Simple Poverty Scorecard® Tool
Malawi

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The Scorocs Simple Poverty Scorecard-brand poverty-assessment tool is a low-cost, transparent way for pro-poor programs in Malawi to prove and improve their social performance by getting to know their participants better. Responses to the scorecard's 10 questions can be collected in about 10 minutes and then used to estimate participants' consumption-based poverty rates, to track changes in poverty rates, or to segment participants for differentiated treatment.

Version note

This new scorecard for Malawi is based on data from 2016/17. It should be used from now on, replacing the old scorecards in Schreiner (2015a and 2011) that are based on data from 2010/11 and 2004/5. Users are warned *not* estimate changes in poverty rates over time with a baseline from an old scorecard and a follow-up from the new scorecard because such estimates may be very inaccurate.

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Scorocs® Simple Poverty Scorecard® Tool

			Name	Identifier
Interview ID:				
Interview date:		Participant:		
Country:	MWI	Field agent:		
Scorecard:	003	Service point:		
Sampling weight:		Number of household members:		

Indicator	Response	Points
1. In what district does the household reside?	A. Chitipa, or Karonga	0
	B. Neno, Nkhata Bay, Nsanje, Phalombe, or Rumphi	4
	C. Chiradzulu, Machinga, or Thyolo	6
	D. Balaka, or Mangochi	8
	E. Chikwawa, or Dedza	9
	F. Nkhotakota, or Salima	11
	G. Mzimba, Ntcheu, or Ntchisi	12
	H. Dowa, Kasungu, Mchinji, Mwanza, Zomba, or Zomba City	13
	I. Blantyre, Lilongwe City, or Mulanje	15
	J. Blantyre City, Lilongwe, or Mzuzu City	17
2. How many members does the household have?	A. Seven or more	0
	B. Six	5
	C. Five	9
	D. Four	15
	E. Three	20
	F. Two	27
	G. One	41
3. What does the household head sleep under in the hot season (October)?	A. *Chitenje* cloth, fertilizer or grain sack, clothes, nothing, or other	0
	B. Blanket only	2
	C. Blanket and sheets, or only sheets	5
4. In the past twelve months, did the male head (or the husband of the female head) engage in casual, part-time, or *ganyu* labour, even for only one hour?	A. No	0
	B. No male head (and female head has no husband in the household)	0
	C. Yes	4
5. Is the female head (or the eldest wife of the male head) able to read and write in Chichewa or English?	A. No	0
	B. Only Chichewa	2
	C. No female head (and male head has no wife in household)	2
	D. Only English, or both English and Chichewa	4
6. The roof of the main dwelling is predominantly made of what material? (*Observe and record*)	A. Grass	0
	B. Iron sheets, clay tiles, concrete, plastic sheeting, or other	3
7. Does the household own a table?	A. No	0
	B. Yes	2
8. How many beds does the household own?	A. None	0
	B. One	5
	C. Two or more	10
9. Does the household currently own any *panga* knives?	A. No	0
	B. Yes	3
10. How many working cell phones in total does the household own?	A. None	0
	B. One	6
	C. Two or more	11

Score:

Back-page Worksheet: Household Members

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

Then read to the respondent: *Please tell me the first names (or nicknames) of all the members of your household, starting with the head and his/her (eldest) spouse (if there is one). A* household *is a single person or a group of people (regardless of blood or marital relationship) who normally live together and eat their meals together.*

Write down the first name/nickname of each member, beginning with the head and the (eldest) spouse of the head (if there is one). Mark the male head (or the husband of the female head, if he exists), and mark the female head (or the eldest wife of the male head, if she exists). Record the number of household members in the scorecard header next to "Number of household members:". Then circle the response to the second scorecard indicator about the number of household members.

Read the third, fourth, and fifth questions aloud, marking the respondent's answers. Record the answer to the sixth question about the main material of the roof of the residence based on your own observation of the roof, asking the respondent only if the response if not clear from your own observation. Finally, read the remaining questions aloud, marking the respondent's answers.

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

First name or nickname	**Head or spouse of head?**
1.	Head (male) Head (female)
2.	Eldest wife of male head Husband of female head Other
3.	Other
4.	Other
5.	Other
6.	Other
7.	Other
8.	Other
9.	Other
10.	Other
11.	Other
12.	Other
13.	Other
14.	Other
15.	Other
16.	Other
Number of household members:	—

Look-up table to convert scores to poverty likelihoods

	Poverty likelihood (%)																	
	National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Score	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
0–17	66.1	95.4	99.8	100.0	99.5	100.0	100.0	100.0	100.0	99.8	100.0	100.0	100.0	42.8	66.1	91.8	95.4	97.8	99.8
18–21	50.6	89.8	99.3	100.0	98.8	100.0	100.0	100.0	100.0	99.3	100.0	100.0	100.0	29.4	50.6	80.0	87.8	95.1	99.7
22–24	44.1	88.4	99.1	100.0	98.4	100.0	100.0	100.0	100.0	99.1	100.0	100.0	100.0	22.6	44.1	76.0	86.7	92.1	99.5
25–27	33.1	82.3	98.3	100.0	97.0	100.0	100.0	100.0	100.0	98.5	100.0	100.0	100.0	14.6	33.0	67.3	80.2	89.9	99.1
28–29	28.4	79.1	95.5	98.5	93.6	99.2	99.9	100.0	100.0	95.5	99.5	100.0	100.0	9.0	28.1	60.6	75.7	86.2	96.6
30–31	22.2	68.3	95.5	98.5	92.4	99.2	99.9	100.0	100.0	95.5	99.5	100.0	100.0	7.7	22.2	52.8	65.3	81.0	96.6
32–33	18.7	63.2	92.1	98.1	88.8	99.2	99.9	100.0	100.0	92.1	99.5	100.0	100.0	7.2	18.7	48.3	61.3	75.3	94.8
34–35	14.5	59.3	89.0	97.8	85.9	99.2	99.9	100.0	100.0	89.0	99.5	100.0	100.0	4.4	14.3	41.9	57.8	70.8	93.2
36–37	13.3	56.3	87.6	97.1	84.4	99.2	99.7	100.0	100.0	87.8	99.4	100.0	100.0	4.2	13.3	40.1	54.5	68.7	92.8
38–39	10.6	50.4	86.3	97.1	82.9	99.2	99.5	100.0	100.0	86.7	99.4	100.0	100.0	2.3	10.6	34.0	48.7	63.7	92.2
40–41	6.9	43.9	81.4	95.9	78.3	97.0	99.5	100.0	100.0	81.4	98.3	100.0	100.0	2.1	6.9	28.0	42.0	59.6	86.8
42–43	4.7	33.8	76.9	90.8	73.7	95.6	98.4	100.0	100.0	76.9	96.6	100.0	100.0	1.8	4.7	18.2	32.8	50.2	82.9
44–45	3.1	32.3	73.5	90.8	69.2	95.6	98.4	100.0	100.0	73.5	96.6	100.0	100.0	1.2	3.1	14.4	31.4	48.0	81.2
46–47	1.9	20.5	63.3	87.9	56.4	93.5	97.2	100.0	100.0	63.3	96.6	100.0	100.0	0.3	1.9	9.3	18.4	34.7	74.1
48–50	1.5	17.0	58.2	80.4	50.4	88.4	96.1	99.8	99.8	58.2	92.2	99.6	100.0	0.3	1.5	7.6	15.4	27.3	68.8
51–53	1.1	10.6	45.1	76.6	37.1	84.4	92.3	99.3	99.3	46.4	89.8	98.5	100.0	0.1	1.1	4.0	9.6	18.3	56.6
54–56	0.5	6.6	37.3	66.9	30.8	78.2	91.1	99.3	99.3	37.4	86.4	98.5	100.0	0.1	0.5	1.7	6.1	10.7	46.1
57–60	0.1	4.4	28.3	57.1	23.7	68.2	85.2	98.9	98.8	28.3	77.5	96.3	100.0	0.0	0.1	1.0	4.1	8.8	35.9
61–67	0.0	1.7	11.6	35.1	9.7	45.1	69.6	94.9	92.6	11.6	57.6	87.9	99.6	0.0	0.0	0.4	1.1	4.1	18.7
68–100	0.0	0.1	2.9	7.0	2.3	11.7	24.6	77.5	71.3	2.9	19.6	59.4	97.2	0.0	0.0	0.0	0.1	0.2	4.2

Warning against hybrid estimates of changes in poverty

The following warning is relevant only for legacy users of old 2004/5 or 2010/11 scorecards who adopt the new 2016/17 scorecard and want to make hybrid estimates of changes in poverty over time with a baseline from an old scorecard and a follow-up from the new scorecard. All other users can skip this warning and go straight to the Introduction.

In the Integrated Household Surveys (IHS) of 2004/5, 2010/11, and 2016/17, Malawi's National Statistical Office (NSO) uses an unchanging definition of *poverty*. In principle, this means that legacy scorecard users can derive hybrid estimates of change over time from a baseline from an old scorecard and a follow-up from the new scorecard.[1] NSO and World Bank (2018, p. 17) and NSO (2012, p. 204) compare poverty-rate estimates across pairs of IHS rounds, implying that they take cross-round estimates of change as valid.

Unfortunately, hybrid estimates of change based on two scorecards for Malawi are likely to be very inaccurate, and so users are warned against them.

Why would hybrid estimates of change for Malawi be inaccurate? In general, estimates of change (both hybrid with two scorecards and non-hybrid with a single scorecard) are sometimes more inaccurate than desired or needed for a given purpose/context. Inaccuracy occurs when an assumption made by a scorecard does not hold in a given country or time period (Sahn and Stifel, 2003).

First, scorecards assume that prices are measured accurately and consistently over time. In the case of Malawi, Pauw, Beck, and Mussa ("PBM", 2016) argue that issues with the poor-focused Consumer Price Index used by the NSO to adjust poverty lines between 2004/5 and 2010/11 leads to inaccurately-high poverty estimates in 2010/11. In turn, this would cause errors in hybrid estimates of change that involve the old 2010/11 scorecard.

Second, estimates based on the NSO data and Malawi's national poverty line have barely change in 12 years; person-level rates decrease from 52.4 percent in 2004/5 to 50.7 percent in 2010/11 before increasing to 51.5 percent in 2016/17. The sizes and directions of these changes defy belief, and PBM point out that they are inconsistent with Malawi's annual per-capita GDP growth from 2004/5 to 2010/11 of 3.5 percent as well as inconsistent with improvements in indicators of non-monetary poverty. When PBM use arguably better (but still imperfect) methods to re-derive consumption and poverty lines, the decrease in the person-level rate for the national line from 2004/5 to

[1] This holds for national lines and 2005 PPP lines supported by both scorecards.

2010/11 changes from 1.7 percentage points to more than 7 percentage points. The NSO's poverty rate for 2010/11 is likely too high.[2]

Third, scorecards assume unchanging populations as well as unchanging relationships between indicators and poverty. But the NSO updated the IHS sampling frame between 2004/5 and 2010/11, and the distribution of responses to the new scorecard's questions mostly shifted from more-poor to less-poor between 2004/5 and 2016/17 (see table following this note).[3] If the NSO's estimate of poverty—which barely budged in 12 years—is correct, then this would imply a strong shift in the relationships between indicators and poverty. More likely (and consistent with PBM), actual poverty decreased much more than measured poverty.[4]

To sum up, legacy scorecard users are warned *not* to use hybrid estimates of change with a baseline from an old scorecard and a follow-up from the new scorecard. Whatever the scorecards' weaknesses, the IHS probably understates the true decrease in poverty from 2004/5 to 2016/17. While it is possible—and probably likely—that hybrid estimates from scorecards are more accurate than NSO estimates, there is no way to check this, because:

- There are no PBM poverty estimates for 2016/17
- The new scorecard's *ganyu*-labor indicator is not in the 2010/11 IHS, and
- The new scorecard's cell-phone indicator is not in the 2004/5 IHS

Nonetheless, it is reasonable to expect that *non-hybrid* estimates of change from now on in which both baseline and follow-up are from the new 2016/17 scorecard will be about as accurate as they are for the typical scorecard.

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[2] The old 2010/11 scorecard is calibrated both to NSO-definition lines as well as to PBM-definition lines, but there are no PBM-definition lines for the 2016/17 IHS.

[3] Household size decreased, and rural households (or at least their male heads) moved to urban areas or left agriculture, reducing the share of male heads who do *ganyu* casual labor. Household heads slept under better materials, literacy increased for female heads and for the spouses of male heads, roof quality improved, and cell-phone ownership increased. The ownership of tables, beds, and *panga* knives (machetes) decreased, consistent with a shift toward greater poverty or data-quality issues.

[4] Mathiassen and Wold (2019) study non-hybrid estimates of changes in poverty rates in Malawi, building two poverty-assessment tools with data from the 2004/5 and 2010/11 IHS rounds and applying them to the intervening Welfare Monitoring Surveys and well the later 2013 Integrated Household Panel Survey. They conclude that the accuracy of their (non-hybrid) estimates of change depends strongly on survey design and implementation (see also Kilic and Sohensen, 2019). They highlight a number of implausible trends in the distributions of responses to tool indicators (such as those noted here for tables, beds, and *panga* knives). Like PBM, they speculate that the true poverty rate is lower than those reported by the NSO from IHS data.

The distribution of responses to indicators in the new 2016/17 scorecard mostly shifts from more-poor to less poor from 2004/5 to 2016/17, inconsistent with the slight change in poverty in the IHS

Indicator	Response	Households (%) '04/05	'10/11	'16/17
1. In what district does the household reside?	A. Chitipa, or Karonga	3	3	3
	B. Neno, Nkhata Bay, Nsanje, Phalombe, or Rumphi	8	11	8
	C. Chiradzulu, Machinga, or Thyolo	12	11	12
	D. Balaka, or Mangochi	9	8	9
	E. Chikwawa, or Dedza	9	8	9
	F. Nkhotakota, or Salima	5	5	5
	G. Mzimba, Ntcheu, or Ntchisi	10	11	10
	H. Dowa, Kasungu, Mchinji, Mwanza, Zomba, or Zomba City	21	18	21
	I. Blantyre, Lilongwe City, or Mulanje	8	9	8
	J. Blantyre City, Lilongwe, or Mzuzu City	14	16	15
2. How many members does the household have?	A. Seven or more	18	18	13
	B. Six	12	13	13
	C. Five	16	16	17
	D. Four	18	18	20
	E. Three	17	17	19
	F. Two	12	10	11
	G. One	8	7	7
3. What does the household head sleep under in the hot season (October)?	A. *Chitenje* cloth, fertilizer or grain sack, clothes, nothing, or other	42	36	33
	B. Blanket only	27	25	27
	C. Blanket and sheets, or only sheets	31	39	40
4. In the past twelve months, did the male head (or the husband of the female head) engage in casual, part-time, or *ganyu* labour, even for only one hour?	A. Yes	21	N/A	27
	B. No male head (and female head has no husband in the household)	28	N/A	36
	C. No	51	N/A	37
5. Is the female head (or the eldest wife of male head) able to read and write in Chichewa or English?	A. No	51	45	38
	B. Only Chichewa	25	27	30
	C. No female head (and male head has no wife in HH)	7	6	7
	D. Only English, or both English and Chichewa	17	21	25
6. The roof of the main dwelling is predominantly made of what material? (*Observe and record*)	A. Grass	74	65	51
	B. Iron sheets, clay tiles, concrete, plastic sheeting, or other	26	35	49
7. Does the household own a table?	A. No	65	68	73
	B. Yes	34	22	27
8. How many beds does the household own?	A. None	70	65	66
	B. One	20	22	20
	C. Two or more	10	14	14
9. Does the household currently own any *panga* knives?	A. No	37	48	51
	B. Yes	63	51	49
10. How many working cell phones in total does the household own?	A. None	N/A	64	52
	B. One	N/A	23	29
	C. Two or more	N/A	13	18

This informative table is not a scorecard. It accompanies the preceding note of warning against hybrid estimates of change. Source: Malawi's 2004/5, 2010/11, and 2016/17 IHS

Scorocs® Simple Poverty Scorecard® Tool
Malawi

1. Introduction

The Scorocs Simple Poverty Scorecard poverty-assessment tool for Malawi is a low-cost, transparent way for pro-poor programs to get know their participants better and so to prove and improve their social performance.

The scorecard can be used to estimate the likelihood that a participant has consumption below a given poverty line, to estimate participants' poverty rate at a point in time, to estimate the change in participants' poverty rate over time (subject to the severe warning already noted), and to segment participants for differentiated treatment.

The direct approach to poverty assessment via consumption surveys is difficult and costly. A case in point is Malawi's 2016/7 Integrated Household Survey, IHS) by Malawi's National Statistical Office (NSO). The 2016/17 IHS runs about 230 pages and covers more than 1,800 top-level questions, most of which have several follow-up questions or are repeated several times (for example, for each household member or for each type of crop or species of livestock). Enumerators visited a given sampled household two or three times over four days, completing interviews at a rate of about one household per day (NSO, 2010).

In comparison, the scorecard's indirect approach is quick and low-cost. It uses 10 verifiable indicators drawn from the 2016/17 IHS (such as "The roof of the main dwelling is predominantly made of what material?" and "Does the household own a table?"). Responses to the questions are used to get a score that is correlated with consumption-based poverty status as measured by the exhaustive IHS survey.

The scorecard differs from "proxy-means tests" (Coady, Grosh, and Hoddinott, 2004) in that it is transparent, it is freely available,[5] and it is tailored to the capabilities and purposes not of national governments but rather of local pro-poor organizations in Malawi. The feasible poverty-assessment options for such organizations are typically blunt (such as rules based on land ownership or housing quality) or subjective and relative (such as participatory wealth ranking facilitated by skilled field workers). Poverty estimates from these approaches may be costly, their accuracy is unknown, and they are not comparable across places, programs, nor time.

The scorecard is a low-cost, consumption-based, quantitative way to estimate the share of a program's participants who are below a given poverty line. Examples of such poverty lines include, Malawi's national line and the World Bank's "international extreme poverty line" of $1.90/day/person 2011 PPP). The scorecard can also be used to estimate changes in poverty rates (subject to the warning against hybrid estimates). While consumption surveys are costly even for governments, some pro-poor

[5] Malawi's scorecard is not in the public domain; it is copyright © 2019 Scorocs.

organizations may be able to implement the low-cost scorecard to help with monitoring poverty and (if desired) segmenting clients for differentiated treatment.

The scorecard's technical approach aims to be understood by non-specialists. After all, if program managers are to adopt the scorecard on their own and apply it to inform their decisions, then they must first trust that it works. Transparency and straightforwardness build trust. Getting "buy-in" matters; proxy-means tests and regressions on the "determinants of poverty" have been around for decades, but they are rarely used to inform decisions by pro-poor organizations. This is not because these tools do not work, but because they are often presented (when they are presented at all) as tables of regression coefficients incomprehensible to non-specialists (with cryptic indicator names such as "`LGHHSZ_2`" and with points with negative values and many decimal places). Thanks to the predictive-modeling phenomenon known as the "flat maximum", approaches that are straightforward and transparent are usually about as accurate as approaches that are complex and opaque (Schreiner, 2012a; Caire and Schreiner, 2012).

Beyond its low cost and transparency, the scorecard's technical approach is innovative in how it associates scores with poverty likelihoods, in the extent of its accuracy tests, and in how it derives formulas for standard errors. Although the accuracy tests are straightforward and commonplace in statistical practice and in the for-profit field of credit-risk scorecards, the tests are rarely applied to poverty-assessment tools.

The scorecard is based on data from Malawi's 2016/17 IHS. Indicators are selected to be:

- Inexpensive to collect, easy to answer quickly, and straightforward to verify
- Strongly correlated with socio-economic status
- Liable to change over time as socio-economic status changes
- Applicable in all districts of Malawi

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 or on hand-held devices in the field in about ten minutes.

The scorecard can be used to estimate three basic quantities. First, it can estimate the *poverty likelihood* of a particular participant's household. This the probability that the household has per-capita consumption below a given poverty line.

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

Third, the scorecard can estimate annual changes in poverty rates (subject to the warning already noted). With two independent samples of participants' households from the same population, this is the difference in the average estimated poverty likelihood in the baseline sample versus the average estimated likelihood in the follow-up sample, divided by the difference (in years) between the average interview date in the baseline sample and the average interview date in the follow-up sample.

With one sample in which each participant's household is scored twice, the estimate of the annual change in a poverty rate is the sum of the changes in each household's estimated poverty likelihood from baseline to follow-up, divided by the sum of years between each household's pair of interviews (Schreiner, 2014a).

The scorecard can also be used to segment participants for differentiated treatment. To help pro-poor programs choose appropriate targeting cut-offs for their purposes, targeting accuracy is reported for a range of possible cut-offs.

This paper presents a single scorecard whose indicators and points are based on 100% of the national poverty line and data from a random sample of about three-fifths of households in the 2016/17 IHS. Scores from this one scorecard are calibrated with this same three-fifths of households from the IHS to poverty likelihoods for 19 poverty lines. Data from the other two-fifths of households in the 2016/17 IHS is used to validate the scorecard's accuracy for estimating households' poverty likelihoods, for estimating poverty rates for a population of participant's households at a point in time, and for segmenting participants.

Given their assumptions, all three scorecard-based estimators (the poverty likelihood of a participant's household, the poverty rate at a point in time of a population of participants' households, and the change in the poverty rate over time of a population of participants' households) are *unbiased*. That is, the true value matches the average of estimates in repeated samples from a single, unchanging population in which the relationship between scorecard indicators and socio-economic status is

unchanging. Like all predictive models, the scorecard has estimation errors when applied (as in this paper) to a validation sample. Furthermore, it makes errors to some unknown extent when applied (in practice) to a different population or when applied after 2016/17 (because the relationships between indicators and poverty change over time and across populations).[6] As already explained in the warning note, hybrid estimates of change over time for Malawi with a baseline from an old scorecard and a follow-up from the new scorecard should *not* be used.

Thus, while the indirect-scorecard approach is less costly than the direct-survey approach, the scorecard has estimation 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 socio-economic status in all populations will be the same as in the construction data. Of course, this assumption—inevitable in predictive modeling—holds only partly.

The average error in the scorecard's estimated poverty rate at a point in time (that is, the average of differences between estimated and observed values across 1,000 bootstrap samples of $n = 16{,}384$ from the validation sample) for 100% of the national poverty line is +0.0 percentage points. The average across all 19 poverty lines of the absolute values of the average error is about 0.3 percentage points, and the maximum

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

of the absolute values of the average error is 0.7 percentage points. These estimation errors are due to sampling variation, not bias; the average error would be zero if the whole 2016/17 IHS were to be repeatedly re-fielded and re-divided into sub-samples before repeating the entire process of constructing and validating the resulting scorecards.

With $n = 16{,}384$, the 90-percent confidence intervals are ± 0.6 percentage points or smaller. For $n = 1{,}024$, the 90-percent intervals are ± 2.2 percentage points or smaller.

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

The "Interview Guide" (found after the "References") tells how to ask questions—and how to interpret responses—so as to mimic practice in Malawi's 2016/17 IHS as closely as possible. The "Interview Guide" (and the "Back-page Worksheet") are integral parts of the scorecard for Malawi.

2. Data and poverty lines

This section presents the data used to construct and validate the scorecard. It also documents the definition of *poverty* as well as the 19 poverty lines to which scores are calibrated.

2.1 Data

Questions and points for the scorecard are selected (*constructed*) based on data from a random three-fifths of the 12,447 households in the 2016/17 IHS, Malawi's most-recent national household consumption survey. These same three-fifths of households are also used to associate (*calibrate*) scores with poverty likelihoods for all poverty lines.

Data from the other two-fifths of households from the 2016/17 IHS is used to test (*validate*) the scorecard's accuracy for point-in-time estimates of poverty rates *out-of-sample*, that is, with data that is not used in construction or calibration. Data from those same two-fifths of households are also used to test out-of-sample targeting accuracy.

The 2016/17 IHS was in the field from 15 April 2016 to 30 April 2017. Consumption is in average prices for Malawi as a whole in April/May 2016.

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, all members in a given household have the same poverty status (or estimated poverty likelihood).

2.2.1 Household-level estimates

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

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

[7] The examples here assume simple random sampling at the household level. This means that each household has the same selection probability and thus the same household-level sampling weight, taken here to be one (1).

weight, and the "0" represents the second household's poverty status (non-poor) or its estimated poverty likelihood. The "$1 + 1$" in the denominator is the sum of the household-level sampling weights of the two households. Household-level sampling weights are used because the unit of analysis is the household.

2.2.2 Person-level estimates

Alternatively, a person-level poverty rate is relevant if a program defines all people in the 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) for households with participants, that is, $\frac{3 \cdot 1 + 4 \cdot 0}{3 + 4} = \frac{3}{7} = 0.43 = 43$ percent. In the "$3 \cdot 1$" term in the numerator, the "3" is the first household's person-level sampling 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 person-level sampling 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 person-level sampling weights of the two households. Person-level sampling weights are used because the unit of analysis is the household member.

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

2.2.3 Participant-level estimates

As a final example, a pro-poor 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 estimated person-level poverty rate is then the participant-weighted average[9] of the poverty statuses (or estimated poverty likelihoods) of households with participants, that is,

$\frac{1 \cdot 1 + 2 \cdot 0}{1 + 2} = \frac{1}{3} = 0.33 = 33$ percent. The first "1" in the "$1 \cdot 1$" in the numerator is the first household's participant-level sampling 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 participant-level sampling 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 participant-level sampling weights of the two households. Participant-level sampling weights are used because the unit of analysis is the participant.[10]

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 scorecard-based estimates, organizations should clearly state the unit of

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

[10] If all households with participants have (or are assumed to have) one participant each, then the participant-level poverty rate is the same as the household-level rate.

analysis—whether households, household members, or participants—and explain why that unit is relevant.

Table 1 reports poverty lines and poverty rates for households and people in the 2012 HSES for Malawi as a whole and for each Malawi's 31 districts by urban/rural/all.

Household-level poverty rates are reported because—as shown above— sampling is almost always done at the level of households and because household-level poverty likelihoods can be straightforwardly converted into poverty rates for other units of analysis. 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 Malawi. Furthermore, popular discussions and policy discourse usually proceed in terms of person-level rates, and the goal of pro-poor programs is to help people (not households) to improve their well-being.

2.3 Definition of *poverty*, and poverty lines

A household's *poverty status* as poor or non-poor depends on whether its per-capita consumption (MWK per person per day) is below a given poverty line. Thus, a definition of *poverty* is a poverty line together with a measure of consumption. NSO and World Bank (2018, pp. 4–13) document Malawi's definition of consumption.

Because pro-poor programs in Malawi may want to use different or various poverty lines, this paper calibrates scores from its single scorecard to poverty likelihoods for 19 lines:

- Food line
- 100% of the national line
- 150% of the national line
- 200% of the national line
- $1.25/day 2005 PPP
- $2.00/day 2005 PPP
- $2.50/day 2005 PPP
- $5.00/day 2005 PPP
- $8.44/day 2005 PPP
- $1.90/day 2011 PPP
- $3.20/day 2011 PPP
- $5.50/day 2011 PPP
- $21.70/day 2011 PPP
- First-decile (10^{th}-percentile) line
- First-quintile (20^{th}-percentile) line
- Second-quintile (40^{th}-percentile) line
- Median (50^{th}-percentile) line
- Third-quintile (60^{th}-percentile) line
- Fourth-quintile (80^{th}-percentile) line

2.3.1 National poverty lines

Following the cost-of-basic-needs approach (Ravallion, 1998), the national poverty line is first defined for the 2004/5 IHS as the sum of a food component plus a non-food component. The food line[11] is the cost of 2,400 Calories from a food basket consumed by people in the fifth and sixth deciles of the distribution of per-capita aggregate household consumption in the 2004/5 IHS (World Bank, 2005). Before adjusting for price differences across four regions[12] and across the months of the 2004/5 IHS field work, this figure is MWK27.48. Because the average region-month price deflator is not 1.0000 but 0.99163, the average food line for Malawi as a whole in prices in February/March 2004 after price adjustments is 27.48·0.99163 = MWK27.25 (Schreiner, 2011).

This food line for the 2004/5 IHS is updated for use with the 2010/11 IHS according to price changes between the 2004/5 and 2010/11 IHS rounds (2.289, NSO, 2015; Schreiner, 2015a). Assuming average region-month price differences of 1.0000 gives 27.48·2.289 = MWK62.90. Accounting for average region-month price differences in the 2010/11 IHS field work (0.93051), the food line in average prices for Malawi as a whole in February/March 2010 is 27.48·2.289·0.93051 = MWK58.52 per person per day.

This food line for 2010/11 is updated for the 2016/17 IHS by accounting for price changes between the 2010/11 IHS and the 2016/17 IHS. NSO and World Bank (2018) report an inflation factor of 3.714, but the actual factor—given that the average region-

[11] NSO calls this the *ultra poverty line*.
[12] North, Central, South, and Urban (Lilongwe, Blantyre, Mzuzu, and Zomba)

month price deflators in 2010/11 and 2016/17 are not 1.0000—is 4.095. In average prices for Malawi as a whole in April/May 2016, the food line is 58.52·4.095 = MWK239.64 per person per day (Table 1), with a household-level poverty rate of 15.9 percent and a person-level rate of 20.1 percent.

The national poverty line[13] (usually called here "100% of the national line") is then this food line, plus a non-food component defined as a weighted average[14] of the non-food consumption of the ten percent of people in the 2004/5 IHS whose food consumption is centered on the food line. Before adjusting for region-month price differences in 2004/5, this figure is MWK44.29. Given that the average price adjustment is not 1.0000 but rather 0.99163, the actual national line in prices for Malawi as a whole in February/March 2004 is 44.29·0.99163 = MWK43.92 per person per day.

This is updated for the 2010/11 IHS according to price changes between the 2004/5 IHS and the 2010/11 IHS (228.9 percent, NSO, 2015; Schreiner, 2015a), giving 44.29·2.289 = MWK101.38. After adjusting for region-month price differences, the national line in average prices for Malawi as a whole in February/March 2010, is 101.38·0.93051 = MWK94.33 per person per day. The ratio of the national lines between 2004/5 and 2010/11 is not 2.289 but rather 94.33 ÷ 43.92 = 2.148.

When updating the national line for 2010/11 to 2016/17, NSO and World Bank (2018) report an inflation factor of 3.714. This assumes average region-month factors of 1.0000, but the actual factors give 4.095. Thus the national line in average prices for

[13] NSO calls this *the poverty line*.
[14] Weights are greater for people whose food consumption is closer to the food line.

Malawi as a whole in April/May 2016 is 94.33·4.095 = MWK386.28 per person per day (Table 1), with a household-level poverty rate of 44.7 percent and a person-level rate of 51.5 percent.[15]

2.3.2 International 2005 PPP poverty lines

International 2005 PPP lines are derived from:

- 2005 PPP exchange rate for Malawi for "individual consumption expenditure by households":[16] MWK56.922 per $1.00
- Average All-Malawi person-level price deflator in the 2016/17 IHS: 1.02588
- Average All-Malawi person-level $1.25/day 2005 PPP line in February/March 2004 (Schreiner, 2015a): MWK62.37
- Ratio of the national line in the 2010/11 and 2004/5 IHS: 2.148[17]
- Ratio of the national line in the 2016/17 and 2010/11 IHS: 4.095

The changes in Malawi's national poverty line are used as price deflators instead of the changes in the Consumer Price Index because the accuracy of Malawi's CPI is doubtful (Pauw, Beck, and Mussa, 2016; NSO, 2015). This paper follows NSO and World Bank (2018) by using the ratios of national lines as price deflators, but this paper differs by not assuming that the average region-month factors for a given IHS round are 1.0000.

[15] NSO and World Bank (2018, p. 16) report this same person-level poverty rate for the national line, suggesting that it uses the same data and calculations as this paper, even though they report an inaccurate average poverty line.

[16] iresearch.worldbank.org/PovcalNetPPP2005/Detail.aspx?Format=Detail&C0=MWI_3&PPP0=56.92&PL0=1.25&Y0=2010.23&NumOfCountries=1, retrieved 10 June 2019.

[17] As shown above, these ratios differ from NSO and World Bank (2018) by not assuming that the person-level average price factors for IHS rounds are 1.0000.

Given these parameters and the household-specific region/month price deflators in the 2016/17 microdata, the $1.25/day 2005 PPP line for a given household in the 2016/17 IHS is

$$\$1.25\,/\,\text{day 2005 PPP line in the 2004/5 IHS} \cdot 2.148 \cdot 4.095 \cdot \left(\frac{\text{HH Deflator}_{2016/17}}{\text{Ave. Deflator}_{2016/17}} \right).$$

Give that the person-level average of the last term in the above equation for Malawi as a whole is 1.0000 by definition, the average $1.25/day 2005 PPP line for Malawi as a whole in prices in April/May 2016 is MWK62.37·2.148·4.095 = MWK548.61 (Table 1). This gives a household-level poverty rate of 66.6 percent and a person-level poverty rate of 72.4 percent.

The lines and rates for $1.25/day here cannot be compared with those of the World Bank's PovcalNet[18] because PovcalNet does not report $1.25/day figures for the 2016/17 IHS.

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

$8.44/day is the 75th percentile of worldwide per-capita income (not consumption) as estimated by Hammond *et al.* (2007). The $8.44/day 2005 PPP line is used by the International Finance Corporation as a benchmark for the "bottom of the pyramid". While the $1.25 2005 PPP standard is in prices in calendar-year 2005, the

[18] `iresearch.worldbank.org/PovcalNetPPP2005/`, retrieved 10 June 2019.

$8.44 2005 PPP standard is in prices in calendar-year 2010.[19] Given the parameters above, an average CPI for calendar-year 2010 of 100.001, and an average CPI for February/March of 2010 of 105.203,[20] the all-Malawi $8.44/day 2005 PPP line is

$$\$1.25 \cdot 2005\text{ PPP factor} \cdot 8.44 \cdot \left(\frac{105.203}{100.001}\right) \cdot 4.095 \cdot \left(\frac{\text{HH Deflator}_{2016/17}}{\text{Ave. Deflator}_{2016/17}}\right).$$

Given that the person-level average of the last term above is 1.0000 by definition, the average $8.44/day 2005 PPP line for Malawi as a whole in prices in April/May 2016 is 56.922·8.44·(105.203/100.001)·4.095 = MWK2,070 (Table 1). This gives a household-level poverty rate of 97.8 percent and a person-level poverty rate of 98.6 percent.

2.3.3 International 2011 PPP poverty lines

International 2011 PPP lines are derived from:

- 2011 PPP exchange rate for Malawi for "individual consumption expenditure by households":[21] MWK78.017 per $1.00
- PovcalNet's $1.90/day 2011 PPP line for the 2010/11 IHS of MWK141.68 per person per day[22]

[19] `datatopics.worldbank.org/consumption/detail#consumptionsegments` and `datatopics.worldbank.org/consumption/detail#datastandardization`, both retrieved 10 June 2019.
[20] `data.imf.org/regular.aspx?key=61545861`, retrieved 10 November 2017. The CPI is used here due to the absence of an alternative for estimating changes in prices.
[21] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&CO=MWI_3&PPPO=78.017&PLO=1.90&YO=2016&NumOfCountries=1`, retrieved 10 June 2019.
[22] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&CO=MWI_3&PPPO=78.017&PLO=1.90&YO=2010&NumOfCountries=1`, retrieved 10 June 2019.

For the 2016/17 IHS, the World Bank's PovcalNet reports a line of MWK526 per person per day and a corresponding person-level poverty rate of 70.3 percent.[23]

This 2016/17 line can be derived as PovcalNet's line for the 1997/8 IHS of MWK17.81[24], multiplied by the ratios of changes in the national lines between the next three IHS rounds (3.476, 2.289, and 3.714, all based incorrectly on average region-month price deflators of 1.0000). This implies $1.90/day lines of MWK61.90 for 2004/5, MWK141.68 for 2010/11, and 526.20 for 2016/17. Of course, this process must start from somewhere. That is, it requires deriving one $1.90/day line for one IHS round before any of the three others. PovcalNet does report how it does this.

To minimize possible inaccuracies due to Malawi's CPI, it is sensible to start with the $1.90/day line for the IHS round closest in time to calendar-year 2011 (average CPI of 107.201). By this logic, PovcalNet would start with the $1.90/day line for the 2010/11 IHS in prices in February/March 2010 (average CPI of 105.203). This gives an average all-Malawi 2010/11 $1.90/day line of $78.017 \cdot 1.90 \cdot (105.203 \div 107.201) =$ MWK145.47.

In fact, PovcalNet's line for 2010/11 is MWK141.68,[25] implying that PovcalNet used an average CPI for February/March 2010 of 102.46, not the IMF's 105.203.

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[23] iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&CO=MWI_3&PPP0=78.017&PL0=1.90&Y0=2016&NumOfCountries=1, retrieved 10 June 2019.
[24] iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&CO=MWI_3&PPP0=78.017&PL0=1.90&Y0=1997&NumOfCountries=1, retrieved 10 June 2019.
[25] iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&CO=MWI_3&PPP0=78.017&PL0=1.90&Y0=2010&NumOfCountries=1, retrieved 10 June 2019.

Given the doubts about Malawi's CPI, this paper adopts PovcalNet's 2010/11 line of MWK141.68 as its starting point. It then derives the 2016/17 $1.90/day line by multiplying the 2010/11 line by the ratio of national lines in the two survey rounds, accounting—unlike PovcalNet—for actual average region-month price deflators. The gives 141.68·4.095 = MWK580.20, giving a household-level poverty rate of 70.1 percent and a person-level poverty rate of 75.6 percent (Table 1, compared with 70.3 percent for PovcalNet with a line of MWK526).[26]

While both the line used here and the line in PovcalNet are probably imperfect, the line here is to be preferred: its derivation is documented (as argued in Schreiner, 2014b), and it uses correct average region-month price deflators.[27]

The 2011 PPP poverty lines for $3.20/day, $5.50/day, and $21.70/day are multiples of the $1.90/day line.[28]

[26] iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&CO=MWI_3&PPPO=78.017&PLO=1.90&YO=2016&NumOfCountries=1, retrieved 10 June 2019.
[27] For the 2010/11 IHS, this paper and PovcalNet use the same $1.90/day line, but they find different person-level poverty rates (71.4 versus 71.7 percent). This reason for this is unknown, but it is known that PovcalNet sometimes does not apply region-month price deflators. Of course, if it makes sense to adjust for prices across countries (the purpose of international 2011 PPP lines in the first place) and to adjust PPP factors over time, then it also makes sense to adjust for prices across regions within a given country and across the months of field work for a given survey.
[28] Jolliffe and Prydz (2016) discuss the World Bank's choice of the four 2011 PPP lines.

2.3.4 Percentile-based poverty lines

The scorecard for Malawi also supports percentile-based poverty lines.[29] This facilitates a number of types of analyses. For example, the second-quintile (40^{th}-percentile) line might be used to help track Malawi's progress toward the World Bank's (2013b) goal of "shared prosperity/inclusive economic growth", defined as income growth among the bottom 40 percent of the world's people.

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

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

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

[29] Following the asset index associated with the Demographic and Health Surveys, percentiles are defined in terms of people (not households) for Malawi as a whole. For example, the all-Malawi person-level poverty rate for the first-quintile (20^{th}-percentile) poverty line is 20 percent (Table 1). The household-level poverty rate for that same line is not 20 percent but rather 15.8 percent.

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

In contrast, an asset index opaquely defines *poverty* in terms of its own questions and points, without reference to an external standard. This means that two asset 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 Malawi, about 70 candidate indicators are initially prepared in the areas of:

- Household composition (such as the number of household members)
- Education (such as whether the female head (or the eldest spouse of the male head) is able to read and write in Chichewa or English)
- Housing (such as the material of the roof)
- Ownership of consumer durables (such as tables and beds)
- Location of residence (such as the district)
- Agriculture (such as whether the household has any *panga* knives)
- Employment (such as the number of household members who work)

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.[30]

One possible application of the scorecard is to estimate changes in poverty rates over time. Thus, when selecting indicators—and holding other considerations constant—preference is given to more sensitive indicators. For example, the number of beds owned is probably more likely to change in response to changes in socio-economic status than is the age of the male head (or the husband of the female head.

The scorecard itself is built using 100% of the national poverty line and Logit regression on the construction sub-sample. Indicator selection is based on both judgment and statistics. The first step is to use Logit to build one scorecard for each candidate indicator. The power of each one-indicator scorecard to rank households by poverty status is assessed via the concentration index (Ravallion, 2009).

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

One of these one-indicator scorecards is then selected based on several factors (Schreiner *et al.*, 2014; Zeller, 2004). These include improvement in accuracy, likelihood of acceptance by users (determined by simplicity, cost of collection, and "face validity" in terms of experience, theory, and common sense), sensitivity to changes in consumption, variety among types of indicators, applicability across regions, tendency to have a slow-changing relationship with socio-economic status 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 stage. The best two-indicator scorecard is then selected, again using judgment to balance statistical accuracy with the non-statistical criteria. These steps are repeated until the scorecard has 10 indicators that work well together.

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

This algorithm is similar to common R^2-based stepwise least-squares regression. It differs from naïve stepwise in that the selection of indicators considers both statistical[31] and non-statistical criteria. The use of non-statistical criteria can improve robustness through time and across non-nationally representative groups. It also helps ensure that indicators are straightforward, common-sense, inexpensive-to-collect, and acceptable to users.

The single scorecard here applies to all of Malawi. Segmenting poverty-assessment tools by urban/rural does not improve targeting accuracy much. This is reported for Malawi and eight other countries in Sub-Saharan Africa (Brown, Ravaillon, and van de Walle, 2018)[32], Indonesia (World Bank, 2012), Bangladesh (Sharif, 2009), India and Mexico (Schreiner, 2006 and 2005a), Sri Lanka (Narayan and Yoshida, 2005), and Jamaica (Grosh and Baker, 1995). In general, segmenting poverty-assessment tools may improve the accuracy of estimates of poverty rates (Diamond *et al.*, 2016; Tarozzi and Deaton, 2009), but it may also increase the risk of overfitting (Haslett, 2012).

[31] 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.
[32] Burkina Faso, Ethiopia, Ghana, Mali, Niger, Nigeria, Tanzania, and Uganda. On average across these countries when targeting people in the lowest quintile or in the lowest two quintiles of scores and when 20 or 40 percent of people are poor, segmenting by urban/rural increases the number of poor people successfully targeted by about one per 200 or one per 400 poor people.

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 and properly used (Schreiner, 2005b). When scorecard projects fail, the reason is not usually statistical inaccuracy but rather the failure of an organization to decide to do what is needed to integrate the scorecard in its processes and to train and convince its employees to use the scorecard properly (Schreiner, 2002). After all, most reasonable poverty-assessment tools have similar targeting accuracy, thanks to the empirical phenomenon known as the "flat maximum".[33] The relevant bottleneck is less technical and more human, not statistics but organizational-change management. Accuracy is easier to achieve than adoption.

The scorecard for Malawi 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 careful attention to the results if, in their view, the scorecard does not imply a lot of additional work and if the whole process generally make sense to them.

[33] Dupriez, 2018; 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.

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

- Ten indicators
- Multiple-choice responses
- Simple points (non-negative integers, and no arithmetic beyond addition)

4.1 How to apply the scorecard in the field

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

- Record the interview identifier, interview date, country code ("MWI"), scorecard code ("003") and the sampling weight assigned to the household of the participant by the organization's survey design (if known)
- Record the names and identifiers of the participant (who is not necessarily the same as the respondent), of the field agent (if there is one) who is the participant's main point of contact with the organization (and who is not necessarily the same as the enumerator), and of the organizational service point that is relevant for the participant (if there is such a service point)
- Mark the response to the first scorecard question ("In what district does the household reside?") based on what is known about where the interviewed household lives
- Complete the "Back-page Worksheet" with each household member's first name (or nickname), marking the male head (or the husband of the female head), if he exists, and marking the female head (or the eldest wife of the male head), if she exists
- Based on the "Back-page Worksheet", record the number of household members in the scorecard header next to "Number of household members:"
- Based on the "Back-page Worksheet", mark the response to the second scorecard question ("How many household members are there?")
- Read the third, fourth, and fifth questions aloud, marking the respondent's answers

- Record the answers to the sixth question about the predominant material of the floor of the main dwelling based on the enumerator's own observation. This question should be asked directly of the respondent only if the response is not obvious to the enumerator
- Read the rest of the scorecard questions to the respondent one-by-one, marking the answers
- For all questions, write each point value in the far right-hand column, and circle the pre-printed response, the pre-printed points, and the hand-written points
- Add up the points to get a total score (if desired)
- Implement targeting policy (if any) based on the score
- Upload the data with a mobile data-collection tool, or deliver the paper scorecard to a central office for data entry and analysis

Of course, field workers must be trained. The quality of outputs depends on the quality of inputs. The training of field workers should be based solely on the "Interview Guide" found after the "References" in this document.

If organizations or field workers gather their own data and if they 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).[34] IRIS Center (2007) and Toohig (2008) are useful nuts-and-bolts guides for logistics, budgeting, training field workers and supervisors, sampling, interviewing, piloting, recording data, and

[34] If a program does not want field workers or respondents to know the points associated with responses, then it can use a mobile data-collection tool or provide a version of the paper 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 answers 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.

controlling quality. Schreiner (2014a) explains how to compute estimates and analyze them.

While collecting scorecard indicators is relatively easier than alternative ways of assessing poverty, it is still absolutely difficult. Training and explicit definitions of the terms and concepts in the scorecard are essential, and field workers should scrupulously study and follow the "Interview Guide" found after the "References" section in this paper, as this "Interview Guide"—along with the "Back-page Worksheet"—is an integral part of the scorecard.[35]

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. Yet Grosh and Baker (1995) suggest that gross underreporting of assets does not affect targeting. For the first stage of targeting in a conditional cash-transfer program in Mexico, Martinelli and Parker (2007, pp. 24–25) find that "under-reporting [of asset ownership] is widespread but not overwhelming, except for a few goods . . . [and] over-reporting is common for a few goods". Still, as is done in Mexico in the second stage of its targeting process, most false self-reports can be corrected (or avoided in the first place) by field workers who make a home visit. This is the recommended procedure for programs that use the scorecard for targeting in Malawi.

[35] The guidelines here are the only ones that organizations should give to enumerators. All other issues of interpretation should be left to the judgment of enumerators and respondents, as this seems to be what Malawi's NSO did in the 2016/17 IHS.

4.2 Survey-design choices

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

- Who will do the interviews
- Where interviews will be done
- How responses and scores will be recorded
- Which participants' households will be interviewed
- How many participants' households will be interviewed
- How frequently participants' households will be interviewed
- Whether the scorecard will be applied at more than one point in time
- Whether the same participants' households will be scored more than once

In general, the sampling design should follow from the organization's goals for the survey, the questions to be answered, and the budget. The broad goals are:

- To make sure that the sample is representative of a well-defined population
- To inform issues that matter to the organization

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

- Employees of the organization
- Third parties

There is only one correct, recommended way to do interviews: in-person, at the sampled household's residence, with an enumerator trained to follow the "Interview Guide". This is how the NSO did interviews in Malawi's 2016/17 IHS, and this provides the most-accurate and most-consistent data (and thus the best estimates).

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

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

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

In some contexts—such as when an organization's field agents do not already visit participants periodically at home anyway as part of their normal work—an organization might judge that the lower costs of a non-recommended approach compensate for less-accurate estimates. The business wisdom of non-recommended methods depends on context-specific factors that each organization must judge for itself. To judge carefully, an organization that is considering a non-recommended method should do a small test to see how responses differ with the non-recommended method versus with a trained enumerator at the residence. Furthermore, any reporting should note the use of the non-recommended method and discuss its possible consequences.

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

- Paper in the field, and then filed at a central office
- Paper in the field, and then keyed into a database or spreadsheet at a central office
- Mobile devices in the field, and then uploaded to a database[36]

Given a population of participants relevant for a particular business question, the participants whose households will be interviewed can be:

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

If not determined by other factors, the number of participants whose households are to be interviewed can be derived from sample-size formulas (presented later) to achieve a desired confidence level and a desired confidence interval. To have the best 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 informing issues that matter to the organization. In practice, errors due to implementation issues and due to interviewing a non-representative sample can easily swamp errors due to having a somewhat smaller sample size.

[36] Scorocs, L.L.C. can help set up a system to collect data with mobile devices or to capture data in a database at the office once paper forms come in. Support is also available for calculating estimates as well as for reporting and analysis.

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 agent visits a participant at home (allowing estimating change)

If a scorecard is applied more than once in order to estimate changes in poverty rates over time, then it can be applied:

- With two independent samples of participants from the same population, with the first sample scored at baseline and the second sample scored at follow-up
- With a single sample of participants, all of whom are scored at both baseline and follow-up

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 scorecard for Bangladesh (Schreiner, 2013a) with a sample of about 25,000 participants. Their design is that all loan officers in a random sample of branches score all participants each time the loan officers visit a homestead (about once a year) as part of their standard due diligence prior to loan disbursement. The loan officers record responses on paper in the field before sending the forms to a central office to be entered into a database and converted to poverty likelihoods.

5. Estimates of a household's poverty likelihood

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

To get absolute units, scores are converted to *poverty likelihoods*, that is, probabilities of being below a poverty line. This is done via easy-to-use look-up tables. For the example of 100% of the national poverty line, scores of 36–37 have a poverty likelihood of 56.3 percent, and scores of 38–39 have a poverty likelihood of 50.4 percent (Table 3).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 36–37 are associated with a poverty likelihood of 56.3 percent for 100% of the national poverty line but of 87.8 percent for the $1.90/day 2011 PPP line.[37]

[37] From Table 3 on, many tables have 19 versions, one for each of the 19 supported poverty lines. To keep them straight, tables are grouped by line. Single tables relevant for all lines appear with the first group of tables for 100% of the national poverty line.

5.1 Calibrating scores with poverty likelihoods

A given score is associated ("calibrated") with an estimated *poverty likelihood* that is defined as the share of households in the construction sub-sample who have the score and who have per-capita consumption below a given poverty line.

For the example of 100% of the national poverty line and a score of 36–37 (Table 4), there are 5,175 (normalized) households in the construction sample. Of these, 2,912 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 36–37 is then 56.3 percent, because 2,912 ÷ 5,175 = 56.3 percent.

To illustrate with 100% of the national poverty line and a score of 38–39, there are 5,644 (normalized) households in the construction sub-sample, of whom 2,844 (normalized) are below the line (Table 4). The poverty likelihood for this score range is then 2,844 ÷ 5,644 = 50.4 percent.

The same method is used to calibrate scores with estimated poverty likelihoods for all 19 poverty lines.[38]

Even though the scorecard is constructed partly based on judgment related to non-statistical criteria, the calibration process produces poverty likelihoods that are objective, that is, derived from monetary poverty lines and from survey data on consumption. The calibrated poverty likelihoods would be objective even if the process

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

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.[39] 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 Malawi's scorecard are transformed coefficients from a Logit regression, (untransformed) scores are not converted to poverty likelihoods via the Logit formula of 2.718281828^{score} x $(1 + 2.718281828^{score})^{-1}$. This is because the Logit formula is esoteric and difficult to compute by hand. It is more intuitive to define the poverty likelihood as the share of households with a given score in the construction 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.

[39] Fuller, 2006; Caire, 2004; Schreiner *et al.*, 2014.

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 samples of households who are representative of the same population as that 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 of the estimates matches the population's true value. Given the assumptions above, the scorecard also produces unbiased estimates of poverty rates at a point in time and unbiased estimates of changes in poverty rates between two points in time.[40]

Of course, the relationships between indicators and poverty do change to some unknown extent over time, and they also vary across sub-national groups in Malawi's population. Thus, scorecard estimates will generally have errors when applied after April 2017 (the last month of field work for the 2016/17 IHS) or when applied with sub-groups that are not nationally representative.

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

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

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

For each score range and for $n = 16{,}384$, Table 5 shows the errors in the estimates of poverty likelihoods, that is, the average of differences between estimates and observed values. It also shows confidence intervals for the errors.

For 100% of the national line and on average across bootstrap samples from the validation sample, the estimated poverty likelihood for scores of 36–37 (56.3 percent, Table 3) is too high by 4.0 percentage points. For scores of 38–39, the estimate is too low by 1.5 percentage points.[41]

[41] These differences are not zero, in spite of the estimator's unbiasedness, because the scorecard is based on a single sample. The average difference by score would be zero if

The 90-percent confidence interval for the differences for scores of 36–37 is ±3.4 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 +0.6 and +7.4 percentage points (because +4.0 – 3.4 = +0.6, and +4.0 + 3.4 = +7.4). In 950 of 1,000 bootstraps (95 percent), the difference is +4.0 ± 4.1 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is +4.0 ± 5.0 percentage points.

A few of the absolute errors between estimated and observed poverty likelihoods in Table 5 for 100% of the national line are large. The differences are at least partly due to the fact that the validation sample is a single sample that—thanks to sampling variation—differs in distribution from the construction sub-sample and from the population of Malawi. For targeting, however, what matters is less the difference in all score ranges and more the differences in the score ranges just above and just below the targeting cut-off. This mitigates the effects of error and sampling variation on targeting (Friedman, 1997). Section 8 below looks at targeting accuracy in detail.

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

In addition, if estimates of populations' poverty rates are to be usefully accurate, then errors across individual households' poverty likelihoods must largely balance out. As discussed in the next section, this is generally the case for nationally representative samples in 2016/17 in Malawi, although it will hold less well for samples from sub-national populations and in other time periods.

Another possible source of errors between estimates and observed values is overfitting. The scorecard here is unbiased, but it may still be *overfit* when applied after the end of the IHS field work in April 2017. That is, the scorecard may fit the construction data from 2016/17 so closely that it captures not only some real patterns that exist in the population of Malawi but also some random patterns that, due to sampling variation, show up only in the 2016/17 IHS construction sample. Or the scorecard may be overfit in the sense that its accuracy decreases when relationships between indicators and poverty change over time or when the scorecard is applied to sub-groups that are not nationally representative.

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

Most errors in individual households' likelihoods do balance out in the estimates of poverty rates for nationally representative samples (see the next two sections). Furthermore, at least some of the differences in change-over-time estimates come from

non-scorecard sources such as changes in the relationships between indicators and poverty, sampling variation, changes in poverty lines, inconsistencies in data quality over time, and imperfections in price adjustments over 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 2021 and that they have scores of 20, 30, and 40, corresponding to estimated poverty likelihoods of 89.8, 68.3, and 43.9 percent (100% of the national line, Table 3). The population's estimated poverty rate is the households' average poverty likelihood of $(89.8 + 68.3 + 43.9) \div 3 = 67.3$ percent.[42]

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 an estimated poverty likelihood of 68.3 percent. This differs from the 67.3 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, colors in the spectrum, or syllables in a solfège scale. 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

[42] This example assumes simple random sampling (or a census) and analysis at the level of households so that each household's household-level sampling weight is one (1). Weights would differ by household if there were stratified sampling or—as discussed in Section 5—if the analysis were at the level of the person or of the participant.

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

Scores from the scorecard are calibrated with data from the construction sample of the 2016/17 IHS for all 19 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 has to do with the specific look-up table used to convert scores to poverty likelihoods.

6.1 Accuracy of estimated poverty rates at a point in time

For the scorecard applied to 1,000 bootstraps of $n = 16{,}384$ for 100% of the national line, the average error (average difference between the estimate and observed value in the validation sample) for a poverty rate at a point in time is +0.0 percentage points (Table 7, which summarizes Table 6 across all poverty lines). For the 19 poverty lines in the validation sample, the maximum of the absolute values of the error is 0.7 percentage points, and the average of the absolute values of the average errors is about 0.3 percentage points. At least part of these differences is due to sampling variation in the division of the 2016/17 IHS into two sub-samples.

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

line in the validation sample, the error happens to be +0.0 percentage points, so the corrected estimate in the three-household example above is 67.3 – (+0.0) = 67.3 percent. Most errors in Table 7 are not 0.0 percentage points, so the corrected estimate usually differs from the uncorrected estimate.

In terms of precision, the 90-percent confidence interval for a population's estimated poverty rate at a point in time with n = 16,384 is ±0.6 percentage points or smaller for all poverty lines (Table 7). Given the scorecard's standard assumptions, this means that in 900 of 1,000 bootstraps of this size, the estimate (after correcting for the known average error) is within 0.6 percentage points of the observed value.

For example, suppose that the (uncorrected) average poverty likelihood in a sample of n = 16,384 with the scorecard and 100% of the national line is 67.3 percent. Then estimates in 90 percent of such samples would be expected to fall in the range of 67.3 – (+0.0) – 0.6 = 66.7 percent to 67.3 – (+0.0) + 0.6 = 67.9 percent, with the most likely observed value being the corrected estimate in the middle of this range, that is, 67.3 – (+0.0) = 67.3 percent. This is because the original (uncorrected) estimate is 67.3 percent, the average error is +0.0 percentage points, and the 90-percent confidence interval for 100% of the national line in the validation sample with this sample size is ±0.6 percentage points (Table 7).

6.2 Formula for standard errors for estimates of poverty rates

How precise are the point-in-time estimates? Because these estimates are averages, they have (in "large" samples) a Normal distribution and can be characterized by their error (average difference vis-à-vis observed values), together with their standard error (precision, taken as the square root of the sum of the squared differences).

Schreiner (2008) proposes an approach to deriving a formula for the standard errors of estimated poverty rates at a point in time from indirect estimation via a scorecard. 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, Malawi's 2016/17 IHS gives a direct-measure household-level poverty rate for 100% of the national line of $\hat{p} = 44.7$ percent (Table 1).[43] If this measure came from a sample of $n = 16{,}384$ households from a population N of 3,797,313 (the number of households in Malawi in 2016/17 according to the IHS sampling weights), then the finite population correction ϕ is $\sqrt{\frac{3{,}797{,}313 - 16{,}384}{3{,}797{,}313 - 1}} = 0.9978$, which is very close to $\phi = 1$. If the desired confidence level is 90-percent ($z = 1.64$), then the confidence interval $\pm c$ is

$$\pm z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.447 \cdot (1 - 0.447)}{16{,}384}} \cdot \sqrt{\frac{3{,}797{,}313 - 16{,}384}{3{,}797{,}313 - 1}} = \pm 0.635$$

percentage points. If ϕ were taken as 1, then the interval would be ± 0.637 percentage points.

Unlike the 2016/17 IHS, however, the scorecard does not measure poverty directly, so this formula is not applicable. To derive a formula for the scorecard, consider Table 6, which reports empirical confidence intervals $\pm c$ for the errors for the scorecard applied to 1,000 bootstrap samples of various sizes from the validation sample. For example, with $n = 16{,}384$ and 100% of the national line in the validation sample, the 90-percent confidence interval is ± 0.589 percentage points.[44]

[43] This analysis ignores that poverty-rate estimates from the IHS are themselves based on a sample and so have their own sampling distribution.
[44] Due to rounding, Table 6 displays 0.6, not 0.589.

Thus, the scorecard's 90-percent confidence interval with $n = 16{,}384$ is ± 0.589 percentage points, while the interval for direct measurement is ± 0.635 percentage points. The ratio of the two intervals is $0.589 \div 0.635 = 0.93$.

Now consider the same exercise, but with $n = 8{,}192$. The confidence interval under direct measurement and 100% of the national line in the validation sample is $\pm 1.64 \cdot \sqrt{\frac{0.447 \cdot (1 - 0.447)}{8{,}192}} \cdot \sqrt{\frac{3{,}797{,}313 - 8{,}192}{3{,}797{,}313 - 1}} = \pm 0.900$ percentage points. The empirical confidence interval with the scorecard (Table 6) is ± 0.817 percentage points. Thus for $n = 8{,}192$, the ratio of the two intervals is $0.817 \div 0.900 = 0.91$.

This ratio of 0.91 for $n = 8{,}192$ is not far from the ratio of 0.93 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 0.91. This implies that confidence intervals for indirect estimates of poverty rates via Malawi's scorecard with 100% of the national line are—for a given sample size—about 9 percent narrower than the confidence intervals for direct estimates via the 2016/17 IHS. This 0.91 appears in Table 7 as the "α factor for precision" because if $\alpha = 0.91$, then the formula for approximate confidence intervals $\pm c$ for the scorecard is $\pm c = \pm z \cdot \alpha \cdot \sigma$. That is, the formula for the approximate standard error σ for point-in-time estimates of poverty rates via the scorecard is $\alpha \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}}$.

In general, α can be greater than or less than 1.00. When α is less than 1.00, it means that the scorecard is has smaller standard errors than direct measurement. It

turns out that α is less than 1.00 for 15 of the 19 poverty lines in Table 7, and its highest value is 1.27.

The formula relating confidence intervals with standard errors for the scorecard can be rearranged to give a formula for determining sample size before estimation. If $\tilde{p}$ is the expected poverty rate before estimation, then the formula for sample size n from a population of size N that is based on the desired confidence level that corresponds to z and the desired confidence interval $\pm c$ is $n = N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p})}{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p}) + c^2 \cdot (N - 1)} \right)$. If the population N is "large" relative to the sample size n, then the finite-population correction factor ϕ can be taken as one (1), and the formula becomes

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

To illustrate how to use this, suppose the population N of 3,797,313 (the number of households in Malawi in 2016/17), suppose $c = 0.04934$, $z = 1.64$ (90-percent confidence), and the relevant poverty line is 100% of the national line so that the most sensible expected poverty rate $\tilde{p}$ is Malawi's overall poverty rate for that line in 2016/17 (44.7 percent at the household level, Table 1). The α factor is 0.91 (Table 7). Then the sample-size formula gives

$$n = 3{,}797{,}313 \cdot \left(\frac{1.64^2 \cdot 0.91^2 \cdot 0.447 \cdot (1 - 0.447)}{1.64^2 \cdot 0.91^2 \cdot 0.447 \cdot (1 - 0.447) + 0.04934^2 \cdot (3{,}797{,}313 - 1)} \right) = 227,$$ which is not too far from the sample size of 256 observed for these parameters in Table 6 for

100% of the national line. Taking the finite population correction factor ϕ as one (1) gives the same result, as $n = \left(\frac{0.91 \cdot 1.64}{0.04934}\right)^2 \cdot 0.447 \cdot (1 - 0.447) = 227.$

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

In practice after the end of field work for the IHS in April 2017, a program would select a poverty line (say, 100% of the national line), note its participants' population size (for example, $N = 10{,}000$ participants), select a desired confidence level (say, 90 percent, or $z = 1.64$), select a desired confidence interval (say, ±2.0 percentage points, or $c = \pm 0.02$), make an assumption about $\widetilde{p}$ (perhaps based on a previous estimate such as the household-level poverty rate for 100% of the national line for Malawi of 44.7 percent in the 2016/17 IHS in Table 1), look up α (here, 0.91 in Table 7), assume that the scorecard will still work in the future and for sub-groups that are not nationally representative,[45] and then compute the required sample size. In this illustration,

$$n = 10{,}000 \cdot \left(\frac{1.64^2 \cdot 0.91^2 \cdot 0.447 \cdot (1 - 0.447)}{1.64^2 \cdot 0.91^2 \cdot 0.447 \cdot (1 - 0.447) + 0.02^2 \cdot (10{,}000 - 1)}\right) = 1{,}210.$$

[45] This paper reports accuracy for the scorecard applied to its validation sample, but it does not test accuracy for later years nor for sub-populations that are not nationally representative. Performance after April 2017 will resemble that in the 2016/17 IHS with deterioration over time and across non-nationally representative sub-groups to the extent that the relationships between indicators and poverty status change.

7. Estimates of changes in poverty rates over time

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

As warned at the start of this paper, it is not possible to test the accuracy of estimates of change over time in which both baseline and follow-up estimates are from Malawi scorecards, and this paper can only suggest approximate formulas for standard errors. Nonetheless, the relevant concepts are discussed because in practice pro-poor organizations in Malawi can apply the new scorecard to collect their own data and measure change over time.

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

The scorecard can estimate change. Of course, poverty could get better or worse, and the scorecard does not indicate what caused change. This point is often forgotten or confused, so it bears repeating: the scorecard merely estimates change, and it does not, in and of itself, indicate the causes of change. In particular, estimating the impact of participation on poverty 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 on poverty 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

Consider the illustration begun in the previous section. On 1 January 2021, an organization samples three households who score 20, 30, and 40 and so have poverty likelihoods of 89.8, 68.3, and 43.9 percent (100% of the national line, Table 3). Given the known average error for this line in the validation sample of +0.0 percentage points (Table 7), the corrected baseline estimated poverty rate is the households' average poverty likelihood of [(89.8 + 68.3 + 43.9) ÷ 3] – (+0.0) = 67.3 percent.

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

- *Two independent samples*: Score a new, independent sample from the same population that was sampled from at baseline
- *One sample scored twice*: Score the same sample that was scored at baseline

7.2.1 Estimating change with two independent samples

By way of illustration, suppose that three years later on 1 January 2024, the organization draws a new, independent sample of 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 82.3, 59.3, and 32.3 percent, 100% of the national line, Table 3). Adjusting for the known average error, the average poverty likelihood at follow-up is [(82.3 + 59.3 + 32.3) ÷ 3] – (+0.0) = 58.0 percent. The three-year

reduction in the poverty rate is then 67.3 – 58.0 = 9.3 percentage points.[46] If exactly three years passed between the average baseline interview and the average follow-up interview, then the estimated annual decrease in the poverty rate is 9.3 ÷ 3 = 3.1 percentage points per year. That is, about one in 32 participants in this hypothetical example cross the poverty line each year.[47] Among those who started below the line, about one in 22 (3.1 ÷ 67.3 = 4.6 percent) on net ended up above the line each year.[48]

7.2.2 Estimating change with one sample scored twice

Alternatively, suppose that the same three original households who were scored at baseline are scored again on 1 January 2024. Given scores of 25, 35, and 45, their follow-up poverty likelihoods are 82.3, 59.3, and 32.3 percent. The average across households of the difference in each given household's baseline poverty likelihood and its follow-up poverty likelihood is [(89.8 – 82.3) + (68.3 – 59.3) + (43.9 – 32.3)] ÷ 3 = 9.4 percentage points.[49] If there are exactly three years between each household's interviews, then the estimated annual decrease in the poverty rate is (again) 9.4 ÷ 3 = 3.1 percentage points per year.

[46] Of course, such a large reduction in poverty in three years is unlikely, but this is just an example to show how the scorecard can be used to estimate change.
[47] This is a net figure; some start above the line and end below it, and vice versa.
[48] The scorecard does not reveal the reasons for this change.
[49] With one sample scored twice, the error for this line from Table 7 should *not* be subtracted off. Note that the estimated change with one sample scored twice (9.4 percentage points) differs slightly from the estimate with two independent samples (9.3 percentage points) due to differences in when rounding is applied.

Given the assumptions of the scorecard, both approaches give unbiased estimates of the annual change in poverty rates. In general and in practice, however, they will give different estimates due to differences in the timing of interviews, in the composition of samples, and in the nature of two independent samples (each scored once) versus the nature of one sample scored twice (Schreiner, 2014a).[50]

7.3 Precision for estimated changes

7.3.1 Precision when scoring two independent samples

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

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

Here, z, c, $\hat{p}$ and N are defined as above, n is the sample size at both baseline and follow-up,[51] and α is the average (across a range of bootstrapped sample sizes) of the ratio of the observed confidence interval from a scorecard divided by the theoretical confidence interval under direct measurement.

[50] And in the case of the example here, differences in when rounding is applied.
[51] This means that—for a given level of precision—estimating the change in a poverty rate between two points in time requires four times as many interviews (not twice as many) as does estimating a poverty rate at a point in time.

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

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

With two independent samples, α has been estimated for scorecards for 19 countries (Schreiner 2018, 2017a, 2017b, 2017c, 2016a, 2016b, 2016c, 2016d, 2015a, 2015c, 2015d, 2015e, 2013a, 2013b, 2012c, 2010, 2009a, 2009b, and Chen and Schreiner, 2009). The unweighted average of α across the 27 scorecards for these 19 countries—after averaging α across poverty lines and pairs of survey rounds for each scorecard—is 1.10. The average absolute error is 3.2 percentage points. These rough figures are as reasonable as any to use for the new Malawi scorecard from now on when both baseline and follow-up are from the new 2016/17 scorecard.

To illustrate the use of this formula to determine sample size for estimating changes in poverty rates with two independent samples, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is ± 2 percentage points ($\pm c = \pm 0.02$), the poverty line is 100% of the national line, $\alpha = 1.10$, $\widetilde{p} = 0.447$ (the household-level poverty rate in 2016/17 for 100% of the national line in Table 1), and the population N is large enough relative to the expected sample size n that the finite population correction ϕ can be taken as one (1). Then the baseline sample size is

$n = 2 \cdot \left(\frac{1.10 \cdot 1.64}{0.02} \right)^2 \cdot 0.447 \cdot (1 - 0.447) \cdot 1 = 4{,}023$ and the follow-up sample size is also 4,023.

7.3.2 Precision with 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 one sample scored twice is:[52]

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

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.

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

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

Because $\tilde{p}_*$ could be anything between 0 and 0.5, more information is needed to apply this formula. The average observed relationship in Niger (Schreiner, 2018) and

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

Peru (Schreiner, 2009c) between $\widetilde{p}_*$, the number of years y between baseline and follow-up, and $p_{\text{pre-baseline}} \cdot (1 - p_{\text{pre-baseline}})$ is close to:

$$\widetilde{p}_* = -0.01 + 0.016 \cdot y + 0.56 \cdot [p_{\text{pre-baseline}} \cdot (1 - p_{\text{pre-baseline}})].$$

Given this approximate result, a sample-size formula for a sample of households to whom the scorecard for Malawi is applied twice (once after April 2017 and then again later) is

$$n = 2 \cdot \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot [-0.01 + 0.016 \cdot y + 0.56 \cdot p_{\text{pre-baseline}} \cdot (1 - p_{\text{pre-baseline}})] \cdot \sqrt{\frac{N - n}{n - 1}}.$$

The average α across poverty lines for Niger and Peru is about 1.14. This 1.14 figure for α is as reasonable as any other for the new Malawi scorecard (as well as for other scorecards in general).

To illustrate the use of this formula, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is ±2.0 percentage points ($\pm c = \pm 0.02$), the poverty line is 100% of the national line, the sample will first be scored in 2021 and then again in 2024 ($y = 3$), and the population N is so large relative to the expected sample size n that the finite population correction ϕ can be taken as one (1). The pre-baseline household-level poverty rate p_{2021} is taken as 44.7 percent (Table 1), and α is assumed to be 1.14. Then the baseline sample size is

$n = 2 \cdot \left(\frac{1.14 \cdot 1.64}{0.02} \right)^2 \cdot \{-0.01 + 0.016 \cdot 3 + [0.56 \cdot 0.447 \cdot (1 - 0.447)]\} \cdot 1 = 3{,}084$. The same group of 3,084 households is scored at follow-up as well.

8. Targeting

When a program uses the scorecard for segmenting participants 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 scorecard.

Households that score at or below a given cut-off should be labeled as *targeted*,[53] not as *poor*. After all, unless all targeted households have poverty likelihoods of 100 percent, it is likely that some of them are non-poor (their consumption is above a given poverty line). In the context of the scorecard, the terms *poor* and *non-poor* have specific definitions. Using these same terms for targeting status is incorrect and misleading.

[53] Other labels can be meaningful 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 include: *Groups A, B, and C*; *Households with scores of 29 or less, 30 to 69, or 70 or more*; and *Households that qualify for reduced fees, or that do not qualify.*

Targeting is successful to the extent to which households truly below a poverty line are targeted (*inclusion*) or households truly above a poverty line are not targeted (*exclusion*). Of course, no poverty-assessment tool is perfect, and targeting is unsuccessful to the extent to which households truly below a poverty line are not targeted (*undercoverage*) or 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 worse inclusion and worse undercoverage (but better exclusion and better leakage).

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 the sum of net benefits.[54]

Table 9 shows the distribution of households by targeting outcome for Malawi. For an example cut-off of 37 or less, outcomes for 100% of the national line in the validation sample are:

- Inclusion: 34.0 percent are below the line and correctly targeted
- Undercoverage: 10.9 percent are below the line and mistakenly not targeted
- Leakage: 11.3 percent are above the line and mistakenly targeted
- Exclusion: 43.9 percent are above the line and correctly not targeted

[54] Adams and Hand, 2000; Hoadley and Oliver, 1998.

Increasing the cut-off to 39 or less improves inclusion and undercoverage but worsens leakage and exclusion:

- Inclusion: 36.9 percent are below the line and correctly targeted
- Undercoverage: 7.9 percent are below the line and mistakenly not targeted
- Leakage: 14.1 percent are above the line and mistakenly targeted
- Exclusion: 41.1 percent are above the line and correctly not targeted

Which cut-off is preferred depends on the sum of net benefits. 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 chosen poverty line
- Select the cut-off with the highest total net benefit

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

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

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

Table 9 shows the hit rate for all cut-offs for the scorecard. For the example of 100% of the national line in the validation sample, total net benefit under the hit rate for a cut-off of 39 or less is 78.0 percent, with more than three in four households in Malawi correctly classified.

The hit rate weighs successful inclusion of households below the poverty 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).

As an alternative to assigning benefits and costs to targeting outcomes and then choosing a cut-off to maximize total net benefits, a program could set a cut-off to achieve a desired poverty rate among targeted households. The third column of Table 10 ("% targeted HHs who are poor") shows, for the scorecard applied to the validation sample, the estimated poverty rate among households who score at or below a given cut-off. For the example of 100% of the national line, targeting households who score 37 or less would target 45.3 percent of all households (second column) and would be

associated with an estimated poverty rate among targeted households of 75.0 percent (third column).

Table 10 also reports two other measures of targeting accuracy. The first is a version of coverage ("% poor HHs who are targeted"). For the example of 100% of the national line with the validation sample and a cut-off of 37 or less, 75.8 percent of all poor households are covered.

The final targeting measure in Table 10 is the number of successfully targeted poor households for each non-poor household mistakenly targeted (right-most column). For 100% of the national line with the validation sample and a cut-off of 37 or less, covering about 3.0 poor households means leaking to 1 non-poor household.

9. Context of poverty-assessment tools in Malawi

This section discusses an existing poverty-assessment tool for Malawi. Schreiner (2015a) compares and contrasts the older 2004/5 and 2010/11 scorecards with 12 older poverty-assessment tools for Malawi.

Brown *et al.* (2018 and 2016) study the targeting accuracy of poverty-assessment tools for nine countries in Sub-Saharan Africa, including Malawi. When the share of people who are targeted is the same as the share of people who are poor, average inclusion across the nine countries is highest for their Basic PMT that uses quantile regression centered on the poverty line (the "Poverty-centered quantile tool"). This tool regresses the logarithm of per-capita consumption on 20 low-cost, verifiable indicators that are commonly used in these sorts of tools:

- Household demographics:
  - Number of household members
  - Share of household members by age and sex:
    - Girls ages 5 or younger
    - Boys ages 5 or younger
    - Girls ages 6 to 14
    - Boys ages 6 to 14
    - Women ages 65 or older
    - Men ages 65 or older

    - Characteristics of the head of the household:
        - Sex
        - Religion
        - Marital status
        - Highest level of education completed
        - Employment status
- Characteristics of residence:
    - Type of floor
    - Type of wall
    - Type of roof
    - Type of cooking fuel
    - Type of toilet arrangement
- Location of residence:
    - Region
    - Urban/rural
- Month in which the household is surveyed

For Malawi, Brown *et al.* construct and test tools at the level of people with data from all households in the 2010/11 IHS. With the first-quintile (20^{th}-percentile) poverty line and when targeting 20 percent of people, inclusion for the poverty-centered quantile tool is 9.6 percent. For the second-quintile (40^{th}-percentile) poverty line and when targeting 40 percent of people, inclusion is 26.6 percent.

How does this compare with the scorecard? The figures in Tables 9 and 10 here for the relevant poverty lines are not comparable with those in Brown *et al.* because they are:

- Based on the 2016/17 IHS, not the 2010/11 IHS
- At the level of households, not people
- Out-of-sample, not in-sample

If the old 2010/11 scorecard's points are re-derived at the person level (keeping the same 10 indicators) using the entire 2010/11 IHS, and if that old scorecard is tested in-sample at the person-level, then its inclusion for the first-decile and second-quintile poverty lines is 9.5 and 25.7 percent, which is lower than—but close to—that of Brown *et al.* (9.6 and 26.6 percent).

Of course, the results here for Malawi do not change Brown *et al.*'s main conclusion that a basic-income scheme or an extremely simple demographic tool with one or two indicators can do almost as well as a more-complex tool in terms of reducing the person-level poverty rate. It does show, however, that a 10-indicator scorecard can do as well as a 20-indicator tool.

The results are also inconsistent with Brown *et al.*'s finding that accuracy is much lower for tools—such as the scorecard—that estimate poor/non-poor status (rather than the level of consumption).[55] Unusually low accuracy is also inconsistent with the "flat max".

[55] The reasons for the unusually high errors found by Brown *et al.* are unknown. If one or more categorical response options are highly lop-sided, then a poor/non-poor tool may be barely estimable and might target everyone or no one. Or the probability threshold for targeting may be too high or too low, or perhaps the share targeted is not held constant.

10. Summary

The scorecard helps pro-poor programs in Malawi to get to know their participants better so as to prove and improve their social performance.

The scorecard can segment clients for differentiated treatment as well as estimate:

- The likelihood that a participant's household has consumption below a given poverty line
- The poverty rate of a population of participants' households at a point in time
- The change in the poverty rate of a population of participants' households

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

The scorecard is constructed with data from about three-fifths of the households in Malawi's 2016/17 IHS. Those households' scores are then calibrated to poverty likelihoods for 19 poverty lines. The scorecard's accuracy (errors and standard errors) is tested out-of-sample on data that was not used to make the scorecard.

When the scorecard is applied to 19 poverty lines in the validation sample, the maximum of the absolute values of the average error for point-in-time estimates of poverty rates is 0.7 percentage points, and the average of the absolute values of the average error across the 19 lines is about 0.3 percentage points. Corrected estimates may be found by subtracting the known error for a given poverty line from original, uncorrected estimates.

For $n = 16{,}384$ and 90-percent confidence, the confidence intervals for point-in-time estimates of poverty rates are ± 0.6 percentage points or better. With $n = 1{,}024$, the 90-percent confidence intervals are ± 2.2 percentage points or better.

For Malawi, hybrid estimates of changes in poverty rates over time with a baseline from an old scorecard and with a follow-up from the new scorecard are expected to be very inaccurate. This, users are warned against them. Nonetheless, it is reasonable to expect that estimates of change in which both baseline and follow-up are from the new 2016/17 scorecard will be about as accurate as they are for the typical scorecard.

If an organization wants to use the scorecard for segmenting clients for differentiated treatment, then this paper provides useful information for selecting a targeting cut-off that fits the organization's values and mission.

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

For this reason, the scorecard uses 10 indicators that are straightforward, low-cost, and verifiable. Points are all zeros or positive integers, and scores range from 0 to 100. Scores are converted to poverty likelihoods via look-up tables, and targeting cut-offs are likewise straightforward to apply. The design attempts to facilitate voluntary adoption by helping program managers to understand and to trust the scorecard and by allowing non-specialists to add up scores quickly in the field.

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

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Interview Guide

The excerpts quoted here are from:

National Statistical Office. (2016) "Enumerator Manual for the Household Questionnaire: Fourth Integrated Household Survey, 2016/17", `microdata.worldbank.org/index.php/catalog/2936/related_materials`, retrieved 10 June 2019 [the *Manual*].

Basic interview instructions

The scorecard can be filled out on paper in the field, with responses entered later in a spreadsheet or in your own database. Alternatively, Scorocs' cloud-based data-collection tool works in a web browser or an Android phone, allowing data entry in the field or in the office. If there is no connection, then data is stored locally until there is a connection. Test the data-collection tool, or ask about a private account.

According to p. 5 of the *Manual*, [the scorecard] should be completed in-person at the participant's residence.

The scorecard should be administered by an enumerator trained to follow this Guide.

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

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

Do not directly ask the first scorecard question ("In what district does the household reside?"). Instead, fill in the answer based on your knowledge of the district where the household resides.

In the same way, do not directly ask the the second scorecard question ("How many members does the household have?"). Instead, mark the response based on the number of household members that you listed on the "Back-page Worksheet".

Ask all of the remaining questions directly of the respondent, except for the sixth question ("The roof of the main dwelling is predominantly made of what material? (*Observe and record*)"). For this question, try to determine the relevant response on your own by observing the roof. If the response if not clear from your own observation, then ask the respondent.

According to p. 24 of the *Manual*, "Read the questions exactly as they are written in [the scorecard], following the established order."

General interviewing guidance

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

Remember that the respondent for the interview need not be the household member who is a participant with your organization.

Likewise, the field agent to be recorded in the scorecard header is not necessarily the same as you the enumerator who does the interview. Rather, the field agent is the employee of the pro-poor program with whom the participant has an on-going relationship. If there is no such field agent, then leave those spaces in the scorecard header blank.

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

When you mark a response to a scorecard question, write the point value in the "Score" column and then circle the spelled-out response option, the pre-printed point value, and the hand-written points, like this:

8. How many beds does the household own?	A. None	0	
	B. One	5	5
	C. Two or more	10	

To help to reduce errors, you should:

- Write the points that correspond to the response in the far right-hand column
- Circle the pre-printed response, the pre-printed points, and the hand-written points

When an issue comes up that is not addressed in this Guide, its resolution should be left to the unaided judgment of the enumerator, as that apparently was the practice of Malawi's NSO in the 2016/17 IHS. That is, an organization using the scorecard should not promulgate any definitions or rules (other than those in this Guide) to be used by all its enumerators. Anything not explicitly addressed in this Guide is to be left to the unaided judgment of each individual enumerator.

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

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

While most responses to questions in the scorecard are verifiable, in most cases you do not need to verify responses. You should verify only if something suggests to you that a response may be inaccurate 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, confused, or uncertain. Likewise, verification is probably appropriate if a child in the household or if a neighbor says something that does not square with a respondent's answer. Verification is also a good idea if you can see something yourself that suggests that a response may be inaccurate, such as a consumer durable that the respondent claims not to possess, or a child eating in the room who has not been counted as a member of the household.

In general, the application of the scorecard should mimic as closely as possible the application of the 2016/17 IHS by Malawi's NSO. For example, interviews should done in-person by a trained enumerator at the participant's residence because that is what NSO did in the 2016/17 IHS.

Translation:

As of this writing, the scorecard itself, the "Back-page Worksheet", and this Guide are available only in English, Chichewa, and Chitumbuka. There are not yet official, professional translations to other languages or dialects spoken in Malawi such as Chinyanja and Chiyao. Users should check scorocs.com to see what translations have been done since this writing.

If there is not yet an official, professional translation to a desired language, then users should contact Scorocs for help in creating such a translation.

According to p. 16 of the *Manual*, "[The scorecard] is produced in English[, Chichewa, and Chitumbuka]. Most of the households to whom you will administer [the scorecard] will not be able to respond to the questions if they are asked in English. Consequently, you must translate the questions into a language in which the members of the interviewed household are fluent. There are three points to bear in mind.

"First, there are several key terms that appear throughout [the scorecard]. These include *household*, *head of household*, [and *poverty*].

"These terms should always be translated into local languages using the exact same words. The questions in English have been carefully worded to ensure that the desired concept is being asked. Study the questions so that you can ask them in a consistent and natural manner. If this is not done, then the responses to the same question across households may not be comparable.

[On pp. 107–108 of the *Manual*, the NSO suggests standard translations of key terms in Chichewa, Chitumbuka, and Chiyao:]

English	Chichewa	Chitumbuka	Chiyao
Head of household	Mkulu wolamulira mnyumba kapena pa banja	Uyo wali namazaza	Mtwee waliwasa; jwakulamulila pewasa
Household	Panyumba; banja	Banja	Nyumba/liwasa
Respondent	Oyankha	Wakuzgora	Wakwanga iusyo
Poverty	Umphawi	Ukavu	Kulaga; usauchi; yakunonopa

"Secondly, [the scorecard] should be administered in a language in which the members of the interviewed household are fluent. . . . Notify your supervisor if you are not fluent in a language spoken fluently by the interviewed household.

"Finally, do not assume that your skills in Chichewa will allow you to conduct interviews throughout Malawi. Although Chichewa is the national language of Malawi, many rural residents are not fluent in Chichewa. This is particularly the case in northern Malawi (where Chichewa is not commonly spoken) and in the lakeshore areas (where Chiyao is the predominant language spoken in the villages). Notify your supervisor if you are not fluent in a language spoken fluently by the interviewed household."

Who should be the respondent?

Remember that the respondent does not need to be the household member who is a participant with your organization (although the respondent may be that person).

According to p. 32 of the *Manual*, the preferred respondent for a given question is "best-informed member of the household on the topic."

For the questions in the scorecard, the *Manual* makes clear that, in general and in the absence of information to the contrary, the head of the household is [considered to be] the best-informed member of the household and so is the preferred respondent. If the head of the household is not available, then the *Manual* says that "if there is a spouse of the head in the household, then he/she will be the most-likely respondent" or that the next-preferred respondent is "the most senior member of the household present".

According to p. 55 of the *Manual*, the head of the household "may be assisted by other informed adults within the household. In the absence of the head of household, the most-informed adult member of the household should be selected as the respondent."

Who is the head of the household?

Note that the head of the household may or may not be the household member who is a participant with your organization (although the head may be that person).

According to p. 13 of the *Manual*, "The *head of household* is the person commonly regarded by the household members as their head. The head would usually be the main income-earner and decision-maker for the household, but you should accept the decision of the household members as to who is their head.

"There must be one and only one head in the household. If more than one individual in a potential household claims headship, or if individuals within a potential household give conflicting statements as to who is the head of the household, then it is very likely that you are dealing with two or more households, rather than one."

General interview guidance

According to p. 10 of the *Manual*, "You, as an enumerator, is the critical foundation for building a quality data set for use in analysis for decision-making."

According to p. 19 of the *Manual*, "Before you visit a selected household, you should ensure that you are ready to begin the interview. That is, be presentable, and know how you are going to begin."

According to p. 21, of the *Manual*, "In general, if you encounter a different or unusual case . . . for a household and are not sure what to do . . . obtain as much information as possible from the household. . . . [and] check this [Guide] for guidance. If the solution cannot be found in this [Guide], then consult your supervisor."

Privacy:

According to p. 20 of the *Manual*, "The setting of [the scorecard interview] should be relatively private. Some of the questions being asked are of a personal and private nature. You should respect the desire of the respondents for privacy.

"No one (except perhaps your supervisor or other members of your organization) should come with you on an interview. If [a member of your organization] does accompany you, then be sure to introduce him/her to the respondent, making clear to the respondent the purpose of his/her presence.

"No one else unrelated to [your organization] or unrelated to the interviewed household should accompany you for introductions nor be present during the interview. If any such individuals are present when you begin an interview, then you must politely request them to leave in order to respect the privacy of the interviewed household. If those individuals cannot leave at that time, then you should schedule the interview for a later time or move to a more appropriate place, when or where greater privacy can be assured. In the event that the respondent requests that he/she be joined by someone who is not a member of the interviewed household, then you must honour the request."

Interacting with the community:
According to pp. 21–22 of the *Manual*, "Your work is not to be secretive. Explain what you are doing to all community members who ask. Be respectful, courteous, and patient with all community members. The quality of your work depends greatly on the cooperation you receive from the members of the communities in which the interviewed households reside."

"If you want to have a good reception from the community, then they should understand exactly you are doing.

"While your work should not be secretive, you must respect the confidentiality and privacy of the respondents of the interviewed households. Unless specifically requested by the respondent, people from who are not members of the interviewed household should not be present while you do an interview.

"You should always be courteous and tactful with respondents.

"Above all, your attitude towards respondents in the interviewed households must be one of respect. You must always be patient towards the members of interviewed households. Be business-like in your conduct; never bullying, demanding, or rude. Always act in a way that warrants respect and cooperation from the respondent.

"During interviews, you should work efficiently and relatively quickly, but you should not rush the respondent or not make unnecessary mistakes yourself. After each interview, you should quickly review [the scorecard]. Thank the respondent for his/her help and time. This is vital if the survey is to be carried out successfully. You may have to visit some households more than once, making it especially vital that your behaviour is above reproach. You will find work more pleasant if you remain polite and friendly to everyone at all times."

Rhythm:
According to p. 23 of the *Manual*, "You the enumerator must seek to develop a smooth interviewing style so that you can obtain all of the information required from the respondent as efficiently as possible. At the same time, this must not come at the expense of correctly administering [the scorecard].

"In general, you must not unnecessarily test the respondent's patience by delaying the interview in any way, particularly through excessive probing on questions that the respondent feels that he/she has already answered to the best of his/her ability.

"You should attempt to reach a good balance between:

- Maintaining a smooth, continuous dialogue that allows you to obtain all of the information required in the shortest possible time without testing the patience of the respondent by delaying the interview in any way, versus
- Allowing the respondent to ask any questions that he/she has about the survey so that he/she is convinced of its value and is cooperative. Doing so, however, will take time and will reduce the efficiency with which interviews are completed. Do not encourage any questions from the respondent on issues unrelated to [the scorecard] such as politics, religion, sports, and so on

Verification:
According to pp. 23–24 of the *Manual*, "If it is clear that the respondent has understood the question you have asked, then you must accept whatever response the respondent provides."

"You must never second-guess the respondent or make the assumption that you have a better understanding of the condition of the household than the respondent does. Your function as the enumerator is not to verify that the information provided is correct. . . . It is always possible that the respondent will lie to you or provide inaccurate information, but you, as the enumerator, should not make any judgments on the information provided.

"Of course, there are exceptions. At all stages of the interview with a household, you should be alert to errors. These can be accidental or deliberate. You can never force people to give answers that they do not want to give, but you can approach the true facts by diplomatic and intelligent interviewing. For example, if the respondent says that the interviewed household has no livestock and yet there are chickens pecking at your feet or goats tied up nearby, then you should inquire about these animals. You should not probe excessively, however, after seeking initial clarification. In any case, you should never go outside of the interviewed household to get information. . . .You should always instill trust among the household members.

"Do not make up your own answers for a question asked to a respondent. You are required to be objective in recording responses."

Guidelines for each indicator in the scorecard

1. In what district does the household reside?
    A. Chitipa, or Karonga
    B. Neno, Nkhata Bay, Nsanje, Phalombe, or Rumphi
    C. Chiradzulu, Machinga, or Thyolo
    D. Balaka, or Mangochi
    E. Chikwawa, or Dedza
    F. Nkhotakota, or Salima
    G. Mzimba, Ntcheu, or Ntchisi
    H. Dowa, Kasungu, Mchinji, Mwanza, Zomba, or Zomba City
    I. Blantyre, Lilongwe City, or Mulanje
    J. Blantyre City, Lilongwe, or Mzuzu City

Unless you need to, do not ask this question directly of the respondent. Instead, mark the response based on your knowledge of the district in which the interviewed household resides.

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

Do not ask this question directly of the respondent. Instead, mark the response based on the number of household members that you listed on the "Back-page Worksheet".

According to pp. 12–13 of the *Manual*, "A *household* may be either a person living alone or a group of people, either related or unrelated, who live together as a single unit in the sense that they have common housekeeping arrangements (that is, they share or are supported by a common budget).

"A standard definition of a *household* is 'a group of people who live together, pool their money, and eat at least one meal together each day'.

"It is possible that individuals who are not members of the interviewed household may be residing with the interviewed household at the time of the interview. In most cases—but not all—someone who does not live with the interviewed household at the time of the interview is not a member of the interviewed household. See below for the definition of *household member*, that is, who is and who is not part of a given household.

"Members of a household need not necessarily be related by blood or marriage. On the other hand, not all those who are related and are living in the same compound or dwelling are necessarily members of the same household. Two brothers who live in the same dwelling with their own wives and children may or may not form a common housekeeping arrangement. If they do not, then they should be considered as separate households."

"There is a distinction between *family* and *household*. *Family* reflects social relationships, blood descent, and marriage. *Household* is used here to identify an economic unit. While families and households are often the same, they are not always the same. You the enumerator must be cautious and use the criteria provided on household membership to determine which individuals make up a particular household.

"In the case of polygamous men and extended-family systems, household members are distributed over two or more dwellings. If these dwelling units are in the same compound or nearby compounds, and if they have a common housekeeping arrangement with a common household budget, then the residents of these separate dwelling units should be treated as one household.

"When listing household members, keep in mind that:

- "It is possible that the household head may not be residing in the dwelling at the time of the interview. He/she may be living and working, temporarily or permanently, in another part of Malawi or in another country
- Boarding-school students who are residing at a boarding school but who are still dependent on the interviewed household should be listed as members of the interviewed household
- Do not include military personnel, prisoners, or other individuals who are residing in other such institutions and who are not primarily dependent on the interviewed household for their welfare
- Some household members may not be relatives of the household head. For example, a servant who lives with the interviewed household is a member of the interviewed household if he/she does not have his/her own household elsewhere for which he/she is the head or upon which he/she is dependent
- Servants, other hired workers, and lodgers (individuals who pay to reside in the dwelling of the interviewed household) should not be listed as members of the interviewed household if they have their own household elsewhere for which they are the head or upon which they are dependent
- Children who are living with other relatives (for example, an aunt or uncle) should not be listed as members of the interviewed household. They are counted instead as members of the household of the aunt/uncle"

According to p. 4 of the 2016/17 IHS *Household Questionnaire*, "Make a complete list of all individuals who normally live and eat their meals together in this household, starting with the head of household [and his/her (eldest) spouse].

"In order to make a comprehensive list of individuals connected to the household, use the following questions:

- "First, give me the names of all the members of your immediate family who normally live and eat their meals together here
- Then, give me the names of any other persons related to you or other household members who normally live and eat their meals together here
- Are there any other persons not here now who normally live and eat their meals here? For example, household members studying elsewhere or traveling
- Then, give me the names of any other persons not related to you or other household members, but who normally live and eat their meals together here, such as servants, lodgers, or others who are not relatives
- Do not list servants who have a household elsewhere, nor guests who are visiting temporarily and have a household elsewhere"

3. What does the household head sleep under in the hot season (October)?
    A. *Chitenje* cloth, fertilizer or grain sack, clothes, nothing, or other
    B. Blanket only
    C. Blanket and sheets, or only sheets

The *Manual* provides no additional information specific to this question.

According to p. 13 of the *Manual*, "The *head of household* is the person commonly regarded by the household members as their head. The head would usually be the main income-earner and decision-maker for the household, but you should accept the decision of the household members as to who is their head.

"There must be one and only one head in the household. If more than one individual in a potential household claims headship, or if individuals within a potential household give conflicting statements as to who is the head of household, then it is very likely that you are dealing with two or more households, rather than one."

Note that the head of the household may or may not be the same household member who is a participant with your organization (although the head may be that person).

Remember that you already know the name of the head of the household from compiling the "Back-page Worksheet". Thus, do not mechanically ask, "What does the household head sleep under in the hot season (October)?". Instead, use the actual first name or nickname of the head, for example: "What does Vincent sleep under in the hot season (October)?"

4. In the past twelve months, did the male head (or the husband of the female head) engage in casual, part-time, or *ganyu* labour, even for only one hour?
    A. Yes
    B. No male head (and the female head has no husband in the household)
    C. No

According to p. 54 of the *Manual*, "*Ganyu labour* is short-term labour hired on a daily or other short-term basis. Most commonly, it is piecework weeding or ridging on the fields of other smallholders or on agricultural estates. However, *ganyu* labour can also be used for non-agricultural tasks, such as construction and gardening."

According to p. 54 of the *Manual*, *ganyu* labour does not include exchange labour (*chipeleganyu*), that is, "working for free for a neighbour/relative (if, for example, they are sick)."

Remember that you already know the name of the male head (or the husband of the female head) from compiling the "Back-page Worksheet". Thus, do not mechanically ask, "In the past twelve months, did the male head (or the husband of the female head) engage in casual, part-time, or *ganyu* labour, even for only one hour?". Instead, use the actual first name or nickname of the male head (or the husband of the female head), for example: "In the past twelve months, did Vincent engage in casual, part-time, or *ganyu* labour, even for only one hour?"

For the purposes of the scorecard, the *male head (or the husband of the female head)* is defined as:

- The household head, if the head is male
- The husband/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 husband/conjugal partner who is a member of her household

According to p. 13 of the *Manual*, "The *head of household* is the person commonly regarded by the household members as their head. The head would usually be the main income-earner and decision-maker for the household, but you should accept the decision of the household members as to who is their head.

"There must be one and only one head in the household. If more than one individual in a potential household claims headship, or if individuals within a potential household give conflicting statements as to who is the head of the household, then it is very likely that you are dealing with two or more households, rather than one."

Note that the head of the household may or may not be the same household member who is a participant with your organization (although the head may be that person).

5. Is the female head (or the eldest wife of the male head) able to read and write in Chichewa or English?
    A. No
    B. Only Chichewa
    C. No female head (and the male head has no wife in the household)
    D. Only English, or both English and Chichewa

The *Manual* provides no additional information specific to this question. In particular, it does not indicate that you the enumerator should ask for any proof or verification of ability of the female head (or the eldest wife of the male head) to read and write. This suggests that you are to take the respondent's word, unless, as discussed earlier, there is something that suggests to you that the response may not be accurate.

The question refers to being able to read *and* write, not just read *or* write.

Remember that you already know the name of the female head (or the eldest wife of the male head) from compiling the "Back-page Worksheet". Thus, do not mechanically ask, "Is the female head (or the eldest wife of the male head) able to read and write in Chichewa or English?". Instead, use the actual first name or nickname of the female head (or the eldest wife of the male head), for example: "Is Tamanda able to read and write in Chichewa or English?"

For the purposes of the scorecard, the *female head (or the eldest wife of the male head)* is defined as:

- The household head, if the head is female
- The eldest wife/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 wife/conjugal partner who is a member of her household

According to p. 13 of the *Manual*, "The *head of household* is the person commonly regarded by the household members as their head. The head would usually be the main income-earner and decision-maker for the household, but you should accept the decision of the household members as to who is their head.

"There must be one and only one head in the household. If more than one individual in a potential household claims headship, or if individuals within a potential household give conflicting statements as to who is the head of the household, then it is very likely that you are dealing with two or more households, rather than one."

Note that the head of the household may or may not be the same household member who is a participant with your organization (although the head may be that person).

6. The roof of the main dwelling is predominantly made of what material? (*Observe and record*)
    A. Grass
    B. Iron sheets, clay tiles, concrete, plastic sheeting, or other

Unless you need to, do not ask this question directly of the respondent. Instead, mark the response based on what you can observe on your own concerning the predominant material of the roof of the household's main dwelling. That is, try to determine the relevant response on your own by observing the roof. If the response if not clear from your own observation, then ask the respondent.

According to p. 56 of the *Manual*, a *dwelling* "may be defined as any structure (permanent, semi-permanent, or traditional) where people live and sleep. It may be a hut, house, stores with a sleeping room or rooms at the back or sides, a shelter of reeds/straw such as those used by fishermen, or any other structure where people sleep.

"Dwellings made up of several separate structures are most commonly found in rural areas, as where separate sleeping huts are constructed for various members of a household."

According to p. 56 of the *Manual*, "Concrete can be counted as a *roof* in the case in which there is a flat roof [when] the building has an unfinished floor above it."

7. Does the household own a table?
    A. No
    B. Yes

The *Manual* provides no additional information specific to this question.

8. How many beds does the household own?
    A. None
    B. One
    C. Two or more

The *Manual* provides no additional information specific to this question.

9. Does the household currently own any *panga* knives?
    A. No
    B. Yes

The *Manual* provides no additional information specific to this question.

10. How many working cell phones in total does the household own?
    A. None
    B. One
    C. Two or more

According to p. 58 of the *Manual*, you the enumerator should "be alert to ownership of cell phones by household members other than the head of the household. Probe to collect information about all phones owned by any household members."

Table 1 (Malawi): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

Region	Line or Rate	Households or People	*n*	Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
				Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		272	439	658	877	623	997	1,246	2,492	2,350	659	1,110	1,907	7,524	219	272	370	429	504	726
	Rate	Households	2,272	3.1	14.3	33.9	52.5	30.4	59.5	71.5	92.3	90.6	34.0	65.9	86.2	99.2	1.1	3.1	9.3	13.6	18.7	40.7
	Rate	People		4.1	17.7	40.0	59.9	36.1	66.8	77.8	94.8	93.7	40.1	72.9	90.4	99.6	1.5	4.1	11.9	17.1	23.0	47.5
Rural	Line	People		232	374	561	748	531	850	1,062	2,125	2,004	562	946	1,626	6,416	187	232	316	366	430	619
	Rate	Households	10,175	18.9	51.9	78.4	89.6	75.2	93.0	96.8	99.7	99.6	78.5	95.1	99.2	100.0	9.0	18.8	39.3	50.2	61.5	82.9
	Rate	People		23.8	59.5	83.8	92.8	80.9	95.3	98.0	99.8	99.8	83.9	96.8	99.5	100.0	12.0	23.7	46.6	57.7	68.7	87.6
All	Line	People		240	386	579	773	549	878	1,097	2,194	2,070	580	977	1,679	6,626	193	239	326	378	444	639
	Rate	Households	12,447	15.9	44.7	70.0	82.6	66.6	86.6	92.0	98.3	97.8	70.1	89.6	96.8	99.8	7.5	15.8	33.6	43.2	53.3	74.9
	Rate	People		20.1	51.5	75.5	86.6	72.4	89.9	94.2	98.9	98.6	75.6	92.3	97.8	99.9	10.0	20.0	40.0	50.0	60.0	80.0

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Balaka): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		272	439	659	878	624	998	1,247	2,494	2,353	660	1,111	1,909	7,532	220	272	371	429	505	727
	Rate	Households	32	3.4	22.1	43.2	55.2	37.0	68.2	87.0	89.9	89.9	43.2	84.1	89.9	100.0	0.0	3.4	9.1	22.1	25.0	49.5
	Rate	People		6.7	30.5	54.0	63.4	46.5	73.5	89.3	93.3	93.3	54.0	87.7	93.3	100.0	0.0	6.7	13.1	30.5	34.5	60.2
Rural	Line	People		235	379	568	757	538	860	1,076	2,151	2,029	569	958	1,646	6,496	189	235	320	370	435	627
	Rate	Households	352	18.7	56.5	81.9	92.8	80.7	94.1	97.3	100.0	100.0	81.9	96.1	100.0	100.0	6.9	18.3	42.6	54.7	67.2	86.3
	Rate	People		23.3	65.1	87.7	96.5	87.0	97.0	98.6	100.0	100.0	87.7	97.9	100.0	100.0	9.8	22.8	50.9	63.6	75.6	91.1
All	Line	People		239	385	578	771	547	875	1,094	2,189	2,064	579	975	1,675	6,609	193	239	325	377	443	638
	Rate	Households	384	16.7	52.1	77.0	88.0	75.1	90.8	96.0	98.7	98.7	77.0	94.5	98.7	100.0	6.0	16.4	38.4	50.5	61.8	81.6
	Rate	People		21.5	61.3	84.0	92.9	82.6	94.4	97.6	99.3	99.3	84.0	96.8	99.3	100.0	8.8	21.1	46.8	60.0	71.1	87.7

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Blantyre): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		269	433	650	866	615	984	1,230	2,461	2,321	651	1,096	1,884	7,432	217	268	366	424	498	717
	Rate	Households	32	0.0	9.2	40.0	49.5	37.0	59.2	81.0	96.7	96.7	40.0	71.5	96.7	100.0	0.0	0.0	3.0	9.2	18.2	40.0
	Rate	People		0.0	14.9	48.3	57.0	45.1	68.0	86.5	98.6	98.6	48.3	77.1	98.6	100.0	0.0	0.0	7.6	14.9	23.2	48.3
Rural	Line	People		236	380	570	759	539	863	1,079	2,157	2,035	570	961	1,651	6,514	190	235	321	371	437	629
	Rate	Households	540	7.9	31.4	66.6	81.8	63.0	87.5	93.9	99.2	98.8	66.6	91.5	97.8	100.0	3.3	7.9	21.4	30.5	42.6	72.7
	Rate	People		11.3	38.7	74.9	87.4	71.4	91.6	95.9	99.5	99.1	74.9	93.9	98.5	100.0	4.8	11.3	27.6	37.7	50.9	79.7
All	Line	People		236	380	570	760	540	863	1,079	2,158	2,036	571	961	1,652	6,518	190	235	321	372	437	629
	Rate	Households	572	7.8	31.3	66.5	81.7	62.9	87.4	93.8	99.2	98.7	66.5	91.5	97.8	100.0	3.2	7.8	21.4	30.4	42.5	72.6
	Rate	People		11.3	38.6	74.8	87.3	71.3	91.5	95.8	99.5	99.1	74.8	93.9	98.5	100.0	4.8	11.3	27.5	37.6	50.8	79.6

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Blantyre City): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

Region	Line or Rate	Households or People	*n*	Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
				Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		272	439	659	878	624	998	1,248	2,495	2,353	660	1,111	1,910	7,535	220	272	371	430	505	727
	Rate	Households	384	0.7	5.9	25.8	44.9	21.7	52.8	65.7	87.9	85.7	25.8	58.8	81.9	98.5	0.3	0.7	3.3	5.2	9.9	32.4
	Rate	People		1.0	8.0	30.6	52.8	25.9	60.2	72.3	90.9	89.7	30.6	66.1	86.6	99.1	0.5	1.0	4.5	7.2	12.9	38.3
Rural	Line	People		272	439	659	878	624	998	1,248	2,495	2,353	660	1,111	1,910	7,535	220	272	371	430	505	727
	Rate	Households	384	0.7	5.9	25.8	44.9	21.7	52.8	65.7	87.9	85.7	25.8	58.8	81.9	98.5	0.3	0.7	3.3	5.2	9.9	32.4
	Rate	People		1.0	8.0	30.6	52.8	25.9	60.2	72.3	90.9	89.7	30.6	66.1	86.6	99.1	0.5	1.0	4.5	7.2	12.9	38.3
All	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	18.8	31.3	68.8	87.5	62.5	87.5	87.5	93.8	93.8	75.0	87.5	87.5	100.0	6.3	18.8	25.0	31.3	43.8	81.3
	Rate	People		21.5	35.4	81.5	96.9	73.8	96.9	96.9	98.5	98.5	87.7	96.9	96.9	100.0	6.2	21.5	27.7	35.4	50.8	93.8

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Chikwawa): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	18.8	31.3	68.8	87.5	62.5	87.5	87.5	93.8	93.8	75.0	87.5	87.5	100.0	6.3	18.8	25.0	31.3	43.8	81.3
	Rate	People		21.5	35.4	81.5	96.9	73.8	96.9	96.9	98.5	98.5	87.7	96.9	96.9	100.0	6.2	21.5	27.7	35.4	50.8	93.8
Rural	Line	People		235	378	567	756	537	859	1,074	2,147	2,025	568	956	1,644	6,485	189	234	319	370	435	626
	Rate	Households	368	26.9	55.6	80.5	89.0	77.1	92.4	95.9	99.4	99.1	80.5	94.2	98.1	100.0	16.3	26.9	46.4	54.1	64.8	84.0
	Rate	People		35.0	64.2	87.2	93.0	84.5	95.6	98.2	99.7	99.7	87.2	96.6	99.4	100.0	22.8	35.0	56.4	62.6	73.4	89.4
All	Line	People		236	380	569	759	539	863	1,078	2,157	2,034	570	960	1,651	6,513	190	235	321	371	437	628
	Rate	Households	384	26.6	54.7	80.1	89.0	76.5	92.2	95.5	99.2	98.9	80.3	93.9	97.7	100.0	16.0	26.6	45.6	53.2	64.0	83.9
	Rate	People		34.6	63.2	87.0	93.1	84.2	95.6	98.1	99.7	99.6	87.2	96.7	99.3	100.0	22.2	34.6	55.4	61.7	72.6	89.5

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Chiradzulu): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	12.5	43.8	75.0	93.8	62.5	93.8	93.8	100.0	100.0	75.0	93.8	100.0	100.0	0.0	12.5	37.5	43.8	50.0	81.3
	Rate	People		9.4	49.1	83.0	98.1	67.9	98.1	98.1	100.0	100.0	83.0	98.1	100.0	100.0	0.0	9.4	35.8	49.1	52.8	86.8
Rural	Line	People		238	383	574	766	544	870	1,088	2,175	2,051	575	969	1,665	6,568	192	237	323	374	440	634
	Rate	Households	367	24.8	60.0	84.5	93.1	81.5	96.3	98.1	100.0	100.0	84.5	97.2	99.7	100.0	9.9	24.8	46.0	58.1	67.6	87.1
	Rate	People		29.0	67.4	88.8	94.7	86.4	96.8	98.2	100.0	100.0	88.8	97.2	99.4	100.0	12.4	29.0	53.0	65.0	74.9	90.6
All	Line	People		239	385	578	770	547	875	1,094	2,188	2,063	578	974	1,674	6,606	193	239	325	377	443	637
	Rate	Households	383	24.1	59.0	83.9	93.2	80.4	96.1	97.9	100.0	100.0	83.9	97.0	99.7	100.0	9.3	24.1	45.5	57.3	66.5	86.7
	Rate	People		28.0	66.4	88.5	94.8	85.4	96.9	98.2	100.0	100.0	88.5	97.3	99.4	100.0	11.7	28.0	52.1	64.2	73.8	90.4

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Chitipa): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		276	444	666	888	631	1,009	1,262	2,523	2,380	667	1,124	1,931	7,620	222	275	375	434	511	735
	Rate	Households	32	12.5	43.8	63.9	79.2	60.4	84.7	91.0	100.0	100.0	63.9	91.0	100.0	100.0	6.3	12.5	24.3	43.8	47.2	66.7
	Rate	People		20.6	57.6	75.2	89.1	74.3	94.3	97.6	100.0	100.0	75.2	97.6	100.0	100.0	8.9	20.6	34.5	57.6	62.2	79.6
Rural	Line	People		256	413	619	826	586	938	1,173	2,346	2,212	620	1,045	1,795	7,083	207	256	349	404	475	683
	Rate	Households	352	26.1	66.6	91.6	97.0	89.8	97.6	99.2	100.0	100.0	91.6	98.4	100.0	100.0	12.6	25.8	50.2	64.6	76.5	94.9
	Rate	People		35.1	75.4	94.8	98.3	94.0	98.6	99.5	100.0	100.0	94.8	99.0	100.0	100.0	17.4	34.7	61.3	73.7	83.8	97.1
All	Line	People		258	416	623	831	590	944	1,180	2,361	2,227	624	1,051	1,807	7,130	208	257	351	406	478	688
	Rate	Households	384	24.8	64.4	89.0	95.3	87.0	96.4	98.4	100.0	100.0	89.0	97.7	100.0	100.0	12.0	24.5	47.7	62.6	73.7	92.2
	Rate	People		33.8	73.8	93.1	97.5	92.3	98.2	99.3	100.0	100.0	93.1	98.8	100.0	100.0	16.7	33.5	59.0	72.3	82.0	95.6

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Dedza): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	6.3	43.8	56.3	62.5	50.0	75.0	87.5	100.0	93.8	56.3	87.5	93.8	100.0	0.0	6.3	31.3	43.8	43.8	56.3
	Rate	People		3.8	51.9	63.5	71.2	55.8	88.5	96.2	100.0	98.1	63.5	96.2	98.1	100.0	0.0	3.8	38.5	51.9	51.9	63.5
Rural	Line	People		225	363	544	725	515	824	1,030	2,059	1,942	545	917	1,576	6,219	181	225	306	355	417	600
	Rate	Households	368	22.3	56.5	80.7	89.4	77.8	92.4	98.0	99.8	99.5	80.7	95.2	99.5	99.8	8.8	22.3	45.3	55.8	66.6	84.0
	Rate	People		27.1	63.8	85.8	92.8	83.2	94.6	98.8	99.8	99.7	85.8	96.9	99.7	99.8	11.7	27.1	53.0	63.5	73.3	89.0
All	Line	People		227	367	550	733	521	833	1,041	2,083	1,965	551	928	1,594	6,290	183	227	310	359	422	607
	Rate	Households	384	20.9	55.4	78.6	87.1	75.4	90.9	97.1	99.8	99.1	78.6	94.5	99.1	99.8	8.0	20.9	44.1	54.7	64.7	81.6
	Rate	People		25.6	63.1	84.3	91.4	81.4	94.2	98.6	99.8	99.6	84.3	96.9	99.6	99.8	10.9	25.6	52.1	62.8	71.9	87.4

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Dowa): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)				
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	0.0	0.0	0.0	37.5	0.0	50.0	56.3	93.8	87.5	0.0	50.0	75.0	93.8	0.0	0.0	0.0	0.0	0.0	18.8
	Rate	People		0.0	0.0	0.0	47.4	0.0	59.6	66.7	98.2	93.0	0.0	59.6	82.5	98.2	0.0	0.0	0.0	0.0	0.0	22.8
Rural	Line	People		225	363	545	726	516	825	1,032	2,063	1,946	546	919	1,579	6,230	182	225	307	355	418	601
	Rate	Households	368	12.2	42.1	70.7	88.5	68.3	90.6	95.4	99.6	99.6	71.0	93.2	99.6	100.0	4.7	12.2	29.2	41.3	54.3	76.2
	Rate	People		16.0	50.0	76.6	90.9	74.7	93.0	96.5	99.5	99.5	77.0	94.6	99.5	100.0	6.0	16.0	35.3	49.0	61.5	80.8
All	Line	People		226	365	547	729	518	829	1,036	2,072	1,954	548	922	1,586	6,256	182	226	308	357	419	604
	Rate	Households	384	11.9	40.9	68.7	87.0	66.4	89.5	94.3	99.4	99.2	69.0	92.0	98.9	99.8	4.6	11.9	28.4	40.1	52.7	74.6
	Rate	People		15.6	48.8	74.8	89.9	73.0	92.2	95.8	99.5	99.4	75.2	93.7	99.1	100.0	5.9	15.6	34.5	47.8	60.1	79.4

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Karonga): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		265	427	641	855	607	971	1,214	2,427	2,289	642	1,081	1,858	7,329	214	265	361	418	491	707
	Rate	Households	48	2.2	22.6	52.8	69.3	45.7	80.9	86.4	98.6	98.6	52.8	86.4	95.8	100.0	0.0	2.2	15.4	21.2	29.7	60.3
	Rate	People		4.2	28.8	57.6	72.0	50.1	83.3	89.7	99.0	99.0	57.6	89.7	97.3	100.0	0.0	4.2	22.8	27.1	34.9	64.0
Rural	Line	People		258	415	623	831	590	944	1,180	2,359	2,225	624	1,051	1,806	7,125	208	257	351	406	478	688
	Rate	Households	336	20.6	54.1	81.2	91.6	79.2	95.1	97.5	100.0	99.7	81.2	96.1	99.4	100.0	7.2	20.6	41.6	51.9	65.9	85.8
	Rate	People		26.9	63.6	87.6	95.7	85.9	97.8	99.0	100.0	99.9	87.6	98.2	99.9	100.0	10.1	26.9	49.9	60.7	74.2	90.7
All	Line	People		259	418	626	835	593	949	1,186	2,372	2,237	627	1,056	1,815	7,163	209	259	353	408	480	691
	Rate	Households	384	17.1	48.0	75.7	87.3	72.7	92.3	95.3	99.7	99.5	75.7	94.2	98.7	100.0	5.8	17.1	36.5	46.0	58.9	80.8
	Rate	People		22.7	57.1	82.0	91.3	79.3	95.1	97.3	99.8	99.8	82.0	96.6	99.4	100.0	8.2	22.7	44.8	54.5	66.9	85.8

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Kasungu): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		270	436	654	872	619	990	1,238	2,475	2,335	655	1,102	1,895	7,475	218	270	368	426	501	721
	Rate	Households	32	7.7	30.2	52.8	78.8	49.0	81.3	95.2	100.0	100.0	52.8	88.9	100.0	100.0	3.8	7.7	17.7	30.2	35.1	61.5
	Rate	People		11.3	42.4	67.2	87.7	62.0	89.6	97.6	100.0	100.0	67.2	96.4	100.0	100.0	5.3	11.3	27.4	42.4	45.3	74.6
Rural	Line	People		224	361	542	723	513	821	1,027	2,053	1,937	543	914	1,571	6,200	181	224	305	353	416	598
	Rate	Households	352	11.6	46.6	76.1	89.1	72.2	92.8	97.3	99.2	99.2	76.5	95.4	99.0	100.0	3.7	11.3	32.1	43.9	56.1	82.0
	Rate	People		14.9	54.3	82.8	94.0	78.6	96.2	98.8	99.8	99.8	83.1	97.6	99.8	100.0	5.2	14.7	39.0	51.7	63.7	88.1
All	Line	People		229	370	555	739	525	840	1,050	2,100	1,981	555	935	1,607	6,342	185	229	312	362	425	612
	Rate	Households	384	11.2	44.9	73.8	88.0	69.8	91.6	97.1	99.3	99.3	74.1	94.8	99.1	100.0	3.7	11.0	30.7	42.5	53.9	79.9
	Rate	People		14.5	53.0	81.1	93.3	76.7	95.5	98.7	99.9	99.9	81.3	97.5	99.8	100.0	5.2	14.3	37.7	50.6	61.6	86.6

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Lilongwe): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		223	360	540	719	511	817	1,022	2,043	1,927	540	910	1,564	6,171	180	223	304	352	414	595
	Rate	Households	575	11.5	43.1	72.8	87.5	69.0	91.1	96.8	99.8	99.6	72.8	94.8	99.3	100.0	4.5	11.5	30.0	40.6	54.0	78.3
	Rate	People		13.9	47.9	76.4	89.5	72.6	92.9	97.9	99.8	99.8	76.4	96.1	99.6	100.0	5.7	13.9	34.9	45.4	58.7	81.2
Rural	Line	People		223	360	540	719	511	817	1,022	2,043	1,927	540	910	1,564	6,171	180	223	304	352	414	595
	Rate	Households	575	11.5	43.1	72.8	87.5	69.0	91.1	96.8	99.8	99.6	72.8	94.8	99.3	100.0	4.5	11.5	30.0	40.6	54.0	78.3
	Rate	People		13.9	47.9	76.4	89.5	72.6	92.9	97.9	99.8	99.8	76.4	96.1	99.6	100.0	5.7	13.9	34.9	45.4	58.7	81.2
All	Line	People		273	441	661	882	626	1,002	1,252	2,504	2,362	662	1,115	1,917	7,562	220	273	372	431	507	730
	Rate	Households	576	3.6	15.2	32.4	51.0	30.4	58.1	69.8	93.6	91.7	32.4	64.0	86.4	99.5	1.1	3.6	10.5	14.5	19.6	39.3
	Rate	People		4.7	18.0	37.7	57.6	35.5	65.1	75.5	96.1	94.5	37.7	70.8	90.3	99.8	1.7	4.7	13.3	17.4	23.6	45.2

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Lilongwe City): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)				
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		273	441	661	882	626	1,002	1,252	2,504	2,362	662	1,115	1,917	7,562	220	273	372	431	507	730
	Rate	Households	576	3.6	15.2	32.4	51.0	30.4	58.1	69.8	93.6	91.7	32.4	64.0	86.4	99.5	1.1	3.6	10.5	14.5	19.6	39.3
	Rate	People		4.7	18.0	37.7	57.6	35.5	65.1	75.5	96.1	94.5	37.7	70.8	90.3	99.8	1.7	4.7	13.3	17.4	23.6	45.2
Rural	Line	People		273	441	661	882	626	1,002	1,252	2,504	2,362	662	1,115	1,917	7,562	220	273	372	431	507	730
	Rate	Households	576	3.6	15.2	32.4	51.0	30.4	58.1	69.8	93.6	91.7	32.4	64.0	86.4	99.5	1.1	3.6	10.5	14.5	19.6	39.3
	Rate	People		4.7	18.0	37.7	57.6	35.5	65.1	75.5	96.1	94.5	37.7	70.8	90.3	99.8	1.7	4.7	13.3	17.4	23.6	45.2
All	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	6.3	43.8	75.0	93.8	75.0	93.8	100.0	100.0	100.0	75.0	100.0	100.0	100.0	0.0	6.3	25.0	43.8	43.8	87.5
	Rate	People		9.2	46.1	81.6	97.4	81.6	97.4	100.0	100.0	100.0	81.6	100.0	100.0	100.0	0.0	9.2	25.0	46.1	46.1	94.7

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Machinga): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	6.3	43.8	75.0	93.8	75.0	93.8	100.0	100.0	100.0	75.0	100.0	100.0	100.0	0.0	6.3	25.0	43.8	43.8	87.5
	Rate	People		9.2	46.1	81.6	97.4	81.6	97.4	100.0	100.0	100.0	81.6	100.0	100.0	100.0	0.0	9.2	25.0	46.1	46.1	94.7
Rural	Line	People		234	378	567	755	536	858	1,073	2,146	2,024	567	955	1,642	6,479	189	234	319	369	434	625
	Rate	Households	368	24.2	66.9	89.6	95.5	88.0	96.7	97.9	99.7	99.4	89.6	97.4	99.4	100.0	12.4	24.2	52.8	64.7	76.9	93.6
	Rate	People		30.7	75.3	93.1	97.1	92.1	98.3	99.0	99.9	99.8	93.1	98.7	99.8	100.0	16.6	30.7	61.7	73.2	83.6	95.8
All	Line	People		237	383	574	765	543	869	1,087	2,173	2,050	575	968	1,663	6,562	191	237	323	374	440	633
	Rate	Households	384	22.5	64.7	88.2	95.4	86.7	96.5	98.1	99.7	99.5	88.2	97.7	99.5	100.0	11.2	22.5	50.1	62.7	73.7	93.0
	Rate	People		28.5	72.4	91.9	97.1	91.1	98.2	99.1	99.9	99.8	91.9	98.9	99.8	100.0	15.0	28.5	58.0	70.5	79.8	95.7

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Mangochi): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	0.0	12.5	56.3	62.5	50.0	68.8	75.0	93.8	93.8	56.3	68.8	87.5	100.0	0.0	0.0	6.3	12.5	12.5	56.3
	Rate	People		0.0	15.9	73.0	77.8	71.4	85.7	87.3	95.2	95.2	73.0	85.7	93.7	100.0	0.0	0.0	6.3	15.9	15.9	73.0
Rural	Line	People		235	379	568	758	538	861	1,076	2,153	2,031	569	959	1,648	6,501	190	235	320	371	436	627
	Rate	Households	367	18.1	52.4	81.8	93.2	76.5	96.7	98.7	99.9	99.9	82.2	97.8	99.7	99.9	9.6	18.1	39.0	51.3	61.5	87.3
	Rate	People		23.5	60.8	86.1	95.5	82.1	97.9	99.5	99.9	99.9	86.6	98.8	99.9	99.9	13.0	23.5	46.5	59.2	68.5	91.5
All	Line	People		236	380	570	761	540	864	1,080	2,161	2,038	571	962	1,654	6,524	190	236	321	372	437	630
	Rate	Households	383	17.6	51.2	81.0	92.3	75.7	95.9	98.0	99.7	99.7	81.4	96.9	99.3	99.9	9.3	17.6	38.0	50.2	60.0	86.3
	Rate	People		22.8	59.5	85.7	95.0	81.8	97.5	99.1	99.8	99.8	86.2	98.5	99.7	99.9	12.6	22.8	45.3	57.9	67.0	91.0

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Mchinji): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	0.0	6.3	31.3	43.8	25.0	43.8	62.5	81.3	81.3	31.3	56.3	75.0	100.0	0.0	0.0	0.0	0.0	12.5	37.5
	Rate	People		0.0	7.1	44.3	60.0	35.7	60.0	75.7	88.6	88.6	44.3	71.4	85.7	100.0	0.0	0.0	0.0	0.0	15.7	52.9
Rural	Line	People		226	364	546	728	517	828	1,035	2,069	1,952	547	921	1,584	6,248	182	226	308	356	419	603
	Rate	Households	368	14.0	45.2	72.3	85.1	68.9	90.8	96.0	99.5	99.5	72.3	94.2	99.0	100.0	4.6	14.0	33.7	43.3	55.3	76.9
	Rate	People		18.0	52.0	78.6	89.0	75.0	93.6	97.2	99.4	99.4	78.6	96.0	99.1	100.0	5.5	18.0	39.7	49.6	62.1	82.9
All	Line	People		227	366	549	732	520	832	1,040	2,080	1,962	550	926	1,592	6,282	183	227	309	358	421	606
	Rate	Households	384	13.5	43.9	71.0	83.7	67.5	89.3	94.9	98.9	98.9	71.0	92.9	98.2	100.0	4.5	13.5	32.6	41.8	53.9	75.6
	Rate	People		17.4	50.5	77.5	88.1	73.7	92.5	96.5	99.1	99.1	77.5	95.2	98.6	100.0	5.4	17.4	38.4	48.0	60.6	82.0

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Mulanje): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		234	378	566	755	536	858	1,073	2,145	2,023	567	955	1,642	6,478	189	234	319	369	434	625
	Rate	Households	376	12.4	40.2	76.2	86.0	73.0	88.7	93.4	99.3	99.3	76.2	91.5	98.7	99.8	6.5	12.4	25.9	38.3	51.5	81.0
	Rate	People		16.6	46.9	79.2	89.5	76.9	91.7	95.5	99.8	99.8	79.2	93.4	99.7	100.0	9.2	16.6	31.4	44.9	56.4	84.0
Rural	Line	People		234	378	566	755	536	858	1,073	2,145	2,023	567	955	1,642	6,478	189	234	319	369	434	625
	Rate	Households	376	12.4	40.2	76.2	86.0	73.0	88.7	93.4	99.3	99.3	76.2	91.5	98.7	99.8	6.5	12.4	25.9	38.3	51.5	81.0
	Rate	People		16.6	46.9	79.2	89.5	76.9	91.7	95.5	99.8	99.8	79.2	93.4	99.7	100.0	9.2	16.6	31.4	44.9	56.4	84.0
All	Line	People		273	440	660	880	625	1,000	1,249	2,499	2,357	661	1,113	1,913	7,546	220	273	371	430	506	728
	Rate	Households	32	0.0	16.0	38.9	48.6	36.1	55.5	71.5	96.5	96.5	38.9	62.5	90.3	100.0	0.0	0.0	13.2	16.0	24.3	38.9
	Rate	People		0.0	19.3	42.7	51.2	39.6	61.3	76.1	97.7	97.7	42.7	67.4	92.4	100.0	0.0	0.0	15.6	19.3	29.8	42.7

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Mwanza): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		273	440	660	880	625	1,000	1,249	2,499	2,357	661	1,113	1,913	7,546	220	273	371	430	506	728
	Rate	Households	32	0.0	16.0	38.9	48.6	36.1	55.5	71.5	96.5	96.5	38.9	62.5	90.3	100.0	0.0	0.0	13.2	16.0	24.3	38.9
	Rate	People		0.0	19.3	42.7	51.2	39.6	61.3	76.1	97.7	97.7	42.7	67.4	92.4	100.0	0.0	0.0	15.6	19.3	29.8	42.7
Rural	Line	People		234	377	565	753	535	856	1,070	2,140	2,018	566	953	1,638	6,462	188	233	318	368	433	624
	Rate	Households	348	13.0	49.4	75.8	87.5	71.9	92.4	96.3	99.1	99.1	76.2	94.7	98.9	100.0	5.3	13.0	36.6	48.2	57.9	79.9
	Rate	People		17.6	57.1	82.1	91.7	78.7	95.5	98.3	99.5	99.5	82.5	97.2	99.4	100.0	7.3	17.6	45.0	56.0	65.7	85.6
All	Line	People		237	383	574	765	543	869	1,087	2,174	2,050	575	968	1,664	6,564	191	237	323	374	440	633
	Rate	Households	380	11.8	46.4	72.5	84.0	68.7	89.1	94.0	98.8	98.8	72.8	91.8	98.1	100.0	4.8	11.8	34.5	45.2	54.9	76.2
	Rate	People		16.0	53.6	78.4	87.9	75.0	92.3	96.2	99.4	99.4	78.7	94.4	98.8	100.0	6.6	16.0	42.2	52.5	62.3	81.5

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Mzimba): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	0.0	0.0	25.0	50.0	12.5	56.3	75.0	100.0	100.0	25.0	56.3	93.8	100.0	0.0	0.0	0.0	0.0	0.0	31.3
	Rate	People		0.0	0.0	26.9	56.7	11.9	62.7	76.1	100.0	100.0	26.9	62.7	92.5	100.0	0.0	0.0	0.0	0.0	0.0	35.8
Rural	Line	People		257	414	621	828	588	941	1,176	2,352	2,218	622	1,047	1,800	7,101	207	256	350	405	476	685
	Rate	Households	364	13.9	39.2	67.7	83.8	64.5	90.0	95.1	99.5	99.5	67.7	92.7	99.2	100.0	4.8	13.6	27.0	38.2	50.1	72.9
	Rate	People		17.6	45.0	72.6	87.3	69.6	92.2	96.0	99.6	99.6	72.6	94.5	99.4	100.0	6.8	17.2	32.5	43.8	56.1	77.6
All	Line	People		257	414	622	829	589	942	1,177	2,355	2,221	623	1,049	1,802	7,110	207	257	350	405	477	686
	Rate	Households	380	13.3	37.4	65.8	82.2	62.1	88.5	94.2	99.5	99.5	65.8	91.0	98.9	100.0	4.6	12.9	25.7	36.5	47.8	70.9
	Rate	People		16.8	42.9	70.6	85.9	67.0	90.9	95.1	99.6	99.6	70.6	93.1	99.0	100.0	6.5	16.4	31.0	41.8	53.6	75.7

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Mzuzu City): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)				
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		273	441	661	881	626	1,001	1,252	2,504	2,361	662	1,115	1,916	7,560	220	273	372	431	507	730
	Rate	Households	384	1.5	6.6	26.2	46.9	20.8	53.1	70.2	95.4	94.7	26.4	63.9	87.6	99.8	0.0	1.5	2.6	6.2	12.4	33.6
	Rate	People		2.0	9.7	33.9	56.2	27.9	62.7	80.6	97.6	97.2	34.3	73.8	94.0	99.9	0.0	2.0	4.5	9.2	17.6	42.3
Rural	Line	People		273	441	661	881	626	1,001	1,252	2,504	2,361	662	1,115	1,916	7,560	220	273	372	431	507	730
	Rate	Households	384	1.5	6.6	26.2	46.9	20.8	53.1	70.2	95.4	94.7	26.4	63.9	87.6	99.8	0.0	1.5	2.6	6.2	12.4	33.6
	Rate	People		2.0	9.7	33.9	56.2	27.9	62.7	80.6	97.6	97.2	34.3	73.8	94.0	99.9	0.0	2.0	4.5	9.2	17.6	42.3
All	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	0.0	0.0	12.5	37.5	12.5	37.5	56.3	87.5	75.0	12.5	50.0	62.5	100.0	0.0	0.0	0.0	0.0	0.0	12.5
	Rate	People		0.0	0.0	20.0	52.3	20.0	52.3	69.2	90.8	84.6	20.0	61.5	76.9	100.0	0.0	0.0	0.0	0.0	0.0	20.0

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Neno): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		264	426	639	852	605	967	1,209	2,419	2,281	640	1,077	1,851	7,304	213	264	360	416	490	705
	Rate	Households	16	0.0	0.0	12.5	37.5	12.5	37.5	56.3	87.5	75.0	12.5	50.0	62.5	100.0	0.0	0.0	0.0	0.0	0.0	12.5
	Rate	People		0.0	0.0	20.0	52.3	20.0	52.3	69.2	90.8	84.6	20.0	61.5	76.9	100.0	0.0	0.0	0.0	0.0	0.0	20.0
Rural	Line	People		233	375	562	750	532	852	1,065	2,130	2,009	563	948	1,630	6,431	188	232	317	367	431	621
	Rate	Households	368	30.8	64.9	84.3	92.5	82.3	94.2	95.8	98.8	98.8	84.3	94.9	97.8	100.0	16.0	30.8	53.7	64.1	70.9	87.1
	Rate	People		36.6	70.8	87.9	94.7	86.4	95.9	97.3	99.5	99.5	87.9	96.2	98.5	100.0	20.1	36.6	60.0	70.1	76.4	90.6
All	Line	People		233	376	564	752	534	854	1,068	2,136	2,015	565	951	1,635	6,451	188	233	318	368	432	622
	Rate	Households	384	30.1	63.3	82.6	91.1	80.6	92.8	94.8	98.5	98.2	82.6	93.8	97.0	100.0	15.6	30.1	52.4	62.6	69.2	85.3
	Rate	People		35.8	69.2	86.3	93.8	84.9	94.9	96.7	99.3	99.2	86.3	95.4	98.0	100.0	19.7	35.8	58.7	68.6	74.7	89.0

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Nkhata Bay): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		275	444	666	888	631	1,009	1,261	2,522	2,379	667	1,123	1,930	7,616	222	275	375	434	510	735
	Rate	Households	32	0.0	26.0	43.2	69.8	39.6	76.0	79.7	97.4	97.4	43.2	76.0	97.4	100.0	0.0	0.0	15.1	26.0	28.6	51.0
	Rate	People		0.0	40.7	59.0	80.5	55.1	87.4	90.6	99.4	99.4	59.0	87.4	99.4	100.0	0.0	0.0	23.2	40.7	44.7	67.0
Rural	Line	People		257	415	622	830	589	942	1,178	2,356	2,222	623	1,049	1,803	7,115	207	257	350	406	477	687
	Rate	Households	351	13.8	50.8	80.0	91.4	75.3	93.5	95.9	99.3	99.3	80.0	95.3	98.5	100.0	8.0	13.8	35.6	49.4	59.7	86.3
	Rate	People		18.0	59.4	86.5	95.6	82.9	97.5	98.9	99.9	99.9	86.5	98.6	99.7	100.0	11.0	18.0	42.3	57.5	68.4	91.8
All	Line	People		259	417	626	835	593	949	1,186	2,371	2,237	627	1,056	1,815	7,161	209	259	353	408	480	691
	Rate	Households	383	12.3	48.2	76.1	89.1	71.5	91.6	94.2	99.1	99.1	76.1	93.2	98.4	100.0	7.2	12.3	33.4	46.9	56.4	82.6
	Rate	People		16.3	57.7	84.0	94.3	80.4	96.5	98.1	99.8	99.8	84.0	97.6	99.6	100.0	10.0	16.3	40.6	56.0	66.2	89.5

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Nkhotakota): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		273	441	661	881	626	1,001	1,252	2,504	2,361	662	1,115	1,916	7,560	220	273	372	431	507	730
	Rate	Households	32	18.7	37.4	62.5	78.1	56.2	81.3	90.6	100.0	100.0	62.5	81.3	100.0	100.0	12.5	18.7	34.3	37.4	53.1	68.8
	Rate	People		22.6	44.6	70.4	84.9	64.1	86.8	95.6	100.0	100.0	70.4	86.8	100.0	100.0	15.7	22.6	41.5	44.6	59.1	74.8
Rural	Line	People		224	362	543	723	514	822	1,027	2,055	1,938	543	915	1,573	6,205	181	224	305	354	416	599
	Rate	Households	351	19.9	46.2	69.6	83.3	65.8	88.7	92.9	99.0	98.7	69.6	90.8	97.9	99.7	9.6	19.9	34.4	43.3	54.0	75.6
	Rate	People		25.4	54.4	77.5	88.6	73.8	92.8	95.8	99.3	99.1	77.5	94.3	98.2	99.8	12.4	25.4	41.5	51.3	62.0	82.4
All	Line	People		229	370	554	739	525	840	1,050	2,099	1,980	555	935	1,607	6,340	185	229	312	361	425	612
	Rate	Households	383	19.8	45.4	68.9	82.7	64.8	87.9	92.7	99.1	98.9	68.9	89.8	98.2	99.7	9.9	19.8	34.4	42.8	53.9	74.9
	Rate	People		25.1	53.4	76.8	88.3	72.8	92.2	95.7	99.4	99.2	76.8	93.5	98.4	99.8	12.8	25.1	41.5	50.6	61.7	81.6

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Nsanje): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

Region	Line or Rate	Households or People	*n*	Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
				Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		275	443	665	887	630	1,007	1,259	2,518	2,375	666	1,121	1,927	7,604	222	275	374	433	510	734
	Rate	Households	32	31.7	53.3	68.2	76.9	63.4	81.7	92.8	95.2	95.2	68.2	86.5	92.8	97.6	19.2	31.7	53.3	53.3	53.3	73.0
	Rate	People		38.2	62.4	75.0	80.2	68.3	83.2	96.4	98.2	98.2	75.0	91.1	96.4	99.4	25.1	38.2	62.4	62.4	62.4	79.2
Rural	Line	People		235	378	567	757	537	860	1,074	2,149	2,027	568	957	1,645	6,489	189	234	319	370	435	626
	Rate	Households	352	30.1	67.8	84.1	91.0	82.3	94.4	97.3	98.8	98.8	84.1	95.3	98.7	100.0	19.2	29.4	54.9	66.7	72.7	87.3
	Rate	People		36.9	75.1	88.6	93.9	86.7	96.3	98.5	99.6	99.6	88.6	97.2	99.6	100.0	25.7	36.2	63.2	74.3	80.3	91.3
All	Line	People		237	382	573	764	543	869	1,086	2,171	2,048	574	967	1,662	6,557	191	237	323	374	439	633
	Rate	Households	384	30.2	66.8	83.1	90.0	81.0	93.5	97.0	98.6	98.6	83.1	94.8	98.3	99.8	19.2	29.5	54.8	65.8	71.5	86.3
	Rate	People		37.0	74.3	87.8	93.1	85.6	95.5	98.4	99.6	99.6	87.8	96.9	99.4	100.0	25.7	36.3	63.1	73.5	79.2	90.6

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Ntcheu): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		226	364	547	729	518	828	1,035	2,070	1,953	547	922	1,584	6,251	182	226	308	356	419	603
	Rate	Households	383	15.3	44.4	74.8	83.9	69.0	89.3	93.8	99.6	99.6	74.8	92.5	98.8	100.0	5.8	15.1	35.2	43.1	54.2	79.2
	Rate	People		19.2	54.1	81.7	88.8	76.8	92.3	95.6	99.9	99.9	81.7	94.2	99.2	100.0	8.1	19.0	43.1	52.9	63.0	85.7
Rural	Line	People		226	364	547	729	518	828	1,035	2,070	1,953	547	922	1,584	6,251	182	226	308	356	419	603
	Rate	Households	383	15.3	44.4	74.8	83.9	69.0	89.3	93.8	99.6	99.6	74.8	92.5	98.8	100.0	5.8	15.1	35.2	43.1	54.2	79.2
	Rate	People		19.2	54.1	81.7	88.8	76.8	92.3	95.6	99.9	99.9	81.7	94.2	99.2	100.0	8.1	19.0	43.1	52.9	63.0	85.7
All	Line	People		265	427	640	854	606	970	1,213	2,426	2,288	641	1,080	1,857	7,325	214	265	361	418	491	707
	Rate	Households	16	6.3	12.5	25.0	37.5	25.0	37.5	50.0	87.5	87.5	25.0	43.8	75.0	93.8	6.3	6.3	12.5	12.5	12.5	31.3
	Rate	People		10.0	18.6	38.6	51.4	38.6	51.4	61.4	94.3	94.3	38.6	55.7	80.0	95.7	10.0	10.0	18.6	18.6	18.6	47.1

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Ntchisi): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		265	427	640	854	606	970	1,213	2,426	2,288	641	1,080	1,857	7,325	214	265	361	418	491	707
	Rate	Households	16	6.3	12.5	25.0	37.5	25.0	37.5	50.0	87.5	87.5	25.0	43.8	75.0	93.8	6.3	6.3	12.5	12.5	12.5	31.3
	Rate	People		10.0	18.6	38.6	51.4	38.6	51.4	61.4	94.3	94.3	38.6	55.7	80.0	95.7	10.0	10.0	18.6	18.6	18.6	47.1
Rural	Line	People		226	364	545	727	516	826	1,033	2,065	1,948	546	920	1,581	6,237	182	225	307	356	418	602
	Rate	Households	367	17.3	47.0	75.3	89.6	72.0	92.6	97.3	99.8	99.8	75.5	94.7	99.5	100.0	10.8	17.3	30.4	44.9	57.3	81.7
	Rate	People		23.3	54.8	82.9	93.9	80.0	95.5	98.8	100.0	100.0	83.4	97.2	99.9	100.0	15.8	23.3	38.2	52.8	66.7	88.6
All	Line	People		227	366	549	732	520	831	1,039	2,078	1,960	550	925	1,591	6,276	183	227	309	358	421	606
	Rate	Households	383	16.9	45.8	73.4	87.7	70.3	90.6	95.6	99.4	99.4	73.7	92.8	98.7	99.8	10.7	16.9	29.7	43.8	55.7	79.9
	Rate	People		22.8	53.5	81.3	92.3	78.5	93.9	97.5	99.7	99.7	81.8	95.7	99.2	99.8	15.6	22.8	37.5	51.6	64.9	87.1

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Phalombe): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		235	378	568	757	537	860	1,075	2,149	2,027	568	957	1,645	6,490	189	234	320	370	435	626
	Rate	Households	382	42.3	75.6	91.9	97.1	90.5	97.9	99.1	100.0	100.0	91.9	98.3	100.0	100.0	26.1	42.3	65.0	74.3	80.9	94.1
	Rate	People		50.6	83.2	95.5	98.6	94.6	99.0	99.6	100.0	100.0	95.5	99.1	100.0	100.0	32.4	50.6	72.7	82.1	87.2	97.0
Rural	Line	People		235	378	568	757	537	860	1,075	2,149	2,027	568	957	1,645	6,490	189	234	320	370	435	626
	Rate	Households	382	42.3	75.6	91.9	97.1	90.5	97.9	99.1	100.0	100.0	91.9	98.3	100.0	100.0	26.1	42.3	65.0	74.3	80.9	94.1
	Rate	People		50.6	83.2	95.5	98.6	94.6	99.0	99.6	100.0	100.0	95.5	99.1	100.0	100.0	32.4	50.6	72.7	82.1	87.2	97.0
All	Line	People		267	430	645	859	610	976	1,220	2,441	2,302	645	1,087	1,868	7,371	215	266	363	420	494	711
	Rate	Households	48	2.1	21.1	41.8	60.6	41.8	64.7	75.0	87.5	87.5	41.8	70.8	85.4	100.0	0.0	2.1	8.4	18.9	27.4	45.9
	Rate	People		2.0	26.2	50.6	68.2	50.6	72.1	80.1	93.5	93.5	50.6	78.0	92.0	100.0	0.0	2.0	12.0	25.2	32.3	54.1

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Rumphi): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		276	445	667	890	632	1,011	1,263	2,527	2,383	668	1,125	1,934	7,630	222	276	376	435	511	736
	Rate	Households	32	3.8	13.8	35.2	57.7	35.2	64.0	74.0	95.1	90.1	35.2	70.2	85.2	100.0	3.8	3.8	7.6	13.8	25.2	45.2
	Rate	People		6.3	14.2	35.6	59.3	35.6	63.7	72.7	92.9	87.6	35.6	69.1	84.6	100.0	6.3	6.3	10.9	14.2	27.8	44.3
Rural	Line	People		225	363	545	726	516	825	1,031	2,063	1,946	545	919	1,579	6,229	182	225	307	355	418	601
	Rate	Households	352	23.2	56.0	84.6	93.1	82.2	95.3	98.1	100.0	100.0	84.6	96.8	99.7	100.0	10.2	23.2	43.3	54.1	67.3	88.5
	Rate	People		28.3	62.2	88.3	95.4	86.3	97.2	98.9	100.0	100.0	88.3	98.1	99.9	100.0	12.7	28.3	50.2	60.7	73.5	91.8
All	Line	People		229	369	554	739	525	840	1,050	2,099	1,980	555	935	1,607	6,339	185	229	312	361	425	612
	Rate	Households	384	21.7	52.8	80.8	90.3	78.6	92.9	96.3	99.6	99.2	80.8	94.7	98.6	100.0	9.7	21.7	40.5	51.0	64.0	85.2
	Rate	People		26.6	58.4	84.2	92.6	82.3	94.6	96.8	99.4	99.0	84.2	95.8	98.7	100.0	12.2	26.6	47.1	57.1	70.0	88.1

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Salima): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		276	445	667	890	632	1,011	1,263	2,527	2,383	668	1,125	1,934	7,630	222	276	376	435	511	736
	Rate	Households	32	3.8	13.8	35.2	57.7	35.2	64.0	74.0	95.1	90.1	35.2	70.2	85.2	100.0	3.8	3.8	7.6	13.8	25.2	45.2
	Rate	People		6.3	14.2	35.6	59.3	35.6	63.7	72.7	92.9	87.6	35.6	69.1	84.6	100.0	6.3	6.3	10.9	14.2	27.8	44.3
Rural	Line	People		225	363	545	726	516	825	1,031	2,063	1,946	545	919	1,579	6,229	182	225	307	355	418	601
	Rate	Households	352	23.2	56.0	84.6	93.1	82.2	95.3	98.1	100.0	100.0	84.6	96.8	99.7	100.0	10.2	23.2	43.3	54.1	67.3	88.5
	Rate	People		28.3	62.2	88.3	95.4	86.3	97.2	98.9	100.0	100.0	88.3	98.1	99.9	100.0	12.7	28.3	50.2	60.7	73.5	91.8
All	Line	People		229	369	554	739	525	840	1,050	2,099	1,980	555	935	1,607	6,339	185	229	312	361	425	612
	Rate	Households	384	21.7	52.8	80.8	90.3	78.6	92.9	96.3	99.6	99.2	80.8	94.7	98.6	100.0	9.7	21.7	40.5	51.0	64.0	85.2
	Rate	People		26.6	58.4	84.2	92.6	82.3	94.6	96.8	99.4	99.0	84.2	95.8	98.7	100.0	12.2	26.6	47.1	57.1	70.0	88.1

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Thyolo): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		233	375	563	751	533	853	1,066	2,132	2,011	564	949	1,632	6,437	188	232	317	367	431	621
	Rate	Households	380	22.2	57.3	78.8	88.5	75.8	92.4	96.9	100.0	99.9	78.8	94.1	99.9	100.0	13.4	22.0	45.2	55.6	65.5	82.3
	Rate	People		29.3	67.3	85.9	92.4	83.7	95.3	98.4	100.0	100.0	85.9	96.6	100.0	100.0	19.6	29.1	56.1	65.6	75.1	88.3
Rural	Line	People		233	375	563	751	533	853	1,066	2,132	2,011	564	949	1,632	6,437	188	232	317	367	431	621
	Rate	Households	380	22.2	57.3	78.8	88.5	75.8	92.4	96.9	100.0	99.9	78.8	94.1	99.9	100.0	13.4	22.0	45.2	55.6	65.5	82.3
	Rate	People		29.3	67.3	85.9	92.4	83.7	95.3	98.4	100.0	100.0	85.9	96.6	100.0	100.0	19.6	29.1	56.1	65.6	75.1	88.3
All	Line	People		233	376	564	752	534	854	1,068	2,136	2,015	565	951	1,635	6,451	188	233	318	368	432	622
	Rate	Households	384	15.0	46.9	75.0	88.5	71.3	93.0	96.5	100.0	99.7	75.2	95.3	99.7	100.0	7.6	15.0	34.1	44.2	57.7	79.2
	Rate	People		19.3	55.9	82.7	92.9	79.1	95.8	98.0	100.0	99.7	82.9	97.1	99.7	100.0	10.4	19.3	42.8	53.5	67.4	86.0

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Zomba): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		233	376	564	752	534	854	1,068	2,136	2,015	565	951	1,635	6,451	188	233	318	368	432	622
	Rate	Households	384	15.0	46.9	75.0	88.5	71.3	93.0	96.5	100.0	99.7	75.2	95.3	99.7	100.0	7.6	15.0	34.1	44.2	57.7	79.2
	Rate	People		19.3	55.9	82.7	92.9	79.1	95.8	98.0	100.0	99.7	82.9	97.1	99.7	100.0	10.4	19.3	42.8	53.5	67.4	86.0
Rural	Line	People		233	376	564	752	534	854	1,068	2,136	2,015	565	951	1,635	6,451	188	233	318	368	432	622
	Rate	Households	384	15.0	46.9	75.0	88.5	71.3	93.0	96.5	100.0	99.7	75.2	95.3	99.7	100.0	7.6	15.0	34.1	44.2	57.7	79.2
	Rate	People		19.3	55.9	82.7	92.9	79.1	95.8	98.0	100.0	99.7	82.9	97.1	99.7	100.0	10.4	19.3	42.8	53.5	67.4	86.0
All	Line	People		274	442	663	884	628	1,004	1,255	2,510	2,367	664	1,118	1,921	7,580	221	274	373	432	508	731
	Rate	Households	384	2.8	12.9	31.1	48.6	27.9	54.9	66.0	89.2	88.9	31.8	61.2	83.0	98.7	1.4	2.8	7.7	12.0	17.0	38.2
	Rate	People		3.9	15.8	35.3	53.2	31.9	59.2	70.7	92.0	91.8	35.9	65.8	86.7	99.5	2.0	3.9	10.4	14.6	20.6	43.1

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 1 (Zomba City): Poverty lines and poverty rates for households and people by urban/rural/all in 2016/17

	Line or	Households or		Poverty lines and poverty rates																	
				National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17 def.)				Percentile-based lines (2016/17 def.)					
Region	Rate	People	*n*	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Urban	Line	People		274	442	663	884	628	1,004	1,255	2,510	2,367	664	1,118	1,921	7,580	221	274	373	432	508	731
	Rate	Households	384	2.8	12.9	31.1	48.6	27.9	54.9	66.0	89.2	88.9	31.8	61.2	83.0	98.7	1.4	2.8	7.7	12.0	17.0	38.2
	Rate	People		3.9	15.8	35.3	53.2	31.9	59.2	70.7	92.0	91.8	35.9	65.8	86.7	99.5	2.0	3.9	10.4	14.6	20.6	43.1
Rural	Line	People		274	442	663	884	628	1,004	1,255	2,510	2,367	664	1,118	1,921	7,580	221	274	373	432	508	731
	Rate	Households	384	2.8	12.9	31.1	48.6	27.9	54.9	66.0	89.2	88.9	31.8	61.2	83.0	98.7	1.4	2.8	7.7	12.0	17.0	38.2
	Rate	People		3.9	15.8	35.3	53.2	31.9	59.2	70.7	92.0	91.8	35.9	65.8	86.7	99.5	2.0	3.9	10.4	14.6	20.6	43.1
All	Line	People		229	369	554	739	525	840	1,050	2,099	1,847	592	997	1,713	6,758	185	229	312	361	425	612
	Rate	Households	384	21.7	52.8	80.8	90.3	78.6	92.9	96.3	99.6	99.2	84.6	95.7	99.0	100.0	9.7	21.7	40.5	51.0	64.0	85.2
	Rate	People		26.6	58.4	84.2	92.6	82.3	94.6	96.8	99.4	99.0	87.8	96.4	98.9	100.0	12.2	26.6	47.1	57.1	70.0	88.1

Source: 2016/17 IHS

Poverty rates are percentages.

All poverty lines are MWK per-person per-day.

Poverty lines for 2016/17 are MWK in average prices in Malawi as a whole in April/May 2016.

Table 2: Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
1,190	In the past twelve months, how many household members worked at least one hour on household agricultural activities (including farming, raising livestock, or fishing), whether for sale or for household food, or engaged in casual, part-time, or *ganyu* labour for anyone who is not a member of the household? (Four or more; Three; Two; One; None)
1,165	What is your main source of cooking fuel? (Collected firewood, crop residue, saw dust, animal waste, or other; Purchased firewood; Charcoal, paraffin, electricity, or gas)
1,115	How many members of the household are 16-years-old or younger? (Five or more; Four; Three; Two; One; None)
1,113	How many members of the household are 17-years-old or younger? (Five or more; Four; Three; Two; One; None)
1,110	How many members of the household are 15-years-old or younger? (Four or more; Three; Two; One; None)
1,107	How many members of the household are 18-years-old or younger? (Five or more; Four; Three; Two; One; None)
1,076	How many members of the household are 14-years-old or younger? (Four or more; Three; Two; One; None)
1,054	What does the household head sleep on? (Mat (grass) on floor, cloth/sack on floor, floor (nothing else), or other; Bed and mat (grass), mattress on floor, or bed alone; Bed and mattress)
1,050	How many members of the household are 13-years-old or younger? (Four or more; Three; Two; One; None)
1,019	How many members of the household are 12-years-old or younger? (Four or more; Three; Two; One; None)
965	What is the highest class level that the female head (or the eldest wife of the male head) ever attended? (None; Nursery/pre-school, or primary standards 1 or 2; Primary standard 3; Primary standard 4; Primary standard 5; Primary standard 6; Primary standard 7; Primary standard 8, or secondary form 1; Secondary forms 2 or 3; Secondary form 4 or higher; No female head (and male head has no wife in the household))
939	How many members of the household are 11-years-old or younger? (Three or more; Two; One; None)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
895	The floor of the main dwelling is predominantly made of what material? (Smoothed mud; Sand; Smooth cement, wood, tile, or other)
888	How many beds does the household own? (None; One; Two or more)
885	In the in the past twelve months, how many household members engaged in casual, part-time, or *ganyu* labour for anyone who is not a member of the household? (Two or more; One; None)
884	How many members does the household have? (Seven or more; Six; Five; Four; Three; Two; One)
876	What is your main source of lighting fuel? (Collected firewood, purchased firewood, or grass; Battery/dry cell (torch); Paraffin, gas, or other; Candles; Electricity)
855	In the past twelve months, how many household members worked at least one hour on household agricultural activities (including farming, raising livestock, or fishing), whether for sale or for household food? (Two or more; One; None)
853	How many working cell phones in total does the household own? (None; One; Two or more)
809	At any time in the past twelve months, did the female head (or the eldest wife of the male head) engage in casual, part-time, or *ganyu* labour for anyone who is not a member of your household? (Yes; No female head (and male head has no wife in the household); No)
765	Do you have electricity working in your dwelling? (No; Yes)
749	Does the household own any televisons? (No; Yes)
744	In what geographic area does the household live? (Northern rural; Southern rural; Central rural; Urban)
708	Does the household own any irons (for pressing clothes)? (No; Yes)
687	What does the household head sleep under in the hot season (October)? (*Chitenje* cloth, fertilizer or grain sack, clothes, nothing, or other; Blanket only; Blanket and sheets, or only sheets)
672	Does the household own any upholstered chairs, sofa sets, coffee tables (for sitting room), cupboards, drawers, or bureaus? (No; Yes)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
642	At any time in the past twelve months, did the female head (or the eldest wife of the male head) work at least one hour on household agricultural activities (including farming, raising livestock, or fishing), whether for sale or for household food? (Yes; No; No female head (and male head has no wife in the household))
639	In what district does the household reside? (Chitipa, or Karonga; Neno, Nkhata Bay, Nsanje, Phalombe, or Rumphi; Chiradzulu, Machinga, or Thyolo; Balaka, or Mangochi; Chikwawa, or Dedza; Nkhotakota, or Salima; Mzimba, Ntcheu, or Ntchisi; Dowa, Kasungu, Mchinji, Mwanza, Zomba, or Zomba City; Blantyre, Lilongwe City, or Mulanje; Blantyre City, Lilongwe, or Mzuzu City)
631	What type of dwelling does the household live in? (Traditional; Semi-permanent (mix of traditional (mud, grass) and modern materials (iron sheet, cement)); Permanent)
625	In the past twelve months, did any household members work or help at least one hour in any kind of non-agricultural or non-fishing household business, big or small, or work for a wage, salary, commission, for any payment in kind, or did domestic work or paid farm work (excluding *ganyu*)? (No; Yes)
595	What does the household head sleep under in the cold season (July)? (*Chitenje* cloth, fertilizer or grain sack, clothes, nothing, or other; Sheets only; Blanket only; Blanket and sheets)
580	Are all household members ages 6 to 15 currently attending school, or, if school is not now in session, did they all attend school in the session just completed *and* plan to attend next session? (No; Yes; No members ages 6 to 15)
577	What is the highest class level that the male head (or the spouse of the female head) ever attended? (None, nursery/pre-school, or primary standard 1; Primary standards 2, 3, or 4; Primary standard 5; Primary standard 6; No male head (and female head has no husband in the household); Primary standard 7; Primary standard 8; Secondary forms 1 or 2; Secondary form 3, or higher)
562	Are all household members ages 6 to 14 currently attending school, or, if school is not now in session, did they all attend school in the session just completed *and* plan to attend next session? (No; Yes; No members ages 6 to 14)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
562	Are all household members ages 6 to 11 currently attending school, or, if school is not now in session, did they all attend school in the session just completed *and* plan to attend next session? (No; Yes; No members ages 6 to 11)
558	Are all household members ages 6 to 13 currently attending school, or, if school is not now in session, did they all attend school in the session just completed *and* plan to attend next session? (No; Yes; No members ages 6 to 13)
556	Are all household members ages 6 to 16 currently attending school, or, if school is not now in session, did they all attend school in the session just completed *and* plan to attend next session? (No; Yes; No members ages 6 to 16)
549	Are all household members ages 6 to 12 currently attending school, or, if school is not now in session, did they all attend school in the session just completed *and* plan to attend next session? (No; Yes; No members ages 6 to 12)
547	Are all household members ages 6 to 17 currently attending school, or, if school is not now in session, did they all attend school in the session just completed *and* plan to attend next session? (No; Yes; No members ages 6 to 17)
544	The roof of the main dwelling is predominantly made of what material? (*Observe and record*) (Grass; Iron sheets, clay tiles, concrete, plastic sheeting, or other)
530	How many members of the household are 6-years-old or younger? (Two or more; One; None)
513	Is the female head (or the eldest wife of the male head) able to read and write in Chichewa or English? (No; Only Chichewa; No female head (and male head has no wife in household); Only English, or both English and Chichewa)
488	Are all household members ages 6 to 18 currently attending school, or, if school is not now in session, did they all attend school in the session just completed *and* plan to attend next session? (No; Yes; No members ages 6 to 18)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
456	At any time in the past twelve months, did the female head (or the eldest wife of the male head) do any work for a wage, salary, commission, for any payment in kind, or did paid domestic work or paid farm work (excluding *ganyu*)? (Yes; No male head (and female head has no spouse in the household); No)
454	Is the male head (or the spouse of the female head) able to read and write in Chichewa or English? (No male head (and female head has no husband in the household); No; Only Chichewa; Only English, or both Chichewa and English)
451	What kind of toilet facility does your household use? (None, or other; Traditional latrine without roof only for household members; Traditional latrine without roof shared with other households; Traditional latrine with roof only for household members; Traditional latrine with roof shared with other households; VIP latrine, or flush toilet)
408	Does the household own a table? (No; Yes)
405	At any time in the past twelve months, did the female head (or the eldest wife of the male head) work or help at least one hour in any kind of non-agricultural or non-fishing household business, big or small? (No; Yes; No female head (and male head has no wife in the household))
405	Does the household own any clocks? (No; Yes)
396	How many hand hoes does the household own? (Five or more; Four; Three; Two; One; None)
394	What kind of toilet facility does your household use? (None, or other; Traditional latrine without roof; Traditional latrine with roof; VIP latrine, or flush toilet)
383	In the past twelve months, did the male head (or the husband of the female head) engage in casual, part-time, or *ganyu* labour, even for only one hour? (Yes; No male head (and female head has no husband in the household); No)
381	At any time in the past twelve months, did the male head (or the spouse of the female head) work at least one hour on household agricultural activities (including farming, raising livestock, or fishing), whether for sale or for household food? (Yes; No male head (and female head has no husband in the household); No)

Table 2 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
347	At any time in the past twelve months, did the male head (or the spouse of the female head) do any work for a wage, salary, commission, for any payment in kind, or did paid domestic work or paid farm work (excluding *ganyu*)? (No; No female head (and male head has no spouse in the household); Yes)
338	Does the household own any radios ('wireless'), radios with flash drive/micro CD, or tape players or CD players/hi-fi? (No; Yes)
257	Does the household head have a spouse/conjugal partner? (Female head/spouse only; Both male and female heads/spouses; Male head/spouse only)
158	Does the household own any chairs? (No; Yes)
141	The outer walls of the main dwelling of the household are predominantly made of what material? (Compacted earth (*yamdindo*), mud (*yomata*), or grass; Mud brick (unfired); Burnt bricks, concrete, wood, iron sheets, or other)
134	At any time in the past twelve months, did the male head (or the spouse of the female head) work or help at least one hour in any kind of non-agricultural or non-fishing household business, big or small? (No male head (and female head has no husband in the household); No; Yes)
61	Does the household own any bicycles, motorcycles/scooters, cars, mini-buses, or lorries? (No; Yes)
45	In what geographic region does the household reside? (Southern; Northern; Central)
29	Does the household currently own any sickles? (Yes; No)
29	How many separate rooms do the members of your household occupy (None; One; Two; Three; Four or more)
6	Does the household currently own any panga knives? (No; Yes)
5	Does the household own any mortars/pestles (*mtondo*)? (No; Yes)
5	Does the household own any axes? (No; Yes)
4	Do any members of your household sleep under a bed net to protect against mosquitoes at some time during the year? (No; Yes)
1	What was your main source of drinking water over the past month? (Communal standpipe, public well (open or protected), river/stream, spring, pond/lake, dam, rainwater, or other; Piped (into dwelling or yard/plot), borehole, open well in yard/plot, protected well in yard/plot, tanker truck/bowser, bottled water)

Source: 2016/17 IHS with 100% of the national poverty line

Tables for
100% of the National Poverty Line

(and Tables Pertaining
to All Poverty Lines)

Table 3 (100% of national line): Scores and their corresponding estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–17	95.4
18–21	89.8
22–24	88.4
25–27	82.3
28–29	79.1
30–31	68.3
32–33	63.2
34–35	59.3
36–37	56.3
38–39	50.4
40–41	43.9
42–43	33.8
44–45	32.3
46–47	20.5
48–50	17.0
51–53	10.6
54–56	6.6
57–60	4.4
61–67	1.7
68–100	0.1

Table 4 (100% of national line): Derivation of estimated poverty likelihoods

Score	Households in range and < poverty line		All households in range		Poverty likelihood (%)
0–17	4,901	÷	5,137	=	95.4
18–21	4,471	÷	4,977	=	89.8
22–24	4,264	÷	4,825	=	88.4
25–27	4,662	÷	5,663	=	82.3
28–29	3,592	÷	4,540	=	79.1
30–31	3,073	÷	4,496	=	68.3
32–33	3,001	÷	4,749	=	63.2
34–35	3,149	÷	5,314	=	59.3
36–37	2,912	÷	5,175	=	56.3
38–39	2,844	÷	5,644	=	50.4
40–41	1,898	÷	4,328	=	43.9
42–43	1,515	÷	4,484	=	33.8
44–45	1,383	÷	4,288	=	32.3
46–47	780	÷	3,812	=	20.5
48–50	969	÷	5,691	=	17.0
51–53	544	÷	5,155	=	10.6
54–56	303	÷	4,600	=	6.6
57–60	242	÷	5,523	=	4.4
61–67	108	÷	6,194	=	1.7
68–100	8	÷	5,406	=	0.1

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

Table 5 (100% of national line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+2.8	1.8	2.1	2.8
18–21	+4.9	2.8	3.4	4.6
22–24	+3.2	2.4	2.8	3.8
25–27	–2.0	2.6	3.0	3.7
28–29	+1.5	2.5	2.9	3.9
30–31	–0.6	3.0	3.5	4.6
32–33	–8.6	5.6	5.8	6.4
34–35	–1.6	3.0	3.6	4.9
36–37	+4.0	3.4	4.1	5.0
38–39	–1.5	3.1	3.9	5.0
40–41	–5.0	4.3	4.7	5.5
42–43	–6.1	4.8	5.2	5.8
44–45	–3.7	3.7	4.5	6.0
46–47	+3.3	2.4	2.9	4.0
48–50	+2.6	2.1	2.5	3.1
51–53	–0.5	2.0	2.5	3.1
54–56	+4.4	0.9	1.1	1.4
57–60	+1.6	0.9	1.0	1.3
61–67	+1.0	0.4	0.4	0.6
68–100	+0.1	0.0	0.0	0.0

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (100% of national line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–1.3	67.3	75.0	91.6
4	+0.1	35.6	41.1	51.7
8	+0.4	25.8	30.5	40.4
16	+0.1	17.5	21.1	28.2
32	–0.1	13.3	15.6	19.7
64	–0.1	9.6	11.4	14.1
128	–0.1	6.4	7.6	10.4
256	–0.1	4.9	5.6	7.4
512	–0.1	3.3	4.1	5.4
1,024	–0.1	2.2	2.6	3.6
2,048	–0.1	1.6	1.9	2.6
4,096	–0.1	1.1	1.3	1.7
8,192	0.0	0.8	1.0	1.2
16,384	0.0	0.6	0.7	0.9

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 7: Errors in estimated poverty rates for a sample of a population of participants' households at a point in time, precision, and the α factor for precision, 2016/17 scorecard applied to the 2016/17 validation sample

	Poverty lines																	
	National (2016/17 def.)				Intl. 2005 PPP (2016/17 def.)					Intl. 2011 PPP (2016/17				Percentile-based lines (2016/17 def.)					
	Food	100%	150%	200%	$1.25	$2.00	$2.50	$5.00	$8.44	$1.90	$3.20	$5.50	$21.70	10th	20th	40th	50th	60th	80th
Error (estimate minus observed value)	+0.7	0.0	+0.6	+0.4	+0.5	+0.2	0.0	+0.4	+0.1	−0.2	0.0	0.0	+0.1	+0.1	+0.7	+0.6	+0.6	+0.5	+0.2
Precision of estimate of change	0.4	0.6	0.5	0.4	0.5	0.4	0.3	0.2	0.2	0.5	0.3	0.2	0.1	0.3	0.4	0.5	0.6	0.6	0.5
Alpha factor for precision	0.93	0.91	0.86	0.85	0.84	0.86	0.84	1.14	1.02	0.89	0.90	1.01	1.27	0.92	0.93	0.91	0.90	0.87	0.85

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Errors (differences between estimates and observed values) are in units of percentage points.

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

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

Alpha is based on 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
Poor	**Inclusion** Poor correctly targeted	**Undercoverage** Poor mistakenly not targeted
Non-poor	**Leakage** Non-poor mistakenly targeted	**Exclusion** Non-poor correctly not targeted

Table 9 (100% of national line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.4	40.4	0.3	54.8	59.3
<=21	8.4	36.4	0.9	54.3	62.7
<=24	12.3	32.5	1.5	53.6	65.9
<=27	16.6	28.2	2.3	52.8	69.4
<=29	20.3	24.6	3.7	51.5	71.8
<=31	24.5	20.3	5.2	50.0	74.4
<=33	27.8	17.0	6.9	48.3	76.2
<=35	31.1	13.7	9.1	46.1	77.2
<=37	34.0	10.9	11.3	43.9	77.8
<=39	36.9	7.9	14.1	41.1	78.0
<=41	39.2	5.7	16.6	38.6	77.8
<=43	40.8	4.0	19.2	36.0	76.8
<=45	42.1	2.7	22.0	33.2	75.3
<=47	43.0	1.8	25.3	29.9	72.9
<=50	43.9	1.0	29.8	25.4	69.2
<=53	44.4	0.4	34.4	20.8	65.2
<=56	44.5	0.3	39.1	16.1	60.7
<=60	44.7	0.1	44.1	11.1	55.8
<=67	44.8	0.0	50.2	5.0	49.8
<=100	44.8	0.0	55.2	0.0	44.8

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (100% of national line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	92.7	9.9	12.7:1
<=21	9.4	90.0	18.8	9.0:1
<=24	13.8	88.9	27.4	8.0:1
<=27	18.9	87.6	37.0	7.1:1
<=29	23.9	84.7	45.2	5.5:1
<=31	29.7	82.4	54.6	4.7:1
<=33	34.7	80.2	62.1	4.1:1
<=35	40.2	77.4	69.5	3.4:1
<=37	45.3	75.0	75.8	3.0:1
<=39	51.0	72.4	82.3	2.6:1
<=41	55.7	70.2	87.4	2.4:1
<=43	59.9	68.0	91.0	2.1:1
<=45	64.1	65.7	94.1	1.9:1
<=47	68.3	62.9	95.9	1.7:1
<=50	73.7	59.5	97.9	1.5:1
<=53	78.8	56.3	99.1	1.3:1
<=56	83.6	53.3	99.4	1.1:1
<=60	88.9	50.3	99.8	1.0:1
<=67	95.0	47.2	100.0	0.9:1
<=100	100.0	44.8	100.0	0.8:1

Scorecard applied to the validation sample.

Tables for the Food Poverty Line

Table 5 (Food line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+5.7	3.3	3.9	5.6
18–21	–4.3	3.8	4.1	5.1
22–24	+7.9	3.3	3.9	5.0
25–27	–4.6	4.1	4.4	5.3
28–29	–1.1	2.9	3.4	4.2
30–31	–0.7	2.3	2.8	3.7
32–33	+2.7	2.3	2.7	3.5
34–35	+0.4	2.1	2.5	3.3
36–37	+6.1	1.4	1.7	2.2
38–39	+0.4	1.9	2.3	3.3
40–41	–2.0	1.9	2.2	2.9
42–43	+1.2	1.2	1.4	1.9
44–45	+1.0	0.9	1.0	1.3
46–47	+0.6	0.7	0.9	1.2
48–50	+0.3	0.6	0.7	0.9
51–53	+0.9	0.1	0.2	0.2
54–56	+0.4	0.1	0.1	0.1
57–60	–0.5	0.4	0.5	0.5
61–67	0.0	0.0	0.0	0.0
68–100	0.0	0.0	0.0	0.0

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (Food line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.6	57.9	68.1	80.1
4	+1.5	27.3	34.1	46.8
8	+1.2	19.0	23.6	31.8
16	+0.6	13.3	15.7	21.3
32	+0.6	9.6	11.5	15.3
64	+0.6	6.8	8.0	10.6
128	+0.6	4.8	5.6	7.6
256	+0.6	3.3	3.9	5.2
512	+0.6	2.4	2.8	3.9
1,024	+0.7	1.7	2.0	2.7
2,048	+0.7	1.2	1.5	1.9
4,096	+0.7	0.9	1.0	1.4
8,192	+0.7	0.6	0.7	1.0
16,384	+0.7	0.4	0.5	0.7

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (Food line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	3.0	12.7	1.8	82.5	85.5
<=21	5.5	10.2	3.9	80.4	85.9
<=24	7.2	8.5	6.7	77.6	84.8
<=27	9.0	6.7	9.9	74.4	83.5
<=29	10.5	5.2	13.5	70.9	81.3
<=31	12.0	3.7	17.7	66.6	78.5
<=33	12.9	2.8	21.8	62.5	75.4
<=35	13.7	2.0	26.5	57.8	71.5
<=37	14.2	1.5	31.1	53.2	67.4
<=39	14.7	1.0	36.2	48.1	62.8
<=41	15.2	0.5	40.6	43.8	58.9
<=43	15.4	0.3	44.6	39.7	55.1
<=45	15.5	0.2	48.7	35.6	51.1
<=47	15.5	0.2	52.8	31.5	47.0
<=50	15.6	0.1	58.1	26.2	41.9
<=53	15.6	0.1	63.2	21.1	36.8
<=56	15.6	0.1	68.0	16.3	32.0
<=60	15.7	0.0	73.2	11.1	26.8
<=67	15.7	0.0	79.3	5.0	20.7
<=100	15.7	0.0	84.3	0.0	15.7

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (Food line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	62.6	19.0	1.7:1
<=21	9.4	58.4	34.8	1.4:1
<=24	13.8	51.8	45.7	1.1:1
<=27	18.9	47.8	57.6	0.9:1
<=29	23.9	43.7	66.6	0.8:1
<=31	29.7	40.3	76.3	0.7:1
<=33	34.7	37.1	82.1	0.6:1
<=35	40.2	34.1	87.4	0.5:1
<=37	45.3	31.4	90.4	0.5:1
<=39	51.0	28.9	93.9	0.4:1
<=41	55.7	27.2	96.8	0.4:1
<=43	59.9	25.6	97.9	0.3:1
<=45	64.1	24.1	98.6	0.3:1
<=47	68.3	22.7	98.9	0.3:1
<=50	73.7	21.2	99.4	0.3:1
<=53	78.8	19.8	99.6	0.2:1
<=56	83.6	18.7	99.7	0.2:1
<=60	88.9	17.7	100.0	0.2:1
<=67	95.0	16.5	100.0	0.2:1
<=100	100.0	15.7	100.0	0.2:1

Scorecard applied to the validation sample.

Tables for
150% of the National Poverty Line

Table 5 (150% of national line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+0.1	0.2	0.3	0.4
18–21	+0.7	0.7	0.8	1.0
22–24	+0.2	0.5	0.6	0.8
25–27	+0.8	1.0	1.2	1.6
28–29	–1.5	1.1	1.2	1.4
30–31	+3.9	2.0	2.4	3.2
32–33	+1.1	1.8	2.1	2.9
34–35	–1.3	1.8	2.1	2.8
36–37	+1.0	2.2	2.7	3.7
38–39	–6.9	4.1	4.3	4.4
40–41	–1.6	2.4	2.7	3.8
42–43	–6.5	4.4	4.7	5.1
44–45	+2.6	3.4	4.0	5.2
46–47	–1.2	3.5	4.2	5.3
48–50	–0.7	3.1	3.6	4.8
51–53	+3.6	3.2	4.0	5.2
54–56	+6.4	2.9	3.5	4.4
57–60	+11.5	2.1	2.6	3.4
61–67	–1.6	1.9	2.3	3.0
68–100	–1.0	1.2	1.4	1.8

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (150% of national line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+1.1	57.7	74.5	91.9
4	+0.9	29.1	35.6	52.7
8	+1.2	21.6	27.1	35.2
16	+1.0	14.8	17.8	24.0
32	+0.7	10.7	13.1	17.8
64	+0.7	7.9	9.1	12.2
128	+0.7	5.7	7.0	8.9
256	+0.6	4.2	5.1	6.3
512	+0.6	2.6	3.2	4.2
1,024	+0.6	2.0	2.4	3.2
2,048	+0.6	1.5	1.8	2.4
4,096	+0.6	1.0	1.2	1.6
8,192	+0.6	0.7	0.9	1.1
16,384	+0.6	0.5	0.6	0.8

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (150% of national line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.7	65.3	0.0	29.9	34.6
<=21	9.3	60.8	0.1	29.8	39.1
<=24	13.7	56.4	0.2	29.7	43.4
<=27	18.6	51.5	0.3	29.6	48.2
<=29	23.4	46.7	0.5	29.4	52.8
<=31	28.8	41.3	0.9	29.0	57.9
<=33	33.3	36.7	1.3	28.6	61.9
<=35	38.3	31.8	1.9	28.0	66.3
<=37	42.7	27.4	2.6	27.3	70.1
<=39	47.8	22.3	3.1	26.8	74.6
<=41	51.8	18.3	4.0	25.9	77.7
<=43	55.1	15.0	4.9	25.0	80.1
<=45	58.1	12.0	6.1	23.9	81.9
<=47	60.9	9.2	7.5	22.5	83.3
<=50	64.0	6.1	9.7	20.2	84.2
<=53	66.3	3.8	12.5	17.4	83.7
<=56	67.9	2.2	15.7	14.2	82.1
<=60	69.0	1.0	19.8	10.1	79.1
<=67	69.9	0.2	25.1	4.8	74.8
<=100	70.1	0.0	29.9	0.0	70.1

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (150% of national line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	99.6	6.8	253.6:1
<=21	9.4	99.1	13.2	111.9:1
<=24	13.8	98.8	19.5	80.4:1
<=27	18.9	98.4	26.5	60.3:1
<=29	23.9	97.8	33.4	44.5:1
<=31	29.7	97.1	41.1	33.4:1
<=33	34.7	96.1	47.6	24.7:1
<=35	40.2	95.2	54.6	20.0:1
<=37	45.3	94.3	60.9	16.7:1
<=39	51.0	93.9	68.3	15.3:1
<=41	55.7	92.9	73.8	13.0:1
<=43	59.9	91.9	78.6	11.3:1
<=45	64.1	90.6	82.9	9.6:1
<=47	68.3	89.1	86.8	8.2:1
<=50	73.7	86.9	91.3	6.6:1
<=53	78.8	84.1	94.6	5.3:1
<=56	83.6	81.2	96.9	4.3:1
<=60	88.9	77.7	98.5	3.5:1
<=67	95.0	73.6	99.7	2.8:1
<=100	100.0	70.1	100.0	2.3:1

Scorecard applied to the validation sample.

Tables for
200% of the National Poverty Line

Table 5 (200% of national line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+0.3	0.2	0.3	0.4
18–21	+0.7	0.5	0.6	0.8
22–24	0.0	0.0	0.0	0.0
25–27	0.0	0.0	0.0	0.0
28–29	–1.0	0.7	0.7	0.8
30–31	–1.5	0.8	0.8	0.8
32–33	+1.5	1.1	1.3	1.8
34–35	+0.3	1.0	1.1	1.4
36–37	+2.2	1.5	1.8	2.4
38–39	+0.1	1.1	1.2	1.7
40–41	+1.3	1.4	1.7	2.2
42–43	–1.4	1.7	2.0	2.7
44–45	–1.6	1.6	1.8	2.5
46–47	+1.3	2.4	2.7	3.6
48–50	–9.3	5.4	5.6	5.8
51–53	+6.5	3.2	3.8	4.7
54–56	+1.2	3.0	3.6	5.0
57–60	+7.9	3.3	3.8	5.0
61–67	–1.8	3.0	3.6	4.6
68–100	–1.0	1.6	1.9	2.5

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (200% of national line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+1.1	54.9	72.7	87.4
4	+0.2	26.1	32.7	45.0
8	+0.7	19.1	22.9	30.6
16	+0.5	13.4	16.2	20.9
32	+0.2	10.0	11.5	15.5
64	+0.3	6.9	8.1	10.6
128	+0.4	5.0	6.1	7.6
256	+0.4	3.3	4.0	5.0
512	+0.4	2.3	2.8	3.7
1,024	+0.3	1.7	2.0	2.5
2,048	+0.4	1.2	1.4	1.9
4,096	+0.3	0.8	1.0	1.3
8,192	+0.4	0.6	0.7	0.9
16,384	+0.4	0.4	0.5	0.7

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (200% of national line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.7	77.7	0.0	17.5	22.2
<=21	9.3	73.2	0.0	17.5	26.8
<=24	13.8	68.7	0.0	17.5	31.2
<=27	18.9	63.6	0.0	17.5	36.3
<=29	23.8	58.7	0.1	17.4	41.2
<=31	29.6	52.9	0.1	17.4	47.0
<=33	34.4	48.1	0.2	17.3	51.7
<=35	39.8	42.7	0.4	17.1	57.0
<=37	44.7	37.8	0.6	16.9	61.6
<=39	50.2	32.3	0.8	16.7	66.9
<=41	54.7	27.8	1.0	16.5	71.2
<=43	58.5	24.0	1.4	16.1	74.6
<=45	62.3	20.2	1.9	15.6	77.9
<=47	65.8	16.7	2.5	15.0	80.9
<=50	70.5	12.0	3.2	14.3	84.8
<=53	74.1	8.4	4.7	12.8	86.9
<=56	77.2	5.3	6.4	11.1	88.3
<=60	79.8	2.7	9.0	8.5	88.3
<=67	82.1	0.4	12.9	4.6	86.6
<=100	82.5	0.0	17.5	0.0	82.5

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (200% of national line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	99.6	5.8	253.6:1
<=21	9.4	99.5	11.3	193.3:1
<=24	13.8	99.7	16.7	286.5:1
<=27	18.9	99.7	22.9	391.8:1
<=29	23.9	99.6	28.9	282.0:1
<=31	29.7	99.7	35.9	350.4:1
<=33	34.7	99.3	41.8	140.0:1
<=35	40.2	99.1	48.3	104.3:1
<=37	45.3	98.7	54.2	76.5:1
<=39	51.0	98.5	60.8	64.8:1
<=41	55.7	98.1	66.3	52.6:1
<=43	59.9	97.6	70.9	41.3:1
<=45	64.1	97.1	75.5	32.9:1
<=47	68.3	96.4	79.8	26.7:1
<=50	73.7	95.6	85.4	22.0:1
<=53	78.8	94.0	89.8	15.7:1
<=56	83.6	92.4	93.6	12.1:1
<=60	88.9	89.9	96.8	8.9:1
<=67	95.0	86.4	99.5	6.4:1
<=100	100.0	82.5	100.0	4.7:1

Scorecard applied to the validation sample.

Tables for
the $1.25/day 2005 PPP Poverty Line

Table 5 ($1.25/day 2005 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	–0.2	0.2	0.3	0.4
18–21	+0.6	0.7	0.9	1.1
22–24	+0.3	0.8	0.9	1.2
25–27	–0.1	1.1	1.2	1.6
28–29	–2.7	1.8	1.9	2.0
30–31	+1.0	2.0	2.4	3.2
32–33	+1.7	2.1	2.4	3.3
34–35	–2.8	2.4	2.6	3.1
36–37	–0.4	2.3	2.8	3.6
38–39	–6.4	4.1	4.2	4.5
40–41	–0.5	2.7	3.3	4.5
42–43	–7.6	5.1	5.3	5.6
44–45	+4.0	3.6	4.3	5.7
46–47	–2.9	3.5	4.2	5.3
48–50	+4.6	3.2	3.8	4.7
51–53	+3.4	3.1	3.7	5.1
54–56	+5.8	2.7	3.2	4.3
57–60	+10.4	1.9	2.2	2.9
61–67	+0.1	1.6	2.0	2.5
68–100	–1.5	1.4	1.5	1.8

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($1.25/day 2005 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.9	61.7	77.5	92.8
4	+0.5	30.6	37.1	51.9
8	+0.9	22.3	27.3	37.0
16	+0.7	15.7	18.9	23.9
32	+0.6	10.9	13.1	17.1
64	+0.5	8.1	9.6	12.1
128	+0.4	5.7	6.9	8.8
256	+0.5	4.3	5.0	6.3
512	+0.5	2.9	3.3	4.3
1,024	+0.5	2.1	2.4	3.2
2,048	+0.4	1.4	1.7	2.3
4,096	+0.4	1.0	1.2	1.6
8,192	+0.4	0.7	0.8	1.1
16,384	+0.5	0.5	0.6	0.7

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($1.25/day 2005 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.7	62.0	0.0	33.2	38.0
<=21	9.2	57.5	0.1	33.2	42.4
<=24	13.6	53.1	0.2	33.0	46.6
<=27	18.5	48.2	0.4	32.9	51.4
<=29	23.2	43.5	0.7	32.6	55.8
<=31	28.7	38.1	1.0	32.2	60.9
<=33	33.0	33.8	1.7	31.6	64.5
<=35	37.8	28.9	2.4	30.9	68.7
<=37	42.1	24.6	3.1	30.1	72.2
<=39	47.0	19.7	3.9	29.3	76.3
<=41	50.8	16.0	5.0	28.3	79.0
<=43	54.0	12.8	6.0	27.3	81.2
<=45	56.8	10.0	7.4	25.9	82.6
<=47	59.2	7.5	9.1	24.2	83.4
<=50	61.8	4.9	11.9	21.4	83.2
<=53	63.7	3.0	15.1	18.2	81.9
<=56	65.0	1.7	18.6	14.7	79.7
<=60	65.9	0.8	22.9	10.3	76.3
<=67	66.6	0.2	28.4	4.9	71.4
<=100	66.7	0.0	33.3	0.0	66.7

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($1.25/day 2005 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	99.6	7.1	253.6:1
<=21	9.4	98.9	13.9	87.6:1
<=24	13.8	98.4	20.4	60.7:1
<=27	18.9	97.9	27.7	46.8:1
<=29	23.9	97.2	34.8	35.0:1
<=31	29.7	96.5	43.0	27.8:1
<=33	34.7	95.1	49.4	19.3:1
<=35	40.2	94.1	56.7	15.9:1
<=37	45.3	93.0	63.1	13.4:1
<=39	51.0	92.3	70.4	11.9:1
<=41	55.7	91.1	76.1	10.2:1
<=43	59.9	90.0	80.8	9.0:1
<=45	64.1	88.5	85.0	7.7:1
<=47	68.3	86.7	88.8	6.5:1
<=50	73.7	83.9	92.6	5.2:1
<=53	78.8	80.8	95.5	4.2:1
<=56	83.6	77.8	97.4	3.5:1
<=60	88.9	74.2	98.8	2.9:1
<=67	95.0	70.1	99.7	2.3:1
<=100	100.0	66.7	100.0	2.0:1

Scorecard applied to the validation sample.

Tables for
the $2.00/day 2005 PPP Poverty Line

Table 5 ($2.00/day 2005 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	0.0	0.0	0.0	0.0
18–21	+0.7	0.5	0.6	0.8
22–24	0.0	0.0	0.0	0.0
25–27	0.0	0.0	0.0	0.0
28–29	–0.2	0.4	0.5	0.6
30–31	–0.8	0.4	0.4	0.4
32–33	+1.2	0.9	1.1	1.5
34–35	+0.6	0.8	0.9	1.2
36–37	+1.0	0.8	1.0	1.3
38–39	+1.6	1.0	1.2	1.6
40–41	–0.6	0.8	1.0	1.3
42–43	+0.4	1.5	1.7	2.6
44–45	+0.4	1.3	1.5	1.9
46–47	+4.1	2.3	2.6	3.4
48–50	–5.7	3.5	3.6	3.8
51–53	+2.7	2.6	3.2	4.0
54–56	–0.1	2.8	3.2	4.1
57–60	+3.1	3.1	3.7	4.9
61–67	–2.3	3.0	3.5	4.4
68–100	–2.1	2.1	2.5	3.3

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($2.00/day 2005 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+1.2	50.0	69.7	92.0
4	+0.1	24.6	29.7	42.0
8	+0.5	15.8	19.6	27.7
16	+0.5	11.7	14.5	20.3
32	+0.2	8.4	10.4	14.8
64	+0.2	6.1	7.5	10.4
128	+0.2	4.3	5.4	7.0
256	+0.2	3.0	3.7	4.7
512	+0.2	2.1	2.6	3.2
1,024	+0.2	1.5	1.8	2.5
2,048	+0.2	1.1	1.3	1.7
4,096	+0.2	0.7	0.9	1.2
8,192	+0.2	0.5	0.6	0.9
16,384	+0.2	0.4	0.4	0.6

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($2.00/day 2005 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.8	81.9	0.0	13.3	18.1
<=21	9.3	77.4	0.0	13.3	22.6
<=24	13.8	72.9	0.0	13.3	27.1
<=27	18.9	67.8	0.0	13.3	32.2
<=29	23.9	62.8	0.1	13.3	37.1
<=31	29.6	57.0	0.1	13.3	42.9
<=33	34.6	52.1	0.1	13.2	47.7
<=35	40.0	46.7	0.2	13.1	53.1
<=37	45.0	41.7	0.3	13.0	58.0
<=39	50.6	36.1	0.4	12.9	63.5
<=41	55.2	31.5	0.5	12.8	67.9
<=43	59.2	27.5	0.8	12.6	71.7
<=45	63.1	23.6	1.0	12.3	75.4
<=47	66.8	19.9	1.5	11.8	78.7
<=50	71.8	14.9	1.9	11.4	83.2
<=53	75.9	10.7	2.9	10.4	86.4
<=56	79.7	7.0	3.9	9.4	89.1
<=60	83.1	3.6	5.8	7.5	90.6
<=67	86.0	0.7	9.0	4.3	90.3
<=100	86.7	0.0	13.3	0.0	86.7

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($2.00/day 2005 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	100.0	5.5	Only poor targeted
<=21	9.4	99.7	10.8	317.1:1
<=24	13.8	99.8	15.9	469.6:1
<=27	18.9	99.8	21.8	642.0:1
<=29	23.9	99.8	27.5	420.9:1
<=31	29.7	99.8	34.2	523.0:1
<=33	34.7	99.6	39.9	260.4:1
<=35	40.2	99.5	46.2	209.1:1
<=37	45.3	99.4	51.9	158.3:1
<=39	51.0	99.2	58.3	123.6:1
<=41	55.7	99.0	63.7	100.4:1
<=43	59.9	98.7	68.3	78.4:1
<=45	64.1	98.4	72.8	60.8:1
<=47	68.3	97.8	77.1	45.3:1
<=50	73.7	97.4	82.8	38.1:1
<=53	78.8	96.4	87.6	26.5:1
<=56	83.6	95.3	91.9	20.3:1
<=60	88.9	93.5	95.8	14.4:1
<=67	95.0	90.5	99.2	9.5:1
<=100	100.0	86.7	100.0	6.5:1

Scorecard applied to the validation sample.

Tables for
the $2.50/day 2005 PPP Poverty Line

Table 5 ($2.50/day 2005 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	0.0	0.0	0.0	0.0
18–21	+0.7	0.5	0.6	0.8
22–24	0.0	0.0	0.0	0.0
25–27	0.0	0.0	0.0	0.0
28–29	–0.1	0.1	0.1	0.1
30–31	–0.1	0.1	0.1	0.1
32–33	+1.8	0.9	1.1	1.5
34–35	–0.1	0.1	0.1	0.1
36–37	–0.3	0.2	0.2	0.2
38–39	–0.2	0.3	0.3	0.4
40–41	+0.4	0.5	0.6	0.8
42–43	–0.3	0.7	0.8	0.9
44–45	+0.1	0.7	0.9	1.2
46–47	–0.7	1.1	1.3	1.8
48–50	–2.8	1.7	1.7	1.8
51–53	–4.3	2.7	2.8	2.9
54–56	+4.5	2.2	2.6	3.5
57–60	–2.7	2.2	2.4	3.1
61–67	+6.0	3.0	3.4	4.3
68–100	–1.8	2.7	3.2	4.3

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($2.50/day 2005 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.3	27.5	50.0	85.7
4	–0.2	19.3	25.4	34.9
8	0.0	13.0	16.4	23.4
16	+0.1	8.8	11.4	15.5
32	–0.1	6.5	8.0	10.6
64	–0.1	4.7	5.4	7.4
128	0.0	3.5	4.2	5.3
256	0.0	2.3	2.7	4.0
512	0.0	1.7	1.9	2.7
1,024	0.0	1.2	1.5	1.9
2,048	0.0	0.8	1.1	1.3
4,096	0.0	0.6	0.7	0.9
8,192	0.0	0.4	0.5	0.6
16,384	0.0	0.3	0.3	0.5

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($2.50/day 2005 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.8	87.3	0.0	7.9	12.7
<=21	9.3	82.8	0.0	7.9	17.2
<=24	13.8	78.3	0.0	7.9	21.7
<=27	18.9	73.2	0.0	7.9	26.7
<=29	23.9	68.2	0.0	7.9	31.7
<=31	29.7	62.4	0.0	7.9	37.5
<=33	34.6	57.5	0.1	7.8	42.4
<=35	40.1	52.0	0.1	7.8	47.9
<=37	45.2	47.0	0.1	7.8	52.9
<=39	50.8	41.3	0.1	7.8	58.6
<=41	55.6	36.6	0.2	7.7	63.3
<=43	59.7	32.4	0.2	7.6	67.3
<=45	63.8	28.3	0.3	7.6	71.4
<=47	67.9	24.2	0.4	7.5	75.4
<=50	73.2	18.9	0.5	7.4	80.6
<=53	78.1	14.0	0.7	7.2	85.2
<=56	82.2	9.9	1.4	6.5	88.7
<=60	86.7	5.4	2.2	5.7	92.4
<=67	90.7	1.4	4.3	3.6	94.3
<=100	92.1	0.0	7.9	0.0	92.1

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($2.50/day 2005 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	100.0	5.2	Only poor targeted
<=21	9.4	99.7	10.1	317.1:1
<=24	13.8	99.8	15.0	469.6:1
<=27	18.9	99.8	20.5	642.0:1
<=29	23.9	99.9	25.9	812.1:1
<=31	29.7	99.9	32.2	1,008.9:1
<=33	34.7	99.7	37.5	327.9:1
<=35	40.2	99.7	43.5	380.3:1
<=37	45.3	99.8	49.0	428.2:1
<=39	51.0	99.7	55.2	396.6:1
<=41	55.7	99.7	60.3	313.3:1
<=43	59.9	99.6	64.8	247.5:1
<=45	64.1	99.5	69.3	195.6:1
<=47	68.3	99.4	73.7	167.4:1
<=50	73.7	99.3	79.4	149.8:1
<=53	78.8	99.1	84.8	106.8:1
<=56	83.6	98.3	89.2	58.9:1
<=60	88.9	97.6	94.1	40.1:1
<=67	95.0	95.5	98.5	21.3:1
<=100	100.0	92.1	100.0	11.7:1

Scorecard applied to the validation sample.

Tables for
the $5.00/day 2005 PPP Poverty Line

Table 5 ($5.00/day 2005 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	0.0	0.0	0.0	0.0
18–21	+0.7	0.5	0.6	0.8
22–24	0.0	0.0	0.0	0.0
25–27	0.0	0.0	0.0	0.0
28–29	0.0	0.0	0.0	0.0
30–31	0.0	0.0	0.0	0.0
32–33	0.0	0.0	0.0	0.0
34–35	0.0	0.0	0.0	0.0
36–37	0.0	0.0	0.0	0.0
38–39	0.0	0.0	0.0	0.0
40–41	0.0	0.0	0.0	0.0
42–43	+0.1	0.2	0.2	0.2
44–45	0.0	0.0	0.0	0.0
46–47	0.0	0.0	0.0	0.0
48–50	–0.1	0.1	0.1	0.2
51–53	–0.7	0.3	0.3	0.3
54–56	+0.8	0.8	1.1	1.3
57–60	–0.5	0.4	0.4	0.5
61–67	+3.1	1.7	2.1	2.7
68–100	+5.0	3.0	3.5	5.0

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($5.00/day 2005 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	0.0	2.5	11.2	58.7
4	+0.4	11.3	18.3	25.7
8	+0.5	9.2	11.7	17.0
16	+0.6	6.2	7.8	12.9
32	+0.5	4.2	5.4	7.8
64	+0.5	3.0	3.5	4.9
128	+0.5	2.1	2.5	3.3
256	+0.5	1.6	1.9	2.5
512	+0.5	1.1	1.4	1.9
1,024	+0.5	0.8	1.0	1.3
2,048	+0.5	0.6	0.7	0.9
4,096	+0.5	0.4	0.5	0.6
8,192	+0.4	0.3	0.3	0.4
16,384	+0.4	0.2	0.2	0.3

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($5.00/day 2005 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.8	93.4	0.0	1.9	6.6
<=21	9.3	88.8	0.0	1.8	11.2
<=24	13.8	84.3	0.0	1.8	15.6
<=27	18.9	79.3	0.0	1.8	20.7
<=29	23.9	74.3	0.0	1.8	25.7
<=31	29.7	68.5	0.0	1.8	31.5
<=33	34.7	63.5	0.0	1.8	36.5
<=35	40.2	57.9	0.0	1.8	42.0
<=37	45.2	52.9	0.0	1.8	47.1
<=39	50.9	47.2	0.0	1.8	52.8
<=41	55.7	42.4	0.0	1.8	57.5
<=43	59.9	38.2	0.0	1.8	61.7
<=45	64.1	34.0	0.0	1.8	65.9
<=47	68.3	29.9	0.0	1.8	70.1
<=50	73.6	24.5	0.1	1.8	75.4
<=53	78.8	19.4	0.1	1.8	80.6
<=56	83.5	14.6	0.1	1.8	85.3
<=60	88.7	9.5	0.2	1.7	90.3
<=67	94.4	3.8	0.6	1.3	95.6
<=100	98.1	0.0	1.9	0.0	98.1

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($5.00/day 2005 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	100.0	4.9	Only poor targeted
<=21	9.4	99.7	9.5	317.1:1
<=24	13.8	99.8	14.1	469.6:1
<=27	18.9	99.8	19.2	642.0:1
<=29	23.9	99.9	24.3	812.1:1
<=31	29.7	99.9	30.2	1,008.9:1
<=33	34.7	99.9	35.3	1,178.7:1
<=35	40.2	99.9	40.9	1,366.6:1
<=37	45.3	99.9	46.1	1,538.5:1
<=39	51.0	99.9	51.9	1,732.0:1
<=41	55.7	99.9	56.8	1,894.5:1
<=43	59.9	99.9	61.0	1,409.0:1
<=45	64.1	99.9	65.3	1,507.8:1
<=47	68.3	99.9	69.6	1,605.7:1
<=50	73.7	99.9	75.0	1,323.4:1
<=53	78.8	99.9	80.3	1,415.9:1
<=56	83.6	99.9	85.1	783.1:1
<=60	88.9	99.8	90.4	477.4:1
<=67	95.0	99.4	96.2	157.8:1
<=100	100.0	98.1	100.0	52.6:1

Scorecard applied to the validation sample.

Tables for
the $8.44/day 2005 PPP Poverty Line

Table 5 ($8.44/day 2005 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	0.0	0.0	0.0	0.0
18–21	+0.7	0.5	0.6	0.8
22–24	0.0	0.0	0.0	0.0
25–27	0.0	0.0	0.0	0.0
28–29	0.0	0.0	0.0	0.0
30–31	0.0	0.0	0.0	0.0
32–33	0.0	0.0	0.0	0.0
34–35	0.0	0.0	0.0	0.0
36–37	0.0	0.0	0.0	0.0
38–39	0.0	0.0	0.0	0.0
40–41	0.0	0.0	0.0	0.0
42–43	+0.1	0.2	0.2	0.2
44–45	0.0	0.0	0.0	0.0
46–47	0.0	0.0	0.0	0.0
48–50	–0.1	0.1	0.1	0.2
51–53	–0.6	0.4	0.4	0.4
54–56	+1.5	1.0	1.2	1.5
57–60	–0.5	0.5	0.6	0.8
61–67	+1.5	1.8	2.2	2.9
68–100	–1.2	3.1	3.6	5.1

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($8.44/day 2005 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.2	4.1	16.4	62.4
4	–0.2	12.1	19.4	27.4
8	+0.1	9.4	12.3	17.9
16	+0.2	6.5	8.5	13.1
32	+0.1	4.6	5.7	7.9
64	+0.1	3.1	3.9	5.1
128	+0.1	2.2	2.6	3.6
256	+0.1	1.6	1.9	2.6
512	+0.1	1.1	1.4	2.0
1,024	+0.1	0.8	1.0	1.3
2,048	+0.1	0.6	0.7	0.9
4,096	+0.1	0.4	0.5	0.7
8,192	+0.1	0.3	0.3	0.4
16,384	+0.1	0.2	0.2	0.3

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($8.44/day 2005 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.8	93.1	0.0	2.2	6.9
<=21	9.3	88.5	0.0	2.1	11.4
<=24	13.8	84.0	0.0	2.1	15.9
<=27	18.9	79.0	0.0	2.1	21.0
<=29	23.9	74.0	0.0	2.1	26.0
<=31	29.7	68.2	0.0	2.1	31.8
<=33	34.7	63.2	0.0	2.1	36.8
<=35	40.2	57.7	0.0	2.1	42.3
<=37	45.2	52.6	0.0	2.1	47.4
<=39	50.9	46.9	0.0	2.1	53.1
<=41	55.7	42.1	0.0	2.1	57.8
<=43	59.9	37.9	0.0	2.1	62.0
<=45	64.1	33.7	0.0	2.1	66.2
<=47	68.3	29.6	0.0	2.1	70.4
<=50	73.6	24.2	0.1	2.1	75.7
<=53	78.7	19.1	0.1	2.1	80.8
<=56	83.5	14.4	0.1	2.0	85.5
<=60	88.6	9.2	0.2	1.9	90.6
<=67	94.2	3.6	0.7	1.4	95.7
<=100	97.8	0.0	2.2	0.0	97.8

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($8.44/day 2005 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	100.0	4.9	Only poor targeted
<=21	9.4	99.7	9.5	317.1:1
<=24	13.8	99.8	14.1	469.6:1
<=27	18.9	99.8	19.3	642.0:1
<=29	23.9	99.9	24.4	812.1:1
<=31	29.7	99.9	30.3	1,008.9:1
<=33	34.7	99.9	35.4	1,178.7:1
<=35	40.2	99.9	41.1	1,366.6:1
<=37	45.3	99.9	46.2	1,538.5:1
<=39	51.0	99.9	52.1	1,732.0:1
<=41	55.7	99.9	56.9	1,894.5:1
<=43	59.9	99.9	61.2	1,409.0:1
<=45	64.1	99.9	65.5	1,507.8:1
<=47	68.3	99.9	69.8	1,605.7:1
<=50	73.7	99.9	75.2	1,323.4:1
<=53	78.8	99.9	80.5	1,086.1:1
<=56	83.6	99.8	85.3	603.3:1
<=60	88.9	99.8	90.6	407.6:1
<=67	95.0	99.2	96.3	131.1:1
<=100	100.0	97.8	100.0	45.4:1

Scorecard applied to the validation sample.

Tables for
the $1.90/day 2011 PPP Poverty Line

Table 5 ($1.90/day 2011 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+0.1	0.2	0.3	0.4
18–21	+0.7	0.7	0.8	1.0
22–24	+0.2	0.5	0.6	0.8
25–27	+1.1	1.0	1.2	1.6
28–29	–1.1	1.0	1.1	1.4
30–31	–2.1	1.4	1.5	1.6
32–33	–0.8	1.4	1.7	2.1
34–35	–1.7	1.7	2.0	2.6
36–37	+2.2	2.2	2.7	3.6
38–39	–4.8	3.1	3.2	3.4
40–41	–1.0	2.3	2.8	3.9
42–43	–6.6	4.4	4.6	5.1
44–45	+6.0	3.3	4.0	5.2
46–47	–1.3	3.5	4.2	5.4
48–50	–2.6	3.0	3.7	4.9
51–53	+4.2	3.3	4.1	5.4
54–56	+3.1	3.2	3.7	4.7
57–60	+6.2	2.5	3.0	3.9
61–67	–3.4	2.9	3.2	3.7
68–100	–1.9	1.6	1.7	2.1

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($1.90/day 2011 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.7	64.4	76.5	90.0
4	+0.1	29.2	35.0	54.3
8	+0.6	21.3	26.8	35.7
16	+0.1	14.9	18.5	24.0
32	–0.3	10.3	12.9	18.6
64	–0.2	7.9	9.7	12.5
128	–0.2	6.0	7.0	8.9
256	–0.2	4.1	4.9	6.3
512	–0.2	2.8	3.3	4.4
1,024	–0.2	2.0	2.4	3.0
2,048	–0.2	1.4	1.7	2.3
4,096	–0.2	1.0	1.2	1.5
8,192	–0.2	0.7	0.9	1.1
16,384	–0.2	0.5	0.6	0.8

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($1.90/day 2011 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.7	65.4	0.0	29.8	34.6
<=21	9.3	60.9	0.1	29.8	39.0
<=24	13.7	56.5	0.2	29.7	43.4
<=27	18.6	51.5	0.3	29.5	48.1
<=29	23.4	46.8	0.5	29.3	52.7
<=31	28.8	41.3	0.9	29.0	57.8
<=33	33.3	36.8	1.3	28.5	61.9
<=35	38.3	31.8	1.9	28.0	66.3
<=37	42.8	27.4	2.5	27.3	70.1
<=39	47.9	22.3	3.1	26.8	74.7
<=41	51.8	18.3	3.9	25.9	77.7
<=43	55.1	15.0	4.8	25.0	80.1
<=45	58.1	12.0	6.0	23.8	82.0
<=47	60.9	9.2	7.4	22.5	83.4
<=50	64.1	6.1	9.6	20.2	84.3
<=53	66.3	3.8	12.5	17.4	83.7
<=56	68.0	2.2	15.6	14.2	82.2
<=60	69.1	1.0	19.8	10.1	79.2
<=67	70.0	0.2	25.0	4.8	74.8
<=100	70.1	0.0	29.9	0.0	70.1

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($1.90/day 2011 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	99.6	6.8	253.6:1
<=21	9.4	99.1	13.2	111.9:1
<=24	13.8	98.8	19.5	80.4:1
<=27	18.9	98.4	26.5	60.3:1
<=29	23.9	97.8	33.3	44.7:1
<=31	29.7	97.1	41.1	33.5:1
<=33	34.7	96.1	47.5	24.8:1
<=35	40.2	95.3	54.7	20.5:1
<=37	45.3	94.4	60.9	17.0:1
<=39	51.0	94.0	68.3	15.5:1
<=41	55.7	92.9	73.8	13.2:1
<=43	59.9	91.9	78.6	11.4:1
<=45	64.1	90.6	82.9	9.7:1
<=47	68.3	89.2	86.8	8.2:1
<=50	73.7	86.9	91.3	6.7:1
<=53	78.8	84.2	94.6	5.3:1
<=56	83.6	81.3	96.9	4.3:1
<=60	88.9	77.8	98.5	3.5:1
<=67	95.0	73.7	99.7	2.8:1
<=100	100.0	70.1	100.0	2.3:1

Scorecard applied to the validation sample.

Tables for
$3.20/day 2011 PPP Poverty Line

Table 5 ($3.20/day 2011 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	0.0	0.0	0.0	0.0
18–21	+0.7	0.5	0.6	0.8
22–24	0.0	0.0	0.0	0.0
25–27	0.0	0.0	0.0	0.0
28–29	–0.4	0.2	0.2	0.2
30–31	–0.4	0.2	0.2	0.2
32–33	+1.5	0.9	1.1	1.5
34–35	–0.4	0.2	0.2	0.2
36–37	+0.8	0.8	0.9	1.2
38–39	–0.2	0.3	0.3	0.4
40–41	+1.0	0.8	1.0	1.3
42–43	–2.0	1.3	1.4	1.4
44–45	+0.3	1.1	1.3	1.6
46–47	+2.8	1.8	2.1	2.7
48–50	–3.2	2.1	2.2	2.4
51–53	–4.0	2.6	2.7	3.0
54–56	+1.6	2.2	2.7	3.5
57–60	+0.4	2.5	2.9	4.0
61–67	+1.8	3.0	3.5	4.6
68–100	+0.1	2.6	3.0	4.0

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($3.20/day 2011 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.4	50.0	59.6	87.6
4	–0.3	21.5	27.7	40.9
8	0.0	14.0	18.4	26.9
16	+0.1	10.2	12.8	19.0
32	–0.2	7.4	9.1	12.9
64	–0.1	5.2	6.3	8.4
128	0.0	3.8	4.5	6.1
256	0.0	2.7	3.2	4.2
512	0.0	1.9	2.2	2.8
1,024	0.0	1.3	1.5	2.1
2,048	0.0	0.9	1.1	1.5
4,096	0.0	0.7	0.8	1.0
8,192	0.0	0.5	0.5	0.8
16,384	0.0	0.3	0.4	0.5

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($3.20/day 2011 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.8	84.9	0.0	10.4	15.1
<=21	9.3	80.3	0.0	10.3	19.7
<=24	13.8	75.8	0.0	10.3	24.1
<=27	18.9	70.8	0.0	10.3	29.2
<=29	23.9	65.8	0.0	10.3	34.2
<=31	29.7	60.0	0.0	10.3	40.0
<=33	34.6	55.1	0.1	10.3	44.8
<=35	40.0	49.6	0.2	10.2	50.2
<=37	45.0	44.6	0.2	10.1	55.2
<=39	50.7	39.0	0.3	10.1	60.8
<=41	55.3	34.3	0.4	10.0	65.3
<=43	59.4	30.2	0.5	9.8	69.3
<=45	63.4	26.2	0.7	9.7	73.1
<=47	67.4	22.3	0.9	9.4	76.8
<=50	72.5	17.2	1.2	9.2	81.6
<=53	77.2	12.5	1.6	8.7	85.9
<=56	81.2	8.4	2.4	8.0	89.1
<=60	85.1	4.5	3.7	6.6	91.8
<=67	88.6	1.0	6.3	4.0	92.6
<=100	89.6	0.0	10.4	0.0	89.6

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($3.20/day 2011 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	100.0	5.3	Only poor targeted
<=21	9.4	99.7	10.4	317.1:1
<=24	13.8	99.8	15.4	469.6:1
<=27	18.9	99.8	21.1	642.0:1
<=29	23.9	99.9	26.6	812.1:1
<=31	29.7	99.9	33.1	1,008.9:1
<=33	34.7	99.7	38.6	327.9:1
<=35	40.2	99.6	44.7	244.0:1
<=37	45.3	99.5	50.2	191.7:1
<=39	51.0	99.5	56.5	189.3:1
<=41	55.7	99.3	61.7	139.9:1
<=43	59.9	99.1	66.3	115.4:1
<=45	64.1	98.9	70.8	89.8:1
<=47	68.3	98.6	75.2	72.0:1
<=50	73.7	98.4	80.8	60.9:1
<=53	78.8	97.9	86.1	47.1:1
<=56	83.6	97.1	90.6	33.7:1
<=60	88.9	95.8	95.0	22.9:1
<=67	95.0	93.3	98.9	14.0:1
<=100	100.0	89.6	100.0	8.7:1

Scorecard applied to the validation sample.

Tables for
$5.50/day 2011 PPP Poverty Line

Table 5 ($5.50/day 2011 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	0.0	0.0	0.0	0.0
18–21	+0.7	0.5	0.6	0.8
22–24	0.0	0.0	0.0	0.0
25–27	0.0	0.0	0.0	0.0
28–29	0.0	0.0	0.0	0.0
30–31	0.0	0.0	0.0	0.0
32–33	0.0	0.0	0.0	0.0
34–35	0.0	0.0	0.0	0.0
36–37	0.0	0.0	0.0	0.0
38–39	0.0	0.0	0.0	0.0
40–41	0.0	0.0	0.0	0.0
42–43	+0.1	0.2	0.2	0.2
44–45	0.0	0.0	0.0	0.0
46–47	0.0	0.0	0.0	0.0
48–50	+0.5	0.5	0.6	0.8
51–53	–1.3	0.8	0.8	0.8
54–56	+1.1	1.0	1.2	1.5
57–60	–1.3	1.0	1.0	1.1
61–67	+1.3	1.9	2.3	3.0
68–100	–0.6	3.2	3.9	4.9

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($5.50/day 2011 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.1	5.0	50.0	66.1
4	–0.3	13.9	20.1	28.7
8	0.0	10.7	13.7	18.5
16	+0.2	7.1	9.2	13.6
32	0.0	5.1	6.2	8.3
64	0.0	3.5	4.0	5.4
128	0.0	2.3	2.8	3.7
256	+0.1	1.7	2.0	2.7
512	0.0	1.2	1.4	2.1
1,024	0.0	0.9	1.0	1.4
2,048	0.0	0.6	0.7	0.9
4,096	0.0	0.4	0.5	0.7
8,192	0.0	0.3	0.4	0.5
16,384	0.0	0.2	0.3	0.3

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($5.50/day 2011 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.8	92.1	0.0	3.1	7.9
<=21	9.3	87.5	0.0	3.1	12.4
<=24	13.8	83.1	0.0	3.1	16.9
<=27	18.9	78.0	0.0	3.1	22.0
<=29	23.9	73.0	0.0	3.1	27.0
<=31	29.7	67.2	0.0	3.1	32.8
<=33	34.7	62.2	0.0	3.1	37.8
<=35	40.2	56.7	0.0	3.1	43.3
<=37	45.2	51.6	0.0	3.1	48.3
<=39	50.9	45.9	0.0	3.1	54.0
<=41	55.7	41.2	0.0	3.1	58.8
<=43	59.9	37.0	0.0	3.1	63.0
<=45	64.1	32.8	0.0	3.1	67.2
<=47	68.3	28.6	0.0	3.1	71.4
<=50	73.6	23.3	0.1	3.0	76.6
<=53	78.7	18.2	0.1	3.0	81.7
<=56	83.3	13.5	0.3	2.9	86.2
<=60	88.3	8.5	0.5	2.6	90.9
<=67	93.7	3.1	1.2	1.9	95.6
<=100	96.9	0.0	3.1	0.0	96.9

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($5.50/day 2011 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	100.0	4.9	Only poor targeted
<=21	9.4	99.7	9.6	317.1:1
<=24	13.8	99.8	14.3	469.6:1
<=27	18.9	99.8	19.5	642.0:1
<=29	23.9	99.9	24.7	812.1:1
<=31	29.7	99.9	30.6	1,008.9:1
<=33	34.7	99.9	35.8	1,178.7:1
<=35	40.2	99.9	41.5	1,366.6:1
<=37	45.3	99.9	46.7	1,538.5:1
<=39	51.0	99.9	52.6	1,732.0:1
<=41	55.7	99.9	57.5	1,894.5:1
<=43	59.9	99.9	61.8	1,409.0:1
<=45	64.1	99.9	66.2	1,507.8:1
<=47	68.3	99.9	70.5	1,605.7:1
<=50	73.7	99.9	76.0	809.9:1
<=53	78.8	99.9	81.2	730.6:1
<=56	83.6	99.7	86.0	321.2:1
<=60	88.9	99.4	91.2	169.8:1
<=67	95.0	98.7	96.8	76.3:1
<=100	100.0	96.9	100.0	30.9:1

Scorecard applied to the validation sample.

Tables for
$21.70/day 2011 PPP Poverty Line

Table 5 ($21.70/day 2011 PPP): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	0.0	0.0	0.0	0.0
18–21	0.0	0.0	0.0	0.0
22–24	0.0	0.0	0.0	0.0
25–27	0.0	0.0	0.0	0.0
28–29	0.0	0.0	0.0	0.0
30–31	0.0	0.0	0.0	0.0
32–33	0.0	0.0	0.0	0.0
34–35	0.0	0.0	0.0	0.0
36–37	0.0	0.0	0.0	0.0
38–39	0.0	0.0	0.0	0.0
40–41	0.0	0.0	0.0	0.0
42–43	0.0	0.0	0.0	0.0
44–45	0.0	0.0	0.0	0.0
46–47	0.0	0.0	0.0	0.0
48–50	0.0	0.0	0.0	0.0
51–53	0.0	0.0	0.0	0.0
54–56	+1.5	0.8	1.0	1.3
57–60	0.0	0.0	0.0	0.0
61–67	–0.4	0.2	0.2	0.2
68–100	0.0	1.0	1.2	1.5

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 ($21.70/day 2011 PPP): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	0.0	0.2	1.3	1.3
4	+0.1	0.5	0.6	17.6
8	+0.1	0.3	0.4	10.0
16	+0.1	0.3	3.3	5.7
32	+0.1	1.0	2.2	3.0
64	+0.1	1.1	1.3	2.1
128	+0.1	0.7	0.8	1.3
256	+0.1	0.6	0.6	0.9
512	+0.1	0.3	0.4	0.6
1,024	+0.1	0.3	0.3	0.4
2,048	+0.1	0.2	0.2	0.3
4,096	+0.1	0.1	0.2	0.2
8,192	+0.1	0.1	0.1	0.2
16,384	+0.1	0.1	0.1	0.1

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 ($21.70/day 2011 PPP): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.8	95.0	0.0	0.2	5.0
<=21	9.4	90.5	0.0	0.2	9.5
<=24	13.8	86.0	0.0	0.2	14.0
<=27	18.9	80.9	0.0	0.2	19.1
<=29	23.9	75.9	0.0	0.2	24.1
<=31	29.7	70.1	0.0	0.2	29.9
<=33	34.7	65.1	0.0	0.2	34.9
<=35	40.2	59.6	0.0	0.2	40.4
<=37	45.3	54.5	0.0	0.2	45.5
<=39	51.0	48.9	0.0	0.2	51.1
<=41	55.7	44.1	0.0	0.2	55.9
<=43	59.9	39.9	0.0	0.2	60.1
<=45	64.1	35.7	0.0	0.2	64.3
<=47	68.3	31.5	0.0	0.2	68.5
<=50	73.7	26.1	0.0	0.2	73.9
<=53	78.8	21.0	0.0	0.2	79.0
<=56	83.6	16.3	0.0	0.1	83.7
<=60	88.8	11.0	0.0	0.1	88.9
<=67	94.9	4.9	0.0	0.1	95.1
<=100	99.8	0.0	0.2	0.0	99.8

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 ($21.70/day 2011 PPP): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	100.0	4.8	Only poor targeted
<=21	9.4	100.0	9.4	Only poor targeted
<=24	13.8	100.0	13.9	Only poor targeted
<=27	18.9	100.0	18.9	Only poor targeted
<=29	23.9	100.0	24.0	Only poor targeted
<=31	29.7	100.0	29.8	Only poor targeted
<=33	34.7	100.0	34.8	Only poor targeted
<=35	40.2	100.0	40.3	Only poor targeted
<=37	45.3	100.0	45.4	Only poor targeted
<=39	51.0	100.0	51.1	Only poor targeted
<=41	55.7	100.0	55.8	Only poor targeted
<=43	59.9	100.0	60.1	Only poor targeted
<=45	64.1	100.0	64.3	Only poor targeted
<=47	68.3	100.0	68.4	Only poor targeted
<=50	73.7	100.0	73.8	Only poor targeted
<=53	78.8	100.0	79.0	Only poor targeted
<=56	83.6	99.9	83.7	1,768.3:1
<=60	88.9	99.9	89.0	1,879.5:1
<=67	95.0	100.0	95.1	2,008.9:1
<=100	100.0	99.8	100.0	537.1:1

Scorecard applied to the validation sample.

Tables for
the First-Decile (10^{th}-Percentile) Poverty Line

Table 5 (First-decile (10th-percentile) line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+0.1	3.4	4.1	5.7
18–21	+0.4	3.1	3.7	4.9
22–24	+3.7	2.6	3.2	4.4
25–27	+2.5	1.9	2.2	2.7
28–29	–3.1	2.6	2.8	3.4
30–31	–3.3	2.5	2.7	3.0
32–33	+1.1	1.3	1.5	2.1
34–35	–2.7	2.2	2.4	2.7
36–37	+1.5	0.8	1.0	1.2
38–39	+1.0	0.5	0.6	0.9
40–41	–0.3	1.0	1.1	1.6
42–43	+1.8	0.1	0.1	0.1
44–45	+0.7	0.4	0.4	0.6
46–47	+0.3	0.0	0.0	0.0
48–50	+0.3	0.0	0.0	0.0
51–53	+0.1	0.0	0.0	0.0
54–56	+0.1	0.0	0.0	0.0
57–60	–0.2	0.2	0.2	0.2
61–67	0.0	0.0	0.0	0.0
68–100	0.0	0.0	0.0	0.0

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (First-decile (10th-percentile) line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.1	46.6	64.1	69.2
4	+0.6	19.1	25.3	37.9
8	+0.5	14.2	18.5	26.2
16	+0.2	9.9	12.1	16.3
32	+0.1	6.9	8.4	11.5
64	+0.1	5.1	6.1	7.9
128	+0.1	3.7	4.3	5.5
256	+0.1	2.5	2.8	4.0
512	+0.1	1.7	2.1	2.6
1,024	+0.1	1.2	1.5	2.0
2,048	+0.1	0.9	1.0	1.4
4,096	+0.1	0.6	0.8	1.0
8,192	+0.1	0.4	0.5	0.7
16,384	+0.1	0.3	0.3	0.5

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (First-decile (10th-percentile) line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	2.0	5.4	2.7	89.9	91.9
<=21	3.3	4.1	6.1	86.5	89.8
<=24	4.2	3.2	9.6	82.9	87.1
<=27	4.9	2.5	14.0	78.6	83.6
<=29	5.5	1.9	18.4	74.2	79.8
<=31	6.2	1.2	23.5	69.1	75.3
<=33	6.6	0.8	28.1	64.5	71.1
<=35	6.9	0.5	33.3	59.3	66.2
<=37	7.1	0.3	38.1	54.4	61.6
<=39	7.2	0.2	43.7	48.9	56.1
<=41	7.3	0.1	48.4	44.2	51.5
<=43	7.4	0.1	52.6	40.0	47.4
<=45	7.4	0.0	56.8	35.8	43.2
<=47	7.4	0.0	60.9	31.7	39.1
<=50	7.4	0.0	66.3	26.3	33.7
<=53	7.4	0.0	71.4	21.2	28.6
<=56	7.4	0.0	76.2	16.4	23.8
<=60	7.4	0.0	81.4	11.1	18.6
<=67	7.4	0.0	87.6	5.0	12.4
<=100	7.4	0.0	92.6	0.0	7.4

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (First-decile (10th-percentile) line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	42.6	27.5	0.7:1
<=21	9.4	35.2	44.5	0.5:1
<=24	13.8	30.3	56.6	0.4:1
<=27	18.9	26.2	66.8	0.4:1
<=29	23.9	23.2	74.9	0.3:1
<=31	29.7	20.8	83.6	0.3:1
<=33	34.7	19.0	88.8	0.2:1
<=35	40.2	17.2	93.5	0.2:1
<=37	45.3	15.7	96.0	0.2:1
<=39	51.0	14.2	97.6	0.2:1
<=41	55.7	13.2	99.1	0.2:1
<=43	59.9	12.3	99.2	0.1:1
<=45	64.1	11.5	99.8	0.1:1
<=47	68.3	10.8	99.8	0.1:1
<=50	73.7	10.0	99.8	0.1:1
<=53	78.8	9.4	99.8	0.1:1
<=56	83.6	8.8	99.8	0.1:1
<=60	88.9	8.3	100.0	0.1:1
<=67	95.0	7.8	100.0	0.1:1
<=100	100.0	7.4	100.0	0.1:1

Scorecard applied to the validation sample.

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

Table 5 (First-quintile (20th-percentile) line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+6.0	3.3	3.9	5.5
18–21	–3.5	3.4	4.1	5.2
22–24	+7.9	3.3	3.9	5.0
25–27	–4.6	4.0	4.4	5.3
28–29	–1.3	2.9	3.4	4.2
30–31	–0.7	2.3	2.8	3.7
32–33	+2.7	2.3	2.7	3.5
34–35	+0.2	2.1	2.5	3.3
36–37	+6.1	1.4	1.7	2.2
38–39	+0.5	1.9	2.2	3.2
40–41	–2.0	1.9	2.2	2.9
42–43	+1.2	1.2	1.4	1.9
44–45	+1.0	0.9	1.0	1.3
46–47	+0.6	0.7	0.9	1.2
48–50	+0.3	0.6	0.7	0.9
51–53	+0.9	0.1	0.2	0.2
54–56	+0.4	0.1	0.1	0.1
57–60	–0.5	0.4	0.5	0.5
61–67	0.0	0.0	0.0	0.0
68–100	0.0	0.0	0.0	0.0

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (First-quintile (20th-percentile) line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.7	58.0	68.1	80.1
4	+1.5	27.3	34.1	46.8
8	+1.2	18.9	23.6	31.8
16	+0.6	13.3	15.7	21.3
32	+0.6	9.6	11.5	15.3
64	+0.6	6.9	7.9	10.6
128	+0.7	4.8	5.6	7.6
256	+0.6	3.3	3.8	5.1
512	+0.6	2.4	2.8	3.9
1,024	+0.7	1.7	2.0	2.7
2,048	+0.7	1.2	1.5	1.9
4,096	+0.7	0.9	1.0	1.4
8,192	+0.7	0.6	0.7	1.0
16,384	+0.7	0.4	0.5	0.7

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (First-quintile (20th-percentile) line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	3.0	12.6	1.8	82.6	85.6
<=21	5.4	10.2	3.9	80.5	85.9
<=24	7.1	8.5	6.7	77.7	84.8
<=27	9.0	6.6	9.9	74.5	83.4
<=29	10.4	5.2	13.5	70.9	81.2
<=31	11.9	3.7	17.8	66.6	78.5
<=33	12.8	2.8	21.9	62.5	75.3
<=35	13.6	2.0	26.6	57.8	71.5
<=37	14.1	1.5	31.2	53.3	67.4
<=39	14.6	1.0	36.3	48.1	62.7
<=41	15.1	0.5	40.6	43.8	58.9
<=43	15.3	0.3	44.7	39.7	55.0
<=45	15.4	0.2	48.8	35.6	51.0
<=47	15.4	0.2	52.9	31.5	46.9
<=50	15.5	0.1	58.1	26.3	41.8
<=53	15.5	0.1	63.3	21.1	36.7
<=56	15.5	0.1	68.1	16.4	31.9
<=60	15.6	0.0	73.3	11.1	26.7
<=67	15.6	0.0	79.4	5.0	20.6
<=100	15.6	0.0	84.4	0.0	15.6

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (First-quintile (20th-percentile) line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	62.2	19.0	1.6:1
<=21	9.3	57.9	34.6	1.4:1
<=24	13.8	51.5	45.6	1.1:1
<=27	18.9	47.4	57.4	0.9:1
<=29	23.9	43.4	66.5	0.8:1
<=31	29.7	40.0	76.1	0.7:1
<=33	34.7	36.9	82.0	0.6:1
<=35	40.2	33.9	87.3	0.5:1
<=37	45.3	31.2	90.4	0.5:1
<=39	50.9	28.7	93.9	0.4:1
<=41	55.7	27.1	96.7	0.4:1
<=43	59.9	25.5	97.8	0.3:1
<=45	64.1	24.0	98.6	0.3:1
<=47	68.3	22.6	98.9	0.3:1
<=50	73.7	21.1	99.4	0.3:1
<=53	78.8	19.7	99.6	0.2:1
<=56	83.6	18.6	99.7	0.2:1
<=60	88.9	17.6	100.0	0.2:1
<=67	95.0	16.4	100.0	0.2:1
<=100	100.0	15.6	100.0	0.2:1

Scorecard applied to the validation sample.

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

Table 5 (Second-quintile (40th-percentile) line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+4.5	2.2	2.6	3.3
18–21	–1.0	3.0	3.4	4.8
22–24	+4.4	3.3	3.9	5.2
25–27	–4.3	3.7	3.9	4.7
28–29	–0.2	3.1	3.8	4.9
30–31	+0.3	3.1	3.7	5.1
32–33	–6.8	5.0	5.4	6.2
34–35	+3.1	3.0	3.6	4.9
36–37	+4.6	3.3	4.0	5.1
38–39	+0.1	2.9	3.5	4.5
40–41	–0.4	3.1	3.6	4.8
42–43	+3.2	2.6	3.0	3.9
44–45	+3.9	1.8	2.2	3.2
46–47	–3.6	2.9	3.1	3.5
48–50	–0.9	1.5	1.9	2.4
51–53	+3.0	0.4	0.5	0.6
54–56	+1.4	0.2	0.2	0.3
57–60	+0.1	0.4	0.5	0.7
61–67	+0.2	0.2	0.2	0.3
68–100	0.0	0.0	0.0	0.0

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (Second-quintile (40th-percentile) line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.6	63.3	76.5	92.1
4	+1.2	33.5	39.5	51.4
8	+0.9	24.2	28.6	38.2
16	+0.8	17.0	20.4	26.5
32	+0.5	12.3	14.2	18.5
64	+0.5	8.7	10.2	13.6
128	+0.4	6.2	7.3	9.1
256	+0.5	4.4	5.4	6.8
512	+0.5	3.2	3.7	5.0
1,024	+0.5	2.2	2.6	3.5
2,048	+0.6	1.6	1.8	2.4
4,096	+0.6	1.1	1.3	1.6
8,192	+0.6	0.8	0.9	1.1
16,384	+0.6	0.5	0.6	0.9

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (Second-quintile (40th-percentile) line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.2	29.3	0.6	65.9	70.1
<=21	8.0	25.5	1.4	65.1	73.1
<=24	11.3	22.1	2.5	64.0	75.4
<=27	14.9	18.6	4.0	62.5	77.4
<=29	17.8	15.7	6.1	60.5	78.3
<=31	21.2	12.3	8.5	58.0	79.2
<=33	23.6	9.8	11.0	55.5	79.1
<=35	25.9	7.6	14.3	52.2	78.0
<=37	27.6	5.9	17.6	48.9	76.5
<=39	29.5	4.0	21.5	45.0	74.5
<=41	30.8	2.7	24.9	41.6	72.4
<=43	31.5	1.9	28.4	38.1	69.7
<=45	32.1	1.4	32.0	34.5	66.6
<=47	32.7	0.8	35.6	30.9	63.6
<=50	33.2	0.3	40.4	26.1	59.3
<=53	33.3	0.1	45.5	21.1	54.4
<=56	33.4	0.1	50.2	16.3	49.7
<=60	33.5	0.0	55.4	11.1	44.6
<=67	33.5	0.0	61.5	5.0	38.5
<=100	33.5	0.0	66.5	0.0	33.5

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (Second-quintile (40th-percentile) line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	87.4	12.5	6.9:1
<=21	9.4	85.0	23.8	5.7:1
<=24	13.8	81.9	33.9	4.5:1
<=27	18.9	78.8	44.4	3.7:1
<=29	23.9	74.6	53.2	2.9:1
<=31	29.7	71.4	63.2	2.5:1
<=33	34.7	68.2	70.6	2.1:1
<=35	40.2	64.3	77.2	1.8:1
<=37	45.3	61.0	82.5	1.6:1
<=39	50.9	57.8	88.0	1.4:1
<=41	55.7	55.3	92.1	1.2:1
<=43	59.9	52.6	94.2	1.1:1
<=45	64.1	50.1	95.9	1.0:1
<=47	68.3	47.9	97.6	0.9:1
<=50	73.7	45.1	99.2	0.8:1
<=53	78.8	42.3	99.6	0.7:1
<=56	83.6	39.9	99.7	0.7:1
<=60	88.9	37.7	99.9	0.6:1
<=67	95.0	35.3	100.0	0.5:1
<=100	100.0	33.5	100.0	0.5:1

Scorecard applied to the validation sample.

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

Table 5 (Median (50th-percentile) line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+3.9	1.9	2.3	3.0
18–21	+3.1	2.8	3.4	4.5
22–24	+1.7	2.4	2.9	3.7
25–27	–1.6	2.7	3.1	4.0
28–29	–1.8	2.5	2.9	3.9
30–31	+2.3	3.0	3.7	5.0
32–33	–10.1	6.4	6.6	7.2
34–35	–2.5	3.0	3.6	4.9
36–37	+4.7	3.4	4.0	5.3
38–39	+0.3	3.2	3.8	4.8
40–41	–6.1	4.9	5.2	5.9
42–43	–4.4	3.9	4.3	5.5
44–45	+9.7	2.6	3.1	4.1
46–47	+2.8	2.3	2.8	3.8
48–50	+2.5	2.0	2.3	2.9
51–53	+1.5	1.8	2.1	2.6
54–56	+3.9	0.9	1.1	1.4
57–60	+1.3	0.9	1.0	1.3
61–67	+0.6	0.3	0.3	0.4
68–100	+0.1	0.0	0.0	0.0

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (Median (50th-percentile) line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.7	66.2	74.4	92.7
4	+0.8	35.6	41.0	52.0
8	+1.1	25.9	31.0	39.0
16	+0.9	17.5	20.9	27.1
32	+0.6	13.1	15.4	19.5
64	+0.4	9.6	10.9	14.1
128	+0.4	6.4	7.4	10.5
256	+0.5	4.6	5.5	7.5
512	+0.5	3.3	4.0	5.1
1,024	+0.5	2.2	2.6	3.4
2,048	+0.5	1.6	1.9	2.6
4,096	+0.5	1.1	1.4	1.7
8,192	+0.6	0.8	0.9	1.2
16,384	+0.6	0.6	0.7	0.9

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (Median (50th-percentile) line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.4	38.8	0.4	56.5	60.8
<=21	8.4	34.8	1.0	55.8	64.2
<=24	12.2	30.9	1.6	55.2	67.4
<=27	16.4	26.8	2.6	54.3	70.6
<=29	20.0	23.1	3.9	53.0	73.0
<=31	24.0	19.1	5.7	51.2	75.2
<=33	27.3	15.8	7.3	49.5	76.9
<=35	30.6	12.6	9.6	47.2	77.8
<=37	33.3	9.9	12.0	44.9	78.2
<=39	36.0	7.2	15.0	41.9	77.9
<=41	38.2	5.0	17.5	39.3	77.5
<=43	39.7	3.4	20.2	36.6	76.3
<=45	40.8	2.4	23.3	33.5	74.3
<=47	41.5	1.6	26.8	30.1	71.6
<=50	42.3	0.8	31.3	25.5	67.9
<=53	42.8	0.4	36.0	20.8	63.6
<=56	42.9	0.2	40.7	16.2	59.1
<=60	43.1	0.1	45.8	11.1	54.2
<=67	43.2	0.0	51.8	5.0	48.2
<=100	43.2	0.0	56.8	0.0	43.2

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (Median (50th-percentile) line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	92.0	10.2	11.5:1
<=21	9.4	89.4	19.4	8.4:1
<=24	13.8	88.3	28.3	7.6:1
<=27	18.9	86.5	37.9	6.4:1
<=29	23.9	83.8	46.4	5.2:1
<=31	29.7	81.0	55.7	4.2:1
<=33	34.7	78.9	63.4	3.7:1
<=35	40.2	76.1	70.9	3.2:1
<=37	45.3	73.6	77.1	2.8:1
<=39	51.0	70.6	83.4	2.4:1
<=41	55.7	68.5	88.5	2.2:1
<=43	59.9	66.3	92.0	2.0:1
<=45	64.1	63.6	94.5	1.7:1
<=47	68.3	60.8	96.2	1.6:1
<=50	73.7	57.5	98.1	1.4:1
<=53	78.8	54.3	99.1	1.2:1
<=56	83.6	51.3	99.4	1.1:1
<=60	88.9	48.5	99.9	0.9:1
<=67	95.0	45.4	100.0	0.8:1
<=100	100.0	43.2	100.0	0.8:1

Scorecard applied to the validation sample.

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

Table 5 (Third-quintile (60th-percentile) line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	–0.3	0.7	0.9	1.2
18–21	+5.2	2.7	3.1	3.9
22–24	+2.6	2.2	2.6	3.2
25–27	+0.6	2.4	2.8	3.7
28–29	+0.1	2.1	2.5	3.3
30–31	+3.4	2.8	3.3	4.1
32–33	–5.7	4.0	4.2	4.7
34–35	+1.0	2.8	3.5	4.4
36–37	–2.4	3.0	3.7	4.9
38–39	–1.0	3.1	3.7	4.8
40–41	–3.4	3.3	3.7	5.2
42–43	–9.9	6.8	7.0	7.7
44–45	–1.1	3.7	4.4	6.1
46–47	+5.1	3.2	3.8	5.0
48–50	+2.3	2.6	3.1	4.2
51–53	+2.5	2.4	2.8	3.7
54–56	+1.9	1.6	2.0	2.7
57–60	+5.3	0.9	1.1	1.5
61–67	+2.9	0.5	0.5	0.7
68–100	–0.4	0.5	0.5	0.7

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (Third-quintile (60th-percentile) line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	–0.2	63.7	76.9	91.6
4	+1.0	34.9	40.2	52.0
8	+1.1	25.1	29.4	37.8
16	+1.0	17.4	20.8	27.1
32	+0.9	12.5	14.7	18.8
64	+0.6	9.2	10.9	14.1
128	+0.5	6.1	7.9	10.2
256	+0.6	4.6	5.5	7.0
512	+0.5	3.1	3.9	5.1
1,024	+0.5	2.1	2.6	3.4
2,048	+0.5	1.5	1.9	2.4
4,096	+0.5	1.1	1.3	1.8
8,192	+0.5	0.8	0.9	1.3
16,384	+0.5	0.6	0.7	0.9

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (Third-quintile (60th-percentile) line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.6	48.7	0.1	46.6	51.2
<=21	8.9	44.4	0.5	46.2	55.1
<=24	13.0	40.4	0.9	45.8	58.8
<=27	17.6	35.8	1.3	45.3	62.9
<=29	21.8	31.6	2.2	44.5	66.3
<=31	26.5	26.8	3.2	43.5	70.0
<=33	30.4	22.9	4.3	42.4	72.8
<=35	34.3	19.1	6.0	40.7	75.0
<=37	37.8	15.5	7.5	39.2	77.0
<=39	41.5	11.8	9.5	37.2	78.7
<=41	44.3	9.0	11.4	35.3	79.6
<=43	46.6	6.8	13.4	33.3	79.9
<=45	48.6	4.7	15.6	31.1	79.7
<=47	49.9	3.4	18.4	28.3	78.2
<=50	51.5	1.8	22.2	24.5	76.0
<=53	52.4	1.0	26.4	20.2	72.6
<=56	52.9	0.4	30.7	16.0	68.8
<=60	53.2	0.2	35.7	11.0	64.1
<=67	53.3	0.0	41.7	5.0	58.3
<=100	53.3	0.0	46.7	0.0	53.3

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (Third-quintile (60th-percentile) line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	97.4	8.7	37.8:1
<=21	9.4	95.1	16.7	19.4:1
<=24	13.8	93.7	24.3	14.9:1
<=27	18.9	92.9	32.9	13.0:1
<=29	23.9	90.9	40.8	10.0:1
<=31	29.7	89.3	49.8	8.3:1
<=33	34.7	87.6	57.0	7.1:1
<=35	40.2	85.2	64.3	5.8:1
<=37	45.3	83.5	70.9	5.0:1
<=39	51.0	81.4	77.8	4.4:1
<=41	55.7	79.5	83.1	3.9:1
<=43	59.9	77.7	87.3	3.5:1
<=45	64.1	75.8	91.1	3.1:1
<=47	68.3	73.1	93.6	2.7:1
<=50	73.7	69.9	96.6	2.3:1
<=53	78.8	66.4	98.2	2.0:1
<=56	83.6	63.3	99.2	1.7:1
<=60	88.9	59.8	99.7	1.5:1
<=67	95.0	56.1	99.9	1.3:1
<=100	100.0	53.3	100.0	1.1:1

Scorecard applied to the validation sample.

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

Table 5 (Fourth-quintile (80th-percentile) line): Errors in poverty likelihoods for a participant's household (average of differences between estimated and observed values) by score range, with confidence intervals

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Error	90-percent	95-percent	99-percent
0–17	+0.1	0.2	0.3	0.4
18–21	+0.4	0.5	0.6	0.8
22–24	+0.2	0.4	0.5	0.7
25–27	+1.3	0.9	1.1	1.6
28–29	–1.7	1.2	1.3	1.3
30–31	–2.1	1.3	1.4	1.5
32–33	–0.2	1.3	1.5	2.0
34–35	–2.7	1.9	2.0	2.1
36–37	+2.7	1.9	2.3	3.1
38–39	–2.4	1.8	1.9	2.2
40–41	+1.6	2.3	2.7	3.6
42–43	–6.6	4.2	4.4	4.8
44–45	+4.1	3.2	3.7	5.5
46–47	+1.1	3.4	4.0	5.2
48–50	–5.8	4.2	4.4	5.4
51–53	+7.8	3.3	3.9	5.3
54–56	–1.1	3.3	4.1	5.4
57–60	+10.3	2.6	3.1	3.8
61–67	–3.3	3.0	3.1	4.0
68–100	–0.7	1.3	1.6	2.1

Scorecard applied to 1,000 bootstraps of n = 16,384 from the validation sample.

Table 6 (Fourth-quintile (80th-percentile) line): Errors in poverty rates for a sample of a population of participants' households at a point in time (average of differences between estimated and observed values), by sample size and with confidence intervals

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Error	90-percent	95-percent	99-percent
1	+0.7	61.4	73.1	88.1
4	+0.5	28.2	33.5	48.2
8	+0.7	20.9	25.1	32.9
16	+0.4	14.5	17.2	22.5
32	0.0	10.5	12.5	16.8
64	+0.2	7.8	9.2	11.6
128	+0.2	5.7	6.7	8.3
256	+0.2	3.9	4.8	6.6
512	+0.2	2.6	3.2	4.3
1,024	+0.2	1.8	2.2	3.1
2,048	+0.2	1.4	1.6	2.2
4,096	+0.2	0.9	1.1	1.5
8,192	+0.2	0.7	0.8	1.1
16,384	+0.2	0.5	0.6	0.8

Scorecard applied to 1,000 bootstraps from the validation sample.

Table 9 (Fourth-quintile (80th-percentile) line): Percentages of participants' households by cut-off score and targeting classification, along with the hit rate

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
<=17	4.7	70.3	0.0	24.9	29.7
<=21	9.3	65.8	0.1	24.9	34.2
<=24	13.7	61.3	0.1	24.8	38.6
<=27	18.7	56.3	0.2	24.7	43.5
<=29	23.6	51.4	0.3	24.6	48.3
<=31	29.3	45.7	0.4	24.6	53.9
<=33	34.0	41.0	0.7	24.3	58.3
<=35	39.3	35.8	0.9	24.0	63.3
<=37	43.8	31.2	1.4	23.5	67.4
<=39	49.1	25.9	1.8	23.1	72.2
<=41	53.2	21.9	2.5	22.4	75.6
<=43	56.8	18.2	3.1	21.8	78.7
<=45	60.1	15.0	4.1	20.9	81.0
<=47	63.2	11.9	5.1	19.8	83.0
<=50	67.0	8.0	6.7	18.3	85.3
<=53	69.7	5.3	9.1	15.9	85.6
<=56	71.9	3.1	11.7	13.3	85.2
<=60	73.5	1.6	15.4	9.6	83.1
<=67	74.8	0.2	20.1	4.8	79.6
<=100	75.1	0.0	24.9	0.0	75.1

Inclusion, undercoverage, leakage, and exclusion normalized to sum to 100. Scorecard applied to the validation sample.

Table 10 (Fourth-quintile (80th-percentile) line): Share of all participants' households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor, share of poor households who are targeted, and number of poor households successfully targeted per non-poor household mistakenly targeted

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
<=17	4.8	99.6	6.3	253.6:1
<=21	9.4	99.4	12.4	165.3:1
<=24	13.8	99.3	18.3	143.2:1
<=27	18.9	98.9	24.9	94.1:1
<=29	23.9	98.7	31.5	78.4:1
<=31	29.7	98.7	39.0	75.2:1
<=33	34.7	98.1	45.3	51.3:1
<=35	40.2	97.7	52.3	42.4:1
<=37	45.3	96.8	58.4	30.7:1
<=39	51.0	96.4	65.5	26.8:1
<=41	55.7	95.4	70.9	20.9:1
<=43	59.9	94.8	75.7	18.2:1
<=45	64.1	93.7	80.1	14.8:1
<=47	68.3	92.5	84.2	12.3:1
<=50	73.7	91.0	89.3	10.1:1
<=53	78.8	88.5	92.9	7.7:1
<=56	83.6	86.0	95.8	6.2:1
<=60	88.9	82.7	97.9	4.8:1
<=67	95.0	78.8	99.7	3.7:1
<=100	100.0	75.1	100.0	3.0:1

Scorecard applied to the validation sample.