Simple Poverty Scorecard® Poverty-Assessment Tool Myanmar

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This document is at `SimplePovertyScorecard.com`.

Abstract

The Simple Poverty Scorecard-brand poverty-assessment tool uses ten low-cost indicators from Myanmar's 2009/10 Integrated Household Living Conditions Assessment to estimate the likelihood that a household has consumption below a given poverty line. Field workers can collect responses in about ten minutes. The scorecard's accuracy is reported for a range of poverty lines. The scorecard is a practical way for pro-poor programs in Myanmar to measure poverty rates, to track changes in poverty rates over time, and to segment clients for targeted services.

Acknowledgements

Simple Poverty Scorecard® Poverty-Assessment Tool

Scoring		**Location**		**Entity**		**Additional data**	
Interview ID:		Sampling wgt.:		Village:		Name of HH head:	
Interview date:		Township:		Field office:		WR Class:	
Country:	MMR	City/town:		Date scored:		Started w/UNDP:	
Scorecard:	001	Ward/village tract:		Enumerator:		# HH members:	

Indicator	Response	Points	Score
1. How many members does the household have?	A. Eight or more	0	
	B. Seven	6	
	C. Six	10	
	D. Five	14	
	E. Four	19	
	F. Three	26	
	G. One or two	34	
2. What is the highest standard/diploma/degree that the female head/spouse has passed?	A. No female head/spouse	0	
	B. None, KG, or first standard	1	
	C. Second standard	7	
	D. Third to fifth standard	8	
	E. Sixth standard or higher	9	
3. How many rooms does the household occupy, including bedrooms, living rooms, and rooms used for household businesses (do not count toilets, kitchens, balconies, nor corridors)?	A. One or none	0	
	B. Two	2	
	C. Three	3	
	D. Four	4	
	E. Five or more	9	
4. What is the major construction material of the floor (observe, do not ask)?	A. Earth/sand, palm/bamboo, combination earth and wood/palm/bamboo, or other	0	
	B. Wood planks, parquet or polished wood, tongue-and-groove wood, cement, wood with covering, cement with covering, or a combination of cement/finished wood and something else	5	
5. What is the major construction material of the external (outer) walls (observe, do not ask)?	A. Thatch/large leaves/palm/*dhani*, or tarpaulin	0	
	B. Bamboo, or rudimentary wood	2	
	C. Unbaked brick and mud, finished wood, or other	3	
	D. Baked brick and cement, or *pucca* cement	9	
6. What type of stove is used most often for cooking food in the household?	A. Open fire, open stove, rice-husk stove, or traditional closed stove	0	
	B. A1 improved stove, other improved stove, stove using electricity, gas, kerosene/diesel, or biofuel, or other	4	
7. Does any member of your household own or have access to a cupboard or a food-storage cabinet (including one rented to others or pawned)?	A. Neither	0	
	B. One, but not both	1	
	C. Both	5	
8. Does any member of your household own or have access to a black-and-white or colour TV (including one rented to others or pawned)?	A. No	0	
	B. Yes	9	
9. Does any household member own or have access to a bicycle or non-motorized boat, a motorcycle, power tiller, trishaw, motorboat, trawlarjee, three-wheeled motor vehicle, motorcar (4 wheels or more), or tractor (including one rented to others or pawned)?	A. No, none of these	0	
	B. Only bicycle or non-motorized boat	4	
	C. Motorcycle, power tiller, trishaw, motorboat, trawlarjee, three-wheeled motor vehicle, motorcar (4 wheels or more), or tractor (regardless of bicycle or non-motorized boat)	8	
10. If any household member's main job is connected with agriculture, hunting, forestry, fishery, mining, or quarrying, and if any household member owns or has the right to use land for agriculture, forestry, pasture, livestock breeding, or water surfaces, then does the household own any non-draught oxen, non-draught buffalo, cows, mythun, horses, or donkeys/mules (including ones rented to others or pawned to others)?	A. Landless agricultural household	0	
	B. Non-agricultural household	1	
	C. Agricultural household with land, but no non-draught large animals	4	
	D. Agricultural household with land and with non-draught large animals	8	

Score:

Worksheet:
Household Roster and Main Job

At the start of the interview, read the following to the respondent:

Please tell me the names and ages of all the persons who usually sleep in the dwelling, eat most of their meals here, and share expenses together. You should include all members of the family, including any children or other persons who may be away for study or work but who consider this as their permanent residence. It also includes any other people who are not blood relatives but who normally sleep here, eat most of their meals here, and share expenses.

Write the names of and ages all household members. For each member 10-years-old or older, ask the respondent whether he/she in his/her main job is connected to agriculture, hunting, forestry, fishery, mining, or quarrying. Count the total number of household members, write it next to "# household members" on the right side of the header of the scorecard, and use it to mark the response to Question 1. You will use the responses related to the main job of each member later when marking Question 10.

Name of household member	Age	In his/her main job, is <name> connected to agriculture, hunting, forestry, fishery, mining, or quarrying?	
1.		No	Yes
2.		No	Yes
3.		No	Yes
4.		No	Yes
5.		No	Yes
6.		No	Yes
7.		No	Yes
8.		No	Yes
9.		No	Yes
10.		No	Yes
11.		No	Yes
12.		No	Yes
13.		No	Yes
14.		No	Yes
15.		No	Yes

Look-up table to convert scores to poverty likelihoods

| | Poverty likelihood (%) by poverty line | | | | | | |
| | National | | | | USAID | Intl. 2005 PPP | |
Score	Food	100%	150%	200%	'Extreme'	$1.25	$2.50
0–4	30.0	83.4	100.0	100.0	71.1	95.2	100.0
5–9	30.0	76.1	100.0	100.0	51.7	87.9	100.0
10–14	25.4	68.6	96.8	99.6	44.1	84.1	99.8
15–19	12.2	60.4	95.7	99.4	33.4	74.6	99.8
20–24	9.1	48.8	93.5	99.4	24.5	61.1	99.8
25–29	6.8	41.6	92.4	99.3	18.2	49.7	99.7
30–34	4.4	29.5	88.4	99.2	13.0	35.1	99.1
35–39	3.2	23.3	84.7	98.2	10.7	27.2	97.5
40–44	1.0	15.0	70.5	95.4	5.5	16.3	93.8
45–49	0.7	10.6	62.9	92.4	3.6	9.7	89.2
50–54	0.2	7.4	55.9	88.4	2.0	5.2	85.6
55–59	0.0	3.5	41.0	80.4	1.2	4.0	73.3
60–64	0.0	1.2	28.8	69.5	0.4	0.8	61.4
65–69	0.0	1.0	22.7	57.6	0.0	0.6	49.5
70–74	0.0	0.3	14.9	49.1	0.0	0.2	37.5
75–79	0.0	0.0	9.3	47.8	0.0	0.0	27.3
80–84	0.0	0.0	4.3	44.6	0.0	0.0	18.6
85–89	0.0	0.0	3.9	31.9	0.0	0.0	12.1
90–94	0.0	0.0	0.0	31.9	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Simple Poverty Scorecard® Poverty-Assessment Tool Myanmar

1. Introduction

Pro-poor programs in Myanmar can use the Simple Poverty Scorecard poverty-assessment tool to estimate the likelihood that a household has consumption below a given poverty line, to measure groups' poverty rates at a point in time, to track changes in groups' poverty rates over time, and to segment clients for targeted services.

The direct approach to poverty measurement via surveys is difficult and costly, asking households about a lengthy list of consumption items. As a case in point, Myanmar's 2009/10 Integrated Household Living Conditions Assessment (IHLCA) runs 55 pages. Enumerators visited each household twice, once in December 2009/January 2010, and again in May 2010. Each visit lasted about half a day and collected a comprehensive measure of consumption covering more than 450 items. One example item is: "During the last seven days, did any member of your household consume *Pegyi* (*lablab* beans)? If so, what was the quantity of *Pegyi* (*lablab* beans) consumed? During the last seven days, did any member of your household acquire any *Pegyi* (*lablab* beans) for consumption? If so, what was the quantity of *Pegyi* (*lablab* beans) acquired for cash? How much did members of your household spend in cash for *Pegyi* (*lablab* beans)? What was the quantity of *Pegyi* (*lablab* beans) received in-kind? What was the quantity of *Pegyi* (*lablab* beans) that your household consumed from home production?

Now then, during the last seven days, did any member of your household consume

Pegya? . . ."

In comparison, the indirect approach via the scorecard is simple, quick, and

inexpensive. It uses ten verifiable indicators (such as "What is the major construction

material of the floor?" or "Does the household own or have access to a black-and-white

or colour TV?") to get a score that is highly correlated with poverty status as measured

by the exhaustive IHLCA survey.

The scorecard differs from "proxy means tests" (Coady, Grosh, and Hoddinott,

2004) in that it is tailored to the capabilities and purposes not of national governments

but rather of local, pro-poor organizations. The feasible poverty-measurement options

for these 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). Measurements from these approaches are not

comparable across villages nor across organizations nor across time, they may be costly,

and their bias and precision are unknown.

The scorecard can be used to measure the share of a pro-poor organization's

participants who are below a given poverty line, such as the Millennium Development

Goals' $1.25/day poverty line at 2005 purchase-power parity.[1] The scorecard can be

used by USAID microenterprise partners to report how many of their participants are

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[1] This paper reports Myanmar's first-ever estimate of poverty rates by the $1.25/day 2005 PPP line (24.8 percent for households, and 31.9 percent for people, Figure 1).

among the poorest half of people below the national poverty line. It can also be used to measure movement across a poverty line over time. In all these cases, the scorecard provides a consumption-based, objective tool with known accuracy. While consumption surveys are costly even for governments, some local organizations may be able to implement an inexpensive scorecard to help with poverty monitoring and targeting.

The statistical approach here aims to be understood by non-specialists. After all, if managers are to adopt the scorecard on their own and apply it to inform their decisions, then they must first trust that it works. Transparency and simplicity build trust. Getting "buy-in" matters; proxy means tests and regressions on the "determinants of poverty" have been around for three decades, but they are rarely used to inform decisions at the local level. This is not because they do not work, but because they are presented (when they are presented at all) as tables of regression coefficients incomprehensible to non-specialists (with cryptic indicator names such as "`LGHHSZ_2`" and with points with negative values and many decimal places). Thanks to the predictive-modeling phenomenon known as the "flat maximum", simple scorecards can be about as accurate as complex ones (Schreiner, 2012).

Beyond its simplicity 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 these accuracy tests are simple and commonplace in statistical practice and in the for-profit field of credit-risk scoring, they have rarely been applied to poverty-assessment tools.

The scorecard is based on the 2009/10 IHLCA conducted by the Myanmar office of the United Nations Development Programme (UNDP). Indicators are selected to be:

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

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

The scorecard can be used to estimate three basic quantities. First, it can estimate a particular household's "poverty likelihood", that is, the probability that the household has per-adult-equivalent or per-capita consumption below a given poverty line.

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

Third, the scorecard can estimate changes in the poverty rate for a group of households (or for two independent samples of households that are both representative of the same population) between two points in time. This estimate is the change in the average poverty likelihood of the group(s) of households over time.

The scorecard can also be used for targeting. To help managers choose the most appropriate targeting cut-off for their purposes, this paper reports several measures of targeting accuracy for a range of possible cut-offs.

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This paper presents a single scorecard whose indicators and points are derived from household consumption data and Myanmar's national poverty line. Scores from this one scorecard are calibrated to poverty likelihoods for seven poverty lines.

The scorecard is constructed and calibrated using half of the data from the 2009/10 IHLCA, and its accuracy is validated on the other half of the data.

All three scoring estimators are *unbiased.* That is, they match the true value on average in repeated samples when constructed from (and applied to) the same population from which the scorecard was built. Like all predictive models, the specific scorecard here is biased to some extent when constructed from a single sample (such as the 2009/10 IHLCA) and when applied to a different population.[2]

Thus, while the indirect scoring approach is less costly than the direct survey approach, it is also biased when applied in practice. (The survey approach is unbiased by definition.) There is bias because scoring must assume that the future relationships between indicators and poverty in all possible groups of households will be the same as in the data used to build the scorecard. Of course, this assumption—ubiquitous and inevitable in predictive modeling—holds only partly.

When applied to the validation sample with bootstraps of $n = 16{,}384$, the difference between scorecard estimates of groups' poverty rates and the true rates at a point in time is $+1.9$ percentage points for the national line. The average absolute

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[2] Important examples include nationally representative samples at a different point in time or non-nationally representative sub-groups (Tarozzi and Deaton, 2009).

difference across all seven lines is 1.3 percentage points. These differences are due to sampling variation and not biased estimators; the average difference would be zero if the whole 2009/10 IHLCA were to be repeatedly redrawn and divided into sub-samples before repeating the entire process of building and validating scorecards.

The 90-percent confidence intervals for these estimates are ± 0.6 percentage points or less. For $n = 1{,}024$, the 90-percent intervals are ± 2.7 percentage points or less.

Section 2 below describes data and poverty lines. Sections 3 and 4 describe scorecard construction and offer guidelines for use in practice. Sections 5 and 6 detail the estimation of households' poverty likelihoods and of groups' poverty rates at a point in time. Section 7 discusses estimating changes in poverty rates through time, and Section 8 covers targeting. Section 9 is a summary.

2. Data and poverty lines

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

2.1   Data

The scorecard is based on data from the 18,609 households in the 2009/10 IHLCA. This is Myanmar's most recent national consumption survey. The measure of consumption is the average of the annual consumption measures in each of two rounds (first in December 2009/January 2010, and then in May 2010), adjusted for cost-of-living differences relative to median prices for Myanmar as a whole as of the period of December 2009 to January 2010 (IHLCA Project Technical Unit, 2010).

For the purposes of the scorecard, the households in the 2009/10 IHLCA are randomly divided into two sub-samples:

- *Construction and calibration* for selecting indicators and points and for associating scores with poverty likelihoods
- *Validation* for measuring accuracy with data not used in construction or calibration

2.2 Poverty rates and poverty lines

2.2.1 Rates

As a general definition, a *poverty rate* is the share of people in a group who live in households whose total household consumption (divided by the number of per-adult-equivalent or the number of household members) is below a given poverty line.

Beyond this general definition, the two most-common cases are *household-level poverty rates* and *person-level poverty rates*. With household-level rates, each household is counted as if it had only one person, regardless of true household size, so all households are counted equally. With person-level rates (the "head-count index"), each household is weighted by the number of people in it, so larger households count more.

For example, consider a group of two households, the first with one member and the second with two members. Suppose further that the first household has per-adult-equivalent or per-capita consumption above a poverty line (it is "non-poor") and that the second household has per-adult-equivalent or per-capita consumption below a poverty line (it is "poor"). The household-level rate counts both households as if they had only one person and so gives a poverty rate of $1 \div (1 + 1) = 50$ percent. In contrast, the person-level rate weighs each household by the number of people in it and so gives a poverty rate of $2 \div (1 + 2) = 67$ percent.

Whether the household-level rate or the person-level rate is relevant depends on the situation. If an organization's "participants" include all the people in a household, then the person-level rate is relevant. Governments, for example, are concerned with the

well-being of people, regardless of how those people are arranged in households, so governments typically report person-level poverty rates.

If an organization has only one "participant" per household, however, then the household-level rate may be relevant. For example, if a microlender has only one borrower in a household, then it might prefer to report household-level poverty rates.

Figure 1 reports poverty rates and poverty lines for Myanmar at both the household-level and the person-level.[3] The scorecard is constructed using the 2009/10 IHLCA and household-level lines. Scores are calibrated to household-level poverty likelihoods, and accuracy is measured for household-level rates. This use of household-level rates reflects the belief that they are relevant for most pro-poor organizations.

Organizations can estimate person-level poverty rates by taking a household-size-weighted average of the household-level poverty likelihoods. It is also possible to construct a scorecard based on person-level lines, to calibrate scores to person-level likelihoods, and to measure accuracy for person-level rates, but it is not done here.

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[3] Figure 2 reports poverty rates and poverty lines (for households and people) by urban, rural, and overall for each of Myanmar's 17 states/regions.

2.2.2 Poverty lines

Myanmar's national poverty line (sometimes called here "100% of the national poverty line) is defined separately for urban and rural areas in each of 17 states/regions (Figure 2) using the cost-of-basic-needs approach (Ravallion, 1998). For a given region, the steps are (IHLCA Project Technical Unit, 2010):

- Measure each household's nominal food and non-food consumption in each IHLCA round
- Derive the number of adult equivalents for both food and non-food consumption in each round and use them to find nominal food and non-food consumption per adult equivalent
- Account for differences in cost-of-living over regions and across rounds via price indexes relative to median prices for Myanmar as a whole in December 2009/January 2010
- Define a reference group as the households between the 25th and 50th percentiles of the distribution of price-adjusted per-adult-equivalent consumption
- Given age- and sex-specific caloric norms, find the daily average caloric requirement for people in households in the reference group (2,300 Calories)
- Given the distribution, prices, and Calories of food items consumed by reference households, find the cost of the food bundle with 2,300 Calories

Averaging the results across rounds gives a food poverty line of MMK7393 per day per adult equivalent. For Myanmar overall, this implies a household-level food-poverty rate of 3.6 percent and a person-level rate of 4.8 percent (Figure 1).[4]

The national (food plus non-food) line is then defined as the food line plus necessary non-food consumption. This non-food component is taken as the food line, multiplied by the share of non-food consumption in the 2009/10 IHLCA (0.27) for households whose total consumption was within 90 to 110 percent of the food line,

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[4] The person-level rate matches UNDP (2011). There is no source to cross-check the household-level rate.

divided by the share of food consumption for those same households (0.73). The national (food plus non-food) poverty line is then the sum of the food line (MMK739) plus the necessary non-food component ($\text{MMK} \, 739 \cdot \dfrac{0.27}{0.73} = 273$), or about MMK1,010 in all-Union median prices as of December 2009/January 2010 (Table 1). The resulting household-level poverty rate is 21.3 percent, and the person-level rate is 25.7 percent (Table 1).[5]

The national line is used to construct the scorecard. Because local pro-poor organizations may want to use different or various poverty lines, this paper calibrates scores from its single scorecard to poverty likelihoods for seven lines:

- Food
- 100% of national
- 150% of national
- 200% of national
- USAID "extreme"
- $1.25/day 2005 PPP
- $2.50/day 2005 PPP

The USAID "extreme" line is defined as the median consumption of people (not households) below the national line (United States Congress, 2004).

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[5] UNDP (2011) reports a person-level national poverty rate of 25.6 percent, which some reports round to 25 percent. There is no source to cross-check the household-level rate.

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

- 2005 PPP exchange rate of MMK279 per $1.00[6]
- Average Consumer Price Index[7] in December 2009/January 2010 of 104.32
- 2005 monthly average CPI of 231.76

Given this, the $1.25/day 2005 PPP line for Myanmar during December 2009/January 2010 is (Sillers, 2006):

$$\left(2005 \text{ PPP exchange rate}\right) \cdot \$1.25 \cdot \left(\frac{\text{CPI}_{\text{Dec.'09/Jan.'10}}}{\text{CPI}_{2005 \text{ average}}}\right) =$$

$$\left(\frac{\text{MMK279}}{\$1.00}\right) \cdot \$1.25 \cdot \left(\frac{231.76}{104.32}\right) = \text{MMK775}.$$

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[6] Sun and Swanson (2009) estimate a PPP factor of 1.521, but this mistakenly uses the grossly overvalued official exchange rate of MMK5.761 per $1.00. In 2005, the official rate applied only for import/export accounting by public-sector institutions, and an active parallel market for dollars was tolerated (Hori and Wong, 2008). There is no complete nor official source of data on unofficial exchange rates in 2005. The figure used here (MMK1,057 per $1.00 on average in 2005) is derived from rates reported in news stories and travelogues on different dates in 2005, assuming linear change between data points. The estimated PPP factor is then Sun and Swanson's 1.521, multiplied by the ratio of the parallel-market rate to the official rate, or $1.521 \cdot \frac{1,057}{5.761} = 279$. The International Monetary Fund (`econstats.com/weo/V013.htm`, retrieved 24 July 2012) reports an "implied PPP conversion rate" for 2005 of 258, close to the 279 used here. The IMF figure, however, may not apply to consumption expenditure by households, and its derivation is not well documented.

[7] The CPI applies to Myanmar overall. It comes from various issues of Central Statistical Organization, *Selected Monthly Economic Indicators*, Nay Pyi Daw: Ministry of National Planning and Economic Development.

This 2005 PPP line applies to Myanmar as a whole. It is adjusted for cost-of-living differences across urban and rural areas by state/region using:

- L, the all-Myanmar \$1.25/day 2005 PPP poverty line (MMK775)
- i, an index to an urban or rural area in a state/region
- N, the number of urban and rural areas by state/region in Myanmar (34)
- π_i, the national poverty line for area i (Figure 2)
- w_i, the share of Myanmar's people who live in area i

The cost-of-living-adjusted 2005 PPP poverty line L_i for area i is then:

$$L_i = \frac{L \cdot \pi_i}{(\sum_{j=1}^{N} \pi_j \cdot w_j) / \sum_{j=1}^{N} w_j}.$$

The \$2.50/day 2005 PPP line is twice the corresponding \$1.25/day line.

This paper presents Myanmar's first-ever poverty estimates based on \$1.25/day (24.8 percent for households, and 31.9 percent for people). The absence of previous estimates is odd and sometimes ironic. For example, the IHCLA Technical Unit's 2011 *MDG Data Report* should have featured an estimate of the \$1.25/day poverty rate as its headline result, but instead it reported the poverty rate by the national line.

3. Scorecard construction

For Myanmar, about 130 potential indicators are initially prepared in the areas of:

- Family composition (such as household size)
- Education (such as the highest standard passed by the female head/spouse)
- Housing (such as wall and floor material)
- Ownership of durable goods (such as televisions, bicycles, motorcycles, or cars)
- Employment (such as whether any household member works in agriculture)
- Agriculture (such as ownership of cows)

Figure 3 lists the candidate indicators, ordered by the entropy-based "uncertainty coefficient" that measures how well a given indicator predicts poverty on its own (Goodman and Kruskal, 1979).

The scorecard also aims to measure *changes* in poverty through time. This means that, when selecting indicators and holding other considerations constant, preference is given to more sensitive indicators. For example, the ownership of a bicycle or motorcycle is probably more likely to change in response to changes in poverty than is the age of the male head/spouse.

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

One of these one-indicator scorecards is then selected based on several factors (Schreiner *et al.*, 2004; Zeller, 2004). These include improvement in accuracy, likelihood of acceptance by users (determined by simplicity, cost of collection, and "face validity" in terms of experience, theory, and common sense), sensitivity to changes in poverty status, variety among indicators, robustness across regions, and verifiability.

A series of two-indicator scorecards are then built, each based on the one-indicator scorecard selected from the first round, with a second candidate indicator added. The best two-indicator scorecard is then selected, again based on "c" and judgment. These steps are repeated until the scorecard has 10 indicators.

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 the common R^2-based stepwise least-squares regression. It differs from naïve stepwise in that the criteria for selecting indicators include not only statistical accuracy but also judgment and non-statistical factors. The use of non-statistical criteria can improve robustness through time and helps ensure that indicators are simple, sensible, and acceptable to users.

The single scorecard here applies to all of Myanmar. Evidence from India and Mexico (Schreiner, 2006 and 2005a), Sri Lanka (Narayan and Yoshida, 2005), and Jamaica (Grosh and Baker, 1995) suggests that segmenting scorecards by urban/rural

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does not improve targeting accuracy much, although it may improve the bias and precision of estimates of poverty rates (Tarozzi and Deaton, 2009).

In the case of Myanmar, adding an indicator for the state/region or for the mother tongue of the male head/spouse (a proxy for ethnicity/culture) improved targeting accuracy only trivially. Furthermore, the grouping of items in responses and the ordering of responses relative to poverty for these two regional indicators sometimes contradicted common sense. Thus, testing did not support the idea that there are advantages to having multiple scorecards segmented by region.

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

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

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

- Only 10 indicators
- Only categorical indicators
- Only simple weights (non-negative integers, no arithmetic beyond addition)

A field worker using the paper scorecard would:

- Record participant and field-worker identifiers, dates, and household size
- Read each question from the scorecard
- Circle the response and its points
- Write the points in the far-right column
- Add up the points to get the total score
- Implement targeting policy (if any)
- Deliver the paper scorecard to a central office for data entry and filing

Of course, field workers must be trained. The quality of outputs depends on the quality of inputs. If organizations or field workers gather their own data and believe that they have an incentive to exaggerate poverty rates (for example, if 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).[8] IRIS Center (2007a) and Toohig (2008) are useful nuts-and-bolts guides for budgeting, training field workers and supervisors, logistics, sampling, interviewing, piloting, recording data, and controlling quality.

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[8] If an organization does not want field workers to know the points associated with indicators, then it can use a version of the scorecard without points and apply the points later at the central office. Schreiner (2011a) argues that in Colombia (Camacho and Conover, 2011), hiding points did little to deter cheating and that cheating by the user's central office was more damaging than cheating by field agents and respondents.

In particular, while collecting scorecard indicators is relatively easier than alternatives, it is still absolutely difficult. Training and explicit definitions of terms and concepts in the scorecard is essential, and field workers should scrupulously follow the "Guidelines for the Interpretation of Indicators" found at the end of this paper, as they are an integral part of the Simple Poverty Scorecard tool.

For the example of Nigeria, Onwujekwe, Hanson, and Fox-Rushby (2006) find distressingly low inter-rater and test-retest correlations for indicators as seemingly simple and obvious as whether the household owns an automobile. At the same time, Grosh and Baker (1995) find 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) find that "underreporting [of asset ownership] is widespread but not overwhelming, except for a few goods . . . [and] overreporting is common for a few goods, which implies that self-reporting may lead to the exclusion of deserving households" (pp. 24–25). 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 agents who verify responses with a home visit, and this is the suggested procedure for the scorecard in Myanmar.

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

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

In general, the sampling design should follow from the organization's goals for

the exercise.

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

- Employees of the organization
- Third-party contractors

Responses, scores, and poverty likelihoods can be recorded:

- On paper in the field and then filed at a central office
- On paper in the field and then keyed into a database or spreadsheet at an office
- On portable electronic devices in the field and uploaded to a database

Given a population relevant for a particular business question, the participants

to be scored can be:

- All participants (census)
- A representative sample of all participants
- All participants in a representative sample of field offices
- A representative sample of all participants in a representative sample of offices

If not determined by other factors, the number of participants to be scored can

be derived from sample-size formulas (presented later) for a desired level of confidence

and a desired confidence interval.

Frequency of application can be:

- As a once-off project (precluding measuring change)
- Once a year (or at some other time interval, allowing measuring change)
- Each time a field worker visits a participant at home (allowing measuring change)

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

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

An example set of choices are illustrated by BRAC and ASA, two microlenders in Bangladesh who each have more than 7 million participants and who are applying the Simple Poverty Scorecard tool for Bangladesh (Chen and Schreiner, 2009a). Their design is that loan officers in a random sample of branches score all participants each time they visit a homestead (about once a year) as part of their standard due diligence prior to loan disbursement. They record responses on paper in the field before sending the forms to a central office to be entered into a database and converted to poverty likelihoods. ASA's and BRAC's sampling plans cover 25,000–50,000 participants each.

5. Estimates of household poverty likelihoods

The sum of scorecard points for a household is called the *score.* For Myanmar, 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 below a line, the scores themselves have only relative units. For example, doubling the score increases the likelihood of being above a given poverty line, but it does not double the likelihood.

To get absolute units, scores must be converted to *poverty likelihoods*, that is, probabilities of being below a poverty line. This is done via simple look-up tables. For the example of the national line, scores of 25–29 have a poverty likelihood of 39.5 percent, and scores of 30–34 have a poverty likelihood of 31.4 percent (Figure 4).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 25–29 are associated with a poverty likelihood of 39.5 percent for the national line but of 99.5 percent for 200% of the national line.[9]

5.1   Calibrating scores with poverty likelihoods

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

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[9] Starting with Figure 4, many figures have seven versions, one for each of the seven poverty lines. To keep them straight, they are grouped by poverty line. Single tables pertaining to all poverty lines are placed with the tables for the national line.

For the example of the national line (Figure 5), there are 9,428 (normalized) households in the calibration sub-sample with a score of 25–29, of whom 3,922 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 25–29 is then 41.6 percent, because $3,922 \div 9,428 = 41.6$ percent.

To illustrate with the national line and a score of 30–34, there are 10,276 (normalized) households in the calibration sample, of whom 3,026 (normalized) are below the line (Figure 5). Thus, the poverty likelihood for this score is $3,026 \div 10,276 = 29.5$ percent.

The same method is used to calibrate scores with estimated poverty likelihoods for the other six poverty lines.[10]

Figure 6a (for the national per-adult-equivalent poverty lines) and Figure 6b (for the international per-capita 2005 PPP poverty lines) show, for all scores, the likelihood that consumption falls in a range demarcated by two adjacent poverty lines.

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[10] To ensure that poverty likelihoods always decrease as scores increase, it is sometimes necessary to combine likelihoods iteratively across series of adjacent scores before grouping scores into ranges. This preserves unbiasedness, and it keeps users from balking when sampling variation in score ranges with few households leads to higher scores being linked with higher poverty likelihoods.

For example, the daily per-adult-equivalent consumption of a household with a score of 25–29 falls in the following ranges with probability:

- 6.8 percent   below the food line
- 11.4 percent   between the food line and the USAID "extreme" line
- 23.4 percent   between the USAID "extreme" line and 100% of the national line
- 50.8 percent   between 100% and 150% of the national line
- 7.0 percent   between 150% and 200% of the national line
- 0.7 percent   above 200% of the national line

Even though the scorecard is constructed partly based on judgment, the calibration process produces poverty likelihoods that are objective, that is, derived from quantitative poverty lines and from survey data on consumption. The poverty likelihoods would be objective even if indicators and/or points were selected without any data at all. In fact, objective scorecards of proven accuracy are often constructed using only expert judgment (Fuller, 2006; Caire, 2004; Schreiner *et al.*, 2004). 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 this depends on using data in score calibration, not on using data (and nothing else) in scorecard construction.

Although the points in the Myanmar scorecard are transformed coefficients from a Logit regression, (untransformed) scores are not converted to poverty likelihoods via the Logit formula of 2.718281828^{score} x $(1+ 2.718281828^{score})^{-1}$. This is because the Logit formula is esoteric and difficult to compute by hand. Non-specialists find it more intuitive to define the poverty likelihood as the share of households with a given score

in the calibration sample who are below a poverty line. In the field, going from scores to poverty likelihoods in this way requires no arithmetic at all, just a look-up table. This non-parametric calibration can also improve accuracy, especially with large samples.

5.2   Accuracy of estimates of households' poverty likelihoods

As long as the relationships between indicators and poverty do not change over time, and as long as the scorecard is applied to households that are representative of the same population from which the scorecard was constructed, then this calibration process produces unbiased estimates of poverty likelihoods. *Unbiased* means that in repeated samples from the same population, the average estimate matches the true poverty likelihood. The scorecard also produces unbiased estimates of poverty rates at a point in time and of changes in poverty rates between two points in time.[11]

Of course, the relationships between indicators and poverty do change to some unknown extent over time and also across sub-groups in Myanmar's population, so the scorecard will generally be biased when applied after May 2010 (the last month of fieldwork for the 2009/10 IHLCA) or when applied with non-nationally representative sub-groups.

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

How accurate are estimates of households' poverty likelihoods, given the

assumption of constant relationships between indicators and poverty over time and the

assumption of a sample that is representative of Myanmar overall? To measure, the

scorecard is applied to 1,000 bootstrap samples of size $n = 16,384$ from the validation

sub-sample. Bootstrapping entails (Efron and Tibshirani, 1993):

- Score each household in the validation sample
- Draw a new bootstrap sample *with replacement* from the validation sample
- For each score, compute the true poverty likelihood in the bootstrap sample, that is, the share of households with the score and with consumption below a poverty line
- For each score, record the difference between the estimated poverty likelihood (Figure 4) and the true poverty likelihood in the bootstrap sample
- Repeat the previous three steps 1,000 times
- For each score, report the average difference between estimated and true poverty likelihoods across the 1,000 bootstrap samples
- For each score, report the two-sided interval containing the central 900, 950, or 990 differences between estimated and true poverty likelihoods

For each score range and for $n = 16,384$, Figure 7 shows the average difference

between estimated and true poverty likelihoods as well as confidence intervals for the

differences.

For the national line, the average poverty likelihood across bootstrap samples for

scores of 25–29 in the validation sample is too high by 8.2 percentage points. For scores

of 30–34, the estimate is too low by 2.9 percentage points.[12]

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

The 90-percent confidence interval for the differences for scores of 25–29 is ±2.2

percentage points (Figure 7). This means that in 900 of 1,000 bootstraps, the difference

between the estimate and the true value is between +6.0 and +10.4 percentage points

(because +8.2 – 2.2 = +6.0, and +8.2 + 2.2 = +10.4). In 950 of 1,000 bootstraps (95

percent), the difference is +8.2 ± 2.5 percentage points, and in 990 of 1,000 bootstraps

(99 percent), the difference is +8.2 ± 3.3 percentage points.

For most scores, Figure 7 shows differences—with a few large ones—between

estimated poverty likelihoods and true values. This is because the validation sub-sample

is a single sample that—thanks to sampling variation—differs in distribution from the

construction/calibration sub-samples and from Myanmar's population. For targeting,

however, what matters is less the difference in all score ranges and more the difference

in score ranges just above and below the targeting cut-off. This mitigates the effects of

bias and sampling variation on targeting (Friedman, 1997). Section 8 below looks at

targeting accuracy in detail.

In addition, if estimates of groups' poverty rates are to be usefully accurate, then

errors for individual households must largely balance out. This is generally the case, as

discussed in the next section.

Another possible source of differences between estimates and true values is

overfitting. The scorecard here is unbiased, but it may still be *overfit* when applied after

the end of the IHLCA fieldwork in May 2010. That is, it may fit the data from the

2009/10 IHLCA so closely that it captures not only some timeless patterns but also

some random patterns that, due to sampling variation, show up only in the 2009/10 IHLCA. Or the scorecard may be overfit in the sense that it is not robust when relationships between indicators and poverty change over time or when it is applied to non-nationally representative samples.

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

Most errors in individual households' likelihoods do cancel out in the estimates of groups' poverty rates (see later sections). Furthermore, at least some of the differences will come from non-scorecard sources such as changes in the relationships between indicators and poverty, sampling variation, changes in poverty lines, inconsistencies in data quality across time, and imperfections in cost-of-living adjustments across time and geography. These factors can be addressed only by improving data quantity and quality (which is beyond the scope of the scorecard) or by reducing overfitting (which likely has limited returns, given the scorecard's parsimony).

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

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

To illustrate, suppose a program samples three households on Jan. 1, 2012 and that they have scores of 20, 30, and 40, corresponding to poverty likelihoods of 48.8, 29.5, and 15.0 percent (national line, Figure 4). The group's estimated poverty rate is the households' average poverty likelihood of $(48.8 + 29.5 + 15.0) \div 3 = 31.1$ percent.

Be careful; the group's poverty rate is *not* the poverty likelihood associated with the average score. Here, the average score is 30, which corresponds to a poverty likelihood of 29.5 percent. This differs from the 31.1 percent found as the average of the three individual poverty likelihoods associated with each of the three scores. Unlike poverty likelihoods, scores are ordinal symbols, like letters in the alphabet or colors in a spectrum. Scores are not cardinal numbers, and so scores cannot be added up or averaged across households. Only three operations are valid for scores: conversion to poverty likelihoods, distributional analysis (Schreiner, 2012), or comparison—if desired—with a cut-off for targeting. The best rule to follow is: Always use poverty likelihoods, never scores.

6.1   Accuracy of estimated poverty rates at a point in time

For the Myanmar scorecard applied to the validation sample with $n = 16{,}384$, the absolute differences between the estimated poverty rate at a point in time and the

true rate are 3.1 percentage points or less (Figure 9, summarizing Figure 8 across

poverty lines). The average absolute difference across the seven poverty lines is 1.3

percentage points. At least part of these differences is due to sampling variation in the

division of the 2009/10 IHLCA into two sub-samples.

When estimating poverty rates at a point in time, the bias reported in Figure 9

should be subtracted from the average poverty likelihood to make the estimate

unbiased. For Myanmar's scorecard and the national line, bias is +1.9 percentage

points, so the unbiased estimate in the three-household example above is 31.1 – (+1.9)

= 29.2 percent.

In terms of precision, the 90-percent confidence interval for a group's estimated

poverty rate at a point in time with n = 16,384 is ±0.6 percentage points or less (Figure

9). This means that in 900 of 1,000 bootstraps of this size, the estimate (after

subtracting off bias) is within 0.6 percentage points or less of the true value.

For example, suppose that the average poverty likelihood in a sample of $n =$

16,384 with the Myanmar scorecard and the national line is 31.1 percent. Then

estimates in 90 percent of samples of $n = 16,384$ would be expected to fall in the range

of 31.1 – (+1.9) – 0.6 = 28.6 percent to 31.1 – (+1.9) + 0.6 = 29.8 percent, with the

most likely true value being the unbiased estimate in the middle of this range (31.1 –

(+1.9) = 29.2 percent). This is because the original (biased) estimate is 31.1 percent,

bias is +1.9 percentage points, and the 90-percent confidence interval for the national

line is ±0.6 percentage points.

6.2   Formula for standard errors for estimates of poverty rates

How precise are the point-in-time estimates? Because they are averages of binary

(0/1, or poor/non-poor) variables, the estimates (in "large" samples) have a Normal

distribution and can be characterized by their average difference vis-à-vis true values

together with the standard error of the average difference.

To derive a formula for the standard errors of estimated poverty rates at a point

in time from indirect measurement via scorecards (Schreiner, 2008a), first note that the

textbook formula (Cochran, 1977) that relates confidence intervals with standard errors

in the case of direct measurement of rates is $\pm c = \pm z \cdot \sigma$, 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 $\begin{cases} 1.28 \text{ for confidence levels of 80 percent} \\ 1.64 \text{ for confidence levels of 90 percent} \\ 1.96 \text{ for confidence levels of 95 percent} \end{cases}$,

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

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

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

N is the population size, and

n is the sample size.

For example, Myanmar's 2009/10 IHLCA estimates a household-level poverty

rate for the national line of $\hat{p} = 21.3$ percent (Figure 1) by direct measurement. If this

estimate came from a sample of $n = 16{,}384$ households from a population N of

8,227,043 (the number of households in Myanmar), then the finite population correction

ϕ is $\sqrt{\dfrac{8{,}227{,}043 - 16{,}384}{8{,}227{,}043 - 1}} = 0.9990$, which can be taken as one (1). If the desired

confidence level is 90-percent ($z = 1.64$), then the confidence interval $\pm c$ is

$$\pm z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.213 \cdot (1 - 0.213)}{16{,}384}} \cdot 1 = \pm 0.525 \text{ percentage points.}$$

The scorecard, however, does not measure poverty directly, so this formula is not

applicable. To derive a formula for the Myanmar scorecard, consider Figure 8, which

reports empirical confidence intervals c for the differences for the scorecard applied to

1,000 bootstrap samples of various sizes from the validation sample. For example, with

$n = 16{,}384$ and the national line, the 90-percent confidence interval is 0.500 percentage

points.[13]

Thus, the 90-percent confidence interval with $n = 16{,}384$ is ± 0.500 percentage

points for the Myanmar scorecard and ± 0.525 percentage points for direct

measurement. The ratio of the two intervals is $0.500 \div 0.525 = 0.95$.

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[13] Due to rounding, Figure 8 displays 0.5, not 0.500.

Now consider the same case, but with $n = 8{,}192$. The confidence interval under

direct measurement is $\pm 1.64 \cdot \sqrt{\dfrac{0.213 \cdot (1 - 0.213)}{8{,}192}} \cdot 1 = \pm 0.742$ percentage points. The

empirical confidence interval with the Myanmar scorecard (Figure 8) is 0.670

percentage points. Thus for $n = 8{,}192$, the ratio of the two intervals is $0.670 \div 0.742 =$

0.90.

This ratio of 0.90 for $n = 8{,}192$ is not too far from the ratio of 0.95 for $n =$

16,384. Across all sample sizes of 256 or more for the national line in Figure 8, the

average ratio turns out to be 0.94, implying that confidence intervals for indirect

estimates of poverty rates via the Myanmar scorecard and this poverty line are 6

percent narrower than confidence intervals for direct estimates via the 2009/10 IHLCA.

This 0.94 appears in Figure 9 as the "α factor" because if $\alpha = 0.94$, then the formula for

confidence intervals c for the Myanmar scorecard is $\pm c = \pm z \cdot \alpha \cdot \sigma$. That is, the

formula for the standard error σ for point-in-time estimates of poverty rates via scoring

is $\alpha \cdot \sqrt{\dfrac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\dfrac{N - n}{N - 1}}$.

In general, α can be more or less than 1.00. When α is less than 1.00, it means

that the scorecard is more precise than direct measurement. This occurs for four of the

seven poverty lines in Figure 9.

The formula relating confidence intervals with standard errors for the scorecard can be rearranged to give a formula for determining sample size before measurement.[14] If $\widetilde{p}$ is the expected poverty rate before measurement, then the formula for sample size n from a population of size N that is based on the desired confidence level that corresponds to z and the desired confidence interval $\pm c$ is

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

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

To illustrate how to use this, suppose the population N is 8,227,043 (the number of households in Myanmar overall while the 2009/10 IHLCA was in the field), suppose c = 0.03965, z = 1.64 (90-percent confidence), and the relevant poverty line is the national line so that the most sensible expected poverty rate $\widetilde{p}$ is Myanmar's overall poverty rate for the national line (21.3 percent, Figure 1) and the α factor is 0.94 (Figure 9). Then the sample-size formula gives

$$n = 8{,}227{,}043 \cdot \left(\frac{1.64^2 \cdot 0.94^2 \cdot 0.213 \cdot (1 - 0.213)}{1.64^2 \cdot 0.94^2 \cdot 0.213 \cdot (1 - 0.213) + 0.03965^2 \cdot (8{,}227{,}043 - 1)} \right) = 254,$$

---

[14] IRIS Center (2007a and 2007b) says that a sample size of n = 300 is sufficient for USAID reporting. If a scorecard is as precise as direct measurement, if the expected (before measurement) poverty rate is 50 percent, and if the confidence level is 90 percent, then n = 300 implies a confidence interval of ± 2.2 percentage points. In fact, USAID has not specified confidence levels nor intervals. Furthermore, the expected poverty rate may not be 50 percent, and the scorecard could be more or less precise than direct measurement.

which is almost exactly the sample size of 256 observed for these parameters in Figure 8

for the national line. Taking the finite population correction factor ϕ as one gives the

same answer, as $n = \left(\dfrac{0.94 \cdot 1.64}{0.03965}\right)^2 \cdot 0.213 \cdot (1 - 0.213) = 253$.

Of course, the α factors in Figure 9 are specific to Myanmar, its poverty lines, its

poverty rates, and this scorecard. The derivation of the formulas, however, is valid for

any poverty-assessment tool following the approach in this paper.

In practice after the end of fieldwork for the IHLCA in May 2010, an

organization would select a poverty line (say, the national line), note their participants'

population size (say, $N = 10{,}000$ participants), select a desired confidence level (say, 90

percent, or $z = 1.64$), select a desired confidence interval (say, ± 2.0 percentage points,

or $c = 0.02$), make an assumption about $\widetilde{p}$ (perhaps based on a previous measurement

such as the 21.3-percent national average in the 2009/10 IHLCA in Figure 1), look up α

(here, 0.94, Figure 9), assume that the scorecard will still work in the future and/or for

non-nationally representative sub-groups,[15] and then compute the required sample size.

In this illustration, $n = 10{,}000 \cdot \left(\dfrac{1.64^2 \cdot 0.94^2 \cdot 0.213 \cdot (1 - 0.213)}{1.64^2 \cdot 0.94^2 \cdot 0.213 \cdot (1 - 0.213) + 0.02^2 \cdot (10{,}000 - 1)}\right)$

$= 906$.

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[15] This paper reports accuracy for the scorecard applied to the validation sample, but it cannot test accuracy for later years or for other groups. Performance after May 2010 will resemble that in the 2009/10 IHLCA with deterioration to the extent that the relationships between indicators and poverty status change over time.

7. Estimates of changes in group poverty rates over time

The change in a group's poverty rate between two points in time is estimated as the change in the average poverty likelihood of the households in the group. With data only from the 2009/10 IHLCA, this paper cannot test estimates of change over time for Myanmar, and it can only suggest approximate formulas for standard errors. Nevertheless, the relevant concepts are presented here because, in practice, pro-poor organizations can apply the scorecard to collect their own data and measure change through time.

7.1   Warning: Change is not impact

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

7.2 Calculating estimated changes in poverty rates over time

Consider the illustration begun in the previous section. On Jan. 1, 2012, a program samples three households who score 20, 30, and 40 and so have poverty likelihoods of 48.8, 29.5, and 15.0 percent (national line, Figure 4). Adjusting for the known bias of +1.9 percentage points, the group's baseline estimated poverty rate is the households' average poverty likelihood of $[(48.8 + 29.5 + 15.0) \div 3] - (+1.9) = 29.2$ percent.

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

- Score a new, independent sample, measuring change across samples
- Score the same sample at follow-up as at baseline

By way of illustration, suppose that a year later on Jan. 1, 2013, the program samples three additional households who are in the same population as the three original households (or suppose that the program scores the same three original households a second time) and finds that their scores are 25, 35, and 45 (poverty likelihoods of 41.6, 23.3, and 10.6 percent, national line, Figure 4). Adjusting for bias, their average poverty likelihood at follow-up is now $[(41.6 + 23.3 + 10.6) \div 3] - (+1.9)$ $= 23.3$ percent, an improvement of $29.2 - 23.3 = 5.9$ percentage points.[16]

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[16] Of course, such a huge reduction in poverty in one year is highly unlikely, but this is just an example to show how the scorecard can be used to estimate change.

Thus, about one in 17 participants in this hypothetical example crossed the poverty line in 2012.[17] Among those who started below the line, about one in five (5.9 ÷ 29.2 = 20.2 percent) on net ended up above the line.[18]

7.3 Accuracy for estimated change in two independent samples

With only the 2009/10 IHLCA, it is not possible to measure the accuracy of scorecard estimates of changes in groups' poverty rates over time. In practice, of course, local pro-poor organizations can still use the Myanmar scorecard to estimate change. The rest of this section suggests approximate formulas for standard errors that may be used until there is additional data.

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

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

z, c, $\hat{p}$ and N are defined as above, n is the sample size at both baseline and follow-up,[19] and α is the average (across a range of bootstrapped sample sizes) of the ratio of the observed confidence interval from a scorecard and the theoretical confidence interval under direct measurement.

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[17] This is a net figure; some people start above the line and end below it, and vice versa.
[18] The scorecard does not reveal the reasons for this change.
[19] This means that, for a given precision and with direct measurement, estimating the change in a poverty rate between two points in time requires four times as many measurements (not twice as many) as does estimating a poverty rate at a point in time.

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

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

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

For countries for which this α has been measured (Schreiner, 2010, 2009a, 2009b, 2009c, 2009d, 2009e, and 2008b; Chen and Schreiner, 2009a and 2009b; and Schreiner and Woller, 2010a and 2010b), the simple average of α across poverty lines and years for a given country and then across countries is 1.19. This is as reasonable a figure as any to use for Myanmar.

To illustrate the use of the formula above to determine sample size for estimating changes in poverty rates across two independent samples, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is 2 percentage points ($c = \pm 0.02$), the poverty line is the national line, $\alpha = 1.19$, $\hat{p} = 0.213$ (from Figure 1), and the population N is large enough relative to the expected sample size n that the finite population correction factor ϕ can be taken as one. Then the baseline

sample size is $n = 2 \cdot \left(\dfrac{1.19 \cdot 1.64}{0.02} \right)^2 \cdot 0.213 \cdot (1 - 0.213) \cdot 1 = 3{,}193$, and the follow-up

sample size is also 3,192.

7.4 Accuracy for estimated change for one sample, scored twice

Analogous to previous derivations, the general formula relating the confidence interval c to the standard error σ when using a scorecard to estimate change for a single group of households, all of whom are scored at two points in time, is:[20]

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

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

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

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

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

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

Given this, a sample-size formula for a group of households to whom the Myanmar scorecard is applied twice (once after May 2010 and then again later) is

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

In Peru (the only other country for which there is an estimate, Schreiner 2009a), the average α across years and poverty lines is about 1.30.

To illustrate the use of this formula, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is 2.0 percentage points ($c = \pm 0.02$), the poverty line is the national line, the sample will first be scored in 2012 and then again in 2015 ($y = 3$), and the population N is so large relative to the expected sample size n that the finite population correction factor ϕ can be taken as one. The pre-baseline poverty rate is taken as 21.3 percent ($p_{2012} = 0.213$, Figure 1), and suppose $\alpha = 1.30$. Then the baseline sample size is

$$n = 2 \cdot \left(\frac{1.30 \cdot 1.64}{0.02}\right)^2 \cdot \left\{-0.02 + 0.016 \cdot 3 + 0.47 \cdot \left[0.213 \cdot (1 - 0.213)\right]\right\} \cdot 1 = 2{,}427. \text{ The}$$

same group of 2,427 households is scored at follow-up as well.

8. Targeting

When a program uses the scorecard for targeting, households with scores at or below a cut-off are labeled *targeted* and treated—for program purposes—as if they are below a given poverty line. Households with scores above a cut-off are labeled *non-targeted* and treated—for program purposes—as if they are above a given poverty line.

There is a distinction between *targeting status* (scoring at or below a targeting cut-off) and *poverty status* (having consumption below a poverty line). Poverty status is a fact that depends on 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.

Targeting is successful when households truly below a poverty line are targeted (*inclusion*) and when households truly above a poverty line are not targeted (*exclusion*). Of course, no scorecard is perfect, and targeting is unsuccessful when households truly below a poverty line are not targeted (*undercoverage*) or when households truly above a poverty line are targeted (*leakage*). Figure 10 depicts these four possible targeting outcomes. Targeting accuracy varies by the cut-off score; a higher cut-off has better inclusion (but greater leakage), while a lower cut-off has better exclusion (but higher undercoverage).

Programs should weigh these trade-offs when setting a cut-off. A formal way to do this is to assign net benefits—based on a program's values and mission—to each of

the four possible targeting outcomes and then to choose the cut-off that maximizes total net benefits (Adams and Hand, 2000; Hoadley and Oliver, 1998).

Figure 11 shows the distribution of households by targeting outcome for Myanmar. For an example cut-off of 25–29, outcomes for the national line in the validation sample are:

- Inclusion: 11.2 percent are below the line and correctly targeted
- Undercoverage: 10.0 percent are below the line and mistakenly not targeted
- Leakage: 11.6 percent are above the line and mistakenly targeted
- Exclusion: 67.1 percent are above the line and correctly not targeted

Increasing the cut-off to 30–34 improves inclusion and undercoverage but worsens leakage and exclusion:

- Inclusion: 14.4 percent are below the line and correctly targeted
- Undercoverage: 6.8 percent are below the line and mistakenly not targeted
- Leakage: 18.7 percent are above the line and mistakenly targeted
- Exclusion: 60.1 percent are above the line and correctly not targeted

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

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

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

- Assign benefits and costs to possible outcomes, based on its values and mission
- Tally total net benefits for each cut-off using Figure 11 for a given poverty line
- Select the cut-off with the highest total net benefit

The most difficult step is assigning benefits and costs to targeting outcomes. A program that uses targeting—with or without scoring—should thoughtfully consider

how it values successful inclusion or 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 "Total Accuracy" (IRIS Center, 2005; Grootaert and Braithwaite, 1998). With "Total Accuracy", total net benefit is the number of households correctly included or correctly excluded:

Total Accuracy =   1   x   Households correctly included   –
                   0   x   Households mistakenly undercovered   –
                   0   x   Households mistakenly leaked   +
                   1   x   Households correctly excluded.

Figure 11 shows "Total Accuracy" for all cut-offs for the Myanmar scorecard. For the national line in the validation sample, total net benefit is greatest (80.5) for a cut-off of 24 or less or for a cut-off of 19 or less, with about four in five households in Myanmar correctly classified.

"Total Accuracy" weighs successful inclusion of households below the line the same as successful exclusion of households above the line. If a program valued inclusion more (say, twice as much) than exclusion, it could reflect this by setting the benefit for inclusion to 2 and the benefit for exclusion to 1. Then the chosen cut-off would maximize (2 x Households correctly included) + (1 x Households correctly excluded).[21]

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[21] Figure 11 also reports "BPAC", the Balanced Poverty Accuracy Criteria adopted by USAID for certifying poverty-assessment tools. IRIS Center (2005) says that BPAC considers accuracy in terms of estimated poverty rates and in terms of targeting inclusion. BPAC = (Inclusion – |Undercoverage – Leakage|) x [100 ÷ (Inclusion + Undercoverage)].

As an alternative to assigning benefits and costs to targeting outcomes and then choosing a cut-off to maximize total net benefit, a program could set a cut-off to achieve a desired poverty rate among targeted households. The third column of Figure 12 ("% targeted who are poor") shows, for the Myanmar scorecard applied to the validation sample, the expected poverty rate among households who score at or below a given cut-off. For the example of the national line, targeting households who score 29 or less would target 22.8 percent of all households (second column) and produce a poverty rate among those targeted of 49.1 percent (third column).

Figure 12 also reports two other measures of targeting accuracy. The first is a version of coverage ("% of poor who are targeted"). For the example of the national line with the validation sample and a cut-off of 29 or less, 52.7 percent of all poor households are covered.

The final targeting measure in Figure 12 is the number of successfully targeted poor households for each non-poor household mistakenly targeted (right-most column). For the national line with the validation sample and a cut-off of 29 or less, covering 1 poor household means leaking to 1 non-poor household.

9. Conclusion

Pro-poor programs in Myanmar can use the scorecard to segment clients for targeted services as well as to estimate:

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

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

The scorecard is built with half of the data from Myanmar's 2009/10 IHLCA, tested on the other half, and calibrated to seven poverty lines.

Bias and precision are reported for estimates of households' poverty likelihoods, groups' poverty rates at a point in time, and changes in groups' poverty rates over time. Of course, the scorecard's estimates of changes are not the same as estimates of program impact. Targeting accuracy is also reported.

When the scorecard is applied to the validation sample with $n = 16{,}384$, the absolute difference between estimates versus true poverty rates for groups of households at a point in time is 3.1 percentage points or less and averages—across the seven poverty lines—about 1.3 percentage points. Unbiased estimates may be had by subtracting this known bias from the original poverty-rate estimates. For $n = 16{,}384$ and 90-percent confidence, the precision of these differences is ±0.6 percentage points or better.

If a program wants to use the scorecard for targeting, then the results here provide the information needed to select a cut-off that fits its values and mission.

Although the statistical technique is innovative, and although technical accuracy is important, the design of the scorecard here focuses on transparency and ease-of-use. After all, a perfectly accurate scorecard is worthless if programs feel so daunted by its complexity or its cost that they do not even try to use it. For this reason, the scorecard is kept simple, using ten indicators that are inexpensive to collect and that are straightforward to verify. Points are all zeros or positive integers, and scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line). Scores are related to poverty likelihoods via simple look-up tables, and targeting cut-offs are likewise simple to apply. The design attempts to facilitate adoption by helping managers understand and trust scoring and by allowing non-specialists to generate scores quickly in the field.

In summary, the scorecard is a practical, objective way for pro-poor programs in Myanmar to estimate consumption-based poverty rates, track changes in poverty rates over time, and target services. The same approach can be applied to any country with similar data.

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Guidelines for the Interpretation
of Scorecard Indicators

The quoted material here comes from discussions with the IHLCA Technical Committee and from:

Ministry of National Planning and Economic Development, IDEA International Institute, and the IHLCA Project Technical Unit. (2004) "Quantitative Survey First Round of the Integrated Household Living Conditions Assessment (IHLCA) in the Union of Myanmar: Enumerator Manual", Yangon (the *Manual*).

The *Manual* quoted here was written for the 2004/5 IHLCA. It was updated for the 2009/10 IHLCA to reflect questions added to the survey. The newer version, however, has not been translated to English. The author has verified that no relevant additions have been omitted here.

Interview guidelines

According to pp. 5–8 of the *Manual*: "It is important to emphasize the need for all survey enumerators to fully understand the questionnaire, as well as this *Manual* with the instructions. These are crucial elements for the success of the survey and obtaining accurate results.

"Introduction of the survey
"The first time the enumerator and respondent meet is crucial for interview success. Thus, the first impression is important; the enumerator's appearance, his/her attitude at the very beginning, and what he/she says are crucial for further work.

"Enumerators should be properly dressed for their work . . . .

"Once selected households are located, the enumerator should ask to talk to the head of the household (or his/her spouse). The enumerator should greet the person kindly and be friendly, introducing him/herself. Then the enumerator should concisely explain the purpose of the survey, its importance, and the need for respondent's cooperation."

The respondent can be the household head or any adult household member who can answer for the entire household.

"The enumerator should develop good communication skills in order to be able to establish good relations with persons of different socio-economic backgrounds. The enumerator should establish confidence with the respondent to increase the reliability of the survey results.

"The enumerator should not give the impression that he/she considers him/herself an important person because of the assignment he/she performs . . . . He/she should be open, friendly and decisive, showing that he/she is an experienced person, but without being intimidating. He/she should not be authoritative nor aggressive. The best communication happens when the respondent sees that the enumerator is honest and confident."

The enumerator should introduce him/herself and tell the respondent for whom the survey is being conducted and for what purpose. Usually, this purpose is "to gain a better understanding of your household and how it lives." Tell the respondent that other households are also being surveyed, and that the participation of their household will be very much appreciated. Tell the respondent that the interview will take about 10 minutes. Tell the respondent that the responses will not be shared with anyone but that summaries of the information obtained in the interview from many households may be used by your organization in its own internal decision-making processes. Thank the respondent in advance for participating. Before starting, ask the respondent for permission to start.

"Keep in mind that the respondent's level of attention, communication, confidence, and participation is usually low at the beginning of the interview. The enumerator's task is to increase gradually the respondent's attention and interest and to maintain it at the highest possible level throughout the interview. The rhythm of the survey, the tone of questions, an adequate speed of question formulation, and knowledge about the questions and their order are all factors that affect the success of the interview.

"If the enumerator reads questions in a monotonous or nervous voice, the information obtained is likely to be of poor quality, as the respondent will get tired and will lose interest in answering.

"When the interview starts, always try to comply with the following instructions:

- Plan sufficient time for the interview
- Behave appropriately throughout the interview
- Do not give any information about which you are not sure. It is better to seem uninformed, but to be honest
- Avoid any conversation or attitude that could lead to a discussion or argument with the respondent. Limit the conversation to the survey topics
- Do not promise anything as an incentive for the respondent to participate
- To the extent possible, avoid interviewing household members in the presence of people who are not part of the household; the respondent could give different answers in presence of other people
- Do not laugh or show surprise at any answer given by the respondent, not by the tone of your voice nor by your facial expressions or body language
- Comply strictly with the order and format of the questionnaire while asking questions. In other words, comply strictly with the instructions given in the survey. Any modification could jeopardize uniformity of information
- Read questions without pressuring the respondent in any way
- Never assume that you know answers in advance. For example, never say something like: 'You own cows, right?'
- In terms of rhythm, keep in mind that the interview consists of questions, answers, moments of silence, and breaks. When you read questions, try to keep the same rhythm all the time, leaving the respondent time to think about the answer
- The enumerator should assess the level of understanding of the respondent, since question-reading speed will depend on this. The enumerator must also pronounce clearly every single word that he/she reads
- Read questions literally as they are written in the questionnaire, without any modification. If the respondent does not understand a question, then read it again. If the respondent does not understand it after a second reading, then explain carefully to him/her the purpose of the question, taking care not to change in any way the original meaning of the question nor influence the answer
- Give the respondent enough time to answer the question. Try to ensure that the respondent does not change the meaning of the question"

The interview should be conducted in the preferred language of the respondent.

When marking responses, circle the response option and its associated points, and write the associated points in the column headed "Points". Do not just tick the response, as it is easy to make a mistake and copy points from the wrong row.

<u>"Ending the interview</u>
"At the end of the interview, check carefully the questionnaire to make sure that no questions were missed and that all questions have a response recorded. If there are any mistakes or missing items, then correct them while you are still there with the respondent. Keep in mind that the data-entry operator requires a clear, complete questionnaire. If any responses are missing or unclear, then you will have to go back to the household to clarify or complete.

"Once the interview is complete, thank the household members for their cooperation, their time, and for the information provided. Try to make a good impression . . . .

"Do not offer copies of the questionnaire, any other survey material, or anything else that you are not authorized to distribute. . . .

"For the results to be comparable, it is important that the questionnaires be filled up the same way with each respondent and in every setting. Before going to the field, enumerators must be familiar with the questionnaires and be thoroughly prepared in their administration. Extensive practice in interviewing will ensure this."

Scores can only be computed if there are answers to all 10 questions. Therefore, each indicator in the scorecard should be associated with one (and only one) response. If a respondent is unable to answer a question, then ask another adult from the same household. If there is no alternative, then discontinue the interview and write "Discontinued due to non-response" on it. Submit it with the other completed surveys.

Be sure to fill out all the indentification information in the header of the scorecard before you leave the homestead.

Guidelines for the Interpretation of Specific Indicators

If these *Guidelines* do not conclusively resolve an issue of interpretation, then the enumerator and the respondent should together come up with an interpretation using their own reasoning and judgment. In particular, the organization fielding the survey should not give enumerators any directions or rules about how to interpret questions or responses except for those in these *Guidelines.*

1. <u>How many members does the household have?</u>

According to p. 3 of the 2009/10 IHLCA survey instrument, *members of the household* are "all the persons who usually sleep in the dwelling, eat most of their meals here, and share expenses together. It should include all members of the family, including any children or other persons who may be away for study or work but who consider this to be their permanent residence. It also includes any other people who are not blood relatives but who normally sleep here, eat most of their meals here, and share expenses . . . ."

The survey instrument instructs the enumerator to tell the respondent that the enumerator would like to make a list of all household members, and then read aloud the definition of *household member* word-for-word as quoted above. Enumerators applying the scorecard should do this too.

Remember that no one can be a member of two households at the same time.

According to the IHLCA Technical Committee, someone who lives elsewhere part-time or full-time (such as a migrant worker) is still considered to be a household member if the person still contributes to the household economically and if the person considers him/herself to be a member of the household. Such a person is not a household member if he/she no longer contributes to the household economically. A migrant is considered to contribute to the household economically if the respondent says "Yes" when asked "Does the migrant contribute to the household?"

According to pp. 10–11 of the *Manual, household members* are "all living persons, related or unrelated, who normally sleep and eat most of their meals together in the same dwelling unit. Hired workers, domestic workers, and boarders who receive accommodation and meals are treated as part of the household. Temporary visitors as well as lodgers who do not receive meals are not treated as part of the household. The table below illustrates some cases.

"Categories of household members and non-members

Members	Non-Members
Household head	Individuals who are dead
Infants	
New permanent residents of the household who recently arrived because they were newly demobilized, married, or had a job transfer	People who have lived in the household in the past year but who have left due to marriage, etc. and are now part of another household
Students living outside the household who are still supported by their family and who are not members of other households	People who have joined the military
Relatives of the household head whose work requires them to be outside the household for long periods of time but who consider this household to be their permanent home and who contribute to the household budget	Guests and all other people not listed in the definition of household members
Any other persons not related to the household head but who normally sleep in the same dwelling, eat most of their meals there, and share expenses with the household	Hired workers, servants, lodgers if they are members of other households and do not sleep in the same dwelling, eat most of their meals, and share expenses with the household"

According to p. 18 of the *Manual*, "do not forget babies and children from the household. Do not include members who are deceased."

According to the IHLCA Technical Committee, sons who are currently living in a monastery but who plan to return home by a specific date should be counted as household members, even if they partly or completely support themselves by donations and even if the household does not contribute anything to cover the monk's expenses.

2. <u>What is the highest standard/diploma/degree that the female head/spouse has passed?</u>

According to p. 10 of the *Manual*, the *household head* is the "person mainly responsible for earning the livelihood for the household. There are also cases where another member of the household is regarded as the head irrespective of responsibility for livelihood, such as the most senior household member." The head of the household must be alive at the time of the interview.

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

- The household head, if the head is a woman
- The spouse/partner/companion of the household head, if the head is a man
- Non existent, if neither of the previous two criteria are met

3. <u>How many rooms does the household occupy, including bedrooms, living rooms, and rooms used for household businesses (do not count toilets, kitchens, balconies, nor corridors)?</u>

According to p. 21 of the *Manual*, "Ask for the number of rooms and, if possible, do the observation yourself and count them. Specify that they should not include toilets, kitchens, balconies, nor corridors."

According to the IHLCA Technical Committee, rooms may be defined by partitions such as curtains, cupboards, or other dividers that are not necessarily structural, weight-bearing walls. Each room should have a distinct purpose (such as living room versus bedroom, or children's bedroom versus parents' bedroom).

According to the IHLCA Technical Committee, "occupied rooms" are those that are used by people.

According to the IHLCA Technical Committee, rooms used for storage (for example, of seeds or sacks of paddy) do count as occupied rooms. Such storage rooms count regardless of whether they are part of the main house or part of a separate building. They are counted because they are rooms "used for household businesses".

According to the IHLCA Technical Committee, worship rooms are counted only if they are distinct spaces dedicated to worship. For example, a small alcove in the living room wall does not count as a distinct worship room dedicated to that purpose; it is counted as part of the living room.

According to the IHLCA Technical Committee, if two or more households share a dwelling, then each room should be counted only for the household that is the room's main user. For example, suppose households A and B share a dwelling. Household A has the first bedroom to itself, household B has the second bedroom to itself, and both households use the living room. According to the respondent, household A is the main user of the living room. Then household A is counted as having two rooms (its bedroom and the living room), and household B is counted as having one rooms (its bedroom and the living room).

4. <u>What is the major construction material of the floor (observe, do not ask)?</u>

According to p. 21 of the *Manual*, "Observe yourself and circle the respective code."

According to the IHLCA Technical Committee, the "major construction material" is that material which covers that largest share of floor space. For example, suppose that 20 percent of the floor is covered by bamboo, 35 percent is covered by earth (dirt), and 45 percent is covered by wood planks. Then the "major construction material" of the floor is wood planks.

5. <u>What is the major construction material of the external (outer) walls (observe, do not ask)?</u>

According to p. 21 of the *Manual*, "Observe yourself and circle the respective code."

6. <u>What type of stove is used most often for cooking food in the household?</u>

According to the IHLCA Technical Committee, IHLCA enumerators were told in their training that *open fire* means cooking with a pot set on three bricks above a fire on the ground outdoors (not in a kitchen). In contrast, *open stove* means cooking with a pot set on three bricks above a fire indoors in a kitchen. A *rice-husk stove* has a design meant specifically for burning rice husks. A *traditional closed stove* has a permanent structure (made of, for example, pressed earth, adobe, or cement) with a hole on top on which the pot sits and a hole on one side through which fuel is added to the fire under the pot and from which ashes are removed. *A1 improved stoves* and *other improved stoves* are efficient closed stoves that require less firewood than stoves made of three bricks.

7. <u>Does any member of your household own or have access to a cupboard or a food-storage cabinet (including one rented to others or pawned)?</u>

According to p. 36 of the *Manual*, the enumerator should "ask whether any member of the household owns or has access to the asset. *Access* means that the household can use the asset, whether because they own it, rent it or borrow it. Also, please include assets that are rented to others or pawned."

In other words, assets that the household has rented out or pawned are to be counted, because the household owns them, even if they are not currently in its possession.

Also, assets that the household currently has in its possession ("has access to") are to be counted even if the household does not own them but merely rents them in or has borrowed them.

For example, a household is not counted as "having access to" a television just because it can watch at a neighbor's house, nor is a household counted as "having access to" a landline telephone just because it can walk down the street to a telephone kiosk to pay to make a call.

To sum up: count the asset if the household owns it (whether or not it currently has it in its possession) and count the asset as well if the household currently has it in its possession (even if the household does not own it). If the household owns it or possesses it, then count it.

According to the IHLCA Technical Committee, IHLCA enumerators were not instructed as to whether a broken or otherwise non-functioning food-storage cabinet is to be counted. They indicated that it is understood that broken or non-functioning assets would not be counted.

If a household does not own nor possess a cupboard nor a food-storage cabinet, then mark response A, "Neither".

If the household owns or possesses a cupboard (but not a food-storage cabinet), or if it owns or possesses a food-storage cabinet (but not a cupboard), then mark response B, "One, but not both".

If the household owns both a cupboard and a food-storage cabinet, then mark response C, "Both".

According to the IHLCA Technical Committee, if the household owns only a cupboard and if it uses that cupboard as a food-storage cabinet, then mark "C. Both".

8. <u>Does any member of your household own or have access to a black-and-white or colour TV, (including one rented to others or pawned)?</u>

According to p. 36 of the *Manual*, the enumerator should "ask whether any member of the household owns or has access to the asset. *Access* means that the household can use the asset, whether because they own it, rent it or borrow it. Also, please include assets that are rented to others or pawned."

In other words, assets that the household has rented out or pawned are to be counted, because the household owns them, even if they are not currently in its possession.

Also, assets that the household currently has in its possession ("has access to") are to be counted even if the household does not own them but merely rents them in or has borrowed them.

For example, a household is not counted as "having access to" a television just because it can watch at a neighbor's house, nor is a household counted as "having access to" a landline telephone just because it can walk down the street to a telephone kiosk to pay to make a call.

To sum up: count the asset if the household owns it (whether or not it currently has it in its possession) and count the asset as well if the household currently has it in its possession (even if the household does not own it). If the household owns it or possesses it, then count it.

According to the IHLCA Technical Committee, IHLCA enumerators were not instructed as to whether a broken or otherwise non-functioning black-and-white or colour TV is to be counted. They indicated that it is understood that broken or non-functioning assets would not be counted.

9. <u>Does household member own or have access to a bicycle or non-motorized boat, a motorcycle, power tiller, trishaw, motorboat, trawlarjee, three-wheeled motor vehicle, motorcar (4 wheels or more), or tractor (including one rented to others or pawned)?</u>

According to p. 36 of the *Manual*, the enumerator should "ask whether any member of the household owns or has access to the asset. *Access* means that the household can use the asset, whether because they own it, rent it or borrow it. Also, please include assets that are rented to others or pawned."

In other words, assets that the household has rented out or pawned are to be counted, because the household owns them, even if they are not currently in its possession.

Also, assets that the household currently has in its possession ("has access to") are to be counted even if the household does not own them but merely rents them in or has borrowed them.

For example, a household is not counted as "having access to" a television just because it can watch at a neighbor's house, nor is a household counted as "having access to" a landline telephone just because it can walk down the street to a telephone kiosk to pay to make a call.

To sum up: count the asset if the household owns it (whether or not it currently has it in its possession) and count the asset as well if the household currently has it in its possession (even if the household does not own it). If the household owns it or possesses it, then count it.

According to the IHLCA Technical Committee, IHLCA enumerators were not instructed as to whether a broken or otherwise non-functioning bicycle, boat, motorcycle, or motorcar (4 wheels) is to be counted. They indicated that it is understood that broken or non-functioning assets would not be counted.

Record the best transport asset that the household owns or possesses. For example, if the household owns both a bicycle and a motorcycle, then you should record the response corresponding to the motorcycle, because it is better than a bicycle. Each asset listed in response C is better than each asset listed in Response B, and it is better to have a bicycle or a non-motorized boat than to have nothing.

If the household does not own or possess any of the transport assets listed, then mark response A, "No, none of these".

If the household owns or possesses a bicycle or a non-motorized boat, but it does not own or possess any of the other transport assets listed in Response C, then mark response B, "Only bicycle or non-motorized boat".

If the household owns or possesses any of the assets listed in response C (motorcycle, power tilller, trishaw, motorboat, trawlarjee, three-wheeled motor vehicle, motorcar (4 wheels or more), or tractor), then mark response C, even if the household also owns or possesses a bicycle and/or a non-motorized boat.

10. <u>If any household member's main job is connected with agriculture, hunting, forestry, fishery, mining, or quarrying, and if any household member owns or has the right to use land for agriculture, forestry, pasture, livestock breeding, or water surfaces, then does the household own any non-draught oxen, non-draught buffalo, cows, mythun, horses, or donkeys/mules (including ones rented to others or pawned to others)?</u>

This is a complex indicator, combining three questions:

- Whether the household works in agriculture
- Whether the household has agricultural land
- Whether the household owns any large, non-draught animals

When listing the names of the household members at the start of the interview, ask whether each member's main job is connected with agriculture, hunting, forestry, fishery, mining, or quarrying. A household's member's *main job* is the economic activity that the respondent considers to be his/her principle one. According to the IHLCA Technical Committee, the main job is determined based on time, not cash income. Refer to these back-page notes when determining the answer to this question.

According to the *Manual*, the following sectors of economic activity correspond with agriculture, hunting, forestry, fishery, mining, or quarrying:

- Agriculture, hunting and forestry:
    — Agriculture, animal farming and related service activities
    — Hunting, forestry, logging and related service activities
    — Fishing
- Fishing:
    — Aquaculture (operation of fish hatcheries and fish farms)
    — Service activities incidental to fishing
- Mining and quarrying:
    — Mining of coal and lignite; extraction of peat
    — Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying
    — Mining of uranium and thorium ores
    — Mining of metal ores
    — Other mining and quarrying

Agriculture encompasses all the extractive sectors listed in the question. Thus, in the response options, the word *agriculture* is shorthand for "agriculture, hunting, forestry, fishery, mining, or quarrying".

When considering land, a household is considered to have the "right to use" land if it owns the land (even if that land is rented out or pawned), rents the land in, sharecrops the land, or has a permit from the government to use the land. Note that "land" also encompasses "water surfaces" that are used for agriculture, fishery, etc.

According to the IHLCA Technical Committee, a household that uses (or has the right to use) a communal water or land resource is not counted as having the "right to use" that land unless they specifically have a permit or otherwise have a recognized right to exclude others from using the resource. For example, a household that has the right to draw water from a one-acre pond from which all other members of the village also have the right to draw water is not counted as having this pond as "land". This is because the household does not have the right to stop others from using the pond. Likewise, a household that fishes in a river or stream is not counted as having the river or stream as "land" unless the household has the exclusive right to fish there.

When considering whether a large animal is "draught" or "non-draught", the key concept is the main purpose of the animal. Thus, an ox currently used for plowing may later be slaughtered for food or sold to be butchered, but its main purpose, from the point of view of the household that currently owns it, is to work, so it is a "draught" animal. Likewise, a calf that is being raised to work as a draught animal is also considered as a draught animal, even though the calf is not yet helping with any farm work.

For the purposes of this question, only non-draught oxen, non-draught buffalo, and any cows (draught or non-draught), mythun, horses, or donkeys/mules are to be counted. That is, do not count draught oxen nor draught buffalo, but do count all non-draught cattle (oxen or cows), all mythun (draught or non-draught), all horses (draught or non-draught), and all donkeys or mules (draught and non-draught),

If no household member's main job is connected with agriculture, then mark response B, "Non-agricultural household".

If the household is agricultural, then ask if it owns or has the right to use any plots of land of the different types listed in the question (land for agriculture, forestry, pasture, livestock breeding, or water surfaces).

If an agricultural household does not own or have the right to use any agricultural land, then mark Response A, "Landless agricultural household".

If an agricultural household does have agricultural land, then ask if the household owns any large, non-draught farm animals (oxen, buffalo, cows, mythun, horses, or donkeys/mules). Do not count draught oxen, draught buffalo or other draught animals that are raised mainly to help with farm work, for example, by pulling ploughs, pulling carts, or carrying loads. Do not count pigs, sheep, goats, or poultry; only count the types of animals listed in the question.

If the household does own one or more of these large, non-draught farm animals, then mark response D, "Agricultural household with land and with non-draught large animals". If they do not own any, then mark response C, "Agricultural household with land, but no non-draught large animals".

Figure 1: Sample sizes, poverty lines, and poverty rates for all of Myanmar by sub-sample, poverty line, and household-level/person-level

| Sample | Poverty line or rate | Households or people | Households surveyed | % with consumption below a poverty line | | | | USAID | Intl. 2005 PPP | |
| | | | | National | | | | | | |
				Food	100%	150%	200%	'Extreme'	$1.25	$2.50
All Myanmar	Line			739	1,010	1,515	2,020	861	775	1,550
	Rate	Households	18,609	3.6	21.3	67.8	89.4	10.3	24.8	86.6
	Rate	People		4.8	25.7	73.1	92.0	12.9	31.9	91.3
Construction and calibration										
Selecting indicators and weights, and	Rate	Households	9,249	3.6	21.3	67.7	89.8	10.0	24.7	86.9
associating scores with likelihoods	Rate	People		4.9	25.8	73.2	92.3	12.5	31.9	91.5
Validation										
Measuring accuracy	Rate	Households	9,360	3.6	21.2	67.9	89.1	10.7	24.9	86.4
	Rate	People		4.8	25.7	72.9	91.7	13.2	31.9	91.1

Source: 2009/10 Integrated Household Living Conditions Assessment. All poverty lines in MMK as of January 2009 to December 2010 at median Union prices.

National poverty lines and the USAID "extreme" line are per day per adult equivalent. International 2005 PPP poverty lines are per day per person.

Figure 2 (Myanmar): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

| Region | Line/rate | Poverty lines and poverty rates (%) | | | | | | |
| | | National | | | | USAID | Intl. 2005 PPP | |
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	718	982	1,473	1,964	843	753	1,506
	Rate (households)	4.2	24.7	74.4	94.3	11.9	28.7	91.9
	Rate (people)	5.6	29.2	78.7	95.9	14.6	35.9	95.3
Urban	Line	798	1,091	1,636	2,182	912	837	1,674
	Rate (households)	1.9	12.0	49.7	76.2	6.1	14.1	72.2
	Rate (people)	2.6	15.7	57.2	81.1	7.8	20.4	79.8
All	Line	739	1,010	1,515	2,021	861	775	1,550
	Rate (households)	3.6	21.3	67.8	89.4	10.3	24.8	86.6
	Rate (people)	4.8	25.7	73.1	92.0	12.9	31.9	91.3

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Kachin): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

		Poverty lines and poverty rates (%)						
		National				**USAID**	**Intl. 2005 PPP**	
Region	**Line/rate**	**Food**	**100%**	**150%**	**200%**	**'extreme'**	**$1.25**	**$2.50**
Rural	Line	783	1,071	1,606	2,141	969	821	1,643
	Rate (households)	4.0	27.0	73.6	92.5	15.6	31.7	92.9
	Rate (people)	4.8	30.9	77.7	93.8	17.5	38.9	95.4
Urban	Line	843	1,153	1,730	2,306	1,003	885	1,769
	Rate (households)	2.3	18.1	67.0	81.8	9.9	26.0	80.9
	Rate (people)	2.5	23.8	76.2	87.0	10.8	40.8	87.0
All	Line	799	1,093	1,640	2,186	978	839	1,677
	Rate (households)	3.5	24.7	71.9	89.7	14.1	30.2	89.8
	Rate (people)	4.2	29.0	77.3	91.9	15.7	39.4	93.1

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Kayah): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

| Region | Line/rate | Poverty lines and poverty rates (%) | | | | | | |
| | | National | | | | USAID | Intl. 2005 PPP | |
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	708	969	1,453	1,938	880	743	1,487
	Rate (households)	1.9	12.5	58.4	85.9	5.9	17.9	87.0
	Rate (people)	2.1	16.5	62.3	89.6	7.6	22.6	92.3
Urban	Line	761	1,041	1,561	2,082	842	798	1,597
	Rate (households)	0.0	1.7	42.2	81.7	0.0	7.6	71.0
	Rate (people)	0.0	2.5	50.4	87.6	0.0	9.4	79.6
All	Line	727	994	1,492	1,989	867	763	1,526
	Rate (households)	1.2	8.3	52.1	84.3	3.6	13.9	80.8
	Rate (people)	1.4	11.5	58.0	88.9	4.9	17.9	87.7

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Kayin): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

| Region | Line/rate | Poverty lines and poverty rates (%) | | | | | | |
| | | National | | | | USAID | Intl. 2005 PPP | |
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	785	1,074	1,610	2,147	952	824	1,647
	Rate (households)	1.7	13.9	63.7	91.2	6.5	19.5	88.5
	Rate (people)	2.2	17.5	71.5	93.9	8.4	26.1	94.6
Urban	Line	806	1,103	1,654	2,205	911	846	1,692
	Rate (households)	0.0	12.7	48.8	78.6	4.0	13.3	74.7
	Rate (people)	0.0	17.1	55.6	84.2	5.5	19.2	84.3
All	Line	788	1,078	1,618	2,157	945	827	1,654
	Rate (households)	1.4	13.7	61.3	89.1	6.1	18.5	86.3
	Rate (people)	1.8	17.4	68.9	92.3	8.0	25.0	92.9

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Chin): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

		Poverty lines and poverty rates (%)						
		National				USAID	Intl. 2005 PPP	
Region	Line/rate	Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	732	1,001	1,501	2,002	754	768	1,536
	Rate (households)	25.1	72.3	99.6	100.0	32.6	79.4	100.0
	Rate (people)	30.3	80.1	99.8	100.0	39.8	88.6	100.0
Urban	Line	806	1,102	1,653	2,204	945	845	1,691
	Rate (households)	5.7	48.1	89.3	97.8	23.4	52.6	96.3
	Rate (people)	6.5	53.3	90.9	98.1	26.1	60.6	97.4
All	Line	750	1,025	1,538	2,051	800	787	1,573
	Rate (households)	20.2	66.1	97.0	99.4	30.3	72.6	99.0
	Rate (people)	24.6	73.6	97.6	99.5	36.5	81.8	99.4

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Sagaing): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

Region	Line/rate	Poverty lines and poverty rates (%)						
		National				USAID	Intl. 2005 PPP	
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	714	976	1,464	1,952	882	749	1,498
	Rate (households)	1.0	12.8	65.6	92.2	6.6	16.9	89.4
	Rate (people)	1.1	15.0	69.7	93.5	7.6	21.3	93.5
Urban	Line	767	1,050	1,575	2,100	916	805	1,611
	Rate (households)	2.1	12.2	51.4	74.9	7.1	15.0	74.8
	Rate (people)	2.7	16.3	57.0	78.7	8.4	20.3	81.2
All	Line	721	986	1,480	1,973	887	757	1,513
	Rate (households)	1.2	12.7	63.5	89.6	6.6	16.6	87.3
	Rate (people)	1.3	15.2	67.9	91.5	7.7	21.2	91.8

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Tanintharyi) : Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

Region	Line/rate	Poverty lines and poverty rates (%)						
		National				**USAID**	**Intl. 2005 PPP**	
		Food	**100%**	**150%**	**200%**	**'extreme'**	**$1.25**	**$2.50**
<u>Rural</u>	Line	775	1,060	1,591	2,121	840	813	1,627
	Rate (households)	9.4	32.7	73.9	92.0	15.7	40.1	90.7
	Rate (people)	11.4	38.0	79.1	94.3	19.6	48.8	94.4
<u>Urban</u>	Line	769	1,052	1,579	2,105	842	807	1,615
	Rate (households)	3.3	13.9	45.5	74.3	6.1	15.6	73.0
	Rate (people)	4.8	17.3	52.9	79.0	7.7	19.7	80.7
<u>All</u>	Line	774	1,059	1,588	2,117	841	812	1,624
	Rate (households)	8.0	28.5	67.5	88.0	13.5	34.6	86.8
	Rate (people)	9.9	33.3	73.1	90.8	16.9	42.2	91.3

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Bogo, East): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

| | | Poverty lines and poverty rates (%) | | | | | | |
| | | National | | | | USAID | Intl. 2005 PPP | |
Region	Line/rate	Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	719	984	1,476	1,968	842	755	1,509
	Rate (households)	2.0	15.7	65.7	93.2	7.6	19.9	87.7
	Rate (people)	2.4	20.1	71.6	95.9	10.0	25.7	93.9
Urban	Line	756	1,034	1,552	2,069	804	793	1,587
	Rate (households)	4.0	17.7	65.1	87.8	8.1	21.5	81.8
	Rate (people)	5.0	21.3	69.0	92.0	10.3	27.1	89.5
All	Line	725	992	1,487	1,983	836	761	1,521
	Rate (households)	2.3	16.0	65.6	92.3	7.7	20.1	86.8
	Rate (people)	2.8	20.3	71.2	95.3	10.0	25.9	93.2

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Bogo, West): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

		Poverty lines and poverty rates (%)						
		National				USAID	Intl. 2005 PPP	
Region	Line/rate	Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	681	931	1,397	1,863	838	715	1,429
	Rate (households)	0.2	14.1	61.9	89.3	6.3	14.9	86.0
	Rate (people)	0.3	15.8	64.9	92.0	7.8	18.7	90.2
Urban	Line	728	996	1,493	1,991	889	764	1,527
	Rate (households)	0.6	12.3	55.0	85.5	5.7	11.4	78.4
	Rate (people)	0.8	15.4	62.1	87.9	7.6	15.4	84.2
All	Line	686	938	1,407	1,877	843	720	1,440
	Rate (households)	0.2	13.9	61.1	88.8	6.2	14.5	85.1
	Rate (people)	0.3	15.8	64.6	91.6	7.8	18.4	89.5

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Magwe): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

| Region | Line/rate | Poverty lines and poverty rates (%) | | | | | | |
| | | National | | | | USAID | Intl. 2005 PPP | |
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	709	970	1,455	1,940	850	744	1,488
	Rate (households)	2.7	24.1	77.0	95.0	11.3	25.9	93.4
	Rate (people)	3.8	28.1	80.8	96.4	14.0	32.5	96.4
Urban	Line	765	1,046	1,569	2,092	875	803	1,605
	Rate (households)	1.6	13.5	53.1	79.2	6.6	14.0	75.3
	Rate (people)	2.1	15.6	57.4	82.4	7.8	18.5	79.9
All	Line	715	978	1,466	1,955	852	750	1,500
	Rate (households)	2.6	23.0	74.5	93.3	10.8	24.6	91.4
	Rate (people)	3.6	26.9	78.5	95.0	13.4	31.2	94.8

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Mandalay) : Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

Region	Line/rate	Poverty lines and poverty rates (%)						
		National				USAID	Intl. 2005 PPP	
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	728	996	1,493	1,991	831	764	1,527
	Rate (households)	5.2	26.9	77.9	94.8	13.0	29.8	93.1
	Rate (people)	6.5	31.7	81.9	96.3	15.9	36.6	96.1
Urban	Line	777	1,062	1,594	2,125	933	815	1,630
	Rate (households)	1.7	10.7	44.1	72.3	5.6	11.6	70.1
	Rate (people)	2.4	14.0	50.1	77.2	7.2	17.1	77.6
All	Line	742	1,015	1,522	2,029	860	778	1,557
	Rate (households)	4.2	22.3	68.4	88.5	10.9	24.7	86.6
	Rate (people)	5.4	26.7	72.9	90.9	13.4	31.1	90.9

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Mon): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

| Region | Line/rate | Poverty lines and poverty rates (%) | | | | | | |
| | | National | | | | USAID | Intl. 2005 PPP | |
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	829	1,133	1,700	2,267	983	869	1,739
	Rate (households)	2.8	13.6	69.7	92.9	7.0	18.4	89.1
	Rate (people)	4.0	16.2	74.3	95.0	8.0	23.6	93.3
Urban	Line	834	1,141	1,712	2,282	961	875	1,751
	Rate (households)	2.4	15.0	54.9	78.9	7.3	18.9	78.4
	Rate (people)	2.4	18.0	61.3	84.3	8.5	24.0	85.1
All	Line	830	1,135	1,702	2,269	979	870	1,741
	Rate (households)	2.8	13.9	67.0	90.3	7.0	18.5	87.1
	Rate (people)	3.7	16.5	72.0	93.1	8.1	23.7	91.8

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Rakhine): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

| Region | Line/rate | Poverty lines and poverty rates (%) | | | | | | |
| | | National | | | | USAID | Intl. 2005 PPP | |
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	593	812	1,218	1,623	661	623	1,245
	Rate (households)	8.9	42.5	86.1	98.2	20.5	51.1	97.0
	Rate (people)	11.5	49.3	89.6	99.0	24.5	61.1	98.8
Urban	Line	629	860	1,291	1,721	689	660	1,320
	Rate (households)	3.4	17.6	54.8	87.3	8.2	17.0	83.6
	Rate (people)	4.6	22.2	62.4	90.5	10.9	23.6	89.5
All	Line	601	822	1,233	1,644	667	630	1,261
	Rate (households)	7.6	36.8	79.0	95.7	17.7	43.4	94.0
	Rate (people)	10.1	43.7	83.9	97.3	21.7	53.4	96.9

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Yangon): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

Region	Line/rate	Poverty lines and poverty rates (%)						
		National				USAID	Intl. 2005 PPP	
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	730	999	1,499	1,998	865	766	1,533
	Rate (households)	3.9	24.0	73.8	94.6	12.5	25.9	90.2
	Rate (people)	4.8	28.1	77.8	96.2	13.9	31.8	93.9
Urban	Line	842	1,151	1,727	2,303	971	883	1,766
	Rate (households)	1.1	8.7	45.1	71.8	4.8	11.4	66.4
	Rate (people)	1.7	11.9	54.2	77.9	6.4	17.3	75.4
All	Line	814	1,114	1,671	2,227	945	854	1,709
	Rate (households)	1.9	12.8	52.6	77.8	6.9	15.2	72.7
	Rate (people)	2.4	15.9	60.1	82.5	8.2	20.9	80.0

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Shan, South): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

Region	Line/rate	Poverty lines and poverty rates (%)						
		National				USAID	Intl. 2005 PPP	
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	719	984	1,475	1,967	840	754	1,509
	Rate (households)	6.8	25.2	75.6	96.2	11.9	33.2	94.4
	Rate (people)	9.9	31.3	80.0	97.1	15.6	42.0	96.9
Urban	Line	805	1,102	1,652	2,203	698	845	1,690
	Rate (households)	2.3	5.7	45.0	76.0	1.9	9.2	68.7
	Rate (people)	3.6	8.5	51.8	80.7	3.1	13.1	77.0
All	Line	742	1,015	1,522	2,029	803	778	1,557
	Rate (households)	5.5	19.5	66.6	90.3	8.9	26.1	86.8
	Rate (people)	8.2	25.3	72.6	92.8	12.3	34.4	91.6

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Shan, North): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

		Poverty lines and poverty rates (%)						
		National				USAID	Intl. 2005 PPP	
Region	Line/rate	Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	807	1,104	1,656	2,207	923	847	1,693
	Rate (households)	9.5	39.9	80.6	95.5	18.5	40.9	94.5
	Rate (people)	11.6	43.3	82.9	96.3	21.4	46.8	96.1
Urban	Line	829	1,133	1,700	2,267	918	869	1,739
	Rate (households)	2.6	12.5	49.6	82.0	6.0	17.8	77.9
	Rate (people)	3.3	16.1	53.3	84.7	7.8	22.7	84.4
All	Line	812	1,110	1,665	2,220	922	852	1,703
	Rate (households)	8.1	34.3	74.3	92.8	16.0	36.2	91.1
	Rate (people)	9.8	37.5	76.6	93.9	18.5	41.7	93.6

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Shan, East) : Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

Region	Line/rate	Poverty lines and poverty rates (%)						
		National				USAID	Intl. 2005 PPP	
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	878	1,201	1,801	2,402	1,044	921	1,843
	Rate (households)	6.7	44.2	92.2	99.8	19.3	46.3	98.7
	Rate (people)	10.8	52.0	95.2	99.8	26.0	56.1	99.5
Urban	Line	852	1,165	1,748	2,331	1,064	894	1,788
	Rate (households)	2.7	23.9	75.4	90.9	12.4	29.9	90.5
	Rate (people)	3.4	28.9	78.7	93.0	14.0	37.7	94.6
All	Line	872	1,192	1,788	2,384	1,049	915	1,829
	Rate (households)	5.8	39.6	88.4	97.8	17.8	42.6	96.9
	Rate (people)	8.9	46.3	91.1	98.2	23.0	51.5	98.3

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 2 (Ayeyarwaddy): Poverty lines, and poverty rates at the household-level and person-level by urban, rural, and all

| Region | Line/rate | Poverty lines and poverty rates (%) | | | | USAID | Intl. 2005 PPP | |
| | | National | | | | | | |
		Food	100%	150%	200%	'extreme'	$1.25	$2.50
Rural	Line	689	942	1,413	1,884	795	723	1,445
	Rate (households)	4.8	29.3	79.3	95.7	13.7	34.3	93.6
	Rate (people)	6.5	34.0	83.2	97.0	17.0	42.4	96.4
Urban	Line	778	1,065	1,597	2,129	868	817	1,633
	Rate (households)	2.8	17.7	58.8	81.0	8.7	18.7	77.0
	Rate (people)	4.1	23.4	65.8	83.5	11.6	26.6	81.4
All	Line	703	961	1,442	1,923	806	737	1,475
	Rate (households)	4.4	27.4	76.0	93.3	12.9	31.7	90.9
	Rate (people)	6.1	32.3	80.4	94.9	16.1	39.9	94.0

Source: 2009/10 Integrated Household Living Conditions Assessment.

All poverty lines in MMY as of January 2009 to December 2010 at the average Union level.

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 3: Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
660	Does any member of your household own or have access to a black-and-white or colour TV (including one rented to others or pawned)? (No; Yes)
621	How many members does the household have? (Eight or more; Seven; Six; Five; Four; Three; One or two)
604	What is the main source of lighting for the dwelling? (Kerosene/diesel lantern; Candle; Other; Communal electricity; Battery/inverter; Private electricity; Public electricity, own generator)
595	Does any member of your household own or have access to a color TV (including one rented to others or pawned)? (No; Yes)
584	What type is the dwelling (observe, do not ask)? (No dwelling, or hut with 1-year post life; Hut with 2- to 3-year post life; Wooden house; Semi-pacca or brick house, or condominium/apartment/flat)
547	Does any member of your household own or have access to a VCD/DVD player (including one rented to others or pawned)? (No; Yes)
499	Does any member of your household own or have access to a cupboard or a food-storage cabinet (including one rented to others or pawned)? (Neither; One, but not both; Both)
476	What is the major construction material of the roof (observe, do not ask)? Thatch/large leaves/palm/*dhani*, tarpaulin, bamboo, tin pieces, or other; Tiles, corrugated metal, wooden shingles, or cement)
467	Does any member of your household own or have access to an electric iron (including one rented to others or pawned)? (No; Yes)
446	What is the major construction material of the external (outer) walls (observe, do not ask)? (Thatch/large leaves/palm/*dhani*, or tarpaulin; Bamboo, or rudimentary wood; Unbaked brick and mud, finished wood, or other; Baked brick and cement, or *pucca* cement)
428	What is the main fuel source used by your household for cooking? (Firewood, biofuel, refuse, or other; Gas, kerosene/diesel, firewood substitute, charcoal, electricity)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
418	How many rooms does the household occupy, including bedrooms, living rooms, and rooms used for household businesses (do not count toilets, kitchens, balconies, nor corridors)? (One or none; Two; Three; Four; Five or more)
417	Was electricity continuously available to your dwelling over the last seven days? (No electricity available in residence; No; Yes)
416	In the last year, how many household members had their main occupation as casual labourers? (Three or more; Two; One; None)
409	Does any household member own or have access to a bicycle or non-motorized boat, a motorcycle, power tiller, trishaw, motorboat, trawlarjee, three-wheeled motor vehicle, motorcar (4 wheels or more), tractor (including one rented to others or pawned)? (No, none of these; Only bicycle or non-motorized boat; Motorcycle, power tilller, trishaw, motorboat, trawlarjee, three-wheeled motor vehicle, motorcar (4 wheels or more), or tractor (regardless of bicycle or non-motorized boat))
407	What is the total area (in acres) of all plots of land (agricultural, forest, pasture, for livestock breeding, or water surfaces) that any member of the household has the right to use? (None to 1.9; 2.0 to 2.9; 3.0 to 6.9; 7.0 or more)
405	How many household members are 18-years-old or younger? (Five or more; Four; Three; Two; One; None)
400	Does any member of your household own or have access to a rice cooker (including one rented to others or pawned)? (No; Yes)
379	In what state/region does the household live? (Chin, Shan (East), Shan (North), or Rakhine; Tanintharyi, Ayeyarwady, or Kachin; Shan (South), Magwe, or Mandalay; Bago (West), Yangon, or Kayah; Bago (East), or Mon; Kayin, or Sagaing)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
377	What is the main source of water used by the household for drinking? (Unprotected spring/pond (no fence), rainwater (no lid), or other; Lake/dam; Public tap/stand pipe; River/stream; Tube well, borehole; Unprotected hand-dug well (no fence nor lid); Private tap water outside the compound; Protected hand-dug well (with fence or lid); Protected spring/pond (with fence) or rainwater (with lid); Tap water inside the compound; or water sold by any means (e.g., truck, cart, etc.); Commercial bottled drinking water)
376	In the last year, how many household members had their main occupation as elementary occupations? (Three or more; Two; One; None)
363	Does any member of your household own or have access to a clock (including one rented to others or pawned)? (No; Yes)
361	Does any member of your household own or have access to an electric inverter (including one rented to others or pawned)? (No; Yes)
347	How many household members are 17-years-old or younger? (Four or more; Three; Two; One; None)
341	What is the major construction material of the floor (observe, do not ask)? (Earth/sand, palm/bamboo, combination earth and wood/palm/bamboo, or other; Wood planks, parquet or polished wood, tongue-and-groove wood, cement, wood with covering, cement with covering, or a combination of cement/finished wood and something else)
335	Does any member of your household own or have access to an electric fan/air cooler (including one rented to others or pawned)? (No; Yes)
335	How many household members are 16-years-old or younger? (Four or more; Three; Two; One; None)
330	In the last seven days, how did your household dispose of most of its garbage? (No fixed place/dumped without burning or burying, or other; Dumped in river/lake; Burnt/buried; Used for fertilizer; Collected by garbage truck/public dump)
324	How many household members are 15-years-old or younger? (Four or more; Three; Two; One; None)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
314	What is the highest standard/diploma/degree that the female head/spouse has passed? (No female head/spouse; None, KG, or first standard; Second standard; Third to fifth standard; Sixth standard or higher)
311	Does any member of your household own or have access to a charcoal stove (including one rented to others or pawned)? (No; Yes)
307	What is the highest standard/diploma/degree that the male head/spouse has passed? (None, KG, or first standard; Second standard; Third standard; Fourth standard; No male head/spouse; Fifth standard; Sixth standard; Seventh standard; Eighth standard; Ninth standard; Tenth standard, undergraduate diploma, bachelor degree, post-graduate diploma/degree)
306	Does any member of your household own or have access to a motorized pump (including one rented to others or pawned)? (No; Yes)
306	What is the total floor space available for your household? (0 to 149; 150 to 199; 200 to 249; 250 to 299; 300 to 349; 350 to 399; 400 to 449; 450 to 599; 600 to 699; 700 to 899; 900 or more)
302	Does any member of your household own or have access to a food-storage cabinet (including one rented to others or pawned)? (No; Yes)
299	What type of stove is used most often for cooking food in the household? (Open fire, open stove, rice-husk stove, or traditional closed stove; A1 improved stove, other improved stove, or stove using electricity, gas, kerosene/diesel, biofuel, or other)
295	How many household members are 14-years-old or younger? (Four or more; Three; Two; One; None)
291	Does any member of your household own or have access to a bedstead (including one rented to others or pawned)? (No; Yes)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
287	What type of toilet facility does the household use (observe, do not ask)? (No facilities (bush, field, river, or stream), or other; Open pit latrine, bucket/pan latrine, or surface latrine/hanging latrine; Direct covered pit latrine without foot-step lid; Indirect covered pit latrine without foot-step lid; Covered pit latrine with foot-step lid; Pour flush toilet with water seal; Flush toilet connected to sewage system or septic tank)
279	Are all household members ages 6 to 17 currently attending school? (No; Yes; No household members in this age range)
276	Does any member of your household own or have access to a motorcycle (including one rented to others or pawned)? (No; Yes)
266	Are all household members ages 6 to 16 currently attending school? (No; Yes; No household members in this age range)
263	Does any member of your household own or have access to a refrigerator/deep freezer (including one rented to others or pawned)? (No; Yes)
263	How many household members are 12-years-old or younger? (Three or more; Two; One; None)
259	Are all household members ages 6 to 18 currently attending school? (No; Yes; No household members in this age range)
258	How many household members are 11-years-old or younger? (Three or more; Two; One; None)
256	Does any member of your household own or have access to a settee (including one rented to others or pawned)? (No; Yes)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
245	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining or quarrying and if at least one household member has the right to use land (agricultural, forest, pasture, for livestock breeding, or water surfaces), then how many draught oxen does the household own? (Landless agricultural household; Agricultural household with land, but no oxen; Agricultural household with land and oxen; Not an agricultural household)
245	Are all household members ages 6 to 15 currently attending school? (No; Yes; No household members in this age range)
241	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying and if at least one household member has the right to use land (agricultural, forest, pasture, for livestock breeding, or water surfaces), then how many draught oxen and draught buffalo does the household own? (Landless agricultural household; Agricultural household with land, but no oxen nor buffalo; Agricultural household with land and draught oxen or draught buffalo; Not an agricultural household)
239	How many household members are 13-years-old or younger? (Three or more; Two; One; None)
236	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does at least one household member have the right to use land (agricultural, forest, pasture, for livestock breeding, or water surfaces)? (No; Yes; Non-agricultural household)
232	What is the mother tongue of the male head/spouse? (Kachin, Shan, other indigenous language, or other foreign language; No male head/spouse; Mon, Chinese, or Arabic; Kayah, Kayin, Rakhine, or Hindi/Other Indian; Myanmar)
231	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any rakes (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
221	What was the main occupation of the male head/spouse in the last year? (Elementary occupations; Does not work; Craft, construction, and related workers; Skilled agricultural and fishery workers; No male head/spouse; Legislators, senior officials, managers, professionals, technicians or associated professionals, clerks, service workers, shop and market sales workers, or plant and machine operators and assemblers)
215	Are all household members ages 6 to 14 currently attending school? (No; Yes; No household members in this age range)
214	What is the mother tongue of the female head/spouse? (Kachin, Shan, other indigenous language, or other foreign language; No female head/spouse; Mon, Chinese, or Arabic; Kayah, Kayin, Rakhine, or Hindi/Other Indian; Myanmar)
201	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any tractors, tractor dishes (3/4 dishes), tractor harrows (16/18 numbers), tractor-operated cultivator/intercultivator, other tractor-operated implements, power tiller, implements operated by a power tiller, diesel/petrol engine, dynamo, motorized or mechanical harvester, thresher, water pump, or sprayer (including ones rented to others or pawned to others)? (No; Not an agricultural household; Yes)
201	How many household members are 6-years-old or younger? (Two or more; One; None)
200	What was the employment status of the male head/spouse in his main work in the past seven days? (Casual worker, or worker not otherwise classified; Does not work; Employee; No male head/spouse; Own-account worker, contributing family worker, or member of a producer cooperative; Employer)
199	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any hand sprayers or hand water pumps (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)

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Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
195	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining or quarrying, then does the household own any hoes (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
195	In the last year, how many household members had their main job connected to agriculture, hunting, forestry, fishery, mining, or quarrying? (Four or more; Three or more; Two; One; None)
194	Are all household members ages 6 to 13 currently attending school? (No; Yes; No household members in this age range)
192	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining or quarrying, then does the household own any mattocks (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
192	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining or quarrying, then does the household own any hand sprayers (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
191	Does any member of your household own or have access to a bicycle (including ones rented to others or pawned to others)? (No; Yes)
183	Are all household members ages 6 to 12 currently attending school? (No; Yes; No household members in this age range)
177	Does the household live in a rural area? (Yes; No)
175	Does any member of your household own or have access to an electric stove (including ones rented to others or pawned to others)? (No; Yes)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
173	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining or quarrying, then does the household own any buildings for agricultural use (including ones rented to others or pawned to others)? (No; Not an agricultural household; Yes)
173	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining or quarrying, then does the household own any forks (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
172	Are all household members ages 6 to 11 currently attending school? (No; Yes; No household members in this age range)
170	Does any member of your household own or have access to a table (including ones rented to others or pawned to others)? (No; Yes)
161	What was the main occupation of the female head/spouse in the last year? (Elementary occupations; Does not work; Skilled agricultural and fishery workers; No female head/spouse; Legislators, senior officials, and managers; Professionals, technicians and associated professionals, clerks, service workers, shop and market sales workers, craft, construction, and related workers, or plant and machine operators and assemblers)
161	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any animal-pulled stock of plough, ploghshares, or animal-pulled harrows (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
158	Does any member of your household own or have access to a chair/bench/stool (including ones rented to others or pawned to others)? (No; Yes)
153	Does any member of your household own or have access to a battery (including ones rented to others or pawned to others)? (No; Yes)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
151	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any sickles, hoes, or mattocks (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
147	In the last year, what kind of trade or business was the main job of the male head/spouse connected to? (Does not work, or other community, social, and personal services; No male head spouse; Agriculture, hunting, forestry, fishery, mining, quarrying, manufacturing, electricity, gas, and water supply, or construction; Others)
147	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any trishaws, carts for non-agricultural use, motorcars (6 or more wheels), motorized boats, trawlarjees, three-wheel motorized vehicles, or other means of business transportation (including ones rented to others or pawned to others)? (No; Not an agricultural household; Yes)
144	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any animal-pulled rotary harrow or pulverizer or animal-pulled harvester/thresher (including ones rented to others or pawned to others)? (No; Not an agricultural household; Yes)
139	Does any member of your household own or have access to a sewing machine (including ones rented to others or pawned to others)? (No; Yes)
136	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any sickles (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
127	In their main work in the past seven days, how many household members were own-account workers? (None; One; Two: Three or more)
122	Does any member of your household own or have access to a land-line telephone (including ones rented to others or pawned to others)? (No; Yes)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
122	Does any member of your household own or have access to a water tank (any type) (including ones rented to others or pawned to others)? (No; Yes)
118	In the last year, how many household members had their main occupation as something other than skilled agricultural and fishery workers or in elementary occupations? (None; One; Two; Three or more)
117	In the last year, how many household members had their main occupation as legislators, senior officials, managers, professionals, technicians and associated professionals, or clerks? (None; One or more)
111	If any household member's main job is connected with agriculture, hunting, forestry, fishery, mining, or quarrying, and if any household member owns or has the right to use land for agriculture, forestry, pasture, livestock breeding, or water surfaces, then does the household own any non-draught oxen, non-draught buffalo, cows, mythun, horses, or donkeys/mules (including ones rented to others or pawned to others)? (Landless agricultural household; Non-agricultural household; Agricultural household with land, but no non-draught large animals; Agricultural household with land and with non-draught large animals)
111	Does any member of your household own or have access to a pocket radio, radio-cassette (without CD player) or stereo/hi-fi cassette (with CD player)? (including one rented to others or pawned)? (No; Yes)
110	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own hand water pumps (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
109	Does any member of your household own or have access to a mobile telephone (including one rented to others or pawned)? (No; Yes)
105	What was the employment status of the female head/spouse in her main work in the past seven days? (Casual worker, worker not otherwise classified; Does not work; No female head/spouse; Member of a producer cooperative, or contributing family worker; Employee; Own-account worker; Employer)
102	What is the religion of the male head/spouse? (Christian; Animist, Hindu, Muslim, or other; Buddhist; No male head/spouse)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
99	Does any member of your household own or have access to a gas stove (including one rented to others or pawned)? (No; Yes)
94	How many of the rooms that the household occupies could be used for sleeping? (One, or none; Two; Three or more)
94	Does the household have a grant-land document for the ownership of its dwelling? (No; Yes)
91	Does any member of your household own or have access to a hot plate (including one rented to others or pawned)? (No; Yes)
86	If at least one household member has his/her main job in agriculture, hunting, forestry, fishery, mining, or quarrying, then does the household own any goats, sheep, or pigs (including ones rented to others or pawned to others)? (No; Yes; Not an agricultural household)
85	During the past seven days, how many household members worked for someone who is not a member of the household, worked on a farm owned or rented by a member of the household, worked on his/her own account or in a business enterprise belonging to him/her or someone in your household, or have a permanent job even though he/she did not work in the past seven days? (Five or more; Four; Three; Two; One or none)
83	Does any member of your household own or have access to a motorcar (4 wheels) (including ones rented to others or pawned to others)? (No; Yes)
82	Does any member of your household own or have access to a satellite dish (including one rented to others or pawned)? (No; Yes)
80	Does any member of your household own or have access to an air conditioner (including one rented to others or pawned)? (No; Yes)
79	Does any member of your household own or have access to a pocket radio (including one rented to others or pawned)? (No; Yes)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
78	In what kind of trade or business is the main job of the female head/spouse connected to in the last year? (Agriculture, hunting, forestry, fishery, mining, quarrying, construction, other community, social, and personal services; Does not work; No female head/spouse; Other)
74	Does any member of your household own or have access to an electric lamp (including one rented to others or pawned)? (No; Yes)
71	What is the religion of the female head/spouse? (Animist, Hindu, Christian, or other; Muslim; No female head/spouse; Buddhist)
69	In the last year, how many household members had their main occupation as skilled agricultural and fishery workers? (Three or more; Two; One; None)
65	In the last year, how many household members had their main job connected to wholesale and retail trade, including repairs? (None; One; Two or more)
65	How many total acres of *le* (paddy) land does any member of the household have the right to use? (None; Up to 1.9; Has no *le* land but does have other agric. land; 2.0 to 4.9; 5.0 or more)
49	Does any member of your household own or have access to a camera (any type) (including one rented to others or pawned)? (No; Yes)
49	In the last year, how many household members had their main job connected to something other than agriculture, hunting, forestry, fishery, mining, or quarrying? (None; One; Two; Three or more)
49	Does any member of your household own or have access to an emergency lamp (including one rented to others or pawned)? (No; Yes)
47	Does any member of your household own or have access to a computer (any type) (including one rented to others or pawned)? (No; Yes)
41	Does any member of your household own or have access to a black and white TV (including one rented to others or pawned)? (No; Yes)
36	Is the toilet shared with other households? (Yes; No)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
33	In the last year, how many household members had their main occupation as service workers or shop and market sales workers? (None; One; Two or more)
32	Does any member of your household own or have access to a radio-cassette (including one rented to others or pawned)? (No; Yes)
30	How many years old was the male head/spouse on his last birthday? (35 or younger; 36 to 40; 41 to 45; 46 to 50; 51 to 55; 56 to 60; 61 to 64; 65 to 40; No male head/spouse)
27	How many years old was the female head/spouse on her last birthday? (30 or younger; 31 to 35; 36 to 40; 41 to 45; 46 to 50; 51 to 55; 56 to 60; 61 to 65; 66 or older; No female head/spouse)
26	In their main work in the past seven days, how many household members were employers or employees? (None; One; Two or more)
19	What is the marital status of the male head/spouse? (Married; Widowed; No male head/spouse; Single, never-married, divorced, separated)
15	During the past seven days, has the male head/spouse worked for someone? (No; Yes; No male head/spouse)
14	Between the last two Myanmar Festivals of Lights, was your dwelling ever surrounded by stagnant waters (not due to temporary flooding)? (Yes; No)
14	What is the marital status of the female head/spouse? (Married; No female head/spouse; Widowed; Single, never-married, divorced, separated)
13	Does the household own any chickens, ducks, quail, or other poultry (including one rented to others or pawned)? (Yes; No)
9	Does the household use the same source for drinking water and for cooking water? (Yes; No)

Figure 3 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly linked with higher poverty likelihoods)
3	During the past seven days, has the female head/spouse worked for someone? (No; Yes; No female head/spouse)
2	Does any member of your household own or have access to land for housing (including land rented to others or pawned)? (No; Yes)
2	Does the household share its dwelling with another household? (Yes; No)
2	Does the household own any fishing nets, boats, or other fishing equipment (including one rented to others or pawned)? (Yes; No)
0	Does any member of your household own or have access to a boat (including one rented to others or pawned)? (Yes; No)
0	Is the kitchen located in the house? (No; Yes)

Source: 2009/10 Integrated Household Living Conditions Survey

Tables for
100% of the National Poverty Line

(and Tables Pertaining to All Seven Poverty Lines)

Figure 4 (National line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	83.4
5–9	76.1
10–14	68.6
15–19	60.4
20–24	48.8
25–29	41.6
30–34	29.5
35–39	23.3
40–44	15.0
45–49	10.6
50–54	7.4
55–59	3.5
60–64	1.2
65–69	1.0
70–74	0.3
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Figure 5 (National line): Derivation of estimated poverty likelihoods associated with scores

Score	Households below poverty line		All households at score		Poverty likelihood (estimated, %)
0–4	142	÷	170	=	83.4
5–9	732	÷	961	=	76.1
10–14	1,344	÷	1,958	=	68.6
15–19	2,466	÷	4,081	=	60.4
20–24	3,038	÷	6,226	=	48.8
25–29	3,922	÷	9,428	=	41.6
30–34	3,026	÷	10,276	=	29.5
35–39	2,804	÷	12,044	=	23.3
40–44	1,797	÷	11,946	=	15.0
45–49	1,234	÷	11,663	=	10.6
50–54	699	÷	9,427	=	7.4
55–59	278	÷	7,970	=	3.5
60–64	76	÷	6,094	=	1.2
65–69	39	÷	3,767	=	1.0
70–74	6	÷	2,249	=	0.3
75–79	0	÷	1,180	=	0.0
80–84	0	÷	357	=	0.0
85–89	0	÷	199	=	0.0
90–94	0	÷	4	=	0.0
95–100	0	÷	0	=	0.0

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

Figure 6a: Distribution of household poverty likelihoods across consumption ranges demarcated by per-adult-equivalent national poverty lines

Likelihood per-adult-equivalent consumption is in range demarcated by poverty lines

Score	<Food <MMK753	=>Food and <USAID =>MMK753 and <MMK901	=>USAID and <100% Natl. =>MMK901 and <MMY1,031	=>100% Natl. and <150% Natl. =>MMY1,031 and <MMY1,547	=>150% Natl. and <200% Natl. =>MMY1,547 and <MMY2,062	=>$2.50/day =>MMY2,062
0–4	30.0	41.1	12.3	16.6	0.0	0.0
5–9	30.0	21.7	24.5	23.9	0.0	0.0
10–14	25.4	18.6	24.6	28.2	2.8	0.4
15–19	12.2	21.1	27.1	35.2	3.7	0.6
20–24	9.1	15.3	24.3	44.7	5.9	0.6
25–29	6.8	11.4	23.4	50.8	7.0	0.7
30–34	4.4	8.6	16.5	58.9	10.9	0.8
35–39	3.2	7.5	12.5	61.4	13.6	1.8
40–44	1.0	4.5	9.6	55.5	24.9	4.6
45–49	0.7	2.9	7.0	52.3	29.5	7.6
50–54	0.2	1.8	5.5	48.4	32.5	11.6
55–59	0.0	1.2	2.3	37.5	39.5	19.6
60–64	0.0	0.4	0.9	27.6	40.7	30.5
65–69	0.0	0.0	1.0	21.6	35.0	42.4
70–74	0.0	0.0	0.3	14.6	34.2	50.9
75–79	0.0	0.0	0.0	9.3	38.4	52.2
80–84	0.0	0.0	0.0	4.3	40.3	55.5
85–89	0.0	0.0	0.0	3.9	28.0	68.1
90–94	0.0	0.0	0.0	0.0	31.9	68.1
95–100	0.0	0.0	0.0	0.0	0.0	100.0

All poverty likelihoods in percentage units.

Figure 6b: Distribution of household poverty likelihoods across consumption ranges demarcated by per-capita international 2005 PPP poverty lines

	Likelihood per-capita consumption is in range demarcated by intl. 2005 PPP poverty lines		
	<$1.25/day	=>$1.25/day and <$2.50/day	=>$2.50/day
Score	<MMK775	=>MMK775 and <MMK1,550	=>MMK1,550
0–4	95.2	4.8	0.0
5–9	87.9	12.1	0.0
10–14	84.1	15.7	0.2
15–19	74.6	25.1	0.3
20–24	61.1	38.7	0.3
25–29	49.7	50.0	0.3
30–34	35.1	64.0	0.9
35–39	27.2	70.3	2.5
40–44	16.3	77.5	6.2
45–49	9.7	79.5	10.9
50–54	5.2	80.4	14.4
55–59	4.0	69.4	26.7
60–64	0.8	60.7	38.6
65–69	0.6	48.9	50.5
70–74	0.2	37.3	62.5
75–79	0.0	27.3	72.7
80–84	0.0	18.6	81.5
85–89	0.0	12.1	87.9
90–94	0.0	0.0	100.0
95–100	0.0	0.0	100.0

All poverty likelihoods in percentage units.

Figure 7 (National line): Bootstrapped differences between estimated and true poverty likelihoods for households in a large sample ($n = 16{,}384$) with confidence intervals, scorecard applied to the validation sample

Score	Diff.	Difference between estimate and true value		
		Confidence interval ($\pm$percentage points)		
		90-percent	95-percent	99-percent
0–4	+35.5	15.6	18.3	23.6
5–9	−1.8	7.2	8.9	11.0
10–14	+10.9	5.4	6.6	8.5
15–19	+3.0	3.6	4.2	5.4
20–24	−0.4	3.2	3.7	4.7
25–29	+8.2	2.2	2.5	3.3
30–34	−2.9	2.5	2.8	3.6
35–39	+5.0	1.5	1.9	2.6
40–44	+0.2	1.5	1.8	2.4
45–49	+3.8	1.0	1.2	1.6
50–54	−0.8	1.5	1.8	2.3
55–59	+0.6	0.7	0.8	1.1
60–64	+0.4	0.4	0.5	0.6
65–69	+0.7	0.2	0.3	0.4
70–74	+0.2	0.1	0.1	0.1
75–79	+0.0	0.0	0.0	0.0
80–84	+0.0	0.0	0.0	0.0
85–89	+0.0	0.0	0.0	0.0
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 8 (National line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, scorecard applied to the validation sample

Sample Size n	Diff.	Difference between estimate and true value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	−1.2	62.8	72.7	81.6
4	+0.8	31.2	37.1	50.0
8	+1.3	22.6	26.7	34.2
16	+1.4	15.7	19.5	26.1
32	+1.7	11.1	13.7	18.5
64	+1.9	7.4	9.1	12.1
128	+2.0	5.6	6.6	8.9
256	+1.9	4.0	4.6	6.0
512	+1.9	2.7	3.2	4.1
1,024	+1.9	2.1	2.4	3.0
2,048	+1.8	1.4	1.6	2.1
4,096	+1.8	1.0	1.2	1.5
8,192	+1.8	0.7	0.8	1.2
16,384	+1.9	0.5	0.6	0.8

Figure 9 (All poverty lines): Differences, precision of differences, and the α factor for bootstrapped estimates of poverty rates for groups of households at a point in time, scorecard applied to the validation sample

| | Poverty line | | | | | | |
| | National | | | | USAID | Intl. 2005 PPP | |
	Food	100%	150%	200%	'Extreme'	$1.25/day	$2.50 day
Estimate minus true value (bias)							
Scorecard applied to validation sample	+0.2	+1.9	+0.6	+1.8	−0.1	+1.5	+3.1
Precision of difference							
Scorecard applied to validation sample	0.2	0.5	0.6	0.5	0.4	0.5	0.6
α factor for sample size							
Scorecard applied to validation sample	0.96	0.94	1.12	1.31	0.99	0.90	1.24

Precision is measured as 90-percent confidence intervals in units of +/− percentage points.

Differences and precision estimated from 500 bootstraps of size $n = 16{,}384$.

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

National poverty lines and the USAID "extreme" line are per day per adult equivalent.

International 2005 PPP poverty lines are per day per person.

Figure 10 (All poverty lines): Possible types of outcomes from targeting by poverty score

		Targeting segment	
		Targeted	**Non-targeted**
True poverty status	**Below poverty line**	**Inclusion** Under poverty line Correctly Targeted	**Undercoverage** Under poverty line Mistakenly Non-targeted
	Above poverty line	**Leakage** Above poverty line Mistakenly Targeted	**Exclusion** Above poverty line Correctly Non-targeted

Figure 11 (National line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, scorecard applied to the validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0–4	0.1	21.1	0.1	78.7	78.8	−98.7
5–9	0.9	20.4	0.3	78.5	79.4	−90.6
10–14	2.1	19.1	1.0	77.8	79.9	−75.5
15–19	4.5	16.8	2.7	76.0	80.5	−45.3
20–24	7.6	13.7	5.8	72.9	80.5	−1.3
25–29	11.2	10.0	11.6	67.1	78.3	+45.3
30–34	14.4	6.8	18.7	60.1	74.5	+12.0
35–39	16.9	4.3	28.2	50.5	67.4	−32.9
40–44	19.0	2.3	38.1	40.6	59.6	−79.4
45–49	20.0	1.2	48.7	30.0	50.1	−129.3
50–54	20.8	0.5	57.4	21.4	42.1	−170.2
55–59	21.1	0.1	65.0	13.7	34.8	−206.2
60–64	21.2	0.0	71.0	7.7	28.9	−234.4
65–69	21.2	0.0	74.8	4.0	25.2	−252.0
70–74	21.2	0.0	77.0	1.7	23.0	−262.6
75–79	21.2	0.0	78.2	0.6	21.8	−268.1
80–84	21.2	0.0	78.6	0.2	21.4	−269.8
85–89	21.2	0.0	78.8	0.0	21.2	−270.7
90–94	21.2	0.0	78.8	0.0	21.2	−270.7
95–100	21.2	0.0	78.8	0.0	21.2	−270.7

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

Figure 12 (National line): For a given score cut-off, the percentage of all households who are targeted (that is, have a score equal to or less than the cut-off), the percentage of targeted households who are poor (that is, below the poverty line), the percentage of poor households who are targeted, and the number of poor households who are successfully targeted (coverage) per non-poor household mistakenly targeted (leakage), scorecard applied to the validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0–4	0.2	58.8	0.5	1.4:1
5–9	1.1	77.4	4.1	3.4:1
10–14	3.1	68.2	9.9	2.1:1
15–19	7.2	62.1	21.0	1.6:1
20–24	13.4	56.5	35.6	1.3:1
25–29	22.8	49.1	52.7	1.0:1
30–34	33.1	43.5	67.9	0.8:1
35–39	45.1	37.5	79.6	0.6:1
40–44	57.1	33.2	89.3	0.5:1
45–49	68.8	29.2	94.4	0.4:1
50–54	78.2	26.6	97.8	0.4:1
55–59	86.1	24.5	99.4	0.3:1
60–64	92.2	23.0	99.8	0.3:1
65–69	96.0	22.1	100.0	0.3:1
70–74	98.3	21.6	100.0	0.3:1
75–79	99.4	21.4	100.0	0.3:1
80–84	99.8	21.3	100.0	0.3:1
85–89	100.0	21.2	100.0	0.3:1
90–94	100.0	21.2	100.0	0.3:1
95–100	100.0	21.2	100.0	0.3:1

Tables for the
Food Poverty Line

Figure 4 (Food line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	30.0
5–9	30.0
10–14	25.4
15–19	12.2
20–24	9.1
25–29	6.8
30–34	4.4
35–39	3.2
40–44	1.0
45–49	0.7
50–54	0.2
55–59	0.0
60–64	0.0
65–69	0.0
70–74	0.0
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Figure 7 (Food line): Bootstrapped differences between estimated and true poverty likelihoods for households in a large sample ($n = 16{,}384$) with confidence intervals, scorecard applied to the validation sample

| Score | Diff. | Difference between estimate and true value | | |
| | | Confidence interval ($\pm$percentage points) | | |
		90-percent	95-percent	99-percent
0–4	+18.2	9.6	11.0	14.4
5–9	+0.7	6.6	8.2	11.0
10–14	+5.9	4.4	5.2	6.9
15–19	−3.0	2.9	3.3	4.1
20–24	−0.9	1.8	2.1	2.6
25–29	+2.1	0.9	1.0	1.4
30–34	+0.0	0.9	1.1	1.4
35–39	+1.1	0.5	0.6	0.8
40–44	−0.5	0.5	0.6	0.8
45–49	+0.4	0.1	0.2	0.2
50–54	−0.2	0.2	0.3	0.3
55–59	−0.1	0.1	0.2	0.2
60–64	+0.0	0.0	0.0	0.0
65–69	+0.0	0.0	0.0	0.0
70–74	+0.0	0.0	0.0	0.0
75–79	+0.0	0.0	0.0	0.0
80–84	+0.0	0.0	0.0	0.0
85–89	+0.0	0.0	0.0	0.0
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 8 (Food line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, scorecard applied to the validation sample

Sample Size n	Diff.	Difference between estimate and true value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	+0.8	6.1	48.9	62.8
4	+0.1	15.2	20.1	29.7
8	+0.3	10.1	12.6	18.6
16	+0.3	7.0	8.9	12.9
32	+0.3	4.9	6.1	8.8
64	+0.3	3.4	4.0	5.7
128	+0.3	2.6	3.0	4.1
256	+0.2	1.9	2.2	2.9
512	+0.3	1.3	1.5	2.1
1,024	+0.3	0.9	1.0	1.3
2,048	+0.2	0.6	0.7	0.9
4,096	+0.2	0.4	0.5	0.6
8,192	+0.3	0.3	0.4	0.5
16,384	+0.2	0.2	0.3	0.4

Figure 11 (Food line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, scorecard applied to the validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0–4	0.0	3.5	0.1	96.3	96.3	−94.6
5–9	0.3	3.3	0.8	95.6	95.9	−59.8
10–14	0.6	2.9	2.5	94.0	94.6	+4.4
15–19	1.2	2.4	6.0	90.5	91.7	−67.2
20–24	1.8	1.7	11.6	84.9	86.7	−223.8
25–29	2.4	1.1	20.4	76.0	78.4	−471.4
30–34	2.9	0.6	30.2	66.3	69.2	−745.0
35–39	3.2	0.3	41.9	54.5	57.8	−1,073.5
40–44	3.4	0.1	53.7	42.8	46.2	−1,402.7
45–49	3.5	0.1	65.3	31.2	34.7	−1,727.6
50–54	3.6	0.0	74.6	21.8	25.4	−1,989.9
55–59	3.6	0.0	82.6	13.9	17.4	−2,212.6
60–64	3.6	0.0	88.7	7.8	11.3	−2,383.3
65–69	3.6	0.0	92.4	4.0	7.6	−2,488.8
70–74	3.6	0.0	94.7	1.7	5.3	−2,551.8
75–79	3.6	0.0	95.9	0.6	4.1	−2,584.8
80–84	3.6	0.0	96.2	0.2	3.8	−2,594.8
85–89	3.6	0.0	96.4	0.0	3.6	−2,600.4
90–94	3.6	0.0	96.4	0.0	3.6	−2,600.5
95–100	3.6	0.0	96.4	0.0	3.6	−2,600.5

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

Figure 12 (Food line): For a given score cut-off, the percentage of all households who are targeted (that is, have a score equal to or less than the cut-off), the percentage of targeted households who are poor (that is, below the poverty line), the percentage of poor households who are targeted, and the number of poor households who are successfully targeted (coverage) per non-poor household mistakenly targeted (leakage), scorecard applied to the validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0–4	0.2	14.1	0.7	0.2:1
5–9	1.1	26.9	8.5	0.4:1
10–14	3.1	20.6	17.9	0.3:1
15–19	7.2	16.7	33.6	0.2:1
20–24	13.4	13.7	51.4	0.2:1
25–29	22.8	10.6	67.8	0.1:1
30–34	33.1	8.8	82.0	0.1:1
35–39	45.1	7.2	90.8	0.1:1
40–44	57.1	6.0	96.1	0.1:1
45–49	68.8	5.1	97.9	0.1:1
50–54	78.2	4.5	99.6	0.0:1
55–59	86.1	4.1	100.0	0.0:1
60–64	92.2	3.9	100.0	0.0:1
65–69	96.0	3.7	100.0	0.0:1
70–74	98.3	3.6	100.0	0.0:1
75–79	99.4	3.6	100.0	0.0:1
80–84	99.8	3.6	100.0	0.0:1
85–89	100.0	3.6	100.0	0.0:1
90–94	100.0	3.6	100.0	0.0:1
95–100	100.0	3.6	100.0	0.0:1

Tables for
150% of the National Poverty Line

Figure 4 (150% of the National line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	96.8
15–19	95.7
20–24	93.5
25–29	92.4
30–34	88.4
35–39	84.7
40–44	70.5
45–49	62.9
50–54	55.9
55–59	41.0
60–64	28.8
65–69	22.7
70–74	14.9
75–79	9.3
80–84	4.3
85–89	3.9
90–94	0.0
95–100	0.0

Figure 7 (150% of the National line): Bootstrapped differences between estimated and true poverty likelihoods for households in a large sample ($n = 16{,}384$) with confidence intervals, scorecard applied to the validation sample

Score	Diff.	Difference between estimate and true value		
		Confidence interval ($\pm$percentage points)		
		90-percent	95-percent	99-percent
0–4	+0.0	0.0	0.0	0.0
5–9	+0.0	0.0	0.0	0.0
10–14	−0.2	1.9	2.2	2.9
15–19	+2.1	1.8	2.1	2.9
20–24	−2.4	1.7	1.8	1.9
25–29	+2.7	1.5	1.7	2.3
30–34	+1.7	1.6	2.0	2.6
35–39	+2.9	1.6	1.9	2.6
40–44	−6.0	3.9	4.1	4.3
45–49	−0.0	2.4	2.8	3.7
50–54	+3.2	2.4	2.9	3.9
55–59	−4.7	3.9	4.1	5.0
60–64	+4.1	2.7	3.2	4.3
65–69	+6.6	3.3	4.1	5.3
70–74	+3.7	2.7	3.3	4.3
75–79	−3.4	4.7	5.5	7.5
80–84	+3.5	1.1	1.2	1.6
85–89	+3.9	0.0	0.0	0.0
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 8 (150% of the National line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, scorecard applied to the validation sample

Sample Size		Difference between estimate and true value		
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	−1.3	64.8	79.8	87.1
4	+0.5	36.4	43.2	58.6
8	+0.5	26.5	31.0	41.1
16	+0.8	19.7	23.4	31.5
32	+0.7	14.4	16.9	22.3
64	+0.5	10.3	12.2	17.0
128	+0.6	7.7	9.4	12.2
256	+0.6	5.3	6.2	8.0
512	+0.6	3.7	4.4	5.9
1,024	+0.6	2.7	3.2	4.4
2,048	+0.6	2.0	2.3	3.1
4,096	+0.6	1.4	1.7	2.1
8,192	+0.6	0.9	1.2	1.5
16,384	+0.6	0.6	0.8	1.1

Figure 11 (150% of the National line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, scorecard applied to the validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0–4	0.2	67.8	0.0	32.1	32.2	−99.5
5–9	1.1	66.8	0.0	32.1	33.2	−96.7
10–14	3.0	64.9	0.0	32.0	35.1	−91.0
15–19	6.9	61.0	0.3	31.8	38.7	−79.3
20–24	12.8	55.1	0.6	31.5	44.4	−61.4
25–29	21.4	46.6	1.5	30.6	52.0	−35.0
30–34	30.4	37.5	2.7	29.4	59.7	−6.5
35–39	40.2	27.7	4.9	27.2	67.4	+25.7
40–44	49.3	18.7	7.8	24.3	73.5	+56.6
45–49	56.3	11.6	12.5	19.6	75.9	+81.7
50–54	61.3	6.7	16.9	15.2	76.4	+75.1
55–59	64.8	3.1	21.3	10.7	75.5	+68.6
60–64	66.7	1.3	25.6	6.5	73.2	+62.4
65–69	67.5	0.5	28.5	3.5	71.0	+58.0
70–74	67.8	0.1	30.5	1.6	69.4	+55.2
75–79	67.9	0.0	31.5	0.6	68.5	+53.6
80–84	67.9	0.0	31.9	0.2	68.1	+53.1
85–89	67.9	0.0	32.1	0.0	67.9	+52.8
90–94	67.9	0.0	32.1	0.0	67.9	+52.8
95–100	67.9	0.0	32.1	0.0	67.9	+52.8

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

Figure 12 (150% of the National line): For a given score cut-off, the percentage of all households who are targeted (that is, have a score equal to or less than the cut-off), the percentage of targeted households who are poor (that is, below the poverty line), the percentage of poor households who are targeted, and the number of poor households who are successfully targeted (coverage) per non-poor household mistakenly targeted (leakage), scorecard applied to the validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0–4	0.2	100.0	0.3	Only poor targeted
5–9	1.1	100.0	1.7	Only poor targeted
10–14	3.1	98.6	4.5	70.5:1
15–19	7.2	96.4	10.2	26.9:1
20–24	13.4	95.9	18.9	23.4:1
25–29	22.8	93.6	31.4	14.6:1
30–34	33.1	91.8	44.7	11.2:1
35–39	45.1	89.1	59.2	8.2:1
40–44	57.1	86.3	72.5	6.3:1
45–49	68.8	81.9	82.9	4.5:1
50–54	78.2	78.4	90.2	3.6:1
55–59	86.1	75.2	95.4	3.0:1
60–64	92.2	72.3	98.1	2.6:1
65–69	96.0	70.3	99.3	2.4:1
70–74	98.3	69.0	99.8	2.2:1
75–79	99.4	68.3	100.0	2.2:1
80–84	99.8	68.1	100.0	2.1:1
85–89	100.0	67.9	100.0	2.1:1
90–94	100.0	67.9	100.0	2.1:1
95–100	100.0	67.9	100.0	2.1:1

Tables for
200% of the National Poverty Line

Figure 4 (200% of the National line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	99.6
15–19	99.4
20–24	99.4
25–29	99.3
30–34	99.2
35–39	98.2
40–44	95.4
45–49	92.4
50–54	88.4
55–59	80.4
60–64	69.5
65–69	57.6
70–74	49.1
75–79	47.8
80–84	44.6
85–89	31.9
90–94	31.9
95–100	0.0

Figure 7 (200% of the National line): Bootstrapped differences between estimated and true poverty likelihoods for households in a large sample ($n = 16{,}384$) with confidence intervals, scorecard applied to the validation sample

| Score | Diff. | Difference between estimate and true value | | |
| | | Confidence interval ($\pm$percentage points) | | |
		90-percent	95-percent	99-percent
0–4	+0.0	0.0	0.0	0.0
5–9	+0.0	0.0	0.0	0.0
10–14	+1.8	1.8	2.1	2.8
15–19	−0.6	0.3	0.3	0.3
20–24	−0.6	0.3	0.3	0.3
25–29	−0.3	0.3	0.3	0.4
30–34	+0.3	0.4	0.5	0.6
35–39	+0.9	0.7	0.8	1.0
40–44	−0.5	0.8	0.9	1.2
45–49	−0.1	1.1	1.3	1.7
50–54	+3.4	1.9	2.3	3.3
55–59	+4.2	2.4	2.8	3.9
60–64	+4.9	3.2	3.8	4.9
65–69	+2.6	5.2	6.2	8.3
70–74	+10.8	4.7	5.7	7.2
75–79	+23.5	5.5	6.7	8.3
80–84	+18.1	11.1	13.6	17.1
85–89	+27.6	4.6	5.3	7.2
90–94	+31.9	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 8 (200% of the National line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, scorecard applied to the validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.0	52.7	65.4	75.2
4	+2.3	28.1	34.1	43.5
8	+2.4	21.3	26.7	33.2
16	+2.0	16.4	19.3	24.4
32	+2.0	11.4	13.8	18.4
64	+2.0	8.1	9.9	13.0
128	+1.9	5.9	7.1	9.3
256	+1.8	4.2	5.0	6.2
512	+1.8	3.0	3.5	4.4
1,024	+1.8	2.1	2.4	3.4
2,048	+1.8	1.5	1.7	2.3
4,096	+1.8	1.0	1.2	1.6
8,192	+1.8	0.7	0.8	1.1
16,384	+1.8	0.5	0.6	0.9

Figure 11 (200% of the National line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, scorecard applied to the validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0–4	0.2	88.9	0.0	10.9	11.1	−99.6
5–9	1.1	88.0	0.0	10.9	12.0	−97.5
10–14	3.1	86.0	0.0	10.9	13.9	−93.1
15–19	7.1	82.0	0.0	10.9	18.0	−83.9
20–24	13.3	75.7	0.0	10.9	24.2	−70.0
25–29	22.7	66.4	0.1	10.8	33.6	−48.9
30–34	32.9	56.2	0.2	10.7	43.6	−25.9
35–39	44.6	44.5	0.5	10.4	55.0	+0.8
40–44	56.0	33.0	1.0	9.9	65.9	+27.0
45–49	66.7	22.4	2.1	8.8	75.5	+52.0
50–54	74.8	14.3	3.4	7.6	82.4	+71.7
55–59	81.1	8.0	5.0	5.9	87.0	+87.8
60–64	85.3	3.8	7.0	3.9	89.2	+92.2
65–69	87.5	1.6	8.5	2.4	89.9	+90.4
70–74	88.6	0.5	9.7	1.2	89.8	+89.2
75–79	89.0	0.1	10.5	0.5	89.4	+88.3
80–84	89.1	0.0	10.7	0.2	89.3	+88.0
85–89	89.1	0.0	10.9	0.0	89.1	+87.8
90–94	89.1	0.0	10.9	0.0	89.1	+87.8
95–100	89.1	0.0	10.9	0.0	89.1	+87.8

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

Figure 12 (200% of the National line): For a given score cut-off, the percentage of all households who are targeted (that is, have a score equal to or less than the cut-off), the percentage of targeted households who are poor (that is, below the poverty line), the percentage of poor households who are targeted, and the number of poor households who are successfully targeted (coverage) per non-poor household mistakenly targeted (leakage), scorecard applied to the validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0–4	0.2	100.0	0.2	Only poor targeted
5–9	1.1	100.0	1.3	Only poor targeted
10–14	3.1	99.2	3.4	117.2:1
15–19	7.2	99.5	8.0	215.9:1
20–24	13.4	99.6	15.0	278.8:1
25–29	22.8	99.6	25.5	250.9:1
30–34	33.1	99.4	36.9	167.1:1
35–39	45.1	98.9	50.1	87.5:1
40–44	57.1	98.2	62.9	53.6:1
45–49	68.8	97.0	74.8	31.8:1
50–54	78.2	95.7	84.0	22.3:1
55–59	86.1	94.2	91.1	16.1:1
60–64	92.2	92.4	95.7	12.2:1
65–69	96.0	91.1	98.2	10.3:1
70–74	98.3	90.2	99.4	9.2:1
75–79	99.4	89.5	99.9	8.5:1
80–84	99.8	89.3	100.0	8.3:1
85–89	100.0	89.1	100.0	8.2:1
90–94	100.0	89.1	100.0	8.2:1
95–100	100.0	89.1	100.0	8.2:1

Tables for the
USAID "Extreme" Poverty Line

Figure 4 (USAID "Extreme" line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	71.1
5–9	51.7
10–14	44.1
15–19	33.4
20–24	24.5
25–29	18.2
30–34	13.0
35–39	10.7
40–44	5.5
45–49	3.6
50–54	2.0
55–59	1.2
60–64	0.4
65–69	0.0
70–74	0.0
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Figure 7 (USAID "Extreme" line): Bootstrapped differences between estimated and true poverty likelihoods for households in a large sample ($n = 16{,}384$) with confidence intervals, scorecard applied to the validation sample

| Score | Diff. | Difference between estimate and true value | | |
| | | Confidence interval (±percentage points) | | |
		90-percent	95-percent	99-percent
0–4	+35.0	15.4	17.9	23.0
5–9	+3.7	7.5	9.0	12.0
10–14	+4.8	5.5	6.6	8.7
15–19	−2.0	3.6	4.2	5.6
20–24	−2.6	2.7	3.2	4.1
25–29	+2.1	1.6	1.9	2.5
30–34	−6.5	4.3	4.5	4.8
35–39	+1.8	1.2	1.4	1.9
40–44	+0.8	0.8	1.0	1.2
45–49	+0.2	0.9	1.1	1.5
50–54	+1.1	0.3	0.4	0.5
55–59	+0.0	0.5	0.6	0.7
60–64	+0.0	0.3	0.3	0.5
65–69	+0.0	0.0	0.0	0.0
70–74	+0.0	0.0	0.0	0.0
75–79	+0.0	0.0	0.0	0.0
80–84	+0.0	0.0	0.0	0.0
85–89	+0.0	0.0	0.0	0.0
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 8 (USAID "Extreme" line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, scorecard applied to the validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	−0.6	54.4	61.3	74.0
4	−0.2	25.9	32.1	41.0
8	−0.2	17.0	21.2	29.7
16	−0.6	12.5	15.4	19.2
32	−0.3	8.8	10.8	13.6
64	−0.1	6.0	7.0	9.5
128	−0.0	4.4	5.4	7.1
256	−0.1	3.3	3.8	4.9
512	−0.1	2.2	2.7	3.5
1,024	−0.1	1.6	1.9	2.4
2,048	−0.1	1.1	1.3	1.8
4,096	−0.1	0.8	0.9	1.2
8,192	−0.1	0.6	0.7	0.9
16,384	−0.1	0.4	0.5	0.7

Figure 11 (USAID "Extreme" line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, scorecard applied to the validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0–4	0.1	10.6	0.1	89.3	89.3	−97.7
5–9	0.6	10.1	0.6	88.8	89.3	−84.1
10–14	1.3	9.3	1.7	87.6	88.9	−58.4
15–19	2.8	7.9	4.4	85.0	87.7	−6.6
20–24	4.5	6.2	8.9	80.4	84.9	+16.5
25–29	6.3	4.3	16.5	72.8	79.2	−54.9
30–34	8.1	2.5	25.0	64.4	72.5	−134.5
35–39	9.2	1.4	35.9	53.4	62.7	−237.0
40–44	9.9	0.7	47.2	42.2	52.1	−342.8
45–49	10.4	0.3	58.4	31.0	41.3	−448.2
50–54	10.5	0.2	67.7	21.7	32.2	−535.3
55–59	10.6	0.0	75.5	13.8	24.4	−609.0
60–64	10.7	0.0	81.6	7.8	18.4	−665.9
65–69	10.7	0.0	85.4	4.0	14.6	−701.3
70–74	10.7	0.0	87.6	1.7	12.4	−722.4
75–79	10.7	0.0	88.8	0.6	11.2	−733.5
80–84	10.7	0.0	89.1	0.2	10.9	−736.8
85–89	10.7	0.0	89.3	0.0	10.7	−738.7
90–94	10.7	0.0	89.3	0.0	10.7	−738.7
95–100	10.7	0.0	89.3	0.0	10.7	−738.7

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

Figure 12 (USAID "Extreme" line): For a given score cut-off, the percentage of all households who are targeted (that is, have a score equal to or less than the cut-off), the percentage of targeted households who are poor (that is, below the poverty line), the percentage of poor households who are targeted, and the number of poor households who are successfully targeted (coverage) per non-poor household mistakenly targeted (leakage), scorecard applied to the validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0–4	0.2	44.7	0.7	0.8:1
5–9	1.1	50.1	5.3	1.0:1
10–14	3.1	43.5	12.6	0.8:1
15–19	7.2	38.8	26.1	0.6:1
20–24	13.4	33.6	42.2	0.5:1
25–29	22.8	27.7	59.3	0.4:1
30–34	33.1	24.5	76.2	0.3:1
35–39	45.1	20.5	86.7	0.3:1
40–44	57.1	17.4	93.1	0.2:1
45–49	68.8	15.1	97.2	0.2:1
50–54	78.2	13.4	98.6	0.2:1
55–59	86.1	12.3	99.7	0.1:1
60–64	92.2	11.5	100.0	0.1:1
65–69	96.0	11.1	100.0	0.1:1
70–74	98.3	10.8	100.0	0.1:1
75–79	99.4	10.7	100.0	0.1:1
80–84	99.8	10.7	100.0	0.1:1
85–89	100.0	10.7	100.0	0.1:1
90–94	100.0	10.7	100.0	0.1:1
95–100	100.0	10.7	100.0	0.1:1

Tables for the
$1.25/day 2005 PPP Poverty Line

Figure 4 ($1.25/day 2005 PPP line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	95.2
5–9	87.9
10–14	84.1
15–19	74.6
20–24	61.1
25–29	49.7
30–34	35.1
35–39	27.2
40–44	16.3
45–49	9.7
50–54	5.2
55–59	4.0
60–64	0.8
65–69	0.6
70–74	0.2
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Figure 7 ($1.25/day 2005 PPP line): Bootstrapped differences between estimated and true poverty likelihoods for households in a large sample ($n = 16,384$) with confidence intervals, scorecard applied to the validation sample

| Score | Diff. | Difference between estimate and true value | | |
| | | Confidence interval (±percentage points) | | |
		90-percent	95-percent	99-percent
0–4	+17.9	13.7	15.6	20.5
5–9	−8.8	5.3	5.5	5.8
10–14	+0.3	3.9	4.5	6.4
15–19	−1.3	2.9	3.6	4.7
20–24	+0.5	3.0	3.5	4.6
25–29	+10.3	2.3	2.8	3.6
30–34	−2.2	2.2	2.7	3.7
35–39	+6.0	1.7	1.9	2.6
40–44	+0.9	1.5	1.8	2.4
45–49	+2.3	1.1	1.3	1.7
50–54	−4.1	2.9	3.1	3.4
55–59	+2.4	0.5	0.6	0.8
60–64	−0.6	0.7	0.8	1.1
65–69	+0.4	0.2	0.2	0.3
70–74	+0.2	0.0	0.0	0.0
75–79	+0.0	0.0	0.0	0.0
80–84	+0.0	0.0	0.0	0.0
85–89	+0.0	0.0	0.0	0.0
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 8 ($1.25/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, scorecard applied to the validation sample

Sample Size n	Diff.	Difference between estimate and true value		
		Confidence interval (±percentage points)		
		90-percent	95-percent	99-percent
1	−1.4	61.3	72.4	84.7
4	+1.5	30.3	37.9	49.6
8	+1.3	22.6	27.3	38.0
16	+1.5	16.2	18.7	25.8
32	+1.6	11.2	13.2	17.6
64	+1.7	7.9	9.2	11.9
128	+1.6	5.8	6.7	8.7
256	+1.5	4.0	4.7	5.9
512	+1.5	2.8	3.3	4.4
1,024	+1.4	2.1	2.5	3.1
2,048	+1.4	1.5	1.7	2.2
4,096	+1.4	1.0	1.1	1.6
8,192	+1.5	0.7	0.8	1.1
16,384	+1.5	0.5	0.6	0.8

Figure 11 ($1.25/day 2005 PPP line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, scorecard applied to the validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0–4	0.1	24.8	0.0	75.0	75.2	−98.8
5–9	1.1	23.9	0.1	75.0	76.0	−91.3
10–14	2.7	22.2	0.4	74.7	77.4	−76.7
15–19	5.8	19.1	1.4	73.7	79.5	−48.0
20–24	9.7	15.3	3.7	71.3	81.0	−7.6
25–29	13.9	11.1	9.0	66.1	80.0	+47.1
30–34	17.7	7.2	15.4	59.7	77.4	+38.4
35–39	20.7	4.3	24.5	50.6	71.2	+1.8
40–44	22.8	2.2	34.3	40.7	63.5	−37.7
45–49	23.9	1.0	44.8	30.2	54.1	−79.8
50–54	24.6	0.3	53.5	21.5	46.1	−114.7
55–59	24.8	0.1	61.3	13.7	38.6	−145.9
60–64	24.9	0.0	67.3	7.7	32.7	−169.9
65–69	24.9	0.0	71.1	4.0	28.9	−184.9
70–74	24.9	0.0	73.3	1.7	26.7	−193.9
75–79	24.9	0.0	74.5	0.6	25.5	−198.7
80–84	24.9	0.0	74.9	0.2	25.1	−200.1
85–89	24.9	0.0	75.1	0.0	24.9	−200.9
90–94	24.9	0.0	75.1	0.0	24.9	−200.9
95–100	24.9	0.0	75.1	0.0	24.9	−200.9

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

Figure 12 ($1.25/day 2005 PPP line): For a given score cut-off, the percentage of all households who are targeted (that is, have a score equal to or less than the cut-off), the percentage of targeted households who are poor (that is, below the poverty line), the percentage of poor households who are targeted, and the number of poor households who are successfully targeted (coverage) per non-poor household mistakenly targeted (leakage), scorecard applied to the validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0–4	0.2	80.5	0.5	4.1:1
5–9	1.1	92.9	4.2	13.0:1
10–14	3.1	87.8	10.9	7.2:1
15–19	7.2	80.9	23.3	4.2:1
20–24	13.4	72.1	38.7	2.6:1
25–29	22.8	60.8	55.6	1.5:1
30–34	33.1	53.6	71.1	1.2:1
35–39	45.1	45.8	82.8	0.8:1
40–44	57.1	39.9	91.2	0.7:1
45–49	68.8	34.8	95.9	0.5:1
50–54	78.2	31.5	98.8	0.5:1
55–59	86.1	28.8	99.5	0.4:1
60–64	92.2	27.0	99.9	0.4:1
65–69	96.0	26.0	100.0	0.4:1
70–74	98.3	25.4	100.0	0.3:1
75–79	99.4	25.1	100.0	0.3:1
80–84	99.8	25.0	100.0	0.3:1
85–89	100.0	24.9	100.0	0.3:1
90–94	100.0	24.9	100.0	0.3:1
95–100	100.0	24.9	100.0	0.3:1

Tables for
the $2.50/day 2005 PPP Poverty Line

Figure 4 ($2.50/day 2005 PPP line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	99.8
15–19	99.8
20–24	99.8
25–29	99.7
30–34	99.1
35–39	97.5
40–44	93.8
45–49	89.2
50–54	85.6
55–59	73.3
60–64	61.4
65–69	49.5
70–74	37.5
75–79	27.3
80–84	18.6
85–89	12.1
90–94	0.0
95–100	0.0

Figure 7 ($2.50/day 2005 PPP line): Bootstrapped differences between estimated and true poverty likelihoods for households in a large sample ($n = 16,384$) with confidence intervals, scorecard applied to the validation sample

		Difference between estimate and true value		
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	+0.0	0.0	0.0	0.0
5–9	+0.0	0.0	0.0	0.0
10–14	−0.2	0.1	0.1	0.1
15–19	−0.2	0.1	0.1	0.2
20–24	−0.3	0.1	0.1	0.1
25–29	+0.0	0.2	0.3	0.3
30–34	+0.3	0.5	0.6	0.8
35–39	−0.4	0.5	0.6	0.8
40–44	−2.3	1.5	1.5	1.6
45–49	−1.7	1.4	1.5	1.8
50–54	+5.2	2.1	2.5	3.2
55–59	+2.8	2.7	3.2	4.4
60–64	+16.0	3.4	4.1	5.4
65–69	+22.4	3.7	4.7	5.7
70–74	+10.3	4.5	5.1	6.6
75–79	+9.9	4.9	6.1	8.1
80–84	+17.4	1.3	1.4	2.1
85–89	+9.1	3.8	4.3	6.2
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 8 ($2.50/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, scorecard applied to the validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.0	56.0	62.1	80.0
4	+2.6	27.7	33.0	43.7
8	+3.2	21.8	25.2	33.0
16	+3.2	15.6	18.3	24.8
32	+3.6	11.5	13.5	17.9
64	+3.3	8.2	9.9	12.8
128	+3.1	6.0	7.3	9.4
256	+3.1	4.3	5.2	6.8
512	+3.1	3.0	3.7	4.8
1,024	+3.1	2.1	2.6	3.2
2,048	+3.1	1.6	1.9	2.4
4,096	+3.1	1.1	1.3	1.7
8,192	+3.1	0.8	0.9	1.1
16,384	+3.1	0.6	0.6	0.8

Figure 11 ($2.50/day 2005 PPP line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, scorecard applied to the validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0–4	0.2	86.2	0.0	13.6	13.8	−99.6
5–9	1.1	85.2	0.0	13.6	14.8	−97.4
10–14	3.1	83.3	0.0	13.6	16.7	−92.8
15–19	7.2	79.2	0.0	13.6	20.8	−83.4
20–24	13.4	73.0	0.0	13.6	27.0	−69.0
25–29	22.8	63.6	0.0	13.6	36.4	−47.2
30–34	33.0	53.4	0.1	13.5	46.4	−23.5
35–39	44.7	41.7	0.5	13.2	57.8	+4.0
40–44	56.0	30.3	1.1	12.6	68.6	+31.0
45–49	66.4	20.0	2.4	11.2	77.6	+56.5
50–54	74.1	12.2	4.0	9.6	83.7	+76.4
55–59	80.0	6.4	6.1	7.5	87.5	+92.4
60–64	83.5	2.8	8.7	4.9	88.4	+89.9
65–69	85.3	1.1	10.7	2.9	88.2	+87.6
70–74	86.1	0.3	12.2	1.5	87.6	+85.9
75–79	86.3	0.0	13.1	0.5	86.9	+84.8
80–84	86.4	0.0	13.4	0.2	86.6	+84.4
85–89	86.4	0.0	13.6	0.0	86.4	+84.2
90–94	86.4	0.0	13.6	0.0	86.4	+84.2
95–100	86.4	0.0	13.6	0.0	86.4	+84.2

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

Figure 12 ($2.50/day 2005 PPP line): For a given score cut-off, the percentage of all households who are targeted (that is, have a score equal to or less than the cut-off), the percentage of targeted households who are poor (that is, below the poverty line), the percentage of poor households who are targeted, and the number of poor households who are successfully targeted (coverage) per non-poor household mistakenly targeted (leakage), scorecard applied to the validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0–4	0.2	100.0	0.2	Only poor targeted
5–9	1.1	100.0	1.3	Only poor targeted
10–14	3.1	100.0	3.6	Only poor targeted
15–19	7.2	99.9	8.3	1,034.9:1
20–24	13.4	99.9	15.5	1,934.4:1
25–29	22.8	99.8	26.4	481.2:1
30–34	33.1	99.6	38.2	228.6:1
35–39	45.1	99.0	51.7	94.9:1
40–44	57.1	98.1	64.9	52.7:1
45–49	68.8	96.5	76.8	27.8:1
50–54	78.2	94.8	85.8	18.3:1
55–59	86.1	92.9	92.6	13.0:1
60–64	92.2	90.5	96.7	9.6:1
65–69	96.0	88.9	98.8	8.0:1
70–74	98.3	87.6	99.7	7.1:1
75–79	99.4	86.8	100.0	6.6:1
80–84	99.8	86.5	100.0	6.4:1
85–89	100.0	86.4	100.0	6.3:1
90–94	100.0	86.4	100.0	6.3:1
95–100	100.0	86.4	100.0	6.3:1