39.7	0.0	59.8	60.3	–97.6
≤14	1.7	38.5	0.1	59.7	61.4	–91.3
≤19	5.1	35.1	0.3	59.5	64.6	–74.0
≤24	9.6	30.6	0.7	59.1	68.7	–50.4
≤29	15.6	24.6	1.9	57.8	73.5	–17.4
≤34	22.5	17.7	3.8	55.9	78.5	+21.6
≤39	26.8	13.4	7.0	52.7	79.6	+51.0
≤44	31.1	9.1	12.1	47.7	78.8	+70.0
≤49	33.8	6.4	18.4	41.3	75.2	+54.2
≤54	36.8	3.4	26.3	33.4	70.3	+34.6
≤59	38.7	1.5	35.5	24.2	63.0	+11.7
≤64	39.8	0.5	42.9	16.9	56.7	–6.5
≤69	40.1	0.2	49.3	10.5	50.5	–22.5
≤74	40.2	0.1	54.8	5.0	45.1	–36.3
≤79	40.2	0.0	57.5	2.2	42.5	–43.0
≤84	40.2	0.0	58.7	1.0	41.3	–46.0
≤89	40.2	0.0	59.3	0.4	40.7	–47.5
≤94	40.2	0.0	59.8	0.0	40.2	–48.6
≤100	40.2	0.0	59.8	0.0	40.2	–48.6

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 ($2.00/day line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	100.0	1.2	Only poor targeted
≤14	1.8	96.4	4.3	27.1:1
≤19	5.4	94.8	12.7	18.3:1
≤24	10.3	93.5	24.0	14.5:1
≤29	17.6	88.9	38.9	8.0:1
≤34	26.4	85.4	56.0	5.9:1
≤39	33.9	79.2	66.7	3.8:1
≤44	43.2	72.0	77.3	2.6:1
≤49	52.3	64.7	84.1	1.8:1
≤54	63.1	58.3	91.5	1.4:1
≤59	74.2	52.1	96.2	1.1:1
≤64	82.6	48.1	98.8	0.9:1
≤69	89.3	44.8	99.6	0.8:1
≤74	95.0	42.3	99.8	0.7:1
≤79	97.8	41.2	100.0	0.7:1
≤84	99.0	40.7	100.0	0.7:1
≤89	99.6	40.4	100.0	0.7:1
≤94	100.0	40.2	100.0	0.7:1
≤100	100.0	40.2	100.0	0.7:1

Tables for
the $2.50/day 2005 PPP Poverty Line

Table 3 ($2.50/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	97.3
15–19	96.8
20–24	96.6
25–29	96.6
30–34	86.8
35–39	79.8
40–44	69.7
45–49	49.6
50–54	47.6
55–59	31.6
60–64	20.1
65–69	11.6
70–74	5.2
75–79	2.2
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 5 ($2.50/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	–2.7	1.4	1.4	1.4
15–19	–0.1	1.1	1.3	1.8
20–24	+0.7	1.1	1.3	1.7
25–29	+3.1	1.1	1.3	1.8
30–34	–3.0	2.2	2.3	2.4
35–39	–11.3	6.3	6.4	6.6
40–44	+6.5	2.4	2.8	3.7
45–49	+13.2	2.7	3.2	4.3
50–54	–2.4	2.7	3.3	4.5
55–59	+5.2	2.1	2.5	3.4
60–64	–23.0	13.2	13.6	14.2
65–69	–3.6	3.0	3.3	3.7
70–74	+2.4	0.8	1.0	1.3
75–79	+0.4	0.8	0.9	1.2
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 6 ($2.50/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.5	69.0	81.6	92.5
4	+1.5	37.3	44.5	54.0
8	+0.4	28.2	33.3	44.7
16	+0.2	20.7	25.1	32.1
32	–0.5	15.4	18.1	23.3
64	–0.4	10.6	12.5	16.6
128	–0.6	7.8	9.1	12.1
256	–0.7	5.7	6.8	9.0
512	–0.7	4.0	4.8	6.7
1,024	–0.7	2.8	3.6	4.4
2,048	–0.8	2.0	2.3	3.1
4,096	–0.8	1.4	1.7	2.3
8,192	–0.8	1.0	1.2	1.6
16,384	–0.8	0.7	0.9	1.1

Table 9 ($2.50/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	53.1	0.0	46.9	46.9	–100.0
≤9	0.5	52.7	0.0	46.9	47.3	–98.2
≤14	1.8	51.4	0.0	46.9	48.6	–93.3
≤19	5.2	47.9	0.1	46.7	52.0	–80.0
≤24	10.0	43.2	0.3	46.5	56.5	–61.9
≤29	16.5	36.6	1.1	45.8	62.3	–35.8
≤34	24.0	29.1	2.4	44.5	68.5	–5.2
≤39	30.5	22.7	3.4	43.4	73.9	+21.1
≤44	36.5	16.7	6.7	40.2	76.7	+49.9
≤49	41.0	12.2	11.3	35.5	76.5	+75.4
≤54	46.3	6.9	16.9	30.0	76.2	+68.3
≤59	49.6	3.6	24.7	22.2	71.7	+53.6
≤64	52.0	1.2	30.6	16.2	68.2	+42.4
≤69	52.8	0.3	36.5	10.3	63.2	+31.3
≤74	53.0	0.1	41.9	4.9	58.0	+21.1
≤79	53.1	0.0	44.6	2.2	55.4	+16.1
≤84	53.1	0.0	45.8	1.0	54.2	+13.8
≤89	53.1	0.0	46.4	0.4	53.6	+12.7
≤94	53.1	0.0	46.9	0.0	53.1	+11.9
≤100	53.1	0.0	46.9	0.0	53.1	+11.9

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 ($2.50/day line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	100.0	0.9	Only poor targeted
≤14	1.8	100.0	3.3	Only poor targeted
≤19	5.4	97.7	9.9	42.8:1
≤24	10.3	96.6	18.7	28.5:1
≤29	17.6	93.9	31.1	15.5:1
≤34	26.4	91.1	45.2	10.2:1
≤39	33.9	89.9	57.3	8.9:1
≤44	43.2	84.5	68.7	5.5:1
≤49	52.3	78.4	77.1	3.6:1
≤54	63.1	73.3	87.0	2.7:1
≤59	74.2	66.8	93.2	2.0:1
≤64	82.6	62.9	97.8	1.7:1
≤69	89.3	59.1	99.4	1.4:1
≤74	95.0	55.8	99.8	1.3:1
≤79	97.8	54.4	100.0	1.2:1
≤84	99.0	53.7	100.0	1.2:1
≤89	99.6	53.4	100.0	1.1:1
≤94	100.0	53.1	100.0	1.1:1
≤100	100.0	53.1	100.0	1.1:1

Tables for
the $5.00/day 2005 PPP Poverty Line

Table 3 ($5.00/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	100.0
20–24	99.8
25–29	99.6
30–34	99.1
35–39	99.1
40–44	97.9
45–49	92.8
50–54	89.6
55–59	82.8
60–64	74.3
65–69	60.3
70–74	47.8
75–79	38.8
80–84	22.7
85–89	10.6
90–94	7.0
95–100	7.0

Table 5 ($5.00/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2012 scorecard applied to the 2012 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0
20–24	–0.2	0.1	0.1	0.1
25–29	+0.5	0.5	0.6	0.7
30–34	0.0	0.3	0.4	0.5
35–39	–0.5	0.3	0.3	0.4
40–44	+1.9	0.8	0.9	1.3
45–49	–0.9	1.0	1.3	1.6
50–54	–4.1	2.5	2.6	2.7
55–59	+16.3	2.7	3.2	4.3
60–64	–12.6	7.0	7.2	7.5
65–69	+5.4	3.1	3.7	4.7
70–74	+16.1	3.3	3.9	5.2
75–79	+0.3	5.0	6.0	7.3
80–84	+14.0	2.8	3.3	4.3
85–89	+6.7	2.0	2.4	3.3
90–94	–15.6	12.5	13.4	15.1
95–100	0.0	0.0	0.0	0.0

Table 6 ($5.00/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2012 scorecard applied to the 2012 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+2.4	61.2	67.5	79.5
4	+3.3	32.6	39.3	52.9
8	+2.5	22.8	29.0	36.1
16	+2.6	17.1	21.0	27.5
32	+2.2	12.5	15.3	19.6
64	+2.4	8.8	10.2	14.0
128	+2.4	6.4	7.4	9.8
256	+2.4	4.5	5.4	6.9
512	+2.5	3.3	3.8	5.3
1,024	+2.5	2.2	2.6	3.3
2,048	+2.5	1.7	2.0	2.6
4,096	+2.5	1.2	1.4	1.9
8,192	+2.4	0.8	1.0	1.2
16,384	+2.4	0.6	0.7	0.9

Table 9 ($5.00/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2012 scorecard applied to the 2012 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.0	83.2	0.0	16.8	16.8	–100.0
≤9	0.5	82.7	0.0	16.8	17.3	–98.8
≤14	1.8	81.5	0.0	16.8	18.5	–95.7
≤19	5.4	77.9	0.0	16.8	22.1	–87.1
≤24	10.3	72.9	0.0	16.8	27.1	–75.2
≤29	17.5	65.7	0.1	16.7	34.2	–57.8
≤34	26.2	57.0	0.2	16.6	42.8	–36.8
≤39	33.6	49.6	0.3	16.5	50.1	–18.9
≤44	42.4	40.8	0.7	16.0	58.5	+2.9
≤49	50.7	32.5	1.5	15.2	66.0	+23.8
≤54	60.5	22.8	2.7	14.1	74.6	+48.5
≤59	68.8	14.4	5.4	11.4	80.2	+71.9
≤64	75.6	7.7	7.1	9.7	85.3	+90.0
≤69	79.3	3.9	10.0	6.8	86.1	+88.0
≤74	81.6	1.6	13.4	3.4	85.0	+83.9
≤79	82.9	0.4	14.9	1.9	84.7	+82.1
≤84	83.1	0.2	15.9	0.9	83.9	+80.9
≤89	83.1	0.1	16.4	0.3	83.5	+80.3
≤94	83.2	0.0	16.8	0.0	83.2	+79.9
≤100	83.2	0.0	16.8	0.0	83.2	+79.9

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100.

Table 10 ($5.00/day line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2012 scorecard applied to the 2012 validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
≤4	0.0	100.0	0.0	Only poor targeted
≤9	0.5	100.0	0.6	Only poor targeted
≤14	1.8	100.0	2.1	Only poor targeted
≤19	5.4	100.0	6.5	Only poor targeted
≤24	10.3	100.0	12.4	Only poor targeted
≤29	17.6	99.6	21.0	256.8:1
≤34	26.4	99.3	31.5	137.6:1
≤39	33.9	99.2	40.4	118.6:1
≤44	43.2	98.3	51.0	57.8:1
≤49	52.3	97.0	60.9	32.8:1
≤54	63.1	95.8	72.6	22.6:1
≤59	74.2	92.7	82.7	12.8:1
≤64	82.6	91.5	90.8	10.7:1
≤69	89.3	88.8	95.3	7.9:1
≤74	95.0	85.9	98.1	6.1:1
≤79	97.8	84.8	99.6	5.6:1
≤84	99.0	83.9	99.8	5.2:1
≤89	99.6	83.5	99.9	5.1:1
≤94	100.0	83.2	100.0	5.0:1
≤100	100.0	83.2	100.0	5.0:1