Simple Poverty Scorecard® Poverty-Assessment Tool Benin

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Abstract

The Simple Poverty Scorecard®-brand poverty-assessment tool for Benin uses 10 low-cost indicators from the 2015 Household Living Standards Survey to estimate the likelihood that a household has consumption below a given poverty line. Field workers can collect responses in about ten minutes. Accuracy is reported for a range of poverty lines. Pro-poor programs in Benin can use the scorecard to estimate poverty rates, to track changes in poverty rates over time, and to segment clients for differentiated treatment.

Version note

This paper uses 2015 data, replacing Schreiner (2012a), which uses 2010 data. The new 2015 scorecard should be used from now on. Legacy users are warned *not* to estimate changes in poverty rates with a baseline from the old 2010 scorecard and a follow-up from the new 2015 scorecard because the relationship between the old 2010 scorecard's indicators and poverty changed a lot between 2010 and 2015.

Acknowledgements

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Simple Poverty Scorecard® Poverty-Assessment Tool

Interview ID:	_____		**Name**	**Identifier**
Interview date:	_____	Participant:	_____	_____
Country:	BEN	Field agent:	_____	_____
Scorecard:	002	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	4	
		C. Five	7	
		D. Four	11	
		E. Three	18	
		F. Two	27	
		G. One	40	
2. How many household members 6-years-old or older worked at least one hour in the past week?		A. None	0	
		B. One	4	
		C. Two or more	8	
3. Main construction material of the floor? (*Observe and record*)	A. Dirt/sand, dung, palm stems/bamboo, planks, sanded wood, vinyl/linoleum, or other		0	
	B. Ciment, moquette, or carrelage		5	
4. Main construction material of the outer walls? (*Observe and record*)	A. Earth, wattle and daub, bamboo/cane/palm stems/logs, second-hand wood, plywood, cardboard, or no walls		0	
	B. Cement, bricks, stones with lime/cement, cinder blocks, adobe (with or without cement veneer), wooden shakes/shingles, stones with mud, or other		2	
5. What is the household's main cooking fuel?	A. Wood, straw/sticks/brush, crop residue, or dung		0	
	B. Charcoal, kerosene, coal, or does not cook		6	
	C. LPG, natural gas, electricity, biogas, or other		12	
6. What toilet arrangement does the household usually use?	A. None/bush, bucket/bedpan, composting toilet, toilet over water, flush (piped or pour) connected to a dry pit, something else, or unknown, or other		0	
	B. Latrine without slab/open ditch		3	
	C. Latrine with slab		5	
	D. Improved ventilated latrine, or flush (piped or pour) connected to sewer or septic tank		9	
7. Does the household have a television and a VCR/DVD player?		A. No TV (regardless of VCR/DVD)	0	
		B. Only TV	3	
		C. TV and VCR/DVD	11	
8. Does the household have a radio?		A. No	0	
		B. Yes	3	
9. Does a member of the household have a bicycle, motorcycle/scooter, or automobile/pick-up?	A. None		0	
	B. Only bicycle		3	
	C. Motorcycle/scooter, or automobile/pick-up (regardless of bicycle)		5	
10. Does the household have a cell phone?		A. No	0	
		B. Yes	5	

Score:

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

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 (regardless of blood or marital relationship) who recognize the authority of one member of the household (the* head*) and who share income and expenses. Members of a household usually eat together and live under the same roof, in the same courtyard, or in the same 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. 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 6-years-old or older, ask whether he/she worked for at least one hour in the past week. Then circle the answer to the second indicator.

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-years-old or older, then did he/she work at least one hour in the past week?		
1. (Head)		<6	No	Yes
2.		<6	No	Yes
3.		<6	No	Yes
4.		<6	No	Yes
5.		<6	No	Yes
6.		<6	No	Yes
7.		<6	No	Yes
8.		<6	No	Yes
9.		<6	No	Yes
10.		<6	No	Yes
11.		<6	No	Yes
12.		<6	No	Yes
13.		<6	No	Yes
14.		<6	No	Yes
15.		<6	No	Yes
Number of household members:		**Number of members who work:**		

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

Score	Poverty likelihood (%) National (2010 def.)		
	100%	150%	200%
0–13	65.5	86.5	94.1
14–17	57.3	82.4	91.1
18–20	55.3	81.1	90.0
21–22	54.6	81.1	90.0
23–24	44.1	74.6	88.4
25–26	43.3	73.1	86.3
27–28	42.5	70.7	83.6
29–30	42.5	69.5	82.7
31–32	37.3	67.5	82.7
33–34	35.7	63.2	81.8
35–36	35.7	62.2	81.8
37–38	32.3	59.7	78.3
39–40	29.6	54.3	72.9
41–43	29.3	54.3	72.9
44–45	28.8	54.3	72.9
46–48	28.8	54.3	72.9
49–51	22.0	48.8	69.0
52–54	16.7	44.4	63.7
55–58	16.0	39.8	61.2
59–62	12.4	32.3	51.8
63–66	7.9	29.3	46.9
67–73	7.3	24.0	37.6
74–100	4.3	13.9	25.8

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

	Poverty likelihood (%)							
	Intl. 2005 PPP (2010 def.)				Intl. 2011 PPP (2010 def.)			
Score	$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
0–13	70.3	90.4	95.0	99.7	72.0	92.5	99.0	100.0
14–17	60.7	86.2	92.2	99.5	63.2	88.9	98.6	100.0
18–20	60.5	85.4	91.5	99.4	63.2	87.8	98.6	99.9
21–22	58.5	85.4	91.5	99.4	61.7	87.8	98.2	99.8
23–24	50.2	81.7	89.2	99.4	54.0	85.2	97.9	99.8
25–26	48.2	80.5	88.5	99.1	51.3	83.7	97.9	99.8
27–28	46.1	77.0	86.0	98.5	48.5	80.5	97.3	99.8
29–30	46.1	75.0	85.2	98.4	48.5	79.1	96.8	99.8
31–32	40.8	73.5	85.2	98.4	44.0	79.1	96.8	99.8
33–34	39.5	70.0	85.2	98.1	42.6	77.2	96.3	99.8
35–36	39.1	70.0	85.2	98.1	42.6	77.2	96.3	99.8
37–38	34.8	65.7	81.7	96.4	38.8	71.8	93.9	99.8
39–40	32.2	62.5	75.7	95.0	34.5	68.1	91.4	99.8
41–43	32.2	62.5	75.7	95.0	34.4	68.1	91.4	99.7
44–45	32.2	62.3	75.5	94.9	34.3	68.1	91.4	99.7
46–48	32.2	62.3	75.5	94.4	34.3	68.1	90.9	99.7
49–51	24.1	57.7	71.7	94.3	26.2	63.8	89.2	99.7
52–54	19.3	53.0	67.4	91.8	21.8	59.6	86.0	99.6
55–58	18.6	49.0	64.1	88.0	20.7	55.6	82.3	99.2
59–62	15.1	41.2	55.8	82.1	16.7	47.2	72.8	98.8
63–66	11.8	36.7	50.0	81.9	13.2	42.5	69.5	98.6
67–73	10.3	30.1	40.1	74.0	10.9	34.9	61.2	96.7
74–100	4.7	18.8	27.3	60.1	5.2	22.8	43.3	92.4

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

Score	Poorest 1/2 < 100% Natl.	Percentile-based lines (2010 def.)				
		20th	40th	50th	60th	80th
0–13	42.2	42.1	65.5	75.2	83.3	94.2
14–17	36.2	36.1	57.3	66.8	76.9	91.4
18–20	31.4	31.3	55.2	66.6	76.1	90.2
21–22	29.4	29.4	54.4	65.1	76.1	90.2
23–24	22.0	22.0	44.0	57.6	68.1	88.6
25–26	21.7	21.7	43.2	55.5	65.9	87.3
27–28	20.6	20.6	42.3	53.3	63.8	84.0
29–30	15.6	15.6	42.3	53.3	63.4	82.9
31–32	14.4	14.4	37.1	47.8	59.5	82.9
33–34	14.2	14.2	35.5	46.9	57.2	82.7
35–36	12.4	12.2	35.5	46.9	57.2	82.7
37–38	11.6	11.6	32.3	42.1	53.5	78.9
39–40	11.6	11.6	29.6	37.9	48.3	73.6
41–43	11.6	11.6	29.3	37.9	48.3	73.6
44–45	11.4	11.3	28.7	37.9	48.3	73.6
46–48	11.1	10.9	28.7	37.9	48.3	73.6
49–51	7.3	7.3	22.0	29.4	38.4	69.5
52–54	6.5	6.5	16.5	24.3	36.2	64.6
55–58	4.8	4.8	15.9	23.0	33.3	61.9
59–62	4.1	4.1	12.0	18.8	28.1	52.4
63–66	2.2	2.2	7.9	15.2	23.5	47.3
67–73	2.0	2.0	7.3	12.9	17.3	38.0
74–100	1.5	1.5	4.1	5.3	10.8	26.1

Note: Estimating Changes in Poverty Rates

The new Simple Poverty Scorecard poverty-assessment tool for Benin is based on data from the 2015 Household Living Standards Survey (*Enquête Modulaire Intégrée sur les Conditions de Vie des Ménages*, EMICoV). It replaces the old scorecard for Benin based on data from the 2010 EMICoV (Schreiner, 2012a). The new 2015 scorecard should be used from now on, both by first-time users and by legacy users of the old 2010 scorecard.

Benin's *Institut National de la Statistique et de l'Analyse Économique* (INSAE) uses the same definition of consumption-based *poverty* for the EMICoV in both 2010 and 2015. Furthermore, the new 2015 scorecard supports the five absolute poverty lines that are supported by the old 2010 scorecard. If the scorecard's standard assumption that the relationship between scorecard indicators and poverty does not change over time holds from 2010 to 2015, then estimates of poverty rates for these five lines from the two scorecards would be comparable. In turn, this would allow legacy users of the old 2010 scorecard to switch to the new 2015 scorecard while still being able to estimate changes in poverty rates over time with an existing baseline estimate from the old 2010 scorecard and a follow-up estimate from the new 2015 scorecard.

Unfortunately, the scorecard's assumption does not hold; in Benin from 2010 to 2015, the relationship between scorecard indicators and poverty changed a lot. In particular, consumption-based head-count poverty rates worsened (increased) from 35.2

percent in 2010, to 36.2 percent in 2011, and then to 40.1 percent in 2015.[1] For the old

2010 scorecard to reflect this, the distribution of the values of the scorecard's indicators

among households in Benin would also have had to tilt towards worse poverty. But the

distributions of these indicators improve from 2010 to 2015.[2] The scorecard thus gets the

sign wrong; it estimates an improvement (reduction) in poverty for Benin from 2010 to

2015, rather than the actual worsening.[3] The old 2010 scorecard may not always get the

sign wrong when applied to a given sub-national population, but it will under-estimate

poverty rates to some unknown degree.

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[1] Schreiner (2012a, p. 63); INSAE (2015, p. 9).

[2] Six of the 10 indicators in the old 2010 scorecard can be compared between the 2010 and 2015 EMICoV. For all six, the distributions shifted towards less poverty: average household size decreased; the female head/spouse was more likely to know how to read and write in French; the average residence had more bedrooms; the quality of cooking fuel improved; the ownership rate of motorcycles and automobiles increased; and the ownership rate of cell phones increased.

[3] In theory, the EMICoV's consumption-based estimates of poverty may also be off or inconsistent between 2010 to 2015 (although there is no evidence for this beyond the mismatch with non-consumption indicators). Possible sources of non-comparability include: the update of the 2015 EMICoV's sampling frame to that of Benin's 2013 census; an issue with poverty-status data in the 2010 EMICV (Schreiner, 2012a); the fact that the 2010 EMICoV ran from February to March and visited households once with paper questionnaires, while the 2015 EMICoV ran from March to June and made five visits with a computerized system (INSAE, 2013); poverty lines in Benin are adjusted for differences in prices across an unusually large number of small areas (144); and the national poverty line is defined with an obsolete food basket based on consumption patterns in 1989. Finally, the old 2010 scorecard may be unusually weak, as it was unusually difficult for Schreiner (2012a) to identify good indicators. Thus, the old 2010 scorecard leans unusually heavily on two slow-changing indicators (*département* of residence, and the number of household members) and also includes an indicator for cell-phone ownership even though only about half of Benin's households had a cell phone in 2010 and—given the known pattern of rapid cell-phone diffusion in other countries and the industry's track record of price reductions, quality improvements, and coverage expansions—it was expected that the relationship between poverty and cell-phone ownership would change in the future.

The old 2010 scorecard—like all scorecards—assumes that an improvement in non-consumption indicators implies an improvement in consumption-based poverty rates. This did not hold in Benin from 2010 to 2015,[4] so legacy users are warned *not* to estimate changes in poverty rates over time by combining a baseline estimate from the old 2010 scorecard with a follow-up estimate from the new 2015 scorecard.[5]

This reflects a known weakness of the scorecard (and other tools that estimate consumption-based poverty based on non-consumption indicators); it tracks increases in poverty less accurately than decreases.[6] Two factors are behind this.

First, scorecard indicators may improve—as they do in Benin from 2010 to 2015—even as consumption-based poverty stagnates or worsens. This can happen if there are changes in the prices, quality, and/or availability of assets, education, and basic features of the residence. It can also happen if households save more (perhaps by consuming less) and use their savings to accumulate assets.

Second, scorecard indicators of household size, education, basic features of the residence, and asset ownership do not seem to change quickly when consumption-based poverty worsens (unless it worsens a lot very quickly). Said another way, scorecard indicators are probably subject to ratchet effects, being more sensitive to increases in

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[4] INSAE (2013, p. 13) reports the same pattern from 2009 to 2011; consumption-based poverty worsened (increased) even as non-consumption indicators of poverty improved.
[5] Legacy users can still estimate change if both baseline and follow-up are from the old 2010 scorecard (or if both baseline and follow-up are from the new 2015 scorecard). In this case, the error—if constant over time—cancels out. The errors differ between the old and new scorecards and so do not cancel out, hence the warning against hybrid estimates.
[6] Schreiner (2017a, 2017b, and 2016a).

consumption than to decreases. That is, when consumption decreases, households are slower to sell off assets (or move to a less-expensive and smaller/lower-quality residence) than they are to acquire assets or to improve their residence when consumption increases. Likewise, education (once acquired) cannot be sold off, given away, nor lost.

What does all this mean for the likely future accuracy of the new 2015 scorecard and for poverty-assessment tools in general? If consumption-based poverty in Benin continues to increase (worsen), then the new 2015 scorecard will probably under-estimate poverty rates. But if consumption-based poverty decreases (improves), then it is reasonable to expect that the new scorecard's accuracy will be similar to that of other scorecards. This uncertainty is the nature of poverty-assessment tools that use non-consumption indicators to estimate consumption-based poverty and that are constructed with data from an earlier time period and then applied with data from a later period. The only quantitative, objective way to predict the future is to extrapolate from the past. The world changes, so errors are inevitable, and the size of errors for a given scorecard can only be known when there is new data from a more-recent national household consumption survey available to build a new scorecard. At that point, of course, knowing the errors of the old scorecard is of little help, as it is the new, more-accurate-for-now scorecard that is relevant, even though its specific errors cannot be known until it is itself made obsolete by an update. Across countries and updates, however, it is possible to learn about the general distribution of errors and thus to learn about the error that can typically be expected (even though the location of any particular new scorecard in the general distribution of errors is always uncertain). The hope is that scorecards can be updated frequently enough

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that—at least when poverty is decreasing—estimates are accurate enough to serve their main purpose of promoting accountability to a pro-poor mission while also helping to inform managers about possible ways to improve the fulfillment of that mission.

Simple Poverty Scorecard® Poverty-Assessment Tool Benin

1. Introduction

Pro-poor programs in Benin can use the Simple Poverty Scorecard poverty-assessment tool as a low-cost, transparent way 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 (subject to the caveats in the "Note" above), 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 Benin's 2015 Household Living Conditions Survey (*Enquête Modulaire Intégrée sur les Conditions de Vie des Ménages*, EMICoV) that was done by the *Institut National de la Statistique et de l'Analyse Économique* (INSAE). The 143-page questionnaire covers more than 1,000 questions, many of which have follow-up questions and/or are asked multiple times (for example, for each household member, each parcel of land, or each income source). Enumerators spent 90 to 120 minutes on average in each of five visits with a surveyed household over a 15-day period, and household members who spent money kept a dairy of their spending.

In comparison, the scorecard's indirect approach is quick and low-cost. It uses 10 verifiable indicators drawn from the 2015 EMICoV (such as "What is the household's

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main cooking fuel?" and "Does the household have a radio?") to get a score that is correlated with poverty status as measured by the exhaustive EMICoV survey.

The scorecard differs from "proxy-means tests" (Coady, Grosh, and Hoddinott, 2004) in that it is transparent, it is freely available,[7] 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, Benin's national line). USAID microenterprise partners in Benin can use the scorecard with the $1.90/day 2011 PPP line to report how many of their participants are "very poor".[8] The scorecard can also be used to estimate the annual change in a poverty rate (subject to the caveats in the "Note" above). For all these applications, the scorecard is a consumption-based, objective tool. While consumption surveys are costly even for governments, some pro-

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

[8] 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 (XOF458, Table 1) or the line that marks the poorest half of people below 100% of the national line (XOF225).

poor organizations may be able to implement a low-cost 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, 2012b; 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 EMICoV from Benin's INSAE. 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 Benin

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-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 (subject to the caveats in the "Note" above). 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 a third-quintile (60th-percentile) poverty line (based on a single national poverty line that is not adjusted for price differences across regions) and data from the 2015 EMICoV. Scores from this one scorecard are calibrated with this same data to poverty likelihoods for 17 poverty lines.

The scorecard is constructed using data from about three-fifths of the households in the 2015 EMICoV. Data from that same three-fifths of households is also used to calibrate scores to poverty likelihoods for the 17 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

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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).[9]

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 –2.7 percentage points. The average across all 17 poverty lines of the absolute values of the average error is about 2.9 percentage points, and the maximum of the absolute values of the average error is 4.7 percentage points. These estimation errors are due to sampling variation, not bias; the average difference would be zero if the whole 2015

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[9] 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).

EMICoV 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 ± 0.9 percentage points

or smaller. For $n = 1,024$, the 90-percent intervals are ± 3.5 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 a related exercise for Benin. 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 Benin's 2015 EMICoV as

closely as possible. This "Guide" (and the "Back-page Worksheet") are integral parts of

the scorecard for Benin.

2. Data and poverty lines

This section presents the data used to construct and validate the scorecard. It also documents Benin's 2010 definition of *poverty*, as well as the 17 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 19,920 households in the 2015 EMICoV, Benin's most-recent national household consumption survey.

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

Data from the other two-fifths of households from the 2015 EMICoV 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 EMICoV ran from March to June of 2015. Consumption is in units of XOF per person per day in prices on average for Benin as a whole during 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 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-capita consumption is less than a given poverty line), and it has three members, one of whom is a program participant. The second household is non-poor and has four members, two of whom are program participants.

Poverty rates are in terms of either households or people. If the program defines its *participants* as households, then the household level is relevant. The estimated household-level poverty rate is the weighted[10] 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

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[10] 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).

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[11] average of poverty statuses (or estimated poverty likelihoods) for households with participants, or

$$\frac{3 \cdot 1 + 4 \cdot 0}{3 + 4} = \frac{3}{7} = 0.43 = 43 \text{ percent.}$$ 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 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

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[11] Given simple random sampling at the household level, a household's person-level weight is the number of people in that household.

the participant-weighted average[12] 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.[13]

To sum up, estimated poverty rates are weighted averages of households' poverty statuses (or estimated poverty likelihoods), where—assuming simple random sampling 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 EMICoV for Benin as a whole (by urban/rural/all) and for each its 12 *départements* (by urban/rural/all).

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[12] Given simple random sampling at the household level, a household's participant-level weight is the number of participants in that household.
[13] If all households with participants have one participant each, then the participant-level poverty rate is the same as the household-level rate.

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 Table 1 because these are the rates reported by the government of Benin. 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 Definition of *poverty*, and poverty lines

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

INSAE (2015, p. 23, and 2013, pp. 194–195 and 198–199) documents Benin's calculation of *consumption* as well as the method used to derive the national poverty line. The definitions of consumption and of the national line are the same in both 2010 to 2015, so INSAE's estimates based on what is called here the "2010 definition" of consumption-based *poverty* are comparable across the two EMICoV rounds.

Because pro-poor programs in Benin may want to use different or various poverty lines, this paper calibrates scores from its single scorecard to poverty likelihoods for 17 lines:

- 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 (20th-percentile) line (based on per-capita consumption)
- Second-quintile (40th-percentile) line (based on per-capita consumption)
- Median (50th-percentile) line (based on per-capita consumption)
- Third-quintile (60th-percentile) line (based on per-capita consumption)
- Fourth-quintile (80th-percentile) line (based on per-capita consumption)

2.3.1 National poverty line

Benin's 2010-definition national poverty line (usually called here "100% of the national line") is a minimum standard for food consumption, plus a minimum standard for non-food consumption.

For a given urban or rural area in one of Benin's 77 *communes*, the food standard is the cost of 2,400 Calories from a food basket in which presumably an item's share is its share of food expenditure in the area-*commune* as observed in the 1989 Consumption-Budget Survey (*l'Enquête Budget-Consommation*). While the make-up of the basket is the same in 2010 and 2015 as in 1989, the prices of its food items is updated with each EMICoV. The value of the food standard is not reported for 2010 nor 2015.

100% of the 2010-definition national poverty line in a given area-*commune* is the food standard, plus a minimum standard of non-food consumption. The non-food standard is defined as the food standard, multiplied by the average non-food consumption of households whose total consumption is below the median, and divided by the average food consumption of households whose total consumption is below the median.[14] The 2010-definition national (food-plus-non-food) line in 2015 is then the sum of the food and non-food standards. In average prices for Benin overall during the 2015 EMICoV field work, 100% of the 2010-definition national line is XOF418 per person per

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[14] INSAE (2013, p. 199) has this formula correct in the text but not in footnote 95.

day giving a household-level poverty rate of 33.0 percent and a person-level poverty rate of 40.1 percent (Table 1).[15]

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

2.3.2 2005 and 2011 PPP poverty lines

International 2005 and 2011 PPP lines are derived from:

- PPP exchange rates for Benin for "individual consumption expenditure by households":
  — 2005:[16] XOF275.189 per $1.00
  — 2011:[17] XOF224.917 per $1.00
- Consumer Price Index (CPI):[18]
  — Calendar-year 2005 average: 87.98
  — Calendar-year 2011 average: 105.32
  — Average March to June 2015 (EMICoV field work): 112.81
- All-Benin person-weighted price deflator: 1.00
- 144 area-*commune* price deflators[19]

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[15] This person-level rate matches INSAE (2015, p. 9), suggesting that this paper uses the same data and calculations as INSAE did.

[16] World Bank, 2008.

[17] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&C0=BEN_3&PPP0=224.917&PL0=1.90&Y0=2015&NumOfCountries=1`, retrieved 11 November 2017.

[18] The monthly CPI series has a base of 100 on average in calendar-year 2008. It comes from `edenpub.bceao.int/rapport.php`, retrieved 11 November 2017.

[19] A given area-*commun*'s deflator is its specific national poverty line, divided by the person-weighted average national line for all of Benin. The average person-weighted deflator for all of Benin is then 1.00. INSAE provides each area-*commune*'s specific national line with the EMICoV data.

2.3.2.1 $1.25/day 2005 PPP line

For a given area-*commune* in Benin, the $1.25/day 2005 PPP line in average

prices for Benin as whole during the 2015 EMICoV field work is

$$\frac{\$1.25 \cdot 2005 \text{ PPP factor} \cdot \left(\dfrac{\text{CPI}_{\text{EMICoV15}}}{\text{CPI}_{2005}}\right) \cdot \text{Area - commune deflator}}{\text{Average all - Benin deflator}}.$$

For the example of the area-*commune* of urban Cotonou in the *département* of

Littoral, the deflator is 1.80708 and so the $1.25/day 2005 PPP line is

$$\frac{\$1.25 \cdot \left(\dfrac{\text{XOF275.189}}{\$1}\right) \cdot \left(\dfrac{112.81}{87.98}\right) \cdot 1.80708}{1.00} = \text{XOF797}.$$

The all-Benin $1.25/day 2005 PPP line is the person-weighted average of the 144

area-*commune* lines. This is XOF441 per person per day, with a household-level poverty

rate of 36.3 percent and a person-level poverty rate of 43.8 percent (Table 1).[20]

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

line.

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[20] The World Bank's PovcalNet (`iresearch.worldbank.org/PovcalNetPPP2005/`,
retrieved 11 November 2017) does not report a $1.25/day 2005 PPP line nor a
corresponding poverty rate for Benin based on the 2015 EMICoV.

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 area-*commune* is

$$\frac{\$1.90 \cdot 2011\,\text{PPP factor} \cdot \left(\dfrac{\text{CPI}_{\text{EMICoV15}}}{\text{CPI}_{2011}}\right) \cdot \text{Area - commune deflator}}{\text{Average all - Benin deflator}}$$

For the example of the area-*commune* of urban Cotonou in the *département* of

Littoral, the $1.90/day 2011 PPP line is

$$\frac{\$1.90 \cdot \left(\dfrac{\text{XOF224.917}}{\$1}\right) \cdot \left(\dfrac{112.81}{105.32}\right) \cdot 1.80708}{1.00} = \text{XOF827}.$$

The all-Benin $1.90/day 2011 PPP line is the person-weighted average of the 144

area-*commune* lines. This is XOF458 per person per day, with a household-level poverty

rate of 38.7 percent and a person-level poverty rate of 46.4 percent (Table 1).

For comparison, the World Bank's PovcalNet[21] reports almost the same

$1.90/day 2011 PPP line for the 2015 EMICoV (XOF457 versus 458) but a higher

person-level poverty rate (49.6 percent versus 46.4). 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 uses the same data as INSAE (2015)

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[21] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&C0=BEN_3`
`&PPP0=224.917&PL0=1.90&Y0=2015&NumOfCountries=1`, retrieved 11 November 2017.

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 Benin, applying PovcalNet's reported poverty line of XOF457 per person per day without adjustment for regional prices in the line itself nor in consumption gives a person-level poverty rate of 49.5537 percent, exactly matching PovcalNet. Thus, PovcalNet differs from this paper because it does not adjust for regional price differences in Benin. Of course, such within-country 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 Benin 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 (XOF225, with a person-level poverty rate of 20.0 percent, Table 1)
- The $1.90/day 2011 PPP line (XOF458, with a person-level poverty rate of 46.4 percent)

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2.3.4 Percentile-based lines

The scorecard for Benin also supports percentile-based poverty lines.[22] This facilitates a number of types of analyses. For example, the second-quintile (40th-percentile) line might be used to help track Benin'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.

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[22] Following the convention of the DHS wealth index, the percentiles are defined in terms of people, not households. For example, the person-level poverty rate for Benin as a whole for the first-quintile (20th-percentile) poverty line is 20 percent (Table 1). The household-level poverty rate for that same line in Benin is not 20 percent but rather 15.2 percent.

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 Benin, about 60 candidate indicators are initially prepared in the areas of:

- Household composition (such as the number of household members)
- Education (such as whether the (eldest) female head/spouse can read and write in French)
- Housing (such as the toilet arrangement)
- Ownership of durable assets (such as beds or televisions)
- Employment (such as the number of household members who work)
- Agriculture (such as the ownership of farm land)

Table 2 lists the candidate indicators, ordered by the entropy-based "uncertainty coefficient" (Goodman and Kruskal, 1979) that measures how well a given indicator predicts poverty status on its own.[23]

One possible application of the scorecard is to estimate the annual change in poverty (subject to the caveats in the "Note" above). Thus, when selecting indicators—and holding other considerations constant—preference is given to more sensitive indicators. For example, the possession of a motorcycle 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 2010-definition 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).

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[23] The uncertainty coefficient is *not* used when selecting scorecard indicators. It is just a way to order the candidate indicators listed in Table 2.

One of these one-indicator scorecards is then selected based on several factors (Schreiner *et al.*, 2014; Zeller, 2004). These include improvement in accuracy, likelihood of acceptance by users (determined by simplicity, cost of collection, and "face validity" in terms of experience, theory, and common sense), sensitivity to changes in 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[24] 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 Benin. 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)[25], 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).

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[24] 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.
[25] 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, Benin'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 Benin scorecard would:

- Record the interview identifier, interview date, country code ("BEN"), scorecard code ("002") 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 work 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 ("How many household members 6-years-old or older worked at least one hour in the past week?")
- For the third scorecard indicator ("Main construction material of the floor? (Observe and record)"), try to determine the relevant response on your own by observing the floor. If the response if not clear from your own observation, then ask the respondent
- For the fourth scorecard indicator ("Main construction material of the outer walls? (Observe and record)"), try to determine the relevant response on your own by observing the outer walls. If the response if not clear from your own observation, then ask the respondent
- 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).[26] 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

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[26] 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 (2012c) 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.[27]

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 Benin.

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[27] 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 Benin's INSAE did in the 2015 EMICoV.

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 issues that matter 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 Benin's INSAE did interviews in the 2015 EMICoV, 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 an organization's field agents do not already visit participants periodically at home anyway—the 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 an organization must judge for itself. To judge carefully, an organization that is 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[28]

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[28] The authors 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 organization.

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)

If a scorecard is applied more than once in order to estimate the annual change in poverty rates, then 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 Benin, 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 27–28 have a poverty likelihood of 42.5 percent, and scores of 25–26 have a poverty likelihood of 43.3 percent (Table 3).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 27–28 are associated with a poverty likelihood of 42.5 percent for 100% of the national line but of 48.5 percent for the $1.90/day 2011 PPP line.[29]

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[29] From Table 3 on, many tables have 17 versions, one for each of the 17 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* that is defined as the share of households in the calibration sub-sample who have the score and who have per-capita consumption below a given poverty line.

For the example of 100% of the national line (Table 4), there are 8,052 (normalized) households in the calibration sub-sample with a score of 27–28. Of these, 3,422 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 27–28 is then 42.5 percent, because $3,422 \div 8,052 = 42.5$ percent.

To illustrate with 100% of the national line and a score of 25–26, there are 6,571 (normalized) households in the calibration sub-sample, of whom 2,845 (normalized) are below the line (Table 4). The poverty likelihood for this score range is then $2,845 \div 6,571 = 43.3$ percent.

The same method is used to calibrate scores with estimated poverty likelihoods for all 17 poverty lines.[30]

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

5.2   Accuracy of estimates of households' poverty likelihoods

As long as the relationships between indicators and poverty do not change over time, and as long as the scorecard is applied to households who are representative of the same population from which the scorecard was originally constructed, then this calibration process produces unbiased estimates of poverty likelihoods. *Unbiased* means that in repeated samples from the same population, the average estimate matches the 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.[31]

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 Benin's population. Thus, scorecard estimates will generally have errors when applied after June 2015 (the last month of field work for the 2015 EMICoV) or when applied with sub-groups that are not nationally representative.

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[31] 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 Benin 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 3) and the observed poverty likelihood 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 5 shows the errors, that is, the

average of differences between estimated versus observed poverty likelihoods. It also

shows confidence intervals for the errors.

For 100% of the national line and on average across bootstrap samples from the

validation sample, the estimated poverty likelihood for scores of 27–28 (42.5 percent,

Table 3) is too low by 10.2 percentage points. For scores of 25–26, the estimate is too

high by 7.3 percentage points.[32]

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[32] 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 27–28 is ±6.7 percentage points (Table 5). 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 –16.9 and –3.5 percentage points (because –10.2 – 6.7 = –16.9, and –10.2 + 6.7 = –3.5). In 950 of 1,000 bootstraps (95 percent), the difference is –10.2 ± 6.9 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is –10.2 ± 7.4 percentage points.

Many of the absolute errors between estimated and observed poverty likelihoods in Table 5 for 100% of the national line are large. This may be partly due to the 2015 EMICoV's adjustment of poverty lines for cost-of-living differences across an unusually large number (144) of very small poverty-line areas, and perhaps also due to the obsolesence of the food basket, which is based on consumption patterns in 1989. 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 Benin'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 Benin, although it will hold less well for samples from sub-national populations and in other time periods.

Another possible source of errors 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 EMICoV field work in June 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 EMICoV construction/calibration data but not in the overall population of Benin. 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 55.3, 42.5, and 29.6 percent (100% of the national line, Table 3). The population's estimated poverty rate is the households' average poverty likelihood of (55.3 + 42.5 + 29.6) ÷ 3 = 42.5 percent.[33]

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 42.5 percent. In this example, it just happens that 42.5 percent is also as the average of the three individual poverty likelihoods associated with each of the three scores. But this is merely coincidence, and in general the two figures will differ. 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, 2012b), or comparison—if desired—with a cut-off for segmentation. There are a few

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[33] 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 at the level of the participant.

contexts in which the analysis of scores is appropriate, but, in general, the safest rule to follow is: If you are not completely sure what to do, then use poverty likelihoods, not scores.

Scores from the scorecard are calibrated with data from the 2015 EMICoV for all 17 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 error (average difference between the estimate and observed value in the 2015 EMICoV) for a poverty rate at a point in time is –2.7 percentage points (Table 7, summarizing Table 6 for all poverty lines). Across the 17 poverty lines in the validation sample, the maximum of the absolute values of the error is 4.7 percentage points, and the average of the absolute values of the average error is about 2.9 percentage points. At least part of these differences is due to sampling variation in the division of the 2015 EMICoV into sub-samples.

When estimating poverty rates at a point in time for a given poverty line, the error reported in Table 7 should be subtracted from the average poverty likelihood to give a corrected estimate. For the example of the scorecard and 100% of the national

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line in the validation sample, the error is –2.7 percentage points, so the corrected

estimate in the three-household example above is 42.5 – (–2.7) = 45.2 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 ±0.9 percentage points or

smaller for all poverty lines (Table 7). This means that in 900 of 1,000 bootstraps of

this size, the estimate (after correcting for the known average error) is within 0.9

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 42.5 percent.

Then estimates in 90 percent of such samples would be expected to fall in the range of

42.5 – (–2.7) – 0.9 = 44.3 percent to 42.5 – (–2.7) + 0.9 = 46.1 percent, with the most

likely observed value being the corrected estimate in the middle of this range, that is,

42.5 – (–2.7) = 45.2 percent. This is because the original (uncorrected) estimate is 42.5

percent, the average error is –2.7 percentage points, and the 90-percent confidence

interval for 100% of the national line in the validation sample with this sample size is

±0.9 percentage points (Table 7).

6.2   Formula for standard errors for estimates of poverty rates

How precise are the point-in-time estimates? Because these estimates are averages, they have (in "large" samples) a Normal distribution and can be characterized by their 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, $\sqrt{\dfrac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \phi$,

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

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

N is the population size, and

n is the sample size.

For example, Benin's 2015 EMICoV gives a direct-measure household-level poverty rate for 100% of the national line of $\hat{p} = 33.0$ percent (Table 1).[34] If this measure came from a sample of $n = 16{,}384$ households from a population N of 2,137,567 (the number of households in Benin in 2015 according to the EMICoV sampling weights), then the finite population correction ϕ is $\sqrt{\dfrac{2{,}137{,}567 - 16{,}384}{2{,}137{,}567 - 1}} = 0.9961$, which is close to $\phi = 1$. If the desired confidence level is 90-percent ($z = 1.64$), then the confidence interval $\pm c$ is

$$\pm z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.330 \cdot (1 - 0.330)}{16{,}384}} \cdot \sqrt{\frac{2{,}137{,}567 - 16{,}384}{2{,}137{,}567 - 1}} = \pm 0.600$$

percentage points. (If ϕ were taken as 1, then the interval would be ± 0.602 percentage points.)

Unlike the 2015 EMICoV, however, the scorecard does not measure poverty directly, so this formula is not applicable. To derive a formula for the scorecard, consider Table 6, 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 ± 0.757 percentage points.[35]

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[34] The analysis here ignores that poverty-rate estimates from the EMICoV are themselves based on a sample and so have their own sampling distribution.
[35] Due to rounding, Table 6 displays 0.8, not 0.757.

Thus, the 90-percent confidence interval with $n = 16{,}384$ is ± 0.757 percentage points for the scorecard and ± 0.600 percentage points for direct measurement. The ratio of the two intervals is $0.757 \div 0.600 = 1.26$.

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

$$\pm 1.64 \cdot \sqrt{\frac{0.330 \cdot (1 - 0.330)}{8{,}192}} \cdot \sqrt{\frac{2{,}137{,}567 - 8{,}192}{2{,}137{,}567 - 1}} = \pm 0.850 \text{ percentage points. The}$$

empirical confidence interval with the scorecard (Table 6) is ± 1.086 percentage points. Thus for $n = 8{,}192$, the ratio of the two intervals is $1.086 \div 0.850 = 1.28$.

This ratio of 1.28 for $n = 8{,}192$ is almost the same as the ratio of 1.26 for $n = 16{,}384$. Across all sample sizes of 256 or more in Table 6, these ratios are generally close to each other, and the average of these ratios in the validation sample turns out to be 1.27, implying that confidence intervals for indirect estimates of poverty rates via Benin's new 2015 scorecard and 100% of the national line are—for a given sample size—about 27-percent wider than confidence intervals for direct estimates via the 2015 EMICoV. This 1.27 appears in Table 7 as the "α factor for precision" because if $\alpha = 1.27$, 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 $\alpha \cdot \sqrt{\dfrac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\dfrac{N - n}{N - 1}}$.

In general, α can be more or less than 1.00. When α is more than 1.00, it means that the scorecard is less precise than direct measurement. It turns out that α is more than 1.00 for all 17 poverty lines in Table 7, and its highest value is 1.37.

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 $n = N \cdot \left(\dfrac{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p})}{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p}) + c^2 \cdot (N - 1)} \right)$. 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 2,137,567 (the number of households in Benin in 2015), suppose $c = 0.06292$, $z = 1.64$ (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 Benin's overall poverty rate for that line in 2015 (33.0 percent at the household level, Table 1). The α factor is 1.27 (Table 7). Then the sample-size formula gives

$$n = 2{,}137{,}567 \cdot \left(\frac{1.64^2 \cdot 1.27^2 \cdot 0.330 \cdot (1 - 0.330)}{1.64^2 \cdot 1.27^2 \cdot 0.330 \cdot (1 - 0.330) + 0.06292^2 \cdot (2{,}137{,}567 - 1)} \right) = 243,$$

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

6 for 100% of the national line. Taking the finite population correction factor ϕ as one

(1) gives the same result, as $n = \left(\dfrac{1.27 \cdot 1.64}{0.06292} \right)^2 \cdot 0.330 \cdot (1 - 0.330) = 243.$[36]

Of course, the α factors in Table 7 are specific to Benin, 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.

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[36] 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 Benin should report using the \$1.90/day 2011 PPP line. Given the α factor of 1.31 for this line (Table 7), an expected before-measurement household-level poverty rate of 38.7 percent (the all-Benin 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 $\pm\, 1.64 \cdot 1.31 \cdot \sqrt{\dfrac{0.387 \cdot (1 - 0.387)}{300}} = \pm 6.0$ percentage points.

In practice after the end of field work for the EMICoV in June 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 Benin of 33.0 percent in the 2015 EMICoV in Table 1), look up α (here, 1.27 in Table 7), assume that the scorecard will still work in the future and for sub-groups that are not nationally representative,[37] and then compute the required sample size. In this

illustration, $n = 10{,}000 \cdot \left(\dfrac{1.64^2 \cdot 1.27^2 \cdot 0.330 \cdot (1 - 0.330)}{1.64^2 \cdot 1.27^2 \cdot 0.330 \cdot (1 - 0.330) + 0.02^2 \cdot (10{,}000 - 1)} \right) = 1{,}935.$

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[37] 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 June 2015 will resemble that in the 2015 EMICoV 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.

This paper cannot test the accuracy of scorecard estimates of the annual change in poverty rates in Benin because of changes between the 2010 and 2015 EMICoV in some scorecard indicators (and in their response options) that appear in the new 2015 scorecard.[38] Likewise, this paper can only suggest approximate formulas for standard errors. Nonetheless, the relevant concepts are presented here because, in practice, pro-poor programs in Benin can apply the scorecard to collect their own data and estimate annual changes (subject to the caveats in the "Note" above).

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

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[38] Non-comparable indicators are exterior walls, cooking fuel, and toilet arrangement.

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 55.3, 42.5, and 29.6 percent (100% of the national line, Table 3). Given the known average error for this line in the validation sample of –2.7 percentage points (Table 7), the corrected baseline estimated poverty rate is the households' average poverty likelihood of $[(55.3 + 42.5 + 29.6) \div 3] – (–2.7) = 45.2$ 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 43.3, 35.7, and 28.8 percent, 100% of the national line, Table 3). Adjusting for the known average error, the average poverty likelihood at follow-up is $[(43.3 + 35.7 + 28.8) \div 3] – (–2.7) = 38.6$ percent. The reduction in the poverty rate is

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then 45.2 – 38.6 = 6.6 percentage points.[39] 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 6.6 ÷ 3 = 2.2 percentage points per year. That is, about one in 45 participants in this hypothetical example cross the poverty line each year.[40] Among those who start below the line, about one in 21 (2.2 ÷ 45.2 = 4.9 percent) on net end up above the line each year.[41]

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 43.3, 35.7, and 28.8 percent. The average across households of the difference in each given household's baseline poverty likelihood and its follow-up poverty likelihood is [(55.3 – 43.3) + (42.5 – 35.7) + (29.6 – 28.8)] ÷ 3 = 6.5 percentage points.[42] Assuming in this example that there are exactly three years between each household's interviews, the estimated annual decrease in the poverty rate is 6.5 ÷ 3 = 2.2 percentage points per year.

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[39] Of course, such a large 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.

[40] This is a net figure; some start above the line and end below it, and vice versa.

[41] The scorecard does not reveal the reasons for this change.

[42] In this approach, the error for this line in Table 7 should *not* be subtracted off. The 6.5 from the second approach differs from the 6.6 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 (subject in the caveats in the "Note" above). 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,[43] 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.

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[43] 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:

$n = 2 \cdot N \cdot \left(\dfrac{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p})}{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p}) + c^2 \cdot (N - 1)} \right)$. If ϕ can be taken as one, then the

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

With the available data for Benin, 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, 2012d, 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 Benin.

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, $\alpha = 1.08$,

$\hat{p} = 0.330$ (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 $n = 2 \cdot \left(\dfrac{1.08 \cdot 1.64}{0.02} \right)^2 \cdot 0.330 \cdot (1 - 0.330) \cdot 1 = 3{,}469$, and the follow-up

sample size is also 3,469.

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:[44]

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

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

Benin, 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

$\widetilde{p}_{12}$ and $\widetilde{p}_{21}$. Before estimation, an agnostic assumption is that the change in the

poverty rate will be zero, which implies $\widetilde{p}_{12} = \widetilde{p}_{21} = \widetilde{p}_*$, giving:

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

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[44] 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 June 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 33.0 percent (Table 1), and α is assumed to be 1.30. Then the baseline sample size is

$n = 2 \cdot \left(\dfrac{1.30 \cdot 1.64}{0.02}\right)^2 \cdot \left[-0.02 + 0.016 \cdot 3 + 0.47 \cdot 0.330 \cdot \left(1 - 0.330\right)\right] \cdot 1 \ = 2{,}999.$ The same

group of 2,999 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*,[45] 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.

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[45] 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 8 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 9 shows the distribution of households by targeting outcome for Benin. For an example cut-off of 28 or less, outcomes for 100% of the national line in the validation sample are:

- Inclusion: 17.0 percent are below the line and correctly targeted
- Undercoverage: 16.0 percent are below the line and mistakenly not targeted
- Leakage: 15.9 percent are above the line and mistakenly targeted
- Exclusion: 51.0 percent are above the line and correctly not targeted

Increasing the cut-off to 30 or less improves inclusion and undercoverage but worsens leakage and exclusion:

- Inclusion: 18.6 percent are below the line and correctly targeted
- Undercoverage: 14.5 percent are below the line and mistakenly not targeted
- Leakage: 18.1 percent are above the line and mistakenly targeted
- Exclusion: 48.9 percent are above the line and correctly not targeted

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

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

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

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

The most difficult step is assigning benefits and costs to targeting outcomes. A program that uses targeting—with or without 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 9 shows the hit rate for all cut-offs for the scorecard. For the example of 100% of the national line in the validation sample, total net benefit—under the hit rate—is 68.0 for a cut-off of 28 or less, with about two in three households in Benin 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).[46]

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[46] Table 9 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 10 ("% 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 28 or less would target 33.0 percent of all households (second column) and would be associated with an estimated poverty rate among those targeted of 51.7 percent (third column).

Table 10 also reports two other measures of targeting accuracy. The first is a version of coverage ("% poor HHs who are targeted"). For the example of 100% of the national line with the validation sample and a cut-off of 28 or less, an estimated 51.5 percent of all poor households are covered.

The final targeting measure in Table 10 is the number of successfully targeted poor households for each non-poor household mistakenly targeted (right-most column). For 100% of the national line with the validation sample and a cut-off of 28 or less, it is estimated that covering about 1.1 poor households means leaking to 1 non-poor household.

9. Context of poverty-assessment tools in Benin

This section discusses an existing poverty-assessment tool for Benin in terms of

its goals, methods, definition 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
- Using a consumption-based definition of *poverty* that is widely understood and that is used by the government of Benin
- 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 Benin, due to its low cost and transparency

Gwatkin *et al.* (2007) construct a poverty-assessment tool for Benin 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 5,769 households in Benin's 2001 DHS.[47] 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

to be a proxy for long-term wealth/economic status.[48] Well-known examples of the PCA

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[47] DHS data for Benin since 1996 include each household's asset-index value (`dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm`, retrieved 11 November 2017).

[48] Nevertheless, the indicators are similar and the "flat maximum" is important, so carefully built PCA indexes and consumption-based poverty-assessment tools rank

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 20 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 floors
  — Type of walls
  — Type of roof
  — Fuel for cooking
  — Fuel for lighting
  — Source of drinking water
  — Toilet arrangement
  — Method of disposal of waste water
  — Method of disposal of garbage
- Ownership of consumer durables:
  — Radios
  — Televisions
  — Refrigerators
  — Telephones
  — Bicycles
  — Motorcycles or scooters
  — Cars or trucks
  — Boats
- Presence of a domestic worker not related to the head
- Whether members of the household work their own or family's agricultural land

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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. 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 20 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 74 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.

10. Conclusion

Pro-poor programs in Benin 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 (subject to the caveats in the "Note" above)

The scorecard is inexpensive to use and can be understood by non-specialists. It is designed to be practical for pro-poor programs in Benin 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 Benin's 2015 EMICoV. Those households' scores are then calibrated to poverty likelihoods for 17 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 17 poverty lines in the validation sample, the maximum absolute value of the average error for point-in-time estimates of poverty rates is 4.7 percentage points, and the average of the absolute values of the average error across the 17 lines is about 2.9 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 ±0.9 percentage points or smaller. With $n = 1,024$, the 90-percent confidence intervals are ±3.5 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 Benin 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.

References

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

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

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

Brown, Caitlin; Ravallion, Martin; and Dominique van de Walle. (2016) "A Poor Means Test? Econometric Targeting in Africa", World Bank Policy Research Working Paper No. 7915, `documents.worldbank.org/curated/en/484991481639919564/pdf/WPS7915.pdf`, retrieved 11 November 2017.

Caire, Dean. (2004) "Building Credit Scorecards for Small-Business Lending in Developing Markets", `microfinance.com/English/Papers/Scoring_SMEs_Hybrid.pdf`, retrieved 11 November 2017.

_____; and Mark Schreiner. (2012) "Cross-Tab Weighting for Credit Scorecards in Developing Markets", `microfinance.com/English/Papers/Cross_Tab_Weights_for_Scoring.pdf`, retrieved 11 November 2017.

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

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

Chen, Shiyuan; and Mark Schreiner. (2009) "Simple Poverty Scorecard Poverty-Assessment Tool: Vietnam", `SimplePovertyScorecard.com/VNM_2006_ENG.pdf`, retrieved 11 November 2017.

Coady, David; Grosh, Margaret; and John Hoddinott. (2004) *Targeting of Transfers in Developing Countries*, `hdl.handle.net/10986/14902`, retrieved 11 November 2017.

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

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

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

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

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

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

Fuller, Rob. (2006) "Measuring the Poverty of Microfinance Clients in Haiti", `microfinance.com/English/Papers/Scoring_Poverty_Haiti_Fuller.pdf`, retrieved 11 November 2017.

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

Grosh, Margaret; and Judy L. Baker. (1995) "Proxy-Means Tests for Targeting Social Programs: Simulations and Speculation", World Bank LSMS Working Paper No. 118, `go.worldbank.org/W9OWN57PD0`, retrieved 11 November 2017.

Gwatkin, Davidson R.; Rutstein, Shea; Johnson, Kiersten; Suliman, Eldaw; Wagstaff, Adam; and Agbessi Amouzou. (2007) "Socio-Economic Differences in Health, Nutrition, and Population: Benin", World Bank Country Reports on HNP and Poverty, `go.worldbank.org/T6LCN5A340`, retrieved 11 November 2017.

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

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

Henry, Carla; Sharma, Manohar; Lapenu, Cecile; and Manfred Zeller. (2003) "Microfinance Poverty Assessment Tool", CGAP Technical Tool No. 5, `cgap.org/publications/microfinance-poverty-assessment-tool`, retrieved 11 November 2017.

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

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

Institut National de la Statistique et de l'Analyse Économique. (2015) "Note sur la Pauvreté au Bénin en 2015", `insae-bj.org/autres_publ.html?file=files/publications/Autres%20publications/Note%20sur%20la%20pauvrete_final.pdf`, retrieved 11 November 2017.

_____.. (2013) "Evaluation de la Pauvreté au Bénin", `insae-bj.org/emicov.html?file=files/enquetes-recensements/emicov/Evaluation_pauvrete.pdf`, retrieved 11 November 2017.

IRIS Center. (2007a) "Manual for the Implementation of USAID Poverty Assessment Tools", `povertytools.org/training_documents/Manuals/USAID_PAT_Manual_Eng.pdf`, retrieved 11 November 2017.

_____. (2007b) "Introduction to Sampling for the Implementation of PATs", `povertytools.org/training_documents/Sampling/Introduction_Sampling.ppt`, retrieved 11 November 2017.

_____. (2005) "Notes on Assessment and Improvement of Tool Accuracy", `povertytools.org/other_documents/AssessingImproving_Accuracy.pdf`, retrieved 11 November 2017.

Johnson, Glenn. (2007) "Lesson 3: Two-Way Tables—Dependent Samples", `onlinecourses.science.psu.edu/stat504/node/96`, retrieved 11 November 2017.

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

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

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

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

Matul, Michal; and Sean Kline. (2003) "Scoring Change: Prizma's Approach to Assessing Poverty", Microfinance Centre for Central and Eastern Europe and the New Independent States Spotlight Note No. 4, `mfc.org.pl/sites/mfc.org.pl/files/spotlight4.PDF`, retrieved 11 November 2017.

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

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

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

Narayan, Ambar; and Nobuo Yoshida. (2005) "Proxy-Means Tests for Targeting Welfare Benefits in Sri Lanka", World Bank Report No. SASPR–7, `documents.worldbank.org/curated/en/2005/07/6209268/proxy-means-test-targeting-welfare-benefits-sri-lanka`, retrieved 11 November 2017.

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

Rutstein, Shea Oscar; and Kiersten Johnson. (2004) "The DHS Wealth Index", DHS Comparative Reports No. 6, `measuredhs.com/pubs/pdf/CR6/CR6.pdf`, retrieved 11 November 2017.

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

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

SAS Institute Inc. (2004) "The LOGISTIC Procedure: Rank Correlation of Observed Responses and Predicted Probabilities", *SAS/STAT User's Guide, Version 9*, support.sas.com/documentation/cdl/en/statug/63033/HTML/default/viewer.htm#statug_logistic_sect035.htm, retrieved 11 November 2017.

Schreiner, Mark. (forthcoming) "How Accurate is the Simple Poverty Scorecard Poverty-Assessment Tool for Sub-National Groups?"

_____. (2017a) "Simple Poverty Scorecard Poverty-Assessment Tool: Zambia", SimplePovertyScorecard.com/ZMB_2015_ENG.pdf, retrieved 11 November 2017.

_____. (2017b) "Simple Poverty Scorecard Poverty-Assessment Tool: Mexico", SimplePovertyScorecard.com/MEX_2014_ENG.pdf, retrieved 11 November 2017.

_____. (2017c) "Simple Poverty Scorecard Poverty-Assessment Tool: El Salvador", SimplePovertyScorecard.com/SLV_2014_ENG.pdf, retrieved 11 November 2017.

_____. (2017d) "Comments on Brown, Ravallion, and van der Walle's 'A Poor Means Test? Econometric Targeting in Africa'".

_____. (2016a) "Simple Poverty Scorecard Poverty-Assessment Tool: Guatemala", SimplePovertyScorecard.com/GTM_2014_ENG.pdf, retrieved 11 November 2017.

_____. (2016b) "Simple Poverty Scorecard Poverty-Assessment Tool: India", SimplePovertyScorecard.com/IND_2011_ENG.pdf, retrieved 11 November 2017.

_____. (2016c) "Simple Poverty Scorecard Poverty-Assessment Tool: Sri Lanka", SimplePovertyScorecard.com/LKA_2012_ENG.pdf, retrieved 11 November 2017.

_____. (2016d) "Simple Poverty Scorecard Poverty-Assessment Tool: Cameroon", SimplePovertyScorecard.com/CMR_2014_ENG.pdf, retrieved 11 November 2017.

_____. (2015a) "There's No Place Like Home? How the Interview Method Affects Results with the Progress out of Poverty Index®", `microfinance.com/English/Papers/Scoring_Poverty_Interview_Method_Effects_EN.pdf`, retrieved 11 November 2017.

_____. (2015b) "Simple Poverty Scorecard Poverty-Assessment Tool: Ghana", `SimplePovertyScorecard.com/GHA_2012_ENG.pdf`, retrieved 11 November 2017.

_____. (2015c) "Simple Poverty Scorecard Poverty-Assessment Tool: Bolivia", `SimplePovertyScorecard.com/BOL_2013_ENG.pdf`, retrieved 11 November 2017.

_____. (2015d) "Simple Poverty Scorecard Poverty-Assessment Tool: Malawi", `SimplePovertyScorecard.com/MWI_2010_ENG.pdf`, retrieved 11 November 2017.

_____. (2015e) "Simple Poverty Scorecard Poverty-Assessment Tool: Cambodia", `SimplePovertyScorecard.com/KHM_2011_ENG.pdf`, retrieved 11 November 2017.

_____. (2014a) "The Process of Poverty-Scoring Analysis", `SimplePovertyScorecard.com/Process_Poverty_Scoring_Analysis.pdf`, retrieved 11 November 2017.

_____. (2014b) "How Do the Simple Poverty Scorecard Poverty-Assessment Tool and the PAT Differ?", `microfinance.com/English/Papers/Scorecard_versus_PAT.pdf`, retrieved 11 November 2017.

_____. (2013a) "Simple Poverty Scorecard Poverty-Assessment Tool: Bangladesh", `SimplePovertyScorecard.com/BGD_2010_ENG.pdf`, retrieved 11 November 2017.

_____. (2013b) "Simple Poverty Scorecard Poverty-Assessment Tool: Nicaragua", `SimplePovertyScorecard.com/NIC_2009_ENG.pdf`, retrieved 4 November 2017.

_____. (2012a) "Simple Poverty Scorecard Poverty-Assessment Tool: Benin", `SimplePovertyScorecard.com/BEN_2010_ENG.pdf`, retrieved 11 November 2017.

_____. (2012b) "An Expert-Based Poverty Scorecard for Rural China", `microfinance.com/English/Papers/Scoring_Poverty_China_EN.pdf`, retrieved 11 November 2017.

_____. (2012c) "Simple Poverty Scorecard Poverty-Assessment Tool: Colombia", `SimplePovertyScorecard.com/COL_2009_ENG.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2012d) "Simple Poverty Scorecard Poverty-Assessment Tool: Peru", `SimplePovertyScorecard.com/PER_2010_ENG.pdf`, retrieved 11 November 2017.

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

⎯⎯⎯. (2010) "Simple Poverty Scorecard Poverty-Assessment Tool: Honduras", `SimplePovertyScorecard.com/HND_2007_ENG.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2009a) "Simple Poverty Scorecard Poverty-Assessment Tool: Philippines", `SimplePovertyScorecard.com/PHL_2004_ENG.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2009b) "Simple Poverty Scorecard Poverty-Assessment Tool: Pakistan", `SimplePovertyScorecard.com/PAK_2005_ENG.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2009c) "Simple Poverty Scorecard Poverty-Assessment Tool: Peru", `SimplePovertyScorecard.com/PER_2007_ENG.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2008) "Simple Poverty Scorecard Poverty-Assessment Tool: Peru", `SimplePovertyScorecard.com/PER_2003_ENG.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2006) "Is One Simple Poverty Scorecard Poverty-Assessment Tool Enough for India?", `microfinance.com/English/Papers/` `Scoring_Poverty_India_Segments.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2005a) "Herramienta Índice de Calificación de la Pobreza™: México", `SimplePovertyScorecard.com/MEX_2002_SPA.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2005b) "IRIS Questions on the Simple Poverty Scorecard Poverty-Assessment Tool", `microfinance.com/English/Papers/` `Scoring_Poverty_Response_to_IRIS.pdf`, retrieved 11 November 2017.

⎯⎯⎯. (2002) *Scoring: The Next Breakthrough in Microfinance?* CGAP Occasional Paper No. 7, `microfinance.com/English/Papers/Scoring_Breakthrough_CGAP.pdf`, retrieved 11 November 2017.

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

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

Sharif, Iffath Anwar. (2009) "Building a Targeting System for Bangladesh Based on Proxy-Means Testing", World Bank Social Protection Discussion Paper No. 0914, `siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers/Safety-Nets-DP/0914.pdf`, retrieved 11 November 2017.

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

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

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

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

Toohig, Jeff. (2008) "PPI Pilot Training Guide", `microfinancegateway.org/sites/default/files/mfg-en-paper-progress-out-of-poverty-index-ppi-pilot-training-mar-2008.pdf`, retrieved 11 November 2017.

United States Congress. (2004) "Microenterprise Results and Accountability Act of 2004 (HR 3818 RDS)", November 20, `smith4nj.com/laws/108-484.pdf`, retrieved 11 November 2017.

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

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

World Bank. (2013) "Shared Prosperity: A New Goal for a Changing World", May 8, `worldbank.org/en/news/feature/2013/05/08/shared-prosperity-goal-for-changing-world`, retrieved 11 November 2017.

_____. (2012) *Targeting Poor and Vulnerable Households in Indonesia*, `documents.worldbank.org/curated/en/2012/01/15879773/targeting-poor-vulnerable-households-indonesia`, retrieved 11 November 2017.

_____. (2008) "International Comparison Project: Tables of Results",
`siteresources.worldbank.org/ICPINT/Resources/icp-final-tables.pdf`,
retrieved 11 November 2017.

Zeller, Manfred. (2004) "Review of Poverty Assessment Tools",
`pdf.usaid.gov/pdf_docs/PNADH120.pdf`, retrieved 11 November 2017.

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

Interview Guide

The excerpts quoted here are taken from:

l'Institut National de la Statistique et de l'Analyse Économique. (2015) « EMICoV–3 : Manuel de l'Enquêteur » [the *Manual*].

<u>Basic steps in the interview</u>

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

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

Do not directly ask the second scorecard indicator ("How many household members 6-years-old or older worked at least one hour in the past week?"). Instead, fill in the appropriate answer based on the information that you have already collected on the "Back-page Worksheet".

Ask all of the other scorecard questions directly of the respondent, except for the third question ("Main construction material of the floor? (Observe and record)") and the fourth question ("Main construction material of the outer walls? (Observe and record)"). For these two questions, follow instead the specific directions that are presented later in this "Guide".

General interviewing advice

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

According to page 7 of the *Manual*, "You should study this ['Guide'] and [the scorecard] carefully."

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 conducts 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 may be left blank.

Read each question word-for-word, in the order presented in the scorecard, except as noted elsewhere in this "Guide" for the third and fourth questions.

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. How many household members 6-years-old or older worked at least one hour in the past week?	A. None	0	
	B. One	4	**4**
	C. Two or more	8	

To help to reduce transcription 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 Benin's INSAE in the 2015 EMICoV. 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.

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 EMICoV by Benin's INSAE. For example, interviews should take place in respondents' homesteads with enumerators who have been trained to follow this "Guide" because the 2015 EMICoV took place in respondents' homesteads with enumerators who were trained to follow the *Manual*.

According to pages 9 and 10 of the *Manual*, remember that "you are always representing [your organization]. Be professional. You should always be kind and friendly when you are in the public eye. Remember that you cannot do high-quality work without the good will and cooperation of the responding households.

"The data that you collect must be true and correct.

"Keep the data that you collect [for the scorecard] strictly confidential. Do not talk about it with anyone, not even your fellow enumerators. And of course, do not divulge it to third parties, that is, anyone other than the responding household."

According to pages 10 and 11 of the *Manual*, you should follow these interviewing rules.

Neutrality. "Being polite, respondents often tend to give the 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 your tone of 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.

"The questions have been carefully crafted to be neutral; they do not suggest nor imply that one response is more likely or to be preferred over another. If you do not read the complete question word-for-word as it is written, then you may destroy this neutrality.

"If the respondent gives a vague answer, try to probe in a neutral fashion, asking questions such as: 'Could you explain to me a little more?' 'I beg your pardon, but I did not understand. Could you please repeat for me?' or 'Do not worry, there is no hurry. Take all the time you need to think about it.'

Do not suggest responses for the respondent. "If the respondent gives an answer that does not address the question asked, then avoid trying to help him/her by saying something such as 'I guess you mean to say something like . . ., right?' The respondent may agree with your interpretation, even if that it is not actually what he/she meant. Instead, try to probe in a way that encourages the respondent to discover the answer by him/herself. Unless [this 'Guide'] says otherwise, you should not read the list of response options to the respondent, even if he/she is having trouble answering, unless he/she specifically asks you to do so.

Read the questions as written and in the order given. "Read the questions in order and word-for-word as they appear in [the scorecard, except as noted in this 'Guide']. If a respondent does not understand a question, then read it again, slowly and clearly. If the respondent still does not understand, then reword the question, being careful not to stray from original meaning. Only say what is necessary to elicit a relevant response.

Be tactful with reluctant respondents. "Sometimes a respondent will say, 'I do not know', seem uninterested or distracted, contradict something that he/she said previously, or refuse to answer a question. When this happens, try to revive his/her interest. For example, if you sense that the respondent is afraid or intimidated, then try to regain his/her confidence before continuing. Pause for a moment to chat about a safe topic that has nothing to do with the [scorecard], for example, the respondent's hometown, the weather, his/her daily activities, and so on.

"If the respondent gives a drawn-out response or answers frivolously, do not rudely interrupt him/her. Instead, listen to what he/she has to say, and then try to gently guide him/her back to the [scorecard] question at hand. Always be positive and friendly. You can cultivate a healthly atmosphere by giving the respondent reason to view you as friendly, receptive, and emphathetic, someone who is not intimidating and to whom the respondent feels like he/she could say anything without being embarrassed. Many problems can be resolved by finding an place that is out of ear-shot of third parties where you can speak with the respondent one-on-one.

"If the respondent is reluctant—or even refuses—to answer a question, then try to overcome the reluctancy by explaining again that the same question is being asked to [many] households [with participants with your organization] and that everyone's responses will be put together [and no one will know who said what]. If the respondent still refuses, then simply write 'REFUSED' next to the question and continue on to the next question as if nothing happened. When you finish the rest of the interview, you can try to get responses for any questions that were left unanswered. But do not insist too much; you can never force a respondent to answer.

Avoid preconceived ideas. "Do not assume anything about the knowledge, capacity, or activities of a respondent. Do not assume, for example, that a rural household (or a household that is illiterate or that does not have much formal schooling) does not have certain types of expenses.

"At the same time, be aware than the quality of the interview can be affected by perceived differences between yourself the enumerator and the respondent. If the respondent believes that you disagree with him/her or do not believe him/her, then he/she may be afraid of you or decide to defy you. Stay calm and professional, speaking in a way that helps the respondent feel comfortable and relaxed.

Do not rush the interview. "Ask questions slowly so that the respondent understands what is being asked. After asking a question, wait: give the respondent time to think. If the respondent feels descombobulated or that he/she does not have the time needed to reflect and to discover his/her own opinion, then he/she may give sloppy or frivolous answers, or just say, 'I don't know'. If you sense that the respondent is giving answers without thinking about them properly in order to get the interview over with, then say to him/her 'Oh, there is no hurry. Your opinion is very important, so please take the time you need to think carefully about your answers.'"

According to pages 11 and 12 of the *Manual*, you as the enumerator need to muster all of your social and technical skills.

- Social skills:
    - "The respondent's first impression of you can make or break the entire interview, so carefully plan your introduction, and dress appropriately
    - Respect all rules of etiquette (including any local customs), introducing yourself before you try to ask any questions
    - Ask to speak with the head of the household. If he/she is not available, then ask to speak with the next-in-charge. If that person is not available, then ask to speak with the head's spouse(s), with the head's representative, or with any other person who can give permission for you to interview the household. (Avoid introducing yourself right off to young children or domestic servants.) Introduce yourself, and clearly explain the reason for your visit. Assure the household that you will keep responses strictly confidential. . . . Also explain that the household has been selected at random, and not all [households with members who are participants with your organization] will be surveyed
    - Do not lose hope if some households refuse to respond or if others make it clear that they dislike responding. If it helps, repeat what you said when you introduced yourself and the survey to the household
    - Do not live off food/drink or other gifts from responding households
- Technical skills:
    - Master the [scorecard] and [this 'Guide'] before going to the field
    - When required, translate the questions to the language spoken by the responding household. If you need to use an interpreter, then be sure that the interpreter understands the questions. Be alert, and constantly critically assess the interpreter's work to reduce misunderstandings and to double-check responses that seem to conflict with other responses or that otherwise do not make sense. Of course, do all this without upsetting the interpreter"

Do's and Don'ts:
According to pages 12 to 13 of the *Manual*, you as the enumerator should:

- "Study [the scorecard] and [this 'Guide'] carefully until you have mastered them
- Master [this 'Guide'] and apply its definitions and instructions rigorously
- Always wear your badge that identifies you as an employee of [your organization]

You the enumerator should not:

- "Divulge or discuss the data that you collect. Keep the data strictly confidential
- Take anyone with you as you work who has no business being there
- Ask the responding household for information that is not in [the scorecard]
- Do anything other than the job for which you have been hired (for example, do not try to sell things to the responding household)
- Do not eat or drink anything in front of the responding household, and do not accept any gifts. If the household insists (as may be the local custom), then explain the reasons why you are not allowed to accept anything
- Quit"

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 Benin such as Fon, Goun, Bariba, and Yoruba. 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 EMICoV questionnaire. Likewise, the *Manual* for the 2015 EMICoV was written in French, so this "Guide" must be translated from the *Manual*'s original French, not from this English "Guide" here.

Job of the enumerator

According to page 7 of the *Manual*, "Keep a regular schedule. Show up on-time. Only the responding household—not you the enumerator—can change an appointment. The household is the boss when it comes to scheduling. That said, do your best to convince the household to plan carefully so as to be available and to be at home at the scheduled time."

According to page 7 of the *Manual*, "In general, your job includes these tasks:

- Find the households whom you have been assigned to interview
- Identify all household members
- Carefully review the filled-out scorecard to make sure that all questions have been asked and that a response has been clearly marked for each question"

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 25 of the *Manual*, "To fill out [the scorecard], you must identify a competent member of the household to be the principal respondent. Any adult member of the household who is able to provide the information required by [the scorecard] will do. Do not interview a young child even if no competent adult member of the household is available.

"In general, you will get answers to all the questions on [the scorecard] from a single respondent. If necessary, however, you may get responses from other competent adult members of the household if they are better able to respond to a particular question."

Note that the head of the household may or may not be the same person who participates 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).

Who is the head of the household?

According to page 27 of the *Manual*, the first person listed on the « Back-page Worksheet » should be the head of the household. "The person identified as the *head of the household* must be a usual resident with the household. This person may be considered to be the head due to his/her age (the eldest member of the household), his/her sex (usually, but not always, a man), or for some other reason. It is up to you as the enumerator to figure out who is the head of the household. Usually, it is straightforward to identify the relevant person. If the person who is identified as the head of the household is not also the respondent for the interview, then you should list the respondent second [after the head]."

Guide for each indicator in the scorecard

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 26 of the *Manual*, "Tell the respondent that you would like to ask about all usual members of the household."

According to page 17 of the *Manual*, "A *household* is a group of people (regardless of blood or marital relationship) who recognize the authority of one member of the household (the head of the household) and who share income and expenses. Members of a household usually live under the same roof, in the same courtyard, or in the same compound."

According to page 26 of the *Manual*, "You should compile a complete list of all people who usually live with the household. To do this right, you need to know the difference between a *member of the household* and a *visitor*.

- *Household member*. A *household* is one person or a group of people who usually live and eat together. A *household* is not the same thing as a *family*. A *family* is made up of people who are related by blood or marriage; a *household* is a group of people who live together, regardless of whether they are related by blood or marriage. For example, three unrelated men who live under the same roof and who eat their meals together are not a family, but they may be considered to be a household
- *Visitor*: A *visitor* is a person who is not a member of the household but who slept with the household the night before the interview

"It is not always straightforward to determine whether someone is a member of a household. Here are some examples:

- A woman states that her husband is the head of the household, even though he lives somewhere else. If the husband does not usually live with the responding household, and if the husband did not spend the night before the interview with the responding household, then he is not considered to be a member of the responding household
- If someone eats meals with one household and sleeps with another household, then the person is considered to be a member of the household where he/she sleeps
- A person who lives alone is considered to be a one-person household
- If a domestic servant usually lives with a household, then he/she is considered to be a member of that household"

2. How many household members 6-years-old or older worked at least one hour in the past week?
   - A. None
   - B. One
   - C. Two or more

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

According to page 72 of the *Manual*, "[*Work*] is any activity done for at least one hour in the past week in exchange for income in-cash or in-kind."

Work also includes self-employment and the production of goods or services that may be sold or traded and may also be consumed by members of the producing household itself (such as food from a household's farm, or clothes from a household's tailor shop). For the purposes of this question, chores such as caring for children, cooking meals for the household, washing clothes or dishes, or cleaning the residence do not count as *work*.

3. Main construction material of the floor? (Observe and record)
   A. Dirt/sand, dung, palm stems/bamboo, planks, sanded wood, vinyl/linoleum, or other
   B. Ciment, moquette, or carrelage

According to page 38 of the *Manual*, "In most cases, you will not ask this question directly of the respondent because you the enumerator will be able to observe the main construction material of the floor on your own. If the proper response is not clear to you from your own observation, however, then you should go ahead and ask the question of the respondent.

"If the floor is made up of more than one type of construction material, then you should record the main one (that is, the one that accounts for the largest area of the floor)."

According to pages 22 and 23 of the *Manual*, "The response option *other* should be marked when the respondent's answer does not match up with any of the options explicitly listed."

4. Main construction material of the outer walls? (Observe and record)
    A. Earth, wattle and daub, bamboo/cane/palm stems/logs, second-hand wood, plywood, cardboard, or no walls
    B. Cement, bricks, stones with lime/cement, cinder blocks, adobe (with or without cement veneer), wooden shakes/shingles, stones with mud, or other

According to page 38 of the *Manual*, "In most cases, you will not ask this question directly of the respondent because you the enumerator will be able to observe the main construction material of the exterior walls on your own. If the proper response is not clear to you from your own observation, however, then you should go ahead and ask the question of the respondent.

"If the exterior walls are made up of more than one type of construction material, then you should record the main one (that is, the one that accounts for the largest part of the exterior walls)."

According to pages 22 and 23 of the *Manual*, "The response option *other* should be marked when the respondent's answer does not match up with any of the options explicitly listed."

5. What is the household's main cooking fuel?
      A. Wood, straw/sticks/brush, crop residue, or dung
      B. Charcoal, kerosene, coal, or does not cook
      C. LPG, natural gas, electricity, biogas, or other

According to page 38 of the *Manual*, "This question is only asking about the type of fuel used for cooking. It is not asking about the type of fuel used for heating or lighting.

"If the household uses more than one type of fuel for cooking, then record the one that is used most frequently.

"*Biogas* refers to gas produced by fermentation in a sealed pit."

According to pages 22 and 23 of the *Manual*, "The response option *other* should be marked when the respondent's answer does not match up with any of the options explicitly listed."

6. What toilet arrangement does the household usually use?
   A. None/bush, bucket/bedpan, composting toilet, toilet over water, flush (piped or pour) connected to a dry pit, something else, or unknown, or other
   B. Latrine without slab/open ditch
   C. Latrine with slab
   D. Improved ventilated latrine, or flush (piped or pour) connected to sewer or septic tank

According to pages 36 and 37 of the *Manual*, "If the respondent answers in general terms such as 'flush toilet', then probe to determine where the toilet's waste drains. Likewise, if the respondent says that the household uses a 'latrine', then probe to determine the specific type of latrine.

"Here are some definitions of different types of toilet arrangements.

- A *piped flush toilet* stores piped-in water in a tank or bucket for flushing. It also has a swan-neck tube underneath the seat that uses water to block foul odors and microbes
- A *pour flush toilet* also has a swan-neck tube underneath the seat that uses water a seal, but the water for flushing is not from a pipe but rather is poured in by hand with a bucket
- A *flush toilet connected to sewer* is a flush toilet in which human waste—and the water used to flush it away—enters a system of pipes that channel or pump the sludge to a public collection point. The sludge is treated until it can be safely returned to the general environment
- A *flush toilet connected to septic tank* flushes waste away with water through pipes to an underground tank that is not directly below the toilet nor the residence
- A *flush toilet connected to latrine* uses water to wash waste into a simple hole dug in the ground
- A *flush toilet connected to something else* uses water to wash waste directly into the general environment near the residence (and not into a hole, septic tank, nor sewer). For example, waste may be washed into the street, the courtyard or yard, into a ditch, or elsewhere
- *Latrine*: With a latrine, waste falls by gravity straight down—without being carried by a person or washed by water—into a hole in the ground
- A *ventilated pit latrine* has a chimney-like tube that runs from inside the waste pit through the roof of the latrine. The tube aeriates the pit. The top end of the tube has a screen to keep insects out
- A *latrine with slab* is a pit to collect waste that is covered with an easy-to-clean slab/platform/seat that is set above ground-level and that prevents surface water from running into the pit

- A *latrine without slab/open ditch* is a pit for waste that is not covered with a slab/platform/seat. It is just a hole in the ground—without anything on top of it—that collects waste
- A *composting toilet* mixes waste with organic material (crop residue, leaves, straw, sawdust, wood chips, or ashes) and that is maintained specifically so as to produce compost that does not pose a threat to human health
- A *bucket/bedpan* is the direct deposit of human waste and toilet paper into a bucket or other portable recepticle that is eventually dumped somewhere
- A *toilet over water* is built directly above a body of water. Waste falls directly into the water below"

According to pages 22 and 23 of the *Manual*, "The response option *other* should be marked when the respondent's answer does not match up with any of the options explicitly listed."

7. Does the household have a television and a VCR/DVD player?
    A. No TV (regardless of VCR/DVD)
    B. Only TV
    C. TV and VCR/DVD

According to page 37 of the *Manual*, "If the respondent states that the household has a television or VCR/DVD player that is not in good working order, then try to determine how long it has been broken and whether it is likely to be repaired. If it seems that the television or VCR/DVD player is only temporarily not in good working order, then [you should count the household as having the television or VCR/DVD player]. Otherwise, [count the household as not having the television or VCR/DVD player]."

Do not read the question as written. Instead, ask one question for each of the two items:

- Does the household have a television?
- Does the household have a VCR/DVD player?

Mark the responses as follows:

| Does the household have an <ITEM>? | | Response to mark |
Television	VCR/DVD player	
No	No	A
Yes	No	B
No	Yes	C
Yes	Yes	C

8. Does the household have a radio?
    A. No
    B. Yes

According to page 37 of the *Manual*, "If the respondent states that the household has a radio that is not in good working order, then try to determine how long it has been broken and whether it is likely to be repaired. If it seems that the radio is only temporarily not in good working order, then [you should count the household as having the radio]. Otherwise, [count the household as not having the radio]."

9. Does a member of the household have a bicycle, motorcycle/scooter, or automobile/pick-up?
   A. None
   B. Only bicycle
   C. Motorcycle, scooter, automobile, or pick-up (regardless of bicycle)

According to page 37 of the *Manual*, "If the respondent states that the household has a bicycle, motorcycle, scooter, automobile, or pick-up that is not in good working order, then try to determine how long it has been broken and whether it is likely to be repaired. If it seems that the bicycle, motorcycle, scooter, automobile, or pick-up is only temporarily not in good working order, then [you should count the household as having the bicycle, motorcycle/scooter, automobile, or pick-up]. Otherwise, [count the household as not having the bicycle, motorcycle/scooter, automobile, or pick-up]."

Do not read the question as written. Instead, ask one question for each of the three items:

- Does the household have a bicycle?
- Does the household have a motorcycle/scooter?
- Does the household have an automobile/pick-up?

Mark the responses as follows:

| Does the household have an <ITEM>? | | | Response to |
Bicycle	Motorcycle/scooter	Automobile/pick-up	mark
No	No	No	A
Yes	No	No	B
No	Yes	No	C
Yes	Yes	No	C
No	No	Yes	C
Yes	No	Yes	C
No	Yes	Yes	C
Yes	Yes	Yes	C

According to page 39 of the *Manual*, "A child's bicycle is basically a toy and so should not be counted for the purposes of this question."

10. Does the household have a cell phone?

     A. No

     B. Yes

According to page 37 of the *Manual*, "If the respondent states that the household has a cell phone that is not in good working order, then try to determine how long it has been broken and whether it is likely to be repaired. If it seems that the cell phone is only temporarily not in good working order, then [you should count the household as having the cell phone]. Otherwise, [count the household as not having the cell phone]."

Table 1 (All of Benin): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		501	752	1,002
	Rate	Households	9,537	28.7	52.8	64.9
	Rate	People		35.8	61.9	73.2
Rural						
	Line	People		350	525	699
	Rate	Households	10,383	36.8	62.3	80.6
	Rate	People		43.6	69.0	84.7
All						
	Line	People		418	627	836
	Rate	Households	19,920	33.0	57.8	73.1
	Rate	People		40.1	65.8	79.5

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (All of Benin): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		529	846	1,058	2,116	549	924	1,589	6,269
	Rate	Households	9,537	32.1	58.2	67.2	87.2	34.5	61.7	79.8	98.8
	Rate	People		39.6	67.0	75.3	92.0	42.4	70.3	86.2	99.4
Rural											
	Line	People		369	591	738	1,477	383	645	1,109	4,376
	Rate	Households	10,383	40.2	70.1	83.2	97.9	42.4	76.1	96.8	99.6
	Rate	People		47.3	76.1	87.0	98.8	49.7	81.1	98.1	99.8
All											
	Line	People		441	706	882	1,764	458	771	1,325	5,228
	Rate	Households	19,920	36.3	64.4	75.5	92.8	38.7	69.2	88.7	99.2
	Rate	People		43.8	72.0	81.7	95.7	46.4	76.2	92.7	99.7

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (All of Benin): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
					Percentile-based lines (2010 def.)				
Urban									
	Line	People		270	269	500	578	876	1,013
	Rate	Households	9,537	11.0	11.0	28.6	37.6	46.9	65.5
	Rate	People		14.8	14.7	35.8	45.8	55.6	73.7
Rural									
	Line	People		188	188	349	403	410	707
	Rate	Households	10,383	19.1	19.1	36.8	45.9	56.2	81.1
	Rate	People		24.3	24.3	43.5	53.5	63.6	85.2
All									
	Line	People		225	224	417	482	620	845
	Rate	Households	19,920	15.3	15.2	32.9	41.9	51.8	73.7
	Rate	People		20.0	20.0	40.0	50.0	60.0	80.0

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Alibori): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		425	638	851
	Rate	Households	373	34.4	57.7	69.0
	Rate	People		45.7	69.5	79.6
Rural						
	Line	People		307	460	614
	Rate	Households	996	30.2	53.3	73.9
	Rate	People		38.1	63.7	81.6
All						
	Line	People		334	501	668
	Rate	Households	1,369	31.2	54.3	72.8
	Rate	People		39.9	65.0	81.1

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Alibori): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.) | | | | Intl. 2011 PPP (2010 def.) | | | |
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		449	718	898	1,796	466	785	1,349	5,322
	Rate	Households	373	37.5	61.8	70.7	92.6	40.8	63.1	83.5	99.2
	Rate	People		49.0	72.7	80.8	96.2	52.5	73.8	90.4	99.8
Rural											
	Line	People		324	518	648	1,295	336	566	973	3,838
	Rate	Households	996	32.5	60.8	76.6	99.5	34.5	68.5	99.0	99.8
	Rate	People		41.0	70.7	83.4	99.9	43.6	77.2	99.8	100.0
All											
	Line	People		353	564	705	1,410	366	616	1,059	4,179
	Rate	Households	1,369	33.7	61.0	75.2	97.8	36.0	67.2	95.3	99.6
	Rate	People		42.8	71.2	82.8	99.0	45.6	76.4	97.6	99.9

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Alibori): Relative and percentile-based poverty lines (2010 definition) 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 (2010 def.)				
				< 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		229	228	424	490	590	860
	Rate	Households	373	14.0	13.7	34.4	43.4	52.3	69.6
	Rate	People		22.3	22.1	45.7	55.6	63.9	80.0
Rural									
	Line	People		165	165	306	354	306	620
	Rate	Households	996	21.4	21.4	30.2	38.0	46.1	74.3
	Rate	People		26.9	26.9	38.1	47.6	57.2	81.8
All									
	Line	People		180	179	333	385	371	675
	Rate	Households	1,369	19.6	19.5	31.2	39.3	47.6	73.2
	Rate	People		25.8	25.8	39.9	49.4	58.8	81.4

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Atacora): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		362	543	724
	Rate	Households	766	39.4	62.5	73.5
	Rate	People		46.4	70.8	79.7
Rural						
	Line	People		283	424	566
	Rate	Households	1,145	30.8	52.0	70.0
	Rate	People		39.7	62.1	79.6
All						
	Line	People		314	471	627
	Rate	Households	1,911	34.1	56.0	71.3
	Rate	People		42.3	65.5	79.7

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Atacora): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		382	611	764	1,529	397	668	1,148	4,530
	Rate	Households	766	42.6	68.6	75.1	91.3	45.4	71.6	86.5	98.9
	Rate	People		50.0	75.4	81.7	94.8	52.8	78.1	91.5	99.6
Rural											
	Line	People		298	478	597	1,194	310	522	897	3,538
	Rate	Households	1,145	33.7	61.5	72.5	98.8	35.5	65.9	95.1	99.8
	Rate	People		42.7	71.3	81.7	99.6	44.6	75.4	97.0	100.0
All											
	Line	People		331	530	662	1,325	344	579	995	3,925
	Rate	Households	1,911	37.1	64.3	73.5	95.9	39.3	68.1	91.8	99.5
	Rate	People		45.6	72.9	81.7	97.7	47.8	76.4	94.9	99.8

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Atacora): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
					Percentile-based lines (2010 def.)				
Urban									
	Line	People		195	194	361	417	432	732
	Rate	Households	766	18.3	18.3	39.1	48.0	57.2	73.8
	Rate	People		21.7	21.7	46.3	55.4	65.3	80.1
Rural									
	Line	People		152	152	282	326	263	572
	Rate	Households	1,145	24.1	24.1	30.7	38.6	46.5	70.4
	Rate	People		31.4	31.4	39.6	48.4	56.5	80.0
All									
	Line	People		169	168	313	362	329	634
	Rate	Households	1,911	21.9	21.9	34.0	42.2	50.6	71.7
	Rate	People		27.6	27.6	42.2	51.1	59.9	80.1

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Atlantique): National poverty lines (2010 definition) 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 (2010 def.) | | |
				100%	150%	200%
Urban						
	Line	People		595	892	1,189
	Rate	Households	822	26.4	65.7	76.7
	Rate	People		31.0	73.0	82.7
Rural						
	Line	People		424	636	848
	Rate	Households	813	41.8	75.0	96.5
	Rate	People		51.8	83.0	98.4
All						
	Line	People		510	764	1,019
	Rate	Households	1,635	33.8	70.2	86.3
	Rate	People		41.3	77.9	90.5

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Atlantique): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		628	1,004	1,256	2,511	652	1,097	1,886	7,441
	Rate	Households	822	31.0	71.2	78.3	95.0	34.4	74.7	88.1	99.8
	Rate	People		36.2	78.2	84.5	98.0	39.3	81.2	92.6	99.9
Rural											
	Line	People		447	716	895	1,790	464	782	1,344	5,304
	Rate	Households	813	44.7	86.4	97.3	99.2	47.6	93.7	99.2	100.0
	Rate	People		55.3	91.3	98.9	99.7	58.0	97.0	99.7	100.0
All											
	Line	People		538	861	1,076	2,152	558	940	1,616	6,376
	Rate	Households	1,635	37.6	78.5	87.5	97.0	40.7	83.9	93.4	99.9
	Rate	People		45.7	84.7	91.7	98.9	48.6	89.1	96.1	100.0

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Atlantique): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		320	319	593	686	1,161	1,203
	Rate	Households	822	6.9	6.7	26.3	38.4	56.0	77.1
	Rate	People		8.4	8.2	30.9	43.5	62.1	83.3
Rural									
	Line	People		228	227	423	489	586	857
	Rate	Households	813	7.8	7.7	41.7	51.8	66.4	96.6
	Rate	People		9.7	9.6	51.5	62.9	76.6	98.5
All									
	Line	People		274	273	508	587	874	1,031
	Rate	Households	1,635	7.3	7.2	33.7	44.8	61.0	86.5
	Rate	People		9.0	8.9	41.2	53.1	69.3	90.8

Note: Columns 20th–80th are "Percentile-based lines (2010 def.)"; "Poverty lines and poverty rates (%)" spans all data columns.

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Borgou): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		385	577	770
	Rate	Households	978	23.7	45.2	56.7
	Rate	People		32.8	57.5	68.9
Rural						
	Line	People		295	443	590
	Rate	Households	1,224	36.8	61.0	74.1
	Rate	People		43.1	68.1	80.4
All						
	Line	People		334	501	668
	Rate	Households	2,202	30.6	53.5	65.8
	Rate	People		38.6	63.5	75.4

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Borgou): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		406	650	813	1,625	422	710	1,221	4,816
	Rate	Households	978	26.9	50.4	60.7	80.3	29.3	53.8	74.3	96.6
	Rate	People		36.8	63.2	72.4	88.1	40.2	66.1	83.8	99.0
Rural											
	Line	People		312	499	623	1,247	323	545	936	3,694
	Rate	Households	1,224	40.3	67.0	75.7	97.6	42.8	71.0	93.8	99.3
	Rate	People		47.0	74.4	81.7	98.6	49.5	77.8	96.3	99.6
All											
	Line	People		353	564	706	1,411	366	617	1,060	4,182
	Rate	Households	2,202	33.9	59.1	68.5	89.3	36.4	62.8	84.5	98.0
	Rate	People		42.6	69.5	77.7	94.1	45.5	72.7	90.9	99.3

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Borgou): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	Percentile-based lines (2010 def.) 20th	40th	50th	60th	80th
Urban									
	Line	People		207	207	384	444	484	778
	Rate	Households	978	12.3	12.3	23.6	32.0	39.8	57.4
	Rate	People		17.1	17.1	32.7	43.6	51.9	69.3
Rural									
	Line	People		159	158	295	340	289	597
	Rate	Households	1,224	30.6	30.6	36.8	46.2	55.3	74.5
	Rate	People		36.2	36.2	43.1	53.3	62.9	80.8
All									
	Line	People		180	179	333	385	374	676
	Rate	Households	2,202	21.9	21.9	30.5	39.4	47.9	66.3
	Rate	People		27.9	27.9	38.6	49.1	58.1	75.8

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Collines): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		483	724	966
	Rate	Households	343	34.3	55.6	65.0
	Rate	People		47.2	70.2	75.7
Rural						
	Line	People		416	624	832
	Rate	Households	1,029	41.4	64.4	83.5
	Rate	People		47.2	70.3	87.5
All						
	Line	People		434	651	868
	Rate	Households	1,372	38.9	61.4	77.2
	Rate	People		47.2	70.2	84.3

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Collines): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		510	815	1,019	2,039	529	891	1,531	6,041
	Rate	Households	343	39.4	61.6	68.2	82.3	41.3	63.5	73.6	99.3
	Rate	People		52.8	73.5	76.7	86.1	55.3	75.2	80.6	99.7
Rural											
	Line	People		439	703	878	1,757	456	768	1,319	5,206
	Rate	Households	1,029	44.7	73.0	85.7	94.2	46.9	78.7	94.2	99.1
	Rate	People		50.4	78.4	89.7	96.4	52.8	83.2	96.4	99.6
All											
	Line	People		458	733	916	1,833	476	801	1,377	5,431
	Rate	Households	1,372	42.9	69.1	79.7	90.1	45.0	73.5	87.1	99.2
	Rate	People		51.0	77.1	86.2	93.7	53.4	81.0	92.1	99.6

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Collines): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
					Percentile-based lines (2010 def.)				
Urban									
	Line	People		260	259	482	557	759	976
	Rate	Households	343	8.1	8.1	34.3	44.1	51.3	66.6
	Rate	People		14.7	14.7	47.2	57.6	65.1	76.2
Rural									
	Line	People		224	223	415	480	563	841
	Rate	Households	1,029	16.4	16.4	41.4	50.3	62.2	83.7
	Rate	People		20.1	20.1	47.2	56.5	68.1	87.6
All									
	Line	People		234	233	433	500	616	878
	Rate	Households	1,372	13.6	13.6	38.9	48.2	58.5	77.8
	Rate	People		18.6	18.6	47.2	56.8	67.3	84.5

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Couffo): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		418	627	836
	Rate	Households	419	40.2	61.9	72.8
	Rate	People		45.8	68.0	79.3
Rural						
	Line	People		389	583	778
	Rate	Households	1,021	43.3	69.5	88.5
	Rate	People		50.8	74.6	90.4
All						
	Line	People		397	596	795
	Rate	Households	1,440	42.4	67.3	84.0
	Rate	People		49.3	72.7	87.2

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Couffo): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		442	706	883	1,766	458	772	1,326	5,233
	Rate	Households	419	42.6	63.5	74.9	92.3	45.6	66.7	85.4	99.8
	Rate	People		48.8	69.8	80.8	95.1	51.6	72.6	89.2	99.9
Rural											
	Line	People		411	657	821	1,642	426	718	1,233	4,866
	Rate	Households	1,021	47.4	76.8	91.1	98.9	48.8	83.3	98.9	100.0
	Rate	People		55.5	81.4	93.5	99.7	56.6	86.6	99.7	100.0
All											
	Line	People		420	671	839	1,678	435	733	1,261	4,973
	Rate	Households	1,440	46.0	73.0	86.5	97.0	47.9	78.5	95.0	99.9
	Rate	People		53.5	78.0	89.8	98.3	55.1	82.5	96.6	100.0

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Couffo): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
					Percentile-based lines (2010 def.)				
Urban									
	Line	People		225	224	417	482	569	846
	Rate	Households	419	20.6	20.6	40.2	49.4	56.3	73.1
	Rate	People		24.5	24.5	45.8	55.6	62.8	79.5
Rural									
	Line	People		209	209	388	448	495	787
	Rate	Households	1,021	18.6	18.6	43.1	52.1	62.6	89.0
	Rate	People		24.6	24.6	50.7	59.7	69.0	91.1
All									
	Line	People		214	213	397	458	516	804
	Rate	Households	1,440	19.2	19.2	42.3	51.3	60.8	84.4
	Rate	People		24.6	24.6	49.2	58.5	67.2	87.7

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Donga): National poverty lines (2010 definition) 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 (2010 def.) | | |
				100%	150%	200%
Urban						
	Line	People		393	589	785
	Rate	Households	409	37.6	65.8	76.5
	Rate	People		42.8	71.3	83.2
Rural						
	Line	People		292	438	584
	Rate	Households	576	37.1	61.7	80.8
	Rate	People		42.2	66.6	85.1
All						
	Line	People		337	505	674
	Rate	Households	985	37.3	63.5	78.9
	Rate	People		42.5	68.7	84.2

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Donga): International 2005 and 2011 PPP poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Intl. 2005 PPP (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		414	663	829	1,658	430	724	1,245	4,912
	Rate	Households	409	43.4	70.9	79.4	88.2	46.9	74.1	85.1	99.6
	Rate	People		48.1	76.7	85.4	92.5	52.5	80.4	89.0	99.9
Rural											
	Line	People		308	493	616	1,232	320	538	925	3,651
	Rate	Households	576	41.0	70.3	82.6	98.3	43.3	75.8	97.4	99.2
	Rate	People		45.5	74.5	87.1	99.6	48.4	80.5	99.1	99.8
All											
	Line	People		356	569	711	1,422	369	622	1,068	4,215
	Rate	Households	985	42.1	70.6	81.2	93.9	44.9	75.0	91.9	99.4
	Rate	People		46.7	75.5	86.3	96.4	50.2	80.5	94.6	99.9

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Donga): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		211	211	392	453	502	794
	Rate	Households	409	19.9	19.3	37.6	51.5	60.9	76.6
	Rate	People		22.6	22.1	42.8	57.1	65.7	83.3
Rural									
	Line	People		157	157	291	336	277	590
	Rate	Households	576	29.6	29.6	36.9	47.8	56.0	81.6
	Rate	People		32.9	32.9	42.1	52.8	60.7	86.2
All									
	Line	People		181	181	336	388	378	681
	Rate	Households	985	25.3	25.1	37.2	49.4	58.1	79.4
	Rate	People		28.3	28.1	42.4	54.7	62.9	84.9

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Littoral): National poverty lines (2010 definition) 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 (2010 def.) | | |
				100%	150%	200%
Urban						
	Line	People		755	1,133	1,510
	Rate	Households	1,829	20.8	42.3	54.6
	Rate	People		25.7	50.4	63.4
Rural						
	Line	People		755	1,133	1,510
	Rate	Households	1,829	20.8	42.3	54.6
	Rate	People		25.7	50.4	63.4
All						
	Line	People		457	686	915
	Rate	Households	710	38.3	61.3	73.1
	Rate	People		46.9	70.7	80.4

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Littoral): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		797	1,275	1,594	3,188	827	1,393	2,394	9,447
	Rate	Households	1,829	23.6	47.6	57.1	84.9	26.1	51.3	76.5	99.1
	Rate	People		28.9	55.9	65.7	90.8	32.2	59.9	83.7	99.5
Rural											
	Line	People		797	1,275	1,594	3,188	827	1,393	2,394	9,447
	Rate	Households	1,829	23.6	47.6	57.1	84.9	26.1	51.3	76.5	99.1
	Rate	People		28.9	55.9	65.7	90.8	32.2	59.9	83.7	99.5
All											
	Line	People		483	772	966	1,931	501	844	1,450	5,723
	Rate	Households	710	42.0	66.5	74.2	91.6	44.6	68.5	85.4	99.4
	Rate	People		50.3	74.9	81.4	95.2	53.0	77.0	90.2	99.8

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Littoral): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
					Percentile-based lines (2010 def.)				
Urban									
	Line	People		406	405	753	870	1,850	1,527
	Rate	Households	1,829	6.7	6.7	20.7	30.2	38.3	55.3
	Rate	People		8.5	8.5	25.6	36.9	46.2	64.0
Rural									
	Line	People		406	405	753	870	1,850	1,527
	Rate	Households	1,829	6.7	6.7	20.7	30.2	38.3	55.3
	Rate	People		8.5	8.5	25.6	36.9	46.2	64.0
All									
	Line	People		246	245	456	527	684	925
	Rate	Households	710	15.5	15.4	38.2	48.4	56.6	73.6
	Rate	People		20.7	20.4	46.8	57.8	65.7	80.8

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Mono): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		457	686	915
	Rate	Households	710	38.3	61.3	73.1
	Rate	People		46.9	70.7	80.4
Rural						
	Line	People		417	625	833
	Rate	Households	678	38.5	68.3	92.3
	Rate	People		46.8	76.0	94.9
All						
	Line	People		438	656	875
	Rate	Households	1,388	38.4	64.6	82.1
	Rate	People		46.8	73.3	87.5

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Mono): International 2005 and 2011 PPP poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Intl. 2005 PPP (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		483	772	966	1,931	501	844	1,450	5,723
	Rate	Households	710	42.0	66.5	74.2	91.6	44.6	68.5	85.4	99.4
	Rate	People		50.3	74.9	81.4	95.2	53.0	77.0	90.2	99.8
Rural											
	Line	People		440	704	879	1,759	456	769	1,321	5,212
	Rate	Households	678	43.6	75.9	95.8	99.3	47.0	85.9	99.3	99.9
	Rate	People		53.2	81.6	97.7	99.8	57.2	90.2	99.8	100.0
All											
	Line	People		462	739	924	1,847	479	807	1,387	5,474
	Rate	Households	1,388	42.7	70.9	84.4	95.3	45.8	76.7	92.0	99.6
	Rate	People		51.7	78.2	89.3	97.4	55.1	83.4	94.9	99.9

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Mono): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		246	245	456	527	684	925
	Rate	Households	710	15.5	15.4	38.2	48.4	56.6	73.6
	Rate	People		20.7	20.4	46.8	57.8	65.7	80.8
Rural									
	Line	People		224	224	416	480	568	842
	Rate	Households	678	13.6	13.6	38.5	50.1	63.1	93.1
	Rate	People		18.6	18.6	46.8	60.2	72.4	95.4
All									
	Line	People		235	235	437	504	627	885
	Rate	Households	1,388	14.6	14.6	38.3	49.2	59.7	82.8
	Rate	People		19.7	19.6	46.8	59.0	69.0	87.9

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Ouémé): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		505	757	1,010
	Rate	Households	1,632	21.5	39.8	54.0
	Rate	People		26.9	47.4	60.8
Rural						
	Line	People		349	524	699
	Rate	Households	769	22.9	43.3	62.1
	Rate	People		29.0	52.4	68.9
All						
	Line	People		455	682	910
	Rate	Households	2,401	22.0	41.0	56.7
	Rate	People		27.6	49.0	63.4

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Ouémé): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		533	853	1,066	2,132	553	932	1,601	6,317
	Rate	Households	1,632	23.7	45.4	55.8	84.6	24.5	49.8	72.2	98.0
	Rate	People		29.4	53.3	62.5	88.8	30.5	57.3	78.3	98.5
Rural											
	Line	People		369	590	737	1,475	383	644	1,108	4,370
	Rate	Households	769	25.0	50.3	66.6	93.6	26.9	57.8	89.0	98.5
	Rate	People		32.1	59.2	72.8	95.4	34.7	65.2	92.0	99.4
All											
	Line	People		480	768	960	1,920	498	839	1,442	5,690
	Rate	Households	2,401	24.1	47.0	59.4	87.6	25.3	52.5	77.8	98.1
	Rate	People		30.3	55.2	65.8	90.9	31.8	59.9	82.7	98.8

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Ouémé): Relative and percentile-based poverty lines (2010 definition) 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 < 100% Natl. | Percentile-based lines (2010 def.) | | | | |
					20th	40th	50th	60th	80th
Urban									
	Line	People		272	271	504	582	865	1,021
	Rate	Households	1,632	8.6	8.6	21.5	26.0	33.3	54.5
	Rate	People		11.4	11.4	26.9	32.1	40.2	61.2
Rural									
	Line	People		188	187	348	403	412	706
	Rate	Households	769	12.8	12.8	22.9	30.7	38.1	63.6
	Rate	People		16.3	16.3	29.0	38.7	47.0	69.8
All									
	Line	People		245	244	454	524	719	920
	Rate	Households	2,401	10.0	10.0	22.0	27.6	34.9	57.6
	Rate	People		13.0	13.0	27.6	34.3	42.4	64.0

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Plateau): National poverty lines (2010 definition) 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 (2010 def.)		
				100%	150%	200%
Urban						
	Line	People		445	667	890
	Rate	Households	563	28.2	46.6	67.4
	Rate	People		35.9	55.5	73.7
Rural						
	Line	People		331	496	661
	Rate	Households	634	32.9	58.4	78.4
	Rate	People		38.3	63.3	79.5
All						
	Line	People		380	570	761
	Rate	Households	1,197	30.9	53.3	73.6
	Rate	People		37.3	59.9	77.0

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Plateau): International 2005 and 2011 PPP poverty lines (2010 definition) 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
				$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		470	751	939	1,879	487	821	1,411	5,567
	Rate	Households	563	30.9	55.8	71.2	89.9	31.7	64.1	85.4	99.7
	Rate	People		39.2	64.0	78.5	95.0	39.9	70.9	91.5	99.9
Rural											
	Line	People		349	559	698	1,397	362	610	1,049	4,138
	Rate	Households	634	36.3	66.2	81.0	99.3	37.7	72.4	98.4	100.0
	Rate	People		42.4	69.8	82.2	99.4	43.7	74.4	98.7	100.0
All											
	Line	People		401	642	803	1,606	417	702	1,206	4,759
	Rate	Households	1,197	34.0	61.7	76.7	95.2	35.1	68.8	92.8	99.9
	Rate	People		41.0	67.3	80.5	97.5	42.1	72.9	95.6	100.0

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Plateau): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		239	239	444	513	649	900
	Rate	Households	563	10.1	10.1	28.2	34.1	41.4	68.4
	Rate	People		13.9	13.9	35.9	42.5	50.3	74.8
Rural									
	Line	People		178	178	330	381	359	669
	Rate	Households	634	13.0	13.0	32.7	40.8	49.9	78.8
	Rate	People		16.5	16.5	38.2	47.2	55.4	79.6
All									
	Line	People		205	204	379	438	485	769
	Rate	Households	1,197	11.8	11.8	30.8	37.9	46.2	74.3
	Rate	People		15.4	15.4	37.2	45.2	53.2	77.5

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Zou): National poverty lines (2010 definition) 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 (2010 def.) | | |
				100%	150%	200%
Urban						
	Line	People		391	586	781
	Rate	Households	693	35.5	54.3	64.6
	Rate	People		43.1	62.6	72.3
Rural						
	Line	People		347	521	694
	Rate	Households	1,498	38.9	63.4	75.7
	Rate	People		42.7	68.0	80.1
All						
	Line	People		362	542	723
	Rate	Households	2,191	37.7	60.2	71.8
	Rate	People		42.8	66.2	77.5

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Zou): International 2005 and 2011 PPP poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Intl. 2005 PPP (2010 def.) $1.25	$2.00	$2.50	$5.00	Intl. 2011 PPP (2010 def.) $1.90	$3.20	$5.50	$21.70
Urban											
	Line	People		412	660	825	1,649	428	721	1,239	4,887
	Rate	Households	693	38.2	59.8	66.0	78.2	41.7	62.5	73.3	97.7
	Rate	People		45.9	67.7	73.8	84.6	49.5	70.4	80.8	99.0
Rural											
	Line	People		366	586	733	1,466	380	641	1,101	4,344
	Rate	Households	1,498	43.1	68.6	80.3	97.3	45.4	71.0	97.3	99.6
	Rate	People		47.0	73.8	84.2	98.3	49.6	76.2	98.3	99.7
All											
	Line	People		382	611	763	1,526	396	667	1,146	4,523
	Rate	Households	2,191	41.4	65.5	75.2	90.6	44.1	68.0	88.8	98.9
	Rate	People		46.6	71.8	80.8	93.8	49.5	74.3	92.5	99.4

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 1 (Zou): Relative and percentile-based poverty lines (2010 definition) and poverty rates for households and people by urban/rural/all in 2015

Area	Line or Rate	Households or People	n	Poorest 1/2 < 100% Natl.	20th	40th	50th	60th	80th
Urban									
	Line	People		210	210	390	450	496	790
	Rate	Households	693	12.4	12.4	35.3	43.4	49.3	65.1
	Rate	People		15.5	15.5	42.9	51.0	57.8	73.1
Rural									
	Line	People		187	186	346	400	397	702
	Rate	Households	1,498	23.7	23.7	38.8	48.2	58.1	76.5
	Rate	People		26.8	26.8	42.6	52.5	62.9	81.0
All									
	Line	People		195	194	361	417	430	731
	Rate	Households	2,191	19.7	19.7	37.6	46.5	55.0	72.5
	Rate	People		23.1	23.1	42.7	52.0	61.2	78.3

Source: 2015 EMICoV

Poverty rates are percentages.

Poverty lines are XOF per-person per-day.

Poverty lines are XOF in prices on average for Benin as a whole from March to June 2015.

Table 2: Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
914	How many household members are 0 to 12 years old? (Five or more; Four; Three; Two; One; None)
910	What is the household's main cooking fuel? (Wood, straw/sticks/brush, crop residue, or dung; Charcoal, kerosene, coal, or does not cook; LPG, natural gas, electricity, biogas, or other)
901	How many household members are 0 to 13 years old? (Five or more; Four; Three; Two; One; None)
890	How many household members are 0 to 11 years old? (Four or more; Three; Two; One; None)
809	How many household members are there? (Seven or more; Six; Five; Four; Three; Two; One)
805	How many household members are 0 to 14 years old? (Five or more; Four; Three; Two; One; None)
805	How many household members are 0 to 15 years old? (Five or more; Four; Three; Two; One; None)
798	What toilet arrangement does the household usually use ? (None/bush, bucket/bedpan, composting toilet, toilet over water, flush (piped or pour) connected to a dry pit, something else, or unknown, or other; Latrine without slab/open ditch; Latrine with slab; Improved ventilated latrine, or flush (piped or pour) connected to sewer or septic tank)
797	How many household members are 0 to 16 years old? (Five or more; Four; Three; Two; One; None)
790	What is the highest educational level that the (eldest) female head/spouse has attended, and what is the highest year or grade completed at that level? (Never went to school/none, informal schooling, or pre-school/kindergarten; Primary grades 1 to 6; No female head/spouse; Primary-school certificate (CEP), or higher)
789	How many household members are 0 to 18 years old? (Five or more; Four; Three; Two; One; None)
787	How many household members are 0 to 17 years old? (Five or more; Four; Three; Two; One; None)
759	How many household members are 0 to 6 years old? (Three or more; Two; One; None)
720	Can the (eldest) female head/spouse read and write with understanding in French? (No; No female head/spouse; Yes)
703	Does the household have a television and a VCR/DVD player? (No TV (regardless of VCR/DVD); Only TV; TV and VCR/DVD)
701	Do you share a toilet arrangement with other households? (No toilet arrangement; Yes; No)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
645	Does the household have a VCR or DVD player? (No; Yes)
638	Does the household have a television? (No; Yes)
587	What is the highest educational level that the male head/spouse has attended, and what is the highest year or grade completed at that level? (Never went to school/none, informal schooling, pre-school/kindergarten, or primary grades 1 to 4; No male head/spouse; Primary grades 5 or 6, primary-school certificate (CEP), or middle school grades 1 to 3; Middle school grade 4 or higher)
580	What is the household's main source of drinking water? (Surface water (stream/dam/lake/pond/river/irrigation canal), rainwater, spring (protected or not), sachet, or other; Borehole, well with a pump, unprotected well, water truck, or cart with water tank; Public standpipe, or protected well; Faucet in the yard/compound or inside the residence, or bottled water)
528	What is the tenancy status of the household in its residence? (Family housing (without title); Owned (without title), or other; Housed for free by parent/friend, or family housing (with title); Renter, owned (with title), or housed by employer (government or private))
528	How many household members 6-years-old or older worked for at least 1 hour in the past week and, in their main occupation, worked in farming, fishing, or hunting ? (Two or more; One; None)
525	Main construction material of the outer walls? (Observe and record) (Earth, wattle and daub, bamboo/cane/palm stems/logs, second-hand wood, plywood, cardboard, or no walls ; Cement, bricks, stones with lime/cement, cinder blocks, adobe (with or without cement veneer), wooden shakes/shingles, stones with mud, or other)
515	Main construction material of the floor? (Observe and record) (Dirt/sand, dung, palm stems/bamboo, planks, sanded wood, vinyl/linoleum, or other; Ciment, moquette, or carrelage)
495	If the (eldest) female head/spouse worked at least one hour in the past week, then what was the main sector of activity (or the main type of product/service produced) in which she had her main occupation? (Farming, fishing, or hunting; Does not work; Manufacturing, or other services; Trade, lodging, and food service, public utilities (water, sanitation, electricity, or gas), logistics and communication, financial services, or construction and public works; No female head/spouse)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
463	If the male head/spouse worked at least one hour in the past week, then what was the main sector of activity (or the main type of product/service produced) in which he had his main occupation? (Farming, fishing, or hunting; No male head/spouse; Does not work; Manufacturing; Construction and public infrastructure, trade, lodging, and food service, or logistics and communication; Financial services, public utilities (water, sanitation, electricity, or gas), or other services)
455	If the (eldest) female head/spouse worked at least one hour in the past week, then what was her status in her main occupation? (Does not work; Self-employed, family workers, day laborer, or apprentice; No female head/spouse; Semi-skilled worker, business owner with at least one employee, middle manager, white-collar worker, skilled worker, executives, professionals, or para-professionals)
447	Can the male head/spouse read and write with understanding in French? (No; No male head/spouse; Yes)
434	Does any member of your household have a bank account? (No; Yes)
433	How many household members 6-years-old or older worked at least one hour in the past week and were in their main occupation a farmer, livestock-raiser, or fisherman? (Two or more; One; None)
432	If the (eldest) female head/spouse worked at least one hour in the past week, then was her main occupation farmer, livestock-raiser, or fisherwoman? (Works as a farmer, livestock-raiser, or fisherwoman; Does not work; Works as something other than a farmer, livestock-raiser, or fisherwoman; No female head/spouse)
398	If the male head/spouse worked at least one hour in the past week, then was his main occupation farmer, livestock-raiser, or fisherman? (Works as a farmer, livestock-raiser, or fisherman; No male head/spouse; Does not work; Works as something other than a farmer, livestock-raiser, or fisherman)
384	Did all household members ages 7 to 12 go to school at some point during the current school year? (No; No one ages 7 to 12; Yes)
381	Did all household members ages 7 to 11 go to school at some point during the current school year? (No; No one ages 7 to 11; Yes)
371	Do members of the household have any farm land? (Yes; No)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
359	Did all household members ages 7 to 13 go to school at some point during the current school year? (No; No one ages 7 to 13; Yes)
346	Did all household members ages 7 to 14 go to school at some point during the current school year? (No; No one ages 7 to 14; Yes)
335	Did all household members ages 7 to 15 go to school at some point during the current school year? (No; No one ages 7 to 15; Yes)
329	Does the household head have a spouse/conjugal partner? (Yes; Female head without a spouse/conjugal partner; Male head without a spouse/conjugal partner)
322	Did all household members ages 7 to 16 go to school at some point during the current school year? (No; No one ages 7 to 16; Yes)
311	Did all household members ages 7 to 17 go to school at some point during the current school year? (No; No one ages 7 to 17; Yes)
311	In the past week, did the (eldest) female head/spouse work at least one hour? (No; No female head/spouse; Yes)
304	Did all household members ages 7 to 18 go to school at some point during the current school year? (No; No one ages 7 to 18; Yes)
275	If the male head/spouse worked at least one hour in the past week, then what was his status in his main occupation? (Self-employed; Does not work; Family worker, or apprentice; No male head/spouse; Day laborer, semi-skilled worker, skilled worker, middle manager, white-collar worker, executives, professionals, para-professionals, or business owner with at least one employee)
250	How many household members 6-years-old or older worked at least 1 hour in the past week and, in their main occupation, were wage/salary workers? (No; Yes)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
224	Main construction material of the roof (Observe and record.) (Sod, palm stems/bamboo, straw/palm leaves/leaves, cardboard, or no roof; Wood, sheet metal, braided palm leaves, or other; Tiles, corrugated metal or asbestos sheets, cement, planks, or shingles)
208	Does the household have a radio ? (No; Yes)
200	Does the household have a cell phone? (No; Yes)
187	In the past week, the male head/spouse or the (eldest) female head/spouse work at least 1 hour and have his/her main occupation in self-employment in a non-agricultural activity? (No; Yes)
156	Does a member of the household have an automobile or car? (No; Yes)
127	How many rooms does the household use for sleeping? (Four or more; Three; Two; One, or none)
113	How many mosquito nets does your household have? (Three or more; Two; One; None)
97	Does your household have any cattle, or farm animals, or poultry? (Yes; No)
92	Does a member of the household have a bicycle, motorcycle/ scooter, or automobile/pick-up? (None; Only bicycle; Motorcycle/scooter, or automobile/pick-up (regardless of bicycle))
90	Do you usually cook inside the house, in a separate building, or outside in the open air? (Outside in the open air, or other; In a separate building; Inside the house; Does not cook)
74	Does a member of the household have a bicycle? (Yes; No)
72	Do you usually cook inside the house (whether in a room used only as a kitchen or not), in a separate building, or outside in the open air? (Outside in the open air, or other; Inside the house but not in a room used only as a kitchen; In a separate building; Inside the house in a room used only as a kitchen; Does not cook)
57	Does a member of the household have a motorcyle/scooter? (No; Yes)
34	How many household members 6-years-old or older worked at least one hour in the past week? (None; One; Two or more)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
31	Do you have a room that is used only as a kitchen? (Does not cook, cook in separate building or outside in open air; No; Oui)
5	In the past week, did the male head/spouse work at least one hour? (No; Yes; No male head/spouse)
0	Did any household members six-years-old or older work for at least 1 hour in the past week and, in their main occupation, were day labourers, unpaid family workers, or unpaid interns/apprentices? (No; Yes)

Source: 2015 EMICoV with the median (50th-percentile) poverty line

Tables for
100% of the National Poverty Line

(and Tables Pertaining
to All Poverty Lines)

Table 3 (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:
0–13	65.5
14–17	57.3
18–20	55.3
21–22	54.6
23–24	44.1
25–26	43.3
27–28	42.5
29–30	42.5
31–32	37.3
33–34	35.7
35–36	35.7
37–38	32.3
39–40	29.6
41–43	29.3
44–45	28.8
46–48	28.8
49–51	22.0
52–54	16.7
55–58	16.0
59–62	12.4
63–66	7.9
67–73	7.3
74–100	4.3

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

Score	Households in range and < poverty line		All households in range		Poverty likelihood (%)
0–13	4,576	÷	6,985	=	65.5
14–17	4,198	÷	7,327	=	57.3
18–20	4,253	÷	7,685	=	55.3
21–22	3,296	÷	6,042	=	54.6
23–24	2,658	÷	6,032	=	44.1
25–26	2,845	÷	6,571	=	43.3
27–28	3,422	÷	8,052	=	42.5
29–30	2,415	÷	5,683	=	42.5
31–32	2,380	÷	6,380	=	37.3
33–34	1,898	÷	5,314	=	35.7
35–36	2,229	÷	6,241	=	35.7
37–38	1,584	÷	4,901	=	32.3
39–40	2,015	÷	6,815	=	29.6
41–43	1,770	÷	6,042	=	29.3
44–45	1,895	÷	6,577	=	28.8
46–48	2,160	÷	7,498	=	28.8
49–51	1,596	÷	7,262	=	22.0
52–54	1,068	÷	6,408	=	16.7
55–58	1,310	÷	8,208	=	16.0
59–62	814	÷	6,558	=	12.4
63–66	370	÷	4,660	=	7.9
67–73	448	÷	6,150	=	7.3
74–100	300	÷	7,036	=	4.3

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

Table 5 (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

Score	Error	Difference between estimate and observed value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
0–13	+2.3	3.1	3.8	4.7
14–17	−6.0	4.5	4.8	5.6
18–20	+5.3	3.3	3.9	4.9
21–22	+1.1	3.3	3.9	5.1
23–24	−3.1	3.4	4.1	5.2
25–26	+7.3	3.8	4.5	5.9
27–28	−10.2	6.7	6.9	7.4
29–30	−3.4	3.6	4.5	5.9
31–32	−2.0	3.6	4.3	5.5
33–34	−7.2	5.6	5.9	6.7
35–36	−5.2	4.9	5.6	7.5
37–38	−5.9	5.1	5.5	6.5
39–40	−0.3	3.4	4.0	5.0
41–43	−1.8	3.3	3.8	5.4
44–45	−8.6	6.7	7.3	7.7
46–48	+5.7	2.8	3.3	4.3
49–51	−25.2	15.1	15.4	15.9
52–54	+4.9	2.0	2.4	3.1
55–58	+2.2	2.0	2.4	3.2
59–62	+2.8	2.2	2.6	3.6
63–66	−6.5	4.9	5.4	6.0
67–73	+1.7	1.3	1.5	2.0
74–100	+0.4	1.4	1.6	2.2

Table 6 (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 n		Difference between estimate and observed value		
		Confidence interval ($\pm$percentage points)		
	Error	90-percent	95-percent	99-percent
1	+0.2	63.3	70.3	79.1
4	−1.2	40.9	48.7	57.4
8	−2.0	31.5	38.0	46.0
16	−2.5	23.1	26.6	36.1
32	−2.4	17.3	19.7	23.9
64	−2.7	12.1	14.3	19.4
128	−2.6	8.4	9.8	13.1
256	−2.7	6.3	7.4	9.8
512	−2.8	4.4	5.3	6.6
1,024	−2.8	3.0	3.6	4.9
2,048	−2.8	2.1	2.5	3.4
4,096	−2.7	1.5	1.8	2.4
8,192	−2.7	1.1	1.3	1.8
16,384	−2.7	0.8	0.9	1.3

Table 7 (National lines, 2010 definition): 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 (2010 def.)		
	100%	150%	200%
Error (estimate minus observed value)	–2.7	–4.7	–3.6
Precision of estimate	0.8	0.8	0.8
Alpha factor for precision	1.27	1.30	1.28

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 7 (International 2005 and 2011 PPP lines, 2010 definition): 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 (2010 def.)				Intl. 2011 PPP (2010 def.)			
	$1.25	$2.00	$2.50	$5.00	$1.90	$3.20	$5.50	$21.70
Error (estimate minus observed value)	–2.8	–4.2	–4.2	–2.0	–3.3	–3.5	–3.0	–0.2
Precision of estimate	0.8	0.8	0.7	0.3	0.8	0.8	0.5	0.1
Alpha factor for precision	1.25	1.30	1.24	1.04	1.31	1.30	1.15	1.02

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 7 (Relative and percentile-based lines, 2010 definition): 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 (2010 def.) | | | | |
	< 100% Natl.	20th	40th	50th	60th	80th
Error (estimate minus observed value)	–0.1	–0.1	–2.7	–3.9	–4.5	–4.1
Precision of estimate	0.6	0.6	0.8	0.9	0.8	0.7
Alpha factor for precision	1.21	1.21	1.27	1.37	1.31	1.28

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 (All poverty lines): Possible targeting outcomes

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

Table 9 (100% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 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
<=13	3.0	30.1	1.9	65.1	68.1	−76.2
<=17	5.9	27.2	3.8	63.1	69.0	−52.6
<=20	8.4	24.7	6.2	60.7	69.1	−30.5
<=22	10.8	22.3	8.4	58.6	69.4	−9.3
<=24	12.8	20.3	10.8	56.1	69.0	+10.1
<=26	14.6	18.5	13.2	53.7	68.3	+28.2
<=28	17.0	16.0	15.9	51.0	68.0	+51.2
<=30	18.6	14.5	18.1	48.9	67.5	+45.4
<=32	20.3	12.8	21.1	45.8	66.1	+36.3
<=34	21.7	11.4	23.1	43.8	65.5	+30.1
<=36	22.9	10.2	25.7	41.2	64.1	+22.3
<=38	24.1	8.9	28.0	38.9	63.0	+15.3
<=40	25.4	7.7	31.0	36.0	61.3	+6.4
<=43	26.8	6.3	33.8	33.1	59.8	−2.3
<=45	27.9	5.2	36.5	30.4	58.3	−10.3
<=48	29.0	4.1	40.0	26.9	55.9	−20.9
<=51	30.2	2.9	43.6	23.3	53.5	−31.8
<=54	30.8	2.3	47.3	19.7	50.5	−42.9
<=58	31.7	1.4	51.6	15.3	47.0	−56.0
<=62	32.1	1.0	55.2	11.7	43.8	−66.9
<=66	32.6	0.5	58.4	8.5	41.1	−76.7
<=73	32.9	0.1	62.8	4.1	37.1	−89.8
<=100	33.1	0.0	66.9	0.0	33.1	−102.3

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

Table 10 (100% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, 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
<=13	4.9	61.9	9.1	1.6:1
<=17	9.7	60.8	17.9	1.6:1
<=20	14.6	57.6	25.4	1.4:1
<=22	19.2	56.4	32.7	1.3:1
<=24	23.6	54.4	38.8	1.2:1
<=26	27.8	52.5	44.1	1.1:1
<=28	33.0	51.7	51.5	1.1:1
<=30	36.7	50.8	56.3	1.0:1
<=32	41.4	49.1	61.4	1.0:1
<=34	44.8	48.4	65.6	0.9:1
<=36	48.6	47.1	69.2	0.9:1
<=38	52.2	46.3	73.0	0.9:1
<=40	56.3	45.0	76.7	0.8:1
<=43	60.6	44.2	80.9	0.8:1
<=45	64.4	43.3	84.3	0.8:1
<=48	69.0	42.0	87.6	0.7:1
<=51	73.8	40.9	91.3	0.7:1
<=54	78.1	39.5	93.2	0.7:1
<=58	83.3	38.0	95.8	0.6:1
<=62	87.3	36.7	96.9	0.6:1
<=66	91.0	35.8	98.5	0.6:1
<=73	95.7	34.4	99.6	0.5:1
<=100	100.0	33.1	100.0	0.5:1

Tables for
150% of the National Poverty Line

Table 3 (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:
0–13	86.5
14–17	82.4
18–20	81.1
21–22	81.1
23–24	74.6
25–26	73.1
27–28	70.7
29–30	69.5
31–32	67.5
33–34	63.2
35–36	62.2
37–38	59.7
39–40	54.3
41–43	54.3
44–45	54.3
46–48	54.3
49–51	48.8
52–54	44.4
55–58	39.8
59–62	32.3
63–66	29.3
67–73	24.0
74–100	13.9

Table 5 (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

| Score | Error | Difference between estimate and observed value | | |
| | | Confidence interval (±percentage points) | | |
		90-percent	95-percent	99-percent
0–13	−1.8	1.9	2.3	3.0
14–17	−4.3	3.1	3.3	3.6
18–20	−3.2	2.7	2.9	3.4
21–22	+7.1	2.9	3.4	4.4
23–24	+2.4	3.1	3.6	4.7
25–26	+2.0	3.7	4.4	5.5
27–28	−8.7	5.5	5.8	6.2
29–30	−1.1	3.2	3.8	5.1
31–32	−0.4	3.2	3.9	5.0
33–34	−9.8	6.5	6.7	7.1
35–36	−0.4	4.0	4.8	6.2
37–38	−5.9	4.8	5.2	5.9
39–40	−0.4	3.5	4.2	5.3
41–43	−3.7	3.5	4.0	5.2
44–45	−6.4	5.1	5.5	6.3
46–48	−1.7	3.4	4.0	5.0
49–51	−20.7	12.0	12.3	12.8
52–54	+0.7	3.5	4.0	5.5
55–58	+4.3	3.2	3.8	4.8
59–62	−13.7	9.0	9.4	10.1
63–66	−11.3	8.1	8.7	9.6
67–73	−11.8	8.3	8.6	9.6
74–100	−0.7	2.5	2.9	3.9

Table 6 (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 n	Difference between estimate and observed value			
		Confidence interval ($\pm$percentage points)		
	Error	90-percent	95-percent	99-percent
1	−1.1	69.2	72.6	79.2
4	−1.4	41.5	49.2	59.9
8	−2.4	32.2	39.0	49.9
16	−3.3	23.8	27.6	35.3
32	−3.9	17.7	21.3	26.4
64	−4.4	13.3	15.6	19.9
128	−4.3	9.0	10.6	14.5
256	−4.5	6.8	8.1	10.2
512	−4.5	4.7	5.5	7.3
1,024	−4.6	3.3	3.9	5.0
2,048	−4.6	2.4	2.8	3.4
4,096	−4.7	1.6	1.9	2.5
8,192	−4.6	1.1	1.3	1.8
16,384	−4.7	0.8	1.0	1.2

Table 9 (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
<=13	4.2	53.6	0.7	41.5	45.7	−84.4
<=17	8.3	49.5	1.5	40.7	49.0	−68.8
<=20	12.2	45.6	2.3	39.9	52.1	−53.6
<=22	15.7	42.1	3.5	38.7	54.5	−39.6
<=24	18.8	39.0	4.8	37.4	56.2	−26.6
<=26	21.8	36.0	6.1	36.1	57.9	−14.2
<=28	25.6	32.2	7.4	34.8	60.5	+1.4
<=30	28.1	29.7	8.6	33.6	61.7	+12.1
<=32	31.1	26.7	10.3	31.9	63.0	+25.4
<=34	33.4	24.4	11.4	30.8	64.2	+35.4
<=36	35.7	22.1	13.0	29.2	64.9	+45.8
<=38	37.8	20.0	14.3	27.9	65.7	+55.7
<=40	40.1	17.7	16.3	25.9	66.0	+66.7
<=43	42.5	15.3	18.1	24.1	66.6	+68.7
<=45	44.5	13.3	19.9	22.3	66.8	+65.6
<=48	46.9	10.9	22.0	20.2	67.1	+61.9
<=51	49.6	8.2	24.3	17.9	67.5	+58.0
<=54	51.4	6.4	26.7	15.5	66.9	+53.9
<=58	53.5	4.3	29.8	12.4	65.8	+48.4
<=62	54.8	3.0	32.5	9.7	64.5	+43.8
<=66	55.9	1.9	35.1	7.1	63.1	+39.3
<=73	57.3	0.5	38.5	3.7	61.0	+33.5
<=100	57.8	0.0	42.2	0.0	57.8	+27.0

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

Table 10 (150% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, 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
<=13	4.9	86.0	7.2	6.1:1
<=17	9.7	84.9	14.3	5.6:1
<=20	14.6	83.9	21.2	5.2:1
<=22	19.2	82.0	27.2	4.6:1
<=24	23.6	79.7	32.6	3.9:1
<=26	27.8	78.2	37.6	3.6:1
<=28	33.0	77.7	44.3	3.5:1
<=30	36.7	76.6	48.6	3.3:1
<=32	41.4	75.1	53.8	3.0:1
<=34	44.8	74.6	57.8	2.9:1
<=36	48.6	73.4	61.7	2.8:1
<=38	52.2	72.5	65.4	2.6:1
<=40	56.3	71.1	69.3	2.5:1
<=43	60.6	70.1	73.5	2.3:1
<=45	64.4	69.1	77.0	2.2:1
<=48	69.0	68.0	81.2	2.1:1
<=51	73.8	67.1	85.8	2.0:1
<=54	78.1	65.8	88.9	1.9:1
<=58	83.3	64.2	92.5	1.8:1
<=62	87.3	62.8	94.8	1.7:1
<=66	91.0	61.5	96.8	1.6:1
<=73	95.7	59.8	99.1	1.5:1
<=100	100.0	57.8	100.0	1.4:1

Tables for
200% of the National Poverty Line

Table 3 (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:
0–13	94.1
14–17	91.1
18–20	90.0
21–22	90.0
23–24	88.4
25–26	86.3
27–28	83.6
29–30	82.7
31–32	82.7
33–34	81.8
35–36	81.8
37–38	78.3
39–40	72.9
41–43	72.9
44–45	72.9
46–48	72.9
49–51	69.0
52–54	63.7
55–58	61.2
59–62	51.8
63–66	46.9
67–73	37.6
74–100	25.8

Table 5 (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

| Score | Error | Difference between estimate and observed value Confidence interval (±percentage points) | | |
		90-percent	95-percent	99-percent
0–13	−0.9	1.3	1.5	1.9
14–17	−1.7	1.6	1.9	2.5
18–20	−1.0	1.7	2.1	2.7
21–22	+4.2	2.4	2.9	3.7
23–24	+2.7	2.3	2.7	3.6
25–26	−0.8	2.4	2.9	4.0
27–28	−3.8	2.8	3.0	3.4
29–30	+0.9	2.6	3.3	4.3
31–32	−1.7	2.2	2.5	3.3
33–34	−3.4	2.9	3.0	3.8
35–36	−0.6	2.9	3.6	4.5
37–38	−4.0	3.4	3.6	4.3
39–40	−7.3	5.0	5.2	5.6
41–43	−2.0	3.0	3.6	4.6
44–45	+3.3	3.6	4.4	5.7
46–48	−4.5	3.6	3.8	4.5
49–51	−12.0	7.2	7.5	8.0
52–54	−0.3	3.5	4.2	5.3
55–58	−4.2	3.7	4.0	5.0
59–62	−12.2	8.0	8.2	8.8
63–66	−6.5	5.7	6.2	7.6
67–73	−9.9	7.2	7.8	8.6
74–100	−2.5	3.2	3.9	5.3

Table 6 (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 n	Error	Difference between estimate and observed value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	−0.5	67.5	73.0	82.1
4	−2.0	39.0	45.0	56.0
8	−2.6	27.6	33.3	43.6
16	−2.8	21.5	24.6	31.5
32	−3.2	15.8	18.3	22.9
64	−3.5	11.3	13.6	17.2
128	−3.5	7.9	9.4	12.9
256	−3.5	5.9	6.9	9.0
512	−3.5	4.1	5.0	6.5
1,024	−3.6	2.9	3.4	4.4
2,048	−3.6	2.0	2.4	3.1
4,096	−3.6	1.4	1.7	2.2
8,192	−3.6	1.0	1.2	1.5
16,384	−3.6	0.8	0.9	1.1

Table 9 (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
<=13	4.6	68.5	0.3	26.7	31.2	−87.1
<=17	9.1	64.0	0.7	26.3	35.3	−74.3
<=20	13.4	59.7	1.2	25.8	39.2	−61.7
<=22	17.4	55.6	1.8	25.2	42.6	−49.9
<=24	21.1	51.9	2.5	24.5	45.7	−38.7
<=26	24.8	48.3	3.1	23.9	48.7	−28.0
<=28	29.1	43.9	3.9	23.1	52.2	−15.0
<=30	32.1	40.9	4.6	22.4	54.5	−5.8
<=32	35.9	37.1	5.5	21.5	57.4	+5.9
<=34	38.7	34.3	6.1	20.9	59.6	+14.4
<=36	41.8	31.3	6.8	20.1	61.9	+23.8
<=38	44.5	28.5	7.6	19.3	63.8	+32.4
<=40	47.7	25.4	8.6	18.3	66.0	+42.4
<=43	50.9	22.1	9.7	17.3	68.2	+52.7
<=45	53.4	19.6	11.0	16.0	69.4	+61.2
<=48	56.8	16.2	12.2	14.8	71.6	+72.2
<=51	60.3	12.7	13.5	13.4	73.7	+81.5
<=54	63.0	10.0	15.1	11.9	74.9	+79.3
<=58	66.2	6.8	17.1	9.8	76.0	+76.6
<=62	68.4	4.7	18.9	8.1	76.4	+74.1
<=66	70.1	3.0	21.0	6.0	76.1	+71.3
<=73	72.0	1.0	23.7	3.3	75.3	+67.6
<=100	73.0	0.0	27.0	0.0	73.0	+63.1

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

Table 10 (200% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, 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
<=13	4.9	93.9	6.2	15.3:1
<=17	9.7	92.9	12.4	13.1:1
<=20	14.6	91.8	18.3	11.2:1
<=22	19.2	90.7	23.8	9.8:1
<=24	23.6	89.6	29.0	8.6:1
<=26	27.8	89.0	33.9	8.1:1
<=28	33.0	88.3	39.9	7.6:1
<=30	36.7	87.5	43.9	7.0:1
<=32	41.4	86.8	49.2	6.6:1
<=34	44.8	86.4	53.0	6.4:1
<=36	48.6	85.9	57.2	6.1:1
<=38	52.2	85.4	61.0	5.8:1
<=40	56.3	84.7	65.3	5.5:1
<=43	60.6	84.0	69.7	5.3:1
<=45	64.4	83.0	73.1	4.9:1
<=48	69.0	82.3	77.8	4.7:1
<=51	73.8	81.7	82.6	4.5:1
<=54	78.1	80.7	86.2	4.2:1
<=58	83.3	79.5	90.6	3.9:1
<=62	87.3	78.4	93.6	3.6:1
<=66	91.0	77.0	95.9	3.3:1
<=73	95.7	75.2	98.6	3.0:1
<=100	100.0	73.0	100.0	2.7:1

Tables for
$1.25/day 2005 PPP Poverty Line

Table 3 ($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:
0–13	70.3
14–17	60.7
18–20	60.5
21–22	58.5
23–24	50.2
25–26	48.2
27–28	46.1
29–30	46.1
31–32	40.8
33–34	39.5
35–36	39.1
37–38	34.8
39–40	32.2
41–43	32.2
44–45	32.2
46–48	32.2
49–51	24.1
52–54	19.3
55–58	18.6
59–62	15.1
63–66	11.8
67–73	10.3
74–100	4.7

Table 5 ($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

Score	Error	Difference between estimate and observed value		
		Confidence interval ($\pm$percentage points)		
		90-percent	95-percent	99-percent
0–13	+3.4	3.2	3.8	4.9
14–17	−5.4	4.2	4.6	5.2
18–20	+4.7	3.4	4.0	5.2
21–22	+0.4	3.3	4.0	5.2
23–24	−2.2	3.3	4.0	5.3
25–26	−8.0	6.0	6.4	7.0
27–28	−10.1	6.6	6.8	7.5
29–30	−5.4	4.4	4.7	5.9
31–32	−2.1	3.5	4.2	5.7
33–34	−8.0	6.1	6.3	7.1
35–36	−3.1	4.7	5.5	7.3
37–38	−5.6	5.0	5.4	6.2
39–40	−0.5	3.5	4.1	5.3
41–43	−2.8	3.4	3.9	5.8
44–45	−6.9	5.9	6.4	7.4
46–48	+2.7	3.2	3.9	5.0
49–51	−24.3	14.5	14.9	15.5
52–54	+5.4	2.4	2.8	3.4
55–58	+3.6	2.1	2.6	3.3
59–62	+4.9	2.2	2.7	3.6
63–66	−3.0	3.2	4.1	5.5
67–73	+2.9	1.5	1.8	2.5
74–100	+0.2	1.5	1.8	2.2

Table 6 ($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 n	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
	Error	90-percent	95-percent	99-percent
1	+1.1	64.2	71.0	80.0
4	−0.8	41.4	49.3	58.4
8	−1.5	31.0	37.1	47.3
16	−2.5	23.0	27.2	34.2
32	−2.4	16.4	19.8	24.9
64	−2.7	11.9	14.3	19.3
128	−2.6	8.5	10.2	13.3
256	−2.7	6.4	7.3	9.4
512	−2.8	4.4	5.2	6.6
1,024	−2.8	3.1	3.7	4.9
2,048	−2.8	2.1	2.7	3.4
4,096	−2.8	1.5	1.8	2.3
8,192	−2.7	1.1	1.3	1.7
16,384	−2.8	0.8	0.9	1.3

Table 9 ($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
<=13	3.2	33.2	1.7	61.9	65.1	−77.9
<=17	6.3	30.1	3.5	60.1	66.4	−56.0
<=20	9.0	27.4	5.6	58.0	67.1	−35.2
<=22	11.7	24.7	7.5	56.1	67.8	−15.2
<=24	13.9	22.5	9.7	53.9	67.8	+3.0
<=26	16.0	20.4	11.9	51.7	67.7	+20.3
<=28	18.6	17.8	14.4	49.2	67.8	+41.8
<=30	20.3	16.1	16.4	47.3	67.6	+55.0
<=32	22.2	14.2	19.2	44.4	66.6	+47.2
<=34	23.7	12.6	21.1	42.5	66.3	+42.1
<=36	25.0	11.4	23.6	40.0	65.1	+35.2
<=38	26.4	10.0	25.8	37.8	64.2	+29.1
<=40	27.7	8.7	28.6	35.0	62.7	+21.3
<=43	29.3	7.1	31.3	32.3	61.6	+13.9
<=45	30.5	5.9	33.9	29.8	60.3	+6.9
<=48	31.8	4.5	37.1	26.5	58.3	−2.1
<=51	33.2	3.2	40.7	22.9	56.1	−11.8
<=54	33.8	2.5	44.2	19.4	53.2	−21.6
<=58	34.8	1.6	48.5	15.1	49.9	−33.3
<=62	35.2	1.2	52.1	11.5	46.7	−43.1
<=66	35.8	0.6	55.3	8.3	44.1	−51.9
<=73	36.2	0.2	59.5	4.1	40.3	−63.6
<=100	36.4	0.0	63.6	0.0	36.4	−74.8

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

Table 10 ($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
<=13	4.9	65.5	8.7	1.9:1
<=17	9.7	64.4	17.2	1.8:1
<=20	14.6	61.8	24.8	1.6:1
<=22	19.2	60.9	32.1	1.6:1
<=24	23.6	58.9	38.2	1.4:1
<=26	27.8	57.4	43.9	1.3:1
<=28	33.0	56.4	51.1	1.3:1
<=30	36.7	55.4	55.9	1.2:1
<=32	41.4	53.6	61.0	1.2:1
<=34	44.8	53.0	65.3	1.1:1
<=36	48.6	51.5	68.8	1.1:1
<=38	52.2	50.6	72.5	1.0:1
<=40	56.3	49.2	76.1	1.0:1
<=43	60.6	48.3	80.5	0.9:1
<=45	64.4	47.4	83.8	0.9:1
<=48	69.0	46.2	87.5	0.9:1
<=51	73.8	44.9	91.1	0.8:1
<=54	78.1	43.3	93.0	0.8:1
<=58	83.3	41.8	95.6	0.7:1
<=62	87.3	40.3	96.7	0.7:1
<=66	91.0	39.3	98.3	0.6:1
<=73	95.7	37.8	99.5	0.6:1
<=100	100.0	36.4	100.0	0.6:1

Tables for
$2.00/day 2005 PPP Poverty Line

Table 3 ($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:
0–13	90.4
14–17	86.2
18–20	85.4
21–22	85.4
23–24	81.7
25–26	80.5
27–28	77.0
29–30	75.0
31–32	73.5
33–34	70.0
35–36	70.0
37–38	65.7
39–40	62.5
41–43	62.5
44–45	62.3
46–48	62.3
49–51	57.7
52–54	53.0
55–58	49.0
59–62	41.2
63–66	36.7
67–73	30.1
74–100	18.8

Table 5 ($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
0–13	−1.5	1.6	1.9	2.4
14–17	−3.1	2.5	2.6	2.9
18–20	−2.4	2.2	2.4	3.0
21–22	+5.0	2.6	3.1	4.2
23–24	+1.9	2.6	3.3	4.2
25–26	+3.3	3.3	3.9	5.0
27–28	−6.3	4.2	4.5	4.8
29–30	−0.1	3.0	3.7	4.8
31–32	+0.7	3.2	3.6	5.0
33–34	−8.1	5.5	5.7	6.4
35–36	+0.9	3.7	4.5	6.1
37–38	−10.3	6.7	7.0	7.5
39–40	+0.3	3.5	4.2	5.4
41–43	−3.0	3.2	3.8	5.0
44–45	−2.0	3.9	4.7	6.1
46–48	−4.8	4.0	4.3	4.8
49–51	−15.4	9.2	9.6	10.1
52–54	+0.4	3.6	4.3	5.6
55–58	+4.1	3.5	4.3	5.5
59–62	−10.9	7.6	7.8	8.4
63–66	−14.0	9.4	9.9	10.9
67–73	−12.1	8.3	8.9	9.8
74–100	−0.8	2.9	3.3	4.1

Table 6 ($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	−1.3	69.2	75.5	83.5
4	−1.2	41.0	48.5	58.8
8	−2.5	31.0	36.3	46.8
16	−2.7	23.9	27.8	34.0
32	−3.3	17.3	19.6	25.3
64	−3.9	12.6	14.8	18.3
128	−4.0	8.6	10.3	13.5
256	−4.1	6.6	7.7	10.2
512	−4.0	4.6	5.6	6.8
1,024	−4.1	3.2	3.7	5.0
2,048	−4.1	2.2	2.7	3.3
4,096	−4.2	1.6	1.9	2.4
8,192	−4.1	1.1	1.3	1.7
16,384	−4.2	0.8	1.0	1.2

Table 9 ($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
<=13	4.4	60.0	0.5	35.2	39.6	−85.6
<=17	8.7	55.7	1.1	34.6	43.2	−71.4
<=20	12.8	51.6	1.8	33.8	46.6	−57.5
<=22	16.5	47.8	2.6	33.0	49.5	−44.5
<=24	20.0	44.4	3.6	32.0	52.0	−32.3
<=26	23.2	41.1	4.6	31.0	54.2	−20.7
<=28	27.3	37.0	5.7	30.0	57.3	−6.3
<=30	30.0	34.4	6.7	28.9	58.9	+3.6
<=32	33.3	31.0	8.1	27.6	60.9	+16.1
<=34	35.8	28.5	9.0	26.7	62.5	+25.4
<=36	38.4	26.0	10.2	25.4	63.8	+35.2
<=38	40.9	23.5	11.3	24.4	65.2	+44.6
<=40	43.4	20.9	12.9	22.8	66.2	+55.0
<=43	46.2	18.2	14.4	21.2	67.4	+66.0
<=45	48.4	16.0	16.0	19.7	68.0	+75.1
<=48	51.2	13.1	17.7	17.9	69.1	+72.4
<=51	54.2	10.2	19.7	16.0	70.1	+69.4
<=54	56.4	8.0	21.7	13.9	70.3	+66.2
<=58	58.9	5.4	24.4	11.3	70.2	+62.1
<=62	60.6	3.8	26.7	8.9	69.5	+58.5
<=66	62.0	2.3	29.0	6.6	68.6	+54.9
<=73	63.6	0.7	32.1	3.6	67.2	+50.1
<=100	64.3	0.0	35.7	0.0	64.3	+44.6

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

Table 10 ($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
<=13	4.9	90.1	6.8	9.1:1
<=17	9.7	88.7	13.4	7.9:1
<=20	14.6	87.6	19.8	7.1:1
<=22	19.2	86.2	25.7	6.2:1
<=24	23.6	84.7	31.1	5.5:1
<=26	27.8	83.4	36.1	5.0:1
<=28	33.0	82.8	42.5	4.8:1
<=30	36.7	81.7	46.6	4.5:1
<=32	41.4	80.4	51.8	4.1:1
<=34	44.8	80.0	55.7	4.0:1
<=36	48.6	79.0	59.7	3.8:1
<=38	52.2	78.3	63.5	3.6:1
<=40	56.3	77.1	67.5	3.4:1
<=43	60.6	76.2	71.8	3.2:1
<=45	64.4	75.1	75.2	3.0:1
<=48	69.0	74.3	79.6	2.9:1
<=51	73.8	73.4	84.2	2.8:1
<=54	78.1	72.2	87.6	2.6:1
<=58	83.3	70.7	91.6	2.4:1
<=62	87.3	69.4	94.1	2.3:1
<=66	91.0	68.1	96.3	2.1:1
<=73	95.7	66.5	98.9	2.0:1
<=100	100.0	64.3	100.0	1.8:1

Tables for
$2.50/day 2005 PPP Poverty Line

Table 3 ($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:
0–13	95.0
14–17	92.2
18–20	91.5
21–22	91.5
23–24	89.2
25–26	88.5
27–28	86.0
29–30	85.2
31–32	85.2
33–34	85.2
35–36	85.2
37–38	81.7
39–40	75.7
41–43	75.7
44–45	75.5
46–48	75.5
49–51	71.7
52–54	67.4
55–58	64.1
59–62	55.8
63–66	50.0
67–73	40.1
74–100	27.3

Table 5 ($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

Score	Error	Difference between estimate and observed value Confidence interval (±percentage points) 90-percent	95-percent	99-percent
0–13	−0.7	1.1	1.4	1.9
14–17	−2.1	1.7	1.9	2.1
18–20	−1.0	1.6	1.9	2.5
21–22	+3.8	2.3	2.8	3.6
23–24	+1.7	2.2	2.6	3.3
25–26	−1.2	2.1	2.5	3.4
27–28	−2.2	2.0	2.2	2.9
29–30	+0.1	2.6	3.1	4.2
31–32	−2.6	2.2	2.3	2.7
33–34	−0.7	2.5	2.9	3.7
35–36	+1.2	2.9	3.3	4.3
37–38	−1.5	2.7	3.2	4.1
39–40	−6.6	4.5	4.8	5.2
41–43	−1.5	3.0	3.5	4.4
44–45	−0.4	3.2	4.0	5.2
46–48	−2.8	2.7	3.1	4.0
49–51	−11.2	6.8	6.9	7.4
52–54	+0.9	3.5	4.0	5.2
55–58	−3.0	3.1	3.7	5.1
59–62	−8.9	6.4	6.6	7.2
63–66	−20.8	12.3	12.5	13.2
67–73	−9.5	7.1	7.5	8.3
74–100	−1.8	3.2	3.8	5.3

Table 6 ($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 n	Error	Difference between estimate and observed value		
		Confidence interval ($\pm$percentage points)		
		90-percent	95-percent	99-percent
1	–0.4	65.9	73.0	82.1
4	–2.3	38.1	44.4	56.1
8	–3.0	25.7	30.6	40.4
16	–3.2	19.3	23.0	29.5
32	–3.6	15.2	17.0	22.0
64	–4.0	10.9	12.4	16.6
128	–4.0	7.5	9.1	11.8
256	–4.1	5.4	6.3	8.3
512	–4.2	3.9	4.7	6.1
1,024	–4.2	2.7	3.2	4.4
2,048	–4.2	1.9	2.2	3.0
4,096	–4.2	1.3	1.6	2.1
8,192	–4.1	0.9	1.1	1.5
16,384	–4.2	0.7	0.9	1.1

Table 9 ($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
<=13	4.6	70.9	0.3	24.3	28.9	−87.5
<=17	9.2	66.3	0.6	23.9	33.1	−74.9
<=20	13.6	61.9	1.0	23.5	37.1	−62.7
<=22	17.7	57.8	1.5	23.0	40.7	−51.1
<=24	21.5	53.9	2.1	22.5	44.0	−40.2
<=26	25.3	50.2	2.6	22.0	47.2	−29.7
<=28	29.7	45.8	3.3	21.2	50.9	−16.9
<=30	32.8	42.7	3.9	20.6	53.5	−7.9
<=32	36.8	38.7	4.6	19.9	56.7	+3.6
<=34	39.6	35.8	5.2	19.3	59.0	+11.9
<=36	42.8	32.7	5.8	18.7	61.5	+21.1
<=38	45.6	29.9	6.6	17.9	63.5	+29.5
<=40	48.9	26.6	7.4	17.1	65.9	+39.4
<=43	52.2	23.3	8.4	16.1	68.3	+49.5
<=45	54.9	20.6	9.4	15.1	70.0	+58.0
<=48	58.4	17.1	10.6	13.9	72.3	+68.7
<=51	62.0	13.5	11.9	12.7	74.6	+79.9
<=54	64.8	10.7	13.3	11.2	76.0	+82.4
<=58	68.1	7.4	15.2	9.3	77.4	+79.9
<=62	70.3	5.1	16.9	7.6	77.9	+77.6
<=66	72.3	3.1	18.7	5.8	78.2	+75.2
<=73	74.4	1.1	21.3	3.2	77.6	+71.8
<=100	75.5	0.0	24.5	0.0	75.5	+67.5

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

Table 10 ($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
<=13	4.9	94.6	6.1	17.6:1
<=17	9.7	94.0	12.1	15.7:1
<=20	14.6	93.2	18.0	13.7:1
<=22	19.2	92.3	23.5	12.0:1
<=24	23.6	91.2	28.5	10.4:1
<=26	27.8	90.8	33.5	9.8:1
<=28	33.0	90.0	39.3	9.0:1
<=30	36.7	89.4	43.5	8.5:1
<=32	41.4	88.9	48.8	8.0:1
<=34	44.8	88.5	52.5	7.7:1
<=36	48.6	88.0	56.7	7.3:1
<=38	52.2	87.4	60.4	6.9:1
<=40	56.3	86.8	64.7	6.6:1
<=43	60.6	86.1	69.2	6.2:1
<=45	64.4	85.3	72.8	5.8:1
<=48	69.0	84.6	77.3	5.5:1
<=51	73.8	83.9	82.1	5.2:1
<=54	78.1	83.0	85.8	4.9:1
<=58	83.3	81.8	90.2	4.5:1
<=62	87.3	80.6	93.2	4.2:1
<=66	91.0	79.5	95.8	3.9:1
<=73	95.7	77.7	98.6	3.5:1
<=100	100.0	75.5	100.0	3.1:1

Tables for
$5.00/day 2005 PPP Poverty Line

Table 3 ($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:
0–13	99.7
14–17	99.5
18–20	99.4
21–22	99.4
23–24	99.4
25–26	99.1
27–28	98.5
29–30	98.4
31–32	98.4
33–34	98.1
35–36	98.1
37–38	96.4
39–40	95.0
41–43	95.0
44–45	94.9
46–48	94.4
49–51	94.3
52–54	91.8
55–58	88.0
59–62	82.1
63–66	81.9
67–73	74.0
74–100	60.1

Table 5 ($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
0–13	+0.1	0.4	0.4	0.5
14–17	−0.1	0.4	0.5	0.5
18–20	−0.3	0.3	0.3	0.3
21–22	+0.3	0.6	0.8	1.0
23–24	−0.2	0.3	0.3	0.4
25–26	−0.4	0.3	0.4	0.5
27–28	+0.5	0.8	1.0	1.3
29–30	−0.3	0.6	0.7	1.0
31–32	+0.5	0.8	1.0	1.3
33–34	−1.4	0.9	0.9	0.9
35–36	−0.8	0.7	0.8	1.0
37–38	+0.1	1.3	1.6	2.0
39–40	−0.9	1.3	1.5	2.0
41–43	+0.7	1.4	1.7	2.4
44–45	−1.9	1.4	1.5	1.7
46–48	−0.4	1.3	1.5	2.1
49–51	−1.6	1.3	1.4	1.7
52–54	−1.3	1.5	1.9	2.4
55–58	−1.9	1.8	2.2	3.1
59–62	−6.2	4.2	4.4	4.7
63–66	−9.7	5.6	5.8	6.0
67–73	−11.0	6.5	6.7	7.1
74–100	+5.1	3.4	4.2	5.3

Table 6 ($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 n	Error	Difference between estimate and observed value Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	+0.9	50.0	58.9	68.7
4	−0.7	21.2	25.7	35.9
8	−1.1	15.5	18.8	24.6
16	−1.2	10.5	13.0	16.4
32	−1.6	8.1	9.5	13.2
64	−1.8	5.4	6.4	9.0
128	−1.8	3.9	4.8	6.3
256	−1.9	2.8	3.4	4.4
512	−1.9	2.0	2.3	3.1
1,024	−1.9	1.4	1.7	2.2
2,048	−1.9	1.0	1.2	1.5
4,096	−2.0	0.7	0.8	1.1
8,192	−1.9	0.5	0.5	0.7
16,384	−2.0	0.3	0.4	0.5

Table 9 ($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
<=13	4.8	87.9	0.0	7.3	12.1	−89.5
<=17	9.7	83.0	0.0	7.3	17.0	−79.0
<=20	14.5	78.2	0.1	7.2	21.8	−68.6
<=22	19.1	73.6	0.1	7.2	26.3	−58.7
<=24	23.5	69.2	0.1	7.2	30.7	−49.2
<=26	27.7	65.0	0.2	7.1	34.8	−40.2
<=28	32.7	60.0	0.3	7.0	39.7	−29.1
<=30	36.3	56.4	0.4	6.9	43.3	−21.2
<=32	40.9	51.8	0.5	6.8	47.8	−11.2
<=34	44.3	48.4	0.5	6.8	51.1	−3.8
<=36	48.1	44.6	0.5	6.8	54.8	+4.3
<=38	51.5	41.2	0.7	6.6	58.1	+11.8
<=40	55.4	37.3	0.9	6.4	61.8	+20.5
<=43	59.5	33.2	1.1	6.2	65.6	+29.5
<=45	63.0	29.7	1.3	6.0	69.0	+37.4
<=48	67.4	25.3	1.6	5.7	73.1	+47.1
<=51	71.9	20.8	1.9	5.4	77.3	+57.2
<=54	75.8	16.9	2.3	5.0	80.9	+66.0
<=58	80.5	12.2	2.8	4.5	85.0	+76.7
<=62	83.9	8.8	3.4	3.9	87.8	+84.6
<=66	87.0	5.7	4.1	3.2	90.2	+92.0
<=73	90.4	2.3	5.3	2.0	92.4	+94.3
<=100	92.7	0.0	7.3	0.0	92.7	+92.1

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

Table 10 ($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
<=13	4.9	99.7	5.2	310.4:1
<=17	9.7	99.6	10.5	262.6:1
<=20	14.6	99.6	15.7	242.6:1
<=22	19.2	99.5	20.6	198.4:1
<=24	23.6	99.5	25.3	188.9:1
<=26	27.8	99.4	29.8	162.5:1
<=28	33.0	99.1	35.3	113.9:1
<=30	36.7	99.0	39.2	102.5:1
<=32	41.4	98.9	44.2	87.0:1
<=34	44.8	98.9	47.8	90.0:1
<=36	48.6	98.9	51.9	87.6:1
<=38	52.2	98.7	55.5	73.8:1
<=40	56.3	98.4	59.8	62.4:1
<=43	60.6	98.1	64.2	52.4:1
<=45	64.4	97.9	68.0	47.6:1
<=48	69.0	97.7	72.7	42.0:1
<=51	73.8	97.4	77.6	37.7:1
<=54	78.1	97.1	81.8	33.6:1
<=58	83.3	96.6	86.8	28.6:1
<=62	87.3	96.1	90.5	24.9:1
<=66	91.0	95.5	93.8	21.4:1
<=73	95.7	94.5	97.6	17.1:1
<=100	100.0	92.7	100.0	12.7:1

Tables for
$1.90/day 2011 PPP Poverty Line

Table 3 ($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:
0–13	72.0
14–17	63.2
18–20	63.2
21–22	61.7
23–24	54.0
25–26	51.3
27–28	48.5
29–30	48.5
31–32	44.0
33–34	42.6
35–36	42.6
37–38	38.8
39–40	34.5
41–43	34.4
44–45	34.3
46–48	34.3
49–51	26.2
52–54	21.8
55–58	20.7
59–62	16.7
63–66	13.2
67–73	10.9
74–100	5.2

Table 5 ($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 ($\pm$percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–13	+3.9	3.1	3.7	4.9
14–17	−7.5	5.2	5.5	6.1
18–20	+5.8	3.4	4.0	5.1
21–22	+1.7	3.2	4.0	5.2
23–24	+0.6	3.3	4.0	5.4
25–26	−8.1	6.0	6.4	7.1
27–28	−10.4	6.7	6.9	7.6
29–30	−6.8	5.1	5.4	6.1
31–32	−0.7	3.5	4.3	5.3
33–34	−6.6	5.3	5.7	6.4
35–36	−0.6	4.7	5.5	7.2
37–38	−4.0	4.2	4.7	6.2
39–40	−0.6	3.4	4.2	5.5
41–43	−2.7	3.4	4.1	5.7
44–45	−5.6	5.2	6.1	7.5
46–48	+1.9	3.2	3.9	5.2
49–51	−25.2	14.9	15.2	16.0
52–54	+6.5	2.3	2.8	3.5
55–58	+4.3	2.2	2.7	3.5
59–62	+5.5	2.2	2.7	3.6
63–66	−15.4	10.0	10.5	11.8
67–73	+3.2	1.6	1.8	2.6
74–100	+0.3	1.5	1.8	2.2

Table 6 ($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 n		Difference between estimate and observed value		
		Confidence interval (±percentage points)		
	Error	90-percent	95-percent	99-percent
1	+1.4	64.4	71.2	80.6
4	−0.7	42.4	49.4	60.2
8	−1.7	31.8	38.9	48.6
16	−2.6	23.8	28.6	36.2
32	−2.8	17.3	20.1	26.1
64	−3.1	12.4	15.3	19.3
128	−3.0	8.7	10.8	13.5
256	−3.1	6.6	7.8	10.1
512	−3.3	4.7	5.6	7.4
1,024	−3.3	3.4	3.9	5.2
2,048	−3.3	2.3	2.7	3.6
4,096	−3.3	1.5	1.8	2.4
8,192	−3.2	1.1	1.4	1.9
16,384	−3.3	0.8	1.0	1.3

Table 9 ($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
<=13	3.3	35.4	1.6	59.7	63.0	−79.0
<=17	6.5	32.1	3.2	58.1	64.6	−57.9
<=20	9.4	29.3	5.2	56.1	65.4	−38.1
<=22	12.1	26.5	7.0	54.3	66.4	−19.0
<=24	14.4	24.3	9.2	52.1	66.6	−1.7
<=26	16.7	22.0	11.2	50.2	66.8	+15.0
<=28	19.4	19.3	13.6	47.8	67.2	+35.5
<=30	21.3	17.4	15.4	45.9	67.2	+49.9
<=32	23.3	15.4	18.1	43.2	66.5	+53.2
<=34	24.9	13.8	19.9	41.4	66.3	+48.5
<=36	26.2	12.4	22.4	38.9	65.2	+42.2
<=38	27.7	11.0	24.5	36.8	64.5	+36.8
<=40	29.1	9.6	27.2	34.1	63.3	+29.7
<=43	30.8	7.9	29.8	31.5	62.3	+23.0
<=45	32.1	6.6	32.3	29.0	61.1	+16.6
<=48	33.6	5.1	35.4	25.9	59.4	+8.4
<=51	35.0	3.7	38.8	22.5	57.5	−0.3
<=54	35.8	2.9	42.3	19.0	54.8	−9.3
<=58	36.8	1.8	46.5	14.8	51.7	−20.1
<=62	37.3	1.4	50.0	11.4	48.7	−29.2
<=66	38.0	0.7	53.0	8.3	46.3	−37.0
<=73	38.5	0.2	57.2	4.1	42.6	−48.0
<=100	38.7	0.0	61.3	0.0	38.7	−58.5

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

Table 10 ($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
<=13	4.9	67.2	8.4	2.0:1
<=17	9.7	67.1	16.9	2.0:1
<=20	14.6	64.2	24.2	1.8:1
<=22	19.2	63.3	31.4	1.7:1
<=24	23.6	61.1	37.3	1.6:1
<=26	27.8	59.9	43.1	1.5:1
<=28	33.0	58.9	50.2	1.4:1
<=30	36.7	58.0	55.0	1.4:1
<=32	41.4	56.2	60.2	1.3:1
<=34	44.8	55.5	64.4	1.2:1
<=36	48.6	54.0	67.8	1.2:1
<=38	52.2	53.1	71.6	1.1:1
<=40	56.3	51.7	75.3	1.1:1
<=43	60.6	50.8	79.7	1.0:1
<=45	64.4	49.9	83.0	1.0:1
<=48	69.0	48.6	86.7	0.9:1
<=51	73.8	47.4	90.5	0.9:1
<=54	78.1	45.8	92.5	0.8:1
<=58	83.3	44.2	95.2	0.8:1
<=62	87.3	42.7	96.4	0.7:1
<=66	91.0	41.8	98.3	0.7:1
<=73	95.7	40.2	99.5	0.7:1
<=100	100.0	38.7	100.0	0.6:1

Tables for
$3.20/day 2011 PPP Poverty Line

Table 3 ($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:
0–13	92.5
14–17	88.9
18–20	87.8
21–22	87.8
23–24	85.2
25–26	83.7
27–28	80.5
29–30	79.1
31–32	79.1
33–34	77.2
35–36	77.2
37–38	71.8
39–40	68.1
41–43	68.1
44–45	68.1
46–48	68.1
49–51	63.8
52–54	59.6
55–58	55.6
59–62	47.2
63–66	42.5
67–73	34.9
74–100	22.8

Table 5 ($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
0–13	−1.1	1.4	1.7	2.1
14–17	−2.9	2.2	2.4	2.7
18–20	−1.2	1.9	2.2	2.7
21–22	+4.5	2.6	3.1	4.0
23–24	+1.8	2.5	2.9	3.7
25–26	+0.1	2.6	3.1	4.4
27–28	−5.8	3.9	4.1	4.5
29–30	−0.1	2.9	3.5	4.5
31–32	+1.4	2.8	3.5	4.7
33–34	−5.0	3.8	4.0	4.5
35–36	+0.8	3.4	4.1	5.6
37–38	−6.9	4.8	5.1	5.5
39–40	−6.0	4.4	4.7	5.3
41–43	−1.5	3.1	3.7	4.7
44–45	+0.9	3.7	4.4	6.0
46–48	−5.5	4.2	4.4	5.1
49–51	−14.4	8.6	8.7	9.2
52–54	+1.5	3.5	4.3	5.6
55–58	+6.4	3.7	4.3	5.5
59–62	−13.2	8.6	8.9	9.5
63–66	−9.9	7.4	7.9	8.8
67–73	−9.9	7.3	7.7	8.8
74–100	−2.8	3.2	3.8	4.9

Table 6 ($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 n	Error	Difference between estimate and observed value		
		Confidence interval ($\pm$percentage points)		
		90-percent	95-percent	99-percent
1	+0.3	68.3	74.4	82.5
4	−1.1	41.0	47.4	60.0
8	−2.1	30.5	33.8	45.3
16	−2.3	22.7	27.1	32.4
32	−2.9	16.7	19.3	24.5
64	−3.4	12.4	14.5	17.4
128	−3.4	8.3	10.0	13.3
256	−3.5	6.2	7.5	9.7
512	−3.5	4.5	5.4	6.6
1,024	−3.5	3.2	3.7	4.7
2,048	−3.5	2.0	2.5	3.4
4,096	−3.5	1.5	1.8	2.4
8,192	−3.5	1.1	1.3	1.5
16,384	−3.5	0.8	0.9	1.1

Table 9 ($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
<=13	4.5	64.6	0.4	30.6	35.1	−86.5
<=17	8.9	60.1	0.8	30.1	39.0	−73.0
<=20	13.1	55.9	1.5	29.5	42.6	−59.9
<=22	17.0	52.0	2.2	28.8	45.8	−47.6
<=24	20.6	48.4	3.0	28.0	48.6	−35.9
<=26	24.1	45.0	3.8	27.2	51.3	−24.8
<=28	28.4	40.7	4.6	26.3	54.7	−11.1
<=30	31.2	37.8	5.5	25.5	56.7	−1.6
<=32	34.8	34.2	6.6	24.4	59.2	+10.4
<=34	37.5	31.5	7.3	23.6	61.1	+19.2
<=36	40.3	28.7	8.3	22.7	63.0	+28.8
<=38	42.9	26.1	9.3	21.7	64.6	+37.7
<=40	45.8	23.2	10.5	20.5	66.3	+47.9
<=43	48.8	20.3	11.8	19.1	67.9	+58.5
<=45	51.1	17.9	13.2	17.7	68.9	+67.3
<=48	54.3	14.7	14.7	16.3	70.6	+78.6
<=51	57.6	11.5	16.3	14.7	72.2	+76.4
<=54	60.0	9.0	18.1	12.9	72.9	+73.8
<=58	62.8	6.2	20.5	10.5	73.3	+70.3
<=62	64.8	4.2	22.5	8.5	73.3	+67.5
<=66	66.4	2.6	24.6	6.3	72.7	+64.3
<=73	68.2	0.9	27.6	3.4	71.6	+60.1
<=100	69.0	0.0	31.0	0.0	69.0	+55.2

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

Table 10 ($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
<=13	4.9	92.2	6.5	11.7:1
<=17	9.7	91.3	12.9	10.5:1
<=20	14.6	89.9	19.0	8.9:1
<=22	19.2	88.7	24.7	7.9:1
<=24	23.6	87.4	29.9	7.0:1
<=26	27.8	86.5	34.8	6.4:1
<=28	33.0	86.0	41.1	6.1:1
<=30	36.7	85.1	45.2	5.7:1
<=32	41.4	84.1	50.4	5.3:1
<=34	44.8	83.6	54.3	5.1:1
<=36	48.6	82.9	58.4	4.9:1
<=38	52.2	82.3	62.1	4.6:1
<=40	56.3	81.4	66.4	4.4:1
<=43	60.6	80.5	70.7	4.1:1
<=45	64.4	79.4	74.1	3.9:1
<=48	69.0	78.7	78.7	3.7:1
<=51	73.8	78.0	83.4	3.5:1
<=54	78.1	76.8	86.9	3.3:1
<=58	83.3	75.4	91.0	3.1:1
<=62	87.3	74.3	93.9	2.9:1
<=66	91.0	72.9	96.2	2.7:1
<=73	95.7	71.2	98.8	2.5:1
<=100	100.0	69.0	100.0	2.2:1

Tables for
$5.50/day 2011 PPP Poverty Line

Table 3 ($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:
0–13	99.0
14–17	98.6
18–20	98.6
21–22	98.2
23–24	97.9
25–26	97.9
27–28	97.3
29–30	96.8
31–32	96.8
33–34	96.3
35–36	96.3
37–38	93.9
39–40	91.4
41–43	91.4
44–45	91.4
46–48	90.9
49–51	89.2
52–54	86.0
55–58	82.3
59–62	72.8
63–66	69.5
67–73	61.2
74–100	43.3

Table 5 ($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
0–13	−0.3	0.4	0.5	0.7
14–17	−0.5	0.5	0.6	0.8
18–20	−0.5	0.5	0.5	0.7
21–22	+2.2	1.5	1.8	2.2
23–24	−0.6	0.6	0.8	1.0
25–26	−0.5	0.7	0.8	1.1
27–28	+1.0	1.0	1.3	1.7
29–30	−1.8	1.2	1.3	1.4
31–32	+0.8	1.2	1.4	1.9
33–34	−1.6	1.3	1.4	1.7
35–36	−1.9	1.3	1.4	1.5
37–38	+0.8	1.8	2.2	2.8
39–40	−0.9	1.8	2.1	2.8
41–43	+3.5	2.4	2.9	3.6
44–45	−3.4	2.3	2.5	2.7
46–48	−0.7	1.8	2.1	2.6
49–51	−4.5	2.9	3.0	3.2
52–54	−3.3	2.6	2.7	3.0
55–58	−3.0	2.6	2.8	3.6
59–62	−8.1	5.4	5.6	6.2
63–66	−16.0	9.1	9.2	9.6
67–73	−8.8	6.2	6.5	7.0
74–100	−2.2	3.4	4.3	5.2

Table 6 ($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 n	Error	Difference between estimate and observed value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	–0.3	55.8	65.0	77.0
4	–1.7	26.0	32.5	42.6
8	–2.1	19.5	23.6	30.7
16	–2.1	14.1	17.0	22.7
32	–2.4	10.6	12.9	17.6
64	–2.7	7.1	8.9	12.1
128	–2.8	5.1	6.2	8.2
256	–2.9	3.8	4.6	5.9
512	–2.9	2.7	3.2	4.2
1,024	–2.9	1.9	2.2	3.0
2,048	–2.9	1.3	1.6	2.0
4,096	–2.9	0.9	1.1	1.5
8,192	–2.9	0.6	0.7	1.0
16,384	–3.0	0.5	0.6	0.7

Table 9 ($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
<=13	4.8	84.0	0.0	11.2	16.0	−89.1
<=17	9.6	79.1	0.1	11.1	20.8	−78.2
<=20	14.4	74.4	0.2	11.0	25.4	−67.4
<=22	18.9	69.9	0.3	10.9	29.8	−57.2
<=24	23.2	65.6	0.4	10.8	34.0	−47.3
<=26	27.3	61.5	0.5	10.7	38.0	−37.9
<=28	32.2	56.5	0.8	10.5	42.7	−26.5
<=30	35.8	52.9	0.8	10.4	46.2	−18.3
<=32	40.4	48.4	1.0	10.2	50.5	−7.9
<=34	43.7	45.1	1.1	10.1	53.8	−0.3
<=36	47.4	41.4	1.2	10.0	57.4	+8.2
<=38	50.6	38.1	1.5	9.7	60.4	+15.8
<=40	54.5	34.3	1.8	9.4	63.9	+24.8
<=43	58.3	30.5	2.3	8.9	67.2	+33.9
<=45	61.7	27.0	2.6	8.6	70.3	+42.1
<=48	65.9	22.9	3.1	8.1	74.0	+51.9
<=51	70.3	18.5	3.6	7.7	77.9	+62.3
<=54	74.0	14.8	4.1	7.1	81.1	+71.3
<=58	78.4	10.4	4.9	6.3	84.7	+82.2
<=62	81.4	7.4	5.9	5.4	86.7	+90.0
<=66	84.0	4.7	7.0	4.2	88.3	+92.1
<=73	87.0	1.8	8.8	2.5	89.4	+90.1
<=100	88.8	0.0	11.2	0.0	88.8	+87.3

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

Table 10 ($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
<=13	4.9	99.0	5.4	103.4:1
<=17	9.7	98.8	10.9	83.0:1
<=20	14.6	98.7	16.2	76.0:1
<=22	19.2	98.3	21.2	56.9:1
<=24	23.6	98.1	26.1	52.9:1
<=26	27.8	98.1	30.7	50.7:1
<=28	33.0	97.7	36.3	42.3:1
<=30	36.7	97.7	40.4	42.5:1
<=32	41.4	97.5	45.5	38.6:1
<=34	44.8	97.5	49.2	38.7:1
<=36	48.6	97.5	53.4	38.6:1
<=38	52.2	97.1	57.1	33.5:1
<=40	56.3	96.7	61.4	29.6:1
<=43	60.6	96.1	65.7	25.0:1
<=45	64.4	95.9	69.5	23.4:1
<=48	69.0	95.5	74.2	21.3:1
<=51	73.8	95.2	79.2	19.7:1
<=54	78.1	94.7	83.3	18.0:1
<=58	83.3	94.1	88.3	15.8:1
<=62	87.3	93.3	91.7	13.8:1
<=66	91.0	92.3	94.7	12.0:1
<=73	95.7	90.8	98.0	9.9:1
<=100	100.0	88.8	100.0	7.9:1

Tables for
$21.70/day 2011 PPP Poverty Line

Table 3 ($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:
0–13	100.0
14–17	100.0
18–20	99.9
21–22	99.8
23–24	99.8
25–26	99.8
27–28	99.8
29–30	99.8
31–32	99.8
33–34	99.8
35–36	99.8
37–38	99.8
39–40	99.8
41–43	99.7
44–45	99.7
46–48	99.7
49–51	99.7
52–54	99.6
55–58	99.2
59–62	98.8
63–66	98.6
67–73	96.7
74–100	92.4

Table 5 ($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
0–13	0.0	0.0	0.0	0.0
14–17	0.0	0.0	0.0	0.0
18–20	−0.1	0.1	0.1	0.1
21–22	−0.2	0.1	0.1	0.1
23–24	−0.2	0.1	0.1	0.1
25–26	−0.2	0.1	0.1	0.1
27–28	+0.8	0.7	0.8	1.0
29–30	−0.2	0.1	0.1	0.1
31–32	−0.1	0.1	0.1	0.1
33–34	−0.2	0.1	0.1	0.1
35–36	−0.2	0.1	0.1	0.1
37–38	+0.5	0.6	0.8	1.0
39–40	−0.1	0.2	0.2	0.2
41–43	−0.3	0.1	0.1	0.1
44–45	−0.3	0.1	0.1	0.1
46–48	−0.3	0.1	0.1	0.1
49–51	−0.2	0.1	0.1	0.1
52–54	−0.4	0.2	0.2	0.2
55–58	−0.8	0.4	0.4	0.4
59–62	+0.6	0.9	1.0	1.4
63–66	−0.9	0.6	0.6	0.7
67–73	−2.1	1.3	1.3	1.4
74–100	+3.9	2.5	2.9	3.8

Table 6 ($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 n	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
	Error	90-percent	95-percent	99-percent
1	+0.3	1.6	3.8	51.1
4	−0.1	1.3	8.7	18.5
8	−0.3	0.9	5.5	10.3
16	−0.1	3.3	4.6	7.3
32	−0.1	2.3	2.8	4.6
64	−0.2	1.6	1.9	2.8
128	−0.1	1.1	1.4	1.9
256	−0.2	0.9	1.0	1.4
512	−0.2	0.7	0.8	1.0
1,024	−0.2	0.5	0.6	0.7
2,048	−0.2	0.3	0.4	0.5
4,096	−0.2	0.2	0.3	0.4
8,192	−0.2	0.2	0.2	0.3
16,384	−0.2	0.1	0.1	0.2

Table 9 ($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
<=13	4.9	94.4	0.0	0.8	5.6	−90.2
<=17	9.7	89.5	0.0	0.8	10.5	−80.4
<=20	14.6	84.7	0.0	0.8	15.3	−70.6
<=22	19.2	80.1	0.0	0.8	19.9	−61.3
<=24	23.6	75.6	0.0	0.8	24.4	−52.4
<=26	27.8	71.4	0.0	0.8	28.6	−43.9
<=28	32.9	66.3	0.0	0.7	33.7	−33.6
<=30	36.6	62.6	0.0	0.7	37.4	−26.1
<=32	41.3	57.9	0.1	0.7	42.1	−16.6
<=34	44.8	54.5	0.1	0.7	45.5	−9.7
<=36	48.6	50.7	0.1	0.7	49.3	−2.1
<=38	52.1	47.2	0.1	0.7	52.8	+5.0
<=40	56.2	43.0	0.1	0.7	56.9	+13.4
<=43	60.5	38.7	0.1	0.7	61.2	+22.1
<=45	64.3	35.0	0.1	0.7	65.0	+29.6
<=48	68.9	30.3	0.1	0.7	69.6	+38.9
<=51	73.7	25.5	0.1	0.7	74.4	+48.7
<=54	78.0	21.3	0.1	0.7	78.6	+57.3
<=58	83.2	16.0	0.1	0.7	83.9	+67.8
<=62	87.1	12.2	0.2	0.6	87.6	+75.7
<=66	90.8	8.4	0.2	0.5	91.3	+83.2
<=73	95.4	3.9	0.4	0.4	95.8	+92.6
<=100	99.2	0.0	0.8	0.0	99.2	+99.2

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

Table 10 ($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
<=13	4.9	100.0	4.9	Only poor targeted
<=17	9.7	100.0	9.8	Poor
<=20	14.6	100.0	14.7	Non-poor
<=22	19.2	100.0	19.3	Benin
<=24	23.6	100.0	23.8	0.0
<=26	27.8	100.0	28.0	0.0
<=28	33.0	99.9	33.2	720.3:1
<=30	36.7	99.9	36.9	801.1:1
<=32	41.4	99.9	41.7	772.2:1
<=34	44.8	99.9	45.1	836.1:1
<=36	48.6	99.9	48.9	907.0:1
<=38	52.2	99.9	52.5	697.5:1
<=40	56.3	99.9	56.7	669.3:1
<=43	60.6	99.9	61.0	720.5:1
<=45	64.4	99.9	64.8	765.2:1
<=48	69.0	99.9	69.4	820.2:1
<=51	73.8	99.9	74.3	790.1:1
<=54	78.1	99.9	78.6	780.1:1
<=58	83.3	99.9	83.9	774.2:1
<=62	87.3	99.8	87.7	454.5:1
<=66	91.0	99.7	91.5	376.3:1
<=73	95.7	99.6	96.1	265.1:1
<=100	100.0	99.2	100.0	129.7:1

Tables for
the line marking the poorest half of people
below 100% of the national poverty line

Table 3 (Line marking 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:
0–13	42.2
14–17	36.2
18–20	31.4
21–22	29.4
23–24	22.0
25–26	21.7
27–28	20.6
29–30	15.6
31–32	14.4
33–34	14.2
35–36	12.4
37–38	11.6
39–40	11.6
41–43	11.6
44–45	11.4
46–48	11.1
49–51	7.3
52–54	6.5
55–58	4.8
59–62	4.1
63–66	2.2
67–73	2.0
74–100	1.5

Table 5 (Line marking 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
0–13	−0.3	3.3	3.9	4.7
14–17	+0.3	3.1	3.8	5.3
18–20	+6.6	2.8	3.4	4.5
21–22	+1.1	2.9	3.3	4.5
23–24	−4.0	3.7	4.0	4.9
25–26	+4.0	2.5	3.0	4.2
27–28	+2.4	2.1	2.6	3.4
29–30	−3.7	3.3	3.6	4.6
31–32	−7.0	5.1	5.5	6.1
33–34	+1.5	2.3	2.8	3.8
35–36	+3.5	2.1	2.6	3.2
37–38	−5.8	4.8	5.1	5.8
39–40	+3.0	2.0	2.4	3.0
41–43	+4.6	1.6	1.9	2.6
44–45	+6.3	1.5	1.7	2.2
46–48	+0.3	2.1	2.6	3.2
49–51	−13.6	9.3	9.7	10.8
52–54	+3.4	1.0	1.2	1.5
55–58	−0.3	1.2	1.5	1.9
59–62	+1.5	1.1	1.4	1.7
63–66	+0.3	0.6	0.8	1.1
67–73	+0.6	0.5	0.6	0.8
74–100	0.0	0.9	1.1	1.4

Table 6 (Line marking 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 *n*	Error	Difference between estimate and observed value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	+0.6	60.3	65.3	68.9
4	+0.8	28.2	34.0	46.5
8	+0.9	20.9	25.5	37.1
16	+0.6	15.2	18.9	29.1
32	+0.6	11.8	15.1	20.5
64	+0.1	8.8	10.4	14.0
128	0.0	6.1	7.4	9.5
256	−0.1	4.4	5.2	7.0
512	−0.1	3.0	3.5	4.6
1,024	−0.1	2.2	2.6	3.2
2,048	−0.1	1.6	1.9	2.4
4,096	−0.1	1.1	1.3	1.8
8,192	−0.1	0.8	0.9	1.3
16,384	−0.1	0.6	0.7	0.9

Table 9 (Line marking 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
<=13	2.1	13.0	2.8	82.1	84.2	−54.1
<=17	3.8	11.2	5.9	79.0	82.8	−10.0
<=20	5.1	9.9	9.5	75.5	80.6	+30.8
<=22	6.4	8.6	12.8	72.2	78.6	+15.2
<=24	7.5	7.5	16.1	68.9	76.4	−6.8
<=26	8.3	6.7	19.5	65.5	73.8	−29.5
<=28	9.4	5.7	23.6	61.4	70.7	−56.8
<=30	10.1	4.9	26.5	58.4	68.6	−76.3
<=32	11.0	4.1	30.4	54.5	65.5	−102.1
<=34	11.4	3.6	33.4	51.6	63.0	−121.8
<=36	11.8	3.2	36.8	48.2	60.0	−144.4
<=38	12.3	2.8	39.9	45.1	57.3	−165.0
<=40	12.7	2.4	43.7	41.3	54.0	−190.1
<=43	13.1	2.0	47.5	37.4	50.5	−215.9
<=45	13.3	1.7	51.0	33.9	47.2	−239.2
<=48	13.8	1.3	55.2	29.7	43.5	−266.9
<=51	14.1	0.9	59.7	25.3	39.4	−296.6
<=54	14.3	0.7	63.8	21.2	35.5	−323.6
<=58	14.6	0.4	68.7	16.3	30.9	−356.5
<=62	14.7	0.3	72.5	12.4	27.1	−382.0
<=66	14.9	0.2	76.2	8.8	23.7	−406.0
<=73	15.0	0.0	80.7	4.2	19.2	−436.5
<=100	15.0	0.0	85.0	0.0	15.0	−464.5

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

Table 10 (Line marking 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
<=13	4.9	42.2	13.6	0.7:1
<=17	9.7	39.0	25.3	0.6:1
<=20	14.6	35.0	33.9	0.5:1
<=22	19.2	33.5	42.7	0.5:1
<=24	23.6	31.9	50.0	0.5:1
<=26	27.8	29.9	55.4	0.4:1
<=28	33.0	28.5	62.4	0.4:1
<=30	36.7	27.7	67.4	0.4:1
<=32	41.4	26.5	72.9	0.4:1
<=34	44.8	25.5	76.0	0.3:1
<=36	48.6	24.3	78.6	0.3:1
<=38	52.2	23.5	81.6	0.3:1
<=40	56.3	22.5	84.1	0.3:1
<=43	60.6	21.5	86.8	0.3:1
<=45	64.4	20.7	88.5	0.3:1
<=48	69.0	20.0	91.5	0.2:1
<=51	73.8	19.2	94.0	0.2:1
<=54	78.1	18.3	95.2	0.2:1
<=58	83.3	17.5	97.1	0.2:1
<=62	87.3	16.9	97.9	0.2:1
<=66	91.0	16.3	98.8	0.2:1
<=73	95.7	15.7	99.7	0.2:1
<=100	100.0	15.0	100.0	0.2:1

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

Table 3 (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:
0–13	42.1
14–17	36.1
18–20	31.3
21–22	29.4
23–24	22.0
25–26	21.7
27–28	20.6
29–30	15.6
31–32	14.4
33–34	14.2
35–36	12.2
37–38	11.6
39–40	11.6
41–43	11.6
44–45	11.3
46–48	10.9
49–51	7.3
52–54	6.5
55–58	4.8
59–62	4.1
63–66	2.2
67–73	2.0
74–100	1.5

Table 5 (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

Score	Error	Difference between estimate and observed value		
		Confidence interval ($\pm$percentage points)		
		90-percent	95-percent	99-percent
0–13	–0.5	3.3	3.9	4.7
14–17	+0.6	3.1	3.8	5.3
18–20	+6.6	2.8	3.4	4.5
21–22	+1.1	2.9	3.3	4.5
23–24	–4.0	3.7	4.0	4.9
25–26	+4.0	2.5	3.0	4.2
27–28	+2.3	2.1	2.6	3.4
29–30	–3.7	3.3	3.6	4.6
31–32	–7.0	5.1	5.5	6.1
33–34	+1.5	2.3	2.8	3.8
35–36	+3.4	2.1	2.6	3.2
37–38	–5.8	4.8	5.1	5.8
39–40	+3.0	2.0	2.4	3.0
41–43	+4.6	1.6	1.9	2.6
44–45	+6.1	1.5	1.7	2.2
46–48	0.0	2.1	2.6	3.2
49–51	–13.6	9.3	9.7	10.8
52–54	+3.4	1.0	1.2	1.5
55–58	–0.3	1.2	1.5	1.9
59–62	+1.5	1.1	1.4	1.7
63–66	+0.3	0.6	0.8	1.1
67–73	+0.6	0.5	0.6	0.8
74–100	0.0	0.9	1.1	1.4

Table 6 (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 n	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
	Error	90-percent	95-percent	99-percent
1	+0.6	60.2	65.2	68.8
4	+0.9	28.2	34.1	46.5
8	+0.9	20.7	25.4	37.0
16	+0.6	15.2	18.9	29.1
32	+0.6	11.8	14.9	20.5
64	+0.1	8.7	10.4	14.0
128	0.0	6.1	7.4	9.5
256	−0.1	4.4	5.2	7.0
512	−0.1	3.0	3.5	4.6
1,024	−0.1	2.2	2.6	3.2
2,048	−0.2	1.6	1.9	2.4
4,096	−0.1	1.1	1.3	1.8
8,192	−0.1	0.8	0.9	1.3
16,384	−0.1	0.6	0.7	0.9

Table 9 (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
<=13	2.1	13.0	2.8	82.2	84.2	−54.0
<=17	3.8	11.2	6.0	79.0	82.8	−9.9
<=20	5.1	9.9	9.5	75.5	80.6	+30.9
<=22	6.4	8.6	12.8	72.2	78.6	+15.0
<=24	7.5	7.5	16.1	68.9	76.4	−7.1
<=26	8.3	6.7	19.5	65.5	73.8	−29.9
<=28	9.4	5.7	23.6	61.4	70.7	−57.2
<=30	10.1	4.9	26.6	58.4	68.5	−76.8
<=32	11.0	4.1	30.4	54.5	65.5	−102.6
<=34	11.4	3.6	33.4	51.6	63.0	−122.3
<=36	11.8	3.2	36.8	48.2	60.0	−145.0
<=38	12.2	2.8	39.9	45.1	57.3	−165.6
<=40	12.6	2.4	43.7	41.3	53.9	−190.7
<=43	13.0	2.0	47.6	37.4	50.4	−216.6
<=45	13.3	1.7	51.1	33.9	47.2	−239.9
<=48	13.7	1.3	55.2	29.7	43.5	−267.7
<=51	14.1	0.9	59.7	25.3	39.4	−297.4
<=54	14.3	0.7	63.8	21.2	35.5	−324.5
<=58	14.6	0.4	68.7	16.3	30.8	−357.4
<=62	14.7	0.3	72.6	12.4	27.1	−382.9
<=66	14.9	0.2	76.2	8.8	23.6	−407.0
<=73	15.0	0.0	80.8	4.2	19.2	−437.5
<=100	15.0	0.0	85.0	0.0	15.0	−465.6

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

Table 10 (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
<=13	4.9	42.2	13.7	0.7:1
<=17	9.7	38.8	25.2	0.6:1
<=20	14.6	34.9	33.9	0.5:1
<=22	19.2	33.4	42.6	0.5:1
<=24	23.6	31.8	50.0	0.5:1
<=26	27.8	29.9	55.3	0.4:1
<=28	33.0	28.4	62.4	0.4:1
<=30	36.7	27.6	67.4	0.4:1
<=32	41.4	26.5	72.9	0.4:1
<=34	44.8	25.5	76.0	0.3:1
<=36	48.6	24.3	78.6	0.3:1
<=38	52.2	23.5	81.5	0.3:1
<=40	56.3	22.4	84.1	0.3:1
<=43	60.6	21.5	86.7	0.3:1
<=45	64.4	20.7	88.5	0.3:1
<=48	69.0	19.9	91.4	0.2:1
<=51	73.8	19.1	94.0	0.2:1
<=54	78.1	18.3	95.2	0.2:1
<=58	83.3	17.5	97.1	0.2:1
<=62	87.3	16.9	97.9	0.2:1
<=66	91.0	16.3	98.8	0.2:1
<=73	95.7	15.6	99.7	0.2:1
<=100	100.0	15.0	100.0	0.2:1

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

Tables for
the Second-Quintile (40$^{\text{th}}$-Percentile) Poverty Line

Table 3 (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:
0–13	65.5
14–17	57.3
18–20	55.2
21–22	54.4
23–24	44.0
25–26	43.2
27–28	42.3
29–30	42.3
31–32	37.1
33–34	35.5
35–36	35.5
37–38	32.3
39–40	29.6
41–43	29.3
44–45	28.7
46–48	28.7
49–51	22.0
52–54	16.5
55–58	15.9
59–62	12.0
63–66	7.9
67–73	7.3
74–100	4.1

Table 5 (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

| Score | Error | Difference between estimate and observed value | | |
| | | Confidence interval (±percentage points) | | |
		90-percent	95-percent	99-percent
0–13	+3.5	3.2	3.9	4.8
14–17	−6.0	4.5	4.8	5.6
18–20	+5.2	3.3	3.9	4.9
21–22	+1.2	3.3	4.0	5.1
23–24	−3.1	3.4	4.1	5.2
25–26	+7.2	3.8	4.5	5.9
27–28	−10.3	6.7	7.0	7.5
29–30	−3.5	3.7	4.5	5.9
31–32	−2.2	3.6	4.3	5.5
33–34	−7.5	5.7	6.1	6.8
35–36	−5.4	5.0	5.6	7.5
37–38	−5.9	5.1	5.5	6.5
39–40	−0.3	3.4	4.0	5.0
41–43	−1.9	3.3	3.8	5.4
44–45	−8.5	6.7	7.2	7.6
46–48	+5.6	2.8	3.3	4.3
49–51	−25.2	15.1	15.4	15.9
52–54	+4.8	2.0	2.4	3.1
55–58	+2.2	2.0	2.4	3.2
59–62	+2.4	2.2	2.6	3.6
63–66	−6.5	4.9	5.4	6.0
67–73	+1.7	1.3	1.5	2.0
74–100	+0.3	1.4	1.6	2.2

Table 6 (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 n	Error	Difference between estimate and observed value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	+0.1	63.3	70.4	79.1
4	−1.2	40.9	48.6	57.4
8	−2.0	31.5	38.0	46.0
16	−2.5	23.1	26.6	36.0
32	−2.5	17.3	19.7	23.8
64	−2.8	12.1	14.3	19.7
128	−2.6	8.5	9.9	13.3
256	−2.7	6.3	7.4	9.8
512	−2.9	4.4	5.3	6.5
1,024	−2.8	3.0	3.6	4.9
2,048	−2.8	2.1	2.5	3.3
4,096	−2.8	1.5	1.8	2.4
8,192	−2.7	1.1	1.3	1.8
16,384	−2.7	0.8	0.9	1.3

Table 9 (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
<=13	3.0	30.1	1.9	65.1	68.1	−76.3
<=17	5.9	27.1	3.8	63.1	69.0	−52.6
<=20	8.4	24.7	6.2	60.8	69.1	−30.5
<=22	10.8	22.3	8.4	58.6	69.3	−9.3
<=24	12.8	20.2	10.8	56.2	68.9	+10.2
<=26	14.6	18.5	13.3	53.7	68.3	+28.3
<=28	17.0	16.0	16.0	51.0	68.0	+51.3
<=30	18.6	14.4	18.1	48.9	67.5	+45.2
<=32	20.3	12.8	21.1	45.8	66.1	+36.0
<=34	21.7	11.4	23.2	43.8	65.5	+29.9
<=36	22.9	10.2	25.8	41.2	64.1	+22.0
<=38	24.1	8.9	28.1	38.9	63.0	+15.0
<=40	25.3	7.7	31.0	36.0	61.3	+6.2
<=43	26.7	6.3	33.9	33.1	59.8	−2.6
<=45	27.8	5.2	36.5	30.4	58.3	−10.6
<=48	28.9	4.1	40.0	26.9	55.9	−21.2
<=51	30.2	2.9	43.7	23.3	53.5	−32.2
<=54	30.8	2.3	47.3	19.7	50.4	−43.2
<=58	31.6	1.4	51.7	15.3	46.9	−56.4
<=62	32.0	1.0	55.3	11.7	43.7	−67.3
<=66	32.5	0.5	58.5	8.5	41.0	−77.1
<=73	32.9	0.1	62.8	4.1	37.0	−90.3
<=100	33.0	0.0	67.0	0.0	33.0	−102.8

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

Table 10 (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
<=13	4.9	61.3	9.0	1.6:1
<=17	9.7	60.6	17.9	1.5:1
<=20	14.6	57.4	25.4	1.4:1
<=22	19.2	56.2	32.6	1.3:1
<=24	23.6	54.2	38.7	1.2:1
<=26	27.8	52.3	44.1	1.1:1
<=28	33.0	51.5	51.5	1.1:1
<=30	36.7	50.7	56.3	1.0:1
<=32	41.4	49.0	61.4	1.0:1
<=34	44.8	48.3	65.6	0.9:1
<=36	48.6	47.0	69.2	0.9:1
<=38	52.2	46.2	73.0	0.9:1
<=40	56.3	45.0	76.6	0.8:1
<=43	60.6	44.1	80.9	0.8:1
<=45	64.4	43.2	84.3	0.8:1
<=48	69.0	41.9	87.6	0.7:1
<=51	73.8	40.9	91.3	0.7:1
<=54	78.1	39.4	93.1	0.7:1
<=58	83.3	38.0	95.8	0.6:1
<=62	87.3	36.7	96.9	0.6:1
<=66	91.0	35.7	98.5	0.6:1
<=73	95.7	34.4	99.6	0.5:1
<=100	100.0	33.0	100.0	0.5:1

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

Table 3 (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:
0–13	75.2
14–17	66.8
18–20	66.6
21–22	65.1
23–24	57.6
25–26	55.5
27–28	53.3
29–30	53.3
31–32	47.8
33–34	46.9
35–36	46.9
37–38	42.1
39–40	37.9
41–43	37.9
44–45	37.9
46–48	37.9
49–51	29.4
52–54	24.3
55–58	23.0
59–62	18.8
63–66	15.2
67–73	12.9
74–100	5.3

Table 5 (Median (50th-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

Score	Error	Difference between estimate and observed value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
0–13	+3.4	3.0	3.5	4.8
14–17	−7.8	5.3	5.6	6.2
18–20	+2.6	3.2	3.8	5.1
21–22	−0.1	3.1	3.6	4.7
23–24	+3.4	3.3	4.0	5.4
25–26	−5.5	4.8	5.1	6.0
27–28	−10.7	6.8	7.1	7.6
29–30	−5.8	4.6	4.9	5.7
31–32	−0.2	3.6	4.2	5.2
33–34	−5.1	4.6	5.0	6.3
35–36	−0.7	4.6	5.6	7.0
37–38	−2.1	4.2	4.9	6.5
39–40	+0.1	3.5	4.2	5.4
41–43	−0.9	3.4	4.0	5.6
44–45	−4.3	4.8	5.8	7.2
46–48	+3.0	3.3	3.9	5.0
49–51	−26.4	15.3	15.7	16.2
52–54	+6.3	2.4	2.9	3.8
55–58	+5.1	2.3	2.8	3.6
59–62	+2.9	2.7	3.2	4.6
63–66	−13.8	9.2	9.6	11.1
67–73	−10.8	7.9	8.4	9.1
74–100	+0.5	1.5	1.8	2.2

Table 6 (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 n	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
	Error	90-percent	95-percent	99-percent
1	+0.7	67.9	74.0	81.2
4	−0.9	44.5	50.9	61.5
8	−2.0	33.8	39.9	49.1
16	−2.9	24.8	29.1	38.8
32	−3.1	18.0	21.4	28.4
64	−3.6	13.5	15.9	21.1
128	−3.6	9.5	11.5	14.4
256	−3.7	7.0	8.3	10.2
512	−3.8	5.0	5.9	7.6
1,024	−3.8	3.5	4.1	5.5
2,048	−3.9	2.4	2.9	3.7
4,096	−3.9	1.7	2.0	2.6
8,192	−3.8	1.2	1.5	1.9
16,384	−3.9	0.9	1.0	1.4

Table 9 (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
<=13	3.4	38.5	1.4	56.6	60.1	−80.2
<=17	6.9	35.1	2.9	55.2	62.1	−60.3
<=20	10.0	32.0	4.6	53.5	63.4	−41.4
<=22	13.0	28.9	6.2	51.9	64.9	−23.2
<=24	15.4	26.6	8.2	49.8	65.2	−7.1
<=26	17.7	24.3	10.1	47.9	65.6	+8.5
<=28	20.7	21.3	12.3	45.7	66.4	+27.9
<=30	22.7	19.3	14.0	44.1	66.7	+41.6
<=32	24.8	17.1	16.6	41.5	66.3	+57.9
<=34	26.6	15.4	18.3	39.8	66.3	+56.5
<=36	28.1	13.9	20.5	37.5	65.6	+51.1
<=38	29.6	12.3	22.5	35.5	65.1	+46.3
<=40	31.2	10.8	25.1	32.9	64.1	+40.1
<=43	33.0	9.0	27.6	30.4	63.4	+34.1
<=45	34.4	7.6	30.0	28.0	62.4	+28.5
<=48	36.0	6.0	33.0	25.0	61.0	+21.3
<=51	37.7	4.3	36.1	21.9	59.6	+13.9
<=54	38.6	3.3	39.5	18.6	57.2	+5.9
<=58	39.8	2.2	43.6	14.5	54.2	−3.8
<=62	40.4	1.6	46.9	11.1	51.5	−11.8
<=66	41.1	0.8	49.9	8.1	49.2	−19.0
<=73	41.8	0.2	54.0	4.1	45.8	−28.7
<=100	42.0	0.0	58.0	0.0	42.0	−38.4

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

Table 10 (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
<=13	4.9	70.7	8.2	2.4:1
<=17	9.8	70.7	16.4	2.4:1
<=20	14.6	68.5	23.8	2.2:1
<=22	19.2	67.8	31.0	2.1:1
<=24	23.6	65.1	36.6	1.9:1
<=26	27.8	63.6	42.2	1.7:1
<=28	33.0	62.7	49.3	1.7:1
<=30	36.7	61.9	54.1	1.6:1
<=32	41.4	60.0	59.2	1.5:1
<=34	44.8	59.3	63.3	1.5:1
<=36	48.6	57.8	67.0	1.4:1
<=38	52.2	56.8	70.6	1.3:1
<=40	56.3	55.4	74.4	1.2:1
<=43	60.6	54.4	78.6	1.2:1
<=45	64.4	53.4	81.9	1.1:1
<=48	69.0	52.1	85.7	1.1:1
<=51	73.8	51.1	89.9	1.0:1
<=54	78.1	49.5	92.0	1.0:1
<=58	83.3	47.7	94.8	0.9:1
<=62	87.3	46.2	96.2	0.9:1
<=66	91.0	45.2	98.0	0.8:1
<=73	95.7	43.6	99.5	0.8:1
<=100	100.0	42.0	100.0	0.7:1

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

Table 3 (Third-quintile (60$^{\text{th}}$-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:
0–13	83.3
14–17	76.9
18–20	76.1
21–22	76.1
23–24	68.1
25–26	65.9
27–28	63.8
29–30	63.4
31–32	59.5
33–34	57.2
35–36	57.2
37–38	53.5
39–40	48.3
41–43	48.3
44–45	48.3
46–48	48.3
49–51	38.4
52–54	36.2
55–58	33.3
59–62	28.1
63–66	23.5
67–73	17.3
74–100	10.8

Table 5 (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

Score	Error	Difference between estimate and observed value		
		Confidence interval ($\pm$percentage points)		
		90-percent	95-percent	99-percent
0–13	+0.7	2.3	2.7	3.7
14–17	−7.1	4.6	4.8	5.3
18–20	−1.8	2.8	3.3	4.2
21–22	+5.0	3.0	3.5	4.6
23–24	+3.8	3.4	3.9	5.2
25–26	+0.3	3.8	4.5	5.9
27–28	−11.7	7.1	7.3	7.8
29–30	−4.7	3.9	4.2	5.0
31–32	−0.9	3.3	4.0	4.9
33–34	−8.9	6.2	6.4	6.9
35–36	−0.4	4.2	4.8	6.8
37–38	−3.6	4.0	4.8	6.6
39–40	−1.3	3.5	4.4	5.6
41–43	−1.5	3.5	4.3	6.2
44–45	−5.1	4.7	5.2	6.9
46–48	−1.4	3.4	4.2	5.3
49–51	−24.6	14.2	14.5	15.1
52–54	+3.0	3.2	3.8	5.1
55–58	+6.0	2.7	3.3	4.2
59–62	+1.7	3.5	4.2	5.3
63–66	−16.2	10.6	11.0	11.9
67–73	−13.1	9.0	9.3	10.1
74–100	+2.2	1.9	2.3	3.1

Table 6 (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 n	Difference between estimate and observed value			
		Confidence interval ($\pm$percentage points)		
	Error	90-percent	95-percent	99-percent
1	−1.1	66.3	76.3	83.0
4	−1.5	44.4	50.9	62.6
8	−2.5	32.5	38.8	48.0
16	−3.2	24.1	28.9	37.6
32	−3.9	18.0	21.6	27.9
64	−4.3	13.4	16.0	19.8
128	−4.2	9.2	11.4	14.3
256	−4.3	6.8	8.2	10.7
512	−4.4	4.7	5.5	7.3
1,024	−4.4	3.3	4.1	5.1
2,048	−4.5	2.3	2.8	3.5
4,096	−4.5	1.7	2.0	2.6
8,192	−4.5	1.2	1.4	1.9
16,384	−4.5	0.8	1.0	1.3

Table 9 (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
<=13	3.9	48.0	1.0	47.1	51.0	−83.1
<=17	7.9	44.1	1.9	46.2	54.0	−66.1
<=20	11.6	40.3	3.0	45.1	56.7	−49.6
<=22	14.9	37.0	4.3	43.8	58.7	−34.3
<=24	17.7	34.2	5.9	42.2	59.9	−20.5
<=26	20.3	31.6	7.5	40.6	60.9	−7.3
<=28	24.0	28.0	9.0	39.0	63.0	+9.7
<=30	26.3	25.6	10.4	37.7	64.0	+21.3
<=32	29.0	23.0	12.4	35.6	64.6	+35.5
<=34	31.0	20.9	13.8	34.3	65.3	+46.1
<=36	33.0	18.9	15.6	32.5	65.5	+57.3
<=38	34.9	17.0	17.2	30.8	65.8	+66.8
<=40	36.9	15.0	19.4	28.7	65.6	+62.6
<=43	39.1	12.8	21.5	26.6	65.7	+58.6
<=45	41.0	11.0	23.4	24.7	65.6	+54.9
<=48	43.1	8.8	25.9	22.2	65.2	+50.1
<=51	45.3	6.6	28.5	19.6	64.9	+45.1
<=54	46.8	5.1	31.3	16.8	63.6	+39.8
<=58	48.5	3.4	34.8	13.3	61.8	+32.9
<=62	49.5	2.4	37.8	10.3	59.8	+27.3
<=66	50.6	1.3	40.5	7.6	58.2	+22.1
<=73	51.6	0.3	44.1	3.9	55.5	+15.0
<=100	51.9	0.0	48.1	0.0	51.9	+7.4

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

Table 10 (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
<=13	4.9	80.4	7.5	4.1:1
<=17	9.7	80.5	15.1	4.1:1
<=20	14.6	79.5	22.3	3.9:1
<=22	19.2	77.8	28.7	3.5:1
<=24	23.6	74.9	34.1	3.0:1
<=26	27.8	73.0	39.1	2.7:1
<=28	33.0	72.6	46.1	2.7:1
<=30	36.7	71.7	50.6	2.5:1
<=32	41.4	70.0	55.8	2.3:1
<=34	44.8	69.3	59.8	2.3:1
<=36	48.6	67.9	63.6	2.1:1
<=38	52.2	66.9	67.3	2.0:1
<=40	56.3	65.6	71.1	1.9:1
<=43	60.6	64.5	75.3	1.8:1
<=45	64.4	63.6	78.9	1.7:1
<=48	69.0	62.4	83.0	1.7:1
<=51	73.8	61.4	87.3	1.6:1
<=54	78.1	60.0	90.2	1.5:1
<=58	83.3	58.2	93.4	1.4:1
<=62	87.3	56.7	95.4	1.3:1
<=66	91.0	55.6	97.4	1.3:1
<=73	95.7	53.9	99.4	1.2:1
<=100	100.0	51.9	100.0	1.1:1

Tables for
the Fourth-Quintile (80$^{\text{th}}$-Percentile) Poverty Line

Table 3 (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:
0–13	94.2
14–17	91.4
18–20	90.2
21–22	90.2
23–24	88.6
25–26	87.3
27–28	84.0
29–30	82.9
31–32	82.9
33–34	82.7
35–36	82.7
37–38	78.9
39–40	73.6
41–43	73.6
44–45	73.6
46–48	73.6
49–51	69.5
52–54	64.6
55–58	61.9
59–62	52.4
63–66	47.3
67–73	38.0
74–100	26.1

Table 5 (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
0–13	−1.1	1.2	1.5	1.9
14–17	−1.8	1.7	1.8	2.5
18–20	−0.8	1.7	2.1	2.7
21–22	+3.7	2.3	2.8	3.8
23–24	+2.9	2.3	2.7	3.6
25–26	+0.2	2.4	2.9	4.0
27–28	−3.7	2.8	3.0	3.4
29–30	+1.1	2.6	3.3	4.3
31–32	−2.3	2.2	2.5	3.1
33–34	−2.7	2.5	2.9	3.8
35–36	−0.1	3.0	3.5	4.5
37–38	−3.8	3.2	3.4	4.2
39–40	−7.4	4.9	5.3	5.7
41–43	−1.3	3.0	3.7	4.6
44–45	+3.5	3.7	4.3	5.6
46–48	−3.7	3.2	3.5	4.5
49–51	−11.8	7.1	7.4	7.9
52–54	−0.6	3.4	4.1	5.2
55–58	−3.8	3.5	3.9	5.1
59–62	−11.9	7.9	8.1	8.8
63–66	−14.5	9.5	9.9	10.6
67–73	−10.8	7.7	8.3	9.0
74–100	−2.4	3.1	3.8	5.2

Table 6 (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 n	Error	Difference between estimate and observed value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	−0.5	67.7	73.0	82.0
4	−2.4	39.1	45.1	56.1
8	−3.0	27.1	33.7	43.7
16	−3.1	20.7	24.4	31.8
32	−3.5	15.1	18.5	22.5
64	−3.9	11.3	13.5	17.5
128	−3.9	8.1	9.6	12.7
256	−4.0	5.6	6.7	8.8
512	−4.0	4.1	5.1	6.3
1,024	−4.1	2.9	3.4	4.4
2,048	−4.1	2.0	2.4	3.1
4,096	−4.1	1.4	1.7	2.1
8,192	−4.1	1.0	1.2	1.5
16,384	−4.1	0.7	0.9	1.1

Table 9 (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
<=13	4.6	69.0	0.3	26.1	30.7	−87.2
<=17	9.1	64.5	0.7	25.7	34.8	−74.4
<=20	13.4	60.2	1.2	25.2	38.6	−62.0
<=22	17.5	56.2	1.7	24.7	42.1	−50.2
<=24	21.2	52.4	2.4	24.0	45.2	−39.1
<=26	24.8	48.8	3.0	23.4	48.2	−28.5
<=28	29.2	44.4	3.8	22.6	51.8	−15.5
<=30	32.2	41.4	4.5	21.9	54.1	−6.4
<=32	36.1	37.6	5.3	21.0	57.1	+5.2
<=34	38.9	34.7	6.0	20.4	59.3	+13.7
<=36	41.9	31.7	6.7	19.7	61.7	+23.0
<=38	44.7	28.9	7.5	18.9	63.6	+31.6
<=40	47.9	25.7	8.4	18.0	65.9	+41.6
<=43	51.2	22.5	9.5	16.9	68.1	+51.8
<=45	53.7	19.9	10.7	15.7	69.4	+60.3
<=48	57.1	16.5	11.9	14.5	71.5	+71.2
<=51	60.6	13.0	13.2	13.1	73.7	+82.0
<=54	63.3	10.3	14.8	11.6	75.0	+80.0
<=58	66.6	7.1	16.8	9.6	76.2	+77.2
<=62	68.8	4.8	18.5	7.9	76.7	+74.9
<=66	70.6	3.0	20.4	5.9	76.5	+72.2
<=73	72.6	1.0	23.1	3.2	75.8	+68.6
<=100	73.6	0.0	26.4	0.0	73.6	+64.2

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

Table 10 (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
<=13	4.9	94.1	6.2	16.1:1
<=17	9.7	93.2	12.3	13.7:1
<=20	14.6	92.0	18.2	11.6:1
<=22	19.2	91.0	23.7	10.2:1
<=24	23.6	89.9	28.8	8.9:1
<=26	27.8	89.2	33.7	8.3:1
<=28	33.0	88.6	39.7	7.7:1
<=30	36.7	87.7	43.7	7.2:1
<=32	41.4	87.1	49.0	6.7:1
<=34	44.8	86.7	52.8	6.5:1
<=36	48.6	86.3	57.0	6.3:1
<=38	52.2	85.7	60.7	6.0:1
<=40	56.3	85.1	65.1	5.7:1
<=43	60.6	84.4	69.5	5.4:1
<=45	64.4	83.4	72.9	5.0:1
<=48	69.0	82.7	77.5	4.8:1
<=51	73.8	82.1	82.3	4.6:1
<=54	78.1	81.1	86.0	4.3:1
<=58	83.3	79.9	90.4	4.0:1
<=62	87.3	78.8	93.4	3.7:1
<=66	91.0	77.5	95.9	3.5:1
<=73	95.7	75.8	98.6	3.1:1
<=100	100.0	73.6	100.0	2.8:1