Simple Poverty Scorecard® Poverty-Assessment Tool El Salvador

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Un índice más actualizado que éste en Castellano está en `SimplePovertyScorecard.com`.
A more-current scorecard than this one is in English at `SimplePovertyScorecard.com`.

Abstract

Based on data from El Salvador's 2008 Multi-Purpose Household Survey, the Simple Poverty Scorecard-brand poverty-assessment tool estimates the likelihood that a household has income below a given poverty line. The scorecard uses ten simple indicators that field workers can quickly collect and verify. Scores can be computed on paper in the field in five to ten minutes. Accuracy and precision are reported for a range of poverty lines. The scorecard is a practical way for pro-poor programs in El Salvador to measure poverty rates, to track changes in poverty rates over time, and to target services.

Simple Poverty Scorecard® Poverty-Assessment Tool

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

Indicator	Value	Points	Score
1. How many household members are 17-years-old or younger?	A. Four or more	0	
	B. Three	5	
	C. Two	10	
	D. One	19	
	E. None	27	
2. Not counting bathrooms, kitchen, hallways, or garage, how many rooms does the household have for its own use?	A. One	0	
	B. Two	3	
	C. Three	4	
	D. Four	12	
	E. Five or more	15	
3. How many household members are salaried employees (be they temporary or permanent)?	A. None	0	
	B. One	7	
	C. Two or more	18	
4. Last week, did the female head/spouse do any work (not counting household chores)?	A. No	0	
	B. Yes	8	
	C. There is no female head/spouse	10	
5. What is the main fuel used for cooking?	A. Firewood, charcoal, kerosene, or other	0	
	B. Propane, electricity, or does not cook	7	
6. Does the household have a refrigerator?	A. No	0	
	B. Yes	4	
7. Does the household have a blender?	A. No	0	
	B. Yes	3	
8. Does the household have a television and/or a VCR or DVD?	A. None	0	
	B. Only a television, or only a VCR or DVD	1	
	C. Both a television and a VCR or DVD	6	
9. Does the household have a radio and/or a stereo system?	A. None	0	
	B. Only a radio, or only a stereo system	1	
	C. Both a radio and a stereo system	4	
10. Does the household have a fan?	A. No	0	
	B. Yes	6	

SimplePovertyScorecard.com   **Score:**

Simple Poverty Scorecard® Poverty-Assessment Tool El Salvador

1. Introduction

Pro-poor programs in El Salvador can use the Simple Poverty Scorecard poverty-assessment tool to estimate the likelihood that a household has income below a given poverty line, to estimate a population's poverty rate at a point in time, to track changes in a population's poverty rate over time, and to segment participants for differentiated treatment.

The direct approach to poverty measurement via surveys is difficult and costly. For example, El Salvador's 2008 Multi-Purpose Household Survey (EHPM, *Encuesta de Hogares de Propósitos Múltiples*) runs more than 20 pages, with an income module with dozens of questions.

In contrast, the indirect approach via the scorecard is simple, quick, and inexpensive. It uses ten verifiable indicators (such as "What is the main fuel used for cooking?" or "Does the household have a blender?") to get a score that is highly correlated with poverty status as measured by income from the lengthy survey.

The scorecard differs from "proxy means tests" (Coady, Grosh, and Hoddinott, 2002) 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 local organizations are typically subjective and relative (such as participatory

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wealth ranking) or blunt (such as rules based on land-ownership or housing quality).

These approaches may be costly, their results are not comparable across organizations

nor countries, and their accuracy and precision are unknown.

The scorecard can serve several purposes. For example, a local pro-poor

organization can use the scorecard to measure the share of its participants with income

below a poverty line such as the Millennium Development Goals' $1.25/day at 2005

purchase-power parity (PPP). Or USAID microenterprise partners could use the

scorecard to report how many of its participants are among the poorest half of people

below the national poverty line. An organization could also use the scorecard to

measure movement across a poverty line over time (for example, Daley-Harris, 2009).

For all scorecard is an income-based, objective tool with known accuracy. While income

surveys are costly even for governments, many local pro-poor organizations can

implement an inexpensive poverty-asssessment tool.

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, 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 by local pro-poor organizations. This is not because these tools do not work,

but because they are presented (when they are presented at all) as tables of regression

coefficients incomprehensible to non-specialists (with indicator names such as

"`LGHHSZ_2`", negative points, and points with many decimal places). Thanks to the predictive-modeling phenomenon known as the "flat maximum", simple scorecards are often about as accurate as complex ones.

The technical approach here is also innovative in how it associates scores with poverty likelihoods, in the extent of its accuracy tests, and in how it derives formulas for standard errors. Although the accuracy tests are simple and standard 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 2008 EHPM conducted by El Salvador's *Dirección General de Estadística y Censos* (DIGESTYC). 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

All points in the scorecard are zeroes or positive 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 five to ten minutes.

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

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

Third, the scorecard can estimate changes in the poverty rate for a given group of households (or for two independent representative samples from 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 services to poorer households. To help managers select an appropriate targeting cut-off, this paper reports several measures of targeting accuracy for a range of possible cut-offs.

This paper presents a single scorecard whose indicators and points are derived from household income data and El Salvador's national poverty line. Scores from this scorecard are calibrated to poverty likelihoods for eight poverty lines.

The scorecard is constructed and calibrated using a sub-sample of the data from the 2008 EHPM. Its accuracy is then validated on a different sub-sample from the 2008 EHPM. While all three scoring estimators are unbiased when applied to the population from which they are derived (that is, they match the true value on average in repeated samples from the same population from which the scorecard is built), they are—like all predictive models—biased to some extent when applied to a different population.[1]

Thus, while the indirect scoring approach is less costly than the direct survey approach, it is also biased in practice. (The direct survey approach is unbiased by definition.) There is bias because scoring must assume that the future relationships

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[1] Important examples of "different populations" are nationally representative samples at another point in time or non-representative sub-groups (Tarozzi and Deaton, 2007).

between indicators and poverty will be the same as in the data used to build the scorecard. It must also assume that these relationships will be the same in all sub-groups as in the population as a whole.[2] Of course, these assumptions—ubiquitous and inevitable in predictive modeling—hold only partly.

When applied to the 2008 validation sample for El Salvador with the national poverty line and $n = 16{,}384$, the difference between scorecard estimates of groups' poverty rates and the true rates at a point in time is $+1.2$ percentage points. Across all eight lines, the average absolute difference is 1.4 percentage points, and the maximum absolute difference is 3.3 percentage points. Because the 2008 validation sample is representative of the same population as the data that is used to construct the scorecard and because all the data come from the same time frame, the scorecard estimators are unbiased and these observed differences are due to sampling variation; the average difference would be zero if the 2008 EHPM were to be repeatedly redrawn and divided into sub-samples before repeating the entire scorecard-building and accuracy-testing process.

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

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[2] Bias may also result from changes over time in the quality of data collection, from changes in the real value of poverty lines, from imperfect adjustment of poverty lines to account for differences in cost-of-living across time or geographic regions, or from sampling variation across surveys.

Section 2 below documents data, poverty rates, and poverty lines for El Salvador. Sections 3 and 4 describe scorecard construction and offer practical guidelines for use. 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, and Section 8 covers targeting. The final section is a summary.

2. Data and poverty lines

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

2.1 Data

The scorecard is based on data from 16,674 households in El Salvador's 2008 EHPM. This is the most recent national income survey available. Households are randomly divided into three sub-samples (Figure 2):

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

2.2 Poverty rates and poverty lines

2.2.1 Rates

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

Beyond this general definition, there two special cases, *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 have greater weight.

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-capita income above a poverty line (it is "non-poor") and that the second household has per-capita income 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 for the group 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 for the group of $2 \div (1 + 2) = 67$ percent.

Whether the household-level rate or the person-level rate is the most 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 their 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 want to report household-level poverty rates.

The scorecard here is constructed using El Salvador's 2008 EHPM 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 the most relevant for most pro-poor organizations.

Person-level poverty rates can be estimated 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.

2.2.2 Poverty lines

Based on El Salvador's 2008 EHPM, Figure 3 reports poverty rates and poverty lines for urban and rural areas in each department and for the country as a whole, at both the household-level and the person-level.

El Salvador's food poverty line (*línea de pobreza extrema*) is defined as the cost ($1.47 per person per day in urban areas, $0.96 in rural areas)[3] of a food basket that provides 2,200 Calories and 46 grams of protein (Florés, 2007). The basket was established in 1983 by El Salvador's *Secretaría Ejecutiva de la Comisión Nacional de Alimentación y Nutrición*, and the 2008 food line is derived as its average cost based on data in the 2008 EHPM. Because this line is not adjusted for the inflation of about 4.3 percent that took place during the twelve months that the EHPM was in the field (January to December, 2008), poverty is overestimated for households surveyed early in 2008 and underestimated for households surveyed later in 2008.[4] The all-El Salvador

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[3] El Salvador has been fully dollarized since 2004.
[4] World Bank (2005) discusses additional weaknesses with El Salvador's official lines.

poverty rate for the food line (Figure 3) is 12.4 percent for households and 15.4 percent for people. These are weighted averages of the urban and rural household-level rates (10.0 and 17.5 percent) and the urban and rural person-level rates (12.1 and 21.4 percent).

The national poverty line (here sometimes called "100% of the national line", corresponding to El Salvador's *línea de pobreza relativa*) is defined as the food line plus the cost of the non-food goods and services observed to be purchased by households whose diets are close to the nutritional norm. More than a decade ago, this ratio was found to be about 2:1, and the national line has been twice the food line ever since. The all-El Salvador poverty rate for the national line (Figure 3) is 39.9 percent for households (35.7 urban and 49.0 rural) and 46.4 percent for people (41.5 urban and 55.4 rural).

Because local pro-poor organizations in El Salvador may want to use different or various poverty lines, this paper calibrates scores from its single scorecard to poverty likelihoods for eight lines:

- National
- Food
- 150% of national
- 200% of national
- USAID "extreme"
- $1.25/day 2005 PPP
- $2.50/day 2005 PPP
- $3.75/day 2005 PPP

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

The USAID "extreme" line is defined as the median income of people (not households) below the national line (U.S. Congress, 2002). It is calculated separately for urban ($1.95, Figure 3) and rural ($1.13).

The process of deriving $1.25/day 2005 PPP poverty lines for urban and rural areas is as follows. First, use the national poverty lines for 2005 ($35.10 per person per month urban, and $22.50 rural, see p. 312 of DIGESTYC, 2008) and 2008 ($44.80 urban, and $29.10 rural) to get region-specific "poverty price indices" for 2008 (with a 2005 base of 100.0) of 44.80 ÷ 35.10 = 127.6353 and 29.10 ÷ 22.50 = 129.3333.

Second, combine these regional "poverty price indices" with the urban and rural population shares of 62.7 and 37.3 percent to produce a single all-El Salvador "poverty price index" for 2008 (still with a 2005 base of 100.0) of (127.6353 x 0.627) + (129.3333 x 0.373) = 128.2687.

Third, plug the 2005 PPP exchange rate for "individual consumption expenditure by households" (World Bank, 2008, $1.81837 per $1.00[5]) into the formula in Sillers (2006) to find the average $1.25/day 2005 PPP line for El Salvador as a whole in January through December 2008:

$$\left(2005 \text{ PPP exchange rate}\right) \cdot \text{USD1.25} \cdot \frac{\text{CPI}_{\text{Ave. 2008}}}{\text{CPI}_{\text{Ave. 2005}}} =$$

$$\left(\frac{\text{USD1.81837}}{\text{USD1.00}}\right) \cdot \text{USD1.25} \cdot \frac{128.2687}{100.0} = \text{USD2.9155 2005 PPP.}$$

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[5] World Bank (2008) gives a 2005 PPP factor of 4.812 *colones* (El Salvador's former currency) per dollar, as well as a market exchange rate of 8.75 *colones* per dollar. This implies that one dollar in El Salvador in 2005 has the same purchasing power as 8.75 ÷ 4.812 = 1.81837 dollars in the United States of America in 2005.

Fourth, adjust the all-El Salvador $1.25/day 2005 PPP line for regional price

differences using:

- L, the 2008 all-El Salvador 2005 PPP poverty line of $2.9155
- π_i, the 2008 national poverty line for region i ($44.80 for urban, $29.10 rural)
- w_i, the person-level population weight for region i (0.627 for urban, 0.373 for rural)
- N, number of regions (2)

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

$$L_i = \frac{L \cdot \pi_i}{\sum_{i=1}^{N} \pi_i \cdot w_i}.$$

The denominator is (0.627 x 44.8) + (0.373 x 29.1) = 38.9439. The urban

$1.25/day 2005 PPP line is then (2.9155 x 44.8) ÷ 38.9439 = $3.35, and the rural line is

(2.9155 x 29.1) ÷ 38.9439 = $2.18. Due to rounding, these differ from Figure 3 by two or

three cents.

The $2.50/day line and the $3.75/day line are multiples of the $1.25/day line.

At first glance, it may seem odd that the all-El Salvador $1.25/day 2005 PPP

line is not $1.25 but rather $2.91. The poverty line and its definition mean that in 2008,

$1.25 in El Salvador can buy the same as $2.91 in the United States of America.

3. Scorecard construction

For the El Salvador scorecard, about 90 potential indicators are initially

prepared in the areas of:

- Family composition (such as household size)
- Education (such as school attendance of children)
- Employment (such as number of household members who are salaried employees)
- Housing (such as the number of rooms)
- Ownership of durable goods (such as refrigerators or fans)

Figure 4 lists all the candidate indicators, ranked by the entropy-based

"uncertainty coefficient" that is a measure of how well the 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, ownership of a fan 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

(forward stepwise, based on "c"). The first step is to use Logit to build one scorecard for

each candidate indicator. Each scorecard's accuracy is taken as "c", a measure of 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), including 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, and verifiability.

A series of two-indicator scorecards are then built, each based on the one-indicator scorecard selected from the first step, now 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.

This algorithm is a Logit analogue to the familiar R^2-based stepwise with 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 and make sense to users.

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).

The single scorecard here applies to all of El Salvador. Tests for Mexico and India (Schreiner, 2006a and 2006b), Sri Lanka (Narayan and Yoshida, 2005), and Jamaica (Grosh and Baker, 1995) suggests that segmenting scorecards by urban/rural does not improve targeting much, although such segmentation may improve the accuracy of estimated poverty rates (Tarozzi and Deaton, 2007).

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4. Practical guidelines for scorecard use

The main challenge of scorecard design is not to squeeze out the last drops of accuracy but rather to improve the chances that scoring is actually used (Schreiner, 2005). When scoring projects fail, the reason is not usually technical 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 predict tolerably well, thanks to the empirical phenomenon known as the "flat maximum" (Falkenstein, 2008; Hand, 2006; Baesens *et al.*, 2003; Lovie and Lovie, 1986; Kolesar and Showers, 1985; Stillwell, Barron, and Edwards, 1983; Dawes, 1979; Wainer, 1976; Myers and Forgy, 1963). The bottleneck is less technical and more human, not statistics but organizational change management. Accuracy is easier to achieve than adoption.

The scorecard here is designed to encourage understanding and trust so that users will want to adopt it and use it properly. Of course, accuracy is important, but so are 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 make a lot of "extra" work and if the whole process generally seems to make sense.

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

- Only 10 indicators
- Only categorical indicators
- Simple points (non-negative integers, and no arithmetic beyond addition)

The scorecard in is ready to be photocopied. A field worker using the paper scorecard would:

- Record participant identifiers
- Read each question from the scorecard
- Circle each 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

4.1 Quality control

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 if they 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).[6] IRIS Center (2007a) and Toohig (2008) are useful nuts-and-bolts guides for planning, budgeting, training field

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[6] If an organization does not want field workers to know the points associated with indicators, then they can use the version of Figure 1 without points and apply the points later in a spreadsheet or database at the central office.

workers and supervisors, logistics, sampling, interviewing, piloting, recording data, and controlling quality.

In particular, while collecting scorecard indicators is relatively easier than most alternatives, it is still absolutely difficult. Training and explicit definitions of terms and concepts in the scorecard is essential.[7] For the example of Nigeria, one study finds distressingly low inter-rater and test-retest correlations for indicators as seemingly simple and obvious as whether the household owns an automobile (Onwujekwe, Hanson, and Fox-Rushby, 2006).

For self-reports in the first stage of targeting in a Mexican program, 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 done in the second stage of the Mexican targeting process, field agents can verify responses with a home visit and correct false reports.

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[7] Appendix A is a guide for interpreting indicators in El Salvador's scorecard.

4.2   Implementation and sampling

In terms of implementation and sample 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

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 an 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 then downloaded to a database

The subjects to be scored can be:

- All participants
- A representative sample of all participants
- All participants in a representative sample of branches
- A representative sample of all participants in a representative sample of branches

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 confidence level and

a desired confidence interval.

Frequency of application can be:

- At in-take of new clients only (precluding measuring change in poverty rates)
- As a once-off project for current participants (precluding measuring change)
- Once a year or at some other fixed 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 changes in poverty rates, it can be applied:

- With different sets of participants, with each set representative a single population
- With a single set of participants

A common bundle of implementation and design choices is illustrated by BRAC and ASA, two microlenders in Bangladesh (each with more than 7 million participants) who are applying the Simple Poverty Scorecard tool for Bangladesh (Schreiner, 2013). Their design is that loan officers in a random sample of branches score all their clients each time they visit a homestead (about once a year) as part of their standard due diligence prior to loan disbursement. Responses in the field are recorded on paper before being sent to a central office to be entered into a database. The sampling plans of ASA and BRAC cover 50,000–100,000 participants each (far more than would be required to inform most relevant decisions at a typical pro-poor organization).

5. Estimates of household poverty likelihoods

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

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 with the 2008 EHPM, scores of 40–44 have a poverty likelihood of 43.5 percent, and scores of 45–49 have a poverty likelihood of 40.4 percent (Figure 5).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 40–44 are associated with a poverty likelihood of 43.5 percent for the national line but 8.4 percent for the food line.[8]

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[8] Starting with Figure 5, many figures have eight versions, one for each of the eight poverty lines. The tables are grouped by poverty line. Single tables that pertain to all poverty lines are placed with the tables for the national line.

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.

For the example of the national line (Figure 6), there are 10,030 (normalized) households in the calibration sub-sample with a score of 40–44, of whom 4,362 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 40–44 is then 43.5 percent, as 4,362 ÷ 10,030 = 43.5 percent.

To illustrate further with the national line and a score of 45–49, there are 9,081 (normalized) households in the calibration sample, of whom 3,665 (normalized) are below the line (Figure 6). Thus, the poverty likelihood for this score is 3,665 ÷ 9,081 = 40.4 percent.

The same method is used to calibrate scores with estimated poverty likelihoods for all eight poverty lines.

Figure 7 shows, for all scores, the likelihood that income falls in a range demarcated by two adjacent poverty lines. For example, the daily income of someone with a score of 40–44 falls in the following ranges with probability:

- 8.4 percent   below the food line
- 8.1 percent   between the food and the USAID "extreme" lines
- 27.0 percent   between the USAID "extreme" and the national lines
- 8.1 percent   between the national and the $1.25/day 2005 PPP lines
- 15.6 percent   between the $1.25/day 2005 PPP and 150% of the national lines
- 19.4 percent   between 150% and 200% of the national lines
- 2.0 percent   between 200% of the national and $2.50/day 2005 PPP lines
- 5.7 percent   between the $2.50/day 2005 PPP and $3.75/day 2005 PPP lines
- 5.7 percent   above the $3.75/day 2005 PPP line

Even though the scorecard is constructed partly based on judgment, this calibration process produces poverty likelihoods that are objective, that is, derived from survey data on income and quantitative poverty lines. The poverty likelihoods would be objective even if indicators and/or points were selected without any data at all. In fact, scorecards with objective poverty likelihoods of proven accuracy are often constructed using only 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 El Salvador's scorecard are transformed coefficients from a Logit regression, scores are not converted to poverty likelihoods via the Logit formula

of $2.718281828^{\text{score}}$ x $(1+ 2.718281828^{\text{score}})^{-1}$. This is because the Logit formula is esoteric and difficult to compute by hand. Non-specialists find it more intuitive to define the poverty likelihood as the share of households with a given score in the calibration sample who are below a poverty line. In the field, this means that converting scores to poverty likelihoods requires no arithmetic at all, just a look-up table. This non-parametric calibration can also improve accuracy, especially with large calibration samples.

5.2 Accuracy of estimates of households' poverty likelihoods

As long as the relationship between indicators and poverty does not change and as long as the scorecard is applied to households who are representative of the same population from which the scorecard is constructed, 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, as well as unbiased estimates of changes in poverty rates between two points in time.[9]

But the relationship between indicators and poverty does change with time and also across sub-groups in El Salvador's population, so the scorecard will generally be biased when applied after the end date of fieldwork for the 2008 EHPM (as it must be

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

applied in practice) or when applied with non-nationally representative groups (as it

probably will be applied by local pro-poor organizations).

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

assumption of representativeness? To check, the scorecard is applied to 1,000 bootstrap

samples of size $n = 16{,}384$ from the 2008 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 who have income below a poverty line
- For each score, record the difference between the estimated poverty likelihood (Figure 5) 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 8 shows the average difference

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

differences.

For the national line in the 2008 validation sample, the average poverty

likelihood across bootstrap samples for scores of 40–44 is too low by 0.5 percentage

points (Figure 8). For scores of 45–49, the estimate is too high by 3.2 percentage

points.[10]

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[10] These differences are not zero, despite the estimator's unbiasedness, because the scorecard comes from a single sample. The average difference by score would be zero if

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The 90-percent confidence interval for the differences for scores of 40–44 is ±2.4 percentage points (Figure 8). This means that in 900 of 1,000 bootstraps, the difference between the estimate and the true value is between –2.9 and +1.9 percentage points (because –0.5 – 2.4 = –2.9, and –0.5 + 2.4 = +1.9). In 950 of 1,000 bootstraps (95 percent), the difference is –0.5 ±2.8 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is –0.5 ±3.7 percentage points.

For many scores, Figure 8 shows differences—a few of them large—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 El Salvador's population. For targeting, however, what matters is less the differences across all score ranges and more the differences 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.

Of course, 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 bias is overfitting. By construction, the scorecard here is unbiased, but it may still be *overfit* when applied after the December 2008 end of

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

fieldwork for the 2008 EHPM. That is, the scorecard may fit the data from the 2008 EHPM so closely that it captures not only real patterns but also some random patterns that, due to sampling variation, show up only in the 2008 EHPM. Or the scorecard may be overfit in the sense that it is not robust to changes through time in the relationships between indicators and poverty. Finally, the scorecard could also be overfit if it is not robust when it is applied to samples from non-nationally representative sub-groups.

Overfitting can be mitigated by simplifying the scorecard and by not relying only on the 2008 EHPM data but rather also considering experience, judgment, and theory. Of course, the scorecard here does this. Bootstrapping scorecard construction—which is not done here—can also mitigate overfitting by reducing (but not eliminating) dependence on a single sampling instance. Combining scorecards can also help, at the cost of complexity.

In any case, most errors in individual households' likelihoods balance out in the estimates of groups' poverty rates (see later sections). Furthermore, much of the differences between scorecard estimates and true values may come from non-scorecard sources such as changes in the relationship between indicators and poverty, sampling variation, changes in poverty lines, inconsistencies in data quality across time, and inconsistencies/imperfections in cost-of-living adjustments across time and geographic regions. These factors can be addressed only by improving data quantity and quality (which is beyond the scope of the scorecard), by updating data, 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, 2010 and that they have scores of 20, 30, and 40, corresponding to poverty likelihoods of 80.1, 69.2, and 43.5 percent (national line, Figure 5). The group's estimated poverty rate is the households' average poverty likelihood of $(80.1 + 69.2 + 43.5) \div 3 = 64.3$ percent.[11]

6.1 Accuracy of estimated poverty rates at a point in time

How accurate is this estimate? For a range of sample sizes, Figure 10 reports average differences between estimated and true poverty rates as well as precision (confidence intervals for the differences) for the El Salvador scorecard applied to 1,000 bootstrap samples from the 2008 validation sample.

Summarizing Figure 10 across poverty lines and years for $n = 16{,}384$, Figure 9 shows that the absolute differences between the estimated poverty rate and the true rate for the 2008 scorecard applied to the 2008 validation sample are 3.3 percentage points or less. The average absolute difference across the eight poverty lines is 1.4 percentage points.

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[11] The group's poverty rate is *not* the poverty likelihood associated with the average score. Here, the average score is $(20 + 30 + 40) \div 3 = 30$, and the poverty likelihood associated with the average score is 69.2 percent. This is not the 64.3 percent found as the average of the three poverty likelihoods associated with each of the three scores.

In terms of precision, the 90-percent confidence interval for a group's estimated poverty rate at a point in time in 2008 with $n = 16{,}384$ and for all poverty lines is ± 0.7 percentage points or less (Figure 9). This means that in 900 of 1,000 bootstraps of this size, the absolute difference between the estimate and the average estimate is 0.7 percentage points or less.

In the specific case of the national line, 90 percent of all samples of $n = 16{,}384$ produce estimates that differ from the true value in the range of $+1.2 + 0.5 = +1.7$ to $+1.2 - 0.5 = +0.7$ percentage points. This is because $+1.2$ is the average difference and ± 0.5 is its 90-percent confidence interval. The average difference is $+1.2$ because the average scorecard estimate is too high by 1.2 percentage points; the scorecard tends to estimate a poverty rate of 40.5 percent for the 2008 validation sample, but the true value is 39.3 percent (Figure 2). Future accuracy will depend on how closely the time of application resembles 2008.

6.2 Standard-error formula for estimates of poverty rates at a point in time

How precise are the point-in-time estimates? Because they are averages, the estimates have a Normal distribution and can be characterized by their average difference vis-à-vis true values, along 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 for indirect measurement via the scorecard (Schreiner, 2008a), note that the textbook formula (Cochran, 1977) that relates confidence intervals with standard errors in the case of direct measurement of poverty rates is $c = +/- z \cdot \sigma$, where:

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

z is from the Normal distribution and is $\begin{cases} 1.64 \text{ for confidence levels of 90 percent} \\ 1.96 \text{ for confidence levels of 95 percent} \\ 2.58 \text{ for confidence levels of 99 percent} \end{cases}$,

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

p is the proportion of households below the poverty line in the sample, and

n is the sample size.

For example, with a sample $n = 16{,}384$, 90-percent confidence ($z = 1.64$), and a poverty rate p of 39.3 percent (the true rate in the 2008 validation sample for the national line in Figure 2), the confidence interval c is

$$+/- z \cdot \sqrt{\frac{p \cdot (1-p)}{n}} = +/- 1.64 \cdot \sqrt{\frac{0.393 \cdot (1-0.393)}{16{,}384}} = \pm 0.626 \text{ percentage points.}$$

Scorecards, however, do not measure poverty directly, so this formula is not applicable. To derive a formula for the El Salvador scorecard, consider Figure 10, which reports empirical confidence intervals c for the differences for the scorecard applied to 1,000 bootstrap samples of various sample sizes from the validation sample. For $n = 16{,}384$, the national line, and the 2008 validation sub-sample, the 90-percent confidence

interval is ±0.535 percentage points.[12] Thus, the ratio of confidence intervals with the scorecard and with direct measurement is $0.535 \div 0.626 = 0.85$.

Now consider the same case, but with $n = 8{,}192$. The confidence interval under direct measurement is $+/-1.64 \cdot \sqrt{\dfrac{0.393 \cdot (1 - 0.393)}{8{,}192}} = \pm 0.885$ percentage points. The empirical confidence interval with the El Salvador scorecard for the national line (Figure 10) is ±0.760 percentage points. Thus for $n = 8{,}192$, the ratio is $0.760 \div 0.885 = 0.86$.

This ratio of 0.86 for $n = 8{,}192$ is close to the ratio of 0.85 for $n = 16{,}384$. Indeed, across all sample sizes of 256 or more in Figure 10, the average ratio turns out to be 0.89, implying that confidence intervals for indirect estimates of poverty rates via the El Salvador scorecard and the national poverty line are about 11 percent narrower than those for direct estimates. This 0.89 appears in Figure 9 as the "α factor" because if $\alpha = 0.89$, then the formula relating confidence intervals c and standard errors σ for the El Salvador scorecard is $c = +/- z \cdot \alpha \cdot \sigma$. The standard error σ for point-in-time estimates of poverty rates via scoring is $\alpha \cdot \sqrt{\dfrac{p \cdot (1 - p)}{n}}$.

In general, α could 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 in four of the eight cases in Figure 9.

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[12] Due to rounding, Figure 10 displays 0.5, not 0.535.

The formula relating confidence intervals to standard errors for the scorecard can be rearranged to give a formula for determining sample size n before measurement.[13] If $\hat{p}$ is the expected poverty rate before measurement, then the formula for n based on the desired confidence level that corresponds to z and the desired confidence interval $\pm c$ under the scorecard is $n = \left(\dfrac{\alpha \cdot z}{c}\right)^2 \cdot \hat{p} \cdot (1 - \hat{p})$.

To illustrate how to use this, suppose $c = 0.04495$ and $z = 1.64$ (90-percent confidence), and $\hat{p} = 0.403$ (the average poverty rate for the national line in the 2008 construction and calibration sub-samples, Figure 2). Then the formula gives

$n = \left(\dfrac{0.89 \cdot 1.64}{0.04495}\right)^2 \cdot 0.403 \cdot (1 - 0.403) = 254$, quite close to the sample size of 256 observed

for these parameters in Figure 10.

Of course, the α factors in Figure 9 are specific to El Salvador, its poverty lines, its poverty rates, and this scorecard. The method for deriving the formulas, however, is valid for any poverty-assessment tool following the approach in this paper.

In practice after the end of the EHPM's field work in December 2008, an organization would select a poverty line (say, the national line), select a desired confidence level (say, 90 percent, or $z = 1.64$), select a desired confidence interval (say,

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[13] IRIS Center (2007a and 2007b) says that a sample size of $n = 300$ is sufficient for reporting estimated poverty rates to USAID. If a poverty-assessment tool 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 or intervals. Furthermore, the expected poverty rate may not be 50 percent, and the poverty-assessment tool could be more or less precise than direct measurement.

±2.0 percentage points, or $c = 0.02$), make an assumption about $\hat{p}$ (perhaps based on a previous measurement such as the 39.9 percent average for the national line in the 2008 EHPM in Figure 2), look up α (here, 0.89), assume that the scorecard will still work in the future and/or for non-nationally representative sub-groups,[14] and then compute the required sample size. In this illustration, $n = \left(\dfrac{0.89 \cdot 1.64}{0.02} \right)^2 \cdot 0.399 \cdot (1 - 0.399) = 1{,}278$.

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[14] This paper reports accuracy for the scorecard applied to the 2008 validation sample, but it cannot test accuracy for later years or other groups. Performance will deteriorate with time to the extent that the relationship between indicators and poverty changes.

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 2008 EHPM, this paper cannot test estimates of change over time for El Salvador, 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, change could be for the better or for the worse, and scoring does not indicate what caused change. This point is often forgotten, confused, or ignored, 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 on poverty status 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, 2010, a program samples three households who score 20, 30, and 40 and so have poverty likelihoods of 80.1, 69.2, and 43.5 percent (national line, Figure 5). The group's baseline estimated poverty rate is the households' average poverty likelihood of (80.1 + 69.2 + 43.5) ÷ 3 = 64.3 percent.

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

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

By way of illustration, suppose that a year later on Jan. 1, 2011, the program samples three additional households who are in the same cohort as the three households originally sampled (or suppose that the program scores the same three original households a second time) and finds that their scores are now 25, 35, and 45 (poverty likelihoods of 75.0, 56.0, and 40.4 percent, national line, Figure 5). Their average poverty likelihood at follow-up is (75.0 + 56.0 + 40.4) ÷ 3 = 57.1 percent, an improvement of 64.3 – 57.1 = 7.2 percentage points.[15]

This suggests that about one of 14 participants crossed the poverty line in 2010. (This is a net figure; some people start above the line and end below it, and vice versa.) Among those who started below the line, about one in nine (7.2 ÷ 64.3 = 11.2 percent)

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

ended up above the line. Of course, the scorecard does not reveal the reasons for this change.

7.3 Estimated changes in poverty rates in El Salvador

With only the 2008 EHPM, 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 apply the El Salvador scorecard to estimate change. The rest of this section suggests approximate formulas for standard errors and sample sizes that may be used until there is additional data.

7.4 Accuracy for estimated change in two independent samples

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

$$c = +/- z \cdot \sigma = +/- z \cdot \alpha \cdot \sqrt{\frac{2 \cdot p \cdot (1-p)}{n}} \ .$$

z, c, and p are defined as above, n is the sample size at both baseline and follow-up,[16] and α is the average (across a range of bootstrapped sample sizes) of the ratio of the observed confidence intervals from a scorecard and the theoretical confidence

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[16] This means that, for a given precision and with direct measurement, estimating the change in a poverty rate over time requires four times as many measurements (not twice as many) as does estimating a poverty rate at a point in time.

intervals from the textbook formula for direct measurement for two equal-sized independent samples.

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

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

For countries for which this α has been measured (Schreiner, 2013, 2010, 2009a, 2009b, 2009c, 2009d, 2009e, and 2008b and Chen and Schreiner, 2009), the simple average of α across poverty lines, years, and countries is 1.13. This is as reasonable a figure as any to use for El Salvador.

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 ($c = 0.02$), the poverty line is the national line, $\alpha = 1.13$, and $\hat{p} = 0.399$ (from Figure 2). Then the baseline sample size is $n = 2 \cdot \left(\frac{1.13 \cdot 1.64}{0.02} \right)^2 \cdot 0.399 \cdot (1 - 0.399) =$ 4,118, and the follow-up sample size is also 4,118.

7.5 Accuracy for estimated change for one sample, scored twice

The general formula relating the confidence interval c to the standard error σ when using scoring to estimate change for a single group of households, all of whom are scored at two points in time, is:[17]

$$c = +/- z \cdot \sigma = +/- z \cdot \alpha \cdot \sqrt{\frac{p_{12} \cdot (1 - p_{12}) + p_{21} \cdot (1 - p_{21}) + 2 \cdot p_{12} \cdot p_{21}}{n}} \ .$$

z, c, and α are defined as before, p_{12} is the share of all sampled households that move from below the poverty line to above it, and p_{21} is the share of all sampled households that move from above the line to below it.

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

$$n = 2 \cdot \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \hat{p}_* \ .$$

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

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

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

Given this, a sample-size formula for a group of households to whom the El Salvador scorecard is applied twice (once after the end of field work for the 2008 EHPM and then again later) is:

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

In Peru (the only other country for which there is a data-based 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 ($c = 0.02$), the poverty line is the national line, and the sample will be scored first in 2010 and then again in 2013 ($y = 3$). The before-baseline poverty rate is 39.9 percent ($p_{2008} = 0.399$, Figure 2), and suppose $\alpha = 1.30$. Then the baseline sample size is

$n = 2 \cdot \left(\dfrac{1.30 \cdot 1.64}{0.02} \right)^2 \cdot \left\{ -0.02 + 0.016 \cdot 3 + 0.47 \cdot \left[0.399 \cdot (1 - 0.399) \right] \right\} = 3{,}198$. The same

group of 3,198 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 income below a poverty line). Poverty status is a fact that depends on whether income 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 11 depicts these four possible targeting outcomes. Targeting accuracy varies by cut-off; a higher cut-off has better inclusion (but worse leakage), while a lower cut-off has better exclusion (but worse undercoverage).

A program 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

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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 12 shows the distribution of households by targeting outcome. For an example cut-off of 44 or less and the 2008 scorecard applied to the 2008 validation sample, outcomes for the national line are:

- Inclusion: 30.1 percent are below the line and correctly targeted
- Undercoverage: 9.2 percent are below the line and mistakenly not targeted
- Leakage: 14.4 percent are above the line and mistakenly targeted
- Exclusion: 46.3 percent are above the line and correctly not targeted

Increasing the cut-off to 49 or less improves inclusion and undercoverage but worsens leakage and exclusion:

- Inclusion: 33.6 percent are below the line and correctly targeted
- Undercoverage: 5.6 percent are below the line and mistakenly not targeted
- Leakage: 19.9 percent are above the line and mistakenly targeted
- Exclusion: 40.8 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 12 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. Any 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 12 shows "Total Accuracy" for all cut-offs for El Salvador's scorecard. For the national line in the 2008 validation sample, total net benefit is greatest (77.0) for a cut-off of 39 or less, with about three in four households in El Salvador 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).[18]

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[18] Figure 12 also reports the Balanced Poverty Accuracy Criteria adopted by USAID for certifying poverty-assessment tools. IRIS Center (2005) says that BPAC considers accuracy both in terms of the estimated poverty rate 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 13 ("% targeted who are poor") shows the expected poverty rate among El Salvador households who score at or below a given cut-off. For the example of the national line and the 2008 validation sample, targeting households who score 44 or less would target 44.5 percent of all households (second column) and lead to a poverty rate among those targeted of 67.6 percent (third column).

Figure 13 also reports two other measures of targeting accuracy. The first is a version of inclusion ("% of poor who are targeted"). For the example of the national line and the 2008 validation sample with a cut-off of 44 or less, 76.6 percent of all poor households are covered.

The final targeting measure in Figure 13 is the number of successfully targeted poor households for each non-poor household mistakenly targeted (right-most column). For the national line, the 2008 validation sample, and a cut-off of 44 or less, covering 2.1 poor households means leaking to 1 non-poor household.

9. Conclusion

Pro-poor programs in El Salvador can use the scorecard to segment clients for differentiated treatment as well as to estimate:

- The likelihood that a household has income 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 over 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 who want to improve how they measure and manage their social performance.

The scorecard is constructed with a sub-sample of data from the 2008 EHPM, tested on a different sub-sample from the 2008 EHPM, and calibrated to eight poverty lines.

Accuracy is 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 in poverty rates are not the same as estimates of program impact. Targeting accuracy and formula for standard errors are also reported.

When the scorecard is applied to the 2008 validation sample with $n = 16{,}384$, the absolute difference between estimates and true poverty rates at a point in time is 3.3 percentage points or less and averages—across the eight poverty lines—1.4 percentage points. With 90-percent confidence, the precision of these differences is ± 0.7 percentage points or less.

For targeting, programs can use the results reported here to select a cut-off that fits their values and mission.

Although the statistical technique is innovative, and although technical accuracy is important, the design of the scorecard focuses on transparency and ease-of-use. After all, 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 straightforward to verify. Points are all zeros or positive integers, and scores range from 0 to 100. 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 sum, the scorecard is a practical, objective way for pro-poor programs in El Salvador to measure poverty rates, track changes in poverty rates over time, and target services, provided that the scorecard is applied during a period similar to that of 2008, the time period when the data used to construct the scorecard was collected. The same approach can be applied to any country with similar data from a national income or expenditure survey.

References

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

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

Caire, Dean. (2004) "Building Credit Scorecards for Small Business Lending in Developing Markets", `microfinance.com/English/Papers/Scoring_SMEs_Hybrid.pdf`, retrieved 6 May 2010.

Chen, Shiyuan; and Mark Schreiner. (2009) "Simple Poverty Scorecard Poverty-Assessment Tool: Vietnam", `SimplePovertyScorecard.com/VNM_2006_ENG.pdf`, retrieved 23 December 2010.

Coady, David; Grosh, Margaret; and John Hoddinott. (2002) "The Targeting of Transfers in Developing Countries: Review of Experience and Lessons", `hdl.handle.net/10986/14902`, retrieved 3 November 2015.

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

Daley-Harris, Sam. (2009) *State of the Microcredit Summit Campaign Report 2009*, `microcreditsummit.org/state_of_the_campaign_report/`, retrieved 6 may 2010.

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

Dirección General de Estadística y Censos. (2009) *Encuesta de Hogares de Propósitos Múltiples 2008*, `http://www.digestyc.gob.sv/Publicaciones/PUBLICACION%20EHPM2008.pdf`, retrieved 6 May 2010.

Efron, Bradley; and Robert J. Tibshirani. (1993) *An Introduction to the Bootstrap*.

Falkenstein, Eric. (2008) "DefProb™: A Corporate Probability of Default Model", `papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID1225981_code17286.pdf?abstractid=1103404&mirid=5`, retrieved 6 May 2010.

Florés, D. (2007) "Presentación El Salvador", `www.inide.gob.ni/pobreza/`
`CDTallerPob/PRESENTACION%20EL%20SALVADOR.ppt`, retrieved 6 May 2010.

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

Fuller, Rob. (2006) "Measuring the Poverty of Microfinance Clients in Haiti",
`microfinance.com/English/Papers/Scoring_Poverty_Haiti_Fuller.pdf`,
retrieved 6 May 2010.

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

Grootaert, Christiaan; and Jeanine Braithwaite. (1998) "Poverty Correlates and
Indicator-Based Targeting in Eastern Europe and the Former Soviet Union",
World Bank Policy Research Working Paper No. 1942,
`go.worldbank.org/VPMWVLU8E0`, retrieved 6 May 2010.

Grosh, Margaret; and Judy L. Baker. (1995) "Proxy Means Tests for Targeting Social
Programs: Simulations and Speculation", World Bank LSMS Working Paper No.
118, `go.worldbank.org/W9OWN57PD0`, retrieved 6 May 2010.

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

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

IRIS Center. (2007a) "Manual for the Implementation of USAID Poverty Assessment
Tools", `povertytools.org/training_documents/Manuals/`
`USAID_PAT_Manual_Eng.pdf`, retrieved 6 May 2010.

_____. (2007b) "Introduction to Sampling for the Implementation of PATs",
`povertytools.org/training_documents/Sampling/Introduction_Sampling.p`
`pt`, retrieved 6 May 2010.

_____. (2005) "Notes on Assessment and Improvement of Tool Accuracy",
`povertytools.org/other_documents/AssessingImproving_Accuracy.pdf`,
retrieved 6 May 2010.

Johnson, Glenn. (2007) "Lesson 3: Two-Way Tables—Dependent Samples", `www.stat.psu.edu/online/development/stat504/03_2way/53_2way_compare.htm`, retrieved 6 May 2010.

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

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

Martinelli, César; and Susan W. Parker. (2007) "Deception and Misreporting in a Social Program", `ciep.itam.mx/~martinel/lies4.pdf`, retrieved 6 May 2010.

Matul, Michal; and Sean Kline. (2003) "Scoring Change: Prizma's Approach to Assessing Poverty", MFC Spotlight Note No. 4, Microfinance Centre for Central and Eastern Europe and the New Independent States, `www.mfc.org.pl/doc/Research/ImpAct/SN/MFC_SN04_eng.pdf`, retrieved 6 May 2010.

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

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

Narayan, Ambar; and Nobuo Yoshida. (2005) "Proxy Means Tests for Targeting Welfare Benefits in Sri Lanka", World Bank Report No. SASPR–7, `siteresources.worldbank.org/EXTSAREGTOPPOVRED/Resources/493440-1102216396155/572861-1102221461685/Proxy+Means+Test+for+Targeting+Welfare+Benefits.pdf`, retrieved 6 May 2010.

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

SAS Institute Inc. (2004) "The LOGISTIC Procedure: Rank Correlation of Observed Responses and Predicted Probabilities", in *SAS/STAT User's Guide, Version 9*, `support.sas.com/documentation/cdl/en/statug/63033/HTML/default/statug_logistic_sect035.htm`, retrieved 6 May 2010.

Schreiner, Mark. (2010) "Simple Poverty Scorecard Poverty-Assessment Tool: Bangladesh", `SimplePovertyScorecard.com/BGD_2005_ENG.pdf`, retrieved 23 December 2016.

_____. (2010) "Simple Poverty Scorecard Poverty-Assessment Tool: Honduras",
    SimplePovertyScorecard.com/HND_2007_ENG.pdf, retrieved 23 December 2016.

_____. (2009a) "Simple Poverty Scorecard Poverty-Assessment Tool: Peru",
    SimplePovertyScorecard.com/PER_2007_ENG.pdf, retrieved 23 December 2016.

_____. (2009b) "Simple Poverty Scorecard Poverty-Assessment Tool: Philippines",
    SimplePovertyScorecard.com/PHL_2002_ENG.pdf, retrieved 23 December 2016.

_____. (2009c) "Simple Poverty Scorecard Poverty-Assessment Tool: Pakistan",
    SimplePovertyScorecard.com/PAK_2005_ENG.pdf, retrieved 23 December 2016.

_____. (2009d) "Simple Poverty Scorecard Poverty-Assessment Tool: Bolivia",
    SimplePovertyScorecard.com/BOL_2007_ENG.pdf, retrieved 23 December 2016.

_____. (2009e) "Simple Poverty Scorecard Poverty-Assessment Tool: Mexico",
    SimplePovertyScorecard.com/MEX_2008_ENG.pdf, retrieved 23 December 2016.

_____. (2008a) "Simple Poverty Scorecard Poverty-Assessment Tool: Peru",
    SimplePovertyScorecard.com/PER_2003_ENG.pdf, retrieved 23 December 2016.

_____. (2008b) "Simple Poverty Scorecard Poverty-Assessment Tool: India",
    SimplePovertyScorecard.com/IND_2005_ENG.pdf, retrieved 23 December 2016.

_____. (2006a) "La Herramienta del Índice de Calificación de la Pobreza™: México",
    SimplePovertyScorecard.com/MEX_2002_SPA.pdf, retrieved 23 December 2016.

_____. (2006b) "Is One Simple Poverty Scorecard Poverty-Assessment Tool Enough for
    India?", microfinance.com/English/Papers/
    Scoring_Poverty_India_Segments.pdf, retrieved 6 May 2010.

_____. (2005) "IRIS Questions on the Simple Poverty Scorecard Poverty-Assessment
    Tool", microfinance.com/English/Papers/
    Scoring_Poverty_Response_to_IRIS.pdf, retrieved 6 May 2010.

_____. (2002) *Scoring: The Next Breakthrough in Microfinance?* CGAP Occasional Paper
    No. 7, pdf.usaid.gov/pdf_docs/PNACQ633.pdf, retrieved 6 May 2010.

_____; Matul, Michal; Pawlak, Ewa; and Sean Kline. (2004) "Poverty Scoring: Lessons
    from a Microlender in Bosnia-Herzegovina", microfinance.com/English/
    Papers/Scoring_Poverty_in_BiH_Short.pdf, retrieved 6 May 2010.

Sillers, Don. (2006) "National and International Poverty Lines: An Overview", `pdf.usaid.gov/pdf_docs/Pnadh069.pdf`, retrieved 31 May 2012.

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

Tarozzi, Alessandro; and Angus Deaton. (2007) "Using Census and Survey Data to Estimate Poverty and Inequality for Small Areas", `princeton.edu/~deaton/downloads/20080301SmallAreas_FINAL.pdf`, retrieved 6 May 2010.

Toohig, Jeff. (2008) "PPI Pilot Training Guide", `progressoutofpoverty.org/toolkit`, retrieved 6 May 2010.

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

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

World Bank. (2008) "Estimation of PPPs for Non-Benchmark Economies for the 2005 ICP Round", `siteresources.worldbank.org/ICPINT/Resources/non-benhmark.pdf` (sic), retrieved 6 May 2010.

_____. (2005) *El Salvador Poverty Assessment: Strengthening Social Policy, Report No. 29594–SV*, `go.worldbank.org/7XESJU78K0`, retrieved 6 May 2010.

Zeller, Manfred. (2004) "Review of Poverty Assessment Tools", `pdf.usaid.gov/pdf_docs/PNADH120.pdf`, retrieved 1 February 2011.

Appendix A:
Guidance for Interpreting Scorecard Indicators

This appendix refers to information in the following documents:

Dirección General de Estadística y Censos. (2009) "Boleta", pp. 482–504 in *Encuesta de Hogares de Propósitos Múltiples 2008*, San Salvador: República de El Salvador, `http://www.digestyc.gob.sv/Publicaciones/PUBLICACION%20EHPM2008.pdf`, visto el 17 de diciembre de 2009. ("la boleta")

_____. (2007) "Manual del Encuestador 2008", San Salvador: República de El Salvador. ("el manual")

_____. (2002) "Aspectos Metodológicos 2003", San Salvador: República de El Salvador. ("el manual metodológico")

1. How many household members are 17 years old or younger?

According to question 102 in the questionnaire, a *household* is made up of "the people who normally reside in the residence". Page 11 of the manual states that sailors on the high seas and prisoners should not be counted, nor should anyone who has been out of the country for more than three months. Page 21 of the methodological manual defines the *household* as "the people related by blood or friendship who share a residence and who share eating arrangements".

2. Not counting bathrooms, kitchen, hallways, or garage, how many rooms does the household have for its own use?

According to the manual (pp. 47–48), *rooms* are "spaces in the residence, surrounded by walls, be they wood or bricks. The walls may or may not reach all they way up to the roof, as long as they have an adequate height. The concept of *rooms* includes bedrooms, dining rooms, eating areas, study rooms, and any rooms used for business or professional purposes. *Rooms* does not include hallways, bathrooms, kitchens, or garages.

"If an area is divided by curtains, then it is counted as a single room."

3. How many household members are salaried employees (be they temporary or
      permanent)?

There is no additional information about this question.

4. Last week, did the female head/spouse do any work (not counting household chores)?

According to p. 63 of the manual, the question pertains to work of an hour or more.
Begging for money is not counted as work. The question applies to the female
head/spouse, even if she is 17-years-old or younger. The *female head/spouse* is defined
as the head of the household (if the head is a woman) or as the spouse of the head of
the household (if the head is a man). If the head of the household is a man without a
spouse, then there is no female head/spouse.

5. What is the main fuel used for cooking?

According to pp. 56–57 of the manual, "if the household uses more than [one] type of
fuel for cooking, then the fuel that is used most frequently should be recorded. If the
household cannot determine which fuel is used most frequently, then the interviewer
should record the fuel on which the household has the greatest expenditure."

6. Does the household have a refrigerator?

There is no additional information about this question.

7. Does the household have a blender?

There is no additional information about this question.

8. Does the household have a television and/or a VCR or DVD?

There is no additional information about this question.

9. <u>Does the household have a radio and/or a stereo system?</u>

According to p. 57 of the manual, *stereo system* includes "all appliances that produce audio and audio only, except radios. Examples include radio/tape players, musical component systems, etc."

10. <u>Does the household have a fan?</u>

There is no additional information about this question.

Figure 2: Sample sizes and household poverty rates by sub-sample and poverty line

| | | % with income below a poverty line | | | | | | | |
| | | National | | | | USAID | International 2005 PPP | | |
Sub-sample	Households	100%	Food	150%	200%	'Extreme'	$1.25/day	$2.50/day	$3.75/day
All El Salvador	16,674	39.9	12.4	60.3	73.0	19.2	46.2	77.6	88.7
Construction									
Selecting indicators and points	5,583	40.3	12.7	60.4	73.6	19.2	46.6	77.9	88.8
Calibration									
Associating scores with likelihoods	5,588	40.3	12.3	60.3	73.2	19.2	46.6	77.9	88.7
Validation									
Measuring accuracy	5,503	39.3	12.2	60.1	72.1	19.3	45.5	76.9	88.7
Change in poverty rate (percentage points)									
From construction/calibration to validation		+1.0	+0.3	+0.3	+1.3	−0.1	+1.2	+1.0	+0.0

Source: 2008 EHPM.

Figure 3: Poverty lines and poverty rates, by department and for all El Salvador, by urban/rural and at household- and person-level

Department	Area	Item	National 100%	National Food	National 150%	National 200%	USAID 'Extreme'	International 2005 PPP $1.25/day	International 2005 PPP $2.50/day	International 2005 PPP $3.75/day
El Salvador	Urban	Poverty line ($/person/day)	2.95	1.47	4.42	5.89	1.95	3.32	6.64	9.95
	Rural	Poverty line ($/person/day)	1.92	0.96	2.87	3.83	1.13	2.16	4.31	6.47
	All	Average poverty line ($/person/day)	2.58	1.29	3.88	5.17	1.66	2.91	5.82	8.73
	Urban	Household-level poverty rate (%)	35.7	10.0	56.0	69.2	17.3	42.0	74.2	86.5
		Person-level poverty rate (%)	41.5	12.1	61.9	74.5	20.7	47.9	78.9	89.4
	Rural	Household-level poverty rate (%)	49.0	17.5	69.3	81.0	23.3	55.2	84.7	93.5
		Person-level poverty rate (%)	55.4	21.4	75.5	85.8	27.7	61.5	89.1	96.1
	All	Household-level poverty rate (%)	39.9	12.4	60.3	73.0	19.2	46.2	77.6	88.7
		Person-level poverty rate (%)	46.4	15.4	66.7	78.4	23.2	52.7	82.5	91.8
Ahuachapán	Urban	Household-level poverty rate (%)	51.7	22.3	72.4	80.0	33.4	57.5	85.7	95.4
		Person-level poverty rate (%)	56.5	24.8	77.7	84.2	36.9	63.5	89.4	96.7
	Rural	Household-level poverty rate (%)	61.6	32.0	82.9	91.6	36.3	67.3	93.1	97.1
		Person-level poverty rate (%)	67.2	36.3	87.2	94.3	40.6	72.7	95.4	98.1
Santa Ana	Urban	Household-level poverty rate (%)	39.8	11.4	58.9	73.8	20.1	45.1	78.7	88.9
		Person-level poverty rate (%)	44.5	12.9	64.2	78.2	23.6	50.0	82.5	90.6
	Rural	Household-level poverty rate (%)	43.5	13.1	65.9	79.8	18.7	50.0	83.7	93.9
		Person-level poverty rate (%)	49.6	16.9	72.8	85.9	23.2	56.0	89.2	96.7
Sonsonate	Urban	Household-level poverty rate (%)	43.7	13.6	65.1	80.5	21.8	51.1	83.4	93.6
		Person-level poverty rate (%)	48.6	16.1	70.6	84.9	26.0	56.7	87.4	95.3
	Rural	Household-level poverty rate (%)	53.3	18.1	73.6	83.7	25.7	59.5	86.6	94.6
		Person-level poverty rate (%)	56.9	18.8	77.4	87.0	26.4	63.1	89.6	96.5
Chalatenango	Urban	Household-level poverty rate (%)	47.8	18.8	65.3	77.6	28.6	54.1	82.0	92.1
		Person-level poverty rate (%)	54.8	23.2	71.3	81.4	33.1	61.1	84.9	93.6
	Rural	Household-level poverty rate (%)	52.3	17.7	65.8	77.6	25.6	55.5	80.3	88.7
		Person-level poverty rate (%)	58.4	23.8	73.5	84.6	32.0	62.5	86.5	92.4
La Libertad	Urban	Household-level poverty rate (%)	32.7	8.8	50.5	63.4	15.9	37.6	68.0	80.3
		Person-level poverty rate (%)	37.7	10.2	55.9	67.8	18.5	42.5	71.8	82.7
	Rural	Household-level poverty rate (%)	39.9	11.1	62.7	79.3	16.3	46.1	82.7	91.1
		Person-level poverty rate (%)	45.7	14.1	70.0	84.6	18.9	52.9	87.5	93.6
San Salvador	Urban	Household-level poverty rate (%)	26.9	4.7	48.4	62.5	10.3	33.5	68.1	82.8
		Person-level poverty rate (%)	32.4	6.0	54.8	68.8	12.9	39.6	73.9	86.8
	Rural	Household-level poverty rate (%)	38.5	11.8	63.3	75.3	16.7	46.3	80.7	92.2
		Person-level poverty rate (%)	45.3	15.7	71.0	82.7	21.2	53.8	87.0	95.8

Figure 3 (cont): Poverty lines and poverty rates, by department and all El Salvador, by urban/rural and at household- and person-level

| | | Average poverty line ($/person/day) and poverty rate (%) | | | | | | | |
| | | National | | | | USAID | International 2005 PPP | | |
Area	Item	100%	Food	150%	200%	'Extreme'	$1.25/day	$2.50/day	$3.75/day
Urban	Household-level poverty rate (%)	46.1	15.0	68.7	79.0	26.0	54.3	83.9	92.5
	Person-level poverty rate (%)	53.3	18.0	74.4	84.5	31.4	60.7	88.7	94.6
Rural	Household-level poverty rate (%)	49.2	15.7	73.7	84.5	23.0	58.2	87.9	94.8
	Person-level poverty rate (%)	55.6	19.2	79.8	90.2	26.2	63.3	93.4	98.3
Urban	Household-level poverty rate (%)	50.8	19.6	71.1	83.7	28.1	56.9	87.4	94.5
	Person-level poverty rate (%)	57.4	22.9	76.2	87.1	32.5	63.3	90.3	96.1
Rural	Household-level poverty rate (%)	48.2	14.7	64.3	77.4	20.8	54.4	81.5	91.9
	Person-level poverty rate (%)	54.5	18.4	70.5	81.7	25.2	59.6	85.7	94.8
Urban	Household-level poverty rate (%)	50.8	21.6	70.5	80.2	33.8	59.7	84.4	92.8
	Person-level poverty rate (%)	54.3	25.3	72.7	82.6	37.5	61.9	87.7	95.1
Rural	Household-level poverty rate (%)	65.5	29.2	82.2	89.3	38.7	69.8	91.0	96.8
	Person-level poverty rate (%)	70.2	32.4	86.6	92.3	43.7	74.6	93.5	97.8
Urban	Household-level poverty rate (%)	50.2	20.5	68.7	77.8	28.3	57.2	82.4	93.3
	Person-level poverty rate (%)	55.1	24.1	72.9	82.8	32.3	61.8	86.7	95.9
Rural	Household-level poverty rate (%)	53.1	17.8	74.0	83.8	26.5	58.7	88.3	94.8
	Person-level poverty rate (%)	56.4	20.7	77.8	86.7	29.9	62.2	90.9	97.3
Urban	Household-level poverty rate (%)	48.2	15.3	65.9	78.2	23.1	54.6	81.3	91.6
	Person-level poverty rate (%)	56.3	17.7	72.0	83.2	26.6	61.5	85.5	94.2
Rural	Household-level poverty rate (%)	54.7	16.3	74.5	84.4	21.2	60.8	89.1	95.7
	Person-level poverty rate (%)	64.3	19.1	82.0	89.3	25.2	69.7	93.4	97.5
Urban	Household-level poverty rate (%)	30.9	8.3	52.7	64.7	14.8	36.8	71.0	86.2
	Person-level poverty rate (%)	38.8	11.6	58.1	69.6	19.3	43.8	75.2	89.2
Rural	Household-level poverty rate (%)	40.6	15.5	64.9	78.4	19.7	47.7	82.2	93.9
	Person-level poverty rate (%)	47.1	20.2	70.1	82.2	24.7	54.0	86.5	96.3
Urban	Household-level poverty rate (%)	56.9	24.4	70.9	82.0	38.0	60.7	85.7	91.5
	Person-level poverty rate (%)	63.5	30.1	75.9	85.2	45.2	66.9	88.6	93.5
Rural	Household-level poverty rate (%)	57.5	26.1	73.5	83.1	31.2	63.1	87.3	93.6
	Person-level poverty rate (%)	65.3	31.6	80.0	87.0	37.4	70.6	90.8	96.2
Urban	Household-level poverty rate (%)	42.2	11.9	64.8	76.6	20.3	50.3	82.5	92.1
	Person-level poverty rate (%)	44.9	13.6	70.2	80.1	22.3	54.3	85.3	93.6
Rural	Household-level poverty rate (%)	42.1	14.7	59.9	71.5	18.7	48.6	76.8	91.1
	Person-level poverty rate (%)	48.2	18.6	64.6	75.1	23.8	54.2	80.3	94.4

e of the 2008 EHPM

Figure 4: Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly indicative of poverty)
1054	¿Qué servicio sanitario tiene la vivienda? (No tiene, o sin datos; Letrina común o abonera; Letrina privada; Inodoro común a alcantarillado o a fosa séptica; Inodoro a alcantarillado fuera de la vivienda; Inodoro a fosa séptica fuera de la vivienda; Inodoro a alcantarillado o a fosa séptica dentro de la vivienda)What toilet arrangement does the household have? (None, or no data; Shared latrine or fertilizer latrine; Latrine (not shared); Shared toilet connected to a sewer or a septic tank; Toilet connected to sewer outside the residence; Toilet connected to a septic tank outside the residence; Toilet connected to sewer or a septic tank inside the residence)
1039	¿El servicio de baño lo satisface por . . .? (Río, quebrada u ojo de agua u otros medios; Barril o pila al aire libre; Regadera o pila (dentro de la vivienda o fuera de la vivienda pero dentro de la propiedad), o regadera o pila de baño común)What arrangement does the household have for bathing? (River, stream, or spring, or other means; Outdoors barrel or bucket; Shower or tub (inside the residence or outside the residence but on the property), or shower or tub shared with other households)
983	¿Cuál fue el último nivel educativo aprobado por la jefa/esposa? (Ninguno, educación inicial u otros; Parvularia; Básica; Media; No hay jefa/esposa; Superior universitario; Superior no universitario, o educación especial)What was the highest educational level passed by the female head/spouse? (None, informal schooling, or others; Pre-school; Grade school; High school; There is no female head/spouse; College; Non-college post-secondary, or special education)
896	How is the residence supplied with water? (Low point where water collects, river, or stream, or spring (protected or unprotected), or other means; Piped outside the house but on the property; Water truck or carrier, or well (with pipes, protected or not), or rainwater; Piped to residence of neighbor, public tank or standpipe, shared hand-pump; Piped inside the house, or bottled water)
871	What is the main fuel used for cooking? (Firewood, charcoal, kerosene, or other; Propane, electricity, or does not cook)

Figure 4 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly associated with poverty)
869	How many household members are 17-years-old or younger? (Four or more; Three; Two; One; None)
861	How many household members are 15-years-old or younger? (Four or more; Three; Two; One; None)
853	How many household members are 18-years-old or younger? (Four or more; Three; Two; One; None)
851	How many household members are 16-years-old or younger? (Four or more; Three; Two; One; None)
829	How many household members are 14-years-old or younger? (Four or more; Three; Two; One; None)
826	What was the highest educational level passed by a household member? (Pre-school; None, informal schooling, or others; Grade school; High school; College, or special education; Non-college post-secondary)
787	What was the highest educational level passed by the male head/spouse? (None, informal schooling, or others; Pre-school; Grade school; High school; There is no male head/spouse; College; Non-college post-secondary, or special education)
780	Not counting bathrooms, kitchen, hallways, or garage, how many rooms does the household have for its own use? (One; Two; Three; Four; Five or more)
766	How many household members are 13-years-old or younger? (Three or more; Two; One; None)
764	Do any household members work as lawmakers and policymakers and executives in public and private administration, professionals, scientists, and intellectuals, technicians and para-professionals, or clerks and other office workers? (No; Yes)
763	No hay niños de estas edades)How many household members ages 7 to 14 currently go to school or day-care (public or private)? (Some or all children in this age range do not go to school nor to day care; All children in this age range go to a public school or to government day care; All children in this age range go to school or to day care, and at least some of them go to a private school (religious or non-religious); There are no children in this age range)
762	Does the household have a television and/or a VCR or DVD? (None; Only a television, or only a VCR or DVD; Both a television and a VCR or DVD)

Figure 4 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly associated with poverty)
755	Does the household have a landline telephone and/or a cellular telephone? (None; Only cellular; Only land-line; Both land-line and cellular)
745	What is the main material of the floor? (Mud bricks, dirt, or others; Concrete slab; Cement or ceramic tile)
740	What is the occupation of the male head/spouse? (Farmer and skilled worker in agriculture and fishing; Unskilled laborer, or does not work; There is no male head/spouse; Manager, operator, and craftsperson in manufacturing; Factory worker; Clerk and other office worker, armed forces, or service workers and salespeople in stores and markets; Lawmaker, policymaker, and executives in public and private administration, professional, scientist, and intellectual, or technician and para-professional)
730	What is the occupation of the female head/spouse? (Farmer and skilled worker in agriculture and fishing, or does not work; Manager, operator, and craftsperson in manufacturing; Unskilled laborer; There is no female head/spouse; Factory worker, armed forces, or service workers and salespeople in stores and markets; Lawmaker, policymaker, and executives in public and private administration, professional, scientist, and intellectual, technician and para-professional, or clerk and other office worker)
725	No hay niños de estas edades)How many household members ages 7 to 17 currently go to school or day-care (public or private)? (Some or all children in this age range do not go to school nor to day care; All children in this age range go to a public school or to government day care; All children in this age range go to school or to day care, and at least some of them go to a private school (religious or non-religious); There are no children in this age range)
718	No hay niños de estas edades)How many household members ages 7 to 15 currently go to school or day-care (public or private)? (Some or all children in this age range do not go to school nor to day care; All children in this age range go to a public school or to government day care; All children in this age range go to school or to day care, and at least some of them go to a private school (religious or non-religious); There are no children in this age range)

Figure 4 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly associated with poverty)
713	No hay niños de estas edades)How many household members ages 7 to 18 currently go to school or day-care (public or private)? (Some or all children in this age range do not go to school nor to day care; All children in this age range go to a public school or to government day care; All children in this age range go to school or to day care, and at least some of them go to a private school (religious or non-religious); There are no children in this age range)
711	How many household members ages 7 to 12 currently go to school or day-care (public or private)? (Some or all children in this age range do not go to school nor to day care; All children in this age range go to a public school or to government day care; All children in this age range go to school or to day care, and at least some of them go to a private school (religious or non-religious); There are no children in this age range)
709	Does the household have a fan? (No; Yes)
705	How many household members ages 7 to 16 currently go to school or day-care (public or private)? (Some or all children in this age range do not go to school nor to day care; All children in this age range go to a public school or to government day care; All children in this age range go to school or to day care, and at least some of them go to a private school (religious or non-religious); There are no children in this age range)
703	How many household members are 12-years-old or younger? (Three or more; Two; One; None)
698	How many household members ages 7 to 13 currently go to school or day-care (public or private)? (Some or all children in this age range do not go to school nor to day care; All children in this age range go to a public school or to government day care; All children in this age range go to school or to day care, and at least some of them go to a private school (religious or non-religious); There are no children in this age range)
669	Does the household have a refrigerator? (No; Yes)

Figure 4 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly associated with poverty)
661	In her main line of work, what is the occupational status of the female head/spouse? (Temporary wage or salaried employee, or does not work; Member of a cooperative, apprentice, self-employed without a fixed place of business, unpaid family worker, or other; Domestic servant; There is no female head/spouse; Permanent salaried employee, self-employed with employees, or self-employed with a dedicated place of business)
660	How many rooms are used exclusively as bedrooms? (Four or more; Three; Two; One; None)
642	Does the household have a television and/or a VCR or DVD? (None; Only a televisión; Both a television and a VCR or DVD)
642	Does the household have a blender? (No; Yes)
633	How many household members are 11-years-old or younger? (Three or more; Two; One; None)
630	How many household members are salaried employees with permanent positions? (Two or more; One; None)
628	How many household members ages 7 to 11 currently go to school or day-care (public or private)? (Some or all children in this age range do not go to school nor to day care; All children in this age range go to a public school or to government day care; All children in this age range go to school or to day care, and at least some of them go to a private school (religious or non-religious); There are no children in this age range)
626	Does the household have a vehicle for personal use? (No; Yes)
618	What is the business or activity of the place where the male head/spouse works? (Agriculture, animal husbandry, hunting, fishing, forestry, mining, and quarrying; Does not work; There is no male head/spouse; Electricity, gas, water, and construction; Logistics, storage, and communications; Manufacturing; Retail and wholesale trade, repair of automobiles and motorcycles, personal effects, and household appliances; Others)
600	Does the household have a clothes washer? (No; Yes)
582	Does the household have a microwave oven? (No; Yes)

Figure 4 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly associated with poverty)
533	What is the main material of the roof? (Straw or palm leaves, scrap materials, metal sheets, or other materials; Mud or concrete shingles; Concrete slab, or asbestos or fiberglass sheets)
530	Does the household have a personal computer? (No; Yes)
513	How many household members are 11-years-old or younger? (Seven or more; Six; Five; Four; Three; Two; One; None)
495	What is the business or activity of the place where the female head/spouse works? (Agriculture, animal husbandry, hunting, fishing, forestry, mining, and quarrying, international organizations, other activities not otherwise specified, or does not work; Health care, social work, and other community service and personal service; Manufacturing; Domestic service; There is no female head/spouse; Others)
475	In her main line of work, what is the occupational status of the male head/spouse? (Temporary wage or salaried employee, member of a cooperative, apprentice, self-employed without a fixed place of business, or other; Does not work; There is no male head/spouse; Permanent salaried employee, domestic servant, or unpaid family worker; Self-employed with employees, or self-employed with a dedicated place of business)
471	Does the household have an iron? (No; Yes)
470	What is the main material of the walls? (Wattle and daub, wood, metal sheets, straw or palm leaves, scrap materials, or other; Adobe; Concrete or mixed)
454	Does the household have a stereo system? (No; Yes)
448	Do any household members work for a business or activity in the area of agriculture, animal husbandry, hunting, fishing, forestry, mining, and quarrying? (Yes; No)
429	How many household members ages 7 to 14 currently go to school or day-care?(Not all; All; There are no members in this age range)
415	How many household members ages 7 to 12 currently go to school or day-care?(Not all; All; There are no members in this age range)
412	How many household members ages 7 to 17 currently go to school or day-care?(Not all; All; There are no members in this age range)

Figure 4 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly associated with poverty)
412	How many household members ages 7 to 15 currently go to school or day-care?(Not all; All; There are no members in this age range)
399	Does the household have a television? (No; Yes)
398	Can the female head/spouse read and write? (No; Yes: There is no female head/spouse)
395	How many household members ages 7 to 18 currently go to school or day-care?(Not all; All; There are no members in this age range)
391	How many household members ages 7 to 16 currently go to school or day-care?(Not all; All; There are no members in this age range)
383	How many household members ages 7 to 11 currently go to school or day-care?(Not all; All; There are no members in this age range)
381	How many household members ages 7 to 13 currently go to school or day-care?(Not all; All; There are no members in this age range)
377	What type of lighting does the residence have? (Kerosene, candles, sunlight, or other type; Tapped electricity from neighbor; Electricity or electrical generator)
376	How many household members are 7-years-old or younger? (Two or more; One; None)
350	How many household members are salaried employees (be they temporary or permanent)? (None; One; Two or more)
336	Last week, did the female head/spouse do any work (not counting household chores)? (No; Yes; There is no female head/spouse)
327	Does the household have a radio and/or a stereo system? (None; Only a radio, or only a stereo system; Both a radio and a stereo system)
311	In the last agricultural season, did any household member work as self-employed farmers, whether with or without employees? (Yes; No)
298	Does any household member go to a school or day care that is private (whether religious or not)? (No; Yes)
265	Does the household employ any domestic servants? (No; Yes)
259	What is the tenancy status of the household in its residence? (Squatter, guardian, lives rent-free, or other; Owned free-and-clear; Renter; Owned with a mortgage outstanding)

Figure 4 (cont.): Poverty indicators by uncertainty coefficient

Uncertainty coefficient	Indicator (Answers ordered starting with those most strongly associated with poverty)
211	Can the male head/spouse read and write? (No; There is no male head/spouse; Yes)
183	How many household members work as service workers and salespeople in stores and markets, managers, operators, and craftspeople in manufacturing, or as factory workers? (None; One; Two or more)
152	Does the household have a video-game machine? (No; Yes)
148	How many household members work as unskilled laborers? (Two or more; One; None)
142	What is the marital status of the male head/spouse? (Cohabiting, or no data; There is no male head/spouse; Married or widowed; Divorced, separated, or single/never-married)
130	What is the marital status of the female head/spouse? (Cohabiting, or no data; Separated; Widowed; Married; Single/never-married; Divorced, or there is no female head/spouse)
130	What kind of residence does the household have? (Improvised shelter, shack, or temporary (due to earthquake); Room in a house or boarding house; Private detached house or condominium; Apartment)
116	How old is the female head/spouse? (28 to 39; 65 or older; 46 to 64; 27 or younger; There is no female head/spouse; 40 to 45)
99	Last week, how many household members did any work? (None; One; Two; Three or more)
70	Does the household have a clothes dryer? (No; Yes)
68	What is the structure of household headship? (Both male and female heads/spouses; Female head/spouse only; Male head/spouse only)
52	How old is the male head/spouse? (65 or older; There is no male head/spouse; 35 to 44; 34 or younger; 45 to 54; 55 to 64)
50	Does the household have a sewing machine? (No; Yes)
21	Last week, did the male head/spouse do any work (not counting household chores)? (No; There is no male head/spouse; Yes)
15	Does any household member know how to read and write? (No; Yes)
3	Does any household member own a business or is self-employed? (Yes; No)
2	Does the household have a radio? (No; Yes)

Source: 2008 EHPM and the national poverty line.

National Poverty Line

2008 Scorecard Applied to 2008 Validation Sample

(and tables pertaining to all poverty lines)

Figure 5 (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	88.1
10–14	93.3
15–19	85.3
20–24	80.1
25–29	75.0
30–34	69.2
35–39	56.0
40–44	43.5
45–49	40.4
50–54	27.5
55–59	19.3
60–64	11.8
65–69	13.0
70–74	6.4
75–79	3.9
80–84	1.0
85–89	0.5
90–94	0.0
95–100	0.0

Figure 6 (National line): Derivation of estimated poverty likelihoods associated with scores

Score	Households below poverty line		All households at score		Poverty likelihood (estimated, %)
0–4	719	÷	719	=	100.0
5–9	1,227	÷	1,392	=	88.1
10–14	2,274	÷	2,439	=	93.3
15–19	2,893	÷	3,394	=	85.3
20–24	3,276	÷	4,093	=	80.1
25–29	5,177	÷	6,902	=	75.0
30–34	4,322	÷	6,251	=	69.2
35–39	5,185	÷	9,264	=	56.0
40–44	4,362	÷	10,030	=	43.5
45–49	3,665	÷	9,081	=	40.4
50–54	2,603	÷	9,457	=	27.5
55–59	1,725	÷	8,917	=	19.3
60–64	861	÷	7,301	=	11.8
65–69	983	÷	7,594	=	13.0
70–74	267	÷	4,212	=	6.4
75–79	164	÷	4,260	=	3.9
80–84	24	÷	2,361	=	1.0
85–89	6	÷	1,288	=	0.5
90–94	0	÷	674	=	0.0
95–100	0	÷	372	=	0.0

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

Figure 7 (All poverty lines): Distribution of household poverty likelihoods across ranges demarcated by poverty lines

	Likelihood of having income in range demarcated by poverty lines per day per capita								
	<Food	=>Food and <USAID	=>USAID and <National	=>National and <$1.25/day	=>$1.25/day and <150% Natl.	=>150% Natl. and <200% Natl.	=>200% Natl. and <$2.50/day	=>$2.50/day and <$3.75/day	=>$3.75/day
Score	<USD1.29	=>USD1.29 and <USD1.66	=>USD1.66 and <USD2.58	=>USD2.58 and <USD2.91	=>USD2.91 and <USD3.88	=>USD3.88 and <USD5.17	=>USD5.17 and <USD5.82	=>USD5.82 and <USD8.73	=>USD8.73
0–4	70.3	16.5	13.3	0.0	0.0	0.0	0.0	0.0	0.0
5–9	67.9	11.0	9.3	8.3	3.6	0.0	0.0	0.0	0.0
10–14	54.0	13.9	25.4	1.4	3.4	0.9	0.6	0.4	0.0
15–19	47.9	8.6	28.8	5.6	6.6	1.8	0.7	0.0	0.0
20–24	40.2	13.6	26.2	7.5	8.2	1.8	1.5	0.9	0.0
25–29	24.6	16.7	33.7	6.0	10.2	4.2	1.8	2.7	0.1
30–34	20.3	11.9	37.0	6.3	12.1	7.0	2.0	2.8	0.7
35–39	12.1	11.0	32.9	6.9	17.4	12.0	2.1	4.5	1.1
40–44	8.4	8.1	27.0	8.1	15.6	19.4	2.0	5.7	5.7
45–49	5.8	7.4	27.2	7.2	21.8	12.6	3.1	8.3	6.7
50–54	2.9	6.3	18.3	10.1	17.5	14.9	7.5	12.5	10.1
55–59	2.2	3.5	13.7	8.9	21.3	14.1	9.7	16.2	10.5
60–64	0.3	0.4	11.1	6.5	14.3	20.3	9.5	20.3	17.5
65–69	0.5	0.4	12.1	3.2	10.2	18.3	10.4	18.4	26.6
70–74	0.5	0.0	5.9	6.6	10.9	20.3	5.1	26.7	24.2
75–79	0.0	0.5	3.4	0.5	7.1	20.6	7.1	24.9	36.0
80–84	0.0	0.0	1.0	0.0	7.3	16.4	5.1	24.6	45.6
85–89	0.0	0.0	0.5	0.0	10.5	14.2	3.1	14.7	57.1
90–94	0.0	0.0	0.0	0.0	0.0	6.2	0.0	14.1	79.7
95–100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.4	75.6

Note: All poverty likelihoods in percentage units.

Figure 8 (National line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16{,}384$), 2008 scorecard applied to the 2008 validation sample

| | | Difference between estimate and true value | | |
| | | Confidence interval (+/− percentage points) | | |
Score	Diff.	90-percent	95-percent	99-percent
0–4	+0.4	0.6	0.6	0.8
5–9	−10.1	5.6	5.6	5.8
10–14	−3.8	2.5	2.6	2.8
15–19	+1.8	3.4	4.0	5.1
20–24	−0.0	3.1	3.8	4.7
25–29	−2.2	2.3	2.7	3.5
30–34	+3.0	2.7	3.3	4.3
35–39	−10.5	6.4	6.6	7.1
40–44	−0.5	2.4	2.8	3.7
45–49	+3.2	2.5	3.1	3.8
50–54	+4.3	2.1	2.4	3.0
55–59	+4.6	1.8	2.1	2.8
60–64	+2.3	1.5	1.8	2.4
65–69	+5.7	1.5	1.8	2.3
70–74	+2.8	1.2	1.5	1.8
75–79	+2.6	0.5	0.6	0.8
80–84	+0.6	0.3	0.4	0.5
85–89	+0.3	0.3	0.3	0.4
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

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, 2008 scorecard applied to the 2008 validation sample

	Poverty line							
	National				USAID	International 2005 PPP		
	100%	Food	150%	200%	'Extreme'	$1.25/day	$2.50/day	$3.75/day
Estimate minus true value								
2008 scorecard applied to 2008 validation	+1.2	+0.2	+0.9	+3.3	−0.1	+1.0	+3.3	+1.3
Precision of difference								
2008 scorecard applied to 2008 validation	0.5	0.4	0.6	0.7	0.4	0.6	0.6	0.7
α factor								
2008 scorecard applied to 2008 validation	0.89	0.88	1.00	1.11	0.88	0.93	1.17	1.60
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.								

Figure 10 (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, 2008 scorecard applied to the 2008 validation sample

Sample Size n	Diff.	Difference between estimate and true value		
		Confidence interval (+/− percentage points)		
		90-percent	95-percent	99-percent
1	+0.3	67.6	77.8	85.4
4	−0.4	36.7	42.5	55.0
8	+1.1	25.4	32.6	41.9
16	+1.2	18.0	21.2	28.1
32	+1.2	12.9	15.1	19.3
64	+1.4	8.9	10.7	13.7
128	+1.4	6.2	7.4	10.4
256	+1.2	4.5	5.5	7.4
512	+1.2	3.3	4.0	4.8
1,024	+1.2	2.2	2.7	3.8
2,048	+1.2	1.6	2.0	2.6
4,096	+1.2	1.1	1.3	1.7
8,192	+1.2	0.8	0.9	1.1
16,384	+1.2	0.5	0.6	0.9

Figure 11 (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 12 (National line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, 2008 scorecard applied to the 2008 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	0.7	38.6	0.0	60.7	61.4	–96.4
5–9	2.1	37.2	0.1	60.7	62.7	–89.4
10–14	4.4	34.9	0.2	60.6	65.0	–77.2
15–19	7.3	32.0	0.7	60.1	67.4	–61.2
20–24	10.6	28.6	1.4	59.3	70.0	–42.2
25–29	15.7	23.6	3.2	57.5	73.2	–11.8
30–34	19.6	19.7	5.6	55.1	74.7	+14.1
35–39	25.4	13.9	9.1	51.7	77.0	+52.4
40–44	30.1	9.2	14.4	46.3	76.4	+63.3
45–49	33.6	5.6	19.9	40.8	74.5	+49.3
50–54	36.0	3.3	27.1	33.7	69.7	+31.1
55–59	37.5	1.8	34.5	26.3	63.7	+12.2
60–64	38.3	1.0	40.9	19.8	58.1	–4.3
65–69	38.9	0.4	48.0	12.8	51.7	–22.2
70–74	39.1	0.1	51.9	8.8	47.9	–32.3
75–79	39.2	0.0	56.1	4.7	43.9	–42.9
80–84	39.3	0.0	58.4	2.3	41.6	–48.8
85–89	39.3	0.0	59.7	1.0	40.3	–52.0
90–94	39.3	0.0	60.4	0.4	39.6	–53.8
95–100	39.3	0.0	60.7	0.0	39.3	–54.7

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

Figure 13 (National line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2008 scorecard applied to the 2008 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	0.7	98.9	1.8	91.8:1
5–9	2.1	97.5	5.2	39.1:1
10–14	4.5	96.4	11.2	26.6:1
15–19	7.9	91.6	18.5	11.0:1
20–24	12.0	88.4	27.1	7.6:1
25–29	18.9	82.9	40.0	4.8:1
30–34	25.2	77.8	49.9	3.5:1
35–39	34.5	73.6	64.6	2.8:1
40–44	44.5	67.6	76.6	2.1:1
45–49	53.6	62.8	85.7	1.7:1
50–54	63.0	57.1	91.6	1.3:1
55–59	71.9	52.1	95.4	1.1:1
60–64	79.2	48.3	97.6	0.9:1
65–69	86.8	44.8	99.0	0.8:1
70–74	91.0	43.0	99.6	0.8:1
75–79	95.3	41.2	99.9	0.7:1
80–84	97.7	40.2	100.0	0.7:1
85–89	99.0	39.7	100.0	0.7:1
90–94	99.6	39.4	100.0	0.7:1
95–100	100.0	39.3	100.0	0.6:1

Food Poverty Line

2008 Scorecard Applied to 2008 Validation Sample

Figure 5 (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	70.3
5–9	67.9
10–14	54.0
15–19	47.9
20–24	40.2
25–29	24.6
30–34	20.3
35–39	12.1
40–44	8.4
45–49	5.8
50–54	2.9
55–59	2.2
60–64	0.3
65–69	0.5
70–74	0.5
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Figure 8 (Food line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16{,}384$), 2008 scorecard applied to the 2008 validation sample

| | | Difference between estimate and true value | | |
| | | Confidence interval (+/− percentage points) | | |
Score	Diff.	90-percent	95-percent	99-percent
0–4	+1.7	8.4	9.9	13.3
5–9	+14.4	6.9	8.2	10.5
10–14	−3.9	4.9	6.0	7.5
15–19	+3.7	4.1	5.0	6.5
20–24	+5.6	3.6	4.2	5.5
25–29	+0.3	2.5	3.0	3.8
30–34	+0.3	2.5	3.2	4.3
35–39	−5.7	4.0	4.2	4.6
40–44	+0.7	1.2	1.4	2.0
45–49	+1.3	1.0	1.1	1.4
50–54	+0.8	0.6	0.7	0.9
55–59	−0.6	1.0	1.2	1.5
60–64	−0.1	0.2	0.3	0.3
65–69	+0.2	0.2	0.2	0.3
70–74	+0.5	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 10 (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, 2008 scorecard applied to the 2008 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/− percentage points)		
		90-percent	95-percent	99-percent
1	+0.2	57.8	67.9	81.8
4	+0.2	25.4	33.6	49.1
8	+0.4	17.0	20.2	29.9
16	+0.3	11.6	14.8	20.0
32	+0.1	8.2	9.8	13.7
64	+0.2	5.7	6.8	9.2
128	+0.0	4.1	4.9	6.8
256	+0.1	2.9	3.5	4.9
512	+0.2	2.2	2.6	3.6
1,024	+0.2	1.5	1.7	2.4
2,048	+0.2	1.1	1.2	1.5
4,096	+0.2	0.7	0.9	1.1
8,192	+0.2	0.5	0.6	0.8
16,384	+0.2	0.4	0.4	0.6

Figure 12 (Food line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, 2008 scorecard applied to the 2008 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	0.5	11.7	0.2	87.6	88.1	−89.8
5–9	1.4	10.8	0.7	87.1	88.5	−71.0
10–14	2.9	9.3	1.6	86.2	89.1	−38.8
15–19	4.4	7.8	3.5	84.3	88.6	+1.1
20–24	5.9	6.3	6.1	81.7	87.7	+47.3
25–29	7.7	4.5	11.3	76.5	84.2	+7.7
30–34	8.9	3.3	16.3	71.5	80.4	−33.4
35–39	10.2	2.0	24.2	63.6	73.8	−98.4
40–44	11.2	1.0	33.3	54.5	65.7	−172.8
45–49	11.6	0.6	41.9	45.9	57.5	−243.5
50–54	11.9	0.3	51.1	36.7	48.6	−318.7
55–59	12.1	0.1	59.8	28.0	40.1	−390.2
60–64	12.1	0.1	67.1	20.7	32.9	−449.7
65–69	12.2	0.0	74.6	13.2	25.4	−511.4
70–74	12.2	0.0	78.8	9.0	21.2	−545.9
75–79	12.2	0.0	83.1	4.7	16.9	−580.8
80–84	12.2	0.0	85.5	2.3	14.5	−600.2
85–89	12.2	0.0	86.7	1.0	13.3	−610.7
90–94	12.2	0.0	87.4	0.4	12.6	−616.2
95–100	12.2	0.0	87.8	0.0	12.2	−619.3

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

Figure 13 (Food line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2008 scorecard applied to the 2008 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	0.7	72.5	4.3	2.6:1
5–9	2.1	67.5	11.7	2.1:1
10–14	4.5	64.1	23.9	1.8:1
15–19	7.9	55.4	36.0	1.2:1
20–24	12.0	49.4	48.7	1.0:1
25–29	18.9	40.5	62.9	0.7:1
30–34	25.2	35.3	72.9	0.5:1
35–39	34.5	29.7	83.9	0.4:1
40–44	44.5	25.1	91.6	0.3:1
45–49	53.6	21.7	95.3	0.3:1
50–54	63.0	18.9	97.6	0.2:1
55–59	71.9	16.8	99.2	0.2:1
60–64	79.2	15.3	99.5	0.2:1
65–69	86.8	14.1	100.0	0.2:1
70–74	91.0	13.4	100.0	0.2:1
75–79	95.3	12.8	100.0	0.1:1
80–84	97.7	12.5	100.0	0.1:1
85–89	99.0	12.3	100.0	0.1:1
90–94	99.6	12.3	100.0	0.1:1
95–100	100.0	12.2	100.0	0.1:1

150% of the National Poverty Line Tables

2008 Scorecard Applied to 2008 Validation Sample

Figure 5 (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	98.1
15–19	97.5
20–24	95.8
25–29	91.3
30–34	87.5
35–39	80.3
40–44	67.3
45–49	69.3
50–54	55.1
55–59	49.5
60–64	32.5
65–69	26.3
70–74	23.8
75–79	11.5
80–84	8.4
85–89	11.0
90–94	0.0
95–100	0.0

Figure 8 (150% of the national line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2008 scorecard applied to the 2008 validation sample

| | | Difference between estimate and true value | | |
| | | Confidence interval (+/− percentage points) | | |
Score	Diff.	90-percent	95-percent	99-percent
0–4	+0.4	0.6	0.6	0.8
5–9	+0.0	0.0	0.0	0.0
10–14	−1.3	0.9	0.9	0.9
15–19	+0.9	1.4	1.7	2.1
20–24	+3.0	2.3	2.7	3.4
25–29	−1.3	1.4	1.7	2.1
30–34	+3.1	2.1	2.4	3.3
35–39	−4.4	3.1	3.3	3.7
40–44	−9.5	5.8	6.0	6.4
45–49	+1.5	2.4	2.9	4.0
50–54	+5.2	2.7	3.3	4.2
55–59	+1.7	2.7	3.3	4.2
60–64	+0.1	2.6	3.2	4.2
65–69	+5.2	2.2	2.6	3.5
70–74	+6.1	2.8	3.4	4.6
75–79	+6.2	1.3	1.5	1.9
80–84	+0.6	2.4	2.9	3.7
85–89	+3.1	2.9	3.5	4.9
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 10 (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, 2008 scorecard applied to the 2008 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/− percentage points)		
		90-percent	95-percent	99-percent
1	−1.0	68.4	77.0	92.2
4	−1.4	38.0	43.7	54.2
8	−0.4	29.0	34.0	43.7
16	+0.0	19.6	24.2	32.0
32	+0.7	13.9	16.6	21.2
64	+1.0	9.9	11.6	15.0
128	+1.1	6.9	7.8	10.5
256	+1.0	5.0	5.9	7.5
512	+0.9	3.6	4.2	5.6
1,024	+0.9	2.5	2.9	3.8
2,048	+0.9	1.8	2.1	2.7
4,096	+0.9	1.3	1.6	2.0
8,192	+0.9	0.9	1.1	1.4
16,384	+0.9	0.6	0.7	1.0

Figure 12 (150% of the national line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, 2008 scorecard applied to the 2008 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	0.7	59.4	0.0	39.9	40.6	–97.6
5–9	2.1	58.0	0.0	39.9	42.0	–93.0
10–14	4.5	55.6	0.0	39.8	44.4	–84.9
15–19	7.8	52.3	0.2	39.7	47.5	–73.8
20–24	11.7	48.5	0.4	39.5	51.2	–60.6
25–29	17.9	42.2	1.0	38.9	56.8	–38.7
30–34	23.2	36.9	2.0	37.9	61.1	–19.5
35–39	31.0	29.1	3.4	36.5	67.5	+8.9
40–44	38.5	21.6	5.9	34.0	72.5	+38.1
45–49	44.6	15.5	9.0	30.9	75.5	+63.3
50–54	49.6	10.6	13.5	26.4	76.0	+77.6
55–59	54.0	6.1	17.9	21.9	75.9	+70.2
60–64	56.6	3.5	22.6	17.3	73.9	+62.4
65–69	58.5	1.6	28.3	11.6	70.1	+52.9
70–74	59.4	0.8	31.7	8.2	67.6	+47.3
75–79	59.8	0.4	35.6	4.3	64.1	+40.9
80–84	60.0	0.1	37.7	2.2	62.2	+37.3
85–89	60.1	0.0	38.8	1.0	61.2	+35.4
90–94	60.1	0.0	39.5	0.4	60.5	+34.3
95–100	60.1	0.0	39.9	0.0	60.1	+33.6

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

Figure 13 (150% of the national line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2008 scorecard applied to the 2008 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	0.7	98.9	1.2	91.8:1
5–9	2.1	99.6	3.5	271.7:1
10–14	4.5	99.2	7.5	118.4:1
15–19	7.9	98.1	13.0	51.3:1
20–24	12.0	96.8	19.4	30.3:1
25–29	18.9	94.7	29.8	18.0:1
30–34	25.2	92.2	38.6	11.8:1
35–39	34.5	90.1	51.6	9.1:1
40–44	44.5	86.7	64.1	6.5:1
45–49	53.6	83.3	74.2	5.0:1
50–54	63.0	78.6	82.4	3.7:1
55–59	71.9	75.1	89.8	3.0:1
60–64	79.2	71.4	94.2	2.5:1
65–69	86.8	67.4	97.3	2.1:1
70–74	91.0	65.2	98.7	1.9:1
75–79	95.3	62.7	99.4	1.7:1
80–84	97.7	61.4	99.8	1.6:1
85–89	99.0	60.7	100.0	1.5:1
90–94	99.6	60.3	100.0	1.5:1
95–100	100.0	60.1	100.0	1.5:1

200% of the National Poverty Line Tables

2008 Scorecard Applied to 2008 Validation Sample

Figure 5 (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	99.0
15–19	99.3
20–24	97.6
25–29	95.4
30–34	94.4
35–39	92.3
40–44	86.7
45–49	81.9
50–54	70.0
55–59	63.6
60–64	52.8
65–69	44.6
70–74	44.1
75–79	32.1
80–84	24.8
85–89	25.2
90–94	6.2
95–100	0.0

Figure 8 (200% of the national line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16{,}384$), 2008 scorecard applied to the 2008 validation sample

| | | Difference between estimate and true value | | |
| | | Confidence interval (+/− percentage points) | | |
Score	Diff.	90-percent	95-percent	99-percent
0–4	+0.4	0.6	0.6	0.8
5–9	+0.0	0.0	0.0	0.0
10–14	−0.7	0.5	0.5	0.6
15–19	+0.7	0.8	0.9	1.2
20–24	+1.5	1.9	2.3	2.9
25–29	−3.1	1.8	1.9	1.9
30–34	+2.1	1.6	1.8	2.5
35–39	−1.7	1.5	1.6	1.9
40–44	+0.3	1.9	2.2	2.9
45–49	−4.2	2.9	3.1	3.5
50–54	+7.8	2.7	3.2	4.3
55–59	−9.0	5.8	6.0	6.6
60–64	+10.0	2.8	3.4	4.3
65–69	+8.4	2.5	3.0	4.0
70–74	+10.9	3.6	4.1	5.5
75–79	+16.0	2.4	2.8	3.7
80–84	+9.8	3.3	3.9	5.3
85–89	+17.2	2.9	3.5	5.0
90–94	+6.2	0.0	0.0	0.0
95–100	−2.6	2.6	2.9	3.5

Figure 10 (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, 2008 scorecard applied to the 2008 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (+/− percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+1.5	62.7	71.3	81.2
4	+0.8	35.7	41.7	51.9
8	+1.7	27.9	33.2	40.1
16	+2.3	20.3	23.6	29.8
32	+3.1	14.6	17.2	21.5
64	+3.3	10.1	11.8	15.6
128	+3.4	6.9	8.6	11.3
256	+3.3	5.0	5.7	8.1
512	+3.2	3.6	4.5	5.7
1,024	+3.2	2.5	2.9	3.9
2,048	+3.2	1.8	2.2	2.7
4,096	+3.3	1.2	1.5	2.0
8,192	+3.3	0.9	1.1	1.4
16,384	+3.3	0.7	0.8	1.1

Figure 12 (200% of the national line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, 2008 scorecard applied to the 2008 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	0.7	71.4	0.0	27.9	28.6	–98.0
5–9	2.1	70.0	0.0	27.9	30.0	–94.2
10–14	4.5	67.6	0.0	27.8	32.4	–87.4
15–19	7.9	64.3	0.1	27.8	35.7	–78.1
20–24	11.9	60.2	0.2	27.7	39.6	–66.8
25–29	18.6	53.5	0.3	27.5	46.1	–47.9
30–34	24.4	47.7	0.8	27.1	51.5	–31.3
35–39	33.1	39.1	1.4	26.5	59.6	–6.4
40–44	41.7	30.4	2.8	25.1	66.8	+19.5
45–49	49.3	22.8	4.3	23.6	72.9	+42.6
50–54	55.7	16.4	7.3	20.6	76.3	+64.6
55–59	62.1	10.1	9.9	18.0	80.1	+85.8
60–64	65.8	6.3	13.5	14.4	80.2	+81.3
65–69	69.0	3.1	17.8	10.1	79.1	+75.3
70–74	70.6	1.6	20.5	7.4	77.9	+71.6
75–79	71.6	0.6	23.7	4.1	75.7	+67.1
80–84	72.0	0.2	25.7	2.2	74.1	+64.4
85–89	72.1	0.0	26.8	1.0	73.1	+62.8
90–94	72.1	0.0	27.5	0.3	72.5	+61.8
95–100	72.1	0.0	27.9	0.0	72.1	+61.4

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

Figure 13 (200% of the national line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2008 scorecard applied to the 2008 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	0.7	98.9	1.0	91.8:1
5–9	2.1	99.6	2.9	271.7:1
10–14	4.5	99.5	6.3	215.3:1
15–19	7.9	99.1	10.9	111.7:1
20–24	12.0	98.7	16.5	76.9:1
25–29	18.9	98.2	25.8	56.0:1
30–34	25.2	96.9	33.8	30.9:1
35–39	34.5	96.0	45.8	23.9:1
40–44	44.5	93.7	57.8	15.0:1
45–49	53.6	92.0	68.3	11.5:1
50–54	63.0	88.4	77.3	7.7:1
55–59	71.9	86.3	86.1	6.3:1
60–64	79.2	83.0	91.2	4.9:1
65–69	86.8	79.5	95.7	3.9:1
70–74	91.0	77.5	97.8	3.4:1
75–79	95.3	75.1	99.2	3.0:1
80–84	97.7	73.7	99.8	2.8:1
85–89	99.0	72.9	100.0	2.7:1
90–94	99.6	72.4	100.0	2.6:1
95–100	100.0	72.1	100.0	2.6:1

USAID "Extreme" Poverty Line

2008 Scorecard Applied to 2008 Validation Sample

Figure 5 (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	86.8
5–9	78.8
10–14	67.9
15–19	56.5
20–24	53.8
25–29	41.3
30–34	32.1
35–39	23.1
40–44	16.5
45–49	13.2
50–54	9.2
55–59	5.7
60–64	0.7
65–69	0.9
70–74	0.5
75–79	0.5
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Figure 8 (USAID "extreme" line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16{,}384$), 2008 scorecard applied to the 2008 validation sample

| Score | Diff. | Difference between estimate and true value | | |
| | | Confidence interval (+/− percentage points) | | |
		90-percent	95-percent	99-percent
0–4	+15.3	8.4	9.9	13.4
5–9	+18.0	7.0	8.2	10.4
10–14	+0.8	4.7	5.6	7.6
15–19	−2.7	4.2	5.0	6.9
20–24	+3.4	3.8	4.6	6.0
25–29	−6.4	4.9	5.2	6.0
30–34	−5.0	4.1	4.3	4.9
35–39	−6.5	4.5	4.8	5.1
40–44	+1.1	1.7	2.0	2.5
45–49	+0.9	1.6	1.9	2.6
50–54	+4.5	0.8	1.0	1.3
55–59	−0.3	1.3	1.5	2.1
60–64	+0.2	0.2	0.3	0.4
65–69	+0.5	0.2	0.2	0.3
70–74	−0.4	0.5	0.5	0.7
75–79	+0.5	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 10 (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, 2008 scorecard applied to the 2008 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/− percentage points)		
		90-percent	95-percent	99-percent
1	+0.1	62.2	70.0	84.8
4	+0.0	30.1	37.7	51.1
8	+0.1	19.8	24.2	34.1
16	−0.0	14.1	16.8	22.1
32	−0.2	9.7	11.5	15.1
64	−0.2	7.0	8.5	10.8
128	−0.2	5.1	6.2	8.0
256	−0.2	3.6	4.3	5.4
512	−0.1	2.5	3.1	4.2
1,024	−0.0	1.8	2.2	2.9
2,048	−0.1	1.2	1.4	2.1
4,096	−0.1	0.9	1.1	1.4
8,192	−0.1	0.6	0.8	1.0
16,384	−0.1	0.4	0.5	0.7

Figure 12 (USAID "extreme" line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, 2008 scorecard applied to the 2008 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	0.6	18.7	0.2	80.6	81.1	−93.4
5–9	1.6	17.7	0.5	80.2	81.8	−80.9
10–14	3.3	16.0	1.3	79.5	82.8	−59.3
15–19	5.2	14.1	2.7	78.0	83.2	−31.7
20–24	7.4	11.9	4.7	76.1	83.4	+0.7
25–29	10.3	9.0	8.6	72.1	82.4	+51.7
30–34	12.4	6.9	12.8	67.9	80.3	+33.5
35–39	14.8	4.5	19.7	61.1	75.9	−1.9
40–44	16.7	2.6	27.8	52.9	69.6	−44.2
45–49	17.9	1.3	35.6	45.1	63.0	−84.8
50–54	18.6	0.7	44.5	36.2	54.8	−130.7
55–59	19.0	0.2	52.9	27.8	46.8	−174.4
60–64	19.1	0.2	60.1	20.6	39.7	−211.8
65–69	19.2	0.1	67.6	13.1	32.3	−250.7
70–74	19.3	0.0	71.8	9.0	28.2	−272.2
75–79	19.3	0.0	76.0	4.7	24.0	−294.3
80–84	19.3	0.0	78.4	2.3	21.6	−306.6
85–89	19.3	0.0	79.7	1.0	20.3	−313.2
90–94	19.3	0.0	80.3	0.4	19.7	−316.7
95–100	19.3	0.0	80.7	0.0	19.3	−318.7

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

Figure 13 (USAID "extreme" line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2008 scorecard applied to the 2008 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	0.7	78.1	2.9	3.6:1
5–9	2.1	74.5	8.2	2.9:1
10–14	4.5	72.5	17.1	2.6:1
15–19	7.9	65.8	27.1	1.9:1
20–24	12.0	61.3	38.2	1.6:1
25–29	18.9	54.4	53.4	1.2:1
30–34	25.2	49.1	64.2	1.0:1
35–39	34.5	43.0	76.8	0.8:1
40–44	44.5	37.5	86.5	0.6:1
45–49	53.6	33.5	93.1	0.5:1
50–54	63.0	29.4	96.2	0.4:1
55–59	71.9	26.5	98.7	0.4:1
60–64	79.2	24.1	99.2	0.3:1
65–69	86.8	22.1	99.7	0.3:1
70–74	91.0	21.2	100.0	0.3:1
75–79	95.3	20.2	100.0	0.3:1
80–84	97.7	19.7	100.0	0.2:1
85–89	99.0	19.5	100.0	0.2:1
90–94	99.6	19.4	100.0	0.2:1
95–100	100.0	19.3	100.0	0.2:1

$1.25/day 2005 PPP Poverty Line

2008 Scorecard Applied to 2008 Validation Sample

Figure 5 ($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	100.0
5–9	96.4
10–14	94.6
15–19	90.8
20–24	87.5
25–29	81.1
30–34	75.4
35–39	62.9
40–44	51.6
45–49	47.6
50–54	37.6
55–59	28.2
60–64	18.3
65–69	16.1
70–74	12.9
75–79	4.3
80–84	1.0
85–89	0.5
90–94	0.0
95–100	0.0

Figure 8 ($1.25/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2008 scorecard applied to the 2008 validation sample

Score	Diff.	Difference between estimate and true value		
		Confidence interval (+/− percentage points)		
		90-percent	95-percent	99-percent
0–4	+0.4	0.6	0.6	0.8
5–9	−2.0	1.5	1.6	1.9
10–14	−4.1	2.4	2.4	2.5
15–19	−1.6	2.0	2.4	3.0
20–24	+5.5	3.1	3.8	4.7
25–29	−0.5	2.2	2.5	3.3
30–34	+2.9	2.6	3.1	3.9
35–39	−8.5	5.4	5.6	6.0
40–44	−8.3	5.3	5.5	6.0
45–49	+2.8	2.6	3.2	4.1
50–54	+4.4	2.4	2.8	3.8
55–59	+2.5	2.4	3.0	4.1
60–64	+4.2	1.9	2.2	2.9
65–69	+6.0	1.7	2.0	2.5
70–74	+7.8	1.4	1.7	2.2
75–79	+3.0	0.5	0.6	0.9
80–84	−0.3	0.7	0.8	1.1
85–89	−0.5	0.8	0.9	1.3
90–94	+0.0	0.0	0.0	0.0
95–100	+0.0	0.0	0.0	0.0

Figure 10 ($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, 2008 scorecard applied to the 2008 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	62.7	73.6	87.3
4	−0.5	36.4	43.1	56.5
8	+0.2	27.0	33.0	42.3
16	+0.4	19.3	22.3	27.7
32	+0.8	12.9	15.5	20.2
64	+1.1	9.4	11.4	15.3
128	+1.1	6.7	8.0	10.8
256	+1.0	4.8	5.6	7.8
512	+1.0	3.3	4.0	5.7
1,024	+1.0	2.4	2.8	3.9
2,048	+1.0	1.6	2.0	2.8
4,096	+1.0	1.2	1.4	1.9
8,192	+1.0	0.9	1.0	1.3
16,384	+1.0	0.6	0.7	1.0

Figure 12 ($1.25/day 2005 PPP line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, 2008 scorecard applied to the 2008 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	0.7	44.7	0.0	54.5	55.2	−96.9
5–9	2.1	43.4	0.0	54.5	56.6	−90.8
10–14	4.4	41.0	0.1	54.4	58.9	−80.2
15–19	7.5	37.9	0.4	54.1	61.7	−65.9
20–24	11.0	34.4	1.0	53.5	64.5	−49.3
25–29	16.5	29.0	2.4	52.1	68.6	−22.1
30–34	20.9	24.6	4.3	50.3	71.2	+1.4
35–39	27.2	18.2	7.2	47.3	74.5	+35.7
40–44	33.0	12.5	11.5	43.0	76.0	+70.4
45–49	37.3	8.2	16.3	38.2	75.5	+64.1
50–54	40.5	5.0	22.6	32.0	72.4	+50.4
55–59	42.9	2.6	29.1	25.5	68.3	+36.0
60–64	44.1	1.4	35.2	19.4	63.5	+22.7
65–69	44.9	0.5	41.9	12.6	57.6	+7.8
70–74	45.2	0.2	45.8	8.7	54.0	−0.7
75–79	45.4	0.1	49.9	4.6	50.0	−9.9
80–84	45.4	0.0	52.2	2.3	47.7	−14.9
85–89	45.5	0.0	53.5	1.0	46.5	−17.7
90–94	45.5	0.0	54.2	0.4	45.8	−19.2
95–100	45.5	0.0	54.5	0.0	45.5	−20.0

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

Figure 13 ($1.25/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2008 scorecard applied to the 2008 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	0.7	98.9	1.6	91.8:1
5–9	2.1	97.9	4.5	46.9:1
10–14	4.5	97.7	9.8	42.6:1
15–19	7.9	94.9	16.6	18.6:1
20–24	12.0	91.5	24.2	10.8:1
25–29	18.9	87.1	36.3	6.7:1
30–34	25.2	83.0	46.0	4.9:1
35–39	34.5	79.0	59.9	3.8:1
40–44	44.5	74.2	72.6	2.9:1
45–49	53.6	69.6	82.0	2.3:1
50–54	63.0	64.2	89.0	1.8:1
55–59	71.9	59.6	94.3	1.5:1
60–64	79.2	55.6	97.0	1.3:1
65–69	86.8	51.7	98.8	1.1:1
70–74	91.0	49.7	99.5	1.0:1
75–79	95.3	47.6	99.8	0.9:1
80–84	97.7	46.5	99.9	0.9:1
85–89	99.0	45.9	100.0	0.8:1
90–94	99.6	45.6	100.0	0.8:1
95–100	100.0	45.5	100.0	0.8:1

$2.50/day 2005 PPP Poverty Line

2008 Scorecard Applied to 2008 Validation Sample

Figure 5 ($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	99.6
15–19	100.0
20–24	99.1
25–29	97.2
30–34	96.5
35–39	94.4
40–44	88.6
45–49	85.0
50–54	77.4
55–59	73.3
60–64	62.3
65–69	55.0
70–74	49.2
75–79	39.2
80–84	29.8
85–89	28.3
90–94	6.2
95–100	0.0

Figure 8 ($2.50/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16{,}384$), 2008 scorecard applied to the 2008 validation sample

| Score | Diff. | Difference between estimate and true value | | |
| | | Confidence interval (+/− percentage points) | | |
		90-percent	95-percent	99-percent
0–4	+0.4	0.6	0.6	0.8
5–9	+0.0	0.0	0.0	0.0
10–14	−0.1	0.4	0.4	0.6
15–19	+0.6	0.5	0.6	0.7
20–24	−0.8	0.4	0.4	0.4
25–29	−1.8	1.1	1.2	1.2
30–34	+1.5	1.2	1.5	2.0
35–39	−3.2	1.9	1.9	2.1
40–44	−1.3	1.7	2.0	2.5
45–49	−6.8	4.1	4.2	4.3
50–54	+11.7	2.7	3.3	4.1
55–59	−8.2	5.2	5.4	5.9
60–64	+12.5	2.9	3.4	4.3
65–69	+6.7	2.7	3.2	4.1
70–74	+6.7	3.7	4.6	6.2
75–79	+20.9	2.5	3.0	4.0
80–84	+9.3	3.8	4.4	5.8
85–89	+20.3	2.9	3.5	5.0
90–94	+4.4	1.0	1.3	1.7
95–100	−2.6	2.6	2.9	3.5

Figure 10 ($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, 2008 scorecard applied to the 2008 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	59.1	64.1	77.6
4	+1.6	34.5	40.2	49.0
8	+2.1	26.2	30.3	37.3
16	+2.5	19.5	22.9	30.3
32	+3.2	14.4	17.1	20.8
64	+3.4	10.1	12.2	15.4
128	+3.4	7.3	8.5	11.6
256	+3.3	5.0	6.2	7.7
512	+3.3	3.6	4.4	5.7
1,024	+3.3	2.5	3.0	3.8
2,048	+3.3	1.8	2.1	2.9
4,096	+3.3	1.3	1.5	2.0
8,192	+3.3	0.9	1.0	1.4
16,384	+3.3	0.6	0.7	1.0

Figure 12 ($2.50/day 2005 PPP line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, 2008 scorecard applied to the 2008 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	0.7	76.2	0.0	23.1	23.8	–98.1
5–9	2.1	74.8	0.0	23.1	25.2	–94.5
10–14	4.5	72.4	0.0	23.1	27.6	–88.2
15–19	7.9	69.0	0.0	23.0	30.9	–79.4
20–24	12.0	64.9	0.0	23.0	35.0	–68.8
25–29	18.8	58.1	0.2	22.9	41.7	–51.0
30–34	24.7	52.2	0.5	22.6	47.3	–35.1
35–39	33.6	43.3	0.8	22.3	55.9	–11.5
40–44	42.7	34.2	1.8	21.3	64.0	+13.3
45–49	50.9	26.1	2.7	20.4	71.2	+35.7
50–54	57.7	19.2	5.3	17.8	75.5	+57.0
55–59	64.7	12.2	7.2	15.8	80.5	+77.6
60–64	69.0	7.9	10.3	12.8	81.8	+86.7
65–69	73.0	3.9	13.9	9.2	82.2	+82.0
70–74	74.9	2.0	16.1	7.0	81.9	+79.0
75–79	76.1	0.8	19.2	3.9	80.1	+75.1
80–84	76.7	0.2	21.0	2.1	78.8	+72.8
85–89	76.9	0.1	22.1	1.0	77.8	+71.3
90–94	76.9	0.0	22.7	0.3	77.2	+70.5
95–100	76.9	0.0	23.1	0.0	76.9	+70.0

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

Figure 13 ($2.50/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2008 scorecard applied to the 2008 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	0.7	98.9	0.9	91.8:1
5–9	2.1	99.6	2.7	271.7:1
10–14	4.5	99.5	5.9	215.3:1
15–19	7.9	99.5	10.3	188.7:1
20–24	12.0	99.6	15.6	245.5:1
25–29	18.9	99.1	24.4	114.7:1
30–34	25.2	98.1	32.1	52.5:1
35–39	34.5	97.6	43.7	40.7:1
40–44	44.5	96.0	55.5	24.0:1
45–49	53.6	94.9	66.1	18.7:1
50–54	63.0	91.6	75.0	10.9:1
55–59	71.9	89.9	84.1	8.9:1
60–64	79.2	87.1	89.7	6.7:1
65–69	86.8	84.0	94.9	5.3:1
70–74	91.0	82.3	97.4	4.6:1
75–79	95.3	79.9	99.0	4.0:1
80–84	97.7	78.5	99.7	3.7:1
85–89	99.0	77.7	99.9	3.5:1
90–94	99.6	77.2	100.0	3.4:1
95–100	100.0	76.9	100.0	3.3:1

$3.75/day 2005 PPP Poverty Line

2008 Scorecard Applied to 2008 Validation Sample

Figure 5 ($3.75/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	100.0
15–19	100.0
20–24	100.0
25–29	99.9
30–34	99.3
35–39	98.9
40–44	94.4
45–49	93.3
50–54	90.0
55–59	89.5
60–64	82.5
65–69	73.4
70–74	75.8
75–79	64.0
80–84	54.4
85–89	42.9
90–94	20.3
95–100	24.4

Figure 8 ($3.75/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2008 scorecard applied to the 2008 validation sample

Score	Diff.	Difference between estimate and true value		
		Confidence interval (+/− 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	+0.0	0.0	0.0	0.0
15–19	+0.6	0.5	0.6	0.7
20–24	+0.1	0.1	0.1	0.1
25–29	+0.7	0.4	0.5	0.6
30–34	+0.3	0.5	0.6	0.8
35–39	–0.7	0.4	0.4	0.5
40–44	+1.7	1.6	1.9	2.4
45–49	–4.8	2.7	2.7	2.8
50–54	+7.2	2.4	3.0	3.8
55–59	–0.9	1.8	2.2	2.9
60–64	–2.5	2.2	2.4	3.3
65–69	+3.8	2.7	3.2	4.1
70–74	+11.7	4.0	4.9	6.4
75–79	+15.5	3.9	4.7	6.2
80–84	+3.5	5.7	6.9	8.9
85–89	–4.7	6.4	7.7	9.9
90–94	–38.3	23.7	24.5	26.3
95–100	–24.0	18.0	19.1	21.5

Figure 10 ($3.75/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, 2008 scorecard applied to the 2008 validation sample

Sample Size	Difference between estimate and true value			
	Diff.	Confidence interval (+/− percentage points)		
n		90-percent	95-percent	99-percent
1	−1.0	54.7	61.6	79.8
4	−0.7	33.1	38.2	56.1
8	+0.0	24.8	30.5	46.1
16	+0.7	18.8	23.1	33.2
32	+0.8	14.6	16.9	23.0
64	+1.2	10.3	11.8	15.8
128	+1.3	7.2	8.8	11.5
256	+1.2	5.1	5.8	7.4
512	+1.3	3.7	4.3	5.6
1,024	+1.3	2.7	3.2	4.0
2,048	+1.3	1.9	2.3	2.9
4,096	+1.3	1.3	1.5	1.9
8,192	+1.3	0.9	1.1	1.4
16,384	+1.3	0.7	0.8	1.0

Figure 12 ($3.75/day 2005 PPP line): Households by targeting classification and score, along with "Total Accuracy" and BPAC, 2008 scorecard applied to the 2008 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	0.7	88.0	0.0	11.3	12.0	–98.4
5–9	2.1	86.6	0.0	11.3	13.4	–95.2
10–14	4.5	84.2	0.0	11.3	15.8	–89.7
15–19	7.9	80.8	0.0	11.3	19.2	–82.1
20–24	12.0	76.7	0.0	11.3	23.3	–72.9
25–29	18.8	69.9	0.1	11.2	30.0	–57.4
30–34	25.0	63.7	0.2	11.1	36.1	–43.4
35–39	34.2	54.5	0.2	11.0	45.3	–22.6
40–44	43.7	45.0	0.7	10.5	54.3	–0.6
45–49	52.5	36.2	1.0	10.3	62.8	+19.6
50–54	60.9	27.8	2.1	9.2	70.1	+39.7
55–59	69.0	19.7	2.9	8.4	77.4	+58.9
60–64	75.2	13.5	4.1	7.2	82.4	+74.1
65–69	80.7	8.0	6.1	5.2	85.9	+88.9
70–74	83.8	4.9	7.2	4.0	87.8	+91.8
75–79	86.3	2.4	9.0	2.3	88.6	+89.9
80–84	87.6	1.1	10.1	1.2	88.8	+88.6
85–89	88.2	0.5	10.8	0.5	88.7	+87.9
90–94	88.6	0.1	11.1	0.2	88.8	+87.5
95–100	88.7	0.0	11.3	0.0	88.7	+87.3

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

Figure 13 ($3.75/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2008 scorecard applied to the 2008 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	0.7	100.0	0.8	Only poor targeted
5–9	2.1	100.0	2.4	Only poor targeted
10–14	4.5	100.0	5.1	Only poor targeted
15–19	7.9	99.7	8.9	380.2:1
20–24	12.0	99.8	13.5	432.2:1
25–29	18.9	99.4	21.2	179.1:1
30–34	25.2	99.4	28.2	153.2:1
35–39	34.5	99.3	38.6	142.4:1
40–44	44.5	98.3	49.3	58.9:1
45–49	53.6	98.1	59.2	51.1:1
50–54	63.0	96.7	68.7	28.9:1
55–59	71.9	96.0	77.8	23.8:1
60–64	79.2	94.9	84.7	18.5:1
65–69	86.8	93.0	91.0	13.2:1
70–74	91.0	92.0	94.5	11.6:1
75–79	95.3	90.6	97.3	9.6:1
80–84	97.7	89.7	98.7	8.7:1
85–89	99.0	89.1	99.4	8.2:1
90–94	99.6	88.9	99.8	8.0:1
95–100	100.0	88.7	100.0	7.9:1