Simple Poverty Scorecard® Poverty-Assessment Tool Togo

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Abstract

The Simple Poverty Scorecard-brand poverty-assessment tool for Togo uses 10 low-cost indicators from the 2015 Core Welfare Indicators Questionnaire 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 Togo to estimate poverty rates, to track changes in poverty rates over time, and to segment clients for differentiated treatment.

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Simple Poverty Scorecard® Poverty-Assessment Tool

			Name	Identifier
Interview ID:				
Interview date:		Participant:		
Country:	TGO	Field agent:		
Scorecard:	001	Service point:		
Sampling wgt.:		Number of household members:		

Indicator	Response	Points Score
1. How many household members are there?	A. Seven or more	0
	B. Six	9
	C. Five	16
	D. Four	18
	E. Three	18
	F. Two	29
	G. One	35
2. Do all household members ages 6 to 18 currently go to school?	A. No	0
	B. Yes	4
	C. No members ages 6 to 18	6
3. What is the main construction material of the residence's walls?	A. Packed earth/mud/unbaked bricks, packed earth with a cement veneer, metal sheets, planks, branches/reeds/woven grass/bamboo, or other	0
	B. Cinder blocks, baked/reinforced bricks, or stone	5
4. What toilet arrangement does the household use?	A. None, or the bush	0
	B. Pit latrine (public or private), uncovered latrine, or other	3
	C. Flush toilet (public or private)	8
5. What is the household's main source of lighting?	A. Homemade kerosene lamp without glass (*lampion*), candles, or other	0
	B. Flashlight	6
	C. Manufactured kerosene lamp with glass, LPG lamp, electricity, generator, or solar panel	12
6. Does your household have any chairs or tables?	A. No	0
	B. Yes	6
7. Does your household have a bed?	A. No	0
	B. Yes	5
8. Does your household have a television?	A. No	0
	B. Yes	6
9. Does your household have a motorcycle/scooter or an automobile for its personal use?	A. No	0
	B. Yes	13
10. Does your household have a cell phone?	A. No	0
	B. Yes	4

Score:

Back-page Worksheet:
Household Members, Ages, and School Attendance

Fill out the scorecard header first. Include the interview's unique identifier (if known), the interview date, and the sampling weight of the participant (if known). Then record the full name and the unique identification number of the participant (who may differ from the respondent), of the participant's field agent (who may differ from you the enumerator), and of the service point that the participant uses.

Then read to the respondent: *Please tell me the first names (or nicknames) and ages of all the members of your household, starting with the head. A* household *is a group of people (or one single person), regardless of blood or marital relationships, who share meals, who recognize the authority of one person called the* head*, and who usually share income and expenses. The household members usually live under the same roof or in the same courtyard/compound.*

Write down the name/nickname and age of each member. You need to know a member's precise age only if it may be close to 6 or 18. Record the number of household members in the scorecard header next to "Number of household members:", and then circle the answer to the first scorecard indicator.

For each member ages 6 to 18, ask whether he/she currently goes to school, and mark the response. Then circle the answer to the second indicator. Mark "C. No members ages 6 to 18" if no members are ages 6 to 18. Mark "B. Yes" if there are members ages 6 to 18 and they all go to school. Mark "A. No" if there are members ages 6 to 18 but at least one does not go to school.

Always keep in mind and apply the detailed instructions in the "Interview Guide".

First name (or nickname)	How old is [NAME]?	If [NAME] is 6- to 18-years-old, does he/she currently go to school?		
1. (Head)		<6 or >18	No	Yes
2.		<6 or >18	No	Yes
3.		<6 or >18	No	Yes
4.		<6 or >18	No	Yes
5.		<6 or >18	No	Yes
6.		<6 or >18	No	Yes
7.		<6 or >18	No	Yes
8.		<6 or >18	No	Yes
9.		<6 or >18	No	Yes
10.		<6 or >18	No	Yes
11.		<6 or >18	No	Yes
12.		<6 or >18	No	Yes
13.		<6 or >18	No	Yes
Number of household members:	—			

Look-up table to convert scores to poverty likelihoods: National poverty lines

	Poverty likelihood (%)			
		National (2015 def.)		
Score	**Food**	**100%**	**150%**	**200%**
0–18	69.7	95.3	97.6	99.9
19–22	51.9	84.0	90.9	95.6
23–26	48.3	78.5	88.9	92.4
27–30	37.9	77.1	87.5	92.4
31–34	32.1	66.9	87.4	92.4
35–38	28.0	66.9	87.3	92.4
39–41	24.0	60.8	85.3	92.4
42–45	20.9	56.6	82.4	92.4
46–48	19.2	49.8	81.6	92.4
49–52	13.3	48.4	73.6	91.8
53–55	7.2	46.5	70.5	89.4
56–58	5.6	28.8	58.2	82.9
59–63	5.6	27.4	54.5	75.9
64–65	5.6	27.4	54.5	75.9
66–68	4.9	18.2	52.4	75.9
69–72	4.0	13.9	31.8	52.7
73–76	2.3	8.9	31.8	50.9
77–82	0.6	5.2	25.7	48.7
83–100	0.3	1.5	9.4	24.6

Look-up table to convert scores to poverty likelihoods: International 2005 and 2011 PPP lines

	Poverty likelihood (%)							
	Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
Score	**$1.25**	**$2.00**	**$2.50**	**$5.00**	**$1.90**	**$3.20**	**$5.50**	**$21.70**
0–18	87.4	96.0	99.2	99.9	87.4	97.6	99.9	100.0
19–22	77.9	90.1	92.8	99.9	78.5	90.9	99.9	100.0
23–26	75.1	87.6	89.8	99.9	76.1	88.9	99.2	100.0
27–30	64.9	87.3	89.8	99.1	64.9	87.3	96.1	100.0
31–34	55.3	85.0	89.8	98.8	55.3	85.6	96.1	100.0
35–38	52.4	83.8	89.2	98.6	53.2	84.7	96.1	100.0
39–41	50.2	78.2	88.3	98.6	51.7	84.4	96.1	100.0
42–45	46.8	75.4	86.4	98.6	47.1	79.4	96.1	100.0
46–48	35.5	74.6	86.1	98.6	35.5	78.1	96.1	100.0
49–52	30.5	65.8	82.3	98.6	31.6	68.5	96.1	100.0
53–55	26.0	59.5	77.2	95.7	27.6	64.8	92.1	100.0
56–58	15.8	48.4	66.7	92.9	17.8	53.0	90.2	99.6
59–63	15.8	44.9	62.0	92.7	17.8	49.0	87.8	99.4
64–65	15.8	44.9	62.0	92.6	17.8	49.0	87.8	99.4
66–68	11.0	42.1	62.0	92.6	11.7	46.6	86.1	99.4
69–72	7.1	22.9	36.9	82.5	8.0	29.2	68.7	99.4
73–76	4.9	22.5	35.9	81.5	5.0	28.5	65.0	99.4
77–82	2.8	18.2	32.4	78.3	3.5	24.3	57.1	99.0
83–100	1.1	2.3	8.4	52.7	1.4	3.6	29.9	98.0

Look-up table to convert scores to poverty likelihoods: Relative and percentile-based poverty lines

	Poverty likelihood (%)					
	Poorest 1/2	Percentile-based lines (2015 def.)				
Score	< 100% Natl.	20th	40th	50th	60th	80th
0–18	75.1	64.9	77.2	93.9	95.3	99.2
19–22	56.7	45.8	69.9	83.1	85.7	92.7
23–26	50.0	40.8	69.1	77.7	81.5	89.6
27–30	44.1	26.8	57.8	72.1	80.6	89.6
31–34	34.2	24.2	53.2	57.3	74.8	89.6
35–38	30.7	20.0	46.7	57.3	73.9	89.2
39–41	29.6	15.1	44.8	56.0	69.0	88.3
42–45	22.2	12.5	37.3	50.4	64.2	86.4
46–48	20.0	12.0	29.5	42.1	55.8	86.1
49–52	12.1	8.5	27.7	38.2	50.6	80.5
53–55	7.0	4.4	23.5	33.7	48.9	77.2
56–58	5.2	2.8	12.9	21.1	34.0	66.6
59–63	5.2	2.7	12.9	20.6	31.5	61.8
64–65	5.2	2.6	12.9	20.6	31.5	61.8
66–68	4.4	2.6	7.7	15.0	21.3	61.8
69–72	4.0	2.6	4.7	12.4	16.6	36.5
73–76	0.8	0.7	3.4	6.6	15.1	35.8
77–82	0.4	0.4	1.5	4.3	9.9	32.3
83–100	0.2	0.2	0.7	1.4	1.5	8.4

Simple Poverty Scorecard® Poverty-Assessment Tool Togo

1. Introduction

The Simple Poverty Scorecard poverty-assessment tool is a low-cost, transparent way for pro-poor programs in Togo to estimate the likelihood that a household has consumption below a given poverty line, to estimate a population's poverty rate at a point in time, to track the annual change in a population's poverty rate, and to segment participants for differentiated treatment.

The direct approach to poverty assessment via consumption surveys is difficult and costly. A case in point is Togo's 2015 Core Welfare Indicators Questionnaire (*Questionnaire Unifié des Indicateurs de Base de Bien-être*, QUIBB) that was done by Togo's *Institut National de la Statistique et des Études Économiques et Démographiques* (INSEED). The 80-page questionnaire covers about 750 questions, many of which have follow-up questions and most of which are asked multiple times (for example, for each household member, student, parcel of land, species of livestock, crop planted, or consumer durable).

In comparison, the indirect approach of the scorecard is quick and low-cost. It uses 10 verifiable indicators drawn from the 2015 QUIBB (such as "What is the main construction material of the residence's walls?" and "Does your household have a bed?")

to get a score that is correlated with poverty status as measured by the exhaustive QUIBB survey.

The 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 organizations. The feasible poverty-assessment options for such 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 estimates from these approaches may be costly, their accuracy is unknown, and they are not comparable across places, organizations, nor time.

The scorecard can be used to estimate the share of a program's participants who are below a given poverty line (for example, Togo's national line). USAID microenterprise partners in Togo can use the scorecard with the $1.90/day 2011 PPP line to report how many of their participants are "very poor".[2] The scorecard can also be used to estimate the annual change in a poverty rate. For all these applications, the scorecard is a consumption-based, objective tool. While consumption surveys are costly even for governments, some pro-poor organizations may be able to implement a low-cost

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

[2] USAID defines a household as *very poor* if its daily per-capita consumption is less than the highest of the $1.90/day 2011 PPP line (XOF474, Table 1) or the line that marks the poorest half of people below 100% of the national line (XOF336).

poverty-assessment tool to help with monitoring poverty and (if desired) segmenting clients for differentiated treatment.

The statistical approach here aims to be understood by non-specialists. After all, if program managers are to adopt the scorecard on their own and apply it to inform their decisions, then they must first trust that it works. Transparency and straightforwardness build 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 pro-poor organizations. This is not because these tools 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", straightforward, 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 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 straightforward and commonplace in statistical practice and in the for-profit field of credit-risk scorecards, they have rarely been applied to poverty-assessment tools.

The scorecard is based on data from the 2015 QUIBB from Togo's INSEED. Indicators are selected to be:

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

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.

The scorecard 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-adult-equivalent or per-capita consumption below a given poverty line.

Second, the scorecard can estimate the poverty rate of a population of households at a point in time. This estimate is the average of estimated poverty likelihoods among a representative sample of households from the population.

Third, the scorecard can estimate the annual change in a poverty rate. With two independent samples from the same population, this is the difference in the average estimated poverty likelihood in the baseline sample versus the average estimated 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 of the annual change in a poverty rate is the sum of the changes in each household's estimated poverty likelihood from baseline to follow-up, divided by the sum of years between each household's pair of interviews (Schreiner, 2014a).

The scorecard can also be used to segment participants for differentiated treatment. 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 Togo's national poverty line and data from the 2015 QUIBB. Scores from this one scorecard are calibrated with this same data to poverty likelihoods for 18 poverty lines.

The scorecard is constructed using data from about three-fifths of the households in the 2015 QUIBB. Data from that same three-fifths of households is also used to calibrate scores to poverty likelihoods for the 18 poverty lines. Data from the other two-fifths of households is used to validate the scorecard's accuracy for estimating households' poverty likelihoods, for estimating populations' poverty rates at a point in time, and for segmenting participants.

Given their assumptions, all three scorecard-based estimators (the poverty likelihood of a household, the poverty rate of a population at a point in time, and the annual change in a population's poverty rate) are *unbiased*. That is, their average matches the true value 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 makes errors 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 after 2015 (because the relationships between indicators and poverty change over time).[3]

Thus, while the indirect-scorecard approach is less costly than the direct-survey approach, it makes errors when applied in practice. (Observed values from the direct-survey approach are taken as correct, ignoring sampling variation.) There are errors because the scorecard necessarily assumes that future relationships between indicators and poverty in all populations will be the same as in the construction data. Of course, this assumption—inevitable in predictive modeling—holds only partly.

The error in the scorecard's estimated poverty rate at a point in time (that is, the average of differences between estimated and observed values across 1,000 bootstrap samples of $n = 16{,}384$ from the validation sample) for 100% of the national poverty line is +0.7 percentage points. The average across all 18 poverty lines of the absolute values of the average error is about 0.7 percentage points, and the maximum of the absolute values of the average error is 1.5 percentage points. These estimation errors are due to sampling variation, not bias; the average difference would be zero if the whole 2015

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

QUIBB were to be repeatedly re-fielded and re-divided into sub-samples before repeating the entire process of constructing and validating the resulting scorecards.

With $n = 16{,}384$, the 90-percent confidence intervals are ± 0.6 percentage points or smaller. For $n = 1{,}024$, the 90-percent intervals are ± 2.5 percentage points or smaller.

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 populations' poverty rates at a point in time. Section 7 discusses estimating the annual change in a population's poverty rate. Section 8 covers targeting. Section 9 places the scorecard here in the context of related exercises for Togo. The last section is a summary.

The "Interview Guide" (found after the References) tells how to ask questions—and how to interpret responses—so as to mimic practice in Togo's 2015 QUIBB as closely as possible. This "Guide" (and the "Back-page Worksheet") are integral parts of the Simple Poverty Scorecard tool for Togo.

2. Data and poverty lines

This section presents the data used to construct and validate the scorecard. It also documents Togo's 2015 definition of *poverty*, as well as the 18 poverty lines to which scores are calibrated.

2.1 Data

Indicators and points for the scorecard are selected (*constructed*) based on data from a random three-fifths of the 2,335 households in the 2015 QUIBB, Togo's most-recent national household consumption survey.

The data from the three-fifths of observations from the 2015 QUIBB that is used to construct the scorecard are also used to associate (*calibrate*) scores to poverty likelihoods for all poverty lines.

Data from the other two-fifths of households from the 2015 QUIBB is used to test (*validate*) scorecard accuracy for point-in-time estimates of poverty rates *out-of-sample*, that is, with data that is not used in construction/calibration. It is also used to test out-of-sample targeting accuracy.

Field work for the QUIBB ran from July to August of 2015.[4] Consumption is in units of XOF per adult equivalent or per person per day in prices in Lomé on average during the field work.

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

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

To illustrate, suppose that a program serves two households. The first household is poor (its per-adult-equivalent or 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

[4] INSEED (2016a, p. xv, and 2016b, p. 9) reports different dates for QUIBB field work: "15 August to 5 September" (a range consistent with "end of interview" date/time fields in the data), and "July to August". This paper uses "July to August".

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" represents the first household's poverty status (poor) or its estimated poverty likelihood. In the "$1 \cdot 0$" term in the numerator, the "1" is the second household's weight, and the "0" represents the second household's poverty status (non-poor) or its estimated poverty likelihood. The "$1 + 1$" in the 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 (or estimated poverty likelihoods) 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" represents its poverty status (poor) or its estimated poverty likelihood. In the "$4 \cdot 0$" term in the numerator, the "4" is the second household's weight because it has four members, and

[5] The examples here assume simple random sampling at the household level. This means that each household has the same weight, taken here to be one (1).
[6] Given simple random sampling at the household level, a household's person-level weight is the number of people in that household.

the zero represents its poverty status (non-poor) or its estimated poverty likelihood. 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 (or estimated poverty likelihoods) 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 numerator is the first household's weight because it has one participant, and the second "1" represents its poverty status (poor) or its estimated poverty likelihood. 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 represents its poverty status (non-poor) or its estimated poverty likelihood. 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.[8]

To sum up, estimated poverty rates are weighted averages of households' poverty statuses (or estimated poverty likelihoods), where—assuming simple random sampling

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

[8] If all households with participants have one participant each, then the participant-level poverty rate is the same as the household-level rate.

at the household level—the weights are the number of relevant units in the household. When reporting, organizations should make explicit the unit of analysis—whether households, household members, or participants—and explain why that unit is relevant.

Table 1 reports poverty lines and poverty rates for households and people in the 2015 QUIBB for Togo as a whole, for the construction/calibration sample, and for the validation sample. For all of Togo and for each of its six regions, Table 2 reports poverty lines and poverty rates for households and people by urban/rural/all.

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 and because sampling is almost always done at the level of households. This is also why the scorecard is constructed, calibrated, and validated with household weights. Person-level poverty rates are also included in Tables 1 and 2 because these are the rates reported by the government of Togo. Furthermore, popular discussions and policy discourse usually proceed in terms of person-level rates, and the goal of pro-poor programs is to help people (not households) to improve their well-being.

2.3 Definitions of *poverty*, and poverty lines

A household's *poverty status* as poor or non-poor depends on whether its per-capita or per-adult-equivalent consumption is below a given poverty line. Thus, a definition of *poverty* is a poverty line together with a measure of consumption. Abdallah and Amouzouvi (2007, pp. 5–6) present Togo's definition of *consumption*.[9]

Because pro-poor programs in Togo may want to use different or various poverty lines, this paper calibrates scores from its single scorecard to poverty likelihoods for 18 lines:

- Food
- 100% of national
- 150% of national
- 200% of national
- $1.25/day 2005 PPP
- $2.00/day 2005 PPP
- $2.50/day 2005 PPP
- $5.00/day 2005 PPP
- $1.90/day 2011 PPP
- $3.20/day 2011 PPP
- $5.50/day 2011 PPP
- $21.70/day 2011 PPP
- Line marking the poorest half of people below 100% of the national line
- First-quintile (20^{th}-percentile) line
- Second-quintile (40^{th}-percentile) line
- Median (50^{th}-percentile) line
- Third-quintile (60^{th}-percentile) line
- Fourth-quintile (80^{th}-percentile) line

[9] The number of days covered the 2015 QUIBB's measure of annual consumption is not clear. The annual and daily figures for the 2006 food line (INSEED 2016b, p. 11) imply 365 days, but the figures for the 2015 food line imply 360. This paper uses 360.

2.3.1 Food poverty line

The history of the derivation of Togo's food poverty line begins with the 2006 QUIBB. Its the daily food line is the cost of an all-Togo basket of 77 food items whose shares reflect relative expenditure on the items in the QUIBB and which is scaled to provide 2,400 Calories (Abdallah and Amouzouvi, 2007). The derivation follows Ravallion's (1998) cost-of-basic-needs method, and it adjusts for price differences across Togo's six regions.

The 2011 QUIBB redefines the food line as $1.00 in terms of XOF at the average market exchange rate in the 12 months before the 2011 field work (INSEED, 2016b, p. 11), again adjusted for regional price differences. The 2011 food line is not the constant-price cost of the food basket used for the 2006 food line, so the two lines—and their corresponding poverty rates—are not comparable.

The 2015 QUIBB again redefines the food line as $1.00 converted to XOF at the average market exchange rate in the 12 months before the survey, adjusted for regional prices differences. The three QUIBB food lines do not represent the constant-price cost of a single food basket, so poverty rates based on them are not comparable.

For Togo as a whole in prices in Lomé on average from July to August, the 2015 food line is XOF421 per adult equivalent per day, giving a household-level poverty rate of 20.3 percent and a person-level poverty rate of 25.9 percent (Table 1).[10]

2.3.2 National poverty line

For the 2006 QUIBB, Abdallah and Amouzouvi (2007) derive Togo's national poverty line (usually called here "100% of the national line") using Ravallion's (1998) cost-of-basic-needs method. In particular, they start by defining a minimum daily standard for food consumption as the cost of a food basket with 2,400 Calories (the 2006 food line), as discussed above.

Abdallah and Amouzouvi then define the 2006 national (food-plus-non-food) line as the 2006 food line, plus a minimum daily standard of non-food consumption. This non-food standard is taken as the 2006 food line, multiplied by the share of non-food consumption in total consumption in the 2006 QUIBB for households whose *total* consumption (not *food* consumption) is within ±10 percent of the 2006 food line. Like the food line, the cost of this non-food standard is adjusted for regional differences in prices. The 2006 national (food-plus-non-food) line is then the sum of the 2006 food line and the 2006 non-food standard. In Lomé (not in Togo as a whole) in prices in Lomé during the QUIBB field work, 100% of the 2006 national line is XOF767.78 per adult equivalent per day.

[10] This 25.9 percent differs from the 28.7 percent in INSEED (2016b, p. 23) because INSEED mistakenly compares the 2015 food line in 2015 prices with 2015 consumption in 2011 prices.

For the 2011 QUIBB, the national line is the 2006 national line adjusted for inflation by multiplying by 1.17 (the ratio of the all-Togo Consumer Price Index during the 2011 QUIBB to the all-Togo CPI during the 2006 QUIBB, INSEED, 2016b, p. 9). This gives a 2011 national line in Lomé (not in Togo as a whole) in prices in Lomé during the 2011 field work of XOF767.78 x 1.17 = XOF898.30.

Finally, the 2015 national line is the 2011 national line, adjusted for an inflation factor of 1.065. Like the 2015 food line, the 2015 national line accounts for regional price differences. The 2015 national line in Lomé (not in Togo as a whole) in prices during the 2015 field work is XOF898.30 x 1.065 = XOF956.68 (Table 2). Unlike the three food lines, the three national (food-plus-non-food) lines and their corresponding poverty rates are comparable across 2006, 2011, and 2015.

On average for Togo as a whole in prices in Lomé during the 2015 field work, 100% of the national (food-plus-non-food) poverty line is XOF716 per adult equivalent per day, giving a household-level poverty rate of 45.5 percent and a person-level poverty rate of 55.1 percent (Table 1).[11]

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

[11] This person-level rate matches INSEED (2016b, p. 2), suggesting that this paper uses the same data and calculations as INSEED did.

2.3.3 2005 and 2011 PPP poverty lines

International 2005 and 2011 PPP lines are derived from:

- PPP exchange rates for Togo for "individual consumption expenditure by households":
  - 2005:[12] XOF282.26 per $1.00
  - 2011:[13] XOF232.22 per $1.00
- Consumer Price Index (CPI):[14]
  - Calendar-year 2005 average: 88.96
  - Calendar-year 2011 average: 108.90
  - Average 1 July to 31 August 2015 (QUIBB field work): 116.98
- All-Togo and regional person-weighted price deflators:[15]
  - All-Togo: 0.748
  - Lomé 1.000
  - Maritime 0.645
  - Plateaux 0.640
  - Centrale 0.743
  - Kara 0.640
  - Savanes 0.650

2.3.3.1 $1.25/day 2005 PPP line

For a given region in Togo, the $1.25/day 2005 PPP line in prices in Lomé during the 2015 QUIBB field work is

$$\frac{\$1.25 \cdot 2005 \text{ PPP factor} \cdot \left(\frac{\text{CPI}_{\text{QUIBB15}}}{\text{CPI}_{2005}}\right) \cdot \text{Regional deflator}}{\text{Average all - Togo deflator}}.$$

[12] World Bank, 2008.

[13] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&CO=TGO_3&PPP0=232.215&PL0=1.90&Y0=2015&NumOfCountries=1`, retrieved 4 November 2017.

[14] The monthly CPI series has a base of 100 on average in calendar-year 2008. It comes from `stat-togo.org/contenu/pdf/pb/pub-speciale-ihpc-indices-fonctions-1997-2014.pdf`, retrieved 4 November 2017.

[15] INSEED provides the deflators with the 2015 QUIBB data.

For the example of the region of Lomé, \$1.25/day 2005 PPP line is

$$\frac{\$1.25 \cdot \left(\frac{\text{XOF}282.26}{\$1}\right) \cdot \left(\frac{116.98}{88.96}\right) \cdot 1.000}{0.748} = \text{XOF}620.$$

The all-Togo \$1.25/day 2005 PPP line is the person-weighted average of the six provincial lines. This is XOF464 per person per day, with a household-level poverty rate of 35.6 percent and a person-level poverty rate of 45.0 percent (Table 1).[16]

The lines for \$2.00/day, \$2.50/day, and \$5.00/day are multiples of the \$1.25/day line.

2.3.2.2 \$1.90/day 2011 PPP line

Given the parameters in the previous sub-section, the \$1.90/day 2011 PPP line for a given region is

$$\frac{\$1.90 \cdot 2011\,\text{PPP factor} \cdot \left(\frac{\text{CPI}_{\text{QUIBB15}}}{\text{CPI}_{2011}}\right) \cdot \text{Regional deflator}}{\text{Average all - Togo deflator}}$$

For the example of the region of Lomé, the \$1.90/day 2011 PPP line is

$$\frac{\$1.90 \cdot \left(\frac{\text{XOF}232.22}{\$1}\right) \cdot \left(\frac{116.98}{108.90}\right) \cdot 1.000}{0.748} = \text{XOF}634.$$

[16] The World Bank's PovcalNet does not report a \$1.25/day 2005 PPP line nor a \$1.25/day 2005 PPP poverty rate for Togo based on the 2015 QUIBB.

The all-Togo $1.90/day 2011 PPP line is the person-weighted average of the six regional lines. This is XOF474 per person per day, with a household-level poverty rate of 36.6 percent and a person-level poverty rate of 46.0 percent (Table 1).

For comparison, the World Bank's PovcalNet[17] reports almost the same $1.90/day 2011 PPP line for the 2015 QUIBB (XOF470 versus 474) but a higher person-level poverty rate (49.2 percent versus 46.0). The reasons for the difference is not clear because PovcalNet does not report:

- The time/place of its price units
- Whether/how it adjusts for regional differences in prices
- How it deflates 2011 PPP factors over time
- Whether it accounts for INSEED's measuring annual consumption based on a 360-day year rather than a 365-day year
- Whether it uses the same data as INSEED (2016b)

As argued in Schreiner (2014b), the figures here for PPP poverty lines are to be preferred over those of PovcalNet because this paper documents its derivations. In the case of Togo, applying PovcalNet's reported poverty line of XOF474 per person per day without adjustment for regional prices in the line itself nor in consumption—and finding daily consumption by dividing INSEED's annual figure by 365—gives a person-level poverty rate of 49.1529 percent, exactly matching PovcalNet. Thus, PovcalNet differs from this paper mostly because it does not adjust for regional price differences in Togo (and partly because it makes a different assumption about the number of days covered by the QUIBB's annual consumption figure). Of course, such within-country

[17] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&C0=TGO_3&PPP0=232.215&PL0=1.90&Y0=2015&NumOfCountries=1`, retrieved 4 November 2017.

adjustments make sense (when deflators exist); after all, the motivation for PPP lines in the first place is to adjust for differences in purchasing power across countries, and if that makes sense, then it also makes sense to adjust for price differences across regions within a country.

The 2011 PPP poverty lines for $3.20/day, $5.50/day, and $21.70/day are multiples of the $1.90/day line.

2.3.3 USAID "very poor" line

Microenterprise programs in Togo who use the scorecard to report the number of their participants who are "very poor" to USAID should use the $1.90/day 2011 PPP 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 (U.S. Congress, 2004):

- The line that marks the poorest half of people below 100% of the national line (XOF336, with a person-level poverty rate of 27.5 percent, Table 1)
- The $1.90/day 2011 PPP line (XOF474, with a person-level poverty rate of 46.0 percent)

2.3.4 Percentile-based lines

The scorecard for Togo also supports percentile-based poverty lines. This facilitates a number of types of analyses. For example, the second-quintile (40^{th}-percentile) line might be used to help track Togo's progress toward the World Bank's (2013) goal of "shared prosperity/inclusive economic growth", defined as income growth among the bottom 40 percent of the world's people.

The four quintile lines, analyzed together, can also be used to look at the relationship of consumption with health outcomes (or anything else related with the distribution of consumption). The scorecard thus offers an alternative for health-equity analyses that typically have used a "wealth index" such as that supplied with the data from the Demographic and Health Surveys (Rutstein and Johnson, 2004) to compare some estimate of wealth with health outcomes.

Of course, analysts could always do (and can still do) relative-wealth analyses with scores from the scorecard. But support for relative consumption lines allows a more straightforward use of a single tool to analyze any or all of:

- Relative wealth (via scores)
- Absolute consumption (via poverty likelihoods and absolute poverty lines)
- Relative consumption (via poverty likelihoods and percentile-based poverty lines)

Unlike the scorecard, wealth indexes only serve to analyze relative wealth. Furthermore, the scorecard—unlike wealth indexes based on Principal Component Analysis or similar approaches—uses a straightforward, well-understood poverty standard whose definition is external to the tool itself (consumption related to a poverty line defined in monetary terms).

In contrast, a wealth index opaquely defines *poverty* in terms of its own indicators and points, without reference to an external standard. This means that two wealth indexes with different indicators or different points—even if derived from the same data for a given country—imply two different definitions of *poverty*. In the same set-up, two scorecards would provide comparable estimates under a single definition of *poverty*.

3. Scorecard construction

For Togo, about 90 candidate indicators are initially prepared in the areas of:

- Household composition (such as the number of household members)
- Education (such as whether all household members ages 6 to 18 go to school)
- Housing (such as the household's toilet arrangement)
- Ownership of durable assets (such as beds or televisions)
- Employment (such as the whether the male head/spouse works for pay)
- Agriculture (such as the ownership of cattle or pigs)

Table 3 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.[18]

One possible application of the scorecard is to estimate the annual change in poverty. Thus, when selecting indicators—and holding other considerations constant—preference is given to more sensitive indicators. For example, the possession of a chair or table is probably more likely to change in response to changes in poverty than is the age of the male head/spouse.

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

[18] The uncertainty coefficient is *not* used when selecting scorecard indicators. It is just a way to order the candidate indicators listed in Table 3.

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 consumption, variety among types of 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 10 indicators that work well together.

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[19] and non-statistical criteria. The use of non-statistical criteria can improve robustness through time and across non-nationally representative groups. It also helps ensure that indicators are straightforward, common-sense, inexpensive-to-collect, and acceptable to users.

The single scorecard here applies to all of Togo. Segmenting poverty-assessment tools by urban/rural does not improve targeting accuracy much. This is documented for nine countries in Sub-Saharan Africa (Brown, Ravaillon, and van de Walle, 2016)[20], Indonesia (World Bank, 2012), Bangladesh (Sharif, 2009), India and Mexico (Schreiner, 2006 and 2005a), Sri Lanka (Narayan and Yoshida, 2005), and Jamaica (Grosh and Baker, 1995). In general, segmentation may improve the accuracy of estimates of poverty rates (Schreiner, forthcoming; Diamond *et al.*, 2016; Tarozzi and Deaton, 2009), but it may also increase the risk of overfitting (Haslett, 2012).

[19] 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.
[20] The nine countries are Burkina Faso, Ethiopia, Ghana, Malawi, Mali, Niger, Nigeria, Tanzania, and Uganda. On average across these countries when targeting people in the lowest quintile or in the lowest two quintiles of scores and when 20 or 40 percent of people are poor, segmenting by urban/rural increased the number of poor people correctly targeted by about one per 200 or one per 400 poor people (Schreiner, 2017d).

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 scorecard 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 the scorecard 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 cost, 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, the scorecard does not imply a lot of additional work and if the whole process generally seems to them to make sense.

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

- Only 10 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 the Togo scorecard would:

- Record the interview identifier, interview date, country code ("TGO"), scorecard code ("001") and the sampling weight assigned to the household of the participant by the organization's survey design (if known)
- Record the names and identifiers of the participant (who is not necessarily the same as the respondent), of the field agent who is the participant's main point of contact with the organization (who is not necessarily the same as the enumerator), and of the organizational service point that is relevant for the participant
- Complete the "Back-page Worksheet" with each household member's first name (or nickname), age, and school-attendance status.
- Based on what has been recorded on the "Back-page Worksheet", record household size (that is, the number of household members) in the scorecard header next to "Number of household members:"
- Based on what has been recorded on the "Back-page Worksheet", mark the response to the first scorecard indicator ("How many household members are there?")
- Based on what has been recorded on the "Back-page Worksheet", mark the response to the second scorecard indicator ("Do all household members ages 6 to 18 currently go to school?")
- Read the rest of the scorecard indicators to the respondent one-by-one.
- Circle each of the household's responses and their points, and write each point value in the far right-hand column
- Add up the points to get a total score
- Implement targeting policy (if any) based on the score
- 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).[21] 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. Schreiner (2014a) explains how to compute estimates and analyze them.

In particular, while collecting scorecard indicators is relatively easier than alternative ways of assessing poverty, it is still absolutely difficult. Training and explicit definitions of the terms and concepts in the scorecard are essential, and field workers should scrupulously study and follow the "Interview Guide" found after the References

[21] If a program does not want field workers and respondents to know the points associated with responses, then it can give them 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 use 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.

in this paper, as this "Guide"—along with the "Back-page Worksheet"—are integral parts of the Simple Poverty Scorecard tool.[22]

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 incontrovertible 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, Martinelli and Parker (2007, pp. 24–25) find that "under-reporting [of asset ownership] is widespread but not overwhelming, except for a few goods . . . [and] over-reporting 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 the scorecard for targeting in Togo.

[22] 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 Togo's INSEED did in the 2015 QUIBB.

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

- Who will do the interviews
- Where interviews will be done
- How responses and scores will be recorded
- Which participants will be interviewed
- How many participants will be interviewed
- How frequently participants will be interviewed
- Whether the scorecard 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 goals should be to make sure that the sample is representative of a well-defined population and that the use of the scorecard will inform an issue that matters to the organization.

The non-specialists who apply the scorecard in the field with the households of an organization's participants can be:

- Employees of the organization
- Third parties

There is only one correct, on-label way to do interviews: they should be done in-person, at the sampled household's residence, with an enumerator trained to follow the "Interview Guide". This is how Togo's INSEED did interviews in the 2015 QUIBB, and this provides the most-accurate and most-consistent data (and thus the best poverty-rate estimates).

Of course, it is possible to do interviews in other ways such as:

- Without an enumerator (for example, respondents fill out paper or web forms on their own or answer questions sent via e-mail, text messaging, or automated voice-response systems)
- Away from the residence (for example, at an organizational service point or at a group-meeting place)
- Not in-person (for example, an enumerator interviewing by phone)

While such off-label methods may reduce costs, they also affect responses (Schreiner, 2015a) and thus reduce the accuracy of scorecard estimates. This is why interviewing by a trained enumerator at the residence is recommended and why off-label methods are not recommended.

In some contexts—such as when field agents do not already visit participants periodically at home anyway—an organization might judge that the lower costs an off-label approach are enough to compensate for less-accurate estimates. The business wisdom of off-label methods depends on context-specific factors that organizations must judge for themselves. To judge carefully, organizations who are considering off-label methods should do a test to check how responses differ with an off-label method versus with a trained enumerator at the residence.

Responses, scores, and poverty likelihoods can be recorded by enumerators 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[23]

[23] The author of this paper can support organizations that want to set up a system to collect data with portable electronic devices in the field or to capture data in a database at the office once paper forms come in from the field. Support is also available for automating the calculation of estimates and for reporting and analysis.

Given a population of participants relevant for a particular business question, the participants to be interviewed 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 in a representative sample of relevant field agents
- A representative sample of relevant participants in a representative sample of relevant field offices and/or in a representative sample of relevant field agents

If not determined by other factors, the number of participants to be interviewed 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 be less on having a sample size large enough to achieve some arbitrary level of statistical significance and more on having a representative sample from a well-defined population that is relevant for issues that matter to the program.

The frequency of application can be:

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

When a scorecard is applied more than once in order to estimate the annual 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 the Simple Poverty Scorecard tool for Bangladesh (Schreiner, 2013a) with a sample of about 25,000. Their design is that all loan officers in a random sample of branches will score all participants each time they visit a homestead (about once a year) as part of their standard due diligence prior to loan disbursement. The loan officers 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 Togo, 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 easy-to-use look-up tables. For the example of 100% of the national line, scores of 46–48 have a poverty likelihood of 49.8 percent, and scores of 49–52 have a poverty likelihood of 48.4 percent (Table 4).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 46–48 are associated with a poverty likelihood of 49.8 percent for 100% of the national line but of 35.5 percent for the $1.90/day 2011 PPP line.[24]

[24] From Table 4 on, many tables have 18 versions, one for each of the 18 supported poverty lines. To keep them straight, they are grouped by line. Single tables pertaining to all lines appear with the first group of tables for 100% of the national line.

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-adult-equivalent or per-capita consumption below a given poverty line.

For the example of 100% of the national line (Table 5), there are 8,314 (normalized) households in the calibration sub-sample with a score of 46–48. Of these, 4,144 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 46–48 is then 49.8 percent, because 4,144 ÷ 8,314 = 49.8 percent.

To illustrate with 100% of the national line and a score of 49–52, there are 9,277 (normalized) households in the calibration sub-sample, of whom 4,492 (normalized) are below the line (Table 5). The poverty likelihood for this score range is then 4,492 ÷ 9,277 = 48.4 percent.

The same method is used to calibrate scores with estimated poverty likelihoods for all 18 poverty lines.[25]

[25] To ensure that poverty likelihoods never increase as scores increase, likelihoods across pairs of adjacent scores may be 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.

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 monetary 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; Caire, 2004; Schreiner *et al.*, 2014). 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 Togo scorecard are transformed coefficients from a Logit regression, (untransformed) scores are not converted to poverty likelihoods via the Logit formula of 2.718281828^{score} x $(1 + 2.718281828^{score})^{-1}$. 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 population's true value. Given the assumptions above, the scorecard also produces unbiased estimates of poverty rates at a point in time and unbiased estimates of the annual change in poverty rates between two points in time.[26]

Of course, the relationships between indicators and poverty do change to some unknown extent over time, and they also vary across sub-national groups in Togo's population. Thus, scorecard estimates will generally have errors when applied after August 2015 (the last month of field work for the 2015 QUIBB) or when applied with sub-groups that are not nationally representative.

[26] This is because these estimates of populations' 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 Togo 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 range, compute the observed 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 range, record the difference between the estimated poverty likelihood (Table 4) and the poverty likelihood observed in the bootstrap sample
- Repeat the previous three steps 1,000 times
- For each score range, report the average difference between estimated and observed poverty likelihoods across the 1,000 bootstrap samples
- For each score range, report the intervals containing the central 900, 950, and 990 differences between estimated and observed poverty likelihoods

For each score range and for $n = 16{,}384$, Table 6 shows the errors, that is, the average of differences between estimated versus observed poverty likelihoods. It also shows confidence intervals for the differences.

For 100% of the national line and on average across bootstrap samples from the validation sample, the estimated poverty likelihood for scores of 46–48 (49.8 percent, Table 4) is too high by 5.0 percentage points. For scores of 49–52, the estimate is too high by 15.8 percentage points.[27]

[27] 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

The 90-percent confidence interval for the differences for scores of 46–48 is ±2.6 percentage points (Table 6). This means that in 900 of 1,000 bootstraps, the average difference between the estimate and the observed value for households in this score range is between +2.4 and +7.6 percentage points (because +5.0 – 2.6 = +2.4, and +5.0 + 2.6 = +7.6). In 950 of 1,000 bootstraps (95 percent), the difference is +5.0 ± 3.2 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is +5.0 ± 4.2 percentage points.

Many of the absolute errors between estimated and observed poverty likelihoods in Table 6 for 100% of the national line are large. This is mostly due to the small sample size of Togo's 2015 QUIBB. The differences are also partly due to the fact that the validation sample is a single sample that—thanks to sampling variation—differs in distribution from the construction/calibration sub-samples and from Togo'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 just below the targeting cut-off. This mitigates the effects of error and sampling variation on targeting (Friedman, 1997). Section 8 below looks at targeting accuracy in detail.

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samples were repeatedly drawn from the population and split into sub-samples before repeating the entire process of scorecard construction/calibration and validation.

In addition, if estimates of populations' 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 in 2015 in Togo, although it will hold less well for samples from sub-national populations and in other time periods.

Another possible source of differences between estimates and observed values is overfitting. The scorecard here is unbiased, but it may still be *overfit* when applied after the end of the QUIBB field work in August 2015. That is, the scorecard may fit the construction/calibration data from 2015 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 2015 QUIBB construction/calibration data but not in the overall population of Togo. 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 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 poverty rate at a point in time

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

To illustrate, suppose a program samples three households on 1 January 2019 and that they have scores of 20, 30, and 40, corresponding to poverty likelihoods of 84.0, 77.1, and 60.8 percent (100% of the national line, Table 4). The population's estimated poverty rate is the households' average poverty likelihood of (84.0 + 77.1 + 60.8) ÷ 3 = 74.0 percent.[28]

Be careful; the population's estimated 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 77.1 percent. This differs from the 74.0 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 segmentation. There are a few contexts in which the analysis of scores is appropriate, but, in general, the

[28] This example assumes simple random sampling (or a census) and analysis at the level of households so that each household's household-level weight is one (1). The weights would differ by household if there were stratified sampling or—as discussed in Section 2—if the analysis were at the level of the person or the participant.

safest rule to follow is: If you are not completely sure what to do, then use poverty likelihoods, not scores.

Scores from the scorecard are calibrated with data from the 2015 QUIBB for all 18 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 in terms of what they do with one poverty line versus with another is 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 scorecard applied to 1,000 bootstraps of $n = 16{,}384$ from the validation sample and 100% of the national line, the average error (difference between the estimate and observed value in the 2015 QUIBB) for a poverty rate at a point in time is +0.7 percentage points (Table 8, summarizing Table 7 for all poverty lines). Across the 18 poverty lines in the validation sample, the maximum of the absolute values of the average error is 1.5 percentage points, and the average of the absolute values of the average error is about 0.7 percentage points. At least part of these differences is due to sampling variation in the division of the 2015 QUIBB into sub-samples.

When estimating poverty rates at a point in time for a given poverty line, the average error reported in Table 8 should be subtracted from the average poverty likelihood to give a corrected estimate. For the example of the scorecard and 100% of the national line in the validation sample, the error is +0.7 percentage points, so the

corrected estimate in the three-household example above is 74.0 – (+0.7) = 73.3 percent.

In terms of precision, the 90-percent confidence interval for a population's estimated poverty rate at a point in time with n = 16,384 is ±0.6 percentage points or smaller for all poverty lines (Table 8). This means that in 900 of 1,000 bootstraps of this size, the estimate (after correcting for the known average error) is within 0.6 percentage points of the observed value.

For example, suppose that the (uncorrected) average poverty likelihood in a sample of n = 16,384 with the scorecard and 100% of the national line is 74.0 percent. Then estimates in 90 percent of such samples would be expected to fall in the range of 74.0 – (+0.7) – 0.6 = 72.7 percent to 74.0 – (+0.7) + 0.6 = 73.9 percent, with the most likely observed value being the corrected estimate in the middle of this range, that is, 74.0 – (+0.7) = 73.3 percent. This is because the original (uncorrected) estimate is 74.0 percent, the average error is +0.7 percentage points, and the 90-percent confidence interval for 100% of the national line in the validation sample with this sample size is ±0.6 percentage points (Table 8).

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 error (average difference vis-à-vis observed values), 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 estimation via a poverty-assessment tool. 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 the 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, Togo's 2015 QUIBB gives a direct-measure household-level poverty rate for 100% of the national line in the validation sample of $\hat{p} = 45.2$ percent (Table 1).[29] If this measure came from a sample of $n = 16{,}384$ households from a population N of 1,467,110 (the number of households in Togo in 2015 according to the QUIBB sampling weights), then the finite population correction ϕ is $\sqrt{\frac{1{,}467{,}110 - 16{,}384}{1{,}467{,}110 - 1}} = 0.9944$, which is close to $\phi = 1$. If the desired confidence level is 90-percent ($z = 1.64$), then the confidence interval $\pm c$ is

$$\pm\, z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.452 \cdot (1 - 0.452)}{16{,}384}} \cdot \sqrt{\frac{1{,}467{,}110 - 16{,}384}{1{,}467{,}110 - 1}} = \pm 0.634$$

percentage points. (If ϕ were taken as 1, then the interval would be ± 0.638 percentage points.)

Unlike the 2015 QUIBB, however, the scorecard does not measure poverty directly, so this formula is not applicable. To derive a formula for the scorecard, consider Table 7, which reports empirical confidence intervals $\pm c$ for the errors for the scorecard applied to 1,000 bootstrap samples 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 ± 0.597 percentage points.[30]

[29] The analysis here ignores that poverty-rate estimates from the QUIBB are themselves based on a sample and so have their own sampling distribution.
[30] Due to rounding, Table 7 displays 0.6, not 0.597.

Thus, the 90-percent confidence interval with $n = 16{,}384$ is ± 0.597 percentage points for the scorecard and ± 0.634 percentage points for direct measurement. The ratio of the two intervals is $0.597 \div 0.634 = 0.94$.

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 $\pm 1.64 \cdot \sqrt{\frac{0.452 \cdot (1 - 0.452)}{8{,}192}} \cdot \sqrt{\frac{1{,}467{,}110 - 8{,}192}{1{,}467{,}110 - 1}} = \pm 0.899$ percentage points. The empirical confidence interval with the scorecard (Table 7) is ± 0.843 percentage points. Thus for $n = 8{,}192$, the ratio of the two intervals is $0.843 \div 0.899 = 0.94$.

This ratio of 0.94 for $n = 8{,}192$ is the same as the ratio for $n = 16{,}384$. Across all sample sizes of 256 or more in Table 7, these ratios are generally close to each other, and the average of these ratios in the validation sample turns out to be 0.93, implying that confidence intervals for indirect estimates of poverty rates via Togo's scorecard and 100% of the national line are—for a given sample size—about 7-percent narrower than confidence intervals for direct estimates via the 2015 QUIBB. This 0.93 appears in Table 8 as the "α factor for precision" because if $\alpha = 0.93$, then the formula for approximate confidence intervals c for the scorecard is $\pm c = \pm z \cdot \alpha \cdot \sigma$. That is, the formula for the approximate standard error σ for point-in-time estimates of poverty rates via the scorecard 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 less than 1.00, it means that the scorecard is more precise than direct measurement. It turns out that α is less than 1.00 for 14 of the 18 poverty lines in Table 8, and its highest value is 1.14.

The formula relating confidence intervals with standard errors for the scorecard can be rearranged to give a formula for determining sample size before estimation. If $\widetilde{p}$ is the expected poverty rate before estimation, 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 $n = N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p})}{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p}) + c^2 \cdot (N - 1)} \right)$. 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

$$n = \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p}).$$

To illustrate how to use this, suppose the population N is 1,467,110 (the number of households in Togo in 2015), suppose $c = 0.04758$, $z = 1.64$ (90-percent confidence), and the relevant poverty line is 100% of the national line so that the most sensible expected poverty rate $\widetilde{p}$ is Togo's overall poverty rate for that line in 2015 (45.5 percent at the household level, Table 1). The α factor is 0.93 (Table 8). Then the sample-size formula gives

$$n = 1{,}467{,}110 \cdot \left(\frac{1.64^2 \cdot 0.93^2 \cdot 0.455 \cdot (1 - 0.455)}{1.64^2 \cdot 0.93^2 \cdot 0.455 \cdot (1 - 0.455) + 0.04758^2 \cdot (1{,}467{,}110 - 1)} \right) = 255,$$ which is almost matches the sample size of 256 observed for these parameters in Table 7 for

100% of the national line. Taking the finite population correction factor ϕ as one (1) gives the same result, as $n = \left(\frac{0.93 \cdot 1.64}{0.04758}\right)^2 \cdot 0.455 \cdot (1 - 0.455) = 255$.[31]

Of course, the α factors in Table 8 are specific to Togo, 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-assessment tool following the approach in this paper.

[31] 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 Togo should report using the $1.90/day 2011 PPP line. Given the α factor of 0.98 for this line (Table 8), an expected before-measurement household-level poverty rate of 36.6 percent (the all-Togo rate for this line in 2015, Table 1), and a confidence level of 90 percent ($z = 1.64$), then $n = 300$ implies a confidence interval of $\pm 1.64 \cdot 0.98 \cdot \sqrt{\frac{0.366 \cdot (1 - 0.366)}{300}} = \pm 4.7$ percentage points.

In practice after the end of field work for the QUIBB in August 2015, 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 estimate such as the household-level poverty rate for 100% of the national line for Togo of 45.5 percent in the 2015 QUIBB in Table 1), look up α (here, 0.93 in Table 8), assume that the scorecard will still work in the future and for sub-groups that are not nationally representative,[32] and then compute the required sample size. In this illustration, $n = 10{,}000 \cdot \left(\frac{1.64^2 \cdot 0.93^2 \cdot 0.455 \cdot (1 - 0.455)}{1.64^2 \cdot 0.93^2 \cdot 0.455 \cdot (1 - 0.455) + 0.02^2 \cdot (10{,}000 - 1)} \right) = 1{,}261.$

[32] This paper reports accuracy for the scorecard applied to its validation sample, but it does not test accuracy for later years nor for sub-populations that are not nationally representative. Performance after August 2015 will resemble that in the 2015 QUIBB with deterioration over time and across non-nationally representative sub-groups 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 population's poverty rate between two points in time is estimated as the change in the average poverty likelihood of a sample of households from the population.

With only data from the 2015 QUIBB, this paper cannot test estimates of the annual change in poverty rates for Togo, and it can only suggest approximate formulas for standard errors. Nonetheless, the relevant concepts are presented here because, in practice, pro-poor programs in Togo can apply the scorecard to collect their own data and estimate change through time.

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

The scorecard can estimate change. Of course, poverty could get better or worse, and the scorecard does not indicate what caused change. This point is often forgotten or confused, so it bears repeating: the scorecard merely estimates change, and it does not, in and of itself, indicate the causes of change. In particular, estimating the impact of participation requires knowledge or assumptions about what would have happened to participants if they had not been participants. Making judgments or drawing conclusions about causality requires either strong assumptions or a control group that resembles participants in all ways except participation. To belabor the point, the scorecard 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 must come from beyond the scorecard.

7.2 Estimating annual changes in poverty rates

Consider the illustration begun in the previous section. On 1 January 2019, an organization samples three households who score 20, 30, and 40 and so have poverty likelihoods of 84.0, 77.1, and 60.8 percent (100% of the national line, Table 4). Given the known average error for this line in the validation sample of +0.7 percentage points (Table 8), the corrected baseline estimated poverty rate is the households' average poverty likelihood of [(84.0 + 77.1 + 60.8) ÷ 3] – (+0.7) = 73.3 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 three years later on 1 January 2022, 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 78.5, 66.9, and 56.6 percent, 100% of the national line, Table 4). Adjusting for the known average error, the average poverty likelihood at follow-up is [(78.5 + 66.9 + 56.6) ÷ 3] – (+0.7) = 66.6 percent, a reduction in the poverty rate of

73.3 – 66.6 = 6.7 percentage points.[33] Supposing that exactly three years passed between the average baseline interview and the average follow-up interview, the estimated annual decrease in the poverty rate is 6.7 ÷ 3 = 2.2 percentage points per year. That is, about one in 45 participants in this hypothetical example cross the poverty line each year.[34] Among those who start below the line, about one in 33 (2.2 ÷ 73.3 = 3.0 percent) on net end up above the line each year.[35]

Alternatively, suppose that the same three original households who were scored at baseline are scored again on 1 January 2022. Given scores of 25, 35, and 45, their follow-up poverty likelihoods are 78.5, 66.9, and 56.6 percent. The average across households of the difference in each given household's baseline poverty likelihood and its follow-up poverty likelihood is [(84.0 – 78.5) + (77.1 – 66.9) + (60.8 – 56.6)] ÷ 3 = 6.6 percentage points.[36] Assuming in this example that there are exactly three years between each household's interviews, the estimated annual decrease in the poverty rate is 6.6 ÷ 3 = 2.2 percentage points per year.

[33] Of course, such a huge reduction in poverty in three years is unlikely, but this is just an example to show how the scorecard can be used to estimate change.
[34] This is a net figure; some start above the line and end below it, and vice versa.
[35] The scorecard does not reveal the reasons for this change.
[36] In this approach, the error for this line in Table 8 should *not* be subtracted off. The 6.6 from the second approach differs from the 6.7 from the first approach only due to differences in rounding in intermediate steps.

Given the assumptions of the scorecard, both approaches give unbiased estimates of the annual change in poverty rates. In general and in practice, 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 estimated change in two independent 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,[37] 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.

[37] 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 estimation via a poverty-assessment tool, where $\widetilde{p}$ is based on previous estimates and is assumed equal at both baseline and follow-up: $n = 2 \cdot N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p})}{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p}) + c^2 \cdot (N - 1)} \right)$. If ϕ can be taken as one, then the formula becomes $n = 2 \cdot \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p})$.

With the available data for Togo, it is not possible to estimate values of α here. Nevertheless, this α has been estimated for 18 countries (Schreiner 2017a, 2017b, 2017c, 2016a, 2016b, 2016c, 2016d, 2015b, 2015c, 2015d, 2015e, 2013a, 2013b, 2012c, 2010, 2009a, 2009b, and Chen and Schreiner, 2009). The unweighted average of α across countries—after averaging α across poverty lines and pairs of survey rounds within each country—is 1.08. This rough figure is as reasonable as any to use for Togo.

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, $\alpha = 1.08$, $\hat{p} = 0.455$ (the household-level poverty rate in 2015 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 $n = 2 \cdot \left(\frac{1.08 \cdot 1.64}{0.02}\right)^2 \cdot 0.455 \cdot (1 - 0.455) \cdot 1 = 3{,}890$, and the follow-up sample size is also 3,890.

7.4 Precision of estimates of 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 sample of households, all of whom are scored at two points in time, is:[38]

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

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 Togo, 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 estimation. This requires an estimate (based on information available before estimation) of the expected shares of all households who cross the poverty line $\tilde{p}_{12}$ and $\tilde{p}_{21}$. Before estimation, an agnostic assumption is that the change in the poverty rate will be zero, which implies $\tilde{p}_{12} = \tilde{p}_{21} = \tilde{p}_*$, giving:

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

[38] 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, 2009c)—close to:

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

Given this, a sample-size formula for a sample of households to whom the scorecard is applied twice (once after August 2015 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, 2009c), 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 2019 and then again in 2022 ($y = 3$), 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 household-level poverty rate p_{2019} is taken as 45.5 percent (Table 1), and α is assumed to be 1.30. Then the baseline sample size is

$n = 2 \cdot \left(\frac{1.30 \cdot 1.64}{0.02}\right)^2 \cdot \left[-0.02 + 0.016 \cdot 3 + 0.47 \cdot 0.455 \cdot \left(1 - 0.455\right)\right] \cdot 1 = 3{,}286$. The same group of 3,286 households is scored at follow-up as well.

8. Targeting

When a program uses the scorecard for segmenting clients for differentiated treatment (*targeting*), households with scores at or below a cut-off are labeled *targeted* and given one type of treatment by the program. Households with scores above a cut-off are labeled *non-targeted* and given another type of treatment.

There is a distinction between *targeting status* (having a score 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 poverty-assessment tool.

Households who score at or below a given cut-off should be labeled as *targeted*,[39] 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). In the context of the scorecard, the terms *poor* and *non-poor* have specific definitions. Using these same terms for targeting status is incorrect and misleading.

[39] Others labels are acceptable as long as they describe the segment and do 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 with scores of 29 or less, 30 to 69, or 70 or more*; and *Households who qualify for reduced fees, or who do not qualify.*

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 poverty-assessment tool 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 9 depicts these four possible targeting outcomes. Targeting accuracy varies by the cut-off score. A higher cut-off has better inclusion and better undercoverage (but worse exclusion and worse leakage), while a lower cut-off has better exclusion and better leakage (but worse inclusion and 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 10 shows the distribution of households by targeting outcome for Togo. For an example cut-off of 48 or less, outcomes for 100% of the national line in the validation sample are:

- Inclusion: 34.2 percent are below the line and correctly targeted
- Undercoverage: 11.1 percent are below the line and mistakenly not targeted
- Leakage: 13.9 percent are above the line and mistakenly targeted
- Exclusion: 40.8 percent are above the line and correctly not targeted

Increasing the cut-off to 52 or less improves inclusion and undercoverage but worsens leakage and exclusion:

- Inclusion: 36.6 percent are below the line and correctly targeted
- Undercoverage: 8.6 percent are below the line and mistakenly not targeted
- Leakage: 17.8 percent are above the line and mistakenly targeted
- Exclusion: 37.0 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 10 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 the scorecard—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 10 shows the hit rate for all cut-offs for the scorecard. For 100% of the national line in the validation sample, total net benefit—under the hit rate—is greatest (75.0) for a cut-off of 48 or less, with about three in four households in Togo 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).[40]

[40] Table 10 also reports BPAC, the Balanced Poverty Accuracy Criterion adopted by USAID for certifying poverty-assessment tools for use by its microenterprise partners. IRIS Center (2005) made BPAC to consider accuracy in terms of the errors in 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 information over-and-above that provided by the other, more-standard measures used 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 11 ("% targeted HHs who are poor") shows, for the scorecard applied to the validation sample, the estimated 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 48 or less would target 48.1 percent of all households (second column) and would be associated with an estimated poverty rate among those targeted of 71.0 percent (third column).

Table 11 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 48 or less, an estimated 75.5 percent of all poor households are covered.

The final targeting measure in Table 11 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 48 or less, it is estimated that covering about 2.5 poor households means leaking to 1 non-poor household.

9. Context of poverty-assessment tools in Togo

This section discusses three existing poverty-assessment tools for Togo in terms of their goals, methods, definitions of *poverty*, data, indicators, errors, precision, and cost. In general, the advantages of the scorecard are its:

- Using data from the most-recent nationally representative consumption survey
- Having fewer and lower-cost indicators than some other tools
- Using a consumption-based definition of *poverty* that is widely understood and that is used by the government of Togo
- Reporting 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 from out-of-sample tests, and having targeting accuracy that is likely similar to that of alternative approaches
- Being feasible for pro-poor programs in Togo, due to its low cost and transparency

9.1 Gwatkin *et al.*

Gwatkin *et al.* (2007) construct a poverty-assessment tool for Togo with an approach that they use in 56 countries with Demographic and Health Surveys (Rutstein and Johnson, 2004). They use Principal Component Analysis to make an asset index from low-cost indicators available for the 7,517 households in Togo's 1998 DHS.[41] The PCA index is like the scorecard here except that—because the DHS does not collect data on consumption—the index uses a different (asset-based) definition of *poverty*, its accuracy vis-à-vis consumption-based poverty is unknown, and it can only be assumed

[41] DHS data for Togo since 1998 include each household's asset-index value (`dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm`, retrieved 3 November 2017).

to be a proxy for long-term wealth/economic status.[42] 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).

The 14 indicators in Gwatkin *et al.* are similar to those in the scorecard in terms of their ease-of-collection and verifiability:

- Characteristics of the residence:
  - — Presence of electricity
  - — Type of floor
  - — Type of walls
  - — Type of roof
  - — Source of drinking water
  - — Type of toilet arrangement
- Ownership of consumer durables:
  - — Radios
  - — Televisions
  - — Refrigerators
  - — Bicycles
  - — Motorcycles
  - — Cars or trucks
- Whether any household members work their own or family's agricultural land
- Number of household members per sleeping room

[42] Nevertheless, the indicators are similar and the "flat maximum" is important, so carefully built PCA indexes and consumption-based poverty-assessment tools rank households much the same and may pick up the same underlying construct (perhaps "permanent income", see Bollen, Glanville, and Stecklov, 2007). Comparisons of rankings of households by PCA indexes, directly-measured consumption, and consumption-based poverty-assessment tools include Filmer and Scott (2012), Howe *et al.* (2009), Lindelow (2006), Sahn and Stifel (2003), 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 value to see how health varies with socio-economic status
- Monitoring (via exit surveys) how well local health-service posts reach the poor
- Estimating 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. In particular, the scorecard's support for relative (percentile-based) poverty lines allows the segmentation of households by quintile of consumption to see how health (or other things) vary with consumption. Of course, it is also possible to segment households by quintiles based on scores from the scorecard to see how health (or other things) vary with wealth.

The Gwatkin *et al.* index is more costly and difficult-to-use than the scorecard. The index has 14 indicators (versus 10), and while the scorecard requires adding up 10 integers (some of them usually zeroes), Gwatkin *et al.*'s index requires adding up 42 numbers, each with five decimal places and about half with negative signs.

A strength of asset indexes is that, because they do not require consumption data, they can be constructed with 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 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 already-constructed asset index, an already-constructed 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 consumption-based poverty-assessment tool (Schreiner, 2011).

In essence, Gwatkin *et al.*—like all asset indexes—define *poverty* in terms of the indicators and 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 an asset-based (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 results are not comparable across different asset indexes because the definition of *poverty* varies with a given index's indicators and points. And an asset index can estimate only the direction of change in its definition of *poverty* over time, not the magnitude of change.

In general, the asset-based approach defines people as *poor* if their assets (physical, human, financial, or social) fall below a threshold. Arguments for an asset-based view of development and well-being 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 specific capabilities more directly, the difference between, say, "Can you afford adequate sanitation on your income?" versus "Do you have a flush toilet?"

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.

9.2 Sahn and Stifel (2000)

Sahn and Stifel (2000) use factor analysis (a close relative of PCA that gives similar results) to construct an asset index for Togo meant to estimate poverty in terms of long-term wealth. Their purpose relates to assessment (to inform governments and donors about the broad progress of poverty reduction in Africa) rather than management and accountability (to provide a tool to help pro-poor programs to prove and improve their poverty-alleviation efforts).

Sahn and Stifel construct their index by pooling data from Togo's 1988 and 1998 DHS. Defining *poverty* according to lines set at the 25^{th} and 40^{th} percentiles of their index, they then compare the distribution of the index and poverty rates over time (within Togo) and across countries (Togo and 10 other sub-Saharan countries).

For the cross-country analysis, Sahn and Stifel construct a single cross-country index from pooled DHS data for all of the 11 countries with multiple DHS rounds (plus five other countries for which only a single DHS round is available). This is possible because the DHS generally uses a common set of indicators across countries.

The nine indicators in Sahn and Stifel are similar to those in Gwatkin *et al.* and in the scorecard here in terms of their ease-of-collection and verifiability:

- Education of the head
- Characteristics of the residence:
  - — Type of floor
  - — Source of drinking water
  - — Type of toilet arrangement
- Ownership of consumer durables:
  - — Radio
  - — Television
  - — Refrigerator
  - — Bicycle
  - — Motorized transport

As with Gwatkin *et al.*, Sahn and Stifel share many of the strengths of the scorecard approach here in that it can be used for targeting and in that it is flexible, low-cost, and adaptable to diverse contexts. Sahn and Stifel point out that because an asset index does not require price adjustments over time or across regions—and because it does not require consumption data at all—it has lower data requirements than consumption-based poverty-assessment tools.

Sahn and Stifel also share with Gwatkin *et al.* the disadvantages of using a less-common definition of *poverty* and of not reporting standard errors.

Sahn and Stifle find that—by their definition—poverty in Togo improved (decreased) from 1988 to 1998. Among the 15 countries studied,[43] Togo had the fourth-lowest asset-based poverty rate.

[43] Besides Togo, these are Benin, Cameroon, Central African Republic, Comoros, Côte d'Ivoire, Ghana, Kenya, Mali, Mozambique, Senegal, Tanzania, Uganda, Zambia, and Zimbabwe.

9.3 Coulombe

Coulombe (2013) seeks to improve poverty-related policy-making and the geographic targeting of pro-poor policies in Togo. To do so, he constructs a "poverty map" (Elbers, Lanjouw, and Lanjouw, 2003) of estimated poverty rates for Togo's 6 régions, 36 préfectures and 5 arrondissements, 386 cantons, as well as for 513 communes within cantons or quartiers within the Commune de Lomé. The results are displayed in tables and in "poverty maps" that roughly show, at a glance, how poverty rates vary across areas.

Coulombe builds four regional poverty-assessment tools (metropolitan Lomé, other urban, rural south, and rural north) using least-squares regression on the logarithm of per-capita consumption for households in the 2011 QUIBB. The tool uses only indicators found in both the QUIBB and in Togo's 2010 General Census of Population and Housing (*Récensement Général de la Population et de l'Habitat*) that have the same wording in both sources as well as similar distributions of responses.

Once built, the four tools are fed the data from the 2010 Census to estimate each household's consumption.[44] The poverty map's estimate of the poverty rate in a given administrative area is then the share of people in households whose estimated consumption is less than the consumption-based poverty line that Coulombe derives by updating the 2006 food and national lines to 2011 based on the change in the CPI

[44] The definition of *consumption* differs from INSEED (Coloumbe and Male, 2013).

(Coloumbe and Male, 2013).[45] The poverty map's indirect estimates have smaller standard errors than direct estimates based solely on QUIBB data,[46] and—in principle—pro-poor policies can be geographically targeted based on the map.

Poverty mapping in Coulombe and the scorecard approach in this paper are similar in that they both:

- Build poverty-assessment tools with data that is representative of a population (the QUIBB strata for poverty mapping, and all-Togo for the scorecard) and then apply the tools with other data on sub-groups that are not, in general, representative of the same population
- Use simple, verifiable indicators that are quick and inexpensive to collect
- Estimate poverty rates for populations
- Provide unbiased estimates when their assumptions hold
- Seek to be useful in practice and so aim to be understood by non-specialists

Strengths of poverty mapping include that it:

- Has formally established theoretical properties
- Can be applied straightforwardly to measures of well-being beyond head-count poverty rates (such as the poverty gap)
- Accounts for uncertainty in the estimation of a tool's points when estimating the standard errors of its estimates
- Requires data on fewer households for construction
- Uses only indicators that are in a census
- Reports standard errors (and complex formulas for standard errors)

[45] The food and national lines used with the poverty map differ from those used by INSEED with the 2011 QUIBB.

[46] As highlighted by Tarozzi and Deaton (2007), the standard error is only one aspect of the accuracy of a poverty-assessment tool (the other being estimation error). Coulombe reports standard errors for all poverty-rate estimates. Sample sizes, however, are not reported, so the precision of the tool cannot be compared with a benchmark nor with that of the scorecard here. Furthermore, poverty rates below the level of Togo's regions are not observed (which is why a poverty map is useful in the first place), so the map's estimation errors (differences between estimated and observed values) are unknown.

Strengths of the scorecard approach include that it:

- Is simpler in terms of both construction and application
- Tests accuracy out-of-sample
- Associates poverty likelihoods with scores non-parametrically
- Reduces overfitting by selecting indicators with both statistical and non-statistical criteria
- Surfaces estimates of poverty likelihoods for individual households
- Offers a single scorecard that applies to all of Togo[47]
- Reports errors and standard errors (and straightforward formulas for standard errors)

In terms of goals, the two approaches differ in that poverty mapping seeks to help governments to target pro-poor policies to poor regions, while the scorecard seeks to help local pro-poor programs to manage their social performance and to strengthen their accountability. These different goals lead directly to their differences in cost, complexity, and transparency.

In terms of their technical approaches, the poverty map estimates consumption, while the scorecard estimates poverty likelihoods. Poverty maps—unlike the scorecard approach—report standard errors that account for survey design and for uncertainty in the estimates of a tool's point values.

[47] According to Mahadevan, Yoshida, and Praslova (2013, pp. 6–7), "The latest recommendation from poverty-map experts in the World Bank Research Department is not to use multiple [poverty-assessment tools] to predict household consumption." Multiple tools can be "problematic because the number of observations for each area becomes small and, as a result, the regression coefficients become less stable." To reduce overfitting, Haslett (2012) recommends that poverty maps use a single, all-country tool.

In terms of targeting, the developers of poverty mapping say that the underlying poverty-assessment tools are too inaccurate for targeting individual households (Elbers, Lanjouw, and Lanjouw, 2003; Demombynes *et al.*, 2004). In contrast, Schreiner (2015f) supports targeting as a legitimate, potentially useful application of the scorecard. In Elbers *et al.* (2007), the developers of poverty mapping seem to take a small step away from their original opposition to targeting individual households with poverty-assessment tools.

Coulombe's four regional poverty-assessment tools use an average of 11 verifiable, low-cost indicators from among the following 21:[48]

- Household demographics:
  - Number of household members (in logarithms)
  - Number of males ages 6 to 14
  - Number of males ages 15 to 35
  - Number of females ages 65 or older
- Characteristics of the head of the household:
  - Marital status
  - Religion
  - Educational attainment
- Characteristics of the residence:
  - Presence of electricity
  - Number of rooms
  - Type of floor
  - Type of wall
  - Type of cooking fuel
  - Type of toilet arrangement
- Ownership of consumer durables:
  - Stove
  - Fan
  - Television
  - Cell phone
  - Motorcycle
- Agricultural assets:
  - Land
  - Goats
- Region of residence

[48] Coulombes says that the tools indicators that are the averages across households at the level of the census' primary sampling units, but he does not report more specifics.

Coulombe reports the estimation error of the poverty map in each of the four regions for which his tools are constructed by comparing the observed poverty rate in a given region in the 2011 QUIBB data with the estimated poverty rate for that region that results from running Census data through the region's poverty-assessment tool. The average abolute error is about 0.4 percentage points, and the largest absolute error is 0.5 percentage points.

How does the scorecard do in those same regions? The comparison, of course, is imperfect. The scorecard is made from—and tested with—2015 data, while the poverty map uses 2011 data. Also, the map uses four regional tools, while the scorecard is a single tool for all of Togo. Finally, the map's tools are constructed at the person-level, while the scorecard is constructed at the household-level. The scorecard therefore loses accuracy when applied at the person-level for the comparison. Still, the comparison may suggest something about the gain in accuracy available from sub-population-specific tools.

In the four regions with 2015 data, the average of the absolute values of the scorecard's errors is about 5.2 percentage points, with a maximum absolute error of 8.6 percentage points. On average, this is worse than Coulombe's tool by about 5 percentage points.

If the scorecard includes an eleventh indicator for the region, however, then its average absolute error falls to 1.4 percentage points. This is still worse than the poverty map, but it suggests much of the gain available from sub-population-specific tools can be had by adding an indicator for the sub-population to the all-Togo scorecard.[49] And as usual, if a scorecard's error in a sub-population is known, then it can be subtracted from the original estimate to get an unbiased estimate.

[49] This is consistent with Diamond *et al.* (2016).

10. Conclusion

Pro-poor programs in Togo can use the scorecard to segment clients for differentiated treatment 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 annual change in the poverty rate of a population

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

The scorecard is constructed with data from about three-fifths of the observations on households in Togo's 2015 QUIBB. Those households' scores are then calibrated to poverty likelihoods for 18 poverty lines. The scorecard's accuracy (errors and standard errors) for targeting and for estimating poverty rates at a point in time is tested out-of-sample on data that is not used in scorecard construction.

When the scorecard is applied to the 18 poverty lines in the validation sample, the maximum absolute value of the average error for point-in-time estimates of poverty rates is 1.5 percentage points, and the average of the absolute values of the average error across the 18 lines is about 0.7 percentage points. Corrected estimates may be had by subtracting the known error for a given poverty line from original, uncorrected estimates.

For $n = 16{,}384$ and 90-percent confidence, the precision of point-in-time estimates of poverty rates is ± 0.6 percentage points or smaller. With $n = 1{,}024$, the 90-percent confidence intervals are ± 2.5 percentage points or smaller.

If an organization wants to use the scorecard for segmenting clients for differentiated treatment, 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 poverty-assessment tool's complexity or its cost that they do not even try to use it.

For this reason, the scorecard uses 10 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 look-up tables, and targeting cut-offs are likewise straightforward to apply. The design attempts to facilitate voluntary adoption by helping program managers to understand and to trust the scorecard and by allowing non-specialists to add up scores quickly in the field.

In summary, the scorecard is a low-cost, practical, objective, transparent way for pro-poor programs in Togo to estimate consumption-based poverty rates, track changes in poverty rates over time, and segment participants for differentiated treatment. The same approach can be applied to any country with similar data.

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Interview Guide

The excerpts quoted here are taken from:

l'Institut National de la Statistique et des Études Économiques et Démographiques. (2011) « Manuel de l'Enquêteur: QUIBB 2011 », `ilo.org/surveydata/index.php/catalog/455/download/4931`, retrieved 4 November 2016 [the *Manual*].

Basic interview instructions

Begin by filling out the scorecard header and the "Back-page Worksheet", 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".

Do not directly ask the first scorecard indicator ("How many household members are there?"). Instead, fill in the appropriate answer based on the number of household members that you listed on the "Back-page Worksheet".

Do not directly ask the second scorecard indicator ("Do all household members ages 6 to 18 currently go to school?"). Instead, fill in the appropriate answer based on the information that you collected on the "Back-page Worksheet".

Ask all of the other scorecard questions directly of the respondent.

General interviewing advice

Study this "Guide" carefully, and carry them with you while you work. Follow the instructions in this "Guide" (including this one).

According to page 10 of the *Manual*, "Maintain a positive attitude. Scrupulously follow the instructions in this 'Guide'.

[This "Guide"] "is an indepensible handbook that you as an enumerator must take to heart and study until you have mastered it."

Remember that the respondent need not be the same person as the household member who is a participant with your organization. Likewise, the "field agent" to be recorded in the scorecard header is not necessarily the same as you the enumerator who is conducting the interview. Rather, the "field agent" is the employee of the pro-poor

program with whom the participant has an on-going relationship. If the program does not have such a field agent, then the relevant spaces in the scorecard header should be left blank.

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

When you mark a response to a scorecard indicator, circle the spelled-out response option and its point value, and write the point value in the "Score" column, like this:

2. Do all household members ages 6 to 18 currently go to school?	A. No	0	
	B. Yes	4	4
	C. No members ages 6 to 18	6	

To help to reduce errors, you should circle the response option, the printed points, and the hand-written points that correspond to the response.

When an issue comes up that is not addressed here, its resolution should be left to the unaided judgment of the enumerator, as that apparently was the practice of Togo's INSEED in the 2015 QUIBB. That is, an organization using the scorecard should not promulgate any definitions or rules (other than those in this "Guide") to be used by all its field agents. Anything not explicitly addressed in this "Guide" is to be left to the unaided judgment of each individual enumerator.

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 this "Guide" or as you, the enumerator, deem appropriate.

According to page 14 of the *Manual*, "Do not read [the scorecard's] response options to the respondent."

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 this "Guide".

While most indicators in the 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 be inaccurate and thus that verification might improve data accuracy. 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 a response may be inaccurate.

In general, the application of the scorecard should mimic as closely as possible the application of the 2015 QUIBB by Togo's INSEED. For example, interviews should take place in respondents' homes with enumerators who have been trained to follow this "Guide" because the 2015 QUIBB used trained enumerators to interview households face-to-face in their homes.

Translation:
As of this writing, the scorecard itself, the "Back-page Worksheet", and this "Guide" are available only in French and English. There are not yet official, standard translations to other major local languages spoken in Togo such as Ewe/Mina, Akposso, Kotocoli, and Kabyè. Users should check `SimplePovertyScorecard.com` to see what translations have been completed since this writing.

If there is not yet an official, standard translation to a given local language, then users should contact the author of this document for help in creating such a translation. In particular, the translation of scorecard indicators should follow as closely as possible the meaning of the original French wording in the 2015 QUIBB questionnaire. Likewise, the *Enumerator Manual* for the 2015 QUIBB was written in French, so this "Guide" must be translated from the *Manual*'s original French, not from this English "Guide" here.

According to page 6 of the *Manual*, "Keep all in information that you receive from respondents strictly confidential. You are expressly forbidden to pass along to anyone [outside of the survey team] any information that you collect from respondents."

Job of the enumerator

According to pages 11 to 13 of the *Manual*, "A survey's success relies on the enumerator's skill and hard work to collect accurate information from respondents. You will face a variety of challenges whose solutions will require your best effort and ingenuity. As an enumerator, you should know the concepts and definitions discussed in this ["Guide"] and follow them carefully.

"Your tasks as the enumerator include:

- Pay your respects to local authorities. Upon arrival, you should introduce yourself to the local authority, . . . explain to him/her the purpose of your work, and ask for his/her support
- Do the interviews 'by the book' according to this ["Guide"]
- Review [the scorecard] at the end of each interview to make sure that all the questions have a response marked
- Check [the scorecards] thoroughly before delivering them to a central office and before leaving the place where you have been working

"Do not write down a response that differs from the one stated by the respondent. If you detect inconsistencies among responses, then you must visit the household again to get its help to correct the inconsistencies. In addition, you should never copy one household's response on [the scorecard] of another household.

"[Do your best to] build a trusting rapport with the respondent. The first impression that he/she has of you will strongly influence his/her the willingness to cooperate in good faith.

"*Introduction*: Introduce yourself, state your name clearly, show your badge as an employee or contractor of <your organization>, and politely request to speak to the head of the household. Always wear your badge.

"*First impression*: When you first approach a household that has been selected for an interview, choose your words carefully so as to help the person to feel at ease. Start with a smile and a cheerful greeting. Keep your language as simple as possible; too much technical jargon may make respondents uncomfortable. [For example, you might introduce yourself as follows:]

> "Good day Sir/Madam. My name is <your name>. I am an enumerator working with <your organization>. We are doing a study about [how people live in the households of our participants]. Your household has been selected at random, and I have been assigned to collect the information from you. I promise that we will treat all the information that you provide to us as strictly confidential. . . . It will take [about 10 to 15 minutes] to go through the questions. I appreciate your cooperation, and I want to thank you in advance for your willingness to help."

"*Dress properly*. This shows respect both for the responding household, and it also helps you to represent <your organization> appropriately. In particular, do not wear anything with the name of a political party or an image of a politician.

"*Confidentiality*: Assure the responding household that their responses will be kept strictly confidential and will not be shared with any unauthorized person. The data will not be used for any purposes other than those of the survey. No one will be able to trace their responses back to them. To show that you are serious about this, always take great care to keep all completed surveys on your person and out-of-sight.

"*Neutrality*. Being polite, some respondents tend to give responses that they assume are what you would like to hear. Therefore, you must be completely neutral when asking questions. Do nothing that might lead the respondent to feel that he/she has given a 'good' or 'bad' response, whether by the tone of your voice, the look on your face, or your body language. Do not give the impression that you approve or disapprove of anything that the respondent says.

"*Read the questions as written and in the order given*. Begin by completing the 'Back-page Worksheet'. Always read the questions as written and in the order given. If a respondent does not understand a question, then clearly explain the question to the respondent.

"*Be tactful*. If the respondent seems uninterested, bored, distracted, contradicts something that he/she said previously, or refuses to answer a question, then try—with tact—to revive his/her interest and trust.

"*Do not rush the interview.* Ask questions slowly so that the respondent can understand what you are asking. After asking a question, wait: give the respondent time to think. If the respondent feels that he/she does not have enough time to reflect and to discover his/her own opinion, then he/she may just say, 'I don't know' or even give a made-up answer. Even when the respondent takes his/her time to answer, you as the enumerator should not pressure him/her nor feel that you should postpone the interview."

Who should be the respondent?

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

According to page 6 of the *Manual*, "The required information can be provided by the head of the household, or—in his/her absence—by any other capable household member."

Note that the head of the household may or may not be the same person who is a participant with your organization. This is fine; the respondent does not need to be the same as the participant in your organization (although the respondent can be that person).

According to pages 9 to 10 of the *Manual*, "The *head of the household* is the household's main decision-maker, and his/her authority is recognized by the other members of the household. The head of the household may or may not be the main income-earner. In many African societies, the oldest adult male is often considered to be the head of the household, even if he is not the main income-earner.

"As the main decision-maker, the head is the most-knowledgable person in terms what is going on in the household, so usually he/she is the most appropriate respondent. Nevertheless, for some questions the head may not have the knowledge required to provide accurate responses, for example, if he/she is not the main income earner, or if other household members have their own areas of particular expertise with regards to the household's activities. In such cases, other members of the household may help the head to respond during the interview. For example, older children may know the exact educational level of the younger members of the household better than the head does."

According to page 19 of the *Manual*, "Remember that the *head of the household* is the person who is recognized as such by the other members of the household. He/she is the person who is responsible for managing the household's finances and who makes decisions on behalf of the household's members. The head may be man or a woman."

Guidelines for each scorecard indicator

1. How many household members are there?
    A. Seven or more
    B. Six
    C. Five
    D. Four
    E. Three
    F. Two
    G. One

According to page 8 of the *Manual*, a *household* "is a group of people who usually live and eat together. In other words, a *household* is a group of people [or one single person]—regardless of blood or marital relationships—who share meals, who recognize the authority of one person called the *head of the household* (who may or may not currently live with the rest of the members of the household), and who usually share income and expenses. The household members usually live under the same roof, in the same courtyard, or in the same compound.

"The concept of household is based on the arrangements made by people—whether alone or collectively with other people—to provide for their basic needs.

"There is a fundamental distinction between a *household* and a *family*. The concept of *household* is broader than that of *family* (that is, a group of people related by blood, marriage, or adoption). For example, a household may be made up of one or more families. It is also possible for members of family to be members of more than one household, whether temporarily or permanently. For example, a child bride might continue to live in her household [of origin] until she is of age, while at the same time her husband lives as part of a different household under another roof.

"Examples of households include:

- A man and his wife(wives), with or without children
- A man and his wife(wives), with their unmarried children and their parents
- A man and his wife(wives) who live their their married children, with whom they share meals
- A man (without a wife) or a woman (without a husband) who lives with his/her children
- A man or a woman who lives alone

"In cases of polygamy in which the wives live in separate residences or compounds, cook on their own, and make their decisions independently, each wife is considered to be a distinct household."

According to page 19 of the *Manual*, when you fill out the "Back-page Worksheet", "you should always list the head of the household first. Even if the respondent is not the head, you should still list the head in first (not the respondent). Even if the head is absent at the time of the interview, you should still list him/her first.

"Take care when compiling the household roster that all members are listed once-and-only-once; do not omit anyone, and do not list anyone twice. [As noted above], the head of the household should always be listed first. After that, list the rest of the members of the household in the following order:

- The unmarried children of the head of the household whose fathers or mothers are no longer members of the household (whether due to death, divorce, abandonment, and so on). List them from youngest to oldest
- The wives of the head of the household who are currently members of the household, starting with the first and then moving on in order. After a given wife is listed, record her unmarried children who are household members, from youngest to oldest, including unmarried children whose fathers are not members of the household
- Any married children of the head of the household who are household members, as well as their spouses and children (if any), as long as they are household members and recognize the authority of the head. List the spouses of married children after the married children, and after listing a given parent or set of parents, then list their children
- The parents (mother and father) of the head of the household, and their spouse(s), if any
- The mother-in-law or father-in-law of the head of the household
- Any grandchildren of the head of the household whose parents are not members of the household
- Any other relatives of the head (such as uncles, cousins, brothers, or grandparents) who usually live in the head's household and who recognize the authority of the head, as well as the relatives' spouses and children (if any). Do not forget to check for the married children of spouses whose children from previous unions are household members, as well as their children (if any)
- Other members of the household who do not have a blood or marital relationship with the head (friends, domestic servants, employees, and so on) who eat and sleep with the household, as well as their spouses and children (if any)

"To be sure that you have not missed any household members, ask specifically about three groups which tend to be overlooked:

- Household members who are temporarily absent at the time of the interview
- Domestic servants who usually live with the household
- Very young children (such as infants and toddlers)

2. Do all household members ages 6 to 18 currently go to school?
    A. No
    B. Yes
    C. No members ages 6 to 18

Do not ask this question directly of the respondent. Instead, mark the response based on the information you already gathered about household members, their ages, and their school attendance on the "Back-page Worksheet".

When figuring out how to mark the appropriate response, keep in mind that this indicator can be viewed as a combination of two questions:

- Are there any household members ages 6 to 18?
- Do all household members ages 6 to 18 currently go to school?

Mark the response on the scorecard according to the combination of responses the two questions above:

Are there any household members ages 6 to 18?	**Do all household members ages 6 to 18 currently go to school?**	**Response**
No	N/A	C
Yes	No	A
No	N/A	C
Yes	Yes	B

The *Manual* provides no additional information about this indicator.

3. What is the main construction material of the residence's walls?
    A. Packed earth/mud/unbaked bricks, packed earth with a cement veneer, metal sheets, planks, branches/reeds/woven grass/bamboo, or other
    B. Cinder blocks, baked/reinforced bricks, or stone

According to pages 59 to 60 of the *Manual*, "The question is concerned with the construction material of the main building in the household's residence. If the walls are made of more than one type of material, then record the main material.

"*Packed earth with a cement veneer* refers to walls made of packed earth or mud that have been covered with a thin layer of cement, or walls made of bricks of packed earth that have been given a cement veneer."

According to page 8 of the *Manual*, "A *residence* is a group of buildings or rooms used by a household as its dwelling."

4. What toilet arrangement does the household use?
    A. None, or the bush
    B. Pit latrine (public or private), uncovered latrine, or other
    C. Flush toilet (public or private)

The *Manual* provides no additional information about this indicator.

5. What is the household's main source of lighting?
    A. Homemade kerosene lamp without glass (*lampion*), candles, or other
    B. Flashlight
    C. Manufactured kerosene lamp with glass, LPG lamp, electricity, generator, or solar panel

According to page 61 of the *Manual*, "Record the lighting source that the household uses most often."

6. Does your household have any chairs or tables?
    A. No
    B. Yes

The *Manual* provides no additional information about this indicator.

7. Does your household have a bed?
    A. No
    B. Yes

The *Manual* provides no additional information about this indicator.

8. Does your household have a television?
    A. No
    B. Yes

The *Manual* provides no additional information about this indicator.

9. Does your household have a motorcycle/scooter or an automobile for its personal use?
    A. No
    B. Yes

The *Manual* provides no additional information about this indicator.

10. Does your household have a cell phone?
    A. No
    B. Yes

The *Manual* provides no additional information about this indicator.

Table 1: National poverty lines and poverty rates for all of Togo and for the construction and validation samples, by households and people in 2015

Sample	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)			
					National (2015 def.)		
				Food	100%	150%	200%
All of Togo							
	Line	People		421	716	1,073	1,431
	Rate	Households	2,335	20.3	45.5	66.3	79.6
	Rate	People		25.9	55.1	75.2	86.6
Construction/calibration:							
(Selecting indicators and points, and associating scores with poverty likelihoods)							
	Rate	Households	1,411	20.1	45.6	66.2	79.8
Validation:							
(Measuring accuracy)							
	Rate	Households	924	20.6	45.2	66.3	79.4

Source: 2015 QUIBB

Poverty lines are XOF per-adult-equivalent per-day.

Poverty lines are XOF in Lomé on average in July to August of 2015.

Table 1: International 2005 and 2011 PPP poverty lines and poverty rates for all of Togo and for the construction and validation samples, by households and people in 2015

Sample	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)							
				Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$1.90**	**$3.20**	**$5.50**	**$21.70**
All of Togo											
	Line	People		464	742	928	1,856	474	798	1,372	5,413
	Rate	Households	2,335	35.6	59.7	70.7	92.4	36.6	63.3	85.9	99.7
	Rate	People		45.0	69.9	80.2	96.3	46.0	73.2	92.2	99.9
Construction/calibration:											
(Selecting indicators and points, and associating scores with poverty likelihoods)											
	Rate	Households	1,411	35.7	59.9	70.8	92.3	36.5	63.2	86.2	99.7
Validation:											
(Measuring accuracy)											
	Rate	Households	924	35.6	59.4	70.6	92.4	36.9	63.4	85.4	99.7

Source: 2015 QUIBB

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in Lomé on average in July to August of 2015.

Table 1: Relative and percentile-based poverty lines and poverty rates for all of Togo and for the construction and validation samples, by households and people in 2015

Sample	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)					
				Poorest 1/2	Percentile-based lines (2015 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
All of Togo									
	Line	People		336	279	413	506	605	921
	Rate	Households	2,335	21.1	15.2	31.4	40.3	50.0	70.5
	Rate	People		27.5	20.0	40.0	50.0	59.9	80.0
Construction/calibration:									
(Selecting indicators and points, and associating scores with poverty likelihoods)									
	Rate	Households	1,411	21.4	15.2	31.3	40.2	49.9	70.6
Validation:									
(Measuring accuracy)									
	Rate	Households	924	20.6	15.2	31.5	40.5	50.0	70.4

Source: 2015 QUIBB

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in Lomé on average in July to August of 2015.

Table 2 (All of Togo): National poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)			
				National (2015 def.)			
				Food	100%	150%	200%
Urban							
	Line	People		490	833	1,249	1,665
	Rate	Households	1,543	9.3	28.4	51.6	69.6
	Rate	People		11.5	36.0	61.2	78.7
Rural							
	Line	People		372	632	948	1,264
	Rate	Households	792	30.4	61.1	79.7	88.9
	Rate	People		36.2	68.7	85.1	92.2
All							
	Line	People		421	716	1,073	1,431
	Rate	Households	2,335	20.3	45.5	66.3	79.6
	Rate	People		25.9	55.1	75.2	86.6

Source and definitions: See Table 1 and text.

Table 2 (All of Togo): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)							
				Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		540	864	1,079	2,159	551	929	1,596	6,297
	Rate	Households	1,543	20.3	43.2	56.5	86.8	21.4	47.1	76.8	99.5
	Rate	People		26.8	53.2	68.1	92.6	28.0	57.4	85.8	99.8
Rural											
	Line	People		410	656	819	1,639	419	705	1,212	4,780
	Rate	Households	792	49.7	74.8	83.7	97.5	50.6	78.1	94.1	99.9
	Rate	People		58.1	81.8	88.9	99.0	59.0	84.6	96.8	100.0
All											
	Line	People		464	742	928	1,856	474	798	1,372	5,413
	Rate	Households	2,335	35.6	59.7	70.7	92.4	36.6	63.3	85.9	99.7
	Rate	People		45.0	69.9	80.2	96.3	46.0	73.2	92.2	99.9

Source and definitions: See Table 1 and text.

Table 2 (All of Togo): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)					
				Poorest 1/2	Percentile-based lines (2015 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		391	325	481	588	704	1,072
	Rate	Households	1,543	9.0	5.6	16.2	23.9	32.8	56.2
	Rate	People		11.9	6.9	21.9	31.0	41.4	67.7
Rural									
	Line	People		297	247	365	447	534	814
	Rate	Households	792	32.2	24.0	45.3	55.4	65.7	83.6
	Rate	People		38.7	29.3	53.0	63.6	73.1	88.8
All									
	Line	People		336	279	413	506	605	921
	Rate	Households	2,335	21.1	15.2	31.4	40.3	50.0	70.5
	Rate	People		27.5	20.0	40.0	50.0	59.9	80.0

Source and definitions: See Table 1 and text.

Table 2 (Lomé): National poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%) National (2015 def.) Food	100%	150%	200%
Urban							
	Line	People		563	957	1,435	1,913
	Rate	Households	769	9.5	27.8	51.6	70.3
	Rate	People		11.8	34.8	60.5	78.2
Rural							
	Line	People		—	—	—	—
	Rate	Households	—	—	—	—	—
	Rate	People		—	—	—	—
All							
	Line	People		563	957	1,435	1,913
	Rate	Households	769	9.5	27.8	51.6	70.3
	Rate	People		11.8	34.8	60.5	78.2

Source and definitions: See Table 1 and text.

Table 2 (Lomé): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)							
				Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		620	992	1,240	2,481	634	1,067	1,834	7,236
	Rate	Households	769	19.8	43.3	55.8	88.0	21.2	47.3	77.8	99.8
	Rate	People		26.1	52.8	66.5	92.9	27.5	57.0	85.4	99.8
Rural											
	Line	People		—	—	—	—	—	—	—	—
	Rate	Households	—	—	—	—	—	—	—	—	—
	Rate	People		—	—	—	—	—	—	—	—
All											
	Line	People		620	992	1,240	2,481	634	1,067	1,834	7,236
	Rate	Households	769	19.8	43.3	55.8	88.0	21.2	47.3	77.8	99.8
	Rate	People		26.1	52.8	66.5	92.9	27.5	57.0	85.4	99.8

Source and definitions: See Table 1 and text.

Table 2 (Lomé): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)					
				Poorest 1/2	Percentile-based lines (2015 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		449	373	552	676	809	1,232
	Rate	Households	769	9.1	5.8	16.0	23.7	33.3	55.7
	Rate	People		12.2	7.2	21.4	30.2	41.7	66.5
Rural									
	Line	People		—	—	—	—	—	—
	Rate	Households	—	—	—	—	—	—	—
	Rate	People		—	—	—	—	—	—
All									
	Line	People		449	373	552	676	809	1,232
	Rate	Households	769	9.1	5.8	16.0	23.7	33.3	55.7
	Rate	People		12.2	7.2	21.4	30.2	41.7	66.5

Source and definitions: See Table 1 and text.

Table 2 (Maritime): National poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)			
				National (2015 def.)			
				Food	100%	150%	200%
Urban							
	Line	People		363	617	926	1,234
	Rate	Households	154	3.1	18.0	40.0	60.4
	Rate	People		3.0	23.2	48.7	71.6
Rural							
	Line	People		363	617	926	1,234
	Rate	Households	156	17.0	41.9	67.4	83.4
	Rate	People		19.0	49.0	76.2	90.6
All							
	Line	People		363	617	926	1,234
	Rate	Households	310	12.6	34.5	58.9	76.2
	Rate	People		14.1	41.1	67.8	84.8

Source and definitions: See Table 1 and text.

Table 2 (Maritime): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)							
				Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		400	640	800	1,600	409	688	1,183	4,667
	Rate	Households	154	11.9	34.1	48.4	80.5	12.5	35.4	69.5	98.3
	Rate	People		15.5	44.0	58.5	89.4	16.1	45.1	82.4	99.1
Rural											
	Line	People		400	640	800	1,600	409	688	1,183	4,667
	Rate	Households	156	28.2	60.2	73.7	93.5	28.9	65.8	89.5	100.0
	Rate	People		34.3	70.3	82.6	97.4	35.1	75.1	95.3	100.0
All											
	Line	People		400	640	800	1,600	409	688	1,183	4,667
	Rate	Households	310	23.1	52.1	65.8	89.4	23.8	56.4	83.3	99.5
	Rate	People		28.5	62.2	75.2	94.9	29.3	65.9	91.3	99.7

Source and definitions: See Table 1 and text.

Table 2 (Maritime): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)					
				Poorest 1/2	Percentile-based lines (2015 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		290	241	356	436	522	795
	Rate	Households	154	3.1	1.5	8.1	14.4	22.2	47.3
	Rate	People		3.2	1.4	10.6	17.9	27.8	56.7
Rural									
	Line	People		290	241	356	436	522	795
	Rate	Households	156	16.6	13.4	24.1	33.0	47.4	73.7
	Rate	People		19.1	16.5	26.6	41.6	54.9	82.6
All									
	Line	People		290	241	356	436	522	795
	Rate	Households	310	12.4	9.7	19.1	27.2	39.5	65.5
	Rate	People		14.2	11.9	21.6	34.3	46.6	74.7

Source and definitions: See Table 1 and text.

Table 2 (Plateaux): National poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)			
				National (2015 def.)			
				Food	100%	150%	200%
Urban							
	Line	People		360	612	918	1,225
	Rate	Households	207	12.6	29.4	56.2	69.4
	Rate	People		15.2	37.3	67.0	80.3
Rural							
	Line	People		360	612	918	1,225
	Rate	Households	190	26.1	56.6	78.1	88.4
	Rate	People		31.2	64.5	82.6	91.1
All							
	Line	People		360	612	918	1,225
	Rate	Households	397	22.6	49.5	72.4	83.4
	Rate	People		27.7	58.5	79.2	88.7

Source and definitions: See Table 1 and text.

Table 2 (Plateaux): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)							
				Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		397	635	794	1,588	406	683	1,174	4,631
	Rate	Households	207	23.4	45.4	58.8	86.7	24.3	49.9	76.4	99.2
	Rate	People		31.2	57.9	72.4	92.7	32.4	61.3	86.8	99.8
Rural											
	Line	People		397	635	794	1,588	406	683	1,174	4,631
	Rate	Households	190	45.2	70.7	81.8	98.6	46.5	73.9	92.9	100.0
	Rate	People		53.5	77.6	86.6	99.4	54.6	80.6	95.2	100.0
All											
	Line	People		397	635	794	1,588	406	683	1,174	4,631
	Rate	Households	397	39.5	64.0	75.7	95.5	40.7	67.6	88.5	99.8
	Rate	People		48.6	73.2	83.5	97.9	49.7	76.3	93.4	100.0

Source and definitions: See Table 1 and text.

Table 2 (Plateaux): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)					
				Poorest 1/2	Percentile-based lines (2015 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		287	239	353	433	518	788
	Rate	Households	207	12.6	8.4	19.2	24.3	30.9	57.4
	Rate	People		16.3	8.9	25.9	32.4	40.5	70.6
Rural									
	Line	People		287	239	353	433	518	788
	Rate	Households	190	27.2	21.3	41.4	53.0	63.0	81.8
	Rate	People		31.5	26.2	49.3	61.0	71.3	86.6
All									
	Line	People		287	239	353	433	518	788
	Rate	Households	397	23.3	17.9	35.5	45.5	54.6	75.4
	Rate	People		28.2	22.4	44.2	54.7	64.6	83.1

Source and definitions: See Table 1 and text.

Table 2 (Centrale): National poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)			
				National (2015 def.)			
				Food	100%	150%	200%
Urban							
	Line	People		418	711	1,066	1,422
	Rate	Households	126	9.1	38.7	60.9	75.0
	Rate	People		11.5	46.9	71.2	85.3
Rural							
	Line	People		418	711	1,066	1,422
	Rate	Households	127	32.4	62.5	78.9	89.6
	Rate	People		40.5	68.1	84.8	92.5
All							
	Line	People		418	711	1,066	1,422
	Rate	Households	253	26.6	56.6	74.4	85.9
	Rate	People		34.4	63.6	81.9	91.0

Source and definitions: See Table 1 and text.

Table 2 (Centrale): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)							
				Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		461	737	922	1,843	471	793	1,363	5,377
	Rate	Households	126	25.3	49.3	66.8	89.0	26.0	55.4	80.0	99.0
	Rate	People		32.8	58.5	79.7	95.0	33.4	65.0	90.4	99.8
Rural											
	Line	People		461	737	922	1,843	471	793	1,363	5,377
	Rate	Households	127	53.3	76.4	82.2	97.9	54.2	78.4	95.2	99.3
	Rate	People		60.1	83.5	87.6	99.5	61.0	85.7	97.8	99.9
All											
	Line	People		461	737	922	1,843	471	793	1,363	5,377
	Rate	Households	253	46.4	69.7	78.4	95.7	47.2	72.7	91.4	99.2
	Rate	People		54.3	78.2	85.9	98.5	55.1	81.3	96.2	99.9

Source and definitions: See Table 1 and text.

Table 2 (Centrale): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)					
				Poorest 1/2	Percentile-based lines (2015 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		334	277	410	502	601	915
	Rate	Households	126	8.9	5.1	19.9	29.3	39.3	66.8
	Rate	People		13.3	6.4	25.8	36.9	47.1	79.7
Rural									
	Line	People		334	277	410	502	601	915
	Rate	Households	127	33.7	21.8	49.4	58.7	65.8	82.2
	Rate	People		42.4	28.3	56.9	64.1	72.5	87.6
All									
	Line	People		334	277	410	502	601	915
	Rate	Households	253	27.5	17.6	42.1	51.4	59.2	78.4
	Rate	People		36.2	23.6	50.3	58.3	67.1	85.9

Source and definitions: See Table 1 and text.

Table 2 (Kara): National poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%) National (2015 def.) Food	100%	150%	200%
Urban							
	Line	People		360	612	918	1,225
	Rate	Households	175	8.6	30.3	49.4	66.9
	Rate	People		10.8	39.4	63.0	79.7
Rural							
	Line	People		360	612	918	1,225
	Rate	Households	143	40.1	73.6	87.3	90.0
	Rate	People		42.0	79.4	89.8	91.5
All							
	Line	People		360	612	918	1,225
	Rate	Households	318	32.0	62.3	77.5	84.0
	Rate	People		35.1	70.5	83.8	88.9

Source and definitions: See Table 1 and text.

Table 2 (Kara): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)							
				Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		397	635	794	1,588	406	683	1,174	4,631
	Rate	Households	175	22.1	41.6	58.3	79.8	23.0	46.3	71.5	99.4
	Rate	People		29.1	51.3	73.5	90.1	29.5	59.1	84.5	99.9
Rural											
	Line	People		397	635	794	1,588	406	683	1,174	4,631
	Rate	Households	143	61.7	81.8	88.7	99.3	62.4	84.6	97.1	100.0
	Rate	People		68.1	85.8	91.1	99.2	68.7	88.4	97.8	100.0
All											
	Line	People		397	635	794	1,588	406	683	1,174	4,631
	Rate	Households	318	51.4	71.4	80.8	94.2	52.2	74.7	90.4	99.9
	Rate	People		59.4	78.1	87.2	97.2	60.0	81.9	94.9	100.0

Source and definitions: See Table 1 and text.

Table 2 (Kara): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)					
				Poorest 1/2	Percentile-based lines (2015 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		287	239	353	433	518	788
	Rate	Households	175	8.1	5.1	17.0	26.5	34.1	58.3
	Rate	People		9.9	6.9	23.3	35.0	43.2	73.5
Rural									
	Line	People		287	239	353	433	518	788
	Rate	Households	143	42.0	31.1	57.6	66.2	76.1	88.0
	Rate	People		44.8	33.3	64.3	72.5	81.3	90.9
All									
	Line	People		287	239	353	433	518	788
	Rate	Households	318	33.2	24.3	47.0	55.9	65.2	80.3
	Rate	People		37.0	27.4	55.2	64.2	72.8	87.0

Source and definitions: See Table 1 and text.

Table 2 (Savanes): National poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)			
				National (2015 def.)			
				Food	100%	150%	200%
Urban							
	Line	People		366	622	933	1,244
	Rate	Households	112	14.3	43.2	59.3	77.4
	Rate	People		18.0	51.8	68.8	85.5
Rural							
	Line	People		366	622	933	1,244
	Rate	Households	176	38.4	73.3	87.6	93.2
	Rate	People		43.6	76.5	89.2	94.4
All							
	Line	People		366	622	933	1,244
	Rate	Households	288	34.4	68.3	83.0	90.6
	Rate	People		40.1	73.2	86.4	93.2

Source and definitions: See Table 1 and text.

Table 2 (Savanes): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)							
				Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		403	645	806	1,613	412	694	1,192	4,704
	Rate	Households	112	29.6	52.8	65.0	92.5	30.7	55.5	84.1	100.0
	Rate	People		37.9	61.7	75.1	95.4	39.2	64.9	90.9	100.0
Rural											
	Line	People		403	645	806	1,613	412	694	1,192	4,704
	Rate	Households	176	62.9	86.5	92.4	98.2	63.5	88.9	96.8	100.0
	Rate	People		67.3	88.3	93.6	99.1	68.3	90.1	97.6	100.0
All											
	Line	People		403	645	806	1,613	412	694	1,192	4,704
	Rate	Households	288	57.5	80.9	87.9	97.3	58.1	83.4	94.7	100.0
	Rate	People		63.3	84.7	91.1	98.6	64.4	86.7	96.7	100.0

Source and definitions: See Table 1 and text.

Table 2 (Savanes): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poverty lines and poverty rates (%)					
				Poorest 1/2	Percentile-based lines (2015 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		292	243	359	440	526	801
	Rate	Households	112	13.3	7.8	25.6	36.3	44.9	65.0
	Rate	People		18.4	10.0	33.6	46.6	54.2	75.1
Rural									
	Line	People		292	243	359	440	526	801
	Rate	Households	176	43.6	32.7	56.7	68.3	77.3	92.4
	Rate	People		49.4	37.3	60.9	72.0	79.6	93.6
All									
	Line	People		292	243	359	440	526	801
	Rate	Households	288	38.6	28.6	51.6	63.0	72.0	87.9
	Rate	People		45.2	33.6	57.2	68.5	76.1	91.1

Source and definitions: See Table 1 and text.

Table 3: Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
1,110	Does your household have a television, a VCR or DVD player, or a satellite dish ? (None; Only television; VCR or DVD player, but no satellite dish (regardless of television); Satellite dish (regardless of television, or VCR or DVD player))
1,016	Does your household have a television? (No ; Yes)
1,013	How many household members are 0 to 18 years old? (Five or more; Four; Three; Two; One; None)
1,004	What is the household's main cooking fuel? (Firewood, kerosene, or crop residue; Charcoal, electricity, solar panel, generator, or other; LPG)
1,002	What toilet arrangement does the household use? (None, or the bush; Pit latrine (public or private), uncovered latrine, or other; Flush toilet (public or private))
955	In the past 7 days, how many household members worked at least one hour (with or without remuneration) in a field or garden that belongs to them or that belongs to some other member of the household? Or how many have taken care of any livestock? (Five or more; Four; Three; Two; One; None)
947	In the past 12 months, how many household members worked at least one hour (with or without remuneration) in a field or garden that belongs to them or that belongs to some other member of the household? Or how many have taken care of any livestock? (Five or more; Four; Three; Two; One; None)
937	What is the household's main source of lighting? (Homemade kerosene lamp without glass (*lampion*), candles, or other; Flashlight; Manufactured kerosene lamp with glass, LPG lamp, electricity, generator, or solar panel)
926	How many household members are 0 to 17 years old? (Five or more; Four; Three; Two; One; None)
907	What is the main construction material of the residence's walls? (Packed earth/mud/unbaked bricks, packed earth with a cement veneer, metal sheets, planks, branches/reeds/woven grass/bamboo, or other; Cinder blocks, baked/reinforced bricks, or stone)
903	How many household members are 0 to 15 years old? (Five or more; Four; Three; Two; One; None)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
888	How many household members are there? (Seven or more; Six; Five; Four; Three; Two; One)
886	How many household members are 0 to 16 years old? (Five or more; Four; Three; Two; One; None)
860	Do any household members ages 6 to 15 currently go to a private or religious school? (There are children in the age range, but some do not go to a school of any kind; There are children in the age range, and all go to public school; There are children in the age range, and some (but not all) go to private school; There are children in the age range, and all go to private school; There are no children in the age range)
829	Does your household have a VCR or DVD player? (No; Yes)
829	What is the highest grade that the (eldest) female head/spouse head has completed? (None, day care, CP1, or CP2; CE1, or CE2; CM1, CM2, or Sixth; No female head/spouse; Fifth, or First year, or higher)
827	Do any household members ages 6 to 16 currently go to a private or religious school? (There are children in the age range, but some do not go to a school of any kind; There are children in the age range, and all go to public school; There are children in the age range, and some (but not all) go to private school; There are children in the age range, and all go to private school; There are no children in the age range)
797	Do any household members ages 6 to 17 currently go to a private or religious school? (There are children in the age range, but some do not go to a school of any kind; There are children in the age range, and all go to public school; There are children in the age range, and some (but not all) go to private school; There are children in the age range, and all go to private school; There are no children in the age range)
797	How many household members are 0 to 14 years old? (Five or more; Four; Three; Two; One; None)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
796	Do any household members ages 6 to 18 currently go to a private or religious school? (There are children in the age range, but some do not go to a school of any kind; There are children in the age range, and all go to public school; There are children in the age range, and some (but not all) go to private school; There are children in the age range, and all go to private school; There are no children in the age range)
796	Do any household members ages 6 to 13 currently go to a private or religious school? (There are children in the age range, but some do not go to a school of any kind; There are children in the age range, and all go to public school; There are children in the age range, and some (but not all) go to private school; There are children in the age range, and all go to private school; There are no children in the age range)
780	Do any household members ages 6 to 12 currently go to a private or religious school? (There are children in the age range, but some do not go to a school of any kind; There are children in the age range, and all go to public school; There are children in the age range, and some (but not all) go to private school; There are children in the age range, and all go to private school; There are no children in the age range)
779	Do any household members ages 6 to 11 currently go to a private or religious school? (There are children in the age range, but some do not go to a school of any kind; There are children in the age range, and all go to public school; There are children in the age range, and some (but not all) go to private school; There are children in the age range, and all go to private school; There are no children in the age range)
779	How many household members are 0 to 13 years old? (Four or more; Three; Two; One; None)
766	Do any household members ages 6 to 14 currently go to a private or religious school? (There are children in the age range, but some do not go to a school of any kind; There are children in the age range, and all go to public school; There are children in the age range, and some (but not all) go to private school; There are children in the age range, and all go to private school; There are no children in the age range)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
749	Does your household have a fan? (No; Yes)
724	How many household members are 0 to 12 years old? (Four or more; Three; Two; One; None)
693	Does your household have any armchairs or sofas? (No; Yes)
666	How many household members are 0 to 11 years old? (Four or more; Three; Two; One; None)
661	Do all household members ages 6 to 16 currently go to school? (No; Yes; No members ages 6 to 16)
656	Does yor household have a coal iron or electric iron? (No; Yes)
647	What is the household's tenancy status in its residence? (Owned (without title); Housed for free by relative or an employer; or other; Renter, or owned (with title))
636	What is the highest grade that the male head/spouse head has passed? (None, day care, CP1, CP2, or CE1; CE2, or CM1; Sixth, Fifth or First year, or Fourth or Second year; No male head/spouse; Third or Third year, or Second; First; Terminal; Higher education first year, or more)
633	Do all household members ages 6 to 15 currently go to school? (No; Yes; No members ages 6 to 15)
633	Do all household members ages 6 to 18 currently go to school? (No; Yes; No members ages 6 to 18)
626	Do all household members ages 6 to 17 currently go to school? (No; Yes; No members ages 6 to 17)
619	In the past 12 months, did the (eldest) female head/spouse work at least one hour (with or without remuneration) in field or garden that belongs to her or that belongs to some other member of the household? Or did she take care of any livestock? (Yes; No; No female head/spouse)
609	Can the (eldest) female head/spouse read, write, and understand a short, simple statement in some language? (No; Yes (national); Yes (foreign); No female head/spouse; Yes (both local and foreign))
589	What is the main source of drinking water? (Stream, water hole/spring, or rainwater; Well; Borehole/well with mechanical pump; Reservoir/dam; Public standpipe, water truck, or other; Faucet in the residence or compound, purified water in a sachet, or bottled water)
585	Do all household members ages 6 to 13 currently go to school? (No; Yes; No members ages 6 to 13)
584	Do all household members ages 6 to 12 currently go to school? (No; Yes; No members ages 6 to 12)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
584	What kind of course of study did the (eldest) female head/spouse most recently take? (Never went to school; General; No female head/spouse; Vo-tech, or professional)
562	In the past 7 days, did the (eldest) female head/spouse work at least one hour (with or without remuneration) in field or garden that belongs to her or that belongs to some other member of the household? Or did she take care of any livestock? (Yes; No; No female head/spouse)
560	Do all household members ages 6 to 11 currently go to school? (No; Yes; No members ages 6 to 11)
552	Do all household members ages 6 to 14 currently go to school? (No; Yes; No members ages 6 to 14)
549	What is the main construction material of the residence's roof? (Straw/reeds/palm branches/leaves/bamboo, or packed earth/mud; Corrugated tin, corrugated aluminum, or other; Tiles; Reinforced concrete slab)
515	Does your household have an electric iron? (No; Yes)
445	Does the household currently have any cattle, donkeys, or horses? (Yes ; No)
445	Does the household currently have any cattle, donkeys, horses, goats, sheep, or pigs? (No; Yes)
429	What kind of course of study did the male head/spouse most recently take? (Never went to school; No male head/spouse; General; Vo-tech, or professional)
421	In the past 7 days, did the male head/spouse work at least one hour (with or without remuneration) in field or garden that belongs to him or that belongs to some other member of the household? Or did he take care of any livestock? (Yes; No male head/spouse; No)
421	In the past 12 months, did the male head/spouse work at least one hour (with or without remuneration) in field or garden that belongs to him or that belongs to some other member of the household? Or did he take care of any livestock? (Yes; No male head/spouse; No)
355	Does your household have a satellite dish? (No; Yes)
347	Does your household have a bed?)(No; Yes)
342	How many household members are 0 to 6 years old? (Three or more; Two; One; None)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
341	Does your household have a motorcycle/scooter or an automobile for its personal use? (No; Yes)
321	Does the household currently have any goats or sheep? (No; Yes)
321	Does the household currently have any goats, sheep, or pigs? (No; Yes)
314	Does your household have any wardrobes, cabinets, or dressers? (No ; Yes)
309	Does your household have a cell phone? (No; Yes)
299	Does your household have a stove or hot plate? (No; Yes)
280	Does your household have a motorcyle/scooter for its personal use? (No; Yes)
276	Can the male head/spouse read, write, and understand a simple statement in some language? (No; Yes (national); No male head/spouse; Yes (foreign); Yes (both national and foreign))
260	Does your household have any chairs or tables? (No; Yes)
254	Does your household have a computer? (No; Yes)
211	What is the construction material of the floor of the residence's main rooms? (Packed earth, dirt/sand, or other; Cement; Marble/tile/granite, or wood/planks)
194	Does your household have a car for its personal use? (No; Yes)
191	In the past 12 months, did the male head/spouse work at least one hour for a business, the government, an employer/client, or for anyone else who is not a member of the household? (No; No male head/spouse; Yes)
172	In the past 7 days, did the (eldest) female head/spouse work at least one hour for a business, the government, an employer/client, or for anyone else who is not a member of the household? (No; Yes; No female head/spouse)
166	In the past 12 months, did the (eldest) female head/spouse work at least one hour for a business, the government, an employer/client, or for anyone else who is not a member of the household? (No; Yes; No female head/spouse)
159	Has the (eldest) female head/spouse had paid employment in the past 12 months? (No; Yes; No female head/spouse)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
157	Does your household have a refrigerator or freezer for its personal use? (No; Yes)
155	In the past 7 days, did the male head/spouse work at least one hour for a business, the government, an employer/client, or for anyone else who is not a member of the household? (No; No male head/spouse; Yes)
153	In the past 12 months, did the (eldest) female head/spouse work at least one hour (with or without remuneration) in trade, manufacturing/processing, or providing a service either as a self-employed person or for another household member who is self-employed (for example, as a craftsperson, trader, indepedendent fisher, lawyer, medical doctor, or other type of self-employment)? (No; Yes; No female head/spouse)
150	Does the household head have a spouse/conjugal partner? (Yes; Female head without a spouse/conjugal partner; Male head without a spouse/conjugal partner)
150	In the past 7 days, did the (eldest) female head/spouse work at least one hour (with or without remuneration) in trade, manufacturing/processing, or providing a service either as a self-employed person or for another household member who is self-employed (for example, as a craftsperson, trader, indepedendent fisher, lawyer, medical doctor, or other type of self-employment)? (No; Yes; No female head/spouse)
142	Does the household currently have any pigs? (No; Yes)
132	Does your household have a non-electric iron? (No; Yes)
123	Does your household have a bicycle? (No; Yes)
111	In the past 7 days, how many household members worked at least 1 hour for a business, the government, an employer/client, or for anyone else who is not a member of the household? (None; One; Two or more)
105	How many rooms your household use for living space? (One, or none; Two; Three; Four; Five or more)
91	How many household members have had paid employment in the past 12 months? (None; One; Two or more)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
83	In the past 12 months, how many household members worked at least 1 hour for a business, the government, an employer/client, or for anyone else who is not a member of the household? (None; One; Two or more)
70	In the past 7 days, did the male head/spouse work at least one hour (with or without remuneration) in trade, manufacturing/processing, or providing a service either as a self-employed person or for another household member who is self-employed, for example, as a craftsperson, trader, indepedendent fisher, lawyer, medical doctor, or other type of self-employment? (No; No male head/spouse; Yes)
63	Has the male head/spouse had paid employment in the past 12 months? (No; No male head/spouse; Yes)
58	Does your household have a radio or radio-cassette, or mini-hifi? (No; Yes)
44	In the past 12 months, did the male head/spouse work at least one hour (with or without remuneration) in trade, manufacturing/processing, or providing a service either as a self-employed person or for another household member who is self-employed, for example, as a craftsperson, trader, indepedendent fisher, lawyer, medical doctor, or other type of self-employment? (No; No male head/spouse; Yes)
8	Does your household have a sewing machine for its personal use? (No; Yes)
5	In the past 12 months, how many household members worked at least one hour (with or without remuneration) in trade, manufacturing/processing, or providing a service either as a self-employed person or for another household member who is self-employed, for example, as a craftsperson, trader, indepedendent fisher, lawyer, medical doctor, or other type of self-employment? (None; One; Two or more)
2	In the past 7 days, how many household members worked at least one hour (with or without remuneration) in trade, manufacturing/processing, or providing a service either as a self-employed person or for another household member who is self-employed, for example, as a craftsperson, trader, indepedendent fisher, lawyer, medical doctor, or other type of self-employment? (None; One; Two or more)

Source: 2015 QUIBB with 100% of the national poverty line

Tables for
100% of the National Poverty Line

(and Tables Pertaining
to All Poverty Lines)

Table 4 (100% of the national line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	95.3
19–22	84.0
23–26	78.5
27–30	77.1
31–34	66.9
35–38	66.9
39–41	60.8
42–45	56.6
46–48	49.8
49–52	48.4
53–55	46.5
56–58	28.8
59–63	27.4
64–65	27.4
66–68	18.2
69–72	13.9
73–76	8.9
77–82	5.2
83–100	1.5

Table 5 (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 (%)
0–18	9,286	÷	9,748	=	95.3
19–22	3,908	÷	4,651	=	84.0
23–26	5,838	÷	7,435	=	78.5
27–30	6,196	÷	8,036	=	77.1
31–34	6,711	÷	10,031	=	66.9
35–38	6,564	÷	9,811	=	66.9
39–41	4,105	÷	6,755	=	60.8
42–45	6,028	÷	10,643	=	56.6
46–48	4,144	÷	8,314	=	49.8
49–52	4,492	÷	9,277	=	48.4
53–55	3,389	÷	7,288	=	46.5
56–58	2,403	÷	8,356	=	28.8
59–63	3,391	÷	12,384	=	27.4
64–65	976	÷	3,566	=	27.4
66–68	1,212	÷	6,658	=	18.2
69–72	989	÷	7,096	=	13.9
73–76	650	÷	7,273	=	8.9
77–82	528	÷	10,153	=	5.2
83–100	124	÷	8,003	=	1.5

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

Table 6 (100% of the national line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	**Error**	**90-percent**	**95-percent**	**99-percent**
0–18	+0.8	1.2	1.5	1.8
19–22	–5.6	3.6	3.8	4.0
23–26	–7.8	4.9	5.0	5.4
27–30	–3.5	2.8	2.9	3.4
31–34	–7.5	4.9	5.1	5.6
35–38	–21.8	11.8	11.9	12.3
39–41	+19.5	2.6	3.0	3.8
42–45	+4.2	3.1	3.7	4.7
46–48	+5.0	2.6	3.2	4.2
49–52	+15.8	2.5	3.0	3.9
53–55	+8.2	3.0	3.7	4.8
56–58	+6.3	2.8	3.3	4.3
59–63	–3.2	2.7	2.9	3.6
64–65	+13.6	2.7	3.2	4.2
66–68	–12.2	7.6	7.9	8.6
69–72	–4.5	3.4	3.7	4.1
73–76	+4.6	1.1	1.4	1.7
77–82	+3.0	0.9	1.0	1.3
83–100	–4.4	3.1	3.3	3.8

Table 7 (100% of the national line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.3	69.8	80.2	92.2
4	–0.8	35.9	41.8	51.5
8	+0.2	25.4	29.5	35.7
16	+0.5	18.1	21.5	27.8
32	+0.5	12.7	14.8	19.3
64	+0.5	9.0	11.3	14.9
128	+0.5	6.5	7.8	10.3
256	+0.6	4.8	5.7	8.0
512	+0.6	3.3	4.1	5.4
1,024	+0.7	2.4	2.9	3.5
2,048	+0.7	1.6	2.0	2.6
4,096	+0.7	1.2	1.4	1.9
8,192	+0.7	0.8	1.0	1.3
16,384	+0.7	0.6	0.7	0.9

Table 8 (National lines): Errors in estimated poverty rates at a point in time (average of differences between estimated and observed values for households in 1,000 bootstrap samples of $n = 16{,}384$ from the validation sample), precision, and the α factor for precision

	Poverty lines			
		National (2015 def.)		
	Food	**100%**	**150%**	**200%**
Error (estimate minus observed value)	–1.3	+0.7	–0.9	+0.1
Precision of estimate	0.6	0.6	0.5	0.5
Alpha factor for precision	1.09	0.93	0.86	0.87

Results pertain to the 2015 scorecard applied to the validation sample.

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

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

Errors and precision estimated from 1,000 bootstraps with n = 16,384.

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

Table 8 (International 2005 and 2011 PPP lines): Errors in estimated poverty rates at a point in time (average of differences between estimated and observed values for households in 1,000 bootstrap samples of n = 16,384 from the validation sample), precision, and the α factor for precision

	Poverty lines							
	Intl. 2005 PPP (2015 def.)				Intl. 2011 PPP (2015 def.)			
	$1.25	**$2.00**	**$2.50**	**$5.00**	**$1.90**	**$3.20**	**$5.50**	**$21.70**
Error (estimate minus observed value)	+0.4	–0.3	–0.6	–0.6	–0.6	–1.2	+0.3	–0.1
Precision of estimate	0.6	0.5	0.5	0.2	0.6	0.5	0.3	0.0
Alpha factor for precision	0.99	0.83	0.82	0.69	0.98	0.81	0.73	0.54

Results pertain to the 2015 scorecard applied to the validation sample.

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

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

Errors and precision estimated from 1,000 bootstraps with n = 16,384.

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

Table 8 (Relative and percentile-based lines): Errors in estimated poverty rates at a point in time (average of differences between estimated and observed values for households in 1,000 bootstrap samples of n = 16,384 from the validation sample), precision, and the α factor for precision

	Poverty lines					
	Poorest 1/2	Percentile-based lines (2015 def.)				
	< 100% Natl.	20th	40th	50th	60th	80th
Error (estimate minus observed value)	+0.2	–1.4	–0.3	–1.5	–1.1	–0.6
Precision of estimate	0.6	0.5	0.6	0.6	0.5	0.5
Alpha factor for precision	1.07	1.14	1.00	0.92	0.87	0.82

Results pertain to the 2015 scorecard applied to the validation sample.

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

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

Errors and precision estimated from 1,000 bootstraps with n = 16,384.

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

Table 9 (All poverty lines): Possible targeting outcomes

Observed poverty status		Targeting segment: Targeted	Targeting segment: Non-targeted
		Inclusion	**Undercoverage**
Poor		Poor correctly targeted	Poor mistakenly not targeted
		Leakage	**Exclusion**
Non-poor		Non-poor mistakenly targeted	Non-poor correctly not targeted

Table 10 (100% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.5	40.7	0.3	54.4	58.9	–79.4
<=22	8.8	36.4	1.0	53.8	62.6	–58.8
<=26	12.9	32.3	1.7	53.0	65.9	–39.2
<=30	16.9	28.4	3.0	51.8	68.7	–18.8
<=34	20.5	24.8	4.6	50.1	70.6	+0.7
<=38	24.5	20.7	5.4	49.4	73.9	+20.1
<=41	28.0	17.2	8.8	46.0	74.0	+43.2
<=45	30.9	14.3	11.0	43.8	74.7	+61.0
<=48	34.2	11.1	13.9	40.8	75.0	+69.2
<=52	36.6	8.6	17.8	37.0	73.6	+60.6
<=55	38.6	6.6	20.8	34.0	72.6	+54.0
<=58	39.7	5.5	24.6	30.2	69.9	+45.6
<=63	42.2	3.1	29.8	25.0	67.1	+34.1
<=65	42.6	2.6	32.3	22.5	65.1	+28.7
<=68	43.8	1.4	35.8	18.9	62.7	+20.7
<=72	44.7	0.5	39.9	14.8	59.5	+11.7
<=76	45.0	0.3	45.0	9.8	54.8	+0.6
<=82	45.1	0.2	50.0	4.8	49.9	–10.5
<=100	45.2	0.0	54.8	0.0	45.2	–21.1

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

Table 11 (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, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	93.1	10.0	13.4:1
<=22	9.8	89.9	19.5	8.9:1
<=26	14.6	88.1	28.5	7.4:1
<=30	19.8	85.0	37.3	5.7:1
<=34	25.1	81.5	45.2	4.4:1
<=38	29.9	82.0	54.1	4.6:1
<=41	36.8	76.2	61.9	3.2:1
<=45	41.9	73.8	68.3	2.8:1
<=48	48.1	71.0	75.5	2.5:1
<=52	54.4	67.3	80.9	2.1:1
<=55	59.4	65.0	85.4	1.9:1
<=58	64.3	61.7	87.8	1.6:1
<=63	72.0	58.6	93.2	1.4:1
<=65	74.9	56.9	94.3	1.3:1
<=68	79.6	55.0	96.8	1.2:1
<=72	84.6	52.8	98.8	1.1:1
<=76	89.9	50.0	99.4	1.0:1
<=82	95.0	47.4	99.6	0.9:1
<=100	100.0	45.2	100.0	0.8:1

Tables for the Food Poverty Line

Table 4 (Food line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	69.7
19–22	51.9
23–26	48.3
27–30	37.9
31–34	32.1
35–38	28.0
39–41	24.0
42–45	20.9
46–48	19.2
49–52	13.3
53–55	7.2
56–58	5.6
59–63	5.6
64–65	5.6
66–68	4.9
69–72	4.0
73–76	2.3
77–82	0.6
83–100	0.3

Table 6 (Food line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+12.1	2.9	3.7	4.8
19–22	–17.8	10.2	10.4	10.9
23–26	–9.7	6.3	6.7	7.2
27–30	+11.7	2.4	2.8	3.7
31–34	–13.4	8.2	8.5	9.1
35–38	+6.4	2.4	2.9	3.9
39–41	–0.5	2.2	2.5	3.4
42–45	+4.3	2.3	2.7	3.7
46–48	–1.7	2.1	2.6	3.3
49–52	–5.6	3.9	4.1	4.5
53–55	–4.8	3.4	3.6	3.9
56–58	+0.1	1.7	2.0	2.6
59–63	+0.6	0.9	1.1	1.4
64–65	+2.6	1.3	1.5	2.0
66–68	–3.8	2.7	2.9	3.1
69–72	–1.9	1.6	1.8	2.1
73–76	+2.3	0.0	0.0	0.0
77–82	+0.6	0.0	0.0	0.0
83–100	+0.3	0.0	0.0	0.0

Table 7 (Food line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.7	63.7	67.8	82.2
4	–0.9	34.4	40.0	51.1
8	–1.3	24.0	30.3	38.6
16	–1.2	17.8	21.2	27.8
32	–1.4	13.2	15.9	22.6
64	–1.3	9.2	10.7	14.8
128	–1.3	6.9	8.0	10.0
256	–1.3	4.6	5.3	7.0
512	–1.3	3.2	3.7	4.6
1,024	–1.3	2.2	2.6	3.3
2,048	–1.3	1.6	1.9	2.5
4,096	–1.3	1.1	1.4	1.8
8,192	–1.3	0.8	1.0	1.2
16,384	–1.3	0.6	0.7	0.9

Table 10 (Food line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	2.6	17.9	2.2	77.2	79.8	–63.8
<=22	5.8	14.8	4.0	75.4	81.2	–24.1
<=26	8.3	12.2	6.3	73.2	81.5	+11.8
<=30	9.9	10.7	10.0	69.5	79.4	+44.6
<=34	11.8	8.7	13.3	66.2	78.0	+35.5
<=38	12.9	7.7	17.0	62.4	75.3	+17.4
<=41	14.9	5.7	21.9	57.5	72.4	–6.6
<=45	15.7	4.9	26.2	53.2	68.9	–27.4
<=48	17.2	3.3	30.9	48.6	65.8	–50.1
<=52	18.5	2.1	36.0	43.5	61.9	–74.9
<=55	19.1	1.5	40.4	39.1	58.1	–96.4
<=58	19.2	1.3	45.1	34.4	53.6	–119.3
<=63	19.7	0.8	52.2	27.2	46.9	–154.1
<=65	19.8	0.7	55.1	24.4	44.2	–167.8
<=68	20.3	0.3	59.4	20.1	40.3	–188.8
<=72	20.6	0.0	64.1	15.4	35.9	–211.6
<=76	20.6	0.0	69.3	10.1	30.7	–237.3
<=82	20.6	0.0	74.5	5.0	25.5	–262.2
<=100	20.6	0.0	79.4	0.0	20.6	–286.4

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

Table 11 (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, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	54.0	12.7	1.2:1
<=22	9.8	59.0	28.2	1.4:1
<=26	14.6	57.1	40.6	1.3:1
<=30	19.8	49.8	48.1	1.0:1
<=34	25.1	47.2	57.6	0.9:1
<=38	29.9	43.1	62.5	0.8:1
<=41	36.8	40.4	72.3	0.7:1
<=45	41.9	37.5	76.4	0.6:1
<=48	48.1	35.8	83.7	0.6:1
<=52	54.4	33.9	89.7	0.5:1
<=55	59.4	32.1	92.7	0.5:1
<=58	64.3	29.9	93.5	0.4:1
<=63	72.0	27.4	96.0	0.4:1
<=65	74.9	26.5	96.4	0.4:1
<=68	79.6	25.4	98.6	0.3:1
<=72	84.6	24.3	100.0	0.3:1
<=76	89.9	22.9	100.0	0.3:1
<=82	95.0	21.6	100.0	0.3:1
<=100	100.0	20.6	100.0	0.3:1

Tables for
the 150% of the National Poverty Line

Table 4 (150% of the national line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	97.6
19–22	90.9
23–26	88.9
27–30	87.5
31–34	87.4
35–38	87.3
39–41	85.3
42–45	82.4
46–48	81.6
49–52	73.6
53–55	70.5
56–58	58.2
59–63	54.5
64–65	54.5
66–68	52.4
69–72	31.8
73–76	31.8
77–82	25.7
83–100	9.4

Table 6 (150% of the national line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	–1.1	0.8	0.8	0.9
19–22	+0.8	1.5	1.9	2.4
23–26	–8.4	4.6	4.7	4.8
27–30	+0.2	1.7	2.1	2.8
31–34	–1.3	1.7	2.1	2.7
35–38	–11.4	5.9	6.0	6.0
39–41	–0.7	1.8	2.1	2.7
42–45	–7.0	4.5	4.6	5.0
46–48	+1.7	2.2	2.5	3.4
49–52	+19.0	2.9	3.3	4.4
53–55	–8.9	5.6	5.9	6.3
56–58	–0.3	3.1	3.8	4.8
59–63	–3.2	2.8	3.1	4.0
64–65	–12.4	8.1	8.4	8.8
66–68	+4.2	3.1	3.8	4.8
69–72	–11.1	7.1	7.4	8.0
73–76	+12.5	2.2	2.7	3.5
77–82	–2.1	2.8	3.4	4.4
83–100	+3.4	1.8	2.0	2.8

Table 7 (150% of the national line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.6	74.9	77.8	82.6
4	–0.4	33.4	39.1	50.4
8	–0.2	22.3	27.0	35.6
16	–0.3	15.9	18.9	23.6
32	–0.6	11.2	13.3	17.0
64	–0.8	7.9	9.4	12.1
128	–0.8	5.9	6.8	8.6
256	–0.8	4.1	4.8	6.2
512	–0.8	3.0	3.5	4.4
1,024	–0.9	2.1	2.4	3.1
2,048	–0.8	1.4	1.7	2.3
4,096	–0.9	1.0	1.2	1.7
8,192	–0.8	0.7	0.9	1.2
16,384	–0.9	0.5	0.6	0.8

Table 10 (150% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.7	61.6	0.1	33.6	38.3	–85.6
<=22	9.1	57.2	0.7	33.0	42.1	–71.5
<=26	13.8	52.5	0.8	32.8	46.6	–57.2
<=30	18.2	48.2	1.7	32.0	50.1	–42.7
<=34	22.7	43.6	2.4	31.3	54.1	–27.9
<=38	27.4	39.0	2.5	31.2	58.5	–13.7
<=41	33.4	32.9	3.3	30.3	63.8	+5.9
<=45	38.0	28.3	3.9	29.8	67.8	+20.5
<=48	43.0	23.4	5.1	28.6	71.5	+37.3
<=52	47.0	19.3	7.4	26.3	73.3	+53.0
<=55	50.9	15.5	8.6	25.1	76.0	+66.3
<=58	53.6	12.7	10.7	23.0	76.7	+77.9
<=63	57.8	8.5	14.1	19.5	77.4	+78.7
<=65	59.6	6.8	15.3	18.4	77.9	+76.9
<=68	61.5	4.8	18.1	15.6	77.1	+72.7
<=72	63.8	2.5	20.8	12.9	76.7	+68.6
<=76	65.0	1.4	24.9	8.7	73.7	+62.4
<=82	66.1	0.2	28.9	4.8	70.9	+56.4
<=100	66.3	0.0	33.7	0.0	66.3	+49.2

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

Table 11 (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, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	97.8	7.1	45.1:1
<=22	9.8	93.0	13.8	13.2:1
<=26	14.6	94.2	20.8	16.3:1
<=30	19.8	91.5	27.4	10.7:1
<=34	25.1	90.6	34.3	9.6:1
<=38	29.9	91.6	41.2	11.0:1
<=41	36.8	90.9	50.4	10.0:1
<=45	41.9	90.8	57.4	9.8:1
<=48	48.1	89.3	64.8	8.4:1
<=52	54.4	86.4	70.9	6.4:1
<=55	59.4	85.6	76.7	5.9:1
<=58	64.3	83.4	80.9	5.0:1
<=63	72.0	80.4	87.2	4.1:1
<=65	74.9	79.5	89.8	3.9:1
<=68	79.6	77.3	92.8	3.4:1
<=72	84.6	75.4	96.2	3.1:1
<=76	89.9	72.3	98.0	2.6:1
<=82	95.0	69.6	99.7	2.3:1
<=100	100.0	66.3	100.0	2.0:1

Tables for
the 200% of the National Poverty Line

Table 4 (200% of the national line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	99.9
19–22	95.6
23–26	92.4
27–30	92.4
31–34	92.4
35–38	92.4
39–41	92.4
42–45	92.4
46–48	92.4
49–52	91.8
53–55	89.4
56–58	82.9
59–63	75.9
64–65	75.9
66–68	75.9
69–72	52.7
73–76	50.9
77–82	48.7
83–100	24.6

Table 6 (200% of the national line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+1.2	0.5	0.6	0.8
19–22	–4.4	2.2	2.2	2.2
23–26	–7.6	3.8	3.8	3.8
27–30	+0.1	1.4	1.7	2.3
31–34	–4.7	2.8	2.9	3.0
35–38	–6.4	3.4	3.5	3.5
39–41	–0.2	1.4	1.7	2.2
42–45	–5.9	3.2	3.3	3.4
46–48	+5.3	1.9	2.2	2.9
49–52	+24.7	3.0	3.5	4.5
53–55	–5.2	3.2	3.3	3.5
56–58	–3.4	2.6	2.7	3.0
59–63	+6.8	2.4	2.9	3.8
64–65	–4.7	3.8	4.0	4.7
66–68	–1.4	2.5	2.9	3.6
69–72	–9.9	6.5	6.7	7.2
73–76	+13.4	2.8	3.3	4.5
77–82	–1.4	3.0	3.5	4.5
83–100	–5.1	4.0	4.3	4.7

Table 7 (200% of the national line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.3	66.0	71.8	83.9
4	+0.6	28.5	34.7	47.4
8	+0.7	19.8	24.2	30.1
16	+0.4	13.9	16.8	21.4
32	+0.2	9.7	11.5	15.5
64	+0.2	6.7	7.9	11.0
128	+0.2	5.1	6.1	7.5
256	+0.1	3.6	4.3	5.6
512	+0.1	2.5	2.9	3.9
1,024	+0.1	1.8	2.2	2.7
2,048	+0.1	1.2	1.5	1.9
4,096	+0.1	0.9	1.1	1.4
8,192	+0.1	0.7	0.8	1.0
16,384	+0.1	0.5	0.5	0.7

Table 10 (200% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.7	74.7	0.1	20.5	25.2	–88.0
<=22	9.7	69.7	0.1	20.5	30.2	–75.4
<=26	14.5	64.9	0.1	20.5	35.0	–63.3
<=30	19.3	60.1	0.6	20.0	39.3	–50.7
<=34	24.3	55.1	0.8	19.8	44.2	–37.7
<=38	29.0	50.4	0.9	19.7	48.7	–25.9
<=41	35.5	43.9	1.3	19.3	54.8	–9.0
<=45	40.5	39.0	1.4	19.1	59.6	+3.7
<=48	45.9	33.5	2.2	18.4	64.3	+18.4
<=52	50.9	28.5	3.5	17.1	68.0	+32.6
<=55	55.5	23.9	3.9	16.7	72.2	+44.8
<=58	59.5	19.9	4.8	15.8	75.3	+55.9
<=63	64.8	14.6	7.2	13.4	78.2	+72.2
<=65	67.0	12.4	7.9	12.7	79.7	+78.7
<=68	70.4	9.0	9.2	11.4	81.8	+88.4
<=72	73.6	5.8	11.0	9.6	83.2	+86.1
<=76	75.9	3.5	14.0	6.6	82.5	+82.4
<=82	78.3	1.2	16.8	3.8	82.1	+78.9
<=100	79.4	0.0	20.6	0.0	79.4	+74.1

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

Table 11 (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, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	97.8	6.0	45.1:1
<=22	9.8	98.9	12.2	92.5:1
<=26	14.6	99.3	18.3	138.4:1
<=30	19.8	97.2	24.3	35.1:1
<=34	25.1	97.0	30.7	32.3:1
<=38	29.9	97.1	36.5	33.9:1
<=41	36.8	96.5	44.7	27.2:1
<=45	41.9	96.5	50.9	28.0:1
<=48	48.1	95.5	57.8	21.2:1
<=52	54.4	93.5	64.1	14.5:1
<=55	59.4	93.4	69.9	14.2:1
<=58	64.3	92.5	74.9	12.4:1
<=63	72.0	90.0	81.6	9.0:1
<=65	74.9	89.5	84.4	8.5:1
<=68	79.6	88.4	88.7	7.6:1
<=72	84.6	87.0	92.7	6.7:1
<=76	89.9	84.4	95.6	5.4:1
<=82	95.0	82.3	98.5	4.7:1
<=100	100.0	79.4	100.0	3.9:1

Tables for
the $1.25/day 2005 PPP Poverty Line

Table 4 ($1.25/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	87.4
19–22	77.9
23–26	75.1
27–30	64.9
31–34	55.3
35–38	52.4
39–41	50.2
42–45	46.8
46–48	35.5
49–52	30.5
53–55	26.0
56–58	15.8
59–63	15.8
64–65	15.8
66–68	11.0
69–72	7.1
73–76	4.9
77–82	2.8
83–100	1.1

Table 6 ($1.25/day 2005 PPP): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+5.6	2.3	2.7	4.0
19–22	–8.2	5.0	5.1	5.5
23–26	–8.4	5.3	5.4	5.7
27–30	+14.4	3.0	3.7	4.6
31–34	–3.6	3.2	3.5	4.2
35–38	–23.2	12.8	13.1	13.5
39–41	+12.2	2.5	2.9	3.7
42–45	+11.3	2.8	3.5	4.5
46–48	+1.7	2.6	3.2	4.0
49–52	+5.4	2.3	2.7	3.6
53–55	–3.6	3.2	3.5	4.5
56–58	+6.0	2.0	2.4	3.1
59–63	–2.4	2.0	2.2	2.5
64–65	+5.0	2.4	2.9	3.7
66–68	–10.0	6.3	6.6	7.1
69–72	–7.6	5.0	5.2	5.6
73–76	+4.9	0.0	0.0	0.0
77–82	+2.8	0.0	0.0	0.0
83–100	+1.1	0.0	0.0	0.0

Table 7 ($1.25/day 2005 PPP): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.5	67.2	79.7	88.2
4	–0.6	35.8	42.5	54.9
8	–0.2	25.0	29.7	38.1
16	0.0	18.5	22.9	28.8
32	+0.1	13.3	16.0	19.9
64	+0.2	9.2	10.5	15.2
128	+0.2	6.7	8.1	11.1
256	+0.3	4.8	5.9	7.4
512	+0.3	3.4	4.1	5.4
1,024	+0.3	2.4	2.8	3.7
2,048	+0.3	1.7	2.0	2.6
4,096	+0.3	1.2	1.4	1.9
8,192	+0.4	0.9	1.0	1.3
16,384	+0.4	0.6	0.7	0.9

Table 10 ($1.25/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	3.8	31.8	1.0	63.4	67.2	–75.7
<=22	7.9	27.6	1.9	62.5	70.5	–50.1
<=26	11.8	23.7	2.8	61.6	73.5	–25.6
<=30	14.7	20.9	5.2	59.2	73.9	–3.0
<=34	17.4	18.2	7.7	56.7	74.1	+19.4
<=38	20.8	14.8	9.1	55.3	76.1	+42.2
<=41	24.0	11.6	12.8	51.6	75.6	+64.0
<=45	26.1	9.5	15.9	48.6	74.6	+55.5
<=48	28.5	7.1	19.6	44.8	73.3	+45.0
<=52	30.3	5.3	24.1	40.3	70.6	+32.2
<=55	31.8	3.7	27.6	36.8	68.7	+22.4
<=58	32.3	3.3	32.0	32.4	64.7	+10.0
<=63	33.8	1.8	38.2	26.2	60.1	–7.3
<=65	34.2	1.4	40.7	23.7	57.8	–14.5
<=68	34.9	0.6	44.7	19.7	54.7	–25.6
<=72	35.6	0.0	49.0	15.4	51.0	–37.8
<=76	35.6	0.0	54.3	10.1	45.7	–52.7
<=82	35.6	0.0	59.5	5.0	40.5	–67.1
<=100	35.6	0.0	64.4	0.0	35.6	–81.0

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

Table 11 ($1.25/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	78.8	10.7	3.7:1
<=22	9.8	80.9	22.3	4.2:1
<=26	14.6	81.0	33.3	4.3:1
<=30	19.8	73.9	41.2	2.8:1
<=34	25.1	69.3	48.9	2.3:1
<=38	29.9	69.5	58.3	2.3:1
<=41	36.8	65.1	67.3	1.9:1
<=45	41.9	62.2	73.2	1.6:1
<=48	48.1	59.3	80.1	1.5:1
<=52	54.4	55.7	85.1	1.3:1
<=55	59.4	53.6	89.5	1.2:1
<=58	64.3	50.2	90.7	1.0:1
<=63	72.0	47.0	95.0	0.9:1
<=65	74.9	45.6	96.0	0.8:1
<=68	79.6	43.9	98.2	0.8:1
<=72	84.6	42.0	100.0	0.7:1
<=76	89.9	39.6	100.0	0.7:1
<=82	95.0	37.4	100.0	0.6:1
<=100	100.0	35.6	100.0	0.6:1

Tables for
the $2.00/day 2005 PPP Poverty Line

Table 4 ($2.00/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	96.0
19–22	90.1
23–26	87.6
27–30	87.3
31–34	85.0
35–38	83.8
39–41	78.2
42–45	75.4
46–48	74.6
49–52	65.8
53–55	59.5
56–58	48.4
59–63	44.9
64–65	44.9
66–68	42.1
69–72	22.9
73–76	22.5
77–82	18.2
83–100	2.3

Table 6 ($2.00/day 2005 PPP): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	–2.7	1.6	1.6	1.7
19–22	–0.1	1.5	1.9	2.4
23–26	–5.2	3.3	3.4	3.6
27–30	+3.6	2.0	2.4	3.4
31–34	–6.2	3.8	4.0	4.2
35–38	–12.4	6.6	6.7	6.9
39–41	–7.8	4.8	4.9	5.2
42–45	–5.8	4.1	4.3	4.7
46–48	+1.3	2.3	2.8	3.7
49–52	+24.3	2.8	3.4	4.4
53–55	–1.9	3.0	3.6	4.8
56–58	–3.3	3.2	3.9	5.2
59–63	–4.1	3.3	3.5	4.2
64–65	+16.5	3.5	4.2	5.2
66–68	+6.9	3.2	3.7	4.8
69–72	–9.9	6.3	6.6	7.2
73–76	+14.7	1.4	1.7	2.3
77–82	+4.4	2.0	2.5	3.1
83–100	–3.7	2.8	2.9	3.4

Table 7 ($2.00/day 2005 PPP): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–1.4	66.7	81.6	86.0
4	–0.4	34.4	41.3	52.6
8	–0.1	23.6	27.8	35.0
16	0.0	16.4	19.4	24.6
32	–0.4	11.2	13.6	18.3
64	–0.3	8.3	10.0	12.5
128	–0.4	5.8	7.0	8.9
256	–0.3	4.0	4.7	6.3
512	–0.2	2.9	3.5	4.3
1,024	–0.3	2.1	2.5	3.2
2,048	–0.2	1.4	1.7	2.3
4,096	–0.3	1.1	1.3	1.8
8,192	–0.2	0.8	0.9	1.2
16,384	–0.3	0.5	0.6	0.8

Table 10 ($2.00/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.7	54.7	0.1	40.5	45.2	–83.9
<=22	9.1	50.3	0.7	39.9	49.0	–68.1
<=26	13.5	45.9	1.1	39.5	53.0	–52.7
<=30	17.7	41.7	2.2	38.4	56.1	–36.8
<=34	22.3	37.1	2.8	37.8	60.1	–20.2
<=38	26.8	32.6	3.1	37.5	64.3	–4.7
<=41	32.9	26.5	3.9	36.7	69.6	+17.2
<=45	37.1	22.3	4.8	35.8	72.9	+33.0
<=48	41.6	17.9	6.5	34.1	75.6	+50.9
<=52	44.8	14.6	9.6	31.0	75.8	+67.0
<=55	47.9	11.6	11.6	29.0	76.9	+80.5
<=58	50.3	9.1	14.0	26.5	76.8	+76.4
<=63	53.9	5.5	18.0	22.5	76.5	+69.6
<=65	54.8	4.6	20.1	20.5	75.3	+66.2
<=68	56.3	3.1	23.3	17.2	73.5	+60.7
<=72	58.1	1.4	26.6	14.0	72.1	+55.3
<=76	58.6	0.8	31.3	9.3	67.8	+47.3
<=82	59.3	0.2	35.8	4.8	64.0	+39.8
<=100	59.4	0.0	40.6	0.0	59.4	+31.7

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

Table 11 ($2.00/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	97.8	8.0	45.1:1
<=22	9.8	93.0	15.3	13.2:1
<=26	14.6	92.3	22.7	12.0:1
<=30	19.8	89.2	29.8	8.2:1
<=34	25.1	88.9	37.5	8.0:1
<=38	29.9	89.8	45.1	8.8:1
<=41	36.8	89.4	55.3	8.4:1
<=45	41.9	88.6	62.5	7.7:1
<=48	48.1	86.5	70.0	6.4:1
<=52	54.4	82.3	75.4	4.7:1
<=55	59.4	80.5	80.5	4.1:1
<=58	64.3	78.2	84.6	3.6:1
<=63	72.0	74.9	90.8	3.0:1
<=65	74.9	73.2	92.2	2.7:1
<=68	79.6	70.7	94.7	2.4:1
<=72	84.6	68.6	97.7	2.2:1
<=76	89.9	65.2	98.6	1.9:1
<=82	95.0	62.3	99.7	1.7:1
<=100	100.0	59.4	100.0	1.5:1

Tables for
the $2.50/day 2005 PPP Poverty Line

Table 4 ($2.50/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	99.2
19–22	92.8
23–26	89.8
27–30	89.8
31–34	89.8
35–38	89.2
39–41	88.3
42–45	86.4
46–48	86.1
49–52	82.3
53–55	77.2
56–58	66.7
59–63	62.0
64–65	62.0
66–68	62.0
69–72	36.9
73–76	35.9
77–82	32.4
83–100	8.4

Table 6 ($2.50/day 2005 PPP): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+0.6	0.5	0.6	0.8
19–22	–0.4	1.3	1.6	2.2
23–26	–10.2	5.1	5.1	5.1
27–30	–1.6	1.5	1.7	2.4
31–34	–5.2	3.1	3.3	3.5
35–38	–9.5	5.0	5.0	5.1
39–41	+0.7	1.8	2.0	2.8
42–45	–10.9	5.8	5.8	6.0
46–48	+2.8	2.1	2.5	3.2
49–52	+24.9	2.9	3.4	4.4
53–55	–12.4	7.0	7.2	7.5
56–58	–14.2	8.2	8.4	8.8
59–63	+1.3	2.5	3.0	4.0
64–65	–5.1	4.4	4.9	5.9
66–68	+5.6	3.1	3.6	4.6
69–72	–14.3	8.6	9.0	9.5
73–76	+23.8	1.7	2.1	2.9
77–82	+5.7	2.7	3.2	3.9
83–100	–0.7	2.0	2.4	3.1

Table 7 ($2.50/day 2005 PPP): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.2	72.7	76.2	86.2
4	–0.6	30.8	37.4	48.7
8	0.0	21.4	24.9	32.8
16	0.0	15.0	17.4	21.9
32	–0.4	10.5	12.7	15.9
64	–0.4	7.4	8.8	11.3
128	–0.6	5.4	6.3	8.1
256	–0.6	3.8	4.5	5.7
512	–0.6	2.8	3.2	4.3
1,024	–0.6	1.9	2.1	2.8
2,048	–0.6	1.3	1.6	2.0
4,096	–0.6	1.0	1.2	1.5
8,192	–0.6	0.7	0.8	1.0
16,384	–0.6	0.5	0.6	0.8

Table 10 ($2.50/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.7	65.9	0.1	29.3	34.0	–86.4
<=22	9.3	61.3	0.5	28.9	38.1	–73.0
<=26	14.1	56.5	0.5	28.9	43.0	–59.3
<=30	18.8	51.8	1.1	28.3	47.1	–45.3
<=34	23.7	46.9	1.4	28.0	51.7	–30.9
<=38	28.3	42.3	1.5	27.9	56.2	–17.6
<=41	34.6	36.0	2.2	27.2	61.8	+1.1
<=45	39.5	31.2	2.5	26.9	66.4	+15.2
<=48	44.7	25.9	3.4	26.0	70.7	+31.4
<=52	49.0	21.7	5.5	23.9	72.9	+46.4
<=55	53.3	17.3	6.2	23.2	76.5	+59.6
<=58	56.9	13.7	7.4	22.0	78.9	+71.7
<=63	61.4	9.2	10.6	18.8	80.2	+85.0
<=65	63.3	7.4	11.6	17.8	81.0	+83.5
<=68	65.7	4.9	14.0	15.4	81.1	+80.2
<=72	68.3	2.3	16.3	13.1	81.3	+76.9
<=76	69.1	1.5	20.8	8.6	77.7	+70.5
<=82	70.3	0.3	24.7	4.7	75.0	+65.0
<=100	70.6	0.0	29.4	0.0	70.6	+58.4

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

Table 11 ($2.50/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	97.8	6.7	45.1:1
<=22	9.8	94.6	13.1	17.6:1
<=26	14.6	96.4	20.0	26.7:1
<=30	19.8	94.6	26.6	17.7:1
<=34	25.1	94.4	33.6	16.9:1
<=38	29.9	95.0	40.1	18.8:1
<=41	36.8	94.0	49.0	15.7:1
<=45	41.9	94.1	55.9	16.1:1
<=48	48.1	92.9	63.3	13.2:1
<=52	54.4	90.0	69.3	9.0:1
<=55	59.4	89.6	75.5	8.7:1
<=58	64.3	88.5	80.6	7.7:1
<=63	72.0	85.3	86.9	5.8:1
<=65	74.9	84.5	89.6	5.4:1
<=68	79.6	82.5	93.0	4.7:1
<=72	84.6	80.7	96.7	4.2:1
<=76	89.9	76.8	97.9	3.3:1
<=82	95.0	74.0	99.6	2.8:1
<=100	100.0	70.6	100.0	2.4:1

Tables for
the $5.00/day 2005 PPP Poverty Line

Table 4 ($5.00/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	99.9
19–22	99.9
23–26	99.9
27–30	99.1
31–34	98.8
35–38	98.6
39–41	98.6
42–45	98.6
46–48	98.6
49–52	98.6
53–55	95.7
56–58	92.9
59–63	92.7
64–65	92.6
66–68	92.6
69–72	82.5
73–76	81.5
77–82	78.3
83–100	52.7

Table 6 ($5.00/day 2005 PPP): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	–0.1	0.0	0.0	0.0
19–22	–0.1	0.0	0.0	0.0
23–26	–0.1	0.0	0.0	0.0
27–30	–0.9	0.5	0.5	0.5
31–34	–1.2	0.6	0.6	0.6
35–38	–1.4	0.7	0.7	0.7
39–41	–1.4	0.7	0.7	0.7
42–45	–0.1	0.6	0.7	0.9
46–48	+1.8	0.9	1.1	1.4
49–52	–1.4	0.7	0.7	0.7
53–55	–4.3	2.1	2.1	2.1
56–58	–3.6	2.3	2.3	2.5
59–63	+6.4	1.9	2.3	3.2
64–65	–4.2	2.6	2.7	2.9
66–68	–1.1	1.3	1.6	2.2
69–72	+1.7	2.5	2.9	4.0
73–76	–8.5	5.1	5.1	5.5
77–82	+4.3	2.5	2.9	4.0
83–100	–0.6	3.0	3.5	4.7

Table 7 ($5.00/day 2005 PPP): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.2	50.0	58.5	70.0
4	–0.3	16.7	23.8	34.6
8	–0.3	11.0	12.8	19.4
16	–0.5	7.6	9.1	12.8
32	–0.6	5.7	6.7	8.8
64	–0.6	3.8	4.7	6.1
128	–0.6	2.7	3.3	4.3
256	–0.6	1.9	2.2	3.0
512	–0.6	1.3	1.7	2.1
1,024	–0.6	0.9	1.1	1.5
2,048	–0.6	0.6	0.7	0.9
4,096	–0.6	0.5	0.6	0.7
8,192	–0.6	0.3	0.4	0.6
16,384	–0.6	0.2	0.3	0.4

Table 10 ($5.00/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.8	87.6	0.0	7.6	12.4	–89.5
<=22	9.8	82.6	0.0	7.6	17.4	–78.8
<=26	14.6	77.8	0.0	7.6	22.2	–68.3
<=30	19.8	72.6	0.0	7.6	27.4	–57.1
<=34	25.1	67.3	0.0	7.6	32.7	–45.7
<=38	29.9	62.6	0.0	7.6	37.4	–35.4
<=41	36.8	55.7	0.0	7.6	44.3	–20.4
<=45	41.8	50.6	0.1	7.5	49.3	–9.4
<=48	47.8	44.7	0.3	7.3	55.0	+3.7
<=52	54.1	38.3	0.3	7.3	61.4	+17.4
<=55	59.1	33.3	0.3	7.3	66.4	+28.3
<=58	63.8	28.7	0.5	7.0	70.8	+38.6
<=63	70.6	21.8	1.4	6.2	76.8	+54.2
<=65	73.3	19.1	1.6	6.0	79.4	+60.4
<=68	77.7	14.7	1.9	5.6	83.4	+70.2
<=72	81.9	10.6	2.8	4.8	86.7	+80.1
<=76	86.5	5.9	3.4	4.2	90.7	+90.9
<=82	90.1	2.3	4.9	2.7	92.8	+94.7
<=100	92.4	0.0	7.6	0.0	92.4	+91.8

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

Table 11 ($5.00/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	100.0	5.2	Only poor targeted
<=22	9.8	100.0	10.6	Poor
<=26	14.6	100.0	15.8	Non-poor
<=30	19.8	100.0	21.5	Togo
<=34	25.1	100.0	27.2	0.0
<=38	29.9	100.0	32.3	0.0
<=41	36.8	100.0	39.8	0.0
<=45	41.9	99.8	45.2	463.1:1
<=48	48.1	99.4	51.7	154.3:1
<=52	54.4	99.4	58.5	174.8:1
<=55	59.4	99.5	64.0	191.0:1
<=58	64.3	99.1	69.0	116.4:1
<=63	72.0	98.1	76.4	50.9:1
<=65	74.9	97.9	79.3	47.3:1
<=68	79.6	97.6	84.1	40.4:1
<=72	84.6	96.7	88.6	29.8:1
<=76	89.9	96.2	93.6	25.5:1
<=82	95.0	94.9	97.5	18.4:1
<=100	100.0	92.4	100.0	12.2:1

Tables for
the $1.90/day 2011 PPP Poverty Line

Table 4 ($1.90/day 2011 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	87.4
19–22	78.5
23–26	76.1
27–30	64.9
31–34	55.3
35–38	53.2
39–41	51.7
42–45	47.1
46–48	35.5
49–52	31.6
53–55	27.6
56–58	17.8
59–63	17.8
64–65	17.8
66–68	11.7
69–72	8.0
73–76	5.0
77–82	3.5
83–100	1.4

Table 6 ($1.90/day 2011 PPP): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+5.6	2.3	2.7	4.0
19–22	–7.7	4.7	4.8	5.2
23–26	–7.4	4.8	4.9	5.3
27–30	+11.0	3.1	3.7	4.7
31–34	–3.6	3.2	3.5	4.2
35–38	–23.5	13.0	13.2	13.7
39–41	+3.1	2.7	3.1	3.8
42–45	+10.3	2.9	3.6	4.5
46–48	+0.3	2.6	3.1	4.3
49–52	+6.6	2.3	2.7	3.6
53–55	–6.1	4.5	4.8	5.4
56–58	+8.0	2.0	2.4	3.1
59–63	–2.0	1.9	2.1	2.8
64–65	+7.0	2.4	2.9	3.7
66–68	–9.4	6.0	6.3	6.7
69–72	–6.6	4.5	4.7	5.1
73–76	+5.0	0.0	0.0	0.0
77–82	+1.2	0.9	1.0	1.3
83–100	+1.4	0.0	0.0	0.0

Table 7 ($1.90/day 2011 PPP): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–1.2	68.7	79.2	89.7
4	–1.3	36.3	42.4	55.2
8	–1.1	25.8	30.3	37.8
16	–0.7	18.7	23.0	29.3
32	–0.8	13.1	15.9	20.7
64	–0.7	9.4	11.0	14.9
128	–0.7	6.8	8.2	10.9
256	–0.6	4.7	5.6	7.6
512	–0.7	3.5	4.0	5.6
1,024	–0.7	2.5	2.8	3.9
2,048	–0.7	1.7	2.1	2.6
4,096	–0.6	1.2	1.5	1.9
8,192	–0.6	0.9	1.0	1.3
16,384	–0.6	0.6	0.7	0.9

Table 10 ($1.90/day 2011 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	3.8	33.1	1.0	62.1	65.9	–76.6
<=22	7.9	29.0	1.9	61.2	69.2	–51.9
<=26	11.8	25.1	2.8	60.3	72.2	–28.3
<=30	14.8	22.1	5.0	58.1	72.9	–6.0
<=34	17.6	19.3	7.5	55.6	73.1	+15.6
<=38	21.1	15.8	8.8	54.3	75.4	+38.0
<=41	24.6	12.3	12.2	50.9	75.6	+66.4
<=45	26.8	10.1	15.1	48.0	74.8	+59.1
<=48	29.4	7.5	18.6	44.5	73.9	+49.5
<=52	31.2	5.7	23.2	39.9	71.1	+37.1
<=55	32.9	4.0	26.5	36.6	69.5	+28.2
<=58	33.4	3.5	30.9	32.2	65.6	+16.2
<=63	35.0	1.9	37.0	26.1	61.2	–0.1
<=65	35.4	1.5	39.5	23.6	58.9	–7.1
<=68	36.2	0.7	43.5	19.6	55.8	–17.8
<=72	36.8	0.1	47.8	15.3	52.1	–29.6
<=76	36.8	0.1	53.1	10.0	46.8	–43.9
<=82	36.9	0.0	58.1	5.0	41.9	–57.5
<=100	36.9	0.0	63.1	0.0	36.9	–71.0

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

Table 11 ($1.90/day 2011 PPP): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	78.8	10.3	3.7:1
<=22	9.8	80.9	21.5	4.2:1
<=26	14.6	81.0	32.1	4.3:1
<=30	19.8	74.7	40.2	3.0:1
<=34	25.1	69.9	47.6	2.3:1
<=38	29.9	70.6	57.1	2.4:1
<=41	36.8	66.9	66.7	2.0:1
<=45	41.9	64.0	72.7	1.8:1
<=48	48.1	61.2	79.8	1.6:1
<=52	54.4	57.4	84.6	1.3:1
<=55	59.4	55.4	89.2	1.2:1
<=58	64.3	51.9	90.5	1.1:1
<=63	72.0	48.7	94.9	0.9:1
<=65	74.9	47.2	95.8	0.9:1
<=68	79.6	45.4	98.0	0.8:1
<=72	84.6	43.5	99.7	0.8:1
<=76	89.9	40.9	99.7	0.7:1
<=82	95.0	38.8	100.0	0.6:1
<=100	100.0	36.9	100.0	0.6:1

Tables for
the $3.20/day 2011 PPP Poverty Line

Table 4 ($3.20/day 2011 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	97.6
19–22	90.9
23–26	88.9
27–30	87.3
31–34	85.6
35–38	84.7
39–41	84.4
42–45	79.4
46–48	78.1
49–52	68.5
53–55	64.8
56–58	53.0
59–63	49.0
64–65	49.0
66–68	46.6
69–72	29.2
73–76	28.5
77–82	24.3
83–100	3.6

Table 6 ($3.20/day 2011 PPP): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	–1.1	0.8	0.8	0.9
19–22	+0.8	1.5	1.9	2.4
23–26	–8.9	4.8	4.9	5.0
27–30	–0.9	1.7	2.0	2.8
31–34	–6.5	3.9	4.1	4.3
35–38	–11.6	6.2	6.3	6.5
39–41	–3.3	2.5	2.6	3.0
42–45	–17.0	8.9	8.9	9.1
46–48	+1.9	2.3	2.7	3.6
49–52	+17.1	2.8	3.4	4.3
53–55	–4.7	3.8	4.1	4.7
56–58	+0.4	3.1	3.8	5.3
59–63	–1.2	2.7	3.0	4.0
64–65	+15.9	3.6	4.4	5.5
66–68	–1.6	3.1	3.8	4.8
69–72	–8.8	5.8	6.2	6.7
73–76	+20.8	1.4	1.7	2.3
77–82	+2.8	2.6	3.0	4.0
83–100	–5.5	3.8	4.0	4.3

Table 7 ($3.20/day 2011 PPP): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.7	74.4	78.2	88.5
4	–0.7	33.2	39.2	51.8
8	–0.5	22.2	26.7	34.2
16	–0.7	15.7	18.3	23.1
32	–1.1	10.7	13.0	16.2
64	–1.2	7.6	8.8	12.5
128	–1.3	5.3	6.5	8.3
256	–1.2	3.9	4.6	6.1
512	–1.2	2.8	3.3	4.3
1,024	–1.2	2.0	2.3	3.2
2,048	–1.2	1.4	1.7	2.2
4,096	–1.2	1.0	1.2	1.6
8,192	–1.2	0.7	0.9	1.1
16,384	–1.2	0.5	0.6	0.8

Table 10 ($3.20/day 2011 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.7	58.7	0.1	36.5	41.2	–84.9
<=22	9.1	54.3	0.7	35.9	45.0	–70.2
<=26	13.8	49.6	0.8	35.8	49.6	–55.2
<=30	18.3	45.2	1.6	35.0	53.3	–39.9
<=34	23.0	40.4	2.1	34.5	57.4	–24.2
<=38	27.4	36.0	2.4	34.2	61.6	–9.6
<=41	33.7	29.7	3.1	33.5	67.2	+11.1
<=45	38.5	24.9	3.4	33.2	71.6	+26.8
<=48	43.2	20.2	4.9	31.7	74.9	+43.9
<=52	46.9	16.5	7.5	29.1	76.0	+59.8
<=55	50.3	13.1	9.2	27.4	77.7	+73.0
<=58	52.8	10.6	11.5	25.1	77.8	+81.8
<=63	56.6	6.8	15.4	21.2	77.8	+75.7
<=65	57.6	5.8	17.3	19.3	76.9	+72.8
<=68	59.6	3.8	20.1	16.5	76.1	+68.4
<=72	61.7	1.7	23.0	13.6	75.3	+63.8
<=76	62.2	1.2	27.7	8.9	71.1	+56.3
<=82	63.1	0.3	31.9	4.7	67.8	+49.7
<=100	63.4	0.0	36.6	0.0	63.4	+42.3

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

Table 11 ($3.20/day 2011 PPP): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	97.8	7.5	45.1:1
<=22	9.8	93.0	14.4	13.2:1
<=26	14.6	94.3	21.8	16.7:1
<=30	19.8	92.0	28.8	11.5:1
<=34	25.1	91.5	36.2	10.8:1
<=38	29.9	92.0	43.3	11.4:1
<=41	36.8	91.6	53.1	10.9:1
<=45	41.9	91.8	60.7	11.2:1
<=48	48.1	89.8	68.1	8.8:1
<=52	54.4	86.2	74.0	6.2:1
<=55	59.4	84.6	79.3	5.5:1
<=58	64.3	82.1	83.2	4.6:1
<=63	72.0	78.6	89.2	3.7:1
<=65	74.9	76.9	90.9	3.3:1
<=68	79.6	74.8	94.0	3.0:1
<=72	84.6	72.9	97.3	2.7:1
<=76	89.9	69.2	98.1	2.2:1
<=82	95.0	66.4	99.5	2.0:1
<=100	100.0	63.4	100.0	1.7:1

Tables for
the $5.50/day 2011 PPP Poverty Line

Table 4 ($5.50/day 2011 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	99.9
19–22	99.9
23–26	99.2
27–30	96.1
31–34	96.1
35–38	96.1
39–41	96.1
42–45	96.1
46–48	96.1
49–52	96.1
53–55	92.1
56–58	90.2
59–63	87.8
64–65	87.8
66–68	86.1
69–72	68.7
73–76	65.0
77–82	57.1
83–100	29.9

Table 6 ($5.50/day 2011 PPP): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	–0.1	0.0	0.0	0.0
19–22	–0.1	0.0	0.0	0.0
23–26	–0.8	0.4	0.4	0.4
27–30	–2.2	1.4	1.5	1.5
31–34	–3.9	2.0	2.0	2.0
35–38	–3.9	2.0	2.0	2.0
39–41	+1.0	1.3	1.5	2.0
42–45	–2.6	1.6	1.6	1.7
46–48	+1.6	1.2	1.4	1.8
49–52	0.0	1.0	1.2	1.7
53–55	–6.9	3.6	3.6	3.7
56–58	–4.2	2.6	2.7	2.9
59–63	+13.9	2.3	2.9	3.9
64–65	–4.6	3.2	3.4	3.7
66–68	+9.1	2.7	3.1	3.9
69–72	–7.4	5.0	5.1	5.6
73–76	+12.5	3.2	3.7	4.6
77–82	+2.7	2.9	3.6	4.5
83–100	+1.1	2.9	3.4	4.3

Table 7 ($5.50/day 2011 PPP): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.2	50.9	65.4	83.1
4	+0.6	22.8	29.1	41.1
8	+0.5	15.4	18.4	25.4
16	+0.5	10.6	12.6	15.7
32	+0.2	7.3	8.8	11.5
64	+0.3	5.2	6.1	8.2
128	+0.3	3.7	4.3	5.8
256	+0.3	2.7	3.2	4.2
512	+0.3	1.9	2.3	3.1
1,024	+0.3	1.3	1.6	2.0
2,048	+0.3	1.0	1.1	1.5
4,096	+0.3	0.7	0.8	1.0
8,192	+0.3	0.5	0.6	0.7
16,384	+0.3	0.3	0.4	0.5

Table 10 ($5.50/day 2011 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.8	80.6	0.0	14.6	19.4	–88.7
<=22	9.8	75.6	0.0	14.6	24.4	–77.0
<=26	14.6	70.8	0.0	14.6	29.2	–65.7
<=30	19.7	65.7	0.1	14.5	34.2	–53.7
<=34	25.0	60.4	0.1	14.5	39.5	–41.4
<=38	29.7	55.7	0.1	14.5	44.2	–30.2
<=41	36.4	49.0	0.4	14.2	50.6	–14.3
<=45	41.4	43.9	0.5	14.1	55.6	–2.4
<=48	47.3	38.1	0.8	13.8	61.0	+11.6
<=52	53.4	32.0	1.1	13.5	66.9	+26.2
<=55	58.3	27.1	1.2	13.4	71.7	+37.8
<=58	62.7	22.7	1.6	13.0	75.7	+48.7
<=63	68.5	16.9	3.5	11.1	79.6	+64.5
<=65	71.1	14.3	3.8	10.9	82.0	+71.0
<=68	74.7	10.7	5.0	9.6	84.3	+80.7
<=72	78.5	6.9	6.2	8.4	86.9	+91.0
<=76	81.6	3.8	8.3	6.3	87.9	+90.2
<=82	84.2	1.2	10.9	3.7	87.9	+87.3
<=100	85.4	0.0	14.6	0.0	85.4	+82.9

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

Table 11 ($5.50/day 2011 PPP): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	100.0	5.7	Only poor targeted
<=22	9.8	100.0	11.5	Poor
<=26	14.6	100.0	17.1	Non-poor
<=30	19.8	99.4	23.1	161.2:1
<=34	25.1	99.5	29.3	204.1:1
<=38	29.9	99.6	34.8	242.9:1
<=41	36.8	99.0	42.6	98.5:1
<=45	41.9	98.9	48.5	90.1:1
<=48	48.1	98.3	55.3	57.5:1
<=52	54.4	98.0	62.5	49.9:1
<=55	59.4	98.0	68.2	49.2:1
<=58	64.3	97.5	73.4	38.4:1
<=63	72.0	95.2	80.2	19.7:1
<=65	74.9	95.0	83.3	19.0:1
<=68	79.6	93.8	87.4	15.0:1
<=72	84.6	92.7	91.9	12.7:1
<=76	89.9	90.7	95.5	9.8:1
<=82	95.0	88.6	98.5	7.7:1
<=100	100.0	85.4	100.0	5.8:1

Tables for
the $21.70/day 2011 PPP Poverty Line

Table 4 ($21.70/day 2011 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	100.0
19–22	100.0
23–26	100.0
27–30	100.0
31–34	100.0
35–38	100.0
39–41	100.0
42–45	100.0
46–48	100.0
49–52	100.0
53–55	100.0
56–58	99.6
59–63	99.4
64–65	99.4
66–68	99.4
69–72	99.4
73–76	99.4
77–82	99.0
83–100	98.0

Table 6 ($21.70/day 2011 PPP): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	0.0	0.0	0.0	0.0
19–22	0.0	0.0	0.0	0.0
23–26	0.0	0.0	0.0	0.0
27–30	0.0	0.0	0.0	0.0
31–34	0.0	0.0	0.0	0.0
35–38	0.0	0.0	0.0	0.0
39–41	0.0	0.0	0.0	0.0
42–45	0.0	0.0	0.0	0.0
46–48	0.0	0.0	0.0	0.0
49–52	0.0	0.0	0.0	0.0
53–55	0.0	0.0	0.0	0.0
56–58	–0.4	0.2	0.2	0.2
59–63	–0.6	0.3	0.3	0.3
64–65	–0.6	0.3	0.3	0.3
66–68	–0.6	0.3	0.3	0.3
69–72	–0.6	0.3	0.3	0.3
73–76	0.0	0.3	0.4	0.5
77–82	–1.0	0.5	0.5	0.5
83–100	+1.2	0.9	1.1	1.4

Table 7 ($21.70/day 2011 PPP): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.1	0.5	1.0	1.0
4	–0.1	0.4	0.4	6.1
8	–0.1	0.2	0.3	5.2
16	–0.1	0.2	1.5	2.7
32	–0.1	0.7	1.1	1.5
64	–0.1	0.6	0.7	1.1
128	–0.1	0.3	0.5	0.6
256	–0.1	0.3	0.3	0.4
512	–0.1	0.2	0.2	0.3
1,024	–0.1	0.1	0.2	0.2
2,048	–0.1	0.1	0.1	0.2
4,096	–0.1	0.1	0.1	0.1
8,192	–0.1	0.1	0.1	0.1
16,384	–0.1	0.0	0.0	0.1

Table 10 ($21.70/day 2011 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.8	94.9	0.0	0.3	5.1	–90.3
<=22	9.8	89.9	0.0	0.3	10.1	–80.3
<=26	14.6	85.1	0.0	0.3	14.9	–70.7
<=30	19.8	79.9	0.0	0.3	20.1	–60.2
<=34	25.1	74.6	0.0	0.3	25.4	–49.7
<=38	29.9	69.9	0.0	0.3	30.1	–40.1
<=41	36.8	63.0	0.0	0.3	37.0	–26.2
<=45	41.9	57.8	0.0	0.3	42.2	–16.0
<=48	48.1	51.7	0.0	0.3	48.3	–3.6
<=52	54.4	45.3	0.0	0.3	54.7	+9.1
<=55	59.4	40.3	0.0	0.3	59.7	+19.2
<=58	64.3	35.4	0.0	0.3	64.6	+29.0
<=63	72.0	27.8	0.0	0.3	72.2	+44.3
<=65	74.9	24.8	0.0	0.3	75.2	+50.2
<=68	79.6	20.1	0.0	0.3	79.9	+59.7
<=72	84.6	15.1	0.0	0.3	84.9	+69.7
<=76	89.9	9.9	0.1	0.2	90.1	+80.2
<=82	95.0	4.8	0.1	0.2	95.2	+90.5
<=100	99.7	0.0	0.3	0.0	99.7	+99.7

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

Table 11 ($21.70/day 2011 PPP): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	100.0	4.8	Only poor targeted
<=22	9.8	100.0	9.8	Poor
<=26	14.6	100.0	14.7	Non-poor
<=30	19.8	100.0	19.9	Togo
<=34	25.1	100.0	25.2	0.0
<=38	29.9	100.0	29.9	0.0
<=41	36.8	100.0	36.9	0.0
<=45	41.9	100.0	42.0	0.0
<=48	48.1	100.0	48.2	0.0
<=52	54.4	100.0	54.6	0.0
<=55	59.4	100.0	59.6	0.0
<=58	64.3	100.0	64.5	0.0
<=63	72.0	100.0	72.2	0.0
<=65	74.9	100.0	75.1	0.0
<=68	79.6	100.0	79.9	0.0
<=72	84.6	100.0	84.9	0.0
<=76	89.9	99.9	90.1	1,639.5:1
<=82	95.0	99.9	95.2	1,733.1:1
<=100	100.0	99.7	100.0	380.3:1

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

Table 4 (Line marking the poorest half below 100% of the national line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	75.1
19–22	56.7
23–26	50.0
27–30	44.1
31–34	34.2
35–38	30.7
39–41	29.6
42–45	22.2
46–48	20.0
49–52	12.1
53–55	7.0
56–58	5.2
59–63	5.2
64–65	5.2
66–68	4.4
69–72	4.0
73–76	0.8
77–82	0.4
83–100	0.2

Table 6 (Line marking the poorest half below 100% of the national line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of n = 16,384 from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+10.8	2.9	3.6	4.6
19–22	–16.3	9.4	9.7	10.1
23–26	–11.7	7.3	7.6	8.3
27–30	+13.8	2.6	2.9	4.1
31–34	–15.0	9.0	9.3	9.8
35–38	+8.8	2.4	2.9	3.9
39–41	+7.5	2.1	2.5	3.3
42–45	+5.6	2.3	2.7	3.9
46–48	+2.2	2.1	2.5	3.2
49–52	–4.9	3.5	3.6	4.0
53–55	–0.1	1.4	1.8	2.3
56–58	+5.2	0.0	0.0	0.0
59–63	+2.1	0.7	0.8	1.0
64–65	–1.1	1.9	2.4	3.1
66–68	–2.8	2.2	2.3	2.6
69–72	–2.1	1.7	1.9	2.1
73–76	+0.8	0.0	0.0	0.0
77–82	+0.4	0.0	0.0	0.0
83–100	+0.2	0.0	0.0	0.0

Table 7 (Line marking the poorest half below 100% of the national line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.2	63.9	70.3	85.3
4	+0.6	32.9	39.5	49.4
8	+0.1	23.0	28.0	35.8
16	+0.3	17.3	21.0	28.2
32	+0.2	12.7	16.0	21.5
64	+0.2	8.9	10.4	13.7
128	+0.2	6.2	7.6	9.6
256	+0.3	4.4	5.2	6.7
512	+0.2	3.2	3.8	4.8
1,024	+0.2	2.1	2.6	3.2
2,048	+0.2	1.5	1.8	2.3
4,096	+0.2	1.1	1.3	1.7
8,192	+0.2	0.8	1.0	1.2
16,384	+0.2	0.6	0.7	0.9

Table 10 (Line marking the 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, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	2.8	17.7	2.0	77.4	80.3	–62.6
<=22	6.2	14.4	3.6	75.8	82.0	–22.2
<=26	8.9	11.6	5.7	73.7	82.7	+14.5
<=30	10.7	9.8	9.1	70.3	81.0	+48.7
<=34	12.9	7.7	12.2	67.2	80.1	+40.5
<=38	13.9	6.6	15.9	63.5	77.4	+22.6
<=41	15.7	4.9	21.1	58.3	74.0	–2.7
<=45	16.5	4.0	25.4	54.1	70.6	–23.4
<=48	17.8	2.8	30.3	49.2	67.0	–47.2
<=52	18.9	1.6	35.5	43.9	62.9	–72.6
<=55	19.4	1.2	40.0	39.4	58.8	–94.7
<=58	19.4	1.2	44.9	34.5	53.9	–118.4
<=63	19.7	0.8	52.2	27.2	46.9	–154.0
<=65	19.9	0.6	55.0	24.5	44.4	–167.3
<=68	20.3	0.3	59.4	20.1	40.3	–188.8
<=72	20.6	0.0	64.1	15.4	35.9	–211.5
<=76	20.6	0.0	69.3	10.1	30.7	–237.2
<=82	20.6	0.0	74.5	5.0	25.5	–262.1
<=100	20.6	0.0	79.4	0.0	20.6	–286.2

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

Table 11 (Line marking the 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, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	58.9	13.8	1.4:1
<=22	9.8	63.2	30.1	1.7:1
<=26	14.6	61.0	43.4	1.6:1
<=30	19.8	54.0	52.2	1.2:1
<=34	25.1	51.3	62.6	1.1:1
<=38	29.9	46.7	67.7	0.9:1
<=41	36.8	42.6	76.1	0.7:1
<=45	41.9	39.5	80.4	0.7:1
<=48	48.1	37.0	86.6	0.6:1
<=52	54.4	34.8	92.0	0.5:1
<=55	59.4	32.6	94.3	0.5:1
<=58	64.3	30.1	94.3	0.4:1
<=63	72.0	27.4	95.9	0.4:1
<=65	74.9	26.6	96.9	0.4:1
<=68	79.6	25.4	98.5	0.3:1
<=72	84.6	24.3	100.0	0.3:1
<=76	89.9	22.9	100.0	0.3:1
<=82	95.0	21.6	100.0	0.3:1
<=100	100.0	20.6	100.0	0.3:1

Tables for
the First-Quintile (20^{th}-Percentile) Poverty Line

Table 4 (First-quintile (20th-percentile) line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	64.9
19–22	45.8
23–26	40.8
27–30	26.8
31–34	24.2
35–38	20.0
39–41	15.1
42–45	12.5
46–48	12.0
49–52	8.5
53–55	4.4
56–58	2.8
59–63	2.7
64–65	2.6
66–68	2.6
69–72	2.6
73–76	0.7
77–82	0.4
83–100	0.2

Table 6 (First-quintile (20th-percentile) line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+7.6	3.0	3.7	4.7
19–22	–14.5	8.6	9.0	9.3
23–26	–6.2	4.6	5.1	5.6
27–30	+4.8	2.3	2.8	3.5
31–34	–17.4	10.3	10.5	11.0
35–38	+6.4	2.1	2.6	3.4
39–41	+2.6	1.6	1.9	2.8
42–45	–1.8	2.3	2.7	3.6
46–48	–2.9	2.4	2.6	3.1
49–52	–0.1	1.6	1.9	2.6
53–55	–2.0	1.7	1.9	2.3
56–58	+2.8	0.0	0.0	0.0
59–63	–0.4	0.7	0.8	1.0
64–65	–0.4	1.3	1.5	2.0
66–68	+0.9	0.7	0.9	1.1
69–72	–3.5	2.4	2.6	2.8
73–76	+0.7	0.0	0.0	0.0
77–82	+0.4	0.0	0.0	0.0
83–100	+0.2	0.0	0.0	0.0

Table 7 (First-quintile (20th-percentile) line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.1	58.3	66.7	78.2
4	–0.6	31.8	38.2	45.8
8	–0.9	23.3	26.7	35.9
16	–1.0	16.2	19.8	25.5
32	–1.2	12.5	14.2	19.8
64	–1.2	8.6	10.2	12.7
128	–1.4	5.8	7.0	8.8
256	–1.3	4.3	4.9	6.3
512	–1.4	3.0	3.6	4.8
1,024	–1.4	2.0	2.4	3.1
2,048	–1.4	1.5	1.7	2.3
4,096	–1.4	1.0	1.2	1.6
8,192	–1.4	0.7	0.9	1.1
16,384	–1.4	0.5	0.6	0.8

Table 10 (First-quintile (20th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	2.6	12.7	2.3	82.5	85.1	–51.4
<=22	5.3	9.9	4.5	80.3	85.7	–0.4
<=26	7.2	8.0	7.4	77.4	84.6	+43.7
<=30	8.5	6.8	11.4	73.4	81.9	+25.2
<=34	10.2	5.0	14.9	69.9	80.1	+2.0
<=38	10.8	4.5	19.1	65.7	76.5	–25.5
<=41	11.7	3.5	25.0	59.8	71.5	–64.6
<=45	12.4	2.8	29.5	55.3	67.6	–94.1
<=48	13.5	1.7	34.6	50.2	63.6	–127.5
<=52	14.0	1.2	40.4	44.4	58.4	–165.6
<=55	14.4	0.8	45.1	39.7	54.1	–196.1
<=58	14.4	0.8	49.9	34.9	49.2	–228.2
<=63	14.7	0.5	57.3	27.5	42.3	–276.3
<=65	14.8	0.4	60.1	24.7	39.5	–294.9
<=68	14.9	0.3	64.7	20.1	35.0	–325.5
<=72	15.2	0.0	69.4	15.4	30.6	–356.3
<=76	15.2	0.0	74.7	10.1	25.3	–391.0
<=82	15.2	0.0	79.8	5.0	20.2	–424.7
<=100	15.2	0.0	84.8	0.0	15.2	–457.3

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

Table 11 (First-quintile (20th-percentile) line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	52.9	16.8	1.1:1
<=22	9.8	54.4	35.1	1.2:1
<=26	14.6	49.5	47.6	1.0:1
<=30	19.8	42.6	55.6	0.7:1
<=34	25.1	40.6	67.0	0.7:1
<=38	29.9	36.1	70.7	0.6:1
<=41	36.8	31.9	77.2	0.5:1
<=45	41.9	29.5	81.4	0.4:1
<=48	48.1	28.0	88.5	0.4:1
<=52	54.4	25.7	92.1	0.3:1
<=55	59.4	24.2	94.5	0.3:1
<=58	64.3	22.4	94.5	0.3:1
<=63	72.0	20.5	96.8	0.3:1
<=65	74.9	19.8	97.4	0.2:1
<=68	79.6	18.7	98.0	0.2:1
<=72	84.6	18.0	100.0	0.2:1
<=76	89.9	16.9	100.0	0.2:1
<=82	95.0	16.0	100.0	0.2:1
<=100	100.0	15.2	100.0	0.2:1

Tables for
the Second-Quintile (40th-Percentile) Poverty Line

Table 4 (Second-quintile (40th-percentile) line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	77.2
19–22	69.9
23–26	69.1
27–30	57.8
31–34	53.2
35–38	46.7
39–41	44.8
42–45	37.3
46–48	29.5
49–52	27.7
53–55	23.5
56–58	12.9
59–63	12.9
64–65	12.9
66–68	7.7
69–72	4.7
73–76	3.4
77–82	1.5
83–100	0.7

Table 6 (Second-quintile (40th-percentile) line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	–0.8	2.5	3.1	4.1
19–22	–13.6	7.7	7.9	8.4
23–26	–11.2	6.7	7.0	7.2
27–30	+17.0	2.8	3.4	4.2
31–34	–5.7	4.3	4.5	4.9
35–38	–20.2	11.6	11.9	12.3
39–41	+10.6	2.4	2.8	3.8
42–45	+11.2	2.7	3.3	4.0
46–48	–2.4	2.6	3.2	4.1
49–52	+5.6	2.2	2.6	3.5
53–55	–0.2	2.7	3.3	4.0
56–58	+3.7	2.0	2.3	3.0
59–63	–1.7	1.6	1.9	2.4
64–65	+4.9	2.1	2.6	3.5
66–68	–4.5	3.2	3.4	3.8
69–72	–2.4	1.9	2.1	2.3
73–76	+3.4	0.0	0.0	0.0
77–82	+1.5	0.0	0.0	0.0
83–100	+0.7	0.0	0.0	0.0

Table 7 (Second-quintile (40th-percentile) line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.6	64.2	73.0	84.7
4	–1.3	35.5	42.0	52.9
8	–1.2	24.6	28.6	36.8
16	–0.8	18.1	21.8	26.1
32	–0.7	13.2	15.6	19.8
64	–0.5	9.1	11.0	14.4
128	–0.5	6.6	7.9	10.4
256	–0.4	4.8	5.9	7.4
512	–0.4	3.4	4.1	5.2
1,024	–0.4	2.4	2.7	3.5
2,048	–0.4	1.6	2.0	2.6
4,096	–0.3	1.2	1.4	1.9
8,192	–0.3	0.8	1.0	1.3
16,384	–0.3	0.6	0.7	0.9

Table 10 (Second-quintile (40th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	3.6	27.8	1.2	67.3	71.0	–73.1
<=22	7.6	23.8	2.2	66.3	73.9	–44.6
<=26	11.3	20.1	3.3	65.3	76.6	–17.4
<=30	13.8	17.7	6.1	62.5	76.2	+6.8
<=34	16.5	15.0	8.6	59.9	76.4	+32.2
<=38	19.3	12.2	10.6	58.0	77.2	+56.2
<=41	22.2	9.3	14.6	53.9	76.1	+53.5
<=45	23.6	7.9	18.3	50.2	73.8	+41.7
<=48	25.8	5.7	22.3	46.3	72.1	+29.1
<=52	27.4	4.0	27.0	41.5	69.0	+14.1
<=55	28.6	2.8	30.8	37.7	66.4	+2.0
<=58	29.0	2.5	35.3	33.2	62.2	–12.3
<=63	30.2	1.2	41.7	26.8	57.1	–32.7
<=65	30.5	0.9	44.4	24.2	54.7	–41.1
<=68	31.1	0.4	48.6	20.0	51.1	–54.4
<=72	31.5	0.0	53.2	15.4	46.8	–69.1
<=76	31.5	0.0	58.5	10.1	41.5	–85.9
<=82	31.5	0.0	63.6	5.0	36.4	–102.2
<=100	31.5	0.0	68.5	0.0	31.5	–117.9

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

Table 11 (Second-quintile (40th-percentile) line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	75.1	11.6	3.0:1
<=22	9.8	77.5	24.2	3.4:1
<=26	14.6	77.6	36.1	3.5:1
<=30	19.8	69.3	43.7	2.3:1
<=34	25.1	65.6	52.4	1.9:1
<=38	29.9	64.6	61.3	1.8:1
<=41	36.8	60.3	70.5	1.5:1
<=45	41.9	56.2	74.9	1.3:1
<=48	48.1	53.6	82.0	1.2:1
<=52	54.4	50.4	87.2	1.0:1
<=55	59.4	48.2	91.0	0.9:1
<=58	64.3	45.1	92.2	0.8:1
<=63	72.0	42.0	96.2	0.7:1
<=65	74.9	40.7	97.0	0.7:1
<=68	79.6	39.0	98.8	0.6:1
<=72	84.6	37.2	100.0	0.6:1
<=76	89.9	35.0	100.0	0.5:1
<=82	95.0	33.1	100.0	0.5:1
<=100	100.0	31.5	100.0	0.5:1

Tables for
the Median (50^{th}-Percentile) Poverty Line

Table 4 (Median (50th-percentile) line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	93.9
19–22	83.1
23–26	77.7
27–30	72.1
31–34	57.3
35–38	57.3
39–41	56.0
42–45	50.4
46–48	42.1
49–52	38.2
53–55	33.7
56–58	21.1
59–63	20.6
64–65	20.6
66–68	15.0
69–72	12.4
73–76	6.6
77–82	4.3
83–100	1.4

Table 6 (Median (50^{th}-percentile) line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+5.7	1.8	2.1	2.8
19–22	–3.0	2.4	2.5	2.9
23–26	–8.6	5.3	5.4	5.9
27–30	–3.4	2.9	3.1	3.9
31–34	–8.5	5.6	5.8	6.3
35–38	–27.9	14.9	15.1	15.5
39–41	–6.8	4.6	4.8	5.3
42–45	+13.6	2.9	3.6	4.5
46–48	+4.3	2.6	3.1	4.4
49–52	+9.7	2.5	3.1	4.2
53–55	–0.3	3.0	3.6	4.7
56–58	+7.8	2.2	2.6	3.4
59–63	+0.7	1.8	2.1	2.8
64–65	+8.3	2.6	3.0	4.0
66–68	–6.1	4.4	4.6	5.1
69–72	–2.7	2.6	2.8	3.6
73–76	+4.3	0.9	1.1	1.4
77–82	+2.0	0.9	1.0	1.3
83–100	+1.4	0.0	0.0	0.0

Table 7 (Median (50th-percentile) line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.9	61.8	78.6	93.7
4	–1.6	34.4	41.6	53.7
8	–1.5	24.7	30.5	37.4
16	–1.0	18.7	22.2	29.4
32	–1.3	13.0	15.7	19.4
64	–1.4	9.2	11.0	14.5
128	–1.5	6.4	7.7	10.3
256	–1.4	4.6	5.4	7.1
512	–1.5	3.4	4.0	5.4
1,024	–1.5	2.3	2.7	3.6
2,048	–1.5	1.6	1.9	2.5
4,096	–1.5	1.2	1.3	1.8
8,192	–1.4	0.8	1.0	1.2
16,384	–1.5	0.6	0.7	0.8

Table 10 (Median (50th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.1	36.4	0.7	58.8	62.9	–77.8
<=22	8.3	32.2	1.5	57.9	66.2	–55.4
<=26	12.3	28.2	2.3	57.2	69.5	–33.5
<=30	16.1	24.4	3.8	55.7	71.8	–11.3
<=34	19.2	21.3	5.9	53.6	72.8	+9.4
<=38	23.1	17.4	6.8	52.7	75.8	+30.7
<=41	27.3	13.2	9.5	50.0	77.3	+58.2
<=45	29.5	11.0	12.4	47.1	76.6	+69.4
<=48	32.3	8.2	15.8	43.7	76.0	+61.0
<=52	34.3	6.2	20.1	39.4	73.7	+50.4
<=55	36.1	4.4	23.4	36.1	72.2	+42.3
<=58	36.8	3.7	27.5	31.9	68.7	+32.0
<=63	38.4	2.1	33.6	25.9	64.3	+17.1
<=65	38.8	1.7	36.1	23.4	62.2	+10.9
<=68	39.6	0.9	40.0	19.5	59.1	+1.2
<=72	40.3	0.2	44.3	15.2	55.4	–9.5
<=76	40.4	0.1	49.5	10.0	50.4	–22.2
<=82	40.5	0.0	54.5	5.0	45.5	–34.6
<=100	40.5	0.0	59.5	0.0	40.5	–46.9

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

Table 11 (Median (50th-percentile) line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	85.5	10.2	5.9:1
<=22	9.8	84.2	20.4	5.3:1
<=26	14.6	84.3	30.4	5.4:1
<=30	19.8	81.1	39.7	4.3:1
<=34	25.1	76.6	47.4	3.3:1
<=38	29.9	77.4	57.0	3.4:1
<=41	36.8	74.3	67.4	2.9:1
<=45	41.9	70.4	72.8	2.4:1
<=48	48.1	67.1	79.7	2.0:1
<=52	54.4	63.1	84.7	1.7:1
<=55	59.4	60.7	89.1	1.5:1
<=58	64.3	57.2	90.8	1.3:1
<=63	72.0	53.4	94.8	1.1:1
<=65	74.9	51.8	95.8	1.1:1
<=68	79.6	49.7	97.8	1.0:1
<=72	84.6	47.6	99.5	0.9:1
<=76	89.9	44.9	99.7	0.8:1
<=82	95.0	42.6	100.0	0.7:1
<=100	100.0	40.5	100.0	0.7:1

Tables for
the Third-Quintile (60th-Percentile) Poverty Line

Table 4 (Third-quintile (60th-percentile) line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	95.3
19–22	85.7
23–26	81.5
27–30	80.6
31–34	74.8
35–38	73.9
39–41	69.0
42–45	64.2
46–48	55.8
49–52	50.6
53–55	48.9
56–58	34.0
59–63	31.5
64–65	31.5
66–68	21.3
69–72	16.6
73–76	15.1
77–82	9.9
83–100	1.5

Table 6 (Third-quintile (60th-percentile) line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+0.5	1.2	1.4	1.8
19–22	–4.4	3.0	3.1	3.4
23–26	–4.8	3.4	3.5	3.9
27–30	0.0	2.2	2.5	3.4
31–34	–4.0	3.1	3.3	3.6
35–38	–18.5	9.9	10.1	10.4
39–41	+0.5	2.3	2.8	3.6
42–45	+5.7	3.1	3.6	4.8
46–48	–10.7	6.6	6.9	7.3
49–52	+13.5	2.7	3.3	4.3
53–55	–0.6	2.9	3.6	4.6
56–58	+4.4	2.8	3.4	4.7
59–63	–2.9	2.6	2.7	3.6
64–65	+11.5	3.2	3.7	4.5
66–68	–9.1	6.1	6.4	7.1
69–72	–4.1	3.3	3.5	4.0
73–76	+10.4	1.2	1.4	1.7
77–82	+3.8	1.4	1.6	2.1
83–100	+1.5	0.0	0.0	0.0

Table 7 (Third-quintile (60th-percentile) line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.7	71.4	79.6	87.9
4	–1.3	35.0	41.7	52.9
8	–0.8	24.6	28.6	38.4
16	–0.7	17.8	20.9	27.2
32	–1.1	12.2	14.3	18.7
64	–1.2	8.8	10.3	13.7
128	–1.2	6.3	7.5	10.1
256	–1.1	4.5	5.2	7.2
512	–1.1	3.3	3.8	5.3
1,024	–1.1	2.2	2.7	3.5
2,048	–1.1	1.6	1.9	2.4
4,096	–1.1	1.1	1.3	1.7
8,192	–1.1	0.8	1.0	1.3
16,384	–1.1	0.5	0.7	0.9

Table 10 (Third-quintile (60th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.6	45.5	0.3	49.6	54.2	–81.2
<=22	9.0	41.1	0.9	49.0	58.0	–62.5
<=26	13.0	37.1	1.6	48.3	61.3	–44.7
<=30	17.0	33.1	2.9	47.1	64.1	–26.3
<=34	20.9	29.2	4.3	45.7	66.6	–8.1
<=38	25.2	24.9	4.7	45.2	70.3	+10.0
<=41	30.0	20.1	6.9	43.0	73.0	+33.4
<=45	33.2	16.9	8.6	41.3	74.5	+49.8
<=48	37.2	12.9	10.8	39.1	76.3	+70.1
<=52	40.0	10.1	14.4	35.5	75.5	+71.3
<=55	42.4	7.7	17.0	32.9	75.3	+66.1
<=58	43.9	6.2	20.3	29.6	73.5	+59.4
<=63	46.7	3.4	25.3	24.6	71.3	+49.5
<=65	47.3	2.8	27.6	22.3	69.6	+44.9
<=68	48.5	1.6	31.2	18.8	67.2	+37.8
<=72	49.5	0.6	35.1	14.8	64.3	+29.9
<=76	49.8	0.3	40.1	9.8	59.6	+19.9
<=82	50.1	0.0	44.9	5.0	55.1	+10.3
<=100	50.1	0.0	49.9	0.0	50.1	+0.3

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

Table 11 (Third-quintile (60th-percentile) line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	94.1	9.1	16.0:1
<=22	9.8	91.1	17.9	10.3:1
<=26	14.7	88.9	26.0	8.0:1
<=30	19.9	85.6	34.0	5.9:1
<=34	25.1	83.1	41.7	4.9:1
<=38	29.9	84.1	50.3	5.3:1
<=41	36.8	81.3	59.8	4.4:1
<=45	41.8	79.4	66.3	3.9:1
<=48	48.0	77.5	74.2	3.4:1
<=52	54.3	73.5	79.8	2.8:1
<=55	59.4	71.4	84.6	2.5:1
<=58	64.2	68.4	87.7	2.2:1
<=63	71.9	64.9	93.2	1.8:1
<=65	74.8	63.2	94.4	1.7:1
<=68	79.6	60.9	96.8	1.6:1
<=72	84.6	58.5	98.8	1.4:1
<=76	89.9	55.4	99.4	1.2:1
<=82	95.0	52.7	100.0	1.1:1
<=100	100.0	50.1	100.0	1.0:1

Tables for
the Fourth-Quintile (80th-Percentile) Poverty Line

Table 4 (Fourth-quintile (80th-percentile) line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–18	99.2
19–22	92.7
23–26	89.6
27–30	89.6
31–34	89.6
35–38	89.2
39–41	88.3
42–45	86.4
46–48	86.1
49–52	80.5
53–55	77.2
56–58	66.6
59–63	61.8
64–65	61.8
66–68	61.8
69–72	36.5
73–76	35.8
77–82	32.3
83–100	8.4

Table 6 (Fourth-quintile (80th-percentile) line): Errors in estimates of a household's poverty likelihood (average of differences between estimated and observed values in 1,000 bootstraps of $n = 16{,}384$ from the validation sample) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–18	+0.6	0.5	0.6	0.8
19–22	–0.5	1.3	1.6	2.2
23–26	–10.4	5.2	5.2	5.2
27–30	–1.8	1.6	1.8	2.4
31–34	–5.5	3.3	3.4	3.6
35–38	–9.6	5.0	5.1	5.1
39–41	+0.7	1.8	2.0	2.8
42–45	–10.9	5.8	5.8	6.0
46–48	+2.9	2.1	2.4	3.2
49–52	+23.2	2.9	3.4	4.4
53–55	–12.4	7.0	7.2	7.5
56–58	–11.3	6.8	7.0	7.4
59–63	+1.1	2.5	3.0	4.0
64–65	–2.5	3.8	4.5	6.1
66–68	+5.4	3.1	3.6	4.6
69–72	–14.7	8.8	9.2	9.7
73–76	+23.7	1.7	2.1	2.9
77–82	+5.6	2.7	3.2	3.9
83–100	–0.7	2.0	2.4	3.1

Table 7 (Fourth-quintile (80th-percentile) line): Errors in estimates of households' poverty rates at a point in time (average of differences between estimated and observed values in 1,000 bootstraps of various sample sizes from the validation sample), with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.2	72.0	76.3	86.2
4	–0.6	30.8	37.3	48.5
8	0.0	21.4	24.8	32.5
16	–0.1	14.9	17.4	22.3
32	–0.4	10.4	12.6	16.4
64	–0.5	7.4	8.6	11.1
128	–0.6	5.4	6.3	7.9
256	–0.6	3.8	4.5	5.6
512	–0.6	2.8	3.2	4.4
1,024	–0.7	1.8	2.2	2.8
2,048	–0.6	1.3	1.6	2.0
4,096	–0.6	1.0	1.2	1.5
8,192	–0.6	0.7	0.8	1.0
16,384	–0.6	0.5	0.6	0.7

Table 10 (Fourth-quintile (80th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=18	4.7	65.6	0.1	29.5	34.3	–86.4
<=22	9.3	61.1	0.5	29.1	38.4	–72.8
<=26	14.1	56.2	0.5	29.1	43.2	–59.1
<=30	18.8	51.5	1.1	28.6	47.4	–45.0
<=34	23.7	46.6	1.4	28.2	52.0	–30.5
<=38	28.4	42.0	1.5	28.1	56.5	–17.2
<=41	34.6	35.7	2.2	27.4	62.1	+1.6
<=45	39.5	30.8	2.5	27.2	66.7	+15.8
<=48	44.6	25.7	3.4	26.3	70.9	+31.6
<=52	48.9	21.5	5.5	24.2	73.1	+46.7
<=55	53.2	17.1	6.2	23.5	76.7	+60.0
<=58	56.7	13.6	7.5	22.1	78.8	+72.0
<=63	61.2	9.1	10.7	18.9	80.1	+84.8
<=65	63.0	7.4	11.9	17.8	80.8	+83.1
<=68	65.4	4.9	14.2	15.4	80.9	+79.8
<=72	68.0	2.3	16.6	13.1	81.1	+76.4
<=76	68.8	1.5	21.1	8.6	77.4	+70.1
<=82	70.1	0.3	25.0	4.7	74.7	+64.5
<=100	70.4	0.0	29.6	0.0	70.4	+57.9

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

Table 11 (Fourth-quintile (80th-percentile) line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted, scorecard applied to the 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
<=18	4.8	97.8	6.7	45.1:1
<=22	9.8	94.6	13.2	17.6:1
<=26	14.6	96.4	20.1	26.7:1
<=30	19.9	94.6	26.7	17.7:1
<=34	25.1	94.4	33.7	16.9:1
<=38	29.9	95.0	40.3	18.8:1
<=41	36.8	94.0	49.2	15.7:1
<=45	42.0	94.1	56.2	16.1:1
<=48	48.0	92.9	63.4	13.1:1
<=52	54.4	89.9	69.5	8.9:1
<=55	59.4	89.6	75.6	8.6:1
<=58	64.3	88.3	80.6	7.5:1
<=63	71.9	85.1	87.0	5.7:1
<=65	74.9	84.1	89.5	5.3:1
<=68	79.6	82.2	93.0	4.6:1
<=72	84.6	80.4	96.7	4.1:1
<=76	89.9	76.6	97.8	3.3:1
<=82	95.0	73.7	99.6	2.8:1
<=100	100.0	70.4	100.0	2.4:1