Simple Poverty Scorecard® Poverty-Assessment Tool South Africa

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17 September 2017

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Abstract

The Simple Poverty Scorecard®-brand poverty-assessment tool uses 12 low-cost indicators from South Africa's 2014/15 National Income Dynamics Survey (NIDS) to estimate the likelihood that an African or Coloured household has consumption below a given poverty line. Field workers can collect responses in about 10 minutes. Accuracy is reported for a range of poverty lines. The scorecard is a practical way for pro-poor programs in South Africa to estimate poverty rates, to track changes in poverty rates over time, and to segment clients for differentiated treatment.

Version note

This paper uses 2014/15 data, replacing Chen, Schreiner, and Woller (2009), which uses 2005/6 data. The new 2014/15 scorecard should be used from now on. The two scorecards use different definitions of *poverty*, so estimates from the old 2005/6 scorecard are *not* comparable with estimates from the new 2014/15 scorecard.

Acknowledgements

Thanks go to Michael Brown, Bryce Cleborne, Jen Jones, Esido Mushwana, Zach Raymond, Adam Sorensen, and John de Wit. Data for Wave 4 of the 2014/15 NIDS was produced by the Southern Africa Labour and Development Research Unit at the University of Cape Town, distributed by DataFirst, and commissioned by the Department of Planning, Monitoring, and Evaluation.

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Simple Poverty Scorecard® Poverty-Assessment Tool

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

Indicator	Response	Points Score
1. How many resident members does the household have?	A. Six or more	0
	B. Five	8
	C. Four	12
	D. Three	17
	E. Two	22
	F. One	38
2. Are any resident household members 15-years-old or older currently being paid a wage or salary to work on a regular basis for an employer (that is not themselves) whether full-time or part-time? Do not count self-employment.	A. No	0
	B. Yes	7
3. If the male head/spouse is a resident member, then how well can he read in English?	A. No male head/spouse, or he is not a resident member	0
	B. Not at all, or not well	3
	C. Fair, or very well	9
4. If the female head/spouse is a resident member, then how well can she read in English?	A. No female head/spouse, or she is not a resident member	0
	B. Not at all, or not well	0
	C. Fair, or very well	6
5. What is the main type of material used for the floor of the main dwelling?	A. Mud/earth, concrete, carpet, or linoleum/vinyl	0
	B. Tiles, or wood	8
6. Is there a flush toilet available for this household?	A. No	0
	B. Yes	4
7. Does the household own at least one gas stove or microwave in good working order?	A. No	0
	B. Yes	4
8. Does the household own at least one fridge/freezer in good working order?	A. No	0
	B. Yes	4
9. Does the household own at least one hi-fi stereo, CD player, or MP3 player in good working order?	A. No	0
	B. Yes	4
10. Does the household own at least one television, DVD or Blu-ray player, or satellite dish in good working order?	A. No TV (regardless of others), or only TV	0
	B. TV and DVD or Blu-ray (but no satellite dish)	4
	C. TV and satellite dish (regardless of others)	10
11. Does the household own at least one lounge suite in good working order?	A. No	0
	B. Yes	2
12. Does the household own at least one cell phone in good working order?	A. No	0
	B. Yes	4

Score:

Back-page Worksheet: Household membership, residency status, and wage/salary status

In the scorecard header, write the interview's unique identifier (if known), the interview date, and the sampling weight of the participant (if known). Then record the name and the unique identification number of the participant (who may differ from the respondent), of the participant's field agent (who may differ from the enumerator), and of the service point that the participant uses. The preferred respondent is the resident household head or any adult household member able to answer the questions.

Read to the respondent: *Please tell me the first name (or nickname) and age of each member of your household. A* household member *is someone who has lived under this roof or within the same compound/homestead/stand at least 15 days during the last 12 months as part of the family. Do not forget babies. Start with the head of the household and his/her spouse/partner (if he/she has a spouse/partner).*

Record the name and age of each household member. Record whether a member is the male head/spouse (if he exists) or the female head/spouse (if she exists).

Next, record whether each household member is also a *resident* household member. Ask, "Does <NAME> usually reside here at least four nights a week?" For each resident member 15-years-old or older, ask whether he/she is currently being paid a wage or salary to work on a regular basis for an employer, whether full-time or part-time. (Do not count self-employment.)

Count the number of resident household members, and write it in the scorecard header by "Number of resident HH members:". Then mark the response to the first scorecard indicator. Also mark the second indicator based on whether any resident member 15-years-old or older works for a regular wage or salary for an employer.

Then ask the remaining 10 questions and record the responses, reading the questions word-for-word in the order given. Do not read the response options.

Keep in mind the definitions of *household*, *household member*, and *resident household member* in the "Guidelines for Applying Scorecard Indicators".

First name or nickname	**Age**	**Has <NAME> lived under this roof or within the same compound/ homestead/stand at least 15 days during the last 12 months as part of the family? (If Yes, then <NAME> is a *household member*)**	**If <NAME> is a household member, then is he/she the household head or the spouse/partner of the head?**	**Does <NAME> usually reside here at least 4 nights a week? (if Yes, then <NAME> is a *resident member*)**	**If <NAME> is 15-years-old or older and a resident member, then is he/she currently being paid a wage or salary to work on a regular basis for an employer (that is not themselves) whether full-time or part-time? Do not count self-employment.**
1.		No Yes	Male head Female head	No Yes	<15 or Non-resident No Yes
2.		No Yes	Male spouse/partner Female spouse/partner Other	No Yes	<15 or Non-resident No Yes
3.		No Yes	Other	No Yes	<15 or Non-resident No Yes
4.		No Yes	Other	No Yes	<15 or Non-resident No Yes
5.		No Yes	Other	No Yes	<15 or Non-resident No Yes
6.		No Yes	Other	No Yes	<15 or Non-resident No Yes
7.		No Yes	Other	No Yes	<15 or Non-resident No Yes
8.		No Yes	Other	No Yes	<15 or Non-resident No Yes
9.		No Yes	Other	No Yes	<15 or Non-resident No Yes
10.		No Yes	Other	No Yes	<15 or Non-resident No Yes
11.		No Yes	Other	No Yes	<15 or Non-resident No Yes
12.		No Yes	Other	No Yes	<15 or Non-resident No Yes
13.		No Yes	Other	No Yes	<15 or Non-resident No Yes
—			**Number of resident household members:**		**Any wage/salary workers?**

Look-up table to convert scores to poverty likelihoods: BLW national poverty lines

	Poverty likelihood (%)				
	BLW National lines				
Score	**Food**	**Lower**	**100% of upper**	**150% of upper**	**200% of upper**
0–20	81,6	95,9	99,6	99,7	99,8
21–28	55,6	82,1	97,3	98,2	99,5
29–35	29,3	64,8	92,6	96,7	99,2
36–37	23,8	55,9	91,3	96,7	99,1
38–40	18,3	50,8	87,7	96,7	99,1
41–45	15,0	35,7	79,7	91,8	95,6
46–46	12,2	29,2	70,4	91,0	94,8
47–48	12,2	29,2	70,4	87,7	90,9
49–50	10,0	18,4	57,3	78,3	87,3
51–53	7,3	16,0	56,8	78,3	87,3
54–58	0,7	6,7	41,7	70,4	86,0
59–59	0,5	3,8	29,5	53,1	74,8
60–61	0,5	3,8	27,3	46,6	64,2
62–66	0,5	3,2	18,4	41,6	58,4
67–68	0,4	0,5	10,0	32,6	48,8
69–70	0,0	0,0	8,3	27,2	48,8
71–74	0,0	0,0	7,8	24,0	37,1
75–79	0,0	0,0	4,8	15,8	27,2
80–82	0,0	0,0	3,9	12,0	21,6
83–85	0,0	0,0	1,8	3,7	9,2
86–100	0,0	0,0	0,0	0,5	2,5

Look-up table to convert scores to poverty likelihoods: SSA national poverty lines

	Poverty likelihood (%)				
	SSA National lines				
Score	**Food**	**Lower**	**100% of upper**	**150% of upper**	**200% of upper**
0–20	80,9	95,2	99,2	99,6	99,7
21–28	55,0	79,7	93,6	97,5	98,2
29–35	29,1	60,5	84,9	94,4	96,7
36–37	23,6	52,3	77,3	92,6	96,7
38–40	18,2	48,3	73,2	92,6	96,7
41–45	15,0	33,3	57,3	83,1	91,8
46–46	12,2	27,0	54,2	75,9	91,0
47–48	12,2	27,0	54,2	74,3	87,7
49–50	10,0	16,3	37,3	66,1	78,2
51–53	7,3	12,8	33,5	65,4	78,2
54–58	0,7	4,9	23,0	50,8	70,4
59–59	0,5	3,5	9,3	36,0	53,1
60–61	0,5	3,5	9,3	34,7	46,6
62–66	0,5	3,0	8,6	24,1	41,6
67–68	0,4	0,4	6,2	15,4	32,6
69–70	0,0	0,0	4,4	10,5	27,2
71–74	0,0	0,0	3,4	10,5	24,0
75–79	0,0	0,0	1,4	6,9	15,8
80–82	0,0	0,0	1,4	5,3	12,0
83–85	0,0	0,0	1,1	1,8	3,7
86–100	0,0	0,0	0,0	0,0	0,5

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

	Poverty likelihood (%)					
	Intl. 2005 PPP lines				Intl. 2011 PPP lines	
Score	**$1.25**	**$2.00**	**$2.50**	**$5.00**	**$1.90**	**$3.10**
0–20	58,1	86,6	94,3	99,4	69,5	93,7
21–28	28,5	61,3	77,5	96,9	38,0	75,0
29–35	12,4	38,4	57,4	91,3	18,1	52,0
36–37	10,4	33,1	46,4	89,5	14,7	44,0
38–40	4,6	23,1	42,1	81,8	9,8	35,7
41–45	3,2	20,0	31,4	76,4	6,3	29,1
46–46	3,2	15,3	23,5	68,8	3,8	21,3
47–48	2,6	15,3	23,5	68,8	3,2	21,3
49–50	2,1	11,3	15,0	53,6	2,6	13,6
51–53	1,2	9,0	11,6	51,9	1,6	10,4
54–58	0,0	1,0	4,0	37,9	0,3	3,2
59–59	0,0	0,8	3,1	28,6	0,0	2,0
60–61	0,0	0,8	3,1	25,5	0,0	2,0
62–66	0,0	0,8	2,7	17,6	0,0	2,0
67–68	0,0	0,4	0,4	9,0	0,0	0,4
69–70	0,0	0,0	0,0	7,1	0,0	0,0
71–74	0,0	0,0	0,0	6,7	0,0	0,0
75–79	0,0	0,0	0,0	4,7	0,0	0,0
80–82	0,0	0,0	0,0	3,8	0,0	0,0
83–85	0,0	0,0	0,0	1,8	0,0	0,0
86–100	0,0	0,0	0,0	0,0	0,0	0,0

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

	Poverty likelihood (%)					
	Poorest half of people	Percentile-based lines				
Score	<100% BLW up. natl. line	20th	40th	50th	60th	80th
0–20	86,2	68,0	94,2	97,7	99,2	99,8
21–28	60,9	35,7	76,6	88,1	94,4	99,5
29–35	37,1	16,3	55,9	75,3	88,6	99,2
36–37	32,5	13,2	45,2	67,0	85,1	99,0
38–40	23,0	9,2	39,6	64,7	79,0	99,0
41–45	19,7	5,3	31,3	46,4	71,5	95,4
46–46	15,3	3,8	22,1	41,7	63,8	94,5
47–48	15,3	3,1	22,1	40,7	63,8	90,6
49–50	11,3	2,4	15,0	29,0	47,0	86,9
51–53	9,0	1,2	10,8	22,4	43,0	86,9
54–58	1,0	0,3	3,6	14,3	27,9	85,7
59–59	0,8	0,0	2,7	6,0	19,5	74,8
60–61	0,8	0,0	2,7	6,0	18,9	63,8
62–66	0,8	0,0	2,3	5,5	15,6	57,4
67–68	0,4	0,0	0,4	3,2	7,7	46,7
69–70	0,0	0,0	0,0	0,0	5,3	46,7
71–74	0,0	0,0	0,0	0,0	5,3	36,3
75–79	0,0	0,0	0,0	0,0	2,0	27,2
80–82	0,0	0,0	0,0	0,0	1,9	21,6
83–85	0,0	0,0	0,0	0,0	1,8	9,2
86–100	0,0	0,0	0,0	0,0	0,0	2,5

Simple Poverty Scorecard® Poverty-Assessment Tool South Africa

1. Introduction

This paper presents the Simple Poverty Scorecard®-brand poverty-assessment tool for South Africa. Pro-poor programs can use it 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 changes in a population's poverty rate over time, and to segment participants for differentiated treatment.

The new scorecard here uses data from South Africa's 2014/15 National Income Dynamics Survey (NIDS) that was done by the Southern Africa Labour and Development Research Unit (SALDRU). It replaces the old scorecard in Chen, Schreiner, and Woller (2009) that uses data from the 2005/6 Income and Expenditure Survey (IES) that was done by Statistics South Africa (SSA). Only the new 2014/15 scorecard should be used from now on, as it is more accurate. The old and new scorecards use different definitions of *poverty*, so their estimates are *not* comparable with each other.

The direct approach to poverty assessment via consumption surveys is difficult and costly. The 2014/15 NIDS is a case in point. According to Chinhema *et al.* (2016), enumerators asked questions for about 40–50 minutes for the household as a whole, about 38 minutes for each adult household member, about 16 minutes for each child

member, and about 12 minutes for each absent member.[1] The average interview took about 2.5 hours.

In comparison, the indirect approach of the Simple Poverty Scorecard® poverty-assessment tool is quick and low-cost. It uses 12 verifiable indicators drawn from the 2014/15 NIDS (such as "What is the main type of material used for the floor of the main dwelling?" and "Does the household own at least one fridge/freezer in good working order?") to get a score that is correlated with poverty status as measured by the exhaustive NIDS survey.

The scorecard differs from "proxy-means tests" (Coady, Grosh, and Hoddinott, 2004) in that it is transparent, it is freely available,[2] and it is tailored to the capabilities and purposes not of national governments but rather of local, pro-poor programs. The feasible poverty-assessment options for local organizations are typically blunt (such as rules based on land ownership or housing quality) or subjective and relative (such as participatory wealth ranking facilitated by skilled field workers). Poverty estimates from these approaches may be costly, their accuracy is unknown, and they are not comparable across places, organizations, nor time.

The scorecard's main use is to measure the share of a program's participants who are below a given poverty line (for example, 100% of the BLW upper national

[1] The household questionnaire has 34 pages, the adult questionnaire has 73 pages, the child questionnaire has 31 pages, and the absent-member questionnaire has 15 pages.
[2] The Simple Poverty Scorecard® poverty-assessment tool is not, however, in the public domain. Copyright is held by Microfinance Risk Management, L.L.C.

line). USAID microenterprise partners in South Africa can use the scorecard with the line marking the poorest half of people below 100% of the BLW upper national line to report how many of their participants are "very poor".[3] The scorecard can also be used to estimate net movement across a poverty line over time. In all these applications, the scorecard provides a consumption-based,[4] objective tool whose accuracy has been tested to the extent possible. While consumption surveys are costly even for governments, some local pro-poor programs may be able to implement a low-cost scorecard 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 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 simplicity 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 local, pro-poor programs. This is not because these tools do not work, but because they are often presented (when they are presented at all) only in English and only 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

[3] 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 (ZAR11.79, Table 1) or the line (ZAR16.19) that marks the poorest half of people below 100% of the BLW upper national line.

[4] The NIDS measures expenditure. This paper follows Budlender, Leibbrandt, and Woolard (2015, p. 13) in using the term *consumption*.

decimal places). Thanks to the predictive-modeling phenomenon known as the *flat maximum*, transparent/straightforward approaches are usually about as accurate as opaque/complex ones (Schreiner, 2012a; Caire and Schreiner, 2012).

Beyond its low cost and transparency, the technical approach of the scorecard is innovative in how it associates scores with poverty likelihoods, in the extent of its accuracy tests, and in how it derives formulas for standard errors. Although the accuracy tests are simple 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 2014/15 NIDS by SALDRU. Indicators are selected to be:

- Inexpensive to collect, easy to answer quickly, and simple to verify
- Strongly correlated with poverty
- Liable to change over time as poverty status changes
- Applicable for African and Coloured households in South Africa[5]

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.

[5] For 100% of the BLW upper national line, 98.0 percent of poor people in South Africa are African or Coloured.

Second, the scorecard can estimate the poverty rate of a population of households at a point in time. This estimate is the average of poverty likelihoods among a representative sample of households from the population. This is by far the scorecard's most common application.

Third, the scorecard can estimate the annual rate of change in a poverty rate. This is a less-common use of the scorecard, but it is still valid, given the assumptions noted here. With two independent samples from the same population, this is the difference in the average poverty likelihood in the baseline sample versus the average likelihood in the follow-up sample, divided by the difference (in years) between the average interview date in the baseline sample and the average interview date in the follow-up sample (Schreiner, 2014a). With one sample in which each household is scored twice, the estimate is the sum of the changes in each household's poverty likelihood from baseline to follow-up, divided by the sum of years between each household's pair of interviews.

The scorecard can also be used to segment participants for differentiated treatment. This is a less-common use of the scorecard, but it is still valid. To help managers choose appropriate targeting cut-offs for their purposes, several measures of targeting accuracy are reported for a range of possible cut-offs.

This paper presents a single scorecard whose indicators and points are derived with the BLW upper national poverty line applied to data from a random three-fifths of African and Coloured households from the 2014/15 NIDS. Scores from this one

scorecard are calibrated with this same three-fifths of the data to poverty likelihoods for 22 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.

Because the definitions of poverty lines and the measure of consumption in the 2014/15 NIDS differ from those in the 2005/6 IES data that was used to construct the old 2005/6 scorecard (Chen, Schreiner, and Woller, 2009), estimates from the two scorecards are *not* comparable. In particular, it is *not* possible to estimate the annual rate of change in a poverty rate with a baseline from the old 2005/6 scorecard and a follow-up from the new 2014/15 scorecard.

Given their assumptions as note here, all three scorecard-based estimators (a household's poverty likelihood, a population's poverty rate at a point in time, and the annual rate of change in a population's poverty rate) are *unbiased*. That is, their average in repeated samples matches the true value when constructed from (and applied to) a single, unchanging population in which the relationship between scorecard indicators and poverty is unchanging. Like all predictive models, the scorecard is constructed from a single sample and so makes errors 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 2014/15 (because the relationships between indicators and poverty change over time).[6]

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.

On average across 1,000 bootstraps of $n = 16{,}384$ from the validation sample, the average error (that is, the difference between the scorecard's estimate of a poverty rate versus the observed rate in the NIDS) at a point in time for 100% of the BLW upper national poverty line is +0.5 percentage points. The average of the absolute values of the average errors across all 22 poverty lines is about 0.8 percentage points, and the maximum of the absolute values of the average errors is 1.9 percentage points. These estimation errors are due to sampling variation, not bias; the average difference would be zero if the whole 2014/15 NIDS were to be repeatedly re-fielded and divided into sub-samples before repeating the entire process of scorecard construction and validation.

[6] Important cases include representative samples of African and Coloured households at a later point in time and sub-populations among African and Coloured households (Schreiner, forthcoming; Diamond *et al.*, 2016; Tarozzi and Deaton, 2009).

With $n = 16{,}384$, the 90-percent confidence intervals are ± 0.7 percentage points or better. For $n = 1{,}024$, the 90-percent intervals are ± 2.7 percentage points or better.

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 changes in poverty rates over time. Section 8 covers targeting. Section 9 places the scorecard here in the context of related exercises for South Africa. The last section is a summary.

The "Guidelines for Applying of the Scorecard" (found after the References) tells how to ask questions—and how to interpret responses—so as to mimic practice in the 2014/15 NIDS as closely as possible. These "Guidelines" (and the "Back-page Worksheet") are integral parts of the Simple Poverty Scorecard® poverty-assessment tool.

2. Data and poverty lines

This section presents the data used to construct and validate the scorecard. It also documents the 22 poverty lines to which scores are calibrated.

2.1 Data

Indicators and points for the new 2014/15 scorecard are selected (*constructed*) based on data from a random three-fifths of the 9,246 African and Coloured households interviewed in the 2014/15 NIDS.

The data from the three-fifths of households from the 2014/15 NIDS that is used to construct the scorecard is also used to associate (*calibrate*) scores with poverty likelihoods for all poverty lines.

Data from the other two-fifths of households in the 2014/15 NIDS is used to test (*validate*) scorecard accuracy for segmenting and for point-in-time estimates of poverty rates *out-of-sample*, that is, with data that is not used in construction/calibration.

The 2014/15 NIDS is South Africa's most-recent national consumption survey. Fieldwork ran from September 2014 to August 2015. The 2014/15 NIDS is Wave 4 of a panel, but this paper treats it as a cross-section. Consumption is in ZAR per person per day in average prices for South Africa as a whole in March 2015.

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 equal-weighted[7] 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

[7] 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[8] average of poverty statuses (or estimated poverty likelihoods) across households with participants, or $\frac{3 \cdot 1 + 4 \cdot 0}{3 + 4} = \frac{3}{7} = 0.43 = 43$ percent. In the "$3 \cdot 1$" term in the numerator, the "3" is the first household's weight because it has three members, and the "1" represents its poverty status (poor) or its estimated poverty likelihood. In the "$4 \cdot 0$" term in the numerator, the "4" is the second household's weight because it has four members, and 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

[8] 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[9] of the poverty statuses (or estimated poverty likelihoods) across 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.

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 household, household member, or participant—and explain why that unit is relevant.

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

Table 1 reports poverty lines and poverty rates for households and people in the 2014/15 NIDS for African and Coloured households, for non-African and non-Coloured households, for South Africa as a whole, and for the construction/calibration sample (which draws only from African and Coloured households), and for the validation sample (which also draws only from African and Coloured households).

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 South Africa. 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 (as opposed to households) to improve their well-being.

2.3 Definitions of *poverty*

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.

The definitions of *poverty* used here with the new 2014/15 scorecard differ from those used in Chen, Schreiner, and Woller (2009) with the old 2005/6 scorecard because poverty lines are defined differently and because consumption is measured differently.

As noted earlier, this means that poverty-rate estimates from the old 2005/6 scorecard are *not* comparable with estimates from the new 2014/15 scorecard.

Budlender, Leibbrandt, and Woolard (2015) describe the NIDS measure of consumption.

To allow pro-poor programs to use different or various poverty lines, this paper calibrates scores from its single new 2014/15 scorecard to poverty likelihoods for 22 lines:

- BLW-definition national lines:
  - Food
  - Lower
  - 100% of upper
  - 150% of upper
  - 200% of upper
- SSA-definition national lines:
  - Food
  - Lower
  - 100% of upper
  - 150% of upper
  - 200% of upper
- International 2005 and 2011 PPP lines:
  - \$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
  - \$3.10/day 2011 PPP
- Relative and percentile-based lines:
  - Line marking the poorest half of people below 100% of the BLW upper line
  - First-quintile (20^{th}-percentile)
  - Second-quintile (40^{th}-percentile)
  - Median (50^{th}-percentile)
  - Third-quintile (60^{th}-percentile)
  - Fourth-quintile (80^{th}-percentile)

2.3.1 BLW-definition national lines

Budlender, Leibbrandt, and Wollard ("BLW", 2015, p. 1) note that "there is no legislated poverty line for South Africa". To derive a set of lines for use with the NIDS, BLW use Ravallion's (1998) cost-of-basic-needs method, carefully comparing their choices with those of other proposed national lines by Simelane (2015), Özler (2007), and SSA (2007).

BLW begin with a food line that is the cost of 2,100 Calories from a food basket defined by the shares and prices of almost all categories of food items in the 2010/11 IES as observed for people in the third, fourth, and fifth deciles of total (food-plus-non-food) consumption. The BLW food line in average prices for South Africa as a whole in March 2015 is ZAR14.80 per person per day[10] (Table 1), giving poverty rates for African and Coloured households of 17.5 percent (households) and 32.8 percent (people).

The BLW lower national (food-plus-non-food) line is then defined as the BLW food line, plus the median non-food consumption observed for people whose *total* (food-plus-non-food) consumption in the 2010/11 IES is within ±5 percent of the BLW food line. The BLW lower national line is ZAR22.83 per person per day, giving poverty rates for African and Coloured households of 30.9 percent (households) and a person-level rate of 49.8 percent (people, Table 1).

[10] BLW (p. 35) report a monthly food line for March 2015 of ZAR444, and the NIDS reports a 30-day measure of consumption (Chinhema *et al.*, 2015, p. 48).

Finally, the BLW upper national (food-plus-non-food) line (hereafter, "100% of the BLW upper national line") is the BLW food line, plus the median non-food consumption observed for people whose *food* consumption in the 2010/11 IES is within ±5 percent of the BLW food line. This is ZAR43.57 per person per day (Table 1), giving poverty rates for African and Coloured households of 54.7 percent (households) and 71.5 percent (people).

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

2.3.2 SSA-definition national lines

Simelane (2015) uses data from the 2010/11 IES to re-base the national poverty lines in SSA (2007) that were originally derived with data from the 2000 IES. Simelane replicates the methods in SSA (2007), so these lines are called here "SSA poverty lines". The re-basing reflects changes in the price and composition of observed food and non-food consumption.[11] Estimates of poverty rates based on the SSA poverty lines are *not* comparable to estimates based on the old 2005/6 scorecard by Chen, Schreiner, and Woller (2009).

Like BLW, Simelane starts with a food line and Ravallion's (1998) cost-of-basic-needs approach. The SSA food line is the observed cost of 2,100 Calories from a food basket of 27 items (selected from the more than 300 food items collected by the 2010/11 IES), each representing at least 0.5 percent of total food consumption and being

[11] Simelane also reports "pilot" province-level lines, without corresponding poverty rates.

consumed by at least 10 percent of interviewed households[12] who are in the second, third, and fourth deciles of total (food-plus-non-food) consumption. The SSA food line is ZAF14.71 per person per day in average prices for South Africa as a whole in March 2015 (Table 1).[13] The corresponding poverty rates for African and Coloured households are 17.4 percent for households and 32.6 percent for people.

The SSA lower national (food-plus-non-food) line is the SSA food line, plus the average of the five medians of non-food consumption for five of the people whose *total* (food-plus-non-food) consumption in the 2010/11 IES is within ±1, ±2, ±3, ±4, and ±5 percent of the SSA food line. The SSA lower national line is ZAR21.42 per person per day, with a household-level poverty rate for African and Coloured households of 29.2 percent and a person-level rate of 47.7 percent (Table 1). For comparison, the BLW lower national line is ZAR22.83.

[12] These two criteria are those used to select items for the food basket used with South Africa's Consumer Price Index (CPI).

[13] Simelane's 30-day food line of ZAF335 is in average prices for South Africa as a whole in February/March of 2011. The average "headline" CPI (base December 2012 = 100) in these two months is 90.75, and the March 2015 CPI is 113.1, so the change in the CPI is 113.1 ÷ 90.75 = 1.246. In contrast, the change in the BLW food line from March 2011 to March 2015 is 444 ÷ 337 = 1.318. The BLW-based inflation factor is used here, so Simelane's ZAF335 in Feburary/March of 2011 becomes 441.53 in March 2015, that is, ZAR14.71 per day (the BLW food line is ZAR14.80). The SSA lower national line and the SSA upper national line are also inflated from February/March 2011 to March 2015 in proportion to the changes in the corresponding BLW lines.

The SSA upper national (food-plus-non-food) line ("100% of the SSA upper national line") is the SSA food line, plus the average of the five medians of non-food consumption for five of the people whose *food* consumption in the 2010/11 IES is within ±1, ±2, ±3, ±4, and ±5 percent of the SSA food line. This is ZAR32.57 per person per day (Table 1), giving poverty rates for African and Coloured households of 43.6 percent (households) and 62.1 percent (people). While the food and lower national lines are similar for BLW and SSA (differing by ZAR0.09 and ZAR1.41 per person per day), 100% of the SSA upper national line is ZAR11.00 lower than the 100% of the BLW upper national line.

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

2.3.3 International 2005 and 2011 PPP lines

The international 2005 and 2011 PPP lines are derived from:

- PPP exchange rates for South Africa for "individual consumption expenditure by households":
  - 2005:[14] ZAR4.572 per $1.00
  - 2011:[15] ZAR5.06753 per $1.00
- Consumer Price Index (CPI, base = 100 in December 2012):[16]
  - Calendar-year 2005 average: 63.35
  - Average in February/March 2011: 90.75
  - Calendar-year 2011 average: 92.34
  - March 2015: 113.10
- BLW food lines (ZAF/person/month) in average prices for South Africa as a whole:[17]
  - March 2011: 337
  - March 2015: 444
- BLW lower national lines:
  - March 2011: 534
  - March 2015: 685
- 100% of the BLW upper national lines:
  - March 2011: 1,042
  - March 2015: 1,307

[14] World Bank, 2008.

[15] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&C0=ZAF_3&PPP0=5.06753&PL0=1.90&Y0=2011&NumOfCountries=1`, retrieved 3 August 2017.

[16] `www.statssa.gov.za/publications/P0141/CPIHistory.pdf`, retrieved 3 August 2017.

[17] BLW, p. 35.

2.3.3.1 $1.25/day 2005 PPP line

The $1.25/day 2005 PPP line in average prices for South Africa as whole in March 2015 is $\$1.25 \cdot \left(\frac{\text{2005 PPP factor}}{\$1.00}\right)\left(\frac{\text{CPI}_{\text{mar2015}}}{\text{CPI}_{2005}}\right)$. This is $\$1.25 \cdot \text{ZAR}4.572 \cdot (113.10 \div 63.35) = \text{ZAF}10.20$ per person per day (Table 1) with a poverty rate for African and Coloured households of 8.7 percent (households) and 18.2 percent (people).

The World Bank's PovcalNet[18] does not report a $1.25/day 2005 PPP line nor a corresponding data-based poverty rate for South Africa in 2014/15. Using the 2010/11 IES, PovcalNet reports an all-South-Africa person-level rate of 9.4 percent for 2010/11 (the poverty line is not reported).[19]

The $2.00, $2.50, and $5.00/day 2005 PPP lines are multiples of the $1.25/day line.

[18] `iresearch.worldbank.org/PovcalNetPPP2005/`, retrieved 3 August 2017.
[19] `iresearch.worldbank.org/PovcalNetPPP2005/Detail.aspx?Format=Detail&C0=ZAF_3&PPP0=4.57&PL0=1.25&Y0=2010.67&NumOfCountries=1`, retrieved 3 August 2017.

2.3.3.2 $1.90/day 2011 PPP line

The \$1.90/day 2011 PPP line is $\$1.90 \cdot \left(\frac{\text{2011 PPP factor}}{\$1.00}\right)\left(\frac{\text{CPI}_{\text{mar2015}}}{\text{CPI}_{\text{2011}}}\right)$. This is $\$1.90 \cdot \text{ZAR}5.06753 \cdot (113.10 \div 92.34) = \text{ZAF}11.79$ (Table 1). The corresponding poverty rates for African and Coloured households are 11.6 percent (households) and 23.3 percent (people).

PovcalNet does not report lines or rates for \$1.90/day 2011 PPP in 2014/15 using data from 2014/15.[20] Using data from the 2010/11 IES, PovcalNet reports a person-level rate for 2010/11 in South Africa as a whole of 16.6 percent and a \$1.90/day 2011 PPP line of ZAR9.63.[21]

The \$3.10/day 2011 PPP line is a multiple of the \$1.90/day line.

[20] `iresearch.worldbank.org/PovcalNet/home.aspx`, retrieved 3 August 2017.
[21] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&C0=ZAF_3&PPP0=5.06753&PL0=1.90&Y0=2011&NumOfCountries=1`, retrieved 3 August 2017.

2.3.4 Relative and percentile-based lines

2.3.4.1 Line marking the poorest half of people below 100% of the BLW upper national line

The line that marks the poorest half of people below 100% of the BLW upper national line is defined as the median (50^{th} percentile) of the aggregate household per-capita consumption of people (not households) below 100% of the BLW upper national line (U.S. Congress, 2004).

Microenterprise programs in South Africa who use the scorecard to report the number of their participants who are "very poor" to USAID should use this line. This is because USAID defines the "very poor" as those people in households whose daily per-capita consumption is below the highest of the following two poverty lines:

- The line that marks the poorest half of people below 100% of the BLW upper national line (ZAR16.19, with a person-level poverty rate for African and Coloured households of 36.4 percent, Table 1)
- The $1.90/day 2011 PPP line (ZAR11.79, with a person-level poverty rate for African and Coloured households of 23.3 percent)

2.3.4.2 Percentile-based lines

The scorecard also supports percentile-based poverty lines, facilitating a number of types of analyses. For example, the second-quintile (40^{th}-percentile) line might be used to help track 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, could also be used to look at the relationship of consumption with health outcomes (or anything else related with the distribution of consumption). The scorecard thus offers an alternative for health-equity analyses that typically have used a "wealth index" such as that supplied with the data from the Demographic and Health Surveys (Rutstein and Johnson, 2004) to compare some estimate of wealth with health outcomes.

Of course, analysts could always do (and can still do) relative-wealth analyses with scores from the Simple Poverty Scorecard® poverty-assessment tool. But support for relative consumption lines allows a more straightforward use of a single tool (the scorecard) 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 standard, straightforward, well-understood definition of *poverty* that is external to the scorecard 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 African and Coloured households in South Africa, about 70 candidate indicators are initially prepared in the areas of:

- Household composition (such as the number of resident members)
- Employment (such as whether any members are paid a wage or salary on a regular basis by an employer)
- Education (such as how well the female head/spouse can read in English)
- Housing (such as the main material used for the floor of the main dwelling)
- Ownership of durable assets (such as fridges/freezers or lounge suites)
- Agriculture (such as the ownership of wheelbarrows)

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.[22]

One possible application of the scorecard is to measure changes in poverty through time. Thus, when selecting indicators—and holding other considerations constant—preference is given to more sensitive indicators. For example, the ownership of a lounge suite 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 BLW upper national poverty line and Logit regression on the construction sub-sample for African and Coloured households. Indicator selection uses both judgment and statistics. The first step is to use Logit to build one scorecard for each candidate indicator. The power of each one-

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

indicator scorecard to rank households by poverty status is measured as "c" (SAS Institute Inc., 2004).

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

A series of two-indicator scorecards are then built, each adding a second indicator to the one-indicator scorecard selected from the first round. The best two-indicator scorecard is then selected, again using judgment to balance statistical accuracy with the non-statistical criteria. These steps are repeated until the scorecard has 12 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) (Schreiner, 2010a).

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[23] 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 simple, common-sense, and acceptable to users.

[23] 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.

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

- Only 12 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 scorecard would:

- Record the interview identifier, interview date, country code ("ZAF"), scorecard code ("002") and the sampling weight assigned by the program's survey design to the household of the participant (if known)
- Record the names and identifiers of the participant (who may not be the same as the respondent), of the participant's field agent (who may not be the same as the enumerator), and of the relevant organizational service point
- Complete the "Back-page Worksheet" with each household member's first name or nickname and age, noting who is the male head/spouse (if he exists) and who is the female head/spouse (if she exists)
- For each household member, determine whether he/she is a *resident member*, that is, whether he or she usually resides with the household in its residence at least 4 nights a week
- Based on what has already been recorded on the "Back-page Worksheet", record household size (the number of resident household members) in the scorecard header next to "Number of resident HH members:"
- Based on what has already been recorded on the "Back-page Worksheet", mark the response to the first scorecard indicator ("How many resident members does the household have?") based on the number of resident members
- For each resident member 15-years-old or older, ask whether he/she is being paid a wage or salary to work on a regular basis by an employer. Mark the response to the second scorecard indicator based on the responses
- Read the rest of the scorecard indicators to the respondent one-by-one
- Draw circles around the relevant 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).[24] IRIS Center (2007a) and Toohig (2008) are useful nuts-and-bolts guides for budgeting, training field workers and supervisors, logistics, sampling, interviewing, piloting, recording data, and controlling quality.

In particular, while collecting scorecard indicators is relatively easier than alternative ways of assessing poverty, it is still absolutely difficult. Training and explicit definitions of terms and concepts in the scorecard are essential, and field workers should scrupulously study and follow the "Guidelines for Applying the Scorecard" found after the References section in this paper, as these "Guidelines"—along with the "Back-page

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

Worksheet"—are integral parts of the Simple Poverty Scorecard® poverty-assessment tool.[25]

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 "underreporting [of asset ownership] is widespread but not overwhelming, except for a few goods . . . [and] overreporting is common for a few goods". Still, as is done in Mexico in the second stage of its targeting process, most false self-reports can be corrected (or avoided in the first place) by field workers who make a home visit. This is the recommended procedure for organizations who use the scorecard for targeting African and Coloured households in South Africa.

[25] 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 SALDRU did in the 2014/15 NIDS.

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

- Who will do the interviews
- How responses and scores will be recorded
- 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 goal should be to make sure that the sample is representative of a well-defined population and that the scorecard will inform an issue that matters to the organization.

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

- Employees of the organization
- Third parties

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 who is trained to follow the "Guidelines for Applying the Scorecard". This is how SALDRU did interviews in South Africa's 2014/15 NIDS, and this provides the most-accurate data and thus the best scorecard-based 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 interactive 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 interviews by phone)

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

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

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

- Paper in the field, and then filed at a central office
- Paper in the field, and then keyed into a database or spreadsheet at a central office
- Portable electronic devices in the field, and then uploaded to a database[26]

[26] The author of this paper can support pro-poor 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 a central office once paper forms come in from the field.

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

- All relevant participants (a census)
- A representative sample of relevant participants
- All relevant participants in a representative sample of relevant field offices and/or 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 scored can be derived from sample-size formulas (presented later) to achieve a desired confidence level and a desired confidence interval. To have a chance to meaningfully inform questions that matter to the organization, however, the focus should be less on having a sample size large enough to achieve some arbitrary level of statistical significance and more on having a representative sample from a well-defined population that is relevant for issues that matter to the program.

The frequency of application can be:

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

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

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

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

5. Estimates of a household's poverty likelihood

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

To get absolute units, scores are converted to *poverty likelihoods*, that is, probabilities of being below a poverty line. This is done via simple look-up tables. For the example of 100% of the BLW upper national line, scores of 51–53 have a poverty likelihood of 56.8 percent, and scores of 54–58 have a poverty likelihood of 41.7 percent (Table 3).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 51–53 are associated with a poverty likelihood of 56.8 percent for 100% of the BLW upper national line but 1.6 percent for the $1.90/day 2011 PPP line.[27]

[27] From Table 3 on, many tables have 22 versions, one for each of the 22 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 BLW upper national line.

5.1 Calibrating scores with poverty likelihoods

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

For the example of 100% of the BLW upper national line (Table 4), there are 9,629 (normalized) households in the calibration sub-sample with a score of 51–53. Of these, 5,474 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 51–53 is then 56.8 percent, because 5,474 ÷ 9,629 = 56.8 percent.

To illustrate with 100% of the BLW upper national line and a score of 54–58, there are 14,769 (normalized) households in the calibration sub-sample, of whom 6,159 (normalized) are below the line (Table 4). The poverty likelihood for this score range is then 6,159 ÷ 14,769 = 41.7 percent.

The same method is used to calibrate scores with estimated poverty likelihoods for all 22 poverty lines.[28]

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

Even though the scorecard is constructed partly based on judgment related to non-statistical criteria, the calibration process produces poverty likelihoods that are objective, that is, derived from quantitative poverty lines and from survey data on consumption. The calibrated poverty likelihoods would be objective even if the process of selecting indicators and points did not use any data at all. In fact, objective scorecards of proven accuracy are often constructed using only expert judgment to select indicators and points (Fuller, 2006; 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 South Africa scorecard are transformed coefficients from a Logit regression, (untransformed) scores are not converted to poverty likelihoods via the Logit formula of $2.718281828^{\text{score}} \text{ x } (1 + 2.718281828^{\text{score}})^{-1}$. 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 true value. Given the assumptions above, the scorecard also produces unbiased estimates of poverty rates at a point in time and unbiased estimates of changes in poverty rates between two points in time.[29]

Of course, the relationships between indicators and poverty do change to some unknown extent over time, and they also vary across sub-groups among African and Coloured households in South Africa. Thus, scorecard estimates will generally have errors when applied after August 2015 (the last month of fieldwork for the 2014/15 NIDS) or when applied with sub-groups that are not representative of the entire population of African and Coloured households.

[29] This is because these estimates 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 the entire population of African and Coloured households in South Africa? 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 a 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 poverty likelihood observed in the bootstrap sample
- Repeat the previous three steps 1,000 times
- For each score range, report the average difference between estimated and observed poverty likelihoods across the 1,000 bootstrap samples
- For each score range, report the two-sided 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 differences between estimated versus observed poverty likelihoods. It also shows confidence intervals for the differences.

For 100% of the BLW upper national line and African and Coloured households, the average poverty likelihood across bootstrap samples for scores of 51–53 in the

validation sample is too low by 3.7 percentage points. For scores of 54–58, the estimate is too high by 7.8 percentage points.[30]

The 90-percent confidence interval for the differences for scores of 51–53 is ±3.2 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 –6.9 and –0.5 percentage points (because –3.7 – 3.2 = –6.9, and –3.7 + 3.2 = –0.5). In 950 of 1,000 bootstraps (95 percent), the difference is –3.7 ± 3.5 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is –3.7 ± 4.5 percentage points.

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

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

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 representative samples of African and Coloured households in 2014/15, although it holds less well for samples from sub-national populations or in later time periods.

Another possible source of differences between estimates and observed values is overfitting. The scorecard here is unbiased, but it may still be *overfit* when applied after the end of the NIDS fieldwork in August 2015. That is, the scorecard may fit the construction/calibration data from 2014/15 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 2014/15 NIDS construction/calibration data but not in the overall population of African and Coloured households in South Africa. 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 representative of the population of African and Coloured households.

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 samples that are representative of African and Coloured households (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 2018 and that they have scores of 20, 30, and 40, corresponding to poverty likelihoods of 99.6, 92.6, and 87.7 percent (100% of the BLW upper national line, Table 3). The population's estimated poverty rate is the households' average poverty likelihood of $(99.6 + 92.6 + 87.7) \div 3 = 93.3$ percent.

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 92.6 percent. This differs from the 93.3 percent found as the average of the three individual poverty likelihoods associated with each of the three scores. Unlike poverty likelihoods, scores are ordinal symbols, like letters in the alphabet or colors in the spectrum. Because scores are not cardinal numbers, they cannot meaningfully be added up or averaged across households. Only three operations are valid for scores: conversion to poverty likelihoods, analysis of distributions (Schreiner, 2012a), or comparison—if desired—with a cut-off for segmentation. There are a few contexts in which the analysis of scores is appropriate, but, in general, the safest rule to follow is: If you are not completely sure what to do, then use poverty likelihoods, not scores.

Scores from the new 2014/15 scorecard are calibrated with data from the 2014/15 NIDS for all 22 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 new 2014/15 scorecard applied to 1,000 bootstraps of $n = 16{,}384$ from the validation sample and 100% of the BLW upper national poverty line, the average error (differences for estimates versus observed values in the validation sample) for a household-level poverty rate at a point in time is +0.5 percentage points (Table 7, summarizing Table 6 across poverty lines). Across all 22 lines in the validation sample, the maximum of the absolute values of the average errors is 1.9 percentage points, and the average of the absolute values of the average errors is about 0.8 percentage points. At least part of these differences is due to sampling variation in the division of the 2014/15 NIDS into sub-samples.

When estimating poverty rates at a point in time for a given poverty line, the average error reported in Table 7 should be subtracted from the average poverty likelihood to give a corrected estimate. For the example of the new 2014/15 scorecard and 100% of the BLW upper national line in the validation sample, the error is +0.5

percentage points, so the corrected estimate in the three-household example above is 93.3 – (+0.5) = 92.8 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 ±0.7 percentage points or better for all poverty lines (Table 7). This means that in 900 of 1,000 bootstraps of this size, the estimate (after correcting for the known average error) is within 0.7 percentage points of the observed value.

For example, suppose that the (uncorrected) average poverty likelihood in a sample of n = 16,384 with the new 2014/15 scorecard and 100% of the BLW upper national line is 93.3 percent. Then estimates in 90 percent of such samples would be expected to fall in the range of 93.3 – (+0.5) – 0.6 = 92.2 percent to 93.3 – (+0.5) + 0.6 = 93.4 percent, with the most likely observed value being the corrected estimate in the middle of this range, that is, 93.3 – (+0.5) = 92.8 percent. This is because the original (uncorrected) estimate is 93.3 percent, the average error is +0.5 percentage points, and the 90-percent confidence interval for 100% of the BLW upper national line in the validation sample with this sample size is ±0.6 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" numbers of repeated samples) a Normal distribution and can be characterized by their average error (difference versus observed value), together with their standard error (precision measured as the square root of the sum of the squares of the errors).

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

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

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

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

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

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

N is the population size, and

n is the sample size.

For example, the 2014/15 NIDS gives a direct-measure estimate of the household-level poverty rate for African and Coloured households in the validation sample for 100% of the BLW upper national line of $\hat{p} = 54.7$ percent (Table 1).[31] If this estimate came from a sample of $n = 16{,}384$ households from a population N of 14,865,516 (the number of African and Coloured households in South Africa in 2014/15 according to the NIDS sampling weights), then the finite population correction ϕ is $\sqrt{\frac{14{,}865{,}516 - 16{,}384}{14{,}865{,}516 - 1}} = 0.9994$, which close to $\phi = 1$. If the desired confidence level is 90-percent ($z = 1.64$), then the confidence interval $\pm c$ is

$$\pm z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.547 \cdot (1 - 0.547)}{16{,}384}} \cdot \sqrt{\frac{14{,}865{,}516 - 16{,}384}{14{,}865{,}516 - 1}} = \pm 0.637$$

percentage points. If ϕ were taken as 1, then the interval is ±0.638 percentage points.

Unlike the 2014/15 NIDS, however, the scorecard does not measure poverty directly, so this formula is not applicable. To derive a formula for the new 2014/15 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 BLW upper national line in the validation sample, the 90-percent confidence interval is ±0.607 percentage points.[32]

[31] The analysis here ignores that poverty-rate estimates from the NIDS are themselves based on samples and so have their own sampling distribution.
[32] Due to rounding, Table 7 displays 0.6, not 0.607.

Thus, the 90-percent confidence interval with $n = 16{,}384$ is ± 0.607 percentage points for the new 2014/15 scorecard and ± 0.637 percentage points for direct measurement. The ratio of the two intervals is $0.607 \div 0.637 = 0.95$.

Now consider the same exercise, but with $n = 8{,}192$. The confidence interval under direct measurement and 100% of the BLW upper national line in the validation sample is $\pm 1.64 \cdot \sqrt{\frac{0.547 \cdot (1 - 0.547)}{8{,}192}} \cdot \sqrt{\frac{14{,}865{,}516 - 8{,}192}{14{,}865{,}516 - 1}} = \pm 0.902$ percentage points. The empirical confidence interval with the new 2014/15 scorecard (Table 6) is ± 0.831 percentage points. Thus for $n = 8{,}192$, the ratio of the two intervals is $0.831 \div 0.902 = 0.92$.

This ratio of 0.92 for $n = 8{,}192$ is close to the ratio of 0.95 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 0.95, implying that confidence intervals for indirect estimates of poverty rates via the new 2014/15 scorecard and 100% of the BLW upper national line are—for a given sample size—about 5 percentage points narrower than confidence intervals for direct estimates via the 2014/15 NIDS. This 0.95 appears in Table 7 as the "α factor for precision" because if $\alpha = 0.95$, then the formula for confidence intervals c for the new 2014/15 scorecard is $\pm c = \pm z \cdot \alpha \cdot \sigma$. That is, the formula for the standard error σ for point-in-time estimates of poverty rates via the scorecard is $\alpha \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}}$.

In general, α can be more or less than 1.00. When α is less than 1.00, it means that the scorecard is more precise than direct measurement. It turns out that α is less than 1.00 for 17 of the 22 poverty lines in Table 7, and it is never higher than 1.15.

The formula relating confidence intervals with standard errors for the scorecard can be rearranged to give a formula for determining sample size before measurement. If $\widetilde{p}$ is the expected poverty rate before measurement, then the formula for sample size n from a population of size N that is based on the desired confidence level that corresponds to z and the desired confidence interval $\pm c$ is $n = N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p})}{z^2 \cdot \alpha^2 \cdot \widetilde{p} \cdot (1 - \widetilde{p}) + c^2 \cdot (N - 1)} \right)$. 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 14,865,516 (the number of African and Coloured households in 2014/15), suppose $c = 0.05055$, $z = 1.64$ (90-percent confidence), and the relevant poverty line is 100% of the BLW upper national line so that the most sensible expected poverty rate $\widetilde{p}$ is the overall poverty rate for that line in 2014/15 for African and Coloured households (54.7 percent at the household level, Table 1). The α factor is 0.95 (Table 7). Then the sample-size formula gives $n = 14{,}865{,}516 \cdot \left(\frac{1.64^2 \cdot 0.95^2 \cdot 0.547 \cdot (1 - 0.547)}{1.64^2 \cdot 0.95^2 \cdot 0.547 \cdot (1 - 0.547) + 0.05055^2 \cdot (14{,}865{,}516 - 1)} \right) =$ 236, which is not too far from the sample size of 256 observed for these parameters in

Table 6 for 100% of the BLW upper national line. Taking the finite population correction factor ϕ as one (1) gives the same result, as

$$n = \left(\frac{0.95 \cdot 1.64}{0.05055}\right)^2 \cdot 0.547 \cdot (1 - 0.547) = 236.$$[33]

Of course, the α factors in Table 7 are specific to African and Coloured households in South Africa as well as to the new 2014/15 scorecard and its poverty lines and poverty rates. 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.

[33] 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 South Africa should report using the line that marks the poorest half of people below 100% of the BLW upper national line. Given the α factor of 0.67 for this line (Table 7), an expected before-measurement household-level poverty rate of 20.0 percent (the rate for this line in 2014/15 for African and Coloured households, Table 1), and a confidence level of 90 percent ($z = 1.64$), then $n = 300$ implies a confidence interval of $\pm 1.64 \cdot 0.67 \cdot \sqrt{\frac{0.200 \cdot (1 - 0.200)}{300}} = \pm 2.5$ percentage points.

In practice after the end of fieldwork for the NIDS in August 2015, a program would select a poverty line (say, 100% of the BLW upper national line), note its participants' population size (for example, $N = 10{,}000$ participants), select a desired confidence level (say, 90 percent, or $z = 1.64$), select a desired confidence interval (say, ± 2.0 percentage points, or $c = \pm 0.02$), make an assumption about $\widetilde{p}$ (perhaps based on a previous measurement such as the household-level poverty rate for 100% of the BLW upper national line for African and Coloured households of 54.7 percent in the 2014/15 NIDS in Table 1, look up α (here, 0.95 in Table 7), assume that the scorecard will still work in the future and for sub-groups that are not representative of the population of African and Coloured households,[34] and then compute the required sample size. In this illustration, $n = 10{,}000 \cdot \left(\frac{1.64^2 \cdot 0.95^2 \cdot 0.547 \cdot (1 - 0.547)}{1.64^2 \cdot 0.95^2 \cdot 0.547 \cdot (1 - 0.547) + 0.02^2 \cdot (10{,}000 - 1)} \right) = 1{,}308.$

[34] This paper reports accuracy for the scorecard applied to its validation sample, but it does not test accuracy for later years or for sub-populations that are not representative of the population of African and Coloured households. Performance after August 2015 will resemble that in the 2014/15 NIDS with deterioration over time and across non-representative sub-groups to the extent that the relationships between indicators and poverty status change.

7. Estimates of annual rates of change in poverty rates

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.

When measuring change, the same definition of *poverty* must be used at both baseline and follow-up. In the case of South Africa, the definition of *poverty* differs between the old 2005/6 scorecard and the new 2014/15 scorecard. Thus, estimates are *not* comparable between the two scorecards, and it is *not* possible to estimate change by comparing a baseline from the old 2005/6 scorecard with a follow-up from the new 2014/15 scorecard.

The differences in the definition of *poverty* preclude testing the accuracy of estimates of the annual rate of change in poverty rates for African and Coloured households South Africa, and this paper can only suggest approximate formulas for standard errors. Nevertheless, the relevant concepts are presented here because, in practice, pro-poor programs can apply the new 2014/15 scorecard to collect their own data to estimate annual rates of change.

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

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

7.2 Estimating changes in poverty rates over time

Consider the illustration begun in the previous section. On 1 January 2018, an organization samples three households who score 20, 30, and 40 and so have poverty likelihoods of 99.6, 92.6 and 87.7 percent (100% of the BLW upper national line, Table 3). Correcting for the known average error for this line in the validation sample of +0.5 percentage points (Table 7), the corrected baseline estimated poverty rate is the households' average poverty likelihood of [(99.6 + 92.6 + 87.7) ÷ 3] – (+0.5) = 92.8 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 2021, 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 97.3, 92.6, and 79.7 percent, 100% of the BLW upper national line, Table 3). Adjusting for the known average error, the average poverty likelihood at follow-up is [(97.3 + 92.6 + 79.7) ÷ 3] – (+0.5) = 89.4 percent, an improvement of 92.8 – 89.4 = 3.4 percentage points. Supposing that exactly three years passed between the average baseline interview and the average follow-up interview, the estimated annual rate of decrease in poverty is about 3.4 ÷ 3 = 1.1 percentage points per year. About one in 91 participants in this hypothetical example cross the poverty line in each year between 2018 and 2021.[35] Among those who start below the line in each year, about one in 84 (1.1 ÷ 92.8 = 1.2 percent) on net end up above the line.[36]

[35] This is a net figure; some start above the line and end below it, and vice versa.
[36] The scorecard does not reveal the reasons for this change.

Alternatively, suppose that the same three original households who were scored at baseline are scored again on 1 January 2021. Given scores of 25, 35, and 45, their follow-up poverty likelihoods are 97.3, 92.6, and 79.7 percent. The average across households of the difference in each given household's baseline poverty likelihood and its follow-up poverty likelihood is $[(99.6 - 97.3) + (92.6 - 92.6) + (87.7 - 79.7)] \div 3 = 3.4$ percentage points.[37] Assuming in this example that there are exactly three years between each household's two interviews, the estimated annual decrease in poverty is (again) about $3.4 \div 3 = 1.1$ percentage points per year.

Given the assumptions of the scorecard, both approaches to estimating change through time are unbiased. In general, 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).

[37] In this case, the error for this line in Table 7 should *not* be subtracted off.

7.3 Precision of estimates of 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 scorecard'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,[38] 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.

As before, the formula for standard errors can be rearranged to give a formula for sample sizes before indirect measurement via a scorecard, where $\tilde{p}$ is based on previous measurements and is assumed equal at both baseline and follow-up:

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

[38] 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.

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

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 BLW upper national line, $\alpha = 1.08$, $\hat{p} = 0.547$ (the household-level poverty rate in 2014/15 for 100% of the BLW upper national line for African and Coloured households in Table 1), and the population N is large enough relative to the expected sample size n that the finite population correction ϕ can be taken as one (1). Then the baseline sample size is $n = 2 \cdot \left(\frac{1.08 \cdot 1.64}{0.02} \right)^2 \cdot 0.547 \cdot (1 - 0.547) \cdot 1 = 3{,}887$, and the follow-up sample size is also 3,887.

7.4 Precision for estimated change for one sample, scored twice

Analogous to previous derivations, the general formula relating the confidence interval $\pm c$ to the standard error σ when using a scorecard to estimate change for a single sample of households, all of whom are scored at two points in time, is:[39]

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

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 African and Coloured households in South Africa, it is not possible to estimate values of α here.

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

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

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

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

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

Given this, a sample-size formula for a sample of households to whom the new 2014/15 scorecard is applied twice (once after August 2015 and then again later) is

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

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

To illustrate the use of this formula, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is ±2.0 percentage points ($\pm c = \pm 0.02$), the poverty line is 100% of the BLW upper national line, the sample will first be scored in 2018 and then again in 2021 ($y = 3$), and the population N is so large relative to the expected sample size n that the finite population correction ϕ can be taken as one (1). The pre-baseline poverty rate p_{2018} is taken as 54.7 percent (Table 1), and α is assumed to be 1.30. Then the baseline sample size is

$n = 2 \cdot \left(\frac{1.30 \cdot 1.64}{0.02}\right)^2 \cdot \left[-0.02 + 0.016 \cdot 3 + 0.47 \cdot 0.547 \cdot \left(1 - 0.547\right)\right] \cdot 1 = 3{,}284$. The same group of 3,284 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*,[40] not as *poor*. After all, unless all targeted households have poverty likelihoods of 100 percent, some of them are non-poor (their consumption is above a given poverty line). With the scorecard, the terms *poor* and *non-poor* have specific definitions. Using these same terms for targeting status is incorrect and misleading.

[40] 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 African and Coloured households. For an example cut-off of 53 or less, outcomes for 100% of the BLW upper national line in the validation sample are:

- Inclusion: 45.8 percent are below the line and correctly targeted
- Undercoverage: 8.9 percent are below the line and mistakenly not targeted
- Leakage: 9.8 percent are above the line and mistakenly targeted
- Exclusion: 35.5 percent are above the line and correctly not targeted

Increasing the cut-off to 58 or less improves both inclusion and undercoverage but worsens both leakage and exclusion:

- Inclusion: 49.8 percent are below the line and correctly targeted
- Undercoverage: 4.9 percent are below the line and mistakenly not targeted
- Leakage: 16.0 percent are above the line and mistakenly targeted
- Exclusion: 29.3 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 new 2014/15 scorecard. For 100% of the BLW upper national line in the validation sample, total net benefit as measured by the hit rate is greatest (81.3) for a cut-off of 53 or less, with about four in five households among African and Coloured households 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).[41]

[41] Table 9 also reports BPAC, the Balanced Poverty Accuracy Criteria adopted by USAID for its certification of poverty-assessment tools. IRIS Center (2005) made BPAC to consider accuracy in terms of the error of estimated poverty rates and in terms of targeting inclusion. BPAC = (Inclusion – |Undercoverage – Leakage|) x [100 ÷ (Inclusion + Undercoverage)]. Schreiner (2014b) explains why BPAC does not add any useful information beyond that provided by the 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 new 2014/15 scorecard applied to the validation sample, the expected poverty rate among households who score at or below a given cut-off. For the example of 100% of the BLW upper national line, targeting households in the validation sample who score 53 or less would target 55.6 percent of all households (second column) and would be associated with a poverty rate among those targeted of 82.4 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 BLW upper national line with the validation sample and a cut-off of 53 or less, 83.7 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 BLW upper national line with the validation sample and a cut-off of 53 or less, covering 4.7 poor households means leaking to 1 non-poor household.

9. Other poverty-assessment tools in South Africa

This section discusses four other poverty-assessment tools for South Africa in terms of their goals, methods, definitions of *poverty*, data, indicators, errors, precision, and cost. In general, the advantages of the Simple Poverty Scorecard® poverty-assessment tool are its:

- Using data from the most-recent nationally representative consumption survey
- Having about the same number of indicators and lower-cost indicators
- Using a consumption-based definition of *poverty*
- 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, and having targeting accuracy that is likely similar to that of alternative approaches
- Being feasible for pro-poor programs who work with African and Coloured households, due to its low cost and transparency

9.1 Gwatkin *et al.*

Gwatkin *et al.* (2007) construct a poverty-assessment tool for South Africa 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 12,247 households in South Africa's 1998 DHS.[42] The PCA index is like the scorecard here except that, because the DHS does not collect data on consumption, the index is based on a different (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.[43] Well-known examples of the PCA asset-index approach include Stifel and Christiaensen (2007), Zeller *et al.* (2006), Sahn and Stifel (2003 and 2000), Henry *et al.* (2003), and Filmer and Pritchett (2001).

[42] The 1998 and 2003 DHS data for South Africa include each household's asset-index score (`dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm`, retrieved 3 August 2017).

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

The 18 indicators in Gwatkin *et al.* are similar in their low cost and verifiability to those in the scorecard:

- Characteristics of the residence:
  - Presence of electricity
  - Type of floor
  - Type of walls
  - Type of fuel for cooking
  - Source of drinking water
  - Type of toilet arrangement
- Number of people per sleeping room
- Ownership of consumer durables:
  - Radios
  - Televisions
  - Refrigerators
  - Washing machines
  - Telephones
  - Personal computers
  - Bicycles
  - Motorcycles
  - Cars or trucks
  - Donkeys or horses
  - Sheep or cattle

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

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

The first goal is segmentation, and the last two goals deal with performance monitoring, so the asset index would be used much like the scorecard here. In particular, the scorecard's support for relative (percentile-based) poverty lines allows for the segmentation of households by quintile 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 18 indicators (versus 12), and while the scorecard requires adding up 12 integers (some of them usually zeroes), Gwatkin *et al.*'s index requires adding up 51 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 asset index, the scorecard can be applied to data from a "light" survey that does not collect consumption as long as the "light" survey collects indicators that match those in the scorecard (Schreiner, 2011).

In essence, Gwatkin *et al.*—like all asset indexes—define *poverty* in terms of the indicators and 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* depends on a given index's indicators and

points. And estimates of change over time from an asset index can only address the direction of change, not the magnitude.

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

- Asset ownership is easier to measure accurately than consumption
- Access to resources in the long term—and thus capacity to produce income and to consume—depends on the control of assets
- Assets get at specific capabilities more directly, the difference between, say, "Can you afford adequate sanitation on your income?" versus "Does the toilet drain to a septic tank or sewer system?"

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

9.2 Sahn and Stifel (2003)

Sahn and Stifel (2003) seek a low-cost, practical way to measure poverty. Based on data from the 8,848 households in the 1994 South African Integrated Household Survey (SAIHS), they use factor analysis—a sister of the PCA approach of Gwatkin *et al.*—to build an asset index. Their goal is "to see if there exist simpler and less demanding alternatives to collecting data on [consumption] for purposes of measuring economic welfare and ranking households" (p. 484). Thus, the motivation of Sahn and Stifel (2003) is similar to that of the scorecard: they want tools that are affordable and feasible given constraints on budgets and non-specialists' technical resources. Furthermore, they want to make comparisons over time and across countries without the complications and assumptions required for direct measurement via consumption surveys. Like this paper, they also seek a tool that can be used for targeting.

The nine indicators in Sahn and Stifel's (2003) index are low-cost and verifiable:

- Characteristics of the residence:
  - Type of floor
  - Source of drinking water
  - Type of toilet arrangement
- Education of the household head
- Ownership of consumer durables:
  - Radios
  - Televisions
  - Refrigerators
  - Bicycles
  - Motorized transport

To check coherence between their asset index and consumption[44] and child nutrition in the 1994 SAIHS, Sahn and Stifel (2003) rank households in South Africa based on the index, on consumption, and on height-for-age. They judge the coherence between two sets of rankings as the distance between a given household's decile ranks. They conclude that the asset index estimates long-term nutritional status no worse than does current consumption and that the index is less complex and less costly. They also report that their asset index estimates consumption worse than does a poverty-assessment tool constructed with least-squares regression that estimates consumption based on household demographics, education, residence quality, and access to public services. Finally, they find that measurement error is worse for consumption than for their index.

[44] Sahn and Stifel (2003) check their index against consumption because it is a common proxy for living standards, not because they believe it should be the benchmark.

9.3 Filmer and Scott

Filmer and Scott (2012) test (on 11 countries, including South Africa) how well different types of asset indexes produce ranks that correlate with ranks from:

- Other types of asset indexes
- Consumption as directly measured by a survey
- Consumption as estimated by a regression-based poverty-assessment tool)

They find that different approaches to constructing asset indexes generally lead to similar rankings vis-à-vis the benchmarks of directly measured consumption and consumption-based poverty-assessment tools. This result is strongest for countries where regression works well for estimating consumption and weakest for less-poor countries with larger shares of non-food consumption.

For South Africa, Filmer and Scott use data on the 8,791 households in the 2003 SAIHS, selecting 16 low-cost and verifiable indicators:

- Characteristics of the residence:
  - Type of residence
  - Type of floor
  - Type of walls
  - Type of roof
  - Number of rooms per household member
- Ownership of consumer durables:
  - Radios
  - Televisions
  - Telephones
  - Electric kettles
  - Paraffin stoves
  - Gas stoves
  - Electric stoves
  - Refrigerators
  - Hot-water heaters
  - Bicycles
  - Cars

Filmer and Scott do not report their tools' points because their goal is to establish the general properties of approaches to constructing asset indexes, rather than to provide asset indexes that local pro-poor programs can use.

9.4 Alderman *et al.*

In response to a legal mandate that South Africa distribute national revenue so as to reflect the number of poor households in each municipality, Alderman *et al.* (2003, p. 171–172) seek "ways to combine detailed information obtained in household surveys with the more-extensive coverage of a census to derive geographic poverty estimates based on consumption . . . [so as to] directly contribute to the implementation of the distribution of equitable share grants." They construct a "poverty map" (Elbers, Lanjouw, and Lanjouw, 2003) of estimated poverty rates in 1996 for each of South Africa's nine provinces, 45 district councils, and 354 magisterial districts. The results are displayed in tables and in "poverty maps" that roughly show, at a glance, how poverty rates vary across small areas.

Alderman *et al.* build nine province-level poverty-assessment tools[45] using generalized least-squares regression on the logarithm of per-capita consumption for households in the 1995 IES. The tool uses only indicators found in both the IES and in South Africa's 1996 census, as well as district-level averages from the census.

The tools are then applied to estimate consumption for each household in the 1996 census. The poverty map's estimate of the poverty rate in a given province,

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

district council, or magisterial district is then the share of people in households whose estimated consumption is less than ZAR800 per month per household (not per-capita). The national government then used the poverty-map estimates as part of the formula to allocate funds to municipalities, and they were also used to help slow the spread of cholera (Snel and Henninger, 2002).

The typical province-level poverty-assessment tool in Alderman *et al.* uses about 14 indicators chosen from the following list. Almost all indicators are defined both for individual households and as district-level averages:

- Household demographics:
  - Logarithm of the number of members
  - Race group
  - Sex of the head
- Number of household members with a primary education or less
- Employment of household members:
  - Number of skilled workers
  - Number of professionals
  - Whether any household members farm
- Characteristics of the residence:
  - Type of residence
  - Use of electric lighting
  - Source of water
  - Type of toilet arrangement
  - Method of garbage disposal
  - Number of rooms per household member
- Ownership of a telephone
- Ownership of real property
- Location of residence

In general, poverty mapping in Alderman *et al.* is similar to the scorecard in that they both:

- Use indicators that are straightforward and verifiable
- Build poverty-measurement tools with data that is representative of a population (the IES survey strata for poverty mapping, and African and Coloured households for the scorecard) and then apply the tools to other data on sub-groups that are not, in general, representative of the same population
- Use indicators that are quick and low-cost to collect
- Estimate poverty rates for populations
- Provide unbiased estimates when their assumptions hold
- Seek to be useful in practice and so aim to be understood by non-specialists

Strengths of poverty mapping include that it:

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

Strengths of the scorecard include that it:

- Is easier to understand in terms of both construction and application
- Tests accuracy out-of-sample
- Associates poverty likelihoods with scores non-parametrically
- Reduces overfitting by selecting indicators based on both statistical and non-statistical criteria
- Surfaces estimates of poverty likelihoods for individual households
- Reports errors
- Reports standard errors (and straightforward formulas for standard errors)

In terms of goals, the two approaches differ in that Alderman *et al.*'s poverty map seeks to help South Africa's national government to equitably share grants with municipalities, while the scorecard seeks to help local pro-poor programs to manage their social performance and to improve their accountability. These different goals lead directly to their differences in cost, complexity, and transparency.

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

When reporting accuracy, Alderman *et al.* (pp. 191–192) focus on standard errors. They note that "on average, the precision of our head-count index (the ratio of standard errors to head-count estimates) for magisterial districts (third administrative level) in South Africa is similar to the precision of head-count figures from the IES for provinces (first administrative level). . . . If researchers are content to use the surveys to make comparative statements regarding poverty across provinces, then the chances are fair that they will also be content to make similar comparisons across second and third administrative levels within those provinces using a poverty map."[46]

[46] Demombynes *et al.* (2004) use this benchmark and come to the same conclusion about the precision of poverty-map estimates in Ecuador, Madagascar, and South Africa.

It is not possible to compare standard errors for the scorecard here versus Alderman *et al.* because (despite their emphasis on the importance of estimating the standard errors of poverty-rate estimates) they report standard errors only at the level of provinces and—below the province level—only for South Africa's Free State. Furthermore, they do not report the number of households in the census for any area.

As highlighted by Tarozzi and Deaton (2009), the standard error is only one aspect of the accuracy of a poverty-assessment tool. Poverty rates for South Africa in 1996 are observed in the IES only for provinces and not for district councils nor magisterial districts. This is why a poverty map is useful in the first place, but it also means that a map's errors (unlike its standard errors) are unknown.

Alderman *et al.* do not report errors at the province level, but they can be computed from their Tables 1 and A1. The maximum absolute error is 5.7 percentage points, and the average of the absolute errors is about 3.0 percentage points.[47]

[47] Province-level errors for the new 2014/15 scorecard cannot be reported here because the NIDS household data does not include the province of residence.

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

10. Conclusion

Pro-poor programs working with African and Coloured households in South Africa can use the Simple Poverty Scorecard® poverty-assessment tool 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 change in a population's poverty rate over time

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

The new scorecard is constructed with data from three-fifths of African and Coloured households in South Africa's 2014/15 NIDS. Those households' scores are then calibrated to poverty likelihoods for 22 poverty lines. The accuracy (errors and precision) of the new 2014/15 scorecard is tested out-of-sample for targeting, for estimating a household's poverty likelihood at a point in time, and for estimating a population's poverty rate a point in time.

When the scorecard is applied to the 22 poverty lines in the validation sample, the maximum absolute value of the average errors for point-in-time estimates of poverty rates is 1.9 percentage points, and the average of the absolute values of the average errors is about 0.8 percentage points. For a given poverty line, corrected estimates may be had by subtracting the known error from the original, uncorrected estimates.

For $n = 16{,}384$ and 90-percent confidence, the precision of point-in-time estimates of poverty rates is ± 0.7 percentage points or better. With $n = 1{,}024$, the 90-percent confidence intervals are ± 2.7 percentage points or better.

The new 2014/15 scorecard here uses a different definition of *poverty* than does the old 2005/6 scorecard, so their poverty-rate estimates are *not* comparable with each other. In particular, it is *not* possible to estimate change over time with a baseline from the old 2005/6 scorecard and a follow-up from the new 2014/15 scorecard.

If a program 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 the program's values and mission.

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

For this reason, the scorecard uses 12 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 managers to understand and to trust the scorecard and by allowing non-specialists to add up scores quickly in the field.

In summary, the Simple Poverty Scorecard® poverty-assessment tool is a practical, objective way for pro-poor programs working with African and Coloured households in South Africa to estimate consumption-based poverty rates, track changes in poverty rates over time, and segment participants for differentiated treatment.

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Guidelines for Applying the Scorecard

The excerpts quoted below from "the *Manual*" are from:

SALDRU; and Development Research Africa. (2008) "National Income Dynamics Survey Fieldwork Manual: Wave 1, 2008", `www.nids.uct.ac.za/documents/wave-1-documents-and-questionnaires/30-wave-1-training-manual`, retrieved 1 August 2017.

Interview Procedure

First, fill out the scorecard header. Second, fill out the "Back-page Worksheet", following the directions there. Then record responses to the first two scorecard indicators. Next, read the remaining 10 questions, recording the responses. Read the questions word-for-word, in order, without reading the response options.

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

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

Likewise, do not ask the second scorecard indicator directly ("Are any resident household members 15-years-old or older currently being paid a wage or salary to work on a regular basis for an employer (that is not themselves) whether full-time or part-time? Do not count self-employment.") Instead, fill in the appropriate response based on what you record on the "Back-page Worksheet".

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

General Interviewing Advice

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

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 need not be the enumerator who is conducting the interview. Rather, the "field agent" is the employee of the pro-poor program with whom the participant has an on-going relationship. If the program does not have such a field agent, then the relevant spaces in the header may be left blank.

Read each question word-for-word, in the order presented in the scorecard. Do not read the response options.

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:

11. Does the household own at least one lounge suite in good working order?	A. No	0	
	B. Yes	2	2

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

When filling out the "Back-page Worksheet", you should circle the relevant responses for each household member. For example:

First name or nickname	**Age**	**Has <NAME> lived under this roof or within the same compound/ homestead/stand at least 15 days during the last 12 months as part of the family? (If Yes, then <NAME> is a *household member*)**	**If <NAME> is a household member, then is he/she the household head or the spouse/partner of the head?**	**Does <NAME> usually reside here at least 4 nights a week? (if Yes, then <NAME> is a *resident member*)**	**If <NAME> is 15-years-old or older and a resident member, then is he/she currently being paid a wage or salary to work on a regular basis for an employer (that is not themselves), whether full-time or part-time? Do not count self-employment.**
1. Xolani	41	No Yes	Male head Female head	No Yes	<15 or Non-resident No Yes
2. Thandiwe	35	No Yes	Male spouse/partner Female spouse/partner Other	No Yes	<15 or Non-resident No Yes
3. Gugulethu	14	No Yes	Other	No Yes	<15 or Non-resident No Yes
4.		No Yes	Other	No Yes	<15 or Non-resident No Yes
. . .		. . .	. . .	. . .	. . .
12.		No Yes	Other	No Yes	<15 or Non-resident No Yes
—			**Number of resident household members:** 2		**Any wage/salary workers?** No

This example has three household members, two of whom are resident members. One of the two resident members is 15-years-old or older, and that person is not currently a wage/salary employee. In particular:

- Xolani is the 41-year-old male head/spouse. He is a household member because he has lived under the same roof or within the same compound/homestead/stand at least 15 days during the last 12 months as part of the family. He is not, however, a resident member, because he does not usually reside there for at least four nights per week. As a non-resident member, the last question on the "Back-page Worksheet" about wage/salary employment does not apply to him. Because he is the male head/spouse but is not a resident member, the response to question 3 ("If the male head/spouse is a resident member, then how well can he read in English?") is "A. No male head/spouse, or he is not a resident member", regardless of Xolani's ability to read in English
- Thandiwe is the 35-year-old female head/spouse (the wife of Xolani). She is a household member, and she is also a resident household member. As a resident member who is 15-years-old or older, she is asked the last question about wage/salary employment. Thandiwe does not receive income from wage/salary employment
- Gugulethu is the 14-year-old daughter of Xolani and Thandiwe. She is a household member and also a resident household member. She is younger than 15-years-old, so the last question about wage/salary employment does not apply to her.

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 SALDRU in the 2014/15 NIDS. That is, an organization using the scorecard should not promulgate any definitions or rules (other than those in these "Guidelines") to be used by all its field agents. Anything not explicitly addressed in these "Guidelines" is to be left to the unaided judgment of each individual enumerator.

Do not read the response options to the respondent. Simply read the question, and then stop; wait for a response. If the respondent asks for clarification or otherwise hesitates or seems confused, then read the question again or provide additional assistance based on these "Guidelines" or as you, the enumerator, deem appropriate.

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

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

In general, the application of the scorecard should mimic as closely as possible the application of the 2014/15 NIDS by SALDRU. For example, interviews should be done by trained enumerators and face-to-face in respondents' homesteads because interviews for the 2014/15 NIDS were done by trained enumerators and face-to-face in respondents' homesteads.

Questionnaire Translation

These "Guidelines"—and this document in general—currently exist in only in English, Xhosa, Zulu, Northern Sotho (Sepedi), and Tsonga; there is not yet an official, standard translation of the scorecard, "Back-page Worksheet", "Guidelines", and poverty-likelihood look-up tables to South Africa's other five official non-European languages (Ndebele, Sotho, Swazi, Tswana, and Venda). Please check `SimplePovertyScorecard.com` to see if such a translation has been done since this writing.

If there is no official, standard translation to a given language, then users should contact the author for help in creating such a translation. In particular, the translation of scorecard indicators and response options should follow as closely as possible the meaning of the original English wording in the 2014/15 NIDS *Questionnaire*.

Who should be the respondent?

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

According to p. 18 of the *Manual*, "The questionnaire is asked of the resident head of the household or of any adult member of the household who is able to answer such questions. This person is asked to respond on behalf of the household. Due to the nature of the questionnaire, different people may be knowledgeable about different aspects of the household. [For a given question], try to find the person who is most knowledgeable to respond."

Enumerator responsabilities

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

According to p. 4 of the *Manual*, "After you have completed your questionnaire and before you leave the respondents' house, quickly check through the questionnaire and make sure you have asked every question you were supposed to ask and make sure you have recorded the responses accurately."

Protocol for the enumerator

According to pp. 5–6 of the *Manual*, "The following are rules and guidelines that pertain to the expected behaviour of [you as the enumerator].

"[You must wear your badge that identifies you as a member of <your organization> at all times.]

Professionalism and ethics

"Do not discuss the interviews with anyone outside of the research team. Indeed, do not to discuss your findings with members of team when it is inappropriate to do so.

"*Do not argue with your informants or enter into debates with them.* Many of the questions in this study have the potential to lead to debates as they are very interesting questions—stick to the questionnaire and minimise discussion with the respondent.

"*Do not turn respondents off by displaying signs of boredom.* This is particularly important. As the study progresses and the number of interviews that you have to undertake adds up, you will feel the boredom of repetitiveness. It is vital that you continue to approach each interview as if it were your first.

Safety

"Every effort and precaution must be made to ensure that [your] safety and security are not compromised. Whenever possible, the following should be adhered to:

- [Carry a cell phone]
- If unsure of safety in a particular area, speak with the local police
- If you feel threatened or that an area is unsafe, then leave the area immediately
- Locate/identify 'safe places' along the route you will travel. These are places you can stop at or to which you can make your way in an emergency
- If there should be an accident, report it to your field manager"

Gaining access

According to pp. 6–8 of the *Manual*, "When you first arrive at the house and tell the respondents that you are conducting a survey, some of the respondents may be reluctant to participate. Respondents may be aware of the study due to pamphlets and outreach that was intended to inform community members about the study. Nevertheless, most people would rather read, be socialising, watching TV, or talking to their families and friends than spending an hour with a stranger. However . . . it is important to try to get as many [households] as we can to start and finish the survey.

"If a respondent does not want to participate in the survey, then he/she will usually make that clear at the very beginning of the interview. It is important, therefore, to make a good impression from the start. Greet the household members, introduce yourself by name and title, and read the introductory statement. In this introduction, explain who you are, what the purpose of the [survey is], the confidentiality of the study, and that the [household] was randomly selected. The following serves as an example of what you can say when introducing yourself and the study.

> *Good day. My name is <your name>. I am from <your organisation>. We are conducting [a survey] aimed at gathering information on household and individual well-being of [participants with <your organisation>]. Your household was randomly selected to participate. All information will be kept confidential. Your participation is entirely voluntary. The [survey lasts about 10 to 20 minutes]. Again, this household has been chosen by chance. We would like to interview [you]. May we do this?*

"Deliver the introductory statement in a clear, friendly, and professional manner. If you need to, practice reading this statement aloud until you are completely comfortable with it. Be sure to explain the research goals carefully and to ask the respondent if he/she would agree to take part.

"Notice some of the things that we say in this introduction. We make it clear from the beginning that we are calling from <your organisation>, a legitimate company that has been operating in the region for over <number of> years. We let the person we hope to interview know that we are asking for information—we can remind respondents that we are not asking for money nor trying to sell anything. Hopefully, by letting people know who we are and why we are calling, we will increase our chances of getting them to participate in the survey.

"Following your introduction, immediately tell the respondent how long your interview will take and make sure that you both understand that the respondent is available to see the interview through to the end. Tell him/her that the questionnaire will take [about 10 minutes] to complete.

"*Do not under any circumstances lie or under-play the length of the interview.* You will find some respondents getting impatient or even angry when you go past the designated time. It is possible that the interview will take longer than you anticipated. If this is the case, then again ask the respondent for permission to extend the time. Should the respondent be unavailable, then set a new time when you can return, and make sure that you both understand the agreement. . . . Try to avoid such a situation arising, but [returning again another time] is preferable to completing an interview with a reluctant respondent. Experience has shown a high error rate as well as creeping 'untruths', as the respondent [gives answers] that are most likely to minimise the time he/she spends with you.

"Reassure the informants about research confidentiality, and carefully explain the confidentiality arrangements. If the informants are still uncomfortable, then they may choose not to answer all the questions. You can never over-emphasise how the interview will remain confidential. Remind your respondents that you are interested in their experiences and their opinions. Make it clear that there are no right or wrong statements. Highlight the valuable contribution that they are making to the subject matter."

<u>Answering a respondent's initial queries</u>

According to pp. 8–9 of the *Manual*, "In some cases, a respondent will ask you for information about the survey, or he/she may want to know why you are calling on him/her. Your ability to answer these questions may determine whether or not a respondent decides to participate in the survey. Here are some of the questions that respondents may ask you during an interview, along with some of the answers that you can give them.

- "*Why did you choose me?* You were chosen through a technique called 'random sampling'. . . . That is the only way we can get a survey that fairly represents [the households of participants with <your organisation>]
- *What are you going to do with this survey?* There will be reports summarising our findings. All answers will be grouped together; no responses will be identified with any specific person. Your cooperation is voluntary, but I would greatly appreciate your help
- *What is this survey all about, anyway?* <Your organisation> wants to know more about the well-being of individuals and <of the households of its participants>. . . . Your answers are confidential, and your cooperation is voluntary, but I would greatly appreciate your help

"Answer these questions to the best of your ability. However, if you do not know the answer to a question, do not make one up! Tell the respondent that you do not know, and offer to direct their query to someone who does. If the respondent still wants his/her question answered, then you can put him/her on hold and call your supervisor. If again you get a refusal, then ask whether your supervisor may visit and better explain what you are doing. You can then return to the interview after the supervisor answers the person's questions.

Confidentiality and consent

According to pp. 9–11 of the *Manual*, "The study is totally confidential. The person has the right to not participate in the study if he or she does not want to. He or she also has the right to refuse to answer questions if he or she does not want to.

"Some information can be regarded as quite sensitive. It is therefore critical that you make the person feel comfortable and ensure them of the *CONFIDENTIALITY* of the study. It is a good idea to highlight to the respondent that the household was chosen randomly (this means by chance) from a list of <the households of participants with your organisation>. They were not selected for any particular reason. All information that the person shares with you must be kept totally confidential and private. It is very important that [you] understand how critical the issue of confidentiality is. It is a matter of trust between informants and <your organisation>. Breaking the confidentiality of the informants breaks that trust. This can hurt the respondents as well as <your organisation>.

"*Informed consent* means that the respondent is informed about the research subject and methods, knows who [is doing the survey], and has had an opportunity to ask as many questions as he/she wants before he/she agrees to be a subject.

"If the respondent consents to participating, then ask the respondent if you may conduct the interview now. If yes, then you may proceed immediately. If no, then ask the respondent if you may return at a more convenient time that week.

"You may be faced with people who do not want to participate. The following section will guide you on how to handle this.

"Refusals. Some people may not want to participate in the interview. If a person refuses to participate, it is still possible to gently persuade him/her to change his/her mind. Sometimes all it takes are a few extra words explaining why we are doing the survey and why the person's information is so important. In most cases, the respondent will tell you why he/she does not want to cooperate. Here are some of the most common reasons people give for not wanting to participate in a survey and some statements you can use to try to convince them to participate in the study.

- *Too busy*. This should only take a little while and it is very important that all people [who are] selected participate in the study. I am sorry to have caught you at a bad time. I would be happy to come back later or tomorrow. When would be a good time to visit you?
- *Not interested*. It is very important to get the participation of everyone in the sample. Your participation is very important to the overall study, otherwise the results will not be [as] useful. So I would really like to talk with you. If we do not get your information, then there will be a gap in our study that may [harm] the [quality of] overall results
- *No one's business*. I can certainly understand. That is why all of our interviews are confidential. Protecting people's privacy is one of our major concerns, and it is for this reason that we remove your identifying information from the questionnaire before we capture your information on a computer. Because we do this, there is no way for us to link any information you share with me to the study or results
- *Leave the survey behind and I will complete it*. I understand why you feel that way, but we have to do all the surveys in the same way. All of the surveys are being administered by interviewers, so we cannot change the way it is being administered for one or two people, as it may make our results different. If you would prefer someone else from my team to speak to you, then I can try and organise that
- *Bad health or not feeling too good (tired) right now*. I am sorry to hear that. I would be happy to come back tomorrow. Would that be fine?
- *Feel inadequate*. The questions are not at all difficult. There are no right or wrong answers. We are concerned about how you feel and behave rather than about how much you know about certain things. Some of the people we have already interviewed had the same concern you have, but, once they got started, they did not have any difficulty answering the questions. Maybe I could read just a few questions to you so you can see what they are like

- *Objects to survey and puts it politely.* The questions in this survey are ones that <your organisation> really needs answers to, and we think your participation is very important
- *Objects to survey and puts it strongly.* I am sorry that you feel that way. It is a pity, for your information would have been valuable. However, I see that you have strong feelings on such matters and I respect that, so I shall be leaving you now. Rest assured that nobody else will visit you. However, should you change your mind, please call <phone number> to arrange another meeting

"The above are only suggestions. As an interviewer, you should rely on your own judgement to encourage people to participate. If you discover a great way of convincing people to participate, then share your wisdom with the rest of the team. As you do these surveys, you will discover which strategies seem to work best for you. In any case, be polite at all times. You want to prevent the respondent from giving you a 'hard refusal'. If a respondent says, 'I am not interested in what you have to say' or 'Do not come back here', then that is a hard refusal. . . . Do whatever you can to prevent a respondent from giving you a hard refusal. In all the examples, you may ask whether your supervisor may visit and better explain what you are doing."

Guidelines to conducting an interview

According to pp. 13–17 of the *Manual*, "To obtain consistent and comparable data, every interviewer must use standardised interviewing techniques and procedures to collect data. To ensure that all interviewers utilise consistent interviewing methods and to minimise response bias, the [questionnaire] has been carefully designed. Interviewers are extremely valuable members of the research team since the quality of the data and the success of the study depends largely upon the ability of each and every interviewer.

"Utilising the general guidelines outlined below will help you maintain control of the interview, collect meaningful data, and reassure the participant by professionally and compassionately conducting the interview.

"*The truth.* Above all else, remember that we want the respondents to tell the truth. In other words, we do not want people to tell us things that they do not really believe nor to tell us what they think that we want to hear. We want to know about their well-being. If someone tells us, for example, that they spend more on one item than another, it must be true.

"*Be prepared.* It is important to be prepared before beginning the interview. The more prepared the interviewer is for the full range of situations that arise during the study visit, the more able he/she is to minimize the burden on the participant. It is crucial that each interviewer be very familiar with the project protocols and procedures, study instruments, . . . and the entire interview process before undertaking the first interview.

"Always remember that you are a professional and therefore should be very knowledgeable about the work you are doing, including details about things like the purpose of the survey, the characteristics of the sample population, and the specifics of the interview. Participants will expect you to know what you are doing and why, and you must be ready to answer any questions that they might ask you.

"Once the respondent has agreed to cooperate, you have to actually ask the questions. When you interview the respondent, use a conversational tone. The more familiar you become with the script, the more natural you will sound reading the questions. Therefore, reading the script over a number of times before making your first call is important. The key is to sound like someone with whom a respondent will want to spend the next [10 minutes]. Try not to sound as though you are bored or dull. You do not want the respondent to mistake you for a computer-generated voice! Also, be sure that you do not sound like you are on fast-forward. A good rule of thumb is that you should read about 60 words every half-a-minute. You may want to time yourself during pre-testing to see how fast you are reading the text.

"*Maintaining rapport and dealing with sensitive issues.* The rapport-building process begins with the initial contact with the respondent, and the interviewer should maintain a positive relationship with the respondent throughout the interview. Through acceptance, an understanding manner, and interest in the respondent, the interviewer can create an atmosphere in which the respondent feels able to speak freely without reservation. Specifically, the interviewer must find a delicate balance between presenting the questions in a professional, matter-of-fact manner without being abrupt, tactless, or insensitive. It is best to avoid acting too serious or too jovial because extreme types of behaviour may alarm or upset the participant, and will bias the interview.

"If the participant appears nervous or indicates that he/she finds a particular question too personal, then reassure him/her that he/she may speak freely and that all of his/her responses will be kept confidential. The interviewer's ability to maintain an environment in which the participant feels safe to speak is critical to the interview process. Basic approaches used in survey research involve emphasising the confidentiality between the interviewer and participant as well as the importance of each individual's participation and contribution to this significant research. Using phrases such as 'I can understand that you might be concerned about the privacy of our conversation, but let me reassure you that your answers are strictly confidential', can help to put participants at ease at difficult points throughout the interview.

"If a participant refuses to answer a question after providing reassurances, [mark the response that these 'Guidelines' indicate as corresponding to a refusal] and then continue on to the next question. Although missing data is always problematic, it is better to accept a refusal to one question than to lose the entire interview.

"*Neutral attitude.* An important point to remember is that you should always maintain a neutral attitude when asking questions. To prevent influencing the participant's reply, the interviewer must take every precaution to avoid showing any personal feelings or judgments. Any reactions that may imply criticism, surprise,

approval, or disapproval of either the questions or of the participant's answers will introduce bias into the interviewing situation. Do not let the respondent think that you approve or disapprove of anything he/she says, and do not let the respondent think you approve or disapprove of any item in the questionnaire. Commenting on the respondent's answers may actually get him/her to change his/her response to one that he/she thinks you will like better. If respondents are discouraged from providing the actual information, then the results will paint a false picture of the respondents. Because we want the survey answers to be like small mirrors on the larger reality of [our participants], it is important for interviewers to let the respondents answer the questions without any cues or feedback from interviewers.

"If you feel that the answer is not quite right, or perhaps that the respondent did not hear you properly, then repeat the question and enter the response given. Remember, it is not up to you to pass judgement on what the respondent says. Yours is the responsibility to capture and to enter the response given. . . .

"Furthermore, we must also be absolutely sure that we correctly record what people say and not merely what we think they have said. If we do not record a person's actual information, then our entire survey is invalid; we have to accept respondents' opinions and record them accurately, even if we disagree with them.

"Interviewers should feel comfortable with the questions and the subject material of the study. Whenever the interviewer feels uneasy, some of those negative feelings may be transmitted to the respondent, and he/she will also feel uncomfortable. All interviewers should practice asking questions that they feel may cause problems until they can ask them in a simple, straightforward, matter-of-fact manner. Through a relaxed, professional attitude, the interviewer can ease the respondent's anxieties and gain her/his confidence. It is especially important to remain neutral while probing a question for clarification of an incomplete response.

"When reading the questions, emphasise only those words which are underlined or italicised, and pause only at commas. Read everything in a natural, even-toned manner.

"*Be a good listener*. Much of the interviewing you do will resemble 'normal' conversation. But it is important to remind yourself that you are *not* having a normal conversation. In a normal situation, you are trying to think up something interesting to say. Here you want to make the other person seem interesting, by your being interested in him/her.

"*Active listening*, or *reflective listening*, is defined as 'a special type of listening that involves paying respectful attention to the content and feelings expressed in another's communication—hearing and understanding and then letting the other know that he or she is being heard and understood'. You need to be an active and aware listener, taking cues from your respondent and, if necessary, guiding him/her back to the issues at hand. Active listening gives a person the opportunity to clarify or further explain his/her communication, thereby greatly reducing the risk that you will misunderstand the nature and specifics of his/her problems. Active listening also lets

the respondent know that you are really listening, which, in turn, helps to build the trust and rapport which is essential to the interviewing process. To do so, you need to ask a question, hear the answer, interpret its meaning, and either dig into the earlier answer in more depth or redirect the person's attention to an area more relevant to the inquiry. In short, you need to be able to listen, think, and talk, almost at the same time. Try to be a good listener. Be more interested than interesting. Sometimes this requires us to probe the respondent to answer the question(s) more fully. Active listening can be broken down into two skill areas: attending skills, and responding skills.

"Attending skills include:

- Contact: Make sure that you always have eye contact without being seen to be scrutinising the respondent—simply, always look at them when both you and he/she is speaking. It is also important to create the correct type of spatial relationship with the respondent. That is, you should neither sit too close not too far, but at an appropriate distance that best creates the type of ambiance that you need to administer the interview. Remember the 'Golden No-Touch Rule'. At no stage following the initial handshake, which may accompany your introduction, do you ever touch the respondent, except when . . . shaking his/her hand upon leaving. . . . Should the respondent persist in touching you, politely move away so that this becomes impossible to continue
- Posture: Always adopt an open posture and a relaxed manner. Walk into the home looking confident, and always sit upright. Remember that in many of the areas where you will be working, violence and crime are high, and being perceived as being over-confident or cocky might scare the respondent into thinking that you might have [ulterior motives]
- Gestures: Avoid any gestures that might be distracting to the respondent. Continuously scratching parts of your anatomy—especially your crotch, picking your nose, or perhaps waving your arms around wildly, suddenly, or erratically—will be off-putting to respondents
- Environment: Already discussed is the need to ensure privacy, an undisturbed conversation, and a physical setting that creates a relaxed atmosphere
- Interested silence: Again this has been covered, but it is important to emphasise that looking interested whilst saying nothing is a skill that all people should have. As a field worker, you should practice, no matter how odd this notion sounds, being good at portraying interest to a respondent's answer. After having to do this for a good number of interviews, it is a skill indeed

“Responding skills include:

- Acknowledgement of responses: Try to avoid non-verbal gestures, such as nodding your head to certain responses. Instead, respond with brief one-to-three word statements
- Echo responses, or repeat words or phrases: Avoid repeating the response just given to you, for no reason other than because it is highly annoying
- Summarising: Depending on circumstances, it is often a good idea to reflect back the main points of communication in a concise and comprehensive way as this may assist the respondent in correcting your interpretation of his/her original response

Guidelines for asking and interpreting scorecard indicators

1. How many resident members does the household have?
    A. Six or more
    B. Five
    C. Four
    D. Three
    E. Two
    F. One

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

This question asks about the number of *resident* household members, not about the number of household members.

According to p. 12 of the *Manual*, "A person is considered a *household member* if all three of the following conditions hold:

- He/she has lived under this 'roof' or within the same compound/homestead/stand at least 15 days during the last 12 months, or if he/she arrived here in the last 15 days and this is now his/her usual residence, and
- When he/she is together [with the household], he/she shares food from a common source with other household members, and
- He/she contributes to—or shares in—a common resource pool"

According to p. 12 of the 2014/15 NIDS *Household Questionnaire*, a *household member* is someone who "has lived under this 'roof' or within the same compound/homestead/stand for at least 15 days during the last 12 months as part of the family."

According to p. 19 of the *Manual*, "Those who comply with the [household-]membership criteria and usually reside there [at least] four nights a week [are considered to be *resident members*]. If a person complies with the membership criteria but is not residing there at the time of the interview, then he/she is considered to be a *non-resident household member*.

"Only four exceptions to this rule exists, that is, if the person is currently:

- At boarding school
- Living in a hall of residence
- In prison
- In a hospital or clinic

"Domestic help or lodgers are *not* counted as being part of the [interviewed] household."

In sum, a *household member* is anyone who has lived under the same "roof" as the household or within the same compound/homestead/stand at least 15 days during the past 12 months as part of the family.

A *resident household member* is a household member who usually resides with the household at least four nights a week.

The household head is a household member, but he/she need not be a resident household member.

2. Are any resident household members 15-years-old or older currently being paid a wage or salary to work on a regular basis for an employer (that is not themselves), whether full-time or part-time? Do not count self-employment.
    A. No
    B. Yes

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

If the respondent refuses to respond and if no household member knows the relevant response, then mark "A. No".

3. If the male head/spouse is a resident member, then how well can he read in English?
    A. No male head/spouse, or he is not a resident member
    B. Not at all, or not well
    C. Fair, or very well

If you know from the "Back-page Worksheet" that there is no male head/spouse, or that the male head/spouse is not a resident member, then mark "A. No male head/spouse, or he is not a resident member". In this case, do not read the question. Just mark the response and go on to the next question.

Remember that you already know the name of the the male head/spouse (and whether he exists and whether he is a resident member) from the "Back-page Worksheet". Thus, if there is a male head/spouse who is a resident member, then do not mechanically ask, "If the male head/spouse is a resident member, then how well can he read in English?". Instead, use the actual name of the male head/spouse, for example: "How well can Themba read in English?" If there is no male head/spouse who is also a resident member, then do not read the question at all. Instead mark "A. No male head/spouse, or he is not a resident member" and then go to the next question.

For the purposes of the scorecard, the *male head/spouse* is defined as:

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

For someone to be the head of the household (or the spouse of the head of the household), it is necessary that the person also be a member of the household. But the head (or the spouse of the head) does not need to be a resident member to be the head (or the spouse of the head). For the purposes of this question, a non-resident head (or spouse of the head) will always result in your marking the response for "A. No male head/spouse, or she is not a resident member".

If the respondent refuses to respond and if no household members know the relevant response, then mark "C. Fair, or very well".

4. If the female head/spouse is a resident member, then how well can she read in English?
    A. No female head/spouse, or she is not a resident member
    B. Not at all, or not well
    C. Fair, or very well

If there is no female head/spouse, or if the female head/spouse is not a resident member, then mark "A. No female head/spouse, or she is not a resident member". In this case, do not read the question. Just mark the response and go on to the next question.

Remember that you already know the name of the the female head/spouse (and whether she exists and whether she is a resident member) from the "Back-page Worksheet". Thus, if there is a female head/spouse who is a resident member, then do not mechanically ask, "If the female head/spouse is a resident member, then how well can she read in English?". Instead, use the actual name of the female head/spouse, for example: "How well can Bathandwa read in English?" If there is no female head/spouse who is also a resident member, then do not read the question at all. Instead, mark "A. No female head/spouse, or she is not a resident member" and then go to the next question.

For the purposes of the scorecard, the *female head/spouse* is defined as:

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

For someone to be the head of the household (or the spouse of the head of the household), it is necessary that the person also be a member of the household. But the head (or the spouse of the head) does not need to be a resident member to be the head (or the spouse of the head). For the purposes of this question, a non-resident head (or spouse of the head) will always result in your marking the response for "A. No female head/spouse, or she is not a resident member".

If the respondent refuses to respond and if no household members know the relevant response, then mark "C. Fair, or very well".

5. What is the main type of material used for the floor of the main dwelling?
    A. Mud/earth, concrete, carpet, or linoleum/vinyl
    B. Tiles, or wood

If the respondent refuses to respond and if no household members know the relevant response, then mark "A. Mud/earth, concrete, carpet, or linoleum/vinyl".

6. Is there a flush toilet available for this household?
    A. No
    B. Yes

There are no additional guidelines for this indicator.

7. Does the household own at least one gas stove or microwave in good working order?
    A. No
    B. Yes

Do not read this question as written. Instead, ask two separate questions, one for each of the two types of assets:

- Does the household own at least one gas stove in good working order?
- Does the household own at least one microwave in good working order?

Mark the responses as follows:

Does the household have at least one . . . in good working order?		**Response to mark**
Gas stove	**Microwave**	
No	No	A
Yes	No	B
No	Yes	B
Yes	Yes	B

If the respondent refuses to respond and if no household members know the relevant response, then mark "A. No".

According to Michael Brown of the SALDRU NIDS team:

- Gas stoves and microwaves that are not currently in good working order are not to be counted, even if they could be repaired in the future
- Gas stoves and microwaves in good working order that were bought on credit or via hire/purchase are to be counted even if they are not yet paid-off
- Gas stoves and microwaves that the household owns but that are not in its possession (that is, that have been lent out or rented out) are included if the respondent mentions them
- Gas stoves and microwaves that are in the household's possession but that the household does not own (that is, that are borrowed in or rented in) are not to be counted

8. Does the household own at least one fridge/freezer in good working order?
    A. No
    B. Yes

According to Michael Brown of the SALDRU NIDS team:

- Fridges/freezers that are not currently in good working order are not to be counted, even if they could be repaired in the future
- Fridges/freezers in good working order that were bought on credit or via hire/purchase are to be counted even if they are not yet paid-off
- Fridges/freezers that the household owns but that are not in its possession (that is, that have been lent out or rented out) are included if the respondent mentions them
- Fridges/freezers that are in the household's possession but that the household does not own (that is, that are borrowed in or rented in) are not to be counted

If the respondent refuses to respond and if no household members know the relevant response, then mark "A. No".

9. Does the household own at least one hi-fi stereo, CD player, or MP3 player in good working order?
    A. No
    B. Yes

According to Michael Brown of the SALDRU NIDS team:

- Hi-fi stereos, CD players, and MP3 players that are not currently in good working order are not to be counted, even if they could be repaired in the future
- Hi-fi stereos, CD players, and MP3 players in good working order that were bought on credit or via hire/purchase are to be counted even if they are not yet paid-off
- Hi-fi stereos, CD players, and MP3 players that the household owns but that are not in its possession (that is, that have been lent out or rented out) are included if the respondent mentions them
- Hi-fi stereos, CD players, and MP3 players that are in the household's possession but that the household does not own (that is, that are borrowed in or rented in) are not to be counted

Do not read this question as written. Instead, ask three separate questions, one for each of the three types of assets:

- Does the household own at least one hi-fi stereo in good working order?
- Does the household own at least one CD player in good working order?
- Does the household own at least one MP3 player in good working order?

Mark the responses as follows:

Does the household have at least one . . . in good working order?			**Response to mark**
Hi-fi stero	**CD player**	**MP3 player**	
No	No	No	A
Yes	No	No	B
No	Yes	No	B
Yes	Yes	No	B
No	No	Yes	B
Yes	No	Yes	B
No	Yes	Yes	B
Yes	Yes	Yes	B

If the respondent refuses to respond and if no household members know the relevant response, then mark "A. No".

10. Does the household own at least one television, DVD or Blu-ray player, or satellite dish in good working order?
    A. No TV (regardless of others), or only TV
    B. TV and DVD or Blu-ray (but no satellite dish)
    C. TV and satellite dish (regardless of others)

Do not read this question as written. Instead, ask three separate questions, one for each of the three types of assets:

- Does the household own at least one television in good working order?
- Does the household own at least one DVD or Blu-ray player in good working order?
- Does the household own at least one satellite dish in good working order?

Mark the responses as follows:

Does the household have at least one . . . in good working order?			**Response**
Television	**DVD or Blu-ray player**	**Satellite dish**	**to mark**
No	No	No	A
Yes	No	No	A
No	Yes	No	A
Yes	Yes	No	B
No	No	Yes	A
Yes	No	Yes	C
No	Yes	Yes	A
Yes	Yes	Yes	C

If the respondent refuses to respond and if no household members know the relevant response, then mark "A. No TV (regardless of others)".

According to Michael Brown of the SALDRU NIDS team:

- Televisions, DVD or Blu-ray players, and satellite dishes that are not currently in good working order are not to be counted, even if they could be repaired in the future
- Televisions, DVD or Blu-ray players, and satellite dishes in good working order that were bought on credit or via hire/purchase are to be counted even if they are not yet paid-off
- Televisions, DVD or Blu-ray players, and satellite dishes that the household owns but that are not in its possession (that is, that have been lent out or rented out) are included if the respondent mentions them
- Televisions, DVD or Blu-ray players, and satellite dishes that are in the household's possession but that the household does not own (that is, that are borrowed in or rented in) are not to be counted

11. Does the household own at least one lounge suite in good working order?
    A. No
    B. Yes

According to Michael Brown of the SALDRU NIDS team:

- Lounge suites that are not currently in good working order are not to be counted, even if they could be repaired in the future
- Lounge suites in good working order that were bought on credit or via hire/purchase are to be counted even if they are not yet paid-off
- Lounge suites that the household owns but that are not in its possession (that is, that have been lent out or rented out) are included if the respondent mentions them
- Lounge suites that are in the household's possession but that the household does not own (that is, that are borrowed in or rented in) are not to be counted

If the respondent refuses to respond and if no household members know the relevant response, then mark "A. No".

12. Does the household own at least one cell phone in good working order?
    A. No
    B. Yes

According to Michael Brown of the SALDRU NIDS team:

- Cell phones that are not currently in good working order are not to be counted, even if they could be repaired in the future
- Cell phones in good working order that were bought on credit or via hire/purchase are to be counted even if they are not yet paid-off
- Cell phones that the household owns but that are not in its possession (that is, that have been lent out or rented out) are included if the respondent mentions them
- Cell phones that are in the household's possession but that the household does not own (that is, that are borrowed in or rented in) are not to be counted

If the respondent refuses to respond and if no household members know the relevant response, then mark "A. No".

Table 1: National BLW poverty lines and poverty rates for African and Coloured households, non-African and non-Coloured households, and all of South Africa, and for the construction and validation samples, by households and people in 2014/15

Year and group	Line or Rate	HHs or People	n	Poverty lines and poverty rates (%)				
				BLW National lines				
				Food	Lower	100% of upper	150% of upper	200% of upper
African and Coloured households								
2014/15	Line	People		14,80	22,83	43,57	65,35	87,13
	Rate	HHs	9 246	17,5	30,9	54,7	68,7	77,2
	Rate	People		32,8	49,8	71,5	81,0	87,4
Non-African and Non-Coloured households								
2014/15	Line	People		14,80	22,83	43,57	65,35	87,13
	Rate	HHs	373	0,2	0,2	7,3	11,9	13,7
	Rate	People		0,3	0,5	12,0	19,3	22,0
All of South Africa								
2014/15	Line	People		14,80	22,83	43,57	65,35	87,13
	Rate	HHs	9 619	15,2	26,9	48,5	61,3	68,9
	Rate	People		29,2	44,4	65,0	74,3	80,2
Construction/calibration: (Selecting indicators and points, and associating scores with poverty likelihoods)								
2014/15	Rate	HHs	5 564	17,5	30,8	54,8	68,7	77,3
Validation: (Measuring accuracy)								
2014/15	Rate	HHs	3 682	17,5	31,1	54,7	68,7	77,1

Source: 2014/15 National Income Dynamics Survey

Poverty lines are in ZAR per day per person in average prices for South Africa as a whole in March 2015.

Table 1: National SSA poverty lines and poverty rates for African and Coloured households, non-African and non-Coloured households, and all of South Africa, and for the construction and validation samples, by households and people in 2014/15

Year and group	Line or Rate	HHs or People	n	Poverty lines and poverty rates (%)				
				SSA National lines				
				Food	Lower	100% of upper	150% of upper	200% of upper
African and Coloured households								
2014/15	Line	People		14,71	21,42	32,57	48,86	65,14
	Rate	HHs	9 246	17,4	29,2	43,6	58,7	68,7
	Rate	People		32,6	47,7	62,1	74,3	81,0
Non-African and Non-Coloured households								
2014/15	Line	People		14,71	21,42	32,57	48,86	65,14
	Rate	HHs	373	0,2	0,2	1,2	9,0	11,9
	Rate	People		0,3	0,5	3,0	14,8	19,3
All of South Africa								
2014/15	Line	HHs		14,71	21,42	32,57	48,86	65,14
	Rate	People	9 619	15,1	25,4	38,0	52,2	61,2
	Rate	HHs		29,0	42,5	55,6	67,8	74,3
Construction/calibration: (Selecting indicators and points, and associating scores with poverty likelihoods)								
2014/15	Rate	HHs	5 564	17,3	29,1	43,4	58,9	68,7
Validation: (Measuring accuracy)								
2014/15	Rate	HHs	3 682	17,4	29,2	43,9	58,5	68,6

Source: 2014/15 National Income Dynamics Survey

Poverty lines are in ZAR per day per person in average prices for South Africa as a whole in March 2015.

Table 1: International 2005 and 2011 PPP poverty lines and poverty rates for African and Coloured households, non-African and non-Coloured households, and all of South Africa, and for the construction and validation samples, by households and people in 2014/15

Year and group	Line or Rate	HHs or People	n	Poverty lines and poverty rates (%)					
				Intl. 2005 PPP				Intl. 2011 PPP	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$1.90**	**$3.10**
African and Coloured households									
2014/15	Line	People		10,20	16,32	20,41	40,81	11,79	19,24
	Rate	HHs	9 246	8,7	20,3	27,7	52,9	11,6	25,8
	Rate	People		18,2	36,7	45,7	70,0	23,3	43,3
Non-African and Non-Coloured households									
2014/15	Line	People		10,20	16,32	20,41	40,81	11,79	19,24
	Rate	HHs	373	0,0	0,2	1,2	9,0	0,2	0,2
	Rate	People		0,0	0,5	3,0	14,8	0,5	0,5
All of South Africa									
2014/15	Line	HHs		10,20	16,32	20,41	40,81	11,79	19,24
	Rate	HHs	9 619	7,6	17,6	24,1	46,6	10,1	22,4
	Rate	HHs		16,2	32,8	40,8	63,4	20,8	38,6
Construction/calibration:									
(Selecting indicators and points, and associating scores with poverty likelihoods)									
2014/15	Rate	HHs	5 564	8,7	20,4	27,5	52,8	11,5	25,8
Validation:									
(Measuring accuracy)									
2014/15	Rate	HHs	3 682	8,8	20,1	27,8	52,9	11,8	25,7

Source: 2014/15 National Income Dynamics Survey

Poverty lines are in ZAR per day per person in average prices for South Africa as a whole in March 2015.

Table 1: Relative and percentile-based poverty lines and poverty rates for African and Coloured households, non-African and non-Coloured households, and all of South Africa, and for the construction and validation samples, by households and people in 2014/15

Year and group	Line or Rate	HHs or People	n	Poverty lines and poverty rates (%)					
				Poorest half of people	Percentile-based lines				
				<100% BLW up. natl. line	20th	40th	50th	60th	80th
African and Coloured households									
2014/15	Line	People		16,19	11,41	20,07	27,47	36,51	85,82
	Rate	HHs	9 246	20,0	11,1	26,9	37,0	48,7	76,9
	Rate	People		36,4	22,4	44,8	56,1	66,6	87,2
Non-African and Non-Coloured households									
2014/15	Line	People		16,2	11,4	20,1	27,5	36,5	85,8
	Rate	HHs	373	0,2	0,0	0,2	0,3	3,1	13,6
	Rate	People		0,5	0,0	0,5	0,6	6,4	22,0
All of South Africa									
2014/15	Line	HHs		16,19	11,41	20,07	27,47	36,51	85,82
	Rate	HHs	9 619	17,4	9,7	23,4	32,2	42,7	68,6
	Rate	HHs		32,5	20,0	40,0	50,0	60,0	80,1
Construction/calibration:									
(Selecting indicators and points, and associating scores with poverty likelihoods)									
2014/15	Rate	HHs	5 564	20,2	10,9	26,9	36,8	48,8	77,0
Validation:									
(Measuring accuracy)									
2014/15	Rate	HHs	3 682	19,8	11,5	26,9	37,3	48,7	76,7

Source: 2014/15 National Income Dynamics Survey

Poverty lines are in ZAR per day per person in average prices for South Africa as a whole in March 2015.

Table 2: Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
1877	How many resident members does the household have? (Six or more; Five; Four; Three; Two; One)
1681	How many household members are 18-years-old or younger? (Four or more; Three; Two; One; None)
1671	How many household members are 15-years-old or younger? (Three or more; Two; One; None)
1661	How many household members are 16-years-old or younger? (Three or more; Two; One; None)
1644	Did any members of this household (resident or non-resident) receive income from government grants in the last month? This includes the old-age pension, the child-support grant, the disability grant, the care-dependency grant, or any other kind of grant. (Yes; No)
1632	How many household members are 17-years-old or younger? (Three or more; Two; One; None)
1625	How many household members are 14-years-old or younger? (Three or more; Two; One; None)
1577	How many household members are 13-years-old or younger? (Three or more; Two; One; None)
1525	How many household members are 12-years-old or younger? (Three or more; Two; One; None)
1460	Did any resident household members 15-years-old or older receive income or assistance from a child-support grant, foster-care grant, or care-dependency grant in the last month? (Yes; No)
1410	How many household members are 11-years-old or younger? (Three or more; Two; One; None)
1134	What is the highest grade in school that the female head/spouse successfully completed (passed)? (None, grade R/0, grade 1 (previously sub A/class 1), grade 2 (sub B/Class 2), or grades 3–7 (std. 1–5); No female head/spouse; Grades 8–11 (std. 6–9/form 1–4), any NTC/NCV, or other; Grade 12 (std. 10/matric/senior certificate/form 5), certificate or diploma requiring grade 12 (std. 10), bachelors degree/degree and diploma, honours degree, or higher degree (masters, doctorate))

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
1079	What is the highest grade in school that the male head/spouse successfully completed (passed)? (No male head/spouse; None, grade R/0, grade 1 (previously sub A/class 1), grade 2 (sub B/Class 2), or grades 3–5 (std. 1–3); Grades 6–7 (std. 4–5); Grades 8–11 (std. 6–9/form 1–4), any NTC/NCV, or other; Grade 12 (std. 10/matric/senior certificate/form 5); Certificate or diploma requiring grade 12 (std. 10), bachelors degree/degree and diploma, honours degree, or higher degree (masters, doctorate))
1030	How many household members are 6-years-old or younger? (Two or more; One; None)
890	Is the male head/spouse currently being paid a wage or salary to work on a regular basis for an employer (that is not himself), whether full-time or part-time? Or was he engaged in any self-employment activities during the last month? For example, he might buy or sell goods, be a commercial farmer, work for himself as a doctor or hairdresser or be a free-lance consultant. Or did he do any casual work to earn money in the past 30 days? (No male head/spouse; None; Only casual work; Self-employment, but not wage or salary (regardless of casual work); Wage or salary (regardless of self-employment or casual work))
879	Is the female head/spouse currently being paid a wage or salary to work on a regular basis for an employer (that is not herself), whether full-time or part-time? (No; No female head/spouse; Yes)
879	Is the female head/spouse currently being paid a wage or salary to work on a regular basis for an employer (that is not herself), whether full-time or part-time? Or was she engaged in any self-employment activities during the last month? For example, she might buy or sell goods, be a commercial farmer, work for himself as a doctor or hairdresser or be a free-lance consultant. Or did she do any casual work to earn money in the past 30 days? (None, self-employment but not wage or salary (regardless of casual work), or only casual work; No female head/spouse; Wage or salary (regardless of self-employment or casual work))
836	Is the male head/spouse a resident member who is currently being paid a wage or salary to work on a regular basis for an employer (that is not himself), whether full-time or part-time? Do not count self-employment (No; Yes; No male head/spouse)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
826	If the female head/spouse is a resident member, then how well can she read in her home language? (Fair, not well, or not at all; Very well; No female head/spouse, or she is not a resident member)
798	Is there a flush toilet available for this household? (No; Yes)
702	What is the structure of household headship? (Head is female with no spouse/partner; Head is female with a spouse/partner who is not a member of the household; Household head has a spouse/partner in the household; Head is male with no spouse/partner; Head is male with a spouse/partner who is not a member of the household; Other)
692	If the male head/spouse is a resident member, then how well can he read in English? (No male head/spouse, or he is not a resident member; Not at all, or not well; Fair, or very well)
690	If the female head/spouse is a resident member, then how well can she read in English? (No female head/spouse, or she is not a resident member; Not at all, or not well; Fair, or very well)
683	What is the main type of material used for the floor of the main dwelling? (Mud/earth, concrete, carpet, or linoleum/vinyl; Tiles, or wood)
682	What is the main material used for the roof of the main dwelling? (Corrugated iron/zinc, plastic, cardboard, wattle-and-daub, or thatching; Asbestos/cement roof sheeting, cement block/concrete, bricks, wood, mud bricks, or mixture of mud and cement; Tile, or stone and rock)
656	Are any resident household members 15-years-old or older currently being paid a wage or salary to work on a regular basis for an employer (that is not themselves) whether full-time or part-time? Do not count self-employment. (No; Yes)
652	How well can the male head/spouse read in his home language? (No male head/spouse; Fair, not well, or not at all; Very well)
629	Does the household own at least one motor vehicle (including bakkie or truck) in running condition? (No; Yes)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
587	What is the structure of household headship? (Female head/spouse only; Both male and female heads/spouses; Male head/spouse only)
581	What is the household's main source of water? (Public tap, water-carrier/tanker, borehole off-site/communal, well, rain-water tank on-site, flowing water/stream, dam/pool/stagnant water, spring, or other; Piped (tap) water on-site or in yard, or borehole on-site; Piped (tap) water in dwelling)
561	Did anyone in this household receive income from employment or self-employment last month? For example, they might buy or sell goods, be commercial farmers, work for themselves as doctors or hairdressers, or be free-lance consultants. (No; Yes)
557	Does the household own at least one television, DVD or Blu-ray player, or satellite dish in good working order? (No TV (regardless of others), or only TV; TV and DVD or Blu-ray (but no satellite dish); TV and satellite dish (regardless of others))
549	Does the household own at least one computer in good working order? (No; Yes)
518	Enumerator: Indicate the type of main dwelling that the household occupies (Traditional dwelling/hut/structure made of traditional materials; Informal dwelling/shack not in backyard, e.g. in an informal/squatter settlement or on farm; Informal dwelling/shack in backyard; Dwelling/house or brick structure on a separate stand or yard or on farm; Dwelling/house/flat/room in backyard, town/cluster/semi-detached house (simplex, duplex, or triplex), or room/flatlet; Flat or apartment in a block of flats, unit in retirement village, caravan/tent, or other)
517	Is your refuse or rubbish removed at least once a week by local authorities? (No; Yes)
503	Does the household own at least one satellite dish in good working order? (No; Yes)
451	What is the main source of energy/fuel for this household for heating? (Wood, coal, animal dung, or other; None; Paraffin; Electricity from mains, electricity from generator, gas, or solar energy)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
417	Do you currently have any street lighting where you live? (No; Yes—currently not in working condition; Yes—currently in working condition)
395	What is the *main* source of energy/fuel for this household for cooking? (Wood, paraffin, coal, animal dung, solar energy, other, or none; Electricity (mains or generator), or gas)
371	Enumerator: Rate the dwelling on the following five-point scale. (Dilapidated/falling down; In need of structural repairs; Structurally sound, but requires maintenance; Structurally sound; In good condition, shows evidence of recent maintenance/renovations; Other)
294	Did any resident household members receive income or assistance from a state (South-African government) old-age grant in the last month? (Yes; No)
289	Does the household own at least one microwave in good working order? (No; Yes)
257	Does the household own at least one gas stove or microwave in good working order? (No; Yes)
256	What is the main material used for the walls of the main dwelling? (Mixture of mud and cement, mud bricks, wood, wattle and daub, thatching, plastic, or cardboard; Cement block/concrete; Corrugated iron/zinc; Bricks, tile, asbestos/cement roof sheeting, stone and rock, or other)
239	Does anyone in this household have access to land that is, or could be, used for purposes of food gardening or agriculture (including livestock keeping)? (No; Yes)
219	Does the household own at least one washing machine in good working order? (No; Yes)
217	Does the household own at least one DVD player in good working order? (No; Yes)
214	Does the household own at least one hi-fi stereo, CD player, or MP3 player in good working order? (No; Yes)
205	Over the last 12 months, has anyone in this household participated in growing food or raising livestock other than as part of paid employment? (No; Yes)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
168	What is the total number of rooms that the household occupies in all structures in this dwelling? Please note that this excludes bathrooms and toilets. (One, or two; Three or more)
164	What is the main source of energy/fuel for this household for lighting? (Candles, paraffin, gas, solar energy, other, or none; Electricity from mains, or electricity from generator)
155	Does the household own at least one paraffin stove in good working order? (No; Yes)
154	Does this household have electricity even if currently disconnected? (No; Yes)
147	Did any resident household members receive income or assistance from a disability grant in the last month? (Yes; No)
137	Does the household own at least one fridge/freezer in good working order? (No; Yes)
135	Did any resident household member 15-years-old or older do any casual work to earn money in the past 30 days? (Yes; No)
132	Is the toilet facility shared with other households? (No, or no toilet facility; Yes)
119	Does the household own at least one electric stove in good working order? (No; Yes)
95	Does the household own at least one television in good working order? (No; Yes)
54	Does the household own at least one cell phone in good working order? (No; Yes)
50	Did the household receive any government assistance (e.g. RDP housing) to obtain this dwelling or another dwelling? (Yes; No)
33	Does the household own at least one radio in good working order? (Yes; No)
22	Does the household own at least one gas stove in good working order? (No; Yes)
22	Does the household own at least one lounge suite in good working order? (No; Yes)
21	Does the household own at least one wheelbarrow in good working order? (Yes; No)
4	How many resident household members 15-years-old or older engaged in any self-employment activities during the last month? For example, they might buy or sell goods, be commercial farmers, work for themselves as doctors or hairdressers or be free-lance consultants. (Yes; No)

Source: 2014/15 NIDS with 100% of the BLW upper national poverty line

Tables for
100% of the BLW Upper National Poverty Line

(and Tables Pertaining
to All Poverty Lines)

Table 3 (100% of the BLW upper 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:
0–20	99,6
21–28	97,3
29–35	92,6
36–37	91,3
38–40	87,7
41–45	79,7
46–46	70,4
47–48	70,4
49–50	57,3
51–53	56,8
54–58	41,7
59–59	29,5
60–61	27,3
62–66	18,4
67–68	10,0
69–70	8,3
71–74	7,8
75–79	4,8
80–82	3,9
83–85	1,8
86–100	0,0

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

Score	Households in range and < poverty line		All households in range		Poverty likelihood (%)
0–20	10 985	÷	11 033	=	99,6
21–28	11 873	÷	12 206	=	97,3
29–35	12 791	÷	13 806	=	92,6
36–37	3 963	÷	4 342	=	91,3
38–40	6 325	÷	7 210	=	87,7
41–45	10 038	÷	12 591	=	79,7
46–46	2 079	÷	2 953	=	70,4
47–48	4 056	÷	5 760	=	70,4
49–50	2 859	÷	4 988	=	57,3
51–53	5 474	÷	9 629	=	56,8
54–58	6 159	÷	14 769	=	41,7
59–59	1 180	÷	3 995	=	29,5
60–61	1 255	÷	4 603	=	27,3
62–66	2 454	÷	13 356	=	18,4
67–68	485	÷	4 858	=	10,0
69–70	431	÷	5 223	=	8,3
71–74	663	÷	8 528	=	7,8
75–79	239	÷	4 944	=	4,8
80–82	100	÷	2 561	=	3,9
83–85	21	÷	1 161	=	1,8
86–100	0	÷	3 757	=	0,0

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

Table 5 (100% of the BLW upper line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+0.7	0,5	0,6	0,8
21–28	–1.2	0,9	0,9	1,0
29–35	+5.5	2,1	2,5	3,2
36–37	–6.6	3,7	3,8	3,9
38–40	–0.3	2,7	3,3	4,3
41–45	–5.3	3,5	3,6	4,0
46–46	+35.5	6,0	7,4	10,2
47–48	–12.4	7,7	8,0	8,7
49–50	–7.2	6,1	6,4	7,8
51–53	–3.7	3,2	3,5	4,5
54–58	+7.8	2,3	2,7	3,5
59–59	–16.2	10,5	10,9	12,4
60–61	–6.5	5,4	5,7	6,2
62–66	+8.6	1,3	1,6	2,1
67–68	+2.5	1,7	2,1	2,8
69–70	+7.6	0,3	0,3	0,4
71–74	–2.3	2,4	2,8	3,5
75–79	+2.1	0,9	1,1	1,4
80–82	+3.9	0,0	0,0	0,0
83–85	+0.6	0,7	0,9	1,2
86–100	0.0	0,0	0,0	0,0

Table 6 (100% of the BLW upper line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.8	57,8	75,7	92,4
4	+1.0	36,8	45,0	56,6
8	+0.1	27,5	31,9	42,9
16	–0.1	20,4	23,6	29,3
32	0.0	14,0	16,2	19,7
64	+0.2	10,2	12,0	14,5
128	+0.3	7,1	8,5	10,8
256	+0.5	5,1	6,2	8,0
512	+0.5	3,5	4,3	5,8
1 024	+0.6	2,4	2,9	3,8
2 048	+0.5	1,7	2,0	2,6
4 096	+0.5	1,2	1,5	2,0
8 192	+0.5	0,8	1,0	1,3
16 384	+0.5	0,6	0,7	0,9

Table 7 (BLW national lines): Average error (differences for estimated versus observed poverty rates) for samples of households at a point in time, precision, and the α factor for precision, 2014/15 scorecard applied to the validation sample

	Poverty lines				
			BLW National lines		
	Food	**Lower**	**100% of upper**	**150% of upper**	**200% of upper**
Error (estimate minus observed value)	–0.1	+0.1	+0.5	+1.4	+1.9
Precision of difference	0,3	0,5	0,6	0,7	0,6
Alpha factor for precision	0,70	0,85	0,95	1,15	1,13

Results pertain to the 2014/15 scorecard applied to the 2014/15 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.

Differences 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 (SSA national lines): Average error (differences for estimated versus observed poverty rates) for samples of households at a point in time, precision, and the α factor for precision, 2014/15 scorecard applied to the validation sample

	Poverty lines				
	SSA National lines				
	Food	**Lower**	**100% of upper**	**150% of upper**	**200% of upper**
Error (estimate minus observed value)	–0.1	–0.2	–0.8	+1.8	+1.4
Precision of difference	0,3	0,5	0,6	0,6	0,7
Alpha factor for precision	0,70	0,84	1,03	0,98	1,14

Results pertain to the 2014/15 scorecard applied to the 2014/15 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.

Differences 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 poverty lines): Average error (differences for estimated versus observed poverty rates) for samples of households at a point in time, precision, and the α factor for precision, 2014/15 scorecard applied to the validation sample

	Poverty lines					
	Intl. 2005 PPP				Intl. 2011 PPP	
	$1.25	**$2.00**	**$2.50**	**$5.00**	**$1.90**	**$3.10**
Error (estimate minus observed value)	–0.7	+0.9	–0.7	+0.3	–1.1	+0.4
Precision of difference	0,3	0,4	0,5	0,6	0,3	0,4
Alpha factor for precision	0,75	0,67	0,84	0,97	0,79	0,77

Results pertain to the 2014/15 scorecard applied to the 2014/15 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.

Differences 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 poverty lines): Average error (differences for estimated versus observed poverty rates) for samples of households at a point in time, precision, and the α factor for precision, 2014/15 scorecard applied to the validation sample

	Poverty lines					
	Poorest half of people	Percentile-based lines				
	<100% BLW up. natl. line	20th	40th	50th	60th	80th
Error (estimate minus observed value)	+0.8	–1.4	+0.7	+0.4	0.0	+1.8
Precision of difference	0,4	0,3	0,4	0,6	0,6	0,6
Alpha factor for precision	0,67	0,80	0,76	0,92	0,98	1,12

Results pertain to the 2014/15 scorecard applied to the 2014/15 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.

Differences 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

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

Table 9 (100% of the BLW upper line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,6	47,1	0,1	45,2	52,8	–72,0
<=28	15,0	39,7	0,2	45,1	60,0	–44,9
<=35	22,7	32,0	1,1	44,2	66,9	–14,8
<=37	25,2	29,5	1,3	44,1	69,3	–5,6
<=40	29,3	25,4	1,8	43,5	72,8	+10,4
<=45	35,9	18,8	3,6	41,7	77,6	+37,8
<=46	36,8	17,8	4,1	41,2	78,0	+42,3
<=48	39,5	15,2	4,9	40,4	79,8	+53,4
<=50	41,7	13,0	6,1	39,2	80,9	+63,6
<=53	45,8	8,9	9,8	35,5	81,3	+82,1
<=58	49,8	4,9	16,0	29,3	79,1	+70,7
<=59	51,1	3,6	17,6	27,7	78,8	+67,8
<=61	52,2	2,5	19,8	25,6	77,7	+63,9
<=66	53,5	1,1	26,6	18,8	72,3	+51,4
<=68	53,9	0,8	28,9	16,5	70,4	+47,2
<=70	54,0	0,7	32,0	13,3	67,4	+41,5
<=74	54,4	0,2	35,6	9,7	64,2	+35,0
<=79	54,6	0,1	39,2	6,1	60,7	+28,2
<=82	54,6	0,1	40,9	4,5	59,1	+25,3
<=85	54,7	0,0	42,4	2,9	57,6	+22,4
<=100	54,7	0,0	45,3	0,0	54,7	+17,1

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

Table 10 (100% of the BLW upper line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	98,9	13,9	86,9:1
<=28	15,2	98,5	27,3	66,2:1
<=35	23,8	95,3	41,6	20,3:1
<=37	26,4	95,3	46,1	20,1:1
<=40	31,1	94,3	53,6	16,4:1
<=45	39,5	91,0	65,6	10,1:1
<=46	41,0	89,9	67,4	8,9:1
<=48	44,4	88,9	72,2	8,0:1
<=50	47,8	87,2	76,2	6,8:1
<=53	55,6	82,4	83,7	4,7:1
<=58	65,8	75,7	91,0	3,1:1
<=59	68,7	74,4	93,4	2,9:1
<=61	71,9	72,5	95,4	2,6:1
<=66	80,1	66,8	97,9	2,0:1
<=68	82,8	65,1	98,6	1,9:1
<=70	86,0	62,8	98,8	1,7:1
<=74	90,0	60,5	99,6	1,5:1
<=79	93,9	58,2	99,9	1,4:1
<=82	95,5	57,2	99,9	1,3:1
<=85	97,1	56,3	100,0	1,3:1
<=100	100,0	54,7	100,0	1,2:1

Tables for
the BLW Food Poverty Line

Table 3 (BLW food line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–20	81,6
21–28	55,6
29–35	29,3
36–37	23,8
38–40	18,3
41–45	15,0
46–46	12,2
47–48	12,2
49–50	10,0
51–53	7,3
54–58	0,7
59–59	0,5
60–61	0,5
62–66	0,5
67–68	0,4
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 (BLW food line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	–1.2	1,9	2,4	2,9
21–28	–0.3	3,0	3,5	4,6
29–35	–4.7	3,6	3,9	4,4
36–37	+0.6	3,8	4,5	5,8
38–40	–16.8	10,3	10,7	11,5
41–45	–0.1	2,0	2,4	2,9
46–46	+4.6	2,6	3,2	4,5
47–48	+8.2	1,1	1,3	1,7
49–50	+9.1	0,5	0,6	0,7
51–53	+6.3	0,3	0,4	0,5
54–58	–4.2	2,8	2,9	3,1
59–59	–1.4	1,2	1,3	1,5
60–61	+0.5	0,0	0,0	0,0
62–66	+0.2	0,2	0,2	0,3
67–68	+0.4	0,0	0,0	0,0
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (BLW food line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.8	63,1	68,7	84,7
4	–0.9	27,3	35,1	46,3
8	–0.5	17,9	22,9	32,0
16	–0.5	11,9	14,3	19,3
32	–0.3	8,0	9,5	13,4
64	–0.2	5,3	6,7	9,3
128	–0.1	3,8	4,6	6,0
256	–0.1	2,8	3,4	4,7
512	–0.1	2,0	2,3	3,2
1 024	–0.1	1,4	1,7	2,2
2 048	–0.1	0,9	1,1	1,5
4 096	–0.1	0,7	0,8	1,0
8 192	–0.1	0,5	0,6	0,7
16 384	–0.1	0,3	0,4	0,5

Table 9 (BLW food line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	6,0	11,5	1,7	80,8	86,8	–21,8
<=28	10,1	7,4	5,1	77,4	87,5	+44,2
<=35	13,1	4,5	10,8	71,7	84,7	+38,5
<=37	13,8	3,7	12,6	69,8	83,6	+28,0
<=40	15,0	2,5	16,0	66,4	81,5	+8,6
<=45	16,4	1,1	23,0	59,4	75,9	–31,2
<=46	16,6	0,9	24,4	58,1	74,7	–39,1
<=48	16,9	0,6	27,5	55,0	71,9	–56,7
<=50	17,0	0,6	30,8	51,7	68,7	–75,5
<=53	17,2	0,4	38,4	44,1	61,2	–118,8
<=58	17,4	0,1	48,4	34,1	51,5	–175,8
<=59	17,5	0,1	51,2	31,3	48,8	–191,7
<=61	17,5	0,1	54,4	28,0	45,5	–210,3
<=66	17,5	0,0	62,6	19,9	37,4	–256,5
<=68	17,5	0,0	65,2	17,2	34,8	–271,7
<=70	17,5	0,0	68,5	14,0	31,5	–290,2
<=74	17,5	0,0	72,5	10,0	27,5	–313,1
<=79	17,5	0,0	76,3	6,1	23,7	–335,1
<=82	17,5	0,0	77,9	4,5	22,1	–344,3
<=85	17,5	0,0	79,6	2,9	20,4	–353,4
<=100	17,5	0,0	82,5	0,0	17,5	–370,0

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

Table 10 (BLW food line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	78,1	34,3	3,6:1
<=28	15,2	66,7	57,7	2,0:1
<=35	23,8	54,8	74,4	1,2:1
<=37	26,4	52,2	78,7	1,1:1
<=40	31,1	48,4	85,8	0,9:1
<=45	39,5	41,6	93,7	0,7:1
<=46	41,0	40,5	94,6	0,7:1
<=48	44,4	38,1	96,4	0,6:1
<=50	47,8	35,6	96,8	0,6:1
<=53	55,6	30,9	97,9	0,4:1
<=58	65,8	26,5	99,2	0,4:1
<=59	68,7	25,5	99,7	0,3:1
<=61	71,9	24,3	99,7	0,3:1
<=66	80,1	21,9	100,0	0,3:1
<=68	82,8	21,2	100,0	0,3:1
<=70	86,0	20,4	100,0	0,3:1
<=74	90,0	19,5	100,0	0,2:1
<=79	93,9	18,7	100,0	0,2:1
<=82	95,5	18,4	100,0	0,2:1
<=85	97,1	18,1	100,0	0,2:1
<=100	100,0	17,5	100,0	0,2:1

Tables for
the BLW Lower National Poverty Line

Table 3 (BLW lower 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:
0–20	95,9
21–28	82,1
29–35	64,8
36–37	55,9
38–40	50,8
41–45	35,7
46–46	29,2
47–48	29,2
49–50	18,4
51–53	16,0
54–58	6,7
59–59	3,8
60–61	3,8
62–66	3,2
67–68	0,5
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 (BLW lower line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+1.8	1,3	1,5	2,1
21–28	–4.1	3,1	3,2	3,5
29–35	+4.8	2,7	3,3	4,2
36–37	+13.6	4,8	5,5	7,6
38–40	+4.1	3,8	4,6	6,3
41–45	–16.4	10,0	10,2	10,6
46–46	+16.2	3,3	4,0	5,3
47–48	–5.0	4,8	5,1	7,4
49–50	+10.7	1,6	2,0	2,6
51–53	+5.9	1,7	2,0	2,6
54–58	–4.4	3,0	3,2	3,5
59–59	+1.6	0,9	1,1	1,4
60–61	–8.2	5,7	6,0	6,9
62–66	+2.6	0,2	0,3	0,4
67–68	–1.4	1,2	1,3	1,5
69–70	–0.1	0,1	0,1	0,1
71–74	–0.4	0,3	0,3	0,4
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (BLW lower line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+1.2	60,1	73,8	95,3
4	–0.1	33,3	40,1	51,0
8	–0.1	23,6	29,0	39,6
16	–0.3	16,3	19,8	25,1
32	–0.2	11,2	13,1	17,9
64	–0.2	8,1	10,1	13,6
128	–0.1	5,8	7,1	9,3
256	0.0	4,1	5,0	6,6
512	+0.1	2,8	3,3	4,3
1 024	+0.1	2,0	2,4	3,0
2 048	+0.1	1,5	1,9	2,4
4 096	+0.1	1,0	1,2	1,6
8 192	+0.1	0,7	0,8	1,1
16 384	+0.1	0,5	0,6	0,8

Table 9 (BLW lower line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,2	23,8	0,5	68,5	75,7	–51,9
<=28	13,6	17,5	1,6	67,4	81,0	–7,3
<=35	19,1	12,0	4,7	64,2	83,3	+38,2
<=37	20,5	10,6	6,0	63,0	83,4	+51,0
<=40	22,6	8,5	8,5	60,4	83,0	+72,7
<=45	26,2	4,9	13,3	55,6	81,8	+57,2
<=46	26,6	4,5	14,4	54,5	81,1	+53,7
<=48	27,8	3,3	16,6	52,3	80,1	+46,5
<=50	28,3	2,8	19,5	49,5	77,8	+37,4
<=53	29,3	1,8	26,2	42,7	72,0	+15,6
<=58	30,4	0,7	35,4	33,5	63,9	–13,9
<=59	30,5	0,6	38,1	30,8	61,3	–22,7
<=61	30,8	0,2	41,1	27,8	58,7	–32,2
<=66	30,9	0,1	49,1	19,8	50,7	–58,1
<=68	31,0	0,1	51,7	17,2	48,2	–66,4
<=70	31,0	0,0	55,0	14,0	45,0	–76,8
<=74	31,1	0,0	58,9	10,0	41,1	–89,6
<=79	31,1	0,0	62,8	6,1	37,2	–102,0
<=82	31,1	0,0	64,4	4,5	35,6	–107,2
<=85	31,1	0,0	66,0	2,9	34,0	–112,3
<=100	31,1	0,0	68,9	0,0	31,1	–121,7

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

Table 10 (BLW lower line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	94,0	23,3	15,8:1
<=28	15,2	89,8	43,8	8,8:1
<=35	23,8	80,1	61,4	4,0:1
<=37	26,4	77,5	65,9	3,4:1
<=40	31,1	72,7	72,7	2,7:1
<=45	39,5	66,3	84,1	2,0:1
<=46	41,0	64,9	85,5	1,8:1
<=48	44,4	62,6	89,4	1,7:1
<=50	47,8	59,3	91,1	1,5:1
<=53	55,6	52,8	94,3	1,1:1
<=58	65,8	46,2	97,8	0,9:1
<=59	68,7	44,4	98,2	0,8:1
<=61	71,9	42,9	99,2	0,8:1
<=66	80,1	38,6	99,6	0,6:1
<=68	82,8	37,5	99,8	0,6:1
<=70	86,0	36,1	99,9	0,6:1
<=74	90,0	34,5	100,0	0,5:1
<=79	93,9	33,1	100,0	0,5:1
<=82	95,5	32,6	100,0	0,5:1
<=85	97,1	32,0	100,0	0,5:1
<=100	100,0	31,1	100,0	0,5:1

Tables for
150% of the BLW Upper National Poverty Line

Table 3 (150% of the BLW upper 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:
0–20	99,7
21–28	98,2
29–35	96,7
36–37	96,7
38–40	96,7
41–45	91,8
46–46	91,0
47–48	87,7
49–50	78,3
51–53	78,3
54–58	70,4
59–59	53,1
60–61	46,6
62–66	41,6
67–68	32,6
69–70	27,2
71–74	24,0
75–79	15,8
80–82	12,0
83–85	3,7
86–100	0,5

Table 5 (150% of the BLW upper line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+0.4	0,4	0,5	0,6
21–28	–1.4	0,8	0,8	0,9
29–35	+4.1	1,8	2,2	2,9
36–37	–3.0	1,6	1,6	1,6
38–40	–1.9	1,2	1,2	1,3
41–45	–5.2	2,9	2,9	3,1
46–46	+36.3	7,6	9,3	12,5
47–48	–11.0	5,7	5,8	5,8
49–50	+5.9	5,0	5,9	7,1
51–53	–6.1	3,9	4,1	4,5
54–58	+18.3	2,5	3,0	3,9
59–59	–12.9	8,8	9,2	10,0
60–61	–1.9	4,2	5,0	6,4
62–66	+2.8	2,9	3,6	4,5
67–68	–1.5	4,6	5,4	7,3
69–70	+21.4	1,2	1,5	1,9
71–74	–4.5	4,3	4,7	6,2
75–79	+5.3	1,9	2,3	2,9
80–82	–28.0	17,3	17,9	19,0
83–85	–4.9	3,8	4,1	4,5
86–100	+0.3	0,1	0,2	0,2

Table 6 (150% of the BLW upper line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.4	64,4	75,5	92,3
4	+0.7	38,4	47,8	60,9
8	+0.1	30,6	35,6	44,6
16	+0.5	22,4	26,6	32,5
32	+0.7	15,0	17,6	22,4
64	+1.2	10,8	12,3	16,7
128	+1.3	7,9	9,4	12,2
256	+1.3	5,5	6,7	8,7
512	+1.3	4,0	4,6	6,2
1 024	+1.3	2,7	3,3	4,2
2 048	+1.4	1,9	2,3	3,0
4 096	+1.4	1,3	1,6	2,1
8 192	+1.4	1,0	1,1	1,4
16 384	+1.4	0,7	0,8	1,1

Table 9 (150% of the BLW upper line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,7	61,0	0,1	31,3	38,9	–77,6
<=28	15,1	53,6	0,1	31,2	46,2	–56,0
<=35	23,3	45,4	0,5	30,8	54,1	–31,3
<=37	25,9	42,8	0,6	30,8	56,6	–23,8
<=40	30,4	38,3	0,7	30,6	61,0	–10,5
<=45	38,2	30,5	1,3	30,0	68,2	+13,0
<=46	39,4	29,3	1,6	29,7	69,2	+17,1
<=48	42,7	26,0	1,7	29,6	72,2	+26,8
<=50	45,4	23,3	2,4	29,0	74,4	+35,7
<=53	51,4	17,3	4,2	27,2	78,6	+55,7
<=58	57,6	11,1	8,2	23,1	80,7	+79,6
<=59	59,5	9,2	9,2	22,2	81,7	+86,6
<=61	61,2	7,4	10,7	20,6	81,9	+84,4
<=66	64,8	3,8	15,3	16,1	80,9	+77,8
<=68	65,9	2,8	16,9	14,5	80,4	+75,5
<=70	66,5	2,2	19,5	11,8	78,3	+71,6
<=74	67,4	1,3	22,6	8,7	76,2	+67,1
<=79	68,0	0,7	25,9	5,5	73,5	+62,4
<=82	68,4	0,3	27,1	4,2	72,6	+60,6
<=85	68,7	0,0	28,4	2,9	71,5	+58,6
<=100	68,7	0,0	31,3	0,0	68,7	+54,4

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

Table 10 (150% of the BLW upper line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	99,3	11,1	148,0:1
<=28	15,2	99,2	21,9	124,7:1
<=35	23,8	97,8	34,0	44,3:1
<=37	26,4	97,9	37,7	46,1:1
<=40	31,1	97,8	44,2	43,6:1
<=45	39,5	96,7	55,6	29,5:1
<=46	41,0	96,2	57,4	25,0:1
<=48	44,4	96,1	62,1	24,5:1
<=50	47,8	95,1	66,1	19,3:1
<=53	55,6	92,5	74,8	12,4:1
<=58	65,8	87,5	83,8	7,0:1
<=59	68,7	86,7	86,6	6,5:1
<=61	71,9	85,1	89,2	5,7:1
<=66	80,1	81,0	94,4	4,3:1
<=68	82,8	79,6	95,9	3,9:1
<=70	86,0	77,3	96,8	3,4:1
<=74	90,0	74,9	98,2	3,0:1
<=79	93,9	72,5	99,0	2,6:1
<=82	95,5	71,6	99,6	2,5:1
<=85	97,1	70,7	100,0	2,4:1
<=100	100,0	68,7	100,0	2,2:1

Tables for
200% of the BLW Upper National Poverty Line

Table 3 (200% of BLW upper 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:
0–20	99,8
21–28	99,5
29–35	99,2
36–37	99,1
38–40	99,1
41–45	95,6
46–46	94,8
47–48	90,9
49–50	87,3
51–53	87,3
54–58	86,0
59–59	74,8
60–61	64,2
62–66	58,4
67–68	48,8
69–70	48,8
71–74	37,1
75–79	27,2
80–82	21,6
83–85	9,2
86–100	2,5

Table 5 (200% of BLW upper line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	–0.2	0,1	0,1	0,1
21–28	–0.2	0,2	0,2	0,3
29–35	+0.8	0,5	0,6	0,8
36–37	–0.6	0,4	0,4	0,5
38–40	–0.9	0,5	0,5	0,5
41–45	–3.1	1,7	1,8	1,8
46–46	–5.1	2,6	2,6	2,6
47–48	–9.0	4,5	4,5	4,6
49–50	–5.3	3,7	3,9	4,2
51–53	–4.1	2,7	2,8	3,1
54–58	+8.8	2,1	2,5	3,2
59–59	–8.1	6,0	6,3	6,6
60–61	+4.6	4,2	5,0	6,8
62–66	+5.4	3,1	3,6	4,7
67–68	+6.7	4,8	5,7	7,5
69–70	+26.8	3,3	3,9	5,2
71–74	+1.1	3,9	4,8	6,1
75–79	+14.6	2,0	2,4	3,1
80–82	–20.4	13,5	14,0	15,0
83–85	–1.4	2,8	3,2	4,1
86–100	–1.0	1,3	1,5	2,0

Table 6 (200% of BLW upper line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–1.1	54,8	74,5	82,8
4	+0.5	36,5	45,0	57,0
8	+0.3	26,5	31,5	43,2
16	+0.9	19,6	23,4	31,3
32	+1.4	14,2	16,5	21,2
64	+1.8	10,0	11,6	15,1
128	+1.9	7,0	8,4	10,8
256	+1.9	4,8	5,6	7,8
512	+1.9	3,3	4,2	5,7
1 024	+1.9	2,5	3,0	3,8
2 048	+1.9	1,8	2,1	2,8
4 096	+1.9	1,2	1,5	2,0
8 192	+1.9	0,9	1,0	1,3
16 384	+1.9	0,6	0,7	1,0

Table 9 (200% of BLW upper line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,7	69,4	0,0	22,9	30,6	–80,0
<=28	15,1	61,9	0,1	22,9	38,0	–60,7
<=35	23,6	53,5	0,2	22,7	46,3	–38,4
<=37	26,2	50,9	0,3	22,7	48,8	–31,7
<=40	30,8	46,3	0,3	22,7	53,5	–19,7
<=45	38,9	38,1	0,5	22,4	61,3	+1,7
<=46	40,5	36,6	0,5	22,4	62,8	+5,7
<=48	43,8	33,2	0,6	22,4	66,2	+14,5
<=50	46,9	30,1	0,8	22,1	69,0	+22,9
<=53	53,7	23,4	1,9	21,1	74,7	+41,8
<=58	61,8	15,2	4,0	19,0	80,8	+65,6
<=59	64,3	12,8	4,4	18,6	82,8	+72,5
<=61	66,5	10,6	5,4	17,5	84,0	+79,6
<=66	71,3	5,7	8,8	14,2	85,5	+88,6
<=68	72,7	4,3	10,0	12,9	85,6	+87,0
<=70	74,0	3,1	12,0	10,9	84,9	+84,4
<=74	75,3	1,8	14,7	8,2	83,5	+80,9
<=79	76,1	1,0	17,8	5,1	81,2	+76,9
<=82	76,6	0,5	18,9	4,0	80,6	+75,4
<=85	76,9	0,2	20,2	2,7	79,6	+73,8
<=100	77,1	0,0	22,9	0,0	77,1	+70,2

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

Table 10 (200% of BLW upper line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	99,9	10,0	1 087,8:1
<=28	15,2	99,6	19,6	279,7:1
<=35	23,8	99,0	30,6	95,7:1
<=37	26,4	99,0	34,0	96,0:1
<=40	31,1	99,1	40,0	113,0:1
<=45	39,5	98,7	50,5	73,7:1
<=46	41,0	98,7	52,5	74,8:1
<=48	44,4	98,7	56,9	76,9:1
<=50	47,8	98,2	60,9	55,9:1
<=53	55,6	96,6	69,7	28,6:1
<=58	65,8	94,0	80,2	15,5:1
<=59	68,7	93,6	83,4	14,7:1
<=61	71,9	92,5	86,3	12,3:1
<=66	80,1	89,1	92,6	8,1:1
<=68	82,8	87,9	94,4	7,3:1
<=70	86,0	86,0	96,0	6,1:1
<=74	90,0	83,7	97,7	5,1:1
<=79	93,9	81,0	98,7	4,3:1
<=82	95,5	80,2	99,3	4,0:1
<=85	97,1	79,2	99,8	3,8:1
<=100	100,0	77,1	100,0	3,4:1

Tables for
the SSA Food Poverty Line

Table 3 (SSA food line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–20	80,9
21–28	55,0
29–35	29,1
36–37	23,6
38–40	18,2
41–45	15,0
46–46	12,2
47–48	12,2
49–50	10,0
51–53	7,3
54–58	0,7
59–59	0,5
60–61	0,5
62–66	0,5
67–68	0,4
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 (SSA food line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	–1.7	2,0	2,4	2,9
21–28	–0.9	3,0	3,5	4,6
29–35	–4.7	3,7	3,9	4,4
36–37	+0.4	3,8	4,5	5,8
38–40	–16.7	10,3	10,6	11,4
41–45	–0.1	2,0	2,4	2,9
46–46	+4.6	2,6	3,2	4,5
47–48	+8.2	1,1	1,3	1,7
49–50	+9.1	0,5	0,6	0,7
51–53	+6.3	0,3	0,4	0,5
54–58	–4.2	2,8	2,9	3,1
59–59	–1.4	1,2	1,3	1,5
60–61	+0.5	0,0	0,0	0,0
62–66	+0.2	0,2	0,2	0,3
67–68	+0.4	0,0	0,0	0,0
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (SSA food line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.8	62,9	68,4	84,3
4	–0.9	27,0	34,9	46,1
8	–0.6	18,0	22,9	32,0
16	–0.5	11,9	14,4	19,4
32	–0.3	8,0	9,5	13,4
64	–0.2	5,3	6,7	9,3
128	–0.2	3,8	4,6	6,0
256	–0.2	2,8	3,4	4,7
512	–0.1	2,0	2,3	3,1
1 024	–0.2	1,4	1,7	2,2
2 048	–0.2	0,9	1,1	1,5
4 096	–0.1	0,7	0,8	1,0
8 192	–0.1	0,5	0,6	0,7
16 384	–0.1	0,3	0,4	0,5

Table 9 (SSA food line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	6,0	11,5	1,7	80,8	86,8	–21,6
<=28	10,1	7,4	5,1	77,5	87,5	+44,9
<=35	13,0	4,4	10,9	71,7	84,7	+37,8
<=37	13,7	3,7	12,7	69,9	83,6	+27,2
<=40	14,9	2,5	16,1	66,4	81,4	+7,5
<=45	16,3	1,1	23,1	59,4	75,8	–32,6
<=46	16,5	0,9	24,5	58,1	74,6	–40,5
<=48	16,8	0,6	27,6	55,0	71,8	–58,3
<=50	16,9	0,6	30,9	51,7	68,6	–77,1
<=53	17,1	0,4	38,5	44,1	61,1	–120,8
<=58	17,3	0,1	48,5	34,1	51,4	–178,1
<=59	17,4	0,1	51,3	31,3	48,7	–194,0
<=61	17,4	0,1	54,5	28,0	45,4	–212,7
<=66	17,4	0,0	62,7	19,9	37,3	–259,3
<=68	17,4	0,0	65,3	17,2	34,7	–274,5
<=70	17,4	0,0	68,6	14,0	31,4	–293,2
<=74	17,4	0,0	72,6	10,0	27,4	–316,2
<=79	17,4	0,0	76,4	6,1	23,6	–338,3
<=82	17,4	0,0	78,0	4,5	22,0	–347,5
<=85	17,4	0,0	79,7	2,9	20,3	–356,8
<=100	17,4	0,0	82,6	0,0	17,4	–373,4

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

Table 10 (SSA food line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	77,6	34,3	3,5:1
<=28	15,2	66,4	57,8	2,0:1
<=35	23,8	54,5	74,5	1,2:1
<=37	26,4	52,0	78,8	1,1:1
<=40	31,1	48,1	85,7	0,9:1
<=45	39,5	41,4	93,6	0,7:1
<=46	41,0	40,2	94,6	0,7:1
<=48	44,4	37,8	96,4	0,6:1
<=50	47,8	35,3	96,8	0,5:1
<=53	55,6	30,7	97,9	0,4:1
<=58	65,8	26,3	99,2	0,4:1
<=59	68,7	25,3	99,7	0,3:1
<=61	71,9	24,2	99,7	0,3:1
<=66	80,1	21,8	100,0	0,3:1
<=68	82,8	21,1	100,0	0,3:1
<=70	86,0	20,3	100,0	0,3:1
<=74	90,0	19,4	100,0	0,2:1
<=79	93,9	18,6	100,0	0,2:1
<=82	95,5	18,3	100,0	0,2:1
<=85	97,1	18,0	100,0	0,2:1
<=100	100,0	17,4	100,0	0,2:1

Tables for
the SSA Lower National Poverty Line

Table 3 (SSA lower 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:
0–20	95,2
21–28	79,7
29–35	60,5
36–37	52,3
38–40	48,3
41–45	33,3
46–46	27,0
47–48	27,0
49–50	16,3
51–53	12,8
54–58	4,9
59–59	3,5
60–61	3,5
62–66	3,0
67–68	0,4
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 (SSA lower line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+2.4	1,3	1,6	2,1
21–28	–2.9	2,5	2,8	3,5
29–35	+2.3	2,7	3,3	4,2
36–37	+11.8	4,7	5,5	7,6
38–40	+2.2	3,8	4,7	6,3
41–45	–17.9	10,7	10,9	11,4
46–46	+15.1	3,1	3,7	5,1
47–48	–6.4	5,5	5,8	7,4
49–50	+10.0	1,5	1,8	2,3
51–53	+3.3	1,7	2,0	2,6
54–58	–3.5	2,5	2,6	2,8
59–59	+1.3	0,9	1,1	1,4
60–61	+1.0	1,0	1,2	1,6
62–66	+2.4	0,2	0,3	0,4
67–68	–1.6	1,3	1,4	1,6
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (SSA lower line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.9	63,6	66,8	95,2
4	–0.2	31,9	39,8	49,9
8	–0.3	22,6	28,4	39,4
16	–0.5	15,3	19,1	25,1
32	–0.5	10,7	13,1	17,0
64	–0.5	7,8	9,8	13,3
128	–0.4	5,8	6,8	9,3
256	–0.3	4,0	4,7	6,6
512	–0.3	2,7	3,3	4,4
1 024	–0.3	1,9	2,2	3,0
2 048	–0.3	1,5	1,8	2,3
4 096	–0.3	1,0	1,2	1,5
8 192	–0.3	0,7	0,8	1,1
16 384	–0.2	0,5	0,6	0,7

Table 9 (SSA lower line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,1	22,1	0,6	70,2	77,3	–49,3
<=28	13,2	16,0	1,9	68,9	82,1	–2,7
<=35	18,5	10,7	5,4	65,4	83,9	+44,9
<=37	19,8	9,4	6,7	64,1	83,9	+58,3
<=40	21,8	7,4	9,3	61,5	83,3	+68,3
<=45	25,2	4,1	14,3	56,5	81,6	+51,0
<=46	25,5	3,7	15,5	55,3	80,9	+47,1
<=48	26,6	2,6	17,8	53,0	79,7	+39,2
<=50	27,1	2,1	20,7	50,1	77,1	+29,1
<=53	28,0	1,3	27,6	43,2	71,1	+5,5
<=58	28,8	0,4	37,0	33,8	62,6	–26,7
<=59	28,9	0,3	39,8	31,0	59,9	–36,1
<=61	29,0	0,2	42,9	27,9	56,9	–46,9
<=66	29,1	0,1	51,0	19,8	49,0	–74,5
<=68	29,2	0,0	53,5	17,2	46,5	–83,3
<=70	29,2	0,0	56,8	14,0	43,2	–94,4
<=74	29,2	0,0	60,8	10,0	39,2	–108,1
<=79	29,2	0,0	64,7	6,1	35,3	–121,3
<=82	29,2	0,0	66,3	4,5	33,7	–126,9
<=85	29,2	0,0	67,9	2,9	32,1	–132,4
<=100	29,2	0,0	70,8	0,0	29,2	–142,3

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

Table 10 (SSA lower line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	92,3	24,3	12,0:1
<=28	15,2	87,3	45,4	6,9:1
<=35	23,8	77,5	63,3	3,4:1
<=37	26,4	74,8	67,7	3,0:1
<=40	31,1	70,2	74,6	2,4:1
<=45	39,5	63,8	86,1	1,8:1
<=46	41,0	62,3	87,4	1,7:1
<=48	44,4	60,0	91,2	1,5:1
<=50	47,8	56,6	92,6	1,3:1
<=53	55,6	50,3	95,7	1,0:1
<=58	65,8	43,7	98,5	0,8:1
<=59	68,7	42,1	98,9	0,7:1
<=61	71,9	40,4	99,4	0,7:1
<=66	80,1	36,4	99,7	0,6:1
<=68	82,8	35,3	100,0	0,5:1
<=70	86,0	34,0	100,0	0,5:1
<=74	90,0	32,5	100,0	0,5:1
<=79	93,9	31,1	100,0	0,5:1
<=82	95,5	30,6	100,0	0,4:1
<=85	97,1	30,1	100,0	0,4:1
<=100	100,0	29,2	100,0	0,4:1

Tables for
100% of the SSA Upper National Poverty Line

Table 3 (100% of SSA upper 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:
0–20	99,2
21–28	93,6
29–35	84,9
36–37	77,3
38–40	73,2
41–45	57,3
46–46	54,2
47–48	54,2
49–50	37,3
51–53	33,5
54–58	23,0
59–59	9,3
60–61	9,3
62–66	8,6
67–68	6,2
69–70	4,4
71–74	3,4
75–79	1,4
80–82	1,4
83–85	1,1
86–100	0,0

Table 5 (100% of SSA upper line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+3.3	1,1	1,3	1,7
21–28	–0.5	1,5	1,8	2,2
29–35	+4.1	2,2	2,7	3,3
36–37	+1.5	4,3	5,2	6,7
38–40	+14.6	4,0	4,6	6,3
41–45	–15.0	8,8	9,0	9,4
46–46	+33.6	4,2	5,3	7,3
47–48	+10.0	4,7	5,6	7,8
49–50	–18.9	12,1	12,5	13,2
51–53	–5.7	4,4	4,6	5,2
54–58	–2.7	2,5	2,7	3,3
59–59	–13.4	8,9	9,4	10,4
60–61	–11.0	7,3	7,5	8,3
62–66	+6.1	0,5	0,6	0,8
67–68	+4.1	1,0	1,2	1,5
69–70	+4.3	0,1	0,1	0,2
71–74	–5.5	4,0	4,2	4,4
75–79	+1.3	0,1	0,1	0,1
80–82	+1.4	0,0	0,0	0,0
83–85	+1.1	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (100% of SSA upper line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.2	69,8	79,1	97,2
4	–0.6	38,0	45,9	56,5
8	–1.4	29,4	36,1	47,9
16	–1.5	21,1	26,0	33,5
32	–1.2	15,3	18,6	23,8
64	–1.1	10,8	12,7	16,8
128	–1.0	7,3	8,6	12,1
256	–0.8	5,3	6,2	8,4
512	–0.8	3,7	4,4	5,6
1 024	–0.8	2,7	3,3	4,1
2 048	–0.8	1,9	2,2	2,9
4 096	–0.9	1,3	1,6	2,1
8 192	–0.8	0,9	1,1	1,5
16 384	–0.8	0,6	0,8	1,0

Table 9 (100% of SSA upper line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,4	36,5	0,3	55,8	63,2	–65,6
<=28	14,5	29,5	0,7	55,4	69,8	–32,5
<=35	21,5	22,5	2,4	53,7	75,2	+3,2
<=37	23,5	20,4	2,9	53,1	76,6	+13,7
<=40	26,6	17,3	4,5	51,6	78,2	+31,3
<=45	32,1	11,9	7,4	48,7	80,8	+62,8
<=46	32,8	11,1	8,2	47,9	80,7	+68,0
<=48	34,7	9,3	9,7	46,3	81,0	+77,9
<=50	36,3	7,6	11,5	44,6	80,9	+73,9
<=53	39,0	4,9	16,5	39,5	78,6	+62,4
<=58	41,8	2,2	24,0	32,0	73,8	+45,3
<=59	42,4	1,6	26,3	29,8	72,1	+40,2
<=61	43,0	0,9	28,9	27,1	70,1	+34,1
<=66	43,5	0,4	36,6	19,5	63,0	+16,7
<=68	43,6	0,3	39,2	16,9	60,5	+10,9
<=70	43,6	0,3	42,4	13,7	57,3	+3,5
<=74	43,9	0,0	46,1	10,0	53,9	–4,9
<=79	43,9	0,0	49,9	6,1	50,1	–13,6
<=82	43,9	0,0	51,5	4,5	48,5	–17,3
<=85	43,9	0,0	53,2	2,9	46,8	–21,0
<=100	43,9	0,0	56,1	0,0	43,9	–27,6

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

Table 10 (100% of SSA upper line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	96,1	16,8	24,6:1
<=28	15,2	95,4	33,0	20,8:1
<=35	23,8	90,1	48,9	9,1:1
<=37	26,4	88,9	53,5	8,0:1
<=40	31,1	85,6	60,6	6,0:1
<=45	39,5	81,3	73,0	4,4:1
<=46	41,0	80,0	74,7	4,0:1
<=48	44,4	78,1	78,9	3,6:1
<=50	47,8	76,0	82,7	3,2:1
<=53	55,6	70,3	88,8	2,4:1
<=58	65,8	63,5	95,1	1,7:1
<=59	68,7	61,7	96,4	1,6:1
<=61	71,9	59,8	97,8	1,5:1
<=66	80,1	54,3	99,0	1,2:1
<=68	82,8	52,7	99,2	1,1:1
<=70	86,0	50,7	99,3	1,0:1
<=74	90,0	48,8	100,0	1,0:1
<=79	93,9	46,8	100,0	0,9:1
<=82	95,5	46,0	100,0	0,9:1
<=85	97,1	45,3	100,0	0,8:1
<=100	100,0	43,9	100,0	0,8:1

Tables for
150% of the SSA Upper National Poverty Line

Table 3 (150% of SSA upper 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:
0–20	99,6
21–28	97,5
29–35	94,4
36–37	92,6
38–40	92,6
41–45	83,1
46–46	75,9
47–48	74,3
49–50	66,1
51–53	65,4
54–58	50,8
59–59	36,0
60–61	34,7
62–66	24,1
67–68	15,4
69–70	10,5
71–74	10,5
75–79	6,9
80–82	5,3
83–85	1,8
86–100	0,0

Table 5 (150% of SSA upper line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+0.3	0,4	0,5	0,6
21–28	–2.1	1,2	1,2	1,2
29–35	+5.7	2,1	2,4	3,1
36–37	–6.5	3,5	3,5	3,6
38–40	+4.3	2,7	3,3	4,3
41–45	–6.7	4,0	4,1	4,3
46–46	+22.4	7,5	9,1	12,4
47–48	–15.2	8,8	9,1	9,6
49–50	+0.6	5,2	6,0	7,6
51–53	+3.7	2,8	3,3	4,5
54–58	+12.4	2,3	2,8	3,5
59–59	–13.9	9,3	9,8	11,3
60–61	+0.9	4,1	4,9	5,8
62–66	+5.9	2,1	2,5	3,4
67–68	–6.1	5,2	5,5	6,5
69–70	+9.6	0,3	0,4	0,5
71–74	+0.4	2,4	2,8	3,5
75–79	+3.0	1,1	1,3	1,6
80–82	+5.0	0,2	0,3	0,4
83–85	–5.1	3,8	4,1	4,6
86–100	0.0	0,0	0,0	0,0

Table 6 (150% of SSA upper line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+1.1	61,2	79,5	93,3
4	+1.7	36,8	44,8	60,0
8	+1.3	28,3	34,2	45,3
16	+1.1	20,8	24,3	31,2
32	+1.3	14,2	16,5	20,9
64	+1.6	10,1	11,7	14,9
128	+1.6	7,0	8,1	10,9
256	+1.8	5,0	6,0	7,5
512	+1.9	3,6	4,1	5,9
1 024	+1.9	2,4	2,9	3,9
2 048	+1.8	1,7	2,1	2,6
4 096	+1.8	1,2	1,5	1,9
8 192	+1.8	0,9	1,0	1,3
16 384	+1.8	0,6	0,8	0,9

Table 9 (150% of SSA upper line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,7	50,9	0,1	41,4	49,1	–73,8
<=28	15,1	43,4	0,1	41,4	56,4	–48,3
<=35	23,0	35,5	0,8	40,7	63,7	–19,9
<=37	25,5	33,0	0,9	40,6	66,1	–11,1
<=40	29,7	28,8	1,4	40,1	69,8	+3,9
<=45	36,7	21,8	2,7	38,8	75,5	+30,2
<=46	37,9	20,6	3,1	38,4	76,3	+34,9
<=48	40,9	17,7	3,6	37,9	78,8	+45,7
<=50	43,2	15,3	4,6	36,9	80,1	+55,4
<=53	47,5	11,0	8,1	33,4	80,9	+76,2
<=58	52,3	6,2	13,5	28,0	80,4	+77,0
<=59	53,8	4,7	14,9	26,6	80,4	+74,6
<=61	54,9	3,6	17,0	24,5	79,3	+70,9
<=66	56,8	1,7	23,3	18,2	75,0	+60,1
<=68	57,4	1,1	25,3	16,2	73,6	+56,7
<=70	57,6	0,9	28,4	13,1	70,7	+51,4
<=74	58,0	0,5	32,0	9,5	67,5	+45,3
<=79	58,3	0,2	35,6	5,9	64,2	+39,2
<=82	58,3	0,2	37,2	4,3	62,6	+36,5
<=85	58,5	0,0	38,6	2,9	61,4	+34,0
<=100	58,5	0,0	41,5	0,0	58,5	+29,1

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

Table 10 (150% of SSA upper line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	99,3	13,1	148,0:1
<=28	15,2	99,2	25,7	122,1:1
<=35	23,8	96,6	39,4	28,1:1
<=37	26,4	96,6	43,7	28,4:1
<=40	31,1	95,5	50,8	21,4:1
<=45	39,5	93,1	62,8	13,4:1
<=46	41,0	92,5	64,8	12,2:1
<=48	44,4	92,0	69,8	11,5:1
<=50	47,8	90,4	73,8	9,4:1
<=53	55,6	85,5	81,2	5,9:1
<=58	65,8	79,5	89,5	3,9:1
<=59	68,7	78,3	92,0	3,6:1
<=61	71,9	76,3	93,8	3,2:1
<=66	80,1	70,9	97,1	2,4:1
<=68	82,8	69,4	98,1	2,3:1
<=70	86,0	67,0	98,5	2,0:1
<=74	90,0	64,5	99,2	1,8:1
<=79	93,9	62,1	99,6	1,6:1
<=82	95,5	61,1	99,7	1,6:1
<=85	97,1	60,2	100,0	1,5:1
<=100	100,0	58,5	100,0	1,4:1

Tables for
200% of the SSA Upper National Poverty Line

Table 3 (200% of SSA upper 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:
0–20	99,7
21–28	98,2
29–35	96,7
36–37	96,7
38–40	96,7
41–45	91,8
46–46	91,0
47–48	87,7
49–50	78,2
51–53	78,2
54–58	70,4
59–59	53,1
60–61	46,6
62–66	41,6
67–68	32,6
69–70	27,2
71–74	24,0
75–79	15,8
80–82	12,0
83–85	3,7
86–100	0,5

Table 5 (200% of SSA upper line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+0.4	0,4	0,5	0,6
21–28	–1.4	0,8	0,8	0,9
29–35	+4.1	1,8	2,2	2,9
36–37	–3.0	1,6	1,6	1,6
38–40	–1.9	1,2	1,2	1,3
41–45	–5.2	2,9	2,9	3,1
46–46	+36.3	7,6	9,3	12,5
47–48	–11.0	5,7	5,8	5,8
49–50	+5.9	5,0	5,9	7,1
51–53	–6.2	3,9	4,1	4,5
54–58	+18.3	2,5	3,0	3,9
59–59	–12.9	8,8	9,2	10,0
60–61	–1.9	4,2	5,0	6,4
62–66	+3.2	2,9	3,6	4,5
67–68	–1.5	4,6	5,4	7,3
69–70	+21.4	1,2	1,5	1,9
71–74	–4.5	4,3	4,7	6,2
75–79	+5.3	1,9	2,3	2,9
80–82	–28.0	17,3	17,9	19,0
83–85	–4.9	3,8	4,1	4,5
86–100	+0.3	0,1	0,2	0,2

Table 6 (200% of SSA upper line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.4	64,4	75,5	92,3
4	+0.7	38,4	47,8	60,9
8	+0.2	30,6	35,6	44,6
16	+0.6	22,5	26,6	32,5
32	+0.7	15,0	17,6	22,4
64	+1.3	10,8	12,3	16,7
128	+1.3	7,9	9,5	12,3
256	+1.3	5,5	6,7	8,7
512	+1.4	4,0	4,6	6,2
1 024	+1.4	2,7	3,3	4,2
2 048	+1.4	1,9	2,3	3,0
4 096	+1.4	1,3	1,6	2,1
8 192	+1.4	1,0	1,1	1,5
16 384	+1.4	0,7	0,8	1,1

Table 9 (200% of SSA upper line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,7	61,0	0,1	31,3	39,0	–77,6
<=28	15,1	53,6	0,1	31,3	46,3	–55,9
<=35	23,3	45,3	0,5	30,9	54,2	–31,3
<=37	25,9	42,7	0,6	30,8	56,7	–23,8
<=40	30,4	38,2	0,7	30,7	61,1	–10,4
<=45	38,2	30,5	1,3	30,1	68,2	+13,1
<=46	39,4	29,2	1,6	29,8	69,2	+17,2
<=48	42,7	26,0	1,7	29,6	72,3	+26,9
<=50	45,4	23,2	2,4	29,0	74,4	+35,8
<=53	51,4	17,2	4,2	27,2	78,6	+55,9
<=58	57,6	11,1	8,2	23,1	80,7	+79,8
<=59	59,5	9,1	9,2	22,2	81,7	+86,7
<=61	61,2	7,4	10,7	20,7	81,9	+84,4
<=66	64,8	3,8	15,3	16,1	80,8	+77,7
<=68	65,8	2,8	16,9	14,5	80,3	+75,3
<=70	66,4	2,2	19,6	11,8	78,2	+71,4
<=74	67,4	1,3	22,6	8,7	76,1	+67,0
<=79	68,0	0,7	25,9	5,5	73,4	+62,2
<=82	68,3	0,3	27,2	4,2	72,5	+60,4
<=85	68,6	0,0	28,5	2,9	71,5	+58,5
<=100	68,6	0,0	31,4	0,0	68,6	+54,3

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

Table 10 (200% of SSA upper line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	99,3	11,2	148,0:1
<=28	15,2	99,2	21,9	124,7:1
<=35	23,8	97,8	34,0	44,3:1
<=37	26,4	97,9	37,7	46,1:1
<=40	31,1	97,8	44,3	43,6:1
<=45	39,5	96,7	55,6	29,5:1
<=46	41,0	96,2	57,4	25,0:1
<=48	44,4	96,1	62,2	24,5:1
<=50	47,8	95,1	66,2	19,3:1
<=53	55,6	92,5	74,9	12,4:1
<=58	65,8	87,5	83,9	7,0:1
<=59	68,7	86,7	86,7	6,5:1
<=61	71,9	85,1	89,2	5,7:1
<=66	80,1	80,9	94,4	4,2:1
<=68	82,8	79,6	95,9	3,9:1
<=70	86,0	77,2	96,8	3,4:1
<=74	90,0	74,8	98,2	3,0:1
<=79	93,9	72,4	99,0	2,6:1
<=82	95,5	71,6	99,6	2,5:1
<=85	97,1	70,6	100,0	2,4:1
<=100	100,0	68,6	100,0	2,2:1

Tables for
the $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:
0–20	58,1
21–28	28,5
29–35	12,4
36–37	10,4
38–40	4,6
41–45	3,2
46–46	3,2
47–48	2,6
49–50	2,1
51–53	1,2
54–58	0,0
59–59	0,0
60–61	0,0
62–66	0,0
67–68	0,0
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 ($1.25/day 2005 PPP): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+6.9	3,2	3,7	4,8
21–28	–2.1	2,6	3,1	4,1
29–35	–5.7	4,0	4,3	4,7
36–37	+4.8	1,6	2,0	2,6
38–40	–14.5	9,0	9,2	10,1
41–45	–4.1	2,8	2,9	3,2
46–46	+3.2	0,0	0,0	0,0
47–48	+1.1	0,6	0,7	0,8
49–50	+2.1	0,0	0,0	0,0
51–53	+0.5	0,3	0,3	0,4
54–58	0.0	0,0	0,0	0,0
59–59	0.0	0,0	0,0	0,0
60–61	0.0	0,0	0,0	0,0
62–66	–0.4	0,3	0,3	0,4
67–68	0.0	0,0	0,0	0,0
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 ($1.25/day 2005 PPP): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.3	50,0	72,9	77,5
4	–1.0	22,2	29,5	45,2
8	–0.8	13,9	19,0	30,2
16	–0.7	8,9	10,7	16,0
32	–0.8	6,3	7,4	10,5
64	–0.8	4,4	5,0	6,6
128	–0.7	3,1	3,6	4,7
256	–0.7	2,2	2,6	3,8
512	–0.7	1,5	1,8	2,5
1 024	–0.7	1,1	1,4	1,8
2 048	–0.7	0,8	0,9	1,2
4 096	–0.7	0,5	0,7	0,9
8 192	–0.7	0,4	0,5	0,6
16 384	–0.7	0,3	0,3	0,4

Table 9 ($1.25/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	3,8	5,0	3,9	87,2	91,0	+30,1
<=28	6,1	2,7	9,1	82,1	88,2	–3,1
<=35	7,3	1,5	16,6	74,6	81,9	–87,7
<=37	7,5	1,3	18,9	72,2	79,8	–114,7
<=40	8,0	0,8	23,1	68,1	76,2	–161,5
<=45	8,6	0,3	30,9	60,3	68,8	–250,5
<=46	8,6	0,3	32,4	58,7	67,3	–268,0
<=48	8,7	0,1	35,7	55,5	64,2	–305,0
<=50	8,7	0,1	39,1	52,1	60,8	–343,2
<=53	8,8	0,1	46,8	44,4	53,1	–430,8
<=58	8,8	0,1	57,0	34,1	42,9	–546,9
<=59	8,8	0,1	59,9	31,3	40,1	–579,4
<=61	8,8	0,1	63,2	28,0	36,8	–616,4
<=66	8,8	0,0	71,3	19,9	28,7	–708,5
<=68	8,8	0,0	73,9	17,2	26,1	–738,6
<=70	8,8	0,0	77,2	14,0	22,8	–775,5
<=74	8,8	0,0	81,2	10,0	18,8	–820,9
<=79	8,8	0,0	85,1	6,1	14,9	–864,7
<=82	8,8	0,0	86,7	4,5	13,3	–883,0
<=85	8,8	0,0	88,3	2,9	11,7	–901,3
<=100	8,8	0,0	91,2	0,0	8,8	–934,2

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

Table 10 ($1.25/day 2005 PPP): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	48,9	42,8	1,0:1
<=28	15,2	40,1	69,0	0,7:1
<=35	23,8	30,6	82,8	0,4:1
<=37	26,4	28,4	85,2	0,4:1
<=40	31,1	25,8	91,0	0,3:1
<=45	39,5	21,7	97,0	0,3:1
<=46	41,0	20,9	97,0	0,3:1
<=48	44,4	19,6	98,6	0,2:1
<=50	47,8	18,2	98,6	0,2:1
<=53	55,6	15,8	99,4	0,2:1
<=58	65,8	13,3	99,4	0,2:1
<=59	68,7	12,8	99,4	0,1:1
<=61	71,9	12,2	99,4	0,1:1
<=66	80,1	11,0	100,0	0,1:1
<=68	82,8	10,7	100,0	0,1:1
<=70	86,0	10,3	100,0	0,1:1
<=74	90,0	9,8	100,0	0,1:1
<=79	93,9	9,4	100,0	0,1:1
<=82	95,5	9,2	100,0	0,1:1
<=85	97,1	9,1	100,0	0,1:1
<=100	100,0	8,8	100,0	0,1:1

Tables for
the $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:
0–20	86,6
21–28	61,3
29–35	38,4
36–37	33,1
38–40	23,1
41–45	20,0
46–46	15,3
47–48	15,3
49–50	11,3
51–53	9,0
54–58	1,0
59–59	0,8
60–61	0,8
62–66	0,8
67–68	0,4
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 ($2.00/day 2005 PPP): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	–0.4	1,8	2,1	2,7
21–28	–0.4	3,0	3,5	4,7
29–35	–0.7	2,7	3,2	4,3
36–37	+7.4	4,1	4,6	6,1
38–40	–13.1	8,5	8,8	9,6
41–45	+2.6	2,1	2,5	3,2
46–46	+7.2	2,7	3,2	4,4
47–48	+10.3	1,2	1,5	1,8
49–50	+9.4	0,7	0,8	1,0
51–53	+7.9	0,3	0,4	0,5
54–58	–4.9	3,1	3,3	3,5
59–59	–1.2	1,1	1,2	1,4
60–61	+0.8	0,0	0,0	0,0
62–66	+0.4	0,2	0,2	0,3
67–68	+0.4	0,0	0,0	0,0
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 ($2.00/day 2005 PPP): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+1.5	64,1	70,6	88,2
4	+0.2	27,9	35,4	46,6
8	+0.4	18,5	23,5	32,6
16	+0.5	12,1	14,7	19,5
32	+0.6	8,2	9,8	13,2
64	+0.8	5,5	6,7	9,4
128	+0.8	3,8	4,6	6,5
256	+0.8	2,9	3,4	4,7
512	+0.9	2,0	2,3	3,2
1 024	+0.8	1,4	1,7	2,2
2 048	+0.8	0,9	1,1	1,6
4 096	+0.9	0,6	0,8	1,0
8 192	+0.9	0,5	0,6	0,7
16 384	+0.9	0,4	0,4	0,5

Table 9 ($2.00/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	6,4	13,6	1,3	78,7	85,1	–29,5
<=28	11,0	9,1	4,2	75,8	86,8	+30,5
<=35	14,5	5,6	9,3	70,6	85,1	+53,5
<=37	15,4	4,7	11,0	68,9	84,3	+45,0
<=40	16,8	3,3	14,3	65,6	82,4	+28,8
<=45	18,5	1,6	21,0	58,9	77,4	–4,5
<=46	18,7	1,4	22,3	57,6	76,3	–11,1
<=48	19,1	1,0	25,3	54,6	73,7	–26,0
<=50	19,3	0,8	28,5	51,4	70,7	–41,8
<=53	19,5	0,5	36,0	43,9	63,4	–79,5
<=58	19,9	0,1	45,9	34,1	54,0	–128,4
<=59	20,0	0,1	48,6	31,3	51,3	–142,3
<=61	20,0	0,1	51,9	28,0	48,0	–158,5
<=66	20,1	0,0	60,0	19,9	40,0	–199,0
<=68	20,1	0,0	62,7	17,2	37,3	–212,2
<=70	20,1	0,0	65,9	14,0	34,1	–228,4
<=74	20,1	0,0	69,9	10,0	30,1	–248,4
<=79	20,1	0,0	73,8	6,1	26,2	–267,6
<=82	20,1	0,0	75,4	4,5	24,6	–275,6
<=85	20,1	0,0	77,0	2,9	23,0	–283,7
<=100	20,1	0,0	79,9	0,0	20,1	–298,1

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

Table 10 ($2.00/day 2005 PPP): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	83,6	32,1	5,1:1
<=28	15,2	72,6	54,9	2,6:1
<=35	23,8	60,9	72,3	1,6:1
<=37	26,4	58,3	76,7	1,4:1
<=40	31,1	54,0	83,7	1,2:1
<=45	39,5	46,8	92,0	0,9:1
<=46	41,0	45,6	93,1	0,8:1
<=48	44,4	43,0	95,2	0,8:1
<=50	47,8	40,4	96,1	0,7:1
<=53	55,6	35,2	97,3	0,5:1
<=58	65,8	30,3	99,3	0,4:1
<=59	68,7	29,2	99,7	0,4:1
<=61	71,9	27,8	99,7	0,4:1
<=66	80,1	25,1	100,0	0,3:1
<=68	82,8	24,3	100,0	0,3:1
<=70	86,0	23,3	100,0	0,3:1
<=74	90,0	22,3	100,0	0,3:1
<=79	93,9	21,4	100,0	0,3:1
<=82	95,5	21,0	100,0	0,3:1
<=85	97,1	20,7	100,0	0,3:1
<=100	100,0	20,1	100,0	0,3:1

Tables for
the $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:
0–20	94,3
21–28	77,5
29–35	57,4
36–37	46,4
38–40	42,1
41–45	31,4
46–46	23,5
47–48	23,5
49–50	15,0
51–53	11,6
54–58	4,0
59–59	3,1
60–61	3,1
62–66	2,7
67–68	0,4
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 ($2.50/day 2005 PPP): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+2.9	1,4	1,7	2,4
21–28	+3.3	2,7	3,3	4,3
29–35	–0.1	2,7	3,3	4,1
36–37	+6.2	4,7	5,5	7,6
38–40	–3.9	3,8	4,7	6,3
41–45	–18.8	11,1	11,4	11,9
46–46	+11.6	3,1	3,7	5,1
47–48	–3.9	4,4	5,2	7,5
49–50	+8.7	1,5	1,8	2,3
51–53	+2.8	1,6	2,0	2,5
54–58	–4.0	2,7	2,9	3,1
59–59	+0.8	0,9	1,1	1,4
60–61	+0.5	1,0	1,2	1,6
62–66	+2.1	0,2	0,3	0,4
67–68	–1.6	1,3	1,4	1,6
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 ($2.50/day 2005 PPP): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.6	63,0	77,0	95,2
4	–0.2	32,3	40,0	52,1
8	–0.4	23,2	28,5	40,2
16	–0.8	15,1	18,5	25,1
32	–0.9	11,0	13,3	16,8
64	–0.9	8,0	9,7	13,1
128	–0.8	5,8	7,0	9,2
256	–0.8	4,0	4,7	6,4
512	–0.8	2,6	3,4	4,5
1 024	–0.7	1,9	2,2	2,9
2 048	–0.7	1,4	1,7	2,2
4 096	–0.7	1,0	1,1	1,5
8 192	–0.7	0,7	0,8	1,1
16 384	–0.7	0,5	0,6	0,8

Table 9 ($2.50/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,0	20,9	0,7	71,4	78,4	–47,3
<=28	12,7	15,1	2,5	69,7	82,4	+0,2
<=35	17,8	10,0	6,1	66,1	83,9	+49,6
<=37	19,1	8,7	7,4	64,8	83,9	+63,6
<=40	21,0	6,8	10,0	62,1	83,2	+63,9
<=45	24,2	3,6	15,2	56,9	81,2	+45,2
<=46	24,6	3,2	16,4	55,8	80,4	+41,1
<=48	25,5	2,3	18,9	53,2	78,7	+32,0
<=50	25,9	1,9	21,9	50,3	76,2	+21,4
<=53	26,7	1,1	28,9	43,3	70,0	–3,8
<=58	27,4	0,4	38,4	33,8	61,2	–38,0
<=59	27,5	0,3	41,1	31,0	58,5	–47,9
<=61	27,6	0,2	44,3	27,9	55,5	–59,2
<=66	27,7	0,1	52,4	19,8	47,6	–88,1
<=68	27,8	0,0	54,9	17,2	45,1	–97,4
<=70	27,8	0,0	58,2	14,0	41,8	–109,1
<=74	27,8	0,0	62,2	10,0	37,8	–123,5
<=79	27,8	0,0	66,0	6,1	34,0	–137,4
<=82	27,8	0,0	67,7	4,5	32,3	–143,2
<=85	27,8	0,0	69,3	2,9	30,7	–148,9
<=100	27,8	0,0	72,2	0,0	27,8	–159,4

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

Table 10 ($2.50/day 2005 PPP): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	90,3	25,0	9,3:1
<=28	15,2	83,7	45,7	5,1:1
<=35	23,8	74,6	63,9	2,9:1
<=37	26,4	72,2	68,6	2,6:1
<=40	31,1	67,7	75,6	2,1:1
<=45	39,5	61,4	87,0	1,6:1
<=46	41,0	60,0	88,4	1,5:1
<=48	44,4	57,4	91,6	1,3:1
<=50	47,8	54,2	93,1	1,2:1
<=53	55,6	48,0	95,9	0,9:1
<=58	65,8	41,6	98,5	0,7:1
<=59	68,7	40,1	98,9	0,7:1
<=61	71,9	38,4	99,3	0,6:1
<=66	80,1	34,6	99,7	0,5:1
<=68	82,8	33,6	100,0	0,5:1
<=70	86,0	32,4	100,0	0,5:1
<=74	90,0	30,9	100,0	0,4:1
<=79	93,9	29,6	100,0	0,4:1
<=82	95,5	29,1	100,0	0,4:1
<=85	97,1	28,7	100,0	0,4:1
<=100	100,0	27,8	100,0	0,4:1

Tables for
the $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:
0–20	99,4
21–28	96,9
29–35	91,3
36–37	89,5
38–40	81,8
41–45	76,4
46–46	68,8
47–48	68,8
49–50	53,6
51–53	51,9
54–58	37,9
59–59	28,6
60–61	25,5
62–66	17,6
67–68	9,0
69–70	7,1
71–74	6,7
75–79	4,7
80–82	3,8
83–85	1,8
86–100	0,0

Table 5 ($5.00/day 2005 PPP): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+0.5	0,5	0,6	0,8
21–28	–1.6	1,1	1,1	1,2
29–35	+5.8	2,1	2,6	3,4
36–37	–7.7	4,3	4,4	4,5
38–40	–5.9	4,2	4,5	4,9
41–45	–4.3	3,2	3,3	3,8
46–46	+33.9	6,0	7,4	10,2
47–48	–10.4	6,8	7,1	7,8
49–50	–9.4	7,3	7,5	8,5
51–53	–0.5	2,9	3,4	4,5
54–58	+5.4	2,3	2,7	3,4
59–59	–16.8	10,8	11,3	12,8
60–61	–7.4	5,8	6,2	6,7
62–66	+9.1	1,3	1,6	2,1
67–68	+1.6	1,7	2,1	2,8
69–70	+6.5	0,3	0,3	0,4
71–74	–2.8	2,7	2,9	3,3
75–79	+2.5	0,9	1,0	1,3
80–82	+3.8	0,0	0,0	0,0
83–85	+0.6	0,7	0,9	1,2
86–100	0.0	0,0	0,0	0,0

Table 6 ($5.00/day 2005 PPP): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.8	65,4	73,9	92,3
4	+0.5	36,8	44,6	55,0
8	–0.3	27,6	32,0	41,8
16	–0.3	20,5	23,9	29,1
32	–0.3	13,7	16,4	20,8
64	–0.1	10,5	11,9	14,9
128	0.0	7,2	8,5	10,8
256	+0.2	5,1	6,2	7,7
512	+0.3	3,5	4,2	5,8
1 024	+0.4	2,5	2,9	4,0
2 048	+0.3	1,7	2,0	2,6
4 096	+0.3	1,2	1,5	2,0
8 192	+0.3	0,9	1,0	1,3
16 384	+0.3	0,6	0,7	1,0

Table 9 ($5.00/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,6	45,3	0,1	47,0	54,7	–71,0
<=28	14,9	37,9	0,2	46,9	61,8	–43,0
<=35	22,5	30,3	1,3	45,8	68,4	–12,3
<=37	24,9	27,9	1,5	45,6	70,6	–2,8
<=40	29,0	23,9	2,1	45,1	74,1	+13,6
<=45	35,4	17,5	4,1	43,0	78,4	+41,5
<=46	36,3	16,5	4,7	42,5	78,8	+46,2
<=48	38,7	14,1	5,7	41,5	80,2	+57,3
<=50	40,8	12,0	6,9	40,2	81,0	+67,6
<=53	44,6	8,3	11,0	36,2	80,8	+79,3
<=58	48,4	4,4	17,4	29,8	78,2	+67,1
<=59	49,7	3,2	19,0	28,2	77,9	+64,1
<=61	50,8	2,1	21,2	26,0	76,7	+59,9
<=66	51,9	1,0	28,2	18,9	70,8	+46,6
<=68	52,2	0,7	30,5	16,6	68,8	+42,2
<=70	52,3	0,5	33,7	13,4	65,8	+36,3
<=74	52,7	0,2	37,3	9,8	62,5	+29,4
<=79	52,8	0,0	41,1	6,1	58,9	+22,3
<=82	52,8	0,0	42,7	4,5	57,3	+19,3
<=85	52,9	0,0	44,2	2,9	55,8	+16,3
<=100	52,9	0,0	47,1	0,0	52,9	+10,8

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

Table 10 ($5.00/day 2005 PPP): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	98,8	14,4	81,1:1
<=28	15,2	98,5	28,3	63,6:1
<=35	23,8	94,5	42,6	17,1:1
<=37	26,4	94,3	47,2	16,6:1
<=40	31,1	93,3	54,9	13,9:1
<=45	39,5	89,6	66,9	8,6:1
<=46	41,0	88,6	68,7	7,8:1
<=48	44,4	87,3	73,3	6,8:1
<=50	47,8	85,5	77,3	5,9:1
<=53	55,6	80,3	84,4	4,1:1
<=58	65,8	73,6	91,6	2,8:1
<=59	68,7	72,4	94,0	2,6:1
<=61	71,9	70,6	96,0	2,4:1
<=66	80,1	64,7	98,1	1,8:1
<=68	82,8	63,1	98,8	1,7:1
<=70	86,0	60,8	99,0	1,6:1
<=74	90,0	58,5	99,7	1,4:1
<=79	93,9	56,3	99,9	1,3:1
<=82	95,5	55,3	99,9	1,2:1
<=85	97,1	54,4	100,0	1,2:1
<=100	100,0	52,9	100,0	1,1:1

Tables for
the $1.90/day 2011 PPP Poverty Line

Table 3 ($1.90/day 201 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:
0–20	69,5
21–28	38,0
29–35	18,1
36–37	14,7
38–40	9,8
41–45	6,3
46–46	3,8
47–48	3,2
49–50	2,6
51–53	1,6
54–58	0,3
59–59	0,0
60–61	0,0
62–66	0,0
67–68	0,0
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 ($1.90/day 201 PPP): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+3.6	3,0	3,5	4,7
21–28	+0.9	2,8	3,3	4,3
29–35	–3.6	2,9	3,1	3,7
36–37	+7.6	1,9	2,2	3,1
38–40	–19.7	11,7	12,1	12,6
41–45	–1.5	1,5	1,8	2,1
46–46	+1.3	1,2	1,4	1,7
47–48	+1.6	0,6	0,7	0,8
49–50	+1.7	0,5	0,5	0,7
51–53	+1.0	0,3	0,3	0,4
54–58	–4.5	2,9	3,0	3,2
59–59	0.0	0,0	0,0	0,0
60–61	0.0	0,0	0,0	0,0
62–66	–0.4	0,3	0,3	0,4
67–68	0.0	0,0	0,0	0,0
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 ($1.90/day 201 PPP): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.9	50,0	75,7	81,6
4	–1.4	24,3	32,7	46,7
8	–1.3	15,4	21,4	34,5
16	–1.2	10,2	13,2	18,5
32	–1.3	7,1	8,8	12,7
64	–1.1	5,0	6,2	8,4
128	–1.1	3,7	4,4	5,7
256	–1.1	2,7	3,2	4,0
512	–1.1	1,8	2,2	2,8
1 024	–1.1	1,3	1,6	2,1
2 048	–1.1	1,0	1,1	1,5
4 096	–1.1	0,6	0,8	1,0
8 192	–1.1	0,5	0,6	0,7
16 384	–1.1	0,3	0,4	0,5

Table 9 ($1.90/day 201 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	4,9	6,9	2,8	85,4	90,2	+6,6
<=28	7,8	4,0	7,4	80,8	88,6	+37,3
<=35	9,5	2,3	14,4	73,8	83,3	–22,1
<=37	9,7	2,0	16,7	71,5	81,2	–41,8
<=40	10,5	1,2	20,5	67,7	78,2	–74,4
<=45	11,2	0,6	28,3	59,9	71,1	–140,1
<=46	11,2	0,5	29,8	58,5	69,7	–152,5
<=48	11,4	0,4	33,0	55,2	66,6	–180,3
<=50	11,4	0,3	36,3	51,9	63,3	–208,3
<=53	11,5	0,2	44,0	44,2	55,7	–273,7
<=58	11,7	0,1	54,1	34,1	45,9	–358,9
<=59	11,7	0,1	56,9	31,3	43,0	–383,2
<=61	11,7	0,1	60,2	28,0	39,8	–410,9
<=66	11,8	0,0	68,3	19,9	31,7	–479,8
<=68	11,8	0,0	71,0	17,2	29,0	–502,4
<=70	11,8	0,0	74,2	14,0	25,8	–530,0
<=74	11,8	0,0	78,2	10,0	21,8	–564,0
<=79	11,8	0,0	82,1	6,1	17,9	–596,8
<=82	11,8	0,0	83,7	4,5	16,3	–610,5
<=85	11,8	0,0	85,3	2,9	14,7	–624,1
<=100	11,8	0,0	88,2	0,0	11,8	–648,8

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

Table 10 ($1.90/day 201 PPP): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	63,1	41,3	1,7:1
<=28	15,2	51,3	66,1	1,1:1
<=35	23,8	39,7	80,3	0,7:1
<=37	26,4	36,8	82,6	0,6:1
<=40	31,1	33,9	89,4	0,5:1
<=45	39,5	28,3	94,8	0,4:1
<=46	41,0	27,4	95,4	0,4:1
<=48	44,4	25,6	96,6	0,3:1
<=50	47,8	24,0	97,2	0,3:1
<=53	55,6	20,8	97,9	0,3:1
<=58	65,8	17,8	99,6	0,2:1
<=59	68,7	17,1	99,6	0,2:1
<=61	71,9	16,3	99,6	0,2:1
<=66	80,1	14,7	100,0	0,2:1
<=68	82,8	14,2	100,0	0,2:1
<=70	86,0	13,7	100,0	0,2:1
<=74	90,0	13,1	100,0	0,2:1
<=79	93,9	12,6	100,0	0,1:1
<=82	95,5	12,3	100,0	0,1:1
<=85	97,1	12,1	100,0	0,1:1
<=100	100,0	11,8	100,0	0,1:1

Tables for
the $3.10/day 2011 PPP Poverty Line

Table 3 ($3.10/day 201 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:
0–20	93,7
21–28	75,0
29–35	52,0
36–37	44,0
38–40	35,7
41–45	29,1
46–46	21,3
47–48	21,3
49–50	13,6
51–53	10,4
54–58	3,2
59–59	2,0
60–61	2,0
62–66	2,0
67–68	0,4
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 ($3.10/day 201 PPP): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+3.7	1,5	1,9	2,5
21–28	+3.1	2,8	3,3	4,5
29–35	–2.0	2,7	3,2	4,2
36–37	+5.5	4,7	5,5	7,3
38–40	–8.5	6,1	6,6	7,5
41–45	+5.6	2,4	2,8	3,6
46–46	+11.3	2,9	3,4	4,7
47–48	–5.2	4,8	5,4	7,4
49–50	+7.4	1,5	1,8	2,3
51–53	+2.0	1,7	2,0	2,6
54–58	–4.6	3,0	3,1	3,4
59–59	+0.1	0,9	1,1	1,4
60–61	–0.5	1,0	1,2	1,6
62–66	+1.5	0,2	0,3	0,3
67–68	–1.3	1,2	1,3	1,5
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 ($3.10/day 201 PPP): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.4	61,5	76,9	95,2
4	–0.2	31,5	38,2	52,3
8	0.0	21,5	27,2	38,4
16	+0.2	14,2	16,9	24,0
32	+0.1	9,9	12,2	16,1
64	+0.2	6,9	8,3	11,5
128	+0.3	5,0	6,1	8,4
256	+0.3	3,6	4,3	5,8
512	+0.3	2,4	2,9	4,0
1 024	+0.3	1,7	2,0	2,7
2 048	+0.3	1,2	1,5	2,0
4 096	+0.3	0,8	1,0	1,4
8 192	+0.3	0,6	0,7	0,9
16 384	+0.4	0,4	0,5	0,7

Table 9 ($3.10/day 201 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	6,8	18,9	0,9	73,4	80,2	–43,7
<=28	12,3	13,5	2,9	71,4	83,6	+6,6
<=35	17,0	8,7	6,8	67,4	84,4	+58,8
<=37	18,2	7,5	8,2	66,0	84,2	+68,0
<=40	20,1	5,7	11,0	63,2	83,3	+57,1
<=45	22,5	3,2	16,9	57,3	79,8	+34,2
<=46	22,8	2,9	18,2	56,1	78,9	+29,4
<=48	23,6	2,1	20,8	53,5	77,1	+19,2
<=50	24,0	1,7	23,8	50,5	74,5	+7,7
<=53	24,8	1,0	30,8	43,5	68,2	–19,7
<=58	25,4	0,4	40,4	33,8	59,2	–57,1
<=59	25,5	0,3	43,2	31,1	56,5	–67,8
<=61	25,6	0,1	46,3	27,9	53,5	–80,1
<=66	25,7	0,1	54,4	19,8	45,5	–111,5
<=68	25,7	0,0	57,0	17,2	43,0	–121,6
<=70	25,7	0,0	60,3	14,0	39,7	–134,2
<=74	25,7	0,0	64,3	10,0	35,7	–149,8
<=79	25,7	0,0	68,1	6,1	31,9	–164,8
<=82	25,7	0,0	69,8	4,5	30,2	–171,1
<=85	25,7	0,0	71,4	2,9	28,6	–177,3
<=100	25,7	0,0	74,3	0,0	25,7	–188,6

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

Table 10 ($3.10/day 201 PPP): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	88,2	26,4	7,5:1
<=28	15,2	80,8	47,7	4,2:1
<=35	23,8	71,3	66,1	2,5:1
<=37	26,4	68,9	70,8	2,2:1
<=40	31,1	64,5	77,9	1,8:1
<=45	39,5	57,1	87,5	1,3:1
<=46	41,0	55,7	88,7	1,3:1
<=48	44,4	53,2	91,8	1,1:1
<=50	47,8	50,3	93,3	1,0:1
<=53	55,6	44,6	96,2	0,8:1
<=58	65,8	38,6	98,6	0,6:1
<=59	68,7	37,1	99,0	0,6:1
<=61	71,9	35,6	99,5	0,6:1
<=66	80,1	32,1	99,8	0,5:1
<=68	82,8	31,1	100,0	0,5:1
<=70	86,0	29,9	100,0	0,4:1
<=74	90,0	28,6	100,0	0,4:1
<=79	93,9	27,4	100,0	0,4:1
<=82	95,5	26,9	100,0	0,4:1
<=85	97,1	26,5	100,0	0,4:1
<=100	100,0	25,7	100,0	0,3:1

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

Table 3 (Line marking poorest half below 100% of upper BLW 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:
0–20	86,2
21–28	60,9
29–35	37,1
36–37	32,5
38–40	23,0
41–45	19,7
46–46	15,3
47–48	15,3
49–50	11,3
51–53	9,0
54–58	1,0
59–59	0,8
60–61	0,8
62–66	0,8
67–68	0,4
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 (Line marking poorest half below 100% of upper BLW line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	–0.6	1,8	2,1	2,6
21–28	0.0	3,1	3,6	4,5
29–35	–2.0	2,7	3,2	4,3
36–37	+7.5	4,0	4,6	6,3
38–40	–13.2	8,6	8,9	9,7
41–45	+2.4	2,1	2,5	3,2
46–46	+7.2	2,7	3,2	4,4
47–48	+10.5	1,2	1,4	1,9
49–50	+9.6	0,6	0,7	1,0
51–53	+8.0	0,3	0,4	0,5
54–58	–4.8	3,1	3,2	3,5
59–59	–1.2	1,1	1,2	1,4
60–61	+0.8	0,0	0,0	0,0
62–66	+0.4	0,2	0,2	0,3
67–68	+0.4	0,0	0,0	0,0
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (Line marking poorest half below 100% of upper BLW line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+1.6	64,2	69,8	86,4
4	+0.2	27,6	35,2	46,4
8	+0.4	18,5	23,4	32,3
16	+0.5	12,1	14,6	19,4
32	+0.6	8,2	9,6	13,3
64	+0.8	5,6	6,7	9,6
128	+0.8	3,8	4,6	6,6
256	+0.8	2,8	3,4	4,6
512	+0.8	2,0	2,3	3,2
1 024	+0.8	1,4	1,7	2,2
2 048	+0.8	0,9	1,1	1,5
4 096	+0.8	0,6	0,8	1,0
8 192	+0.8	0,5	0,6	0,7
16 384	+0.8	0,4	0,4	0,5

Table 9 (Line marking poorest half below 100% of upper BLW line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	6,4	13,4	1,3	78,9	85,3	–28,7
<=28	10,9	8,9	4,3	75,9	86,8	+31,8
<=35	14,4	5,4	9,5	70,8	85,1	+52,1
<=37	15,2	4,5	11,2	69,0	84,3	+43,4
<=40	16,6	3,2	14,5	65,8	82,4	+26,9
<=45	18,3	1,5	21,2	59,1	77,3	–7,0
<=46	18,5	1,3	22,5	57,7	76,2	–13,8
<=48	18,9	0,9	25,5	54,7	73,6	–29,0
<=50	19,1	0,7	28,7	51,5	70,6	–45,2
<=53	19,3	0,5	36,3	43,9	63,2	–83,6
<=58	19,6	0,1	46,2	34,1	53,7	–133,4
<=59	19,7	0,1	48,9	31,3	51,0	–147,4
<=61	19,7	0,1	52,2	28,0	47,7	–163,9
<=66	19,8	0,0	60,3	19,9	39,7	–205,0
<=68	19,8	0,0	63,0	17,2	37,0	–218,4
<=70	19,8	0,0	66,2	14,0	33,8	–234,8
<=74	19,8	0,0	70,2	10,0	29,8	–255,1
<=79	19,8	0,0	74,1	6,1	25,9	–274,6
<=82	19,8	0,0	75,7	4,5	24,3	–282,8
<=85	19,8	0,0	77,3	2,9	22,7	–290,9
<=100	19,8	0,0	80,2	0,0	19,8	–305,6

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

Table 10 (Line marking poorest half below 100% of upper BLW line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	83,1	32,4	4,9:1
<=28	15,2	71,8	55,1	2,5:1
<=35	23,8	60,3	72,7	1,5:1
<=37	26,4	57,6	77,0	1,4:1
<=40	31,1	53,5	84,0	1,1:1
<=45	39,5	46,3	92,5	0,9:1
<=46	41,0	45,1	93,5	0,8:1
<=48	44,4	42,6	95,5	0,7:1
<=50	47,8	39,9	96,3	0,7:1
<=53	55,6	34,7	97,4	0,5:1
<=58	65,8	29,9	99,3	0,4:1
<=59	68,7	28,7	99,7	0,4:1
<=61	71,9	27,4	99,7	0,4:1
<=66	80,1	24,7	100,0	0,3:1
<=68	82,8	23,9	100,0	0,3:1
<=70	86,0	23,0	100,0	0,3:1
<=74	90,0	22,0	100,0	0,3:1
<=79	93,9	21,1	100,0	0,3:1
<=82	95,5	20,7	100,0	0,3:1
<=85	97,1	20,4	100,0	0,3:1
<=100	100,0	19,8	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:
0–20	68,0
21–28	35,7
29–35	16,3
36–37	13,2
38–40	9,2
41–45	5,3
46–46	3,8
47–48	3,1
49–50	2,4
51–53	1,2
54–58	0,3
59–59	0,0
60–61	0,0
62–66	0,0
67–68	0,0
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 (First-quintile (20th-percentile) line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+3.2	3,0	3,5	4,5
21–28	–0.8	2,7	3,3	4,2
29–35	–5.3	3,8	4,0	4,5
36–37	+6.2	1,9	2,2	3,1
38–40	–20.3	12,0	12,4	12,9
41–45	–2.5	1,9	2,1	2,3
46–46	+1.3	1,2	1,4	1,7
47–48	+1.6	0,6	0,7	0,8
49–50	+1.6	0,5	0,5	0,7
51–53	+0.5	0,3	0,3	0,4
54–58	–4.5	2,9	3,0	3,2
59–59	0.0	0,0	0,0	0,0
60–61	0.0	0,0	0,0	0,0
62–66	–0.4	0,3	0,3	0,4
67–68	0.0	0,0	0,0	0,0
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (First-quintile (20th-percentile) line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.4	50,0	75,8	81,3
4	–1.7	24,2	32,7	46,4
8	–1.7	15,5	21,2	34,9
16	–1.6	10,2	13,1	18,8
32	–1.7	7,0	8,8	12,8
64	–1.5	4,9	6,2	8,4
128	–1.4	3,7	4,4	5,6
256	–1.5	2,7	3,2	4,0
512	–1.5	1,9	2,2	2,8
1 024	–1.5	1,3	1,6	2,1
2 048	–1.5	1,0	1,1	1,5
4 096	–1.4	0,6	0,8	1,0
8 192	–1.4	0,5	0,6	0,7
16 384	–1.4	0,3	0,4	0,5

Table 9 (First-quintile (20th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	4,7	6,8	3,0	85,5	90,2	+7,8
<=28	7,6	4,0	7,6	80,9	88,4	+33,8
<=35	9,2	2,3	14,7	73,8	83,0	–27,4
<=37	9,5	2,0	17,0	71,5	81,0	–47,5
<=40	10,3	1,2	20,8	67,7	77,9	–80,9
<=45	10,9	0,6	28,6	59,9	70,8	–148,2
<=46	11,0	0,5	30,0	58,5	69,4	–160,9
<=48	11,1	0,4	33,3	55,2	66,3	–189,3
<=50	11,2	0,3	36,6	51,9	63,1	–218,0
<=53	11,3	0,2	44,3	44,2	55,5	–285,0
<=58	11,5	0,1	54,3	34,2	45,6	–372,3
<=59	11,5	0,1	57,2	31,3	42,7	–397,2
<=61	11,5	0,1	60,5	28,0	39,5	–425,6
<=66	11,5	0,0	68,6	19,9	31,4	–496,1
<=68	11,5	0,0	71,2	17,2	28,8	–519,2
<=70	11,5	0,0	74,5	14,0	25,5	–547,5
<=74	11,5	0,0	78,5	10,0	21,5	–582,3
<=79	11,5	0,0	82,4	6,1	17,6	–615,8
<=82	11,5	0,0	84,0	4,5	16,0	–629,9
<=85	11,5	0,0	85,6	2,9	14,4	–643,9
<=100	11,5	0,0	88,5	0,0	11,5	–669,1

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

Table 10 (First-quintile (20th-percentile) line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	61,3	41,0	1,6:1
<=28	15,2	49,8	65,6	1,0:1
<=35	23,8	38,5	79,8	0,6:1
<=37	26,4	35,8	82,2	0,6:1
<=40	31,1	33,0	89,1	0,5:1
<=45	39,4	27,6	94,7	0,4:1
<=46	41,0	26,8	95,3	0,4:1
<=48	44,4	25,0	96,6	0,3:1
<=50	47,8	23,4	97,1	0,3:1
<=53	55,6	20,3	97,9	0,3:1
<=58	65,8	17,4	99,6	0,2:1
<=59	68,7	16,7	99,6	0,2:1
<=61	71,9	15,9	99,6	0,2:1
<=66	80,1	14,4	100,0	0,2:1
<=68	82,8	13,9	100,0	0,2:1
<=70	86,0	13,4	100,0	0,2:1
<=74	90,0	12,8	100,0	0,1:1
<=79	93,9	12,3	100,0	0,1:1
<=82	95,5	12,0	100,0	0,1:1
<=85	97,1	11,9	100,0	0,1:1
<=100	100,0	11,5	100,0	0,1:1

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

Table 3 (Second-quintile (40^{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:
0–20	94,2
21–28	76,6
29–35	55,9
36–37	45,2
38–40	39,6
41–45	31,3
46–46	22,1
47–48	22,1
49–50	15,0
51–53	10,8
54–58	3,6
59–59	2,7
60–61	2,7
62–66	2,3
67–68	0,4
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 (Second-quintile (40th-percentile) line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+3.5	1,5	1,9	2,5
21–28	+2.4	2,7	3,3	4,3
29–35	–1.0	2,7	3,3	4,2
36–37	+4.9	4,7	5,5	7,6
38–40	–6.0	4,9	5,4	6,3
41–45	+7.3	2,4	2,8	3,6
46–46	+10.2	3,1	3,7	5,1
47–48	–5.3	4,9	5,3	7,5
49–50	+8.7	1,5	1,8	2,3
51–53	+2.0	1,6	2,0	2,5
54–58	–4.3	2,9	3,0	3,3
59–59	+0.5	0,9	1,1	1,4
60–61	+0.2	1,0	1,2	1,6
62–66	+1.8	0,2	0,3	0,3
67–68	–1.3	1,2	1,3	1,5
69–70	0.0	0,0	0,0	0,0
71–74	0.0	0,0	0,0	0,0
75–79	0.0	0,0	0,0	0,0
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (Second-quintile (40th-percentile) line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.6	62,3	77,2	95,3
4	+0.1	31,2	37,8	51,9
8	+0.4	21,8	27,0	38,9
16	+0.5	14,1	17,0	24,7
32	+0.5	10,2	12,5	16,8
64	+0.5	6,7	8,3	11,7
128	+0.6	5,0	6,1	8,6
256	+0.6	3,6	4,3	5,9
512	+0.7	2,4	3,0	3,8
1 024	+0.7	1,7	2,0	2,8
2 048	+0.7	1,2	1,5	2,0
4 096	+0.7	0,9	1,0	1,3
8 192	+0.7	0,6	0,7	0,9
16 384	+0.7	0,4	0,5	0,7

Table 9 (Second-quintile (40th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	6,9	20,0	0,8	72,2	79,1	–45,8
<=28	12,6	14,3	2,6	70,5	83,1	+3,2
<=35	17,6	9,3	6,2	66,9	84,5	+54,1
<=37	18,9	8,0	7,5	65,6	84,5	+68,5
<=40	20,8	6,1	10,2	62,8	83,7	+62,0
<=45	23,4	3,5	16,0	57,0	80,4	+40,4
<=46	23,8	3,1	17,2	55,9	79,7	+36,1
<=48	24,7	2,3	19,7	53,3	78,0	+26,7
<=50	25,1	1,9	22,7	50,4	75,4	+15,7
<=53	25,9	1,1	29,7	43,4	69,2	–10,3
<=58	26,5	0,4	39,2	33,8	60,4	–45,8
<=59	26,7	0,3	42,0	31,1	57,7	–56,0
<=61	26,8	0,1	45,1	27,9	54,7	–67,6
<=66	26,9	0,1	53,2	19,8	46,7	–97,7
<=68	26,9	0,0	55,8	17,2	44,2	–107,3
<=70	26,9	0,0	59,1	14,0	40,9	–119,4
<=74	26,9	0,0	63,1	10,0	36,9	–134,3
<=79	26,9	0,0	66,9	6,1	33,1	–148,6
<=82	26,9	0,0	68,6	4,5	31,4	–154,6
<=85	26,9	0,0	70,2	2,9	29,8	–160,6
<=100	26,9	0,0	73,1	0,0	26,9	–171,4

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

Table 10 (Second-quintile (40th-percentile) line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	89,3	25,6	8,3:1
<=28	15,2	83,1	46,9	4,9:1
<=35	23,9	74,0	65,5	2,8:1
<=37	26,4	71,6	70,3	2,5:1
<=40	31,1	67,1	77,4	2,0:1
<=45	39,5	59,3	86,9	1,5:1
<=46	41,0	58,0	88,4	1,4:1
<=48	44,4	55,6	91,6	1,2:1
<=50	47,8	52,5	93,1	1,1:1
<=53	55,6	46,6	96,1	0,9:1
<=58	65,8	40,3	98,6	0,7:1
<=59	68,7	38,8	99,0	0,6:1
<=61	71,9	37,2	99,5	0,6:1
<=66	80,1	33,5	99,8	0,5:1
<=68	82,8	32,5	100,0	0,5:1
<=70	86,0	31,3	100,0	0,5:1
<=74	90,0	29,9	100,0	0,4:1
<=79	93,9	28,7	100,0	0,4:1
<=82	95,5	28,2	100,0	0,4:1
<=85	97,1	27,7	100,0	0,4:1
<=100	100,0	26,9	100,0	0,4:1

Tables for
the Median (50^{th}-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:
0–20	97,7
21–28	88,1
29–35	75,3
36–37	67,0
38–40	64,7
41–45	46,4
46–46	41,7
47–48	40,7
49–50	29,0
51–53	22,4
54–58	14,3
59–59	6,0
60–61	6,0
62–66	5,5
67–68	3,2
69–70	0,0
71–74	0,0
75–79	0,0
80–82	0,0
83–85	0,0
86–100	0,0

Table 5 (Median (50th-percentile) line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+2.1	1,1	1,2	1,7
21–28	–2.9	2,3	2,5	2,7
29–35	+3.8	2,4	2,9	4,2
36–37	+8.3	5,2	6,1	7,9
38–40	+12.2	4,0	4,8	6,4
41–45	–11.0	7,2	7,5	7,9
46–46	+25.9	3,6	4,4	5,8
47–48	+0.6	4,7	5,4	7,5
49–50	+17.0	2,1	2,5	3,3
51–53	+1.0	2,5	2,9	3,9
54–58	–3.8	2,9	3,0	3,5
59–59	–14.9	9,7	10,1	11,1
60–61	–11.3	7,3	7,8	8,5
62–66	+4.0	0,4	0,4	0,6
67–68	+1.1	1,0	1,2	1,5
69–70	–0.1	0,1	0,1	0,1
71–74	–1.2	0,8	0,9	1,0
75–79	–0.1	0,1	0,1	0,1
80–82	0.0	0,0	0,0	0,0
83–85	0.0	0,0	0,0	0,0
86–100	0.0	0,0	0,0	0,0

Table 6 (Median (50th-percentile) line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.6	67,9	80,5	96,0
4	+0.3	35,4	42,3	54,9
8	–0.3	25,6	31,6	43,0
16	–0.5	18,3	22,2	31,0
32	–0.1	13,0	15,6	22,3
64	–0.1	9,2	11,1	15,2
128	+0.1	6,8	8,2	10,8
256	+0.3	4,6	5,3	7,4
512	+0.3	3,2	3,6	4,9
1 024	+0.4	2,3	2,7	3,5
2 048	+0.4	1,7	2,0	2,6
4 096	+0.4	1,1	1,4	1,8
8 192	+0.4	0,8	0,9	1,3
16 384	+0.4	0,6	0,7	0,8

Table 9 (Median (50th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,4	29,8	0,3	62,4	69,8	–59,5
<=28	14,2	23,0	1,0	61,8	76,0	–21,0
<=35	20,6	16,7	3,3	59,5	80,0	+19,4
<=37	22,3	14,9	4,2	58,6	80,9	+31,1
<=40	25,0	12,2	6,1	56,7	81,6	+50,8
<=45	29,2	8,0	10,3	52,5	81,7	+72,3
<=46	29,8	7,4	11,3	51,5	81,3	+69,7
<=48	31,3	5,9	13,2	49,6	80,9	+64,7
<=50	32,2	5,0	15,6	47,2	79,4	+58,0
<=53	33,9	3,3	21,7	41,1	75,0	+41,6
<=58	35,7	1,5	30,1	32,7	68,4	+19,2
<=59	36,1	1,1	32,5	30,3	66,4	+12,6
<=61	36,6	0,6	35,3	27,5	64,2	+5,2
<=66	37,0	0,3	43,1	19,7	56,6	–15,9
<=68	37,1	0,2	45,7	17,1	54,2	–22,8
<=70	37,1	0,1	48,9	13,9	50,9	–31,5
<=74	37,2	0,0	52,8	10,0	47,2	–41,9
<=79	37,2	0,0	56,7	6,1	43,3	–52,3
<=82	37,2	0,0	58,3	4,5	41,7	–56,6
<=85	37,2	0,0	59,9	2,9	40,1	–61,0
<=100	37,2	0,0	62,8	0,0	37,2	–68,8

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

Table 10 (Median (50th-percentile) line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	95,5	19,8	21,4:1
<=28	15,2	93,4	38,2	14,2:1
<=35	23,9	86,1	55,2	6,2:1
<=37	26,5	84,3	60,0	5,4:1
<=40	31,1	80,3	67,2	4,1:1
<=45	39,5	73,9	78,4	2,8:1
<=46	41,0	72,5	80,0	2,6:1
<=48	44,5	70,4	84,1	2,4:1
<=50	47,8	67,4	86,6	2,1:1
<=53	55,6	61,0	91,2	1,6:1
<=58	65,8	54,3	95,9	1,2:1
<=59	68,6	52,6	97,1	1,1:1
<=61	71,9	51,0	98,5	1,0:1
<=66	80,1	46,2	99,3	0,9:1
<=68	82,7	44,8	99,6	0,8:1
<=70	86,0	43,1	99,6	0,8:1
<=74	90,0	41,3	100,0	0,7:1
<=79	93,9	39,6	100,0	0,7:1
<=82	95,5	39,0	100,0	0,6:1
<=85	97,1	38,3	100,0	0,6:1
<=100	100,0	37,2	100,0	0,6:1

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

Table 3 (Third-quintile (60^{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:
0–20	99,2
21–28	94,4
29–35	88,6
36–37	85,1
38–40	79,0
41–45	71,5
46–46	63,8
47–48	63,8
49–50	47,0
51–53	43,0
54–58	27,9
59–59	19,5
60–61	18,9
62–66	15,6
67–68	7,7
69–70	5,3
71–74	5,3
75–79	2,0
80–82	1,9
83–85	1,8
86–100	0,0

Table 5 (Third-quintile (60th-percentile) line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	+0.9	0,6	0,7	1,0
21–28	–3.7	2,1	2,2	2,3
29–35	+4.9	2,1	2,5	3,5
36–37	+1.1	4,1	4,9	6,1
38–40	+3.1	3,5	4,1	5,3
41–45	–7.1	4,6	4,8	5,2
46–46	+28.8	6,0	7,4	10,2
47–48	–13.5	8,5	8,8	9,5
49–50	–11.3	8,2	8,7	9,5
51–53	0.0	3,0	3,4	4,7
54–58	–0.2	2,3	2,6	3,4
59–59	–5.7	5,1	5,6	7,0
60–61	–12.0	8,1	8,5	8,9
62–66	+11.3	0,7	0,8	1,1
67–68	+4.4	1,2	1,3	1,7
69–70	+4.9	0,2	0,2	0,3
71–74	–3.7	3,1	3,3	3,5
75–79	–0.2	0,9	1,0	1,3
80–82	+1.9	0,0	0,0	0,0
83–85	+0.6	0,7	0,9	1,2
86–100	0.0	0,0	0,0	0,0

Table 6 (Third-quintile (60th-percentile) line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	0.0	71,8	77,6	94,6
4	–0.5	38,1	43,9	56,0
8	–0.7	28,2	32,9	46,0
16	–0.6	20,0	23,8	29,3
32	–0.6	14,0	16,5	20,3
64	–0.3	10,4	12,4	15,1
128	–0.2	7,2	8,3	10,9
256	0.0	5,1	6,1	8,3
512	0.0	3,5	4,1	5,5
1 024	0.0	2,5	3,0	4,1
2 048	0.0	1,8	2,1	2,6
4 096	–0.1	1,3	1,5	1,9
8 192	–0.1	0,9	1,1	1,3
16 384	0.0	0,6	0,7	1,0

Table 9 (Third-quintile (60th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,6	41,1	0,1	51,2	58,8	–68,6
<=28	14,8	33,8	0,3	51,0	65,8	–38,3
<=35	22,2	26,5	1,7	49,7	71,8	–5,4
<=37	24,4	24,3	2,1	49,3	73,7	+4,4
<=40	28,0	20,6	3,0	48,3	76,3	+21,5
<=45	34,0	14,6	5,4	45,9	79,9	+51,0
<=46	35,0	13,7	6,0	45,3	80,3	+56,1
<=48	37,3	11,4	7,1	44,2	81,6	+67,9
<=50	39,2	9,5	8,6	42,7	81,9	+78,6
<=53	42,3	6,4	13,3	38,0	80,3	+72,7
<=58	45,5	3,1	20,3	31,1	76,6	+58,3
<=59	46,2	2,4	22,4	28,9	75,1	+53,9
<=61	47,1	1,5	24,8	26,5	73,7	+49,1
<=66	47,9	0,7	32,2	19,2	67,1	+33,9
<=68	48,1	0,6	34,7	16,7	64,8	+28,8
<=70	48,2	0,5	37,8	13,5	61,7	+22,3
<=74	48,5	0,2	41,5	9,8	58,3	+14,7
<=79	48,6	0,0	45,3	6,1	54,7	+7,0
<=82	48,6	0,0	46,9	4,5	53,1	+3,7
<=85	48,7	0,0	48,4	2,9	51,6	+0,5
<=100	48,7	0,0	51,3	0,0	48,7	–5,5

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

Table 10 (Third-quintile (60th-percentile) line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	98,2	15,6	55,6:1
<=28	15,2	97,7	30,5	43,1:1
<=35	23,8	93,0	45,6	13,2:1
<=37	26,4	92,2	50,1	11,9:1
<=40	31,1	90,2	57,6	9,2:1
<=45	39,5	86,2	69,9	6,3:1
<=46	41,0	85,4	71,9	5,8:1
<=48	44,4	84,0	76,7	5,3:1
<=50	47,8	82,0	80,5	4,6:1
<=53	55,6	76,1	86,9	3,2:1
<=58	65,8	69,2	93,5	2,2:1
<=59	68,7	67,3	95,0	2,1:1
<=61	71,9	65,5	96,9	1,9:1
<=66	80,1	59,8	98,5	1,5:1
<=68	82,8	58,1	98,8	1,4:1
<=70	86,0	56,0	99,0	1,3:1
<=74	90,0	53,9	99,7	1,2:1
<=79	93,9	51,8	99,9	1,1:1
<=82	95,5	50,9	99,9	1,0:1
<=85	97,1	50,1	100,0	1,0:1
<=100	100,0	48,7	100,0	0,9:1

Tables for
the Fourth-Quintile (80th-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:
0–20	99,8
21–28	99,5
29–35	99,2
36–37	99,0
38–40	99,0
41–45	95,4
46–46	94,5
47–48	90,6
49–50	86,9
51–53	86,9
54–58	85,7
59–59	74,8
60–61	63,8
62–66	57,4
67–68	46,7
69–70	46,7
71–74	36,3
75–79	27,2
80–82	21,6
83–85	9,2
86–100	2,5

Table 5 (Fourth-quintile (80th-percentile) line): Average errors (differences for estimated versus observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2014/15 scorecard applied to the validation sample

	Error (difference between estimate and observed value)			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–20	–0.2	0,1	0,1	0,1
21–28	–0.2	0,2	0,2	0,3
29–35	+0.8	0,5	0,6	0,8
36–37	–0.7	0,5	0,5	0,5
38–40	–1.0	0,5	0,5	0,5
41–45	–3.2	1,8	1,8	1,9
46–46	–5.4	2,7	2,7	2,7
47–48	–9.3	4,7	4,7	4,7
49–50	–5.7	3,9	4,1	4,4
51–53	–4.4	2,8	2,9	3,2
54–58	+8.5	2,1	2,5	3,2
59–59	–8.1	6,0	6,3	6,6
60–61	+4.1	4,2	5,0	6,8
62–66	+4.8	3,1	3,6	4,7
67–68	+4.8	4,8	5,7	7,6
69–70	+27.1	3,1	3,7	5,0
71–74	+0.3	3,9	4,8	6,1
75–79	+14.6	2,0	2,4	3,1
80–82	–20.4	13,5	14,0	15,0
83–85	–1.4	2,8	3,2	4,1
86–100	+2.2	0,2	0,2	0,3

Table 6 (Fourth-quintile (80th-percentile) line): Average errors (differences for estimated versus observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2014/15 scorecard applied to the validation sample

Sample Size	Error (difference between estimate and observed value)			
		Confidence interval (+percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.8	55,3	74,7	82,7
4	+0.6	35,9	44,1	56,4
8	+0.2	26,1	31,1	42,1
16	+0.8	19,2	22,8	30,7
32	+1.2	13,9	16,2	20,8
64	+1.6	9,9	11,7	14,8
128	+1.8	6,9	8,2	10,6
256	+1.7	4,7	5,6	7,7
512	+1.8	3,3	4,2	5,7
1 024	+1.8	2,5	2,9	3,8
2 048	+1.8	1,7	2,1	2,8
4 096	+1.8	1,3	1,5	2,0
8 192	+1.8	0,9	1,0	1,3
16 384	+1.8	0,6	0,7	1,0

Table 9 (Fourth-quintile (80th-percentile) line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2014/15 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
<=20	7,7	69,0	0,0	23,3	30,9	–79,9
<=28	15,1	61,6	0,1	23,2	38,3	–60,5
<=35	23,6	53,1	0,2	23,0	46,6	–38,2
<=37	26,2	50,6	0,3	23,0	49,2	–31,4
<=40	30,8	45,9	0,3	23,0	53,8	–19,4
<=45	38,9	37,8	0,6	22,7	61,6	+2,1
<=46	40,4	36,3	0,6	22,7	63,1	+6,1
<=48	43,8	32,9	0,6	22,7	66,5	+15,0
<=50	46,9	29,8	0,9	22,4	69,3	+23,4
<=53	53,7	23,1	1,9	21,4	75,0	+42,3
<=58	61,8	14,9	4,0	19,3	81,0	+66,3
<=59	64,3	12,5	4,4	18,9	83,1	+73,2
<=61	66,5	10,3	5,4	17,8	84,3	+80,4
<=66	71,2	5,5	8,8	14,4	85,7	+88,5
<=68	72,6	4,1	10,1	13,1	85,8	+86,8
<=70	73,8	3,0	12,2	11,0	84,8	+84,0
<=74	75,1	1,7	14,9	8,3	83,4	+80,5
<=79	75,9	0,9	18,0	5,2	81,1	+76,5
<=82	76,3	0,4	19,2	4,1	80,4	+75,0
<=85	76,7	0,1	20,4	2,8	79,5	+73,4
<=100	76,7	0,0	23,3	0,0	76,7	+69,7

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

Table 10 (Fourth-quintile (80th-percentile) line): Share of 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 who are successfully targeted per non-poor household mistakenly targeted, 2014/15 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
<=20	7,7	99,9	10,0	1 087,8:1
<=28	15,2	99,6	19,7	279,7:1
<=35	23,8	99,0	30,8	95,7:1
<=37	26,4	99,0	34,1	96,0:1
<=40	31,1	99,1	40,1	113,0:1
<=45	39,5	98,6	50,7	69,9:1
<=46	41,0	98,6	52,7	71,1:1
<=48	44,4	98,7	57,1	73,3:1
<=50	47,8	98,2	61,1	54,1:1
<=53	55,6	96,6	69,9	28,2:1
<=58	65,8	93,9	80,5	15,4:1
<=59	68,7	93,6	83,7	14,6:1
<=61	71,9	92,4	86,6	12,2:1
<=66	80,1	89,0	92,8	8,1:1
<=68	82,8	87,8	94,7	7,2:1
<=70	86,0	85,8	96,1	6,0:1
<=74	90,0	83,4	97,8	5,0:1
<=79	93,9	80,8	98,9	4,2:1
<=82	95,5	79,9	99,5	4,0:1
<=85	97,1	79,0	99,9	3,8:1
<=100	100,0	76,7	100,0	3,3:1