Simple Poverty Scorecard® Poverty-Assessment Tool Senegal

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Abstract

The Simple Poverty Scorecard-brand poverty-assessment tool uses 11 low-cost indicators from Senegal's 2011 Poverty Monitoring Survey to estimate the likelihood that a household has consumption below a given poverty line. Field workers can collect responses in about ten minutes. Accuracy is reported for a range of poverty lines. The scorecard is a practical way for pro-poor programs in Senegal to measure poverty rates, to track changes in poverty rates over time, and to segment clients for differentiated treatment.

Version note

This paper uses 2011 data, replacing Schreiner (2009a), which uses 2005/6 data. The new 2011 scorecard should be used from now on. Six of the poverty lines supported for the old 2005/6 scorecard are also supported for the new 2011 scorecard, so existing users can measure change over time for those lines with a baseline from the old 2005/6 scorecard and a follow-up from the new 2011 scorecard.

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Simple Poverty Scorecard® Poverty-Assessment Tool

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

Indicator	Response	Points	Score
1. How many members does the household have?	A. Fifteen or more	0	
	B. Thirteen, or fourteen	8	
	C. Eleven, or twelve	13	
	D. Nine, or ten	20	
	E. Eight	24	
	F. Seven	28	
	G. Six	30	
	H. One to five	35	
2. In the last seven days, did the male head/spouse work at least one hour in self-employment, as a paid or unpaid employee, or as an apprentice or family worker?	A. No	0	
	B. Yes	2	
	C. No male head/spouse	5	
3. Does the residence have a separate room for a kitchen?	A. No	0	
	B. Yes	4	
4. What is the main toilet arrangement used by the household?	A. None/bush, open latrine, bowl/bucket, public restroom, covered latrine, improved ventilated latrine, or a neighbor's toilet arrangement	0	
	B. Flush toilet (with a septic tank or connected to sewer system), or other	6	
5. Does your household have a living-room set in good working order?	A. No	0	
	B. Yes	8	
6. Does your household have a bedroom set in good working order?	A. No	0	
	B. Yes	4	
7. Does your household have a refrigerator/freezer in good working order?	A. No	0	
	B. Yes	6	
8. How many fans in good working order does your household currently have?	A. None	0	
	B. One	9	
	C. Two or more	15	
9. Does your household have an electric iron in good working order?	A. No	0	
	B. Yes	4	
10. Does your household have a table in good working order?	A. No	0	
	B. Yes	5	
11. Does your household have a planter or sprayer in good working order?	A. No	0	
	B. Yes	8	

Score:

Back-page Worksheet: Household Membership

In the scorecard header, write the interview's unique identifier (if known), the interview date, and the sampling weight of the participant (if known). Then record the name and the unique identification number of the participant (who may differ from the respondent), of yourself as the field agent, and of the service point that the participant uses.

Read to the respondent: *Please tell me the first names (or nicknames) of the members of your household, starting with the head. A* household *is a group of one or more people—be they currently present or absent—who normally live and eat meals together and who pool all or part of their resources to meet their basic needs (in particular, food and shelter). All household members recognize the authority of one member as the head.* Members should have lived with the household for at least six of the past 12 months or currently live with the household and expect to stay for a total duration of at least six months.

Write down the name/nickname of each member, marking the head and his/her sex.

Count the number of household members, and write it in the scorecard header by "Number of household members:". Then mark the response to the first scorecard indicator.

Always keep in mind the full definitions of *household* and *household member* in the "Guidelines for the Interpretation of Scorecard Indicators".

First name or nickname	**Is <name> the head?**		
1.	No	Yes, male	Yes, female
2.	No	Yes, male	Yes, female
3.	No	Yes, male	Yes, female
4.	No	Yes, male	Yes, female
5.	No	Yes, male	Yes, female
6.	No	Yes, male	Yes, female
7.	No	Yes, male	Yes, female
8.	No	Yes, male	Yes, female
9.	No	Yes, male	Yes, female
10.	No	Yes, male	Yes, female
11.	No	Yes, male	Yes, female
12.	No	Yes, male	Yes, female
13.	No	Yes, male	Yes, female
14.	No	Yes, male	Yes, female
15.	No	Yes, male	Yes, female
16.	No	Yes, male	Yes, female
17.	No	Yes, male	Yes, female
18.	No	Yes, male	Yes, female
19.	No	Yes, male	Yes, female
20.	No	Yes, male	Yes, female
Number of household members:	—		

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

	Poverty likelihood (%)			
		National lines		
Score	**Food**	**100%**	**150%**	**200%**
0–4	25.6	97.7	100.0	100.0
5–9	19.0	89.5	100.0	100.0
10–14	16.4	84.1	100.0	100.0
15–19	14.7	84.1	98.1	100.0
20–24	11.8	77.4	97.8	100.0
25–29	11.8	74.7	97.8	99.7
30–34	10.7	74.5	93.0	98.2
35–39	5.5	52.0	85.4	96.2
40–44	5.3	43.2	74.4	90.1
45–49	4.1	33.4	70.7	89.0
50–54	2.3	28.6	63.5	85.9
55–59	2.3	22.8	57.0	80.1
60–64	1.2	16.5	49.0	72.1
65–69	0.2	5.5	35.5	61.7
70–74	0.2	4.7	25.1	52.0
75–79	0.2	2.4	16.1	37.9
80–84	0.2	1.8	10.4	20.8
85–89	0.2	1.8	3.2	14.9
90–94	0.2	1.8	3.2	14.9
95–100	0.0	0.8	1.4	6.5

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

	Poverty likelihood (%)						
	Intl. 2005 PPP lines					Intl. 2011 PPP lines	
Score	**$1.25**	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
0–4	91.7	100.0	100.0	100.0	100.0	91.7	100.0
5–9	79.8	98.3	99.9	100.0	100.0	81.2	99.7
10–14	72.6	96.8	99.8	100.0	100.0	76.1	99.6
15–19	69.2	94.6	99.8	100.0	100.0	73.6	95.5
20–24	60.3	93.3	99.7	100.0	100.0	66.1	94.9
25–29	56.7	91.0	99.3	100.0	100.0	63.1	94.4
30–34	47.1	88.9	96.4	100.0	100.0	51.7	91.6
35–39	27.9	72.4	88.7	99.9	100.0	33.2	79.7
40–44	26.5	62.1	78.0	98.3	99.4	30.2	68.8
45–49	16.8	52.1	71.4	98.0	98.7	18.0	57.2
50–54	10.9	43.2	61.1	92.8	98.7	12.8	51.3
55–59	8.3	38.3	59.1	92.0	96.5	11.2	48.5
60–64	4.6	31.1	51.8	88.8	93.5	6.7	36.5
65–69	0.8	14.8	34.9	79.9	90.4	2.1	19.0
70–74	0.7	6.6	21.3	79.4	90.4	1.0	11.0
75–79	0.6	3.4	14.0	74.5	88.2	0.7	7.6
80–84	0.6	2.6	10.4	53.1	84.0	0.7	6.5
85–89	0.6	2.1	2.5	47.4	78.3	0.7	2.5
90–94	0.6	2.1	2.5	29.0	57.6	0.7	2.5
95–100	0.0	0.9	1.1	14.2	57.6	0.3	1.1

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

	Poverty likelihood (%)					
	Poorest half of people	Percentile-based lines				
Score	below 100% Natl. line	20th	40th	50th	60th	80th
0–4	91.7	75.9	97.7	100.0	100.0	100.0
5–9	72.7	61.1	88.7	93.3	98.3	100.0
10–14	62.5	51.2	82.9	88.8	94.3	100.0
15–19	55.8	48.9	82.9	88.8	94.1	100.0
20–24	46.5	38.5	74.0	82.5	91.3	99.8
25–29	46.2	37.6	71.8	81.0	90.3	99.3
30–34	37.9	34.7	66.1	77.6	87.4	96.9
35–39	20.6	18.3	44.4	55.8	70.4	90.4
40–44	19.8	16.6	36.2	46.7	59.3	82.1
45–49	13.3	11.6	25.1	34.9	51.0	75.9
50–54	8.1	5.9	17.0	28.8	40.1	70.1
55–59	6.5	4.8	16.0	27.3	35.7	66.7
60–64	3.2	2.4	11.4	20.3	28.9	56.5
65–69	0.6	0.5	2.6	6.3	12.6	38.5
70–74	0.6	0.5	1.2	4.4	5.8	31.7
75–79	0.6	0.5	1.1	1.7	3.3	19.8
80–84	0.6	0.5	1.0	1.2	2.6	11.4
85–89	0.6	0.5	1.0	1.2	2.1	3.7
90–94	0.6	0.5	1.0	1.2	2.1	3.7
95–100	0.0	0.0	0.5	0.5	0.9	1.6

Note on estimating changes in poverty rates over time using both the old 2005/6 scorecard and the new 2011 scorecard

The new scorecard here is based on data from the 2011 Poverty Monitoring Survey (*Enquête de Suivi de la Pauvreté au Sénégal*, ESPS) done by Senegal's *Agence Nationale de la Statistique et la Démographie* (ANSD). It replaces the scorecard in Schreiner (2009a) that is based on data from the 2005/6 ESPS. The new 2011 scorecard should be used from now on.

The ESPS uses the same definition of *poverty* in both 2005/6 and 2011. Furthermore, six of the poverty lines supported for the old 2005/6 scorecard are also supported for the new 2011 scorecard. Therefore, estimated poverty rates for these six lines based on the old 2005/6 scorecard are comparable with estimates based on the new 2011 scorecard.[1]

Thus, pro-poor programs in Senegal that already use the old 2005/6 scorecard can switch to the new 2011 scorecard and still estimate hybrid changes in poverty rates over time with existing baseline estimates from the old 2005/6 scorecard and follow-up estimates from the new 2011 scorecard.

[1] ANSD (2013) compares ESPS poverty-rate estimates across 2005/6 and 2011 as if both surveys use the same definition of *poverty*. On pp. 27 and 30, ANSD notes that the 2005/6 measure of consumption is probably too high in the region of Louga and that the 2005/6 non-food component of the national poverty line is probably too low in the "other urban" (non-Dakar, and non-rural) stratum. Like ANSD, this paper ignores these non-comparabilities in the definition of *poverty*.

In sum, both first-time and legacy users should use the new 2011 scorecard from now on. Looking forward, this establishes the best baseline. Looking backward, legacy users of Senegal's old 2005/6 scorecard can still use existing estimates when measuring change.

Simple Poverty Scorecard® Poverty-Assessment Tool Senegal

1. Introduction

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

The new scorecard here uses data from Senegal's 2011 Poverty Monitoring Survey (*Enquête de Suivi de la Pauvreté au Sénégal*, ESPS). It replaces the old scorecard in Schreiner (2009a) that uses data from the 2005/6 ESPS. Only the new 2011 scorecard should be used from now on, as it is more accurate. Six poverty lines that are supported for the old 2005/6 scorecard are also supported for the new 2011 scorecard, so legacy users of the old 2005/6 scorecard can measure change over time for those lines with a baseline from the old 2005/6 scorecard and a follow-up from the new 2011 scorecard.

The direct approach to poverty measurement via consumption surveys is difficult and costly. The 2011 ESPS (done by Senegal's *Agence Nationale de la Statistique et la*

Démographie, ANSD) is a case in point. Enumerators for the ESPS completed about one interview per day, asking more than 600 questions, many of which had a number of follow-up questions.

In comparison, the indirect approach of the scorecard is quick and low-cost. It uses 11 verifiable indicators drawn from the 2011 ESPS (such as "Does the residence have a separate room for a kitchen?" and "How many fans in good working order does your household currently have?") to get a score that is correlated with poverty status as measured by the exhaustive ESPS survey.

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

The scorecard can be used to measure the share of a program's participants who are below a given poverty line (for example, Senegal's national line). USAID microenterprise partners in Senegal can use the scorecard with the $1.90/day 2011 PPP

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

poverty line to report how many of their participants are "very poor".[3] The scorecard can also be used to measure net movement across a poverty line over time. In all these applications, the scorecard provides a consumption-based, objective tool. While consumption surveys are costly even for governments, some local pro-poor organizations may be able to implement a low-cost poverty-assessment tool to help with monitoring poverty and (if desired) segmenting clients for differentiated treatment.

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

[3] USAID defines a household as *very poor* if its daily per-capita consumption is less than the highest of the $1.90/day 2011 PPP line (XOF474, Table 1) or the line that marks the poorest half of people below 100% of the national line (XOF409).

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

The scorecard is based on data from the 2011 ESPS by Senegal's ANSD. Indicators are selected to be:

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

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

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

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

Third, the scorecard can estimate the annual rate of change in the poverty rate. With two independent samples from the same population, this is the difference in the average poverty likelihood in the baseline sample versus the average likelihood in the follow-up sample, divided by the difference (in years) between the average interview date in the baseline sample and the average interview date in the follow-up sample.

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

The scorecard can also be used to segment participants for differentiated treatment. To help managers choose appropriate targeting cut-offs for their purposes, several measures of targeting accuracy are reported for a range of possible cut-offs.

This paper presents a single scorecard whose indicators and points are derived with Senegal's national poverty line applied to data from the 2011 ESPS. Scores from this one scorecard are calibrated with this same data to poverty likelihoods for 17 poverty lines. In particular, it is calibrated to six of the lines supported by the old 2005/6 scorecard (Schreiner, 2009a). Thus, legacy users can switch to the new 2011 scorecard here and measure change over time with one of these six lines by combining existing estimates from the old 2005/6 scorecard with estimates from the new 2011 scorecard.

The new 2011 scorecard is constructed using data from half of the households in the 2011 ESPS. Data from that same half of households is also used to calibrate scores to poverty likelihoods for 17 poverty lines. Data from the other half of households is used to validate the scorecard's accuracy for estimating households' poverty likelihoods, for estimating populations' poverty rates at a point in time, and for segmenting participants.

Given their assumptions, all three scorecard-based estimators (a household's poverty likelihood, a population's poverty rate at a point in time, and a population's annual rate of change in its poverty rate) are *unbiased*. That is, they match the population's true value on average in repeated samples when constructed from (and applied to) a single, unchanging population in which the relationship between scorecard indicators and poverty is unchanging. Like all predictive models, the scorecard is constructed from a single sample and so misses the mark to some unknown extent when applied (as in this paper) to a validation sample. Furthermore, it makes errors when applied (in practice) to a different population or when applied after 2011 (because the relationships between indicators and poverty change over time).[4]

Thus, while the indirect scorecard approach is less costly than the direct survey approach, it makes errors when applied in practice. (Observed values from the direct survey approach are taken as correct, ignoring sampling variation.) There are errors

[4] Important cases include nationally representative samples at a later point in time or sub-national populations that are not nationally representative (Diamond *et al.*, 2016; Tarozzi and Deaton, 2007).

because the scorecard necessarily assumes that future relationships between indicators and poverty in all populations will be the same as in the construction data. Of course, this assumption—inevitable in predictive modeling—holds only partly.

On average across 1,000 bootstraps of $n = 16{,}384$ from the validation sample, the average error (difference between the scorecard's estimate of a poverty rate versus the observed rate in the 2011 ESPS) at a point in time for 100% of the national poverty line is +0.1 percentage points. The average across all 17 poverty lines of the average absolute errors is about 1.5 percentage points, and the maximum of the average absolute errors is 3.7 percentage points. These estimation errors are due to sampling variation, not bias; the average difference would be zero if the whole 2011 ESPS were to be repeatedly re-fielded and re-divided into sub-samples before repeating the entire process of constructing and validating the resulting scorecards.

With $n = 16{,}384$, the 90-percent confidence intervals are ± 0.8 percentage points or less. For $n = 1{,}024$, the 90-percent intervals are ± 3.0 percentage points or less.

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

The "Guidelines for the Interpretation of Scorecard Indicators" tells how to ask questions—and how to interpret responses—so as to mimic practice in Senegal's 2011 ESPS as closely as possible. These "Guidelines" (and the "Back-page Worksheet") are integral parts of the Simple Poverty Scorecard tool.

2. Data and poverty lines

This section presents the data used to construct and validate the scorecard. It also documents the 17 poverty lines to which scores are calibrated.

2.1 Data

Indicators and points for the new 2011 scorecard are selected (*constructed*) based on data from a random half of the 5,953 households in Senegal's 2011 ESPS who were admininstered the full consumption module. The 2011 ESPS is Senegal's most-recent national consumption survey.

The data from the half of households from the 2011 ESPS that is used to construct the scorecard is also used to associate (*calibrate*) scores to poverty likelihoods for all poverty lines.

Data from the other half of households in the 2011 ESPS is used to test (*validate*) scorecard accuracy for point-in-time estimates of poverty rates *out-of-sample*, that is, with data that is not used in construction/calibration.

Field work for the 2011 ESPS ran from 1 August to 15 December 2011. Consumption is in units of XOF per person or per-adult-equivalent per day in average prices in Senegal as a whole during the ESPS fieldwork.

2.2 Poverty rates at the household, person, and participant level

A *poverty rate* is the share of units in households in which total household consumption (divided by the number of household members or by the number of adult equivalents in the household) is below a given poverty line. The unit of analysis is either the household itself or a person in the household. By assumption, each member of a given household has the same poverty status (or estimated poverty likelihood) as the other members in that household.

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

Poverty rates are in terms of either households or people. If the program defines its *participants* as households, then the household level is relevant. The estimated household-level poverty rate is the weighted[5] average of poverty statuses (or estimated poverty likelihoods) across households with participants. This is $\frac{1 \cdot 1 + 1 \cdot 0}{1 + 1} = \frac{1}{2} = 0.5 = 50$ percent. In the "$1 \cdot 1$" term in the numerator, the first "1" is the first household's weight, and the second "1" represents the first household's poverty status (poor) or its estimated poverty likelihood. In the "$1 \cdot 0$" term in the numerator, the "1" is the second household's weight, and the "0" represents the second household's

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

poverty status (non-poor) or its estimated poverty likelihood. The "$1 + 1$" in the denominator is the sum of the weights of the two households. Household-level weights are used because the unit of analysis is the household.

Alternatively, a person-level rate is relevant if a program defines all people in households that benefit from its services as *participants*. In the example here, the person-level rate is the household-size-weighted[6] average of poverty statuses (or estimated poverty likelihoods) for households with participants, or $\frac{3 \cdot 1 + 4 \cdot 0}{3 + 4} = \frac{3}{7} = 0.43 = 43$ percent. In the "$3 \cdot 1$" term in the numerator, the "3" is the first household's weight because it has three members, and the "1" represents its poverty status (poor) or its estimated poverty likelihood. In the "$4 \cdot 0$" term in the numerator, the "4" is the second household's weight because it has four members, and the zero represents its poverty status (non-poor) or its estimated poverty likelihood. The "$3 + 4$" in the denominator is the sum of the weights of the two households. A household's weight is its number of members because the unit of analysis is the household member.

As a final example, a program might count as *participants* only those household members who directly participate in the program. For the example here, this means that some—but not all—household members are counted. The person-level rate is now

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

the participant-weighted average[7] of the poverty statuses (or estimated poverty likelihoods) of households with participants, or $\frac{1 \cdot 1 + 2 \cdot 0}{1 + 2} = \frac{1}{3} = 0.33 = 33$ percent. The first "1" in the "$1 \cdot 1$" in the numerator is the first household's weight because it has one participant, and the second "1" represents its poverty status (poor) or its estimated poverty likelihood. In the "$2 \cdot 0$" term in the numerator, the "2" is the second household's weight because it has two participants, and the zero represents its poverty status (non-poor) or its estimated poverty likelihood. The "$1 + 2$" in the denominator is the sum of the weights of the two households. Each household's weight is its number of participants because the unit of analysis is the participant.

To sum up, estimated poverty rates are weighted averages of households' poverty statuses (or estimated poverty likelihoods), where—assuming simple random sampling at the household level—the weights are the number of relevant units in the household. When reporting, organizations should make explicit the unit of analysis—whether household, household member, or participant—and explain why that unit is relevant.

Table 1 reports poverty lines and poverty rates for households and people in the 2011 ESPS for Senegal as a whole, for the construction/calibration sample, and for the validation sample. For all of Senegal and for each of its 14 administrative regions, Table 2 reports poverty lines and poverty rates for households and people by urban/rural/all.

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

Household-level poverty rates are reported because—as shown above—household-level poverty likelihoods can be straightforwardly converted into poverty rates for other units of analysis and because sampling is almost always done at the level of households. This is also why the scorecard is constructed, calibrated, and validated with household weights. Person-level poverty rates are also included in Tables 1 and 2 because these are the rates reported by the government of Senegal. Furthermore, popular discussions and policy discourse usually proceed in terms of person-level rates, and the goal of pro-poor programs is to help people (not households) to improve their well-being.

2.3 Definition of *poverty*, and poverty lines

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

ANSD (2013) compares ESPS poverty-rate estimates across 2005/6 and 2011 without caveats, implying that both surveys use the same definition of *poverty*. ANSD (pp. 27 and 30) notes that the 2005/6 measure of consumption is probably too high in the region of Louga and that the 2005/6 non-food component of 100% of the national poverty line is probably too low in "other urban areas" (non-Dakar, and non-rural). Like ANSD (2013), this paper ignores these non-comparabilities in the definition of *poverty* between 2005/6 and 2011.

2.3.1 National poverty lines

Senegal's national poverty line for the 2011 ESPS follows the World Bank's (2004) derivation for the 2000/1 *Enquête Sénégalaise Auprès des Ménages*. Using Ravaillion's (1998) cost-of-basic-needs approach, the derivation of the national line starts with a food line that is the observed cost of 2,400 Calories in a basket of 24 food items (accounting for 80 percent of food consumption in the 2011 ESPS), where the share of a given food item is the average for people in the second through sixth deciles of per-adult-equivalent consumption in the 2011 ESPS (ANSD, 2013; Mesple-Somps, 2007). To account for geographic differences in cost-of-living, the food line is defined separately for three regions (Dakar, other urban areas, and rural).[8] The food line for Senegal as a whole for the 2011 ESPS is XOF339 per adult equivalent per day (Table 1), giving poverty rates of 4.6 percent (households) and 5.8 percent (people).

The national line (called here from now on "100% of the national line") is then defined—separately for Dakar, other urban areas, and rural—as the food line, plus the average non-food consumption per adult equivalent observed for households whose food consumption is within ±5 percent of the food line. For the 2011 ESPS, 100% of the national (food-plus-non-food) line for Senegal as a whole is XOF741 per adult equivalent per day, implying a household-level poverty rate of 35.6 percent and a person-level rate of 46.7 percent (Table 1).[9]

[8] There is no adjustment for changes in prices during ESPS fieldwork.

[9] The person-level poverty rate for 100% of the national (food-plus-non-food) line matches ANSD (2013, p. x), providing some confidence that this paper uses the same data as ANSD did in its official calculations.

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

Because pro-poor organizations in Senegal may want to use different or various poverty lines, this paper calibrates scores from its single new 2011 scorecard to poverty likelihoods for 17 lines:

- Food*
- 100% of national*
- 150% of national*
- 200% of national*
- $1.25/day 2005 PPP*
- $2.00/day 2005 PPP
- $2.50/day 2005 PPP*
- $5.00/day 2005 PPP
- $8.44/day 2005 PPP
- $1.90/day 2011 PPP
- $3.10/day 2011 PPP
- Line marking the poorest half of people below 100% of the national line
- First-quintile (20^{th}-percentile) line
- Second-quintile (40^{th}-percentile) line
- Median (50^{th}-percentile) line
- Third-quintile (60^{th}-percentile) line
- Fourth-quintile (80^{th}-percentile) line

The six poverty lines marked with an asterisk are also supported for the old 2005/6 scorecard (Schreiner, 2009a). Legacy users can use these lines to find hybrid estimates of changes in poverty rates over time in which the baseline estimate comes from the old 2005/6 scorecard and the follow-up estimate comes from the new 2011 scorecard.

2.3.2 International 2005 and 2011 PPP lines

International 2005 and 2011 PPP lines are derived from:

- PPP exchange rates for Senegal for "individual consumption expenditure by

households":
  - 2005:[10] XOF298.240 per $1.00
  - 2011:[11] XOF246.107 per $1.00
- Consumer Price Index (CPI):[12]
  - Calendar-year 2005 average: 100.910
  - Calendar-year 2010 average: 115.307
  - Calendar-year 2011 average: 119.290
  - Average during 2011 ESPS fieldwork: 120.929
- All-Senegal and regional price deflators:[13]
  - All-Senegal average deflator: 1.0000023
  - Dakar: 1.3669177
  - Other urban areas: 1.0908533
  - Rural: 0.8173479

[10] World Bank, 2008.

[11] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&C0=SEN_3&PPP0=246.107&PL0=1.90&Y0=2011&NumOfCountries=1`, retrieved 18 April 2017.

[12] The CPI series has base = 100 in December 2004. It is derived from splicing two "Dakar only (Harmonized)" series (base = 100 on average for calendar-year 1996, and base = 100 on average for calendar-year 2008) from `ansd.sn/ressources/publications/BADIS_2007-2009.pdf` and from `ansd.sn/index.php?option=com_ansd&view=titrepublication&id=6` (retrieved 18 April 2017).

[13] A given region's deflator is its value of 100% of the national line divided by the all-Senegal person-weighted average of 100% of the national line.

2.4.1.1. $1.25/day 2005 PPP line

For a given poverty-line region in Senegal (Dakar, other urban areas, or rural), the $1.25/day 2005 PPP line in prices for Senegal as a whole during fieldwork for the 2011 ESPS is

$$\frac{\$1.25 \cdot \left(\frac{\text{2005 PPP factor}}{\$1.00}\right)\left(\frac{\text{CPI}_{\text{2011 ESPS}}}{\text{CPI}_{\text{2005}}}\right) \cdot \text{Regional deflator}}{\text{All - Senegal deflator}}.$$

For the example of rural areas, the $1.25/day 2005 PPP line is

$$\frac{\$1.25 \cdot \left(\frac{\text{XOF298.240}}{\$1.00}\right)\left(\frac{\text{XOF120.929}}{\text{XOF100.910}}\right) \cdot 0.8173479}{1.0000023} = \text{XOF365.16}.$$

The all-Senegal $1.25/day 2005 PPP line is the person-weighted average of the three regional $1.25/day lines of XOF610.68 (Dakar), XOF487.35 (other urban areas), and XOF365.16 (rural). This is XOF446.76 per person per day, with a household-level poverty rate of 21.4 percent and a person-level poverty rate of 29.3 percent (Table 1).

For comparison, the World Bank's PovcalNet reports a person-level poverty rate for its $1.25/day 2005 PPP line of 34.1 percent.[14] The lower estimate here of 29.3 percent is to be preferred (Schreiner, 2014b) because PovcalNet does not report:

- Its $1.25/day 2005 PPP line in XOF
- The time/place of its price units
- Whether/how it adjusts for regional differences in prices
- How it deflates 2005 PPP factors over time

[14] `iresearch.worldbank.org/PovcalNetPPP2005/Detail.aspx?Format=Detail&C0=SEN_3&PPP0=298.25&PL0=1.25&Y0=2011&NumOfCountries=1`, retrieved 19 April 2017.

In particular, PovcalNet may not have adjusted for regional-price differences, applying instead a single $1.25/day line in all regions. This would reduce the poverty line in Dakar and other urban areas (decreasing their poverty rates) and increase the line in rural areas (increasing its poverty rate). With about 57 percent of the population in rural areas, the net effect is likely to increase the estimated poverty rate. Of course, it makes sense to adjust for regional-price differences; after all, such regional adjustments are the whole purpose of PPP poverty lines in the first place.

Two other factors may also affect the difference between PovcalNet and this paper. First, PovcalNet's estimates are based on a 20-quantile approximation of the distribution of consumption as opposed to direct use of the household-level microdata. Second, PovcalNet may use a different measure of consumption than that computed by ANSD for the 2011 ESPS.

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

The \$8.44/day 2005 PPP line is the 75th percentile of worldwide per-capita income (not consumption) as estimated by Hammond *et al.* (2007). It is used by the International Finance Corporation as a benchmark for the "bottom of the pyramid". While the \$1.25 standard is in prices in calendar-year 2005, the \$8.44 standard is in prices in calendar-year 2010.[15] Given the average CPI for calendar-year 2010 of 115.307, the all-Senegal \$8.44/day 2005 PPP line is thus

$$\frac{\$8.44 \cdot \left(\frac{\text{XOF298.240}}{\$1.00}\right)\left(\frac{\text{XOF120.929}}{\text{XOF115.307}}\right) \cdot 1.0000023}{1.0000023} = \text{XOF2,639.87.}$$

[15] `datatopics.worldbank.org/consumption/detail#consumptionsegments` and `datatopics.worldbank.org/consumption/detail#datastandardization`, both retrieved 19 April 2017.

2.4.1.2. $1.90/day 2011 PPP line

For a given poverty-line region in Senegal, the $1.90/day 2011 PPP line in prices for Senegal as a whole during fieldwork for the 2011 ESPS is

$$\frac{\$1.90 \cdot \left(\frac{\text{2011 PPP factor}}{\$1.00}\right)\left(\frac{\text{CPI}_{\text{2011 ESPS}}}{\text{CPI}_{\text{2011}}}\right) \cdot \text{Regional deflator}}{\text{All - Senegal deflator}}.$$

For the example of rural areas, the $1.90/day 2011 PPP line is

$$\frac{\$1.90 \cdot \left(\frac{\text{XOF246.107}}{\$1.00}\right)\left(\frac{\text{XOF120.929}}{\text{XOF119.290}}\right) \cdot 0.8173479}{1.0000023} = \text{XOF387.44}.$$

The all-Senegal $1.90/day 2011 PPP line is the person-weighted average of the three regional $1.90/day lines of XOF647.96 (Dakar), XOF517.09 (other urban areas), and XOF387.44 (rural). This is XOF474.03 per person per day, with a household-level poverty rate of 24.4 percent and a person-level poverty rate of 32.9 percent (Table 1).

PovcalNet reports a very similar $1.90/day 2011 PPP line of XOF470 but a higher person-level poverty rate of 38.0 percent.[16] As for the $1.25/day 2005 PPP line, the differences in poverty rates is probably due to PovcalNet's probably not adjusting for regional-price differences. Again, the estimate here is to be preferred.

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

[16] `iresearch.worldbank.org/PovcalNet/Detail.aspx?Format=Detail&C0=SEN_3&PPP0=246.107&PL0=1.90&Y0=2011&NumOfCountries=1`, retrieved 19 April 2017.

2.3.3 USAID "very poor" line

Microenterprise programs in Senegal who use the scorecard to report the number of their participants who are "very poor" to USAID should use the $1.90/day 2011 PPP line. This is because USAID defines the "very poor" as those people in households whose daily per-capita (not per-adult equivalent) consumption is below the highest of the following two poverty lines:

- The line that marks the poorest half of people below 100% of the national line (XOF409, with a person-level poverty rate of 23.4 percent, Table 1)
- The $1.90/day 2011 PPP line (XOF474, with a person-level poverty rate of 32.9 percent)

2.3.4 Percentile-based lines

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

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

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

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

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

In contrast, a wealth index opaquely defines *poverty* in terms of its own indicators and points, without reference to an external standard. This means that two wealth indexes with different indicators or different points—even if derived from the same data for a given country—imply two different definitions of *poverty*. In the same set-up, two scorecards would provide comparable estimates under a single definition of *poverty*.

3. Scorecard construction

For Senegal, about 90 candidate indicators are initially prepared in the areas of:

- Household composition (such as the number of members)
- Education (such as whether the female head/spouse or the first wife knows how to read and write in any language)
- Housing (such as whether the residence has a separate room for a kitchen)
- Ownership of durable assets (such as bedroom sets or electric irons)
- Agriculture (such as the ownership of a planter or sprayer)

Table 3 lists the candidate indicators, ordered by the entropy-based "uncertainty coefficient" (Goodman and Kruskal, 1979) that measures how well a given indicator predicts poverty status on its own.[17]

One possible application of the scorecard is to measure *changes* in poverty through time. Thus, when selecting indicators—and holding other considerations constant—preference is given to more sensitive indicators. For example, the number of fans owned is probably more likely to change in response to changes in poverty than is the age of the male head/spouse.

The scorecard itself is built using 100% of the national poverty line and Logit regression on the construction sub-sample. Indicator selection is based on both judgment and statistics. The first step is to use Logit to build one scorecard for each candidate indicator. The power of each one-indicator scorecard to rank households by poverty status is measured as "c" (SAS Institute Inc., 2004).

[17] The uncertainty coefficient is *not* used when selecting scorecard indicators. It is just a way to order the candidate indicators listed in Table 3.

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

A series of two-indicator scorecards are then built, each adding a second indicator to the one-indicator scorecard selected from the first round. The best two-indicator scorecard is then selected, again using judgment to balance statistical accuracy with the non-statistical criteria. These steps are repeated until the scorecard has 11 indicators that work well together.

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

This algorithm is similar to common R^2-based stepwise least-squares regression. It differs from naïve stepwise in that the selection of indicators considers both statistical[18] and non-statistical criteria. The use of non-statistical criteria can improve robustness through time and across non-nationally representative groups. It also helps ensure that indicators are straightforward, common-sense, and acceptable to users.

The single scorecard here applies to all of Senegal. Segmenting poverty-assessment tools by urban/rural does not improve targeting accuracy much as shown for nine countries in Sub-Saharan Africa (Brown, Ravaillon, and van de Walle, 2016)[19], Indonesia (World Bank, 2012), Bangladesh (Sharif, 2009), India and Mexico (Schreiner, 2006 and 2005a), Sri Lanka (Narayan and Yoshida, 2005), and Jamaica (Grosh and Baker, 1995). In general, segmentation may improve the accuracy of estimates of poverty rates (Schreiner, forthcoming; Diamond *et al.*, 2016; Tarozzi and Deaton, 2009), but it may also increase the risk of overfitting (Haslett, 2012).

[18] The statistical criterion for selecting an indicator is not the p values of its coefficients but rather the indicator's contribution to the ranking of households by poverty status.
[19] The nine countries are Burkina Faso, Ethiopia, Ghana, Malawi, Mali, Niger, Nigeria, Tanzania, and Uganda. On average across these countries when targeting people in the lowest quintile or in the lowest two quintiles of scores and when 20 or 40 percent of people are poor, segmenting by urban/rural increased the number of poor people correctly targeted by one per 200 or 400 poor people.

4. Practical guidelines for scorecard use

The main challenge of scorecard design is not to maximize statistical accuracy but rather to improve the chances that the scorecard is actually used (Schreiner, 2005b). When scorecard projects fail, the reason is not usually statistical inaccuracy but rather the failure of an organization to decide to do what is needed to integrate the scorecard in its processes and to train and convince its employees to use the scorecard properly (Schreiner, 2002). After all, most reasonable scorecards have similar targeting accuracy, thanks to the empirical phenomenon known as the "flat maximum" (Caire and Schreiner, 2012; Hand, 2006; Baesens *et al.*, 2003; Lovie and Lovie, 1986; Kolesar and Showers, 1985; Stillwell, Barron, and Edwards, 1983; Dawes, 1979; Wainer, 1976; Myers and Forgy, 1963). The bottleneck is less technical and more human, not statistics but organizational-change management. Accuracy is easier to achieve than adoption.

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

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

- Only 11 indicators
- Only "multiple-choice" indicators
- Only simple points (non-negative integers, and no arithmetic beyond addition)

The scorecard (and its "Back-page Worksheet") is ready to be photocopied. A field worker using the scorecard in Senegal would:

- Record the interview identifier, interview date, country code ("SEN"), scorecard code ("002") and the sampling weight assigned by the organization's survey design to the household of the participant (if known)
- Record the names and identifiers of the participant (who may not be the same as the respondent), of the field agent, and of the relevant organizational service point
- Complete the "Back-page Worksheet" with each household member's first name or nickname, noting which member is the male head/spouse (if he exists)
- Based on what has already been recorded on the "Back-page Worksheet", record household size (the number of household members) in the scorecard header next to "Number of household members:"
- Based on what has already been recorded on the "Back-page Worksheet", mark the response to the first scorecard indicator ("How many members does the household have?") based on the number of household members
- Read the rest of the scorecard indicators to the respondent one-by-one
- Draw circles around the relevant responses and their points, and write each point value in the far right-hand column
- Add up the points to get a total score
- Implement targeting policy (if any) based on the score
- Deliver the paper scorecard to a central office for data entry and filing

Of course, field workers must be trained. The quality of outputs depends on the quality of inputs. If organizations or field workers gather their own data and believe that they have an incentive to exaggerate poverty rates (for example, if managers or funders reward them for higher poverty rates), then it is wise to do on-going quality control via data review and random audits (Matul and Kline, 2003).[20] IRIS Center (2007a) and Toohig (2008) are useful nuts-and-bolts guides for budgeting, training field workers and supervisors, logistics, sampling, interviewing, piloting, recording data, and controlling quality. Schreiner (2014a) explains how to compute estimates and analyze them.

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

In particular, while collecting scorecard indicators is relatively easier than alternative ways of measuring poverty, it is still absolutely difficult. Training and explicit definitions of the terms and concepts in the scorecard are essential, and field workers should scrupulously study and follow the "Guidelines for the Interpretation of Scorecard Indicators" found after the References in this paper, as these "Guidelines"—along with the "Back-page Worksheet"—are integral parts of the Simple Poverty Scorecard tool.[21]

For the example of Nigeria, one study (Onwujekwe, Hanson, and Fox-Rushby, 2006) found distressingly low inter-rater and test-retest correlations for indicators as seemingly incontrovertible as whether a household owns an automobile. At the same time, Grosh and Baker (1995) suggest that gross underreporting of assets does not affect targeting. For the first stage of targeting in a conditional cash-transfer program in Mexico, Martinelli and Parker (2007, pp. 24–25) find that "underreporting [of asset ownership] is widespread but not overwhelming, except for a few goods . . . [and] overreporting is common for a few goods". Still, as is done in Mexico in the second stage of its targeting process, most false self-reports can be corrected (or avoided in the first place) by field workers who make a home visit. This is the recommended procedure for organizations who use the scorecard for targeting in Senegal.

[21] The guidelines here are the only ones that organizations should give to field workers. All other issues of interpretation should be left to the judgment of field workers and respondents, as this seems to be what Senegal's ANSD did in the 2011 ESPS.

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

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

In general, the sampling design should follow from the organization's goals for the exercise, the questions to be answered, and the budget. The main goal should be to make sure that the sample is representative of a well-defined population and that the use of the scorecard will inform an issue that matters to the organization.

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

- Employees of the organization
- Third parties

There is only one correct, on-label way to do interviews: in-person at the sampled household's residence with an enumerator trained to follow the "Guidelines for the Interpretation of Scorecard Indicators". This is how Segenal's ANSD did interviews in the 2011 ESPS, and this provides the most-accurate data and thus the best poverty estimates. Of course, it is possible to do interviews in other ways such as without an enumerator (for example, respondents on their own fill out paper or web forms or answer questions sent via e-mail, text messaging, or automated interactive voice-response systems), away from the residence (for example, at an organizational service point or at a group-meeting place), or not in-person (for example, an enumerator interviewing by phone). While such off-label methods may reduce costs, they also affect responses (Schreiner, 2015a) and thus reduce the accuracy of scorecard estimates. Thus, interviewing by a trained enumerator at the residence is recommended; off-label methods are not recommended. In some contexts—such as when field agents do not already visit participants periodically at home anyway—an organization might judge that the lower costs an off-label approach are enough to compensate for less-accurate estimates. The business wisdom of off-label methods depends on context-specific factors that organizations must judge for themselves. To judge carefully, organizations who are considering off-label methods should test how responses differ with an off-label method versus with a trained enumerator at the residence.

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

- Paper in the field, and then filed at a central office
- Paper in the field, and then keyed into a database or spreadsheet at a central office
- Portable electronic devices in the field, and then uploaded to a database[22]

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

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

If not determined by other factors, the number of participants to be scored can be derived from sample-size formulas (presented later) to achieve a desired confidence level and a desired confidence interval. To have a chance to meaningfully inform questions that matter to the organization, however, the focus should be less on having a sample size large enough to achieve some arbitrary level of statistical significance and more on having a representative sample from a well-defined population that is relevant for issues that matter to the program.

[22] The author of this paper can support pro-poor organizations that want help in setting up a system to collect data with portable electronic devices in the field or to capture data in a database at the office once paper forms come in from the field.

The frequency of application can be:

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

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

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

An example set of choices is illustrated by BRAC and ASA, two microfinance organizations in Bangladesh who each have about 7 million participants and who declared their intention to apply the Simple Poverty Scorecard tool for Bangladesh (Schreiner, 2013a) with a sample of about 25,000. Their design is that all loan officers in a random sample of branches will score all participants each time they visit a homestead (about once a year) as part of their standard due diligence prior to loan disbursement. They record responses on paper in the field before sending the forms to a central office to be entered into a database and converted to poverty likelihoods.

5. Estimates of a household's poverty likelihood

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

To get absolute units, scores are converted to *poverty likelihoods*, that is, probabilities of being below a poverty line. This is done via easy-to-use look-up tables. For the example of 100% of the national line, scores of 40–44 have a poverty likelihood of 43.2 percent, and scores of 45–49 have a poverty likelihood of 33.4 percent (Table 4).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 40–44 are associated with a poverty likelihood of 43.2 percent for 100% of the national line but 30.2 percent for the $1.90/day 2011 PPP line.[23]

[23] From Table 4 on, many tables have 17 versions, one for each of the 17 poverty lines. To keep them straight, they are grouped by line. Single tables pertaining to all lines appear with the first group of tables for 100% of the national line.

5.1 Calibrating scores with poverty likelihoods

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

For the example of 100% of the national line (Table 5), there are 10,764 (normalized) households in the calibration sub-sample with a score of 40–44. Of these, 4,653 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 40–44 is then 43.2 percent, because 4,653 ÷ 10,764 = 43.2 percent.

To illustrate with 100% of the national line and a score of 45–49, there are 7,516 (normalized) households in the calibration sub-sample, of whom 2,511 (normalized) are below the line (Table 5). The poverty likelihood for this score range is then 2,511 ÷ 7,516 = 33.4 percent.

The same method is used to calibrate scores with estimated poverty likelihoods for all 17 poverty lines.[24]

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

Even though the scorecard is constructed partly based on judgment related to non-statistical criteria, the calibration process produces poverty likelihoods that are objective, that is, derived from quantitative poverty lines and from survey data on consumption. The calibrated poverty likelihoods would be objective even if the process of selecting indicators and points did not use any data at all. In fact, objective scorecards of proven accuracy are often constructed using only expert judgment to select indicators and points (Fuller, 2006; Caire, 2004; Schreiner *et al.*, 2014). Of course, the scorecard here is constructed with both data and judgment. The fact that this paper acknowledges that some choices in scorecard construction—as in any statistical analysis—are informed by judgment in no way impugns the objectivity of the poverty likelihoods, as their objectivity depends on using data in score calibration, not on using data (and nothing else) in scorecard construction.

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

5.2 Accuracy of estimates of households' poverty likelihoods

As long as the relationships between indicators and poverty do not change over time, and as long as the scorecard is applied to households who are representative of the same population from which the scorecard was originally constructed, then this calibration process produces unbiased estimates of poverty likelihoods. *Unbiased* means that in repeated samples from the same population, the average estimate matches the true value in the population. Given the assumptions above, the scorecard also produces unbiased estimates of poverty rates at a point in time and unbiased estimates of changes in poverty rates between two points in time.[25]

Of course, the relationships between indicators and poverty do change to some unknown extent over time, and they also vary across sub-national groups in Senegal's population. Thus, scorecard estimates will generally have errors when applied after December 2011 (the last month of fieldwork for the 2011 ESPS) or when applied with sub-groups that are not nationally representative.

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

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

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

For each score range and for $n = 16{,}384$, Table 6 shows the errors, that is, the average differences between estimated versus observed poverty likelihoods. It also shows confidence intervals for the differences.

For 100% of the national line and on average across bootstrap samples in the validation sample, the estimated poverty likelihood for scores of 40–44 (43.2 percent, Table 4) is too low by 17.1 percentage points. For scores of 45–49, the estimate is too high by 10.7 percentage points.[26]

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

The 90-percent confidence interval for the differences for scores of 40–44 is ±9.9 percentage points (Table 6). This means that in 900 of 1,000 bootstraps, the average difference between the estimate and the observed value for households in this score range is between –27.0 and –7.2 percentage points (because –17.1 – 9.9 = –27.0, and –17.1 + 9.9 = –7.2). In 950 of 1,000 bootstraps (95 percent), the difference is –17.1 ± 10.3 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is –17.1 ± 10.7 percentage points.

Many of the absolute errors between estimated and observed poverty likelihoods in Table 6 for 100% of the national line are large. There are differences because the validation sample is a single sample that—thanks to sampling variation—differs in distribution from the construction/calibration sub-samples and from Senegal's population. For targeting, however, what matters is less the difference in all score ranges and more the difference in the score ranges just above and just below the targeting cut-off. This mitigates the effects of bias and sampling variation on targeting (Friedman, 1997). Section 8 below looks at targeting accuracy in detail.

In addition, if estimates of populations' poverty rates are to be usefully accurate, then errors for individual households' poverty likelihoods must largely balance out. As discussed in the next section, this is generally the case for nationally representative

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

samples in 2011, although it holds less well for samples from sub-national populations or in other time periods.

Another possible source of differences between estimates and observed values is overfitting. The scorecard here is unbiased, but it may still be *overfit* when applied after the end of the ESPS fieldwork in December 2011. That is, the scorecard may fit the construction/calibration data from 2011 so closely that it captures not only some real patterns but also some random patterns that, due to sampling variation, show up only in the 2011 ESPS construction/calibration data but not in the overall population of Senegal. Or the scorecard may be overfit in the sense that it is not robust when relationships between indicators and poverty change over time or when the scorecard is applied to samples that are not nationally representative.

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

Most errors in individual households' likelihoods do balance out in the estimates of poverty rates for nationally representative samples (see the next two sections). Furthermore, at least some of the differences in change-over-time estimates come from non-scorecard sources such as changes in the relationships between indicators and poverty, sampling variation, changes in poverty lines, inconsistencies in data quality across time, and imperfections in price adjustments across time and across geographic regions. These factors can be addressed only by improving the availability, frequency, quantity, and quality of data from national consumption surveys (which is beyond the scope of the scorecard) or by reducing overfitting (which likely has limited returns, given the scorecard's parsimony).

6. Estimates of a poverty rate at a point in time

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

To illustrate, suppose a program samples three households on 1 January 2018 and that they have scores of 20, 30, and 40, corresponding to poverty likelihoods of 77.4, 74.5, and 43.2 percent (100% of the national line, Table 4). The population's estimated poverty rate is the households' average poverty likelihood of (77.4 + 74.5 + 43.2) ÷ 3 = 65.0 percent.

Be careful; the population's estimated poverty rate is *not* the poverty likelihood associated with the average score. Here, the average score is 30, which corresponds to a poverty likelihood of 74.5 percent. This differs from the 65.0 percent found as the average of the three individual poverty likelihoods associated with each of the three scores. Unlike poverty likelihoods, scores are ordinal symbols, like letters in the alphabet or colors in the spectrum. Because scores are not cardinal numbers, they cannot meaningfully be added up or averaged across households. Only three operations are valid for scores: conversion to poverty likelihoods, analysis of distributions (Schreiner, 2012a), or comparison—if desired—with a cut-off for segmentation. There are a few contexts in which the analysis of scores is appropriate, but, in general, the safest rule to follow is: If you are not completely sure what to do, then use poverty likelihoods, not scores.

Scores from the new 2011 scorecard are calibrated with data from the 2011 ESPS for all 17 poverty lines. The process of calibrating scores to poverty likelihoods and the approach to estimating poverty rates is exactly the same for all poverty lines. For users, the only difference in terms of what they do with one poverty line versus with another is the specific look-up table used to convert scores to poverty likelihoods.

After switching from the old 2005/6 scorecard to the new 2011 scorecard, legacy users can salvage existing poverty-rate estimates for measuring change over time with any of the six poverty lines that are supported for both the old and new scorecards with a baseline estimate from the old 2005/6 scorecard and a follow-up estimate from the new 2011 scorecard.

6.1 Accuracy of estimated poverty rates at a point in time

For the new 2011 scorecard applied to 1,000 bootstraps of $n = 16{,}384$ from the validation sample and 100% of national poverty line, the average error (difference between the estimate and observed value in the 2011 ESPS) for a poverty rate at a point in time is +0.1 percentage points (Table 8, summarizing Table 7 across all poverty lines). Across all 17 poverty lines in the validation sample, the maximum of the average absolute errors is 3.7 percentage points, and the average of the average absolute errors is about 1.5 percentage points. At least part of these differences is due to sampling variation in the division of the 2011 ESPS into sub-samples.

When estimating poverty rates at a point in time for a given poverty line, the average error reported in Table 8 should be subtracted from the average poverty likelihood to give a corrected estimate. For the example of the new 2011 scorecard and 100% of the national line in the validation sample, the error is +0.1 percentage points, so the corrected estimate in the three-household example above is 65.0 – (+0.1) = 64.9 percent.

In terms of precision, the 90-percent confidence interval for a population's estimated poverty rate at a point in time with n = 16,384 is ±0.8 percentage points or better for all poverty lines (Table 8). This means that in 900 of 1,000 bootstraps of this size, the estimate (after correcting for the known average error) is within 0.8 percentage points of the observed value.

For example, suppose that the (uncorrected) average poverty likelihood in a sample of n = 16,384 with the new 2011 scorecard and 100% of the national line is 65.0 percent. Then estimates in 90 percent of such samples would be expected to fall in the range of 65.0 – (+0.1) – 0.7 = 64.2 percent to 65.0 – (+0.1) + 0.7 = 65.6 percent, with the most likely observed value being the corrected estimate in the middle of this range, that is, 65.0 – (+0.1) = 64.9 percent. This is because the original (uncorrected) estimate is 65.0 percent, the average error is +0.1 percentage points, and the 90-percent confidence interval for 100% of the national line in the validation sample with this sample size is ±0.7 percentage points (Table 8).

6.2 Formula for standard errors for estimates of poverty rates

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

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

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

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

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

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

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

N is the population size, and

n is the sample size.

For example, Senegal's 2011 ESPS gives a direct-measurement estimate of the household-level poverty rate for 100% of the national line in the validation sample of $\hat{p}$ = 35.6 percent (Table 1).[27] If this estimate came from a sample of n = 16,384 households from a population N of 1,498,872 (the number of households in Senegal in 2011 according to the ESPS sampling weights), then the finite population correction ϕ is $\sqrt{\frac{1{,}498{,}872 - 16{,}384}{1{,}498{,}872 - 1}} = 0.9945$, which close to $\phi = 1$. If the desired confidence level is 90-percent ($z = 1.64$), then the confidence interval $\pm c$ is

$$\pm z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.356 \cdot (1 - 0.356)}{16{,}384}} \cdot \sqrt{\frac{1{,}498{,}872 - 16{,}384}{1{,}498{,}872 - 1}} = \pm 0.610$$

percentage points. (If ϕ were taken as 1, then the interval is ±0.613 percentage points.)

Unlike the 2011 ESPS, however, the scorecard does not measure poverty directly, so this formula is not applicable. To derive a formula for the new 2011 scorecard, consider Table 7, which reports empirical confidence intervals $\pm c$ for the errors for the scorecard applied to 1,000 bootstrap samples of various sizes from the validation sample. For example, with n = 16,384 and 100% of the national line in the validation sample, the 90-percent confidence interval is ±0.705 percentage points.[28]

[27] The analysis here ignores that poverty-rate estimates from the ESPS are themselves based on a sample and so have their own sampling distribution.
[28] Due to rounding, Table 7 displays 0.7, not 0.705.

Thus, the 90-percent confidence interval with $n = 16{,}384$ is ± 0.705 percentage points for the new 2011 scorecard and ± 0.610 percentage points for direct measurement. The ratio of the two intervals is $0.705 \div 0.610 = 1.16$.

Now consider the same exercise, but with $n = 8{,}192$. The confidence interval under direct measurement and 100% of the national line in the validation sample is $\pm\, 1.64 \cdot \sqrt{\frac{0.365 \cdot (1 - 0.365)}{8{,}192}} \cdot \sqrt{\frac{1{,}498{,}872 - 8{,}192}{1{,}498{,}872 - 1}} = \pm 0.870$ percentage points. The empirical confidence interval with the new 2011 scorecard (Table 7) is ± 1.000 percentage points. Thus for $n = 8{,}192$, the ratio of the two intervals is $1.000 \div 0.870 = 1.15$.

This ratio of 1.15 for $n = 8{,}192$ is close to the ratio of 1.16 for $n = 16{,}384$. Across all sample sizes of 256 or more in Table 7, these ratios are generally close to each other, and the average of these ratios in the validation sample turns out to be 1.17, implying that confidence intervals for indirect estimates of poverty rates via Senegal's new 2011 scorecard and 100% of the national line are—for a given sample size—about 17-percent wider than confidence intervals for direct estimates via the 2011 ESPS. This 1.17 appears in Table 8 as the "α factor for precision" because if $\alpha = 1.17$, then the formula for confidence intervals c for the new 2011 scorecard is $\pm c = \pm z \cdot \alpha \cdot \sigma$. That is, the formula for the standard error σ for point-in-time estimates of poverty rates via the scorecard is $\alpha \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}}$.

In general, α can be more or less than 1.00. When α is more than 1.00, it means that the scorecard is less precise than direct measurement. It turns out that α is more than 1.00 for 13 of the 17 poverty lines in Table 8, and its hightest value is 1.64.

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

To illustrate how to use this, suppose the population N is 1,498,872 (the number of households in Senegal in 2011), suppose $c = 0.05779$, $z = 1.64$ (90-percent confidence), and the relevant poverty line is 100% of the national line so that the most sensible expected poverty rate $\widetilde{p}$ is Senegal's overall poverty rate for that line in 2011 (35.6 percent at the household level, Table 1). The α factor is 1.17 (Table 8). Then the sample-size formula gives $n = 1{,}498{,}872 \cdot \left(\frac{1.64^2 \cdot 1.17^2 \cdot 0.356 \cdot (1 - 0.356)}{1.64^2 \cdot 1.17^2 \cdot 0.356 \cdot (1 - 0.356) + 0.05779^2 \cdot (1{,}498{,}872 - 1)} \right) = 253$, which is close to the sample size of 256 observed for these parameters in Table 7 for 100% of

the national line. Taking the finite population correction factor ϕ as one (1) gives the same result, as $n = \left(\frac{1.17 \cdot 1.64}{0.05779}\right)^2 \cdot 0.356 \cdot (1 - 0.356) = 253.$[29]

Of course, the α factors in Table 8 are specific to Senegal, its poverty lines, its poverty rates, and this scorecard. The derivation of the formulas for standard errors using the α factors, however, is valid for any poverty-assessment tool following the approach in this paper.

[29] Although USAID has not specified confidence levels nor intervals, IRIS Center (2007a and 2007b) says that a sample size of $n = 300$ is sufficient for USAID reporting. USAID's microenterprise partners in Senegal should report using the $1.90/day 2011 PPP line. Given the α factor of 1.05 for this line (Table 8), an expected before-measurement household-level poverty rate of 24.4 percent (the all-Senegal rate for this line in 2011, Table 1), and a confidence level of 90 percent ($z = 1.64$), then $n = 300$ implies a confidence interval of $\pm 1.64 \cdot 1.05 \cdot \sqrt{\frac{0.244 \cdot (1 - 0.244)}{300}} = \pm 4.3$ percentage points.

In practice after the end of fieldwork for the ESPS in December 2011, a program would select a poverty line (say, 100% of the national line), note its participants' population size (for example, $N = 10{,}000$ participants), select a desired confidence level (say, 90 percent, or $z = 1.64$), select a desired confidence interval (say, ± 2.0 percentage points, or $c = \pm 0.02$), make an assumption about $\widetilde{p}$ (perhaps based on a previous measurement such as the household-level poverty rate for 100% of the national line for Senegal of 35.6 percent in the 2011 ESPS in Table 1), look up α (here, 1.17 in Table 8), assume that the scorecard will still work in the future and for sub-groups that are not nationally representative,[30] and then compute the required sample size. In this illustration, $n = 10{,}000 \cdot \left(\frac{1.64^2 \cdot 1.17^2 \cdot 0.356 \cdot (1 - 0.356)}{1.64^2 \cdot 1.17^2 \cdot 0.356 \cdot (1 - 0.356) + 0.02^2 \cdot (10{,}000 - 1)} \right) = 1{,}743.$

[30] This paper reports accuracy for the scorecard applied to its validation sample, but it does not test accuracy for later years or for sub-populations that are not nationally representative. Performance after December 2011 will resemble that in the 2011 ESPS with deterioration over time and across non-nationally representative sub-groups to the extent that the relationships between indicators and poverty status change.

7. Estimates of changes in poverty rates over time

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

When measuring change, the same definition of *poverty* must be used at both baseline and follow-up, but it is not necessary to use same scorecard at both points. In the case of Senegal, the baseline estimate can come from the old 2005/6 scorecard and the follow-up estimate can come from the new 2011 scorecard as long as the estimate is based on any one of the six poverty lines that are supported for both scorecards.

The accuracy of estimates of change are not tested here because many indicators in the new 2011 scorecard are not available in the 2005/6 ESPS. Thus, this paper cannot test the accuracy of estimates of change over time for Senegal, and it can only suggest approximate formulas for standard errors. Nonetheless, the relevant concepts are presented here because in practice pro-poor organizations in Senegal can apply the scorecard to collect their own data and measure change through time.

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

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

participation 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 the impact of participation only if there is some way to know—or explicit assumptions about—what would have happened in the absence of participation. And that information must come from beyond the scorecard.

7.2 Estimating changes in poverty rates over time

Consider the illustration begun in the previous section. On 1 January 2018, an organization samples three households who score 20, 30, and 40 and so have poverty likelihoods of 77.4, 74.5, and 43.2 percent (100% of the national line, Table 4). Given the known average error for this line in the validation sample of +0.1 percentage points (Table 8), the corrected baseline estimated poverty rate is the households' average poverty likelihood of $[(77.4 + 74.5 + 43.2) \div 3] - (+0.1) = 64.9$ percent.

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

- Score a new, independent sample from the same population
- Score the same sample that was scored at baseline

By way of illustration, suppose that three years later on 1 January 2021, the organization samples three additional households who are in the same population as the three original households and finds that their scores are 25, 35, and 45 (poverty likelihoods of 74.7, 52.0, and 33.4 percent, 100% of the national line, Table 4). Adjusting for the known average error, the average poverty likelihood at follow-up is

[(74.7 + 52.0 + 33.4) ÷ 3] – (+0.1) = 53.3 percent, an improvement of 64.9 – 53.3 = 11.6 percentage points.[31] Supposing that exactly three years passed between the average baseline interview and the average follow-up interview, the estimated annual rate of decrease in poverty is 11.6 ÷ 3 = 3.9 percentage points per year. That is, about one in eight-or-nine participants in this hypothetical example cross the poverty line between 2018 and 2021.[32] Among those who start below the line, about one in five-or-six (11.6 ÷ 64.9 = 17.9 percent) on net end up above the line.[33]

Alternatively, suppose that the same three original households who were scored at baseline are scored again on 1 January 2021. Given scores of 25, 35, and 45, their follow-up poverty likelihoods are 74.7, 52.0, and 33.4 percent. The average across households of the difference in each given household's baseline poverty likelihood and its follow-up poverty likelihood is [(77.4 – 74.7) + (74.5 – 52.0) + (43.2 – 33.4)] ÷ 3 = 11.7 percentage points.[34] Assuming in this example that there are exactly three years between each household's interviews, the estimated annual decrease in poverty is (again) 11.7 ÷ 3 = 3.9 percentage points per year.

[31] Of course, such a huge reduction in poverty in three years is highly unlikely, but this is just an example to show how the scorecard can be used to estimate change.
[32] This is a net figure; some start above the line and end below it, and vice versa.
[33] The scorecard does not reveal the reasons for this change.
[34] In this case, the error for this line in Table 8 should *not* be subtracted off. The 11.7 percentage points with this second approach differs from the 11.6 percentage points under the first approach only due to rounding.

Given the assumptions of the scorecard, both approaches to estimating change through time are unbiased. In general, however, they will give different estimates due to differences in the timing of interviews, in the composition of the samples, and in the nature of two samples being scored once versus one sample being scored twice (Schreiner, 2014a).

7.3 Precision for estimated change in two independent samples

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

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

Here, z, c, $\hat{p}$ and N are defined as above, n is the sample size at both baseline and follow-up,[35] and α is the average (across a range of bootstrapped sample sizes) of the ratio of the observed confidence interval from a scorecard and the theoretical confidence interval under direct measurement.

As before, the formula for standard errors can be rearranged to give a formula for sample sizes before indirect measurement via a poverty-assessment tool, where $\tilde{p}$ is based on previous measurements and is assumed equal at both baseline and follow-up: $n = 2 \cdot N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p})}{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p}) + c^2 \cdot (N - 1)} \right)$. If ϕ can be taken as one, then the formula becomes $n = 2 \cdot \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \tilde{p} \cdot (1 - \tilde{p})$.

[35] This means that—for a given level of precision—estimating the change in a poverty rate between two points in time requires four times as many interviews (not twice as many) as does estimating a poverty rate at a point in time.

With the available data for Senegal, it is not possible to estimate values of α here. Nevertheless, this α has been measured for 17 countries (Schreiner 2017a, 2016a, 2016b, 2016c, 2016d, 2015b, 2015c, 2015d, 2015e, 2013a, 2013b, 2012c, 2010, 2009b, 2009c, 2009d; and Chen and Schreiner, 2009). The unweighted average of α across countries—after averaging α across poverty lines and survey years within each country—is 1.06. This rough figure is as reasonable as any to use for Senegal.

To illustrate the use of this formula to determine sample size for estimating changes in poverty rates across two independent samples, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is ± 2 percentage points ($\pm c = \pm 0.02$), the poverty line is 100% of the national line, $\alpha = 1.06$, $\hat{p} = 0.356$ (the household-level poverty rate in 2011 for 100% of the national line in Table 1), and the population N is large enough relative to the expected sample size n that the finite population correction ϕ can be taken as one (1). Then the baseline sample size is $n = 2 \cdot \left(\frac{1.06 \cdot 1.64}{0.02} \right)^2 \cdot 0.356 \cdot (1 - 0.356) \cdot 1 = 3{,}465$, and the follow-up sample size is also 3,465.

7.4 Precision of estimates of change for one sample, scored twice

Analogous to previous derivations, the general formula relating the confidence interval $\pm c$ to the standard error σ when using a scorecard to estimate change for a single sample of households, all of whom are scored at two points in time, is:[36]

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

where z, c, α, N, and n are defined as usual, $\hat{p}_{12}$ is the share of all sampled households that move from below the poverty line to above it, and $\hat{p}_{21}$ is the share of all sampled households that move from above the line to below it. With the available data for Senegal, it is not possible to estimate values of α here.

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

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

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

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

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

Given this, a sample-size formula for a sample of households to whom the new 2011 scorecard is applied twice (once after December 2011 and then again later) is

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

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

To illustrate the use of this formula, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is ±2.0 percentage points ($\pm c = \pm 0.02$), the poverty line is 100% of the national line, the sample will first be scored in 2018 and then again in 2021 ($y = 3$), and the population N is so large relative to the expected sample size n that the finite population correction ϕ can be taken as one (1). The pre-baseline poverty rate p_{2018} is taken as 35.6 percent (Table 1), and α is assumed to be 1.30. Then the baseline sample size is

$n = 2 \cdot \left(\frac{1.30 \cdot 1.64}{0.02}\right)^2 \cdot \left[-0.02 + 0.016 \cdot 3 + 0.47 \cdot 0.356 \cdot \left(1 - 0.356\right)\right] \cdot 1 = 3{,}086$. The same group of 3,086 households is scored at follow-up as well.

8. Targeting

When a program uses the scorecard for segmenting clients for differentiated treatment (*targeting*), households with scores at or below a cut-off are labeled *targeted* and given one type of treatment by the program. Households with scores above a cut-off are labeled *non-targeted* and given another type of treatment.

There is a distinction between *targeting status* (having a score at or below a targeting cut-off) and *poverty status* (having consumption below a poverty line). Poverty status is a fact that is defined by whether consumption is below a poverty line as directly measured by a survey. In contrast, targeting status is a program's policy choice that depends on a cut-off and on an indirect estimate from a poverty-assessment tool.

Households who score at or below a given cut-off should be labeled as *targeted*,[37] not as *poor*. After all, unless all targeted households have poverty likelihoods of 100 percent, some of them are non-poor (their consumption is above a given poverty line). With the scorecard, the terms *poor* and *non-poor* have specific definitions. Using these same terms for targeting status is incorrect and misleading.

[37] Others labels are acceptable as long as they describe the segment and do not confuse targeting status (having a score below a program-selected cut-off) with poverty status (having consumption below an externally-defined poverty line). Examples of acceptable labels include *Groups A, B, and C*; *Households with scores of 29 or less, 30 to 69, or 70 or more*; and *Households who qualify for reduced fees, or do not qualify.*

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

Table 9 depicts these four possible targeting outcomes. Targeting accuracy varies by the cut-off score; a higher cut-off has better inclusion (but worse leakage), while a lower cut-off has better exclusion (but worse undercoverage).

Programs should weigh these trade-offs when setting a cut-off. A formal way to do this is to assign net benefits—based on a program's values and mission—to each of the four possible targeting outcomes and then to choose the cut-off that maximizes total net benefits (Adams and Hand, 2000; Hoadley and Oliver, 1998).

Table 10 shows the distribution of households by targeting outcome for Senegal. For an example cut-off of 44 or less, outcomes for 100% of the national line in the validation sample are:

- Inclusion: 26.4 percent are below the line and correctly targeted
- Undercoverage: 9.3 percent are below the line and mistakenly not targeted
- Leakage: 14.3 percent are above the line and mistakenly targeted
- Exclusion: 49.9 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: 28.8 percent are below the line and correctly targeted
- Undercoverage: 7.0 percent are below the line and mistakenly not targeted
- Leakage: 19.5 percent are above the line and mistakenly targeted
- Exclusion: 44.8 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 Table 10 for a given poverty line
- Select the cut-off with the highest total net benefit

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

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

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

Table 10 shows the hit rate for all cut-offs for the new 2011 scorecard. For 100% of the national line in the validation sample, total net benefit—under the hit rate—is greatest (76.4) for a cut-off of 34 or less, with about three in four households in Senegal correctly classified.

The hit rate weighs successful inclusion of households below the line the same as successful exclusion of households above the line. If a program values inclusion more (say, twice as much) than exclusion, then it can reflect this by setting the benefit for inclusion to 2 and the benefit for exclusion to 1. Then the chosen cut-off will maximize (2 x Households correctly included) + (1 x Households correctly excluded).[38]

[38] Table 10 also reports BPAC, the Balanced Poverty Accuracy Criteria adopted by USAID for certifying poverty-assessment tools. It is discussed in the next section.

As an alternative to assigning benefits and costs to targeting outcomes and then choosing a cut-off to maximize total net benefits, a program could set a cut-off to achieve a desired poverty rate among targeted households. The third column of Table 11 ("% targeted HHs who are poor") shows, for the new 2011 scorecard applied to the validation sample, the expected poverty rate among households who score at or below a given cut-off. For the example of 100% of the national line, targeting households in the validation sample who score 44 or less would target 40.7 percent of all households (second column) and would be associated with a poverty rate among those targeted of 64.9 percent (third column).

Table 11 also reports two other measures of targeting accuracy. The first is a version of coverage ("% poor HHs who are targeted"). For the example of 100% of the national line with the validation sample and a cut-off of 44 or less, 73.9 percent of all poor households are covered.

The final targeting measure in Table 11 is the number of successfully targeted poor households for each non-poor household mistakenly targeted (right-most column). For 100% of the national line with the validation sample and a cut-off of 44 or less, covering 1.8 poor households means leaking to 1 non-poor household.

9. Context of poverty-assessment tools in Senegal

This section discusses four existing poverty-assessment tools for Senegal in terms of their goals, methods, definitions of *poverty*, data, indicators, errors, precision, and cost. In general, the advantages of the scorecard are its:

- Using data from the most-recent nationally representative consumption survey
- Having fewer and lower-cost indicators than most other tools
- Using a consumption-based definition of *poverty* that is widely understood and that is used by the government of Senegal
- Reporting errors and precision for estimates of poverty rates at a point in time from out-of-sample tests, including formulas for standard errors
- Reporting targeting accuracy from out-of-sample tests, and having targeting accuracy that is likely similar to that of alternative approaches
- Being feasible for pro-poor programs in Senegal, due to its low cost and transparency

9.1 Gwatkin *et al.*

Gwatkin *et al.* (2007) construct a poverty-assessment tool for Senegal with an approach that they use in 56 countries with Demographic and Health Surveys (Rutstein and Johnson, 2004). They use Principal Component Analysis to make an asset index from low-cost indicators available for the 4,772 households in Senegal's 1997 DHS.[39] The PCA index is like the scorecard here except that—because the DHS does not collect data on consumption—the index uses a different (asset-based) definition of *poverty*, its accuracy vis-à-vis consumption-based poverty is unknown, and it can only be assumed to be a proxy for long-term wealth/economic status.[40] Well-known examples of the PCA asset-index approach include Stifel and Christiaensen (2007), Zeller *et al.* (2006), Sahn and Stifel (2003 and 2000), Henry *et al.* (2003), and Filmer and Pritchett (2001).

[39] DHS data for Senegal since 1997 include each household's asset-index value (`dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm`, retrieved 17 April 2017).

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

The 15 indicators in Gwatkin *et al.* are similar to those in the scorecard in terms of their ease-of-collection and verifiability:

- Characteristics of the residence:
  - — Presence of electricity
  - — Type of floor
  - — Source of drinking water
  - — Type of toilet arrangement
- Ownership of consumer durables:
  - — Radios
  - — Televisions
  - — Video players
  - — Refrigerators
  - — Telephones
  - — Bicycles
  - — Motorcycles
  - — Cars
  - — Carts or wagons
- Whether any household members work their own or family's agricultural land
- Number of household members per sleeping room

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

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

The first goal is segmentation, and the last two goals deal with performance monitoring, so the asset index would be used much like the scorecard here. In particular, the scorecard's support for relative (percentile-based) poverty lines allows the segmentation of households by quintile of consumption to see how health (or other things) vary with consumption. Of course, it is also possible to segment households by quintiles based on scores from the scorecard to see how health (or other things) vary with wealth.

The Gwatkin *et al.* index is more costly and difficult-to-use than the scorecard. The index has 15 indicators (versus 11), and while the scorecard requires adding up 11 integers (some of them usually zeroes), Gwatkin *et al.*'s index requires adding up 36 numbers, each with five decimal places and about half with negative signs.

A strength of asset indexes is that, because they do not require consumption data, they can be constructed with data from a wide array of "light" surveys such as censuses, Demographic and Health Surveys, Welfare Monitoring Surveys, and Core Welfare Indicator Questionnaires. In comparison, the scorecard is linked directly to a consumption-based poverty line. Thus, while both approaches can rank households, only the scorecard can estimate consumption-based poverty status. Like an already-constructed asset index, an already-constructed scorecard can be applied to data from a "light" survey that does not collect consumption as long as the "light" survey collects indicators that match those in the scorecard (Schreiner, 2011).

In essence, Gwatkin *et al.*—like all asset indexes—define *poverty* in terms of the indicators and points in the index itself. Thus, the index is not a proxy standing in for something else (such as consumption). Rather, it is a direct measure of an asset-based (non-consumption-based) definition of *poverty*. There is nothing wrong—and a lot right—about defining *poverty* in this way, but it is not as common as a consumption-based definition. It also means that results are not comparable across different asset indexes because the definition of *poverty* varies with a given index's indicators and points. And an asset index can estimate only the direction of change in its definition of *poverty* over time, not the magnitude of change.

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

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

While the asset view and the income/consumption view are distinct, they are also tightly linked. After all, income and consumption are flows of resources received/consumed from the use of stocks of assets. Both views are low-dimensional

simplifications—due to practical limits on definitions and measurement—of a higher-dimensional and more-complete conception of the production of human well-being.

9.2 Sahn and Stifel (2000)

Sahn and Stifel (2000) use factor analysis (a close relative of PCA that gives similar results) to construct an asset index for Senegal meant to measure poverty in terms of long-term wealth. Their purpose relates to assessment (to inform governments and donors about the broad progress of poverty reduction in Africa) rather than management and accountability (to provide a tool to help pro-poor organizations prove and improve their poverty-alleviation efforts).

Sahn and Stifel construct their index by pooling data from Senegal's 1986, 1992, and 1997 DHS. Defining poverty status according to lines set at the 25^{th} and 40^{th} percentiles of their index, they then compare the distribution of the index and poverty rates over time (within Senegal) and across countries (Senegal and 10 other sub-Saharan countries).

For the cross-country analysis, Sahn and Stifel construct a single cross-country index from pooled DHS data for the 11 countries with multiple DHS rounds (plus five others for which only a single DHS round is available). This is possible because the DHS generally uses a common set of indicators.

The eight indicators in Sahn and Stifel are similar to those in Gwatkin *et al.* and in the scorecard here in terms of their ease-of-collection and verifiability:

- Education of the head
- Characteristics of the residence:
  - — Type of floor
  - — Source of drinking water
  - — Type of toilet arrangement
- Ownership of consumer durables:
  - — Radio
  - — Television
  - — Refrigerator
  - — Motorized transport

Like Gwatkin *et al.*, Sahn and Stifel shares many of the strengths of the approach here in that it can be used for targeting and in that it is flexible, low-cost, and adaptable to diverse contexts. Sahn and Stifel point out that because an asset index does not require price adjustments over time or between countries—and because it does not require consumption data at all—it has lower data requirements than consumption-based poverty-assessment tools.

Sahn and Stifel also share with Gwatkin *et al.* the disadvantages of using a less-common definition of *poverty* and of not reporting standard errors.

Sahn and Stifle find that poverty in Senegal worsened from 1986 to 1992 but improved from 1992 to 1997. Among the 11 countries studied,[41] Senegal had the second-lowest asset-based poverty rate.

[41] Besides Senegal, these are Cameroon, Ghana, Kenya, Madagascar, Mali, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

Booysen *et al.* (2008) closely follow Sahn and Stifel (2000). For Senegal, Booysen *et al.* construct asset indexes from the same three DHS rounds as Sahn and Stifel, they use seven of the same eight indicators, and they also find that asset-based poverty fell in Senegal from 1986 to 1997 and that Senegal had one of the lowest poverty rates among the countries studied.[42] Booysen *et al.* differ from Sahn and Stifle (2000) mostly in their use Multiple Correspondence Analysis instead of factor analysis. MCA is PCA, *sans* the assumption that indicators have Normal distributions. In principle, this makes MCA better suited for categorical indicators, although Booysen *et al.* do not show that this changes any results vis-à-vis PCA.

[42] For Booysen *et al.*, the seven countries are Senegal and Ghana, Kenya, Mali, Tanzania, Zambia, and Zimbabwe.

9.3 IRIS Center

USAID commissioned IRIS Center (2011) to make the "Poverty Assessment Tool" (PAT) to help its microenterprise partners in Senegal fulfill a mandate to report the share of their participants who are "very poor" (U.S. Congress, 2004).

IRIS Center did not use data on the 13,503 households in the 2005/6 ESPS because, after "close examination", it found that this data "had significant shortcomings" (p. 1). IRIS does not describe these shortcomings. IRIS then did its own nationally representative consumption survey from July to September of 2009, covering 842 households.

IRIS also uses its own definition of *poverty*. The measure of consumption from IRIS' bespoke survey differs from that in the 2005/6 ESPS and in the 2011 ESPS. In terms of poverty lines, the PAT follows Schreiner (2009a) in its use of the $1.25/day 2005 PPP line as the USAID "very poor" line. The household-level poverty rate with the 2005/6 ESPS and this line in Schreiner (2009a) is 22.1 percent, but for IRIS with its own data, its own measure of consumption, and its own $1.25/day 2005 PPP poverty line, the household-level rate is 11.5 percent. IRIS does not discuss why its $1.25/day poverty rate is less than half that of the scorecard and of PovcalNet. The PAT also supports $0.75, $1.00, $2.00, and $2.50/day 2005 PPP lines, but it does not support Senegal's national poverty line. The PAT's lines are not adjusted for regional-price differences. To sum up, the PAT for Senegal provides estimates based on a unique definition of *poverty* that no one else uses.

Because IRIS' data set is so small, the PAT's accuracy is only tested in-sample (not out-of-sample), and so its reported accuracy is overstated.

To construct the PAT, IRIS tests four regression-based approaches in both one-stage and two-stage versions (IRIS, 2005), settling on a one-step quantile regression that estimates the 39th percentile of the logarithm of per-capita consumption, conditional on a household's responses to the PAT's 18 indicators (IRIS, 2011):

- Demographics:
  - — Number of household members (and its square)
  - — Age of the head (and its square)
  - — Dependency ratio (the number of members ages 15 or younger or 66 or older, divided by the number of household members ages 16 to 65)
- Characteristics of the residence:
  - — Type of wall
  - — Type of roof
  - — Type of toilet arrangement
  - — Method of disposal of garbage
- Asset ownership:
  - — Table
  - — Sofa
  - — Fan
  - — Refrigerator
  - — Car
  - — Cattle
  - — Number of artisanal machetes
  - — Number of chairs
  - — Number of computers
- Location of residence:
  - — Urban/rural
  - — Region

In general, the PAT is like the scorecard (Schreiner, 2014b). In the specific case of Senegal, however, they differ as noted above. The two tools also generally differ in that the PAT:

- Estimates consumption itself (not whether a household's consumption is below a poverty line) and then converts estimated consumption into a poverty likelihood of either 0 or 100 percent (rather than a poverty likelihood between 0 and 100 percent)
- Has more indicators (18 rather than 11)
- Does not report errors nor standard errors for estimates of poverty rates at a point in time
- Does not report sample-size formula for point-in-time estimates

Because the PAT uses different data from a different time period as well as a different definition of *poverty*, and because the PAT does not report out-of-sample accuracy, its accuracy cannot be compared with that of the new 2011 scorecard for Senegal here nor with that of the old 2005/6 scorecard in Schreiner (2009a).

IRIS reports the PAT's (in-sample) accuracy in terms of the Balanced Poverty Accuracy Criterion. IRIS Center (2005) introduced BPAC, and USAID adopted BPAC as its criterion for approving poverty-assessment tools for use by its microenterprise partners. BPAC considers accuracy in terms of inclusion and in terms of the absolute difference between undercoverage and leakage (which under the PAT's approach—but not under the scorecard's approach—is equal to the absolute error of the estimated poverty rate):

$$\text{BPAC} = 100 \cdot \left(\frac{\text{Inclusion} - |\ \text{Undercoverage} - \text{Leakage}\ |}{\text{Inclusion} + \text{Undercoverage}} \right).$$

Because the error (in the PAT approach) is the difference between undercoverage and leakage, and because the normalization term $\frac{100}{\text{Inclusion} + \text{Undercoverage}}$ may be relevant only when comparing poverty-assessment tools across populations with different poverty rates (but irrelevant when selecting among alternative poverty-assessment tools for a given country in a given year for a given poverty line), the cleaner formula $\text{BPAC} = \text{Inclusion} - |\,\text{Error}\,|$ ranks poverty-assessment tools the same as the more complex formula.

Expressing BPAC as $\text{Inclusion} - |\,\text{Error}\,|$ helps to show why BPAC is not useful for comparing the PAT with the scorecard (Schreiner, 2014b). Given the assumptions discussed earlier,[43] scorecard estimates of poverty rates are unbiased, regardless of whether undercoverage differs from leakage when (and if) targeting. While BPAC can be used to compare alternatives that use the PAT's consumption-estimation approach, it does not make sense to apply BPAC to the scorecard's likelihood-estimation approach. This is because the scorecard does not use a single consumption cut-off to classify households as either 100-percent poor or 0-percent poor. Instead, households have an estimated poverty likelihood somewhere between 0 to 100 percent. If a scorecard user sets a targeting cut-off, then that cut-off matters only for rank-based targeting, and it does not affect the estimation of poverty rates at all.

[43] The unbiasedness of the PAT—or of any other poverty-assessment tool—also requires these same assumptions.

Although IRIS reports the PAT's targeting accuracy and although the BPAC formula considers targeting accuracy in terms of inclusion, IRIS disavows the use of the the PAT for targeting.[44]

IRIS also disavows using the PAT to estimate change over time, saying "It is unclear that the tools will be able to identify real changes in poverty over time due to their inherent measurement errors. Unless the changes in the poverty rate are exceptionally large and unless the tools are exceptionally accurate, then the changes identified are likely to be contained within the margin of error."[45] Even though IRIS does not report accuracy for estimates of change over time for Senegal nor for any other country, it nevertheless asserts that the confidence interval for estimates of change—for some unstated confidence level and some unstated sample size—will usually include zero.

The scorecard supports targeting and estimating changes over time by reporting accuracy for these possible uses. This allows users to decide for themselves whether the scorecard is adequate for their purposes.

[44] FHI360 (2013) and `povertytools.org/faq/faq2.html` (retrieved 19 April 2017).
[45] `povertytools.org/faq/faq2.html`, retrieved 19 April 2017.

9.4 Leite, Stoeffler, and Kryeziu

Leite, Stoeffler, and Kryeziu ("LSK", 2015) construct a poverty-assessment tool to simulate the gains from the household-level targeting of social transfers in Senegal. Their goal is to promote "a better-targeted, more-efficient, and scaled-up national system of safety nets [and so] contribute directly to poverty reduction among vulnerable populations" (p. 222).

To this end, they use data from the 2011 ESPS to construct three regional tools (Dakar, other urban areas, and rural). Indicators and points are derived via R^2-based stepwise ordinary-least-squares regression on the logarithm of per-adult-equivalent consumption. In contrast to the scorecard and its 11 indicators, LSK take a kitchen-sink approach to indicator selection in search of a "more complete PMT formula" (p. 226). On average, their three tools use 60 indicators from the following 106:

- Household demographics:
  - Number of household members:
    - Number of members (and its square)
    - Categorical ranges of the number of members
    - Categorical ranges of the number of members by age
  - Characteristics of the head of the household:
    - Sex
    - Age
    - Marital status
    - Religion
    - Education
    - Health-insurance coverage
    - Student status
  - Presence of a member with a disability

- Employment:
  - Agriculture:
    - Whether the head works in agriculture
    - Whether the household:
      - Produces agricultural products
      - Grows cash crops
      - Uses fertilizer
      - Hires labor
  - Sector of employment of the head
  - Type of employment of the head
  - Type of employer of the head
  - Whether any household member is self-employed
  - Whether any household member has a wage or salary job
- Characteristics of the residence:
  - Type of residence
  - Number of rooms:
    - Number
    - Categories of ranges of number
  - Number of household members per room
  - Presence of a separate kitchen
  - Type of floor
  - Type of wall
  - Type of roof
  - Source of energy for cooking
  - Type of lighting
  - Source of drinking water
  - Presence of a cistern
  - Type of toilet arrangement
  - Method of disposal of garbage
  - Presence of internet access
  - Presence of services within 1 kilometer of the residence:
    - Primary school
    - Telephone kiosk
    - Internet café
    - Police station
  - Region of residence

- Ownership of consumer durables:
  - Foam mattress
  - Spring mattress
  - Frame bed
  - Chair
  - Table
  - Carpet
  - Rug
  - Bookshelf
  - Armchair
  - Living-room set
  - Bedroom set
  - Wardrobe
  - Trunk
  - Water barrel
  - Food processor/mixer
  - LPG cylinder
  - Stove
  - Refrigerator/freezer
  - Sewing machine
  - Electric iron
  - Flashlight
  - Solar panel
  - Clock
  - Radio
  - Television
  - Video player
  - Satellite dish
  - Cable or private-network connection
  - Land-line telephone
  - Cellular telephone
  - Computer
  - Electrical generator
  - Electrical inverter
  - Fan
  - Water heater
  - Air conditioner
  - Bicycle
  - Motorcycle
  - Car
  - Truck
  - Canoe

- Ownership of agricultural assets:
  - Agricultural land
  - Ownership of a given species of livestock:
    - Cattle
    - Goats
    - Sheep
    - Pigs
    - Horses
    - Poultry
  - Number of livestock owned of a given species:
    - Cattle
    - Goats
    - Sheep
    - Pigs
    - Horses
    - Donkeys
    - Poultry
  - Hoe/ax
  - Wheelbarrow
  - Cart
  - Plow
  - Sprayer
  - Planter
  - Thresher
  - Tractor
  - Fishing net

How does accuracy compare between the LSK tools and the new 2011 scorecard? Even though both approaches are based on the 2011 ESPS, the comparison is not apples-to-apples in several ways, all of which put the scorecard at a disadvantage:

- The LSK tools are weighted (and optimized) at the level of people, but the scorecard is weighted at the level of households. For comparability, the scorecard would be tested at the level of people, a level for which is is not optimized
- There are three region-specific LSK tools, while the single scorecard applies to all of Senegal
- The average LSK tool has 60 indicators, while the scorecard has 11
- The LSK tools include all the indicators in the scorecard plus more, and more indicators can only increase targeting accuracy (at least in-sample)
- The LSK tools are tested in-sample, while the scorecard is tested out-of-sample. This advantage is magnified by the possibility—especially in Dakar—that the LSK kitchen-sink approach has produced overfit tools
- The LSK test defines households' poverty statuses such that 20 percent of people in each of the three regions are poor, which implies that the 20 percent of people who are poor in the country overall are not completely the same as the 20 percent of people with the lowest per-adult-equivalent consumption. In contrast, the scorecard is constructed to rank households based on their poverty status by 100% of the national poverty line, without consideration of the region

LSK check their tools' targeting accuracy by targeting the 20 percent of people in a given region with the lowest estimated consumption from their poverty-assessment tool. Because in each region 20 percent of people are poor and 20 percent of people are targeted, targeting accuracy can be succinctly summarized as *inclusion* as defined in this paper, that is, the share of all people who are poor and who are successfully targeted (Schreiner, 2017b).

LSK report accuracy as *exclusion error* and *inclusion error*. While these terms are not always defined consistently in the literature and while LSK do not report what definition they use, two other chapters in the book in which LSK appears (del Ninno and Mills, 2015, pp. 71–72 and p. 134) define them—using the terms of this paper—as exclusion error = undercoverage ÷ (inclusion + undercoverage), and as inclusion error = leakage ÷ (inclusion + leakage).[46] When the share targeted is the same as the share poor (as in LSK's test), it means that undercoverage = leakage, from which it follows that exclusion error = inclusion error (Brown *et al.*, 2016). LSK, however, report unequal inclusion and exclusion errors in all three regions. Thus, LSK have described their test wrong, reported their results wrong, used different definitions of exclusion error and inclusion error than those assumed here, or I have misunderstood LSK or I have made some other mistake. In any case, a comparison of targeting accuracy is not possible because I do not know how to test the scorecard here in a way that will be at least somewhat comparable to LSK.

[46] Recall that in this paper, *inclusion* is the share of all units who are both truly poor and successfully targeted, *undercoverage* is the share of all units who are both truly poor and mistakenly not targeted, *leakage* is the share of all units who are both truly non-poor and mistakenly targeted, and *exclusion* is the share of all units who are both truly non-poor and successfully not targeted.

10. Conclusion

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

- The likelihood that a household has consumption below a given poverty line
- The poverty rate of a population at a point in time
- The 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 pro-poor programs in Senegal that want to improve how they monitor and manage their social performance.

The new 2011 scorecard is constructed with data from half of the households in Senegal's 2011 ESPS. Those households' scores are then calibrated to poverty likelihoods for 17 poverty lines. The accuracy (errors and standard errors) of the new 2011 scorecard is tested out-of-sample on data that is not used in scorecard construction for targeting and for households' poverty likelihoods at a point in time.

Legacy users of Senegal's old 2005/6 scorecard can switch to the new 2011 scorecard without having to start over from scratch when measuring changes in poverty rates over time for the six poverty lines that are supported for both scorecards with a baseline estimate from the old 2005/6 scorecard and a follow-up estimate from the new 2011 scorecard.

When the scorecard is applied to the 17 poverty lines in the validation sample, the maximum average absolute error for point-in-time estimates of poverty rates is 3.7 percentage points, and the average of the average absolute errors across the 17 lines is

about 1.5 percentage points. Corrected estimates may be had by subtracting the known error for a given poverty line from original, uncorrected estimates.

For $n = 16{,}384$ and 90-percent confidence, the precision of point-in-time estimates of poverty rates is ± 0.8 percentage points or better. With $n = 1{,}024$, the 90-percent confidence intervals are ± 3.0 percentage points or better.

If an organization wants to use the scorecard for segmenting clients for differentiated treatment, then the results here provide useful information for selecting a targeting cut-off that fits its values and mission.

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

For this reason, the scorecard uses 11 indicators that are straightforward, low-cost, and verifiable. Points are all zeros or positive integers, and scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line). Scores are converted to poverty likelihoods via look-up tables, and targeting cut-offs are likewise straightforward to apply. The design attempts to facilitate voluntary adoption by helping managers to understand and to trust the scorecard and by allowing non-specialists to add up scores quickly in the field.

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

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Guidelines for the Interpretation of Scorecard Indicators

The following guidelines are excerpts from:

Agence Nationale de la Statistique et de la Démographie. (2013) "Enquête de Suivi de la Pauvreté au Sénégal (ESPS-II, 2011): Manuel d'Instructions pour le Remplissage du Questionnaire", [the *Manual*], `anads.ansd.sn/index.php/catalog/17/download/350`, retrieved 18 April 2017.

Basic interview instructions

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

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

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

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

General interviewing advice

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

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

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

When you mark a response to a scorecard indicator, circle the spelled-out response option and its point value, and write the point value in the "Score" column, like this:

2. In the last seven days, did the male head/spouse work at least one hour in self-employment, as a paid or unpaid employee, or as an apprentice or family worker?	A. No	0	
	B. Yes	2	2
	C. No male head/spouse	5	

When an issue comes up that is not addressed here, its resolution should be left to the unaided judgment of the enumerator, as that apparently was the practice of Senegal's *Agence Nationale de la Statistique et de la Démographie* in the 2011 ESPS. That is, an organization using the scorecard should not promulgate any definitions or rules (other than those in these "Guidelines") to be used by all its field agents. Anything not explicitly addressed in these "Guidelines" is to be left to the unaided judgment of each individual enumerator.

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

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

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

In general, the application of the scorecard should mimic as closely as possible the application of the 2011 ESPS by Senegal's *Agence National de la Statistique et de la Démographie*. For example, interviews should take place in respondents' homesteads because the 2011 ESPS took place in respondents' homesteads.

Translation of the scorecard:
As of this writing, the scorecard itself, the "Back-page Worksheet", and these "Guidelines" are available only in English and French. Official, standard translations are planned for local languages spoken by many people in Senegal such as Wolof and Pulaar, but they are not yet complete. Scorecard users should check `SimplePovertyScorecard.com` to see what translations have been completed since this writing.

If there is no official, standard translation to a given local language, then users should contact the author of this document for help in creating such a translation. In particular, the translation of scorecard indicators should follow as closely as possible the meaning of the original French wording in the official 2011 ESPS *Questionnaire*. The *Enumerator Manual* for the 2011 ESPS was written in French, so these "Guidelines" must be translated from the *Manual*'s original French, not from these English "Guidelines" here.

According to p. 7 of the *Manual*, "If you the enumerator are not fluent in the language spoken by the household, and if none of the household members is fluent in French, then you should inform your manager of the situation. If you have no other option but to resort to an interpreter, then you must take care that he or she translates the questions appropriately. Instruct the translator to give you an accurate translation of the household's responses. Of course, the responses given should correspond to the questions asked. Make sure that the interpreter does not start answering the questions for the household."

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

According to p. 10 of the *Manual*, "The main respondent should be the head of the household or his or her representative (for example, his or her oldest son or daughter, or his or her sibling or spouse). Other members of the household can also contribute with complementary information or clarifications."

Who is the head of the household?

The *Manual* implies that the *head of the household* is the household member whom the other members recognize as the head and who generally has decision-making power.

According to p. 13 of the *Manual*, "The head of the household is not necessarily a male, even though the head usually is a male.

"In some households—in particular, those linked with a polygamous man—the members may consider the polygamous man to be their head even if the polygamous man is a member of another household and not a member of the household being interviewed. In this case (and for the purposes of the scorecard), you should consider the head to be the wife (or one of the wives) who is a member of the interviewed household and whose decision-making authority in the absence of the polygamous man is acknowledged by the other household members.

"If the person named by the members of the household as the head is not a member of the household, then you as the enumerator for the purposes of the scorecard must identify as the head some other member of the household who has decision-making authority. For example, this person could be a brother, mother, or uncle of the person who was named as head, or it could just as well be any other member of the household who is in charge of household decision-making in the place of the absent (nominal) head.

"If a polygamous man who is not a member of the interviewed household nevertheless spent the night before the interview with the interviewed household, then he is considered to be a visitor and is not counted as a household member.

"By way of illustration, suppose that Fatou Diouf is the second wife of Modou Faye. She lives in a different residence apart from her husband, and her husband spends most of his time in his first wife's household. In this case, Modou Faye is not counted as the head of Fatou Diouf's household, even if he spent the night before the day of the interview with her household.

"The term *spouse* means the same thing as *conjugual partner* or *partner*, regardless of whether the head of the household is male or female, and regardless of whether the couple is legally married."

Procedures to maintain confidentiality

According to p. 6 of the *Manual*, do the following to maintain confidentiality:

- Keep the data that you collect from each household confidential. Reassure the respondents by reminding them that you will keep their responses strictly confidential
- Do not take third parties who have nothing to do with the survey with you to any interviews. (An exception is made for interpreters needed to help you to communicate with the interviewed household)
- Do not delegate your job to anyone who is not a member of your organization's survey team
- Track completed questionnaires carefully. Do not leave questionnaires (even blank or partially completed ones) laying around where they might be seen or picked up by third parties who are not members of your organization's survey team"

Your first meeting with the household

According to p. 6 of the *Manual*, do the following when you meet the household.

"Your first contact with the household is of the upmost imporance because the first impression will determine how well the household cooperates.

"Follow these basic rules of behavior in your role as an enumerator:

- Dress appropriately and professionally. Always be polite
- Do not smoke when you are with the responding household
- Do not interrupt the respondent, and do not try to hurry him or her up
- Avoid any and all responses (positive or negative) to what the respondent says, as your reactions may influence what the respondent says later
- If a respondent hesitates, seems uncertain, or gives a response that seems unlikely to you, then ask (for example) whether what he or she said is usually the case
- If a respondent is uncooperative, tell him or her in a neutral tone of voice that your manager requires that you verify all unusual responses
- Study the questionnaire [and these "Guidelines"] until they are second nature
- Keep your cool; if you get confused or upset, then the respondent may lose confidence in you and be less enthusiastic about cooperating

"When you arrive at the household's residence, introduce yourself and show your badge as an employee of [your organization] and any letter of introduction that [your organization] has given you. Explain the purpose of your visit as follows:

- You are doing a survey on behalf of [your organization] of [households that have members who are participants of your organization]
- This particular household was selected at random to be in the survey
- The household's responses to the survey's questions will help [your organization] to understand better the lives of [its participants and their households]
- The household's responses will be kept strictly confidential

"Once you have explained the purpose of the survey and obtained the consent of the head of the household, you may go ahead and begin the interview."

Guidelines for specific scorecard indicators

1. How many members does the household have?
    A. Fifteen or more
    B. Thirteen, or fourteen
    C. Eleven, or twelve
    D. Nine, or ten
    E. Eight
    F. Seven
    G. Six
    H. One to five

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

According to pp. 10–12 of the *Manual*, "The 2011 ESPS defines a *household* as a group of people who live together and who share all or part of their resources in order to provide for the household's basic needs (in particular, food and shelter). All members of the household recognize the authority of one of their members as the head.

"The definition of *household* corresponds to the concept of [*ménage* in French], *njël* in Wolof, *ngaak* in Serer, *hirande* in Pulaar, *niakhamé* in Soninké, *fousil* or *sinkamé* in Diola, and *sinkiro* in Manding.

"The main criterion for counting someone as a *member of the household* is the length of his or her residence with the household. In general, a person counts as a household member if he or she has lived with the household for at least six of the past 12 months. In some cases, a person may count as a household member even without meeting this criterion. To wit:

- Someone who joined the household less than six months ago but who intends to remain and live as part of the household for a total duration of at least six months. This is the case, for example, for a newly-wed who has recently left the home of his or her parents to join the household of his or her spouse (or to start a new household)
- Newborns whose mother is a member of the household

Examples of specific applications of the definition of *household*:
"The following examples aim to show what to do in some common complicated cases of the application of the definition of *household* and *household member*:

- A household can be comprised of only a single person who lives alone
- Members of a household do not necessarily need to be related to each other by blood or marriage
- All the members of a household do not necessarily need to live in the same residence. In particular, if some members live in rooms in a neighboring compound (perhaps due to a lack of space in the household's own compound), such people are nevertheless still members of the household as long as they fulfill the other membership criteria (in particular, [having lived with the household for at least six of the past 12 months], sharing food, sharing all or part of their resources to meet the household's basic needs for food and shelter, and recognizing the authority of the head of the household)
- If all the wives of a polygamous man live in the same compound, then they are all counted as part of the same household. If some of the wives live in different residences (for example, if one wife lives in a neighboring compound), then each wife (or group of wives) counts as a member of a different household. If some of the wives of a polygamous man live in different residences and so are not part of a single household (for example, if one wife lives in the household of her father), then the polygamous man is counted as a member of the household in which he spends the largest share of his time. If the polygamous man spends equal amounts of time in the households of two or more of his wives, then he is counted as a member of the household of his first wife, and the rest of his wives are counted as the heads of their own distinct households
- Renters and lodgers are not counted as members of their landlord's household. In the same way, domestic servants who do not sleep in the residence of their employer are not counted as members of their employer's household. For example, this is the case for maids who go home each night to their own residences to sleep
- Apprentices and domestic servants who usually sleep in the residence of their employer are counted as members of the employer's household. For example, this is the case for maids who only go home to sleep at their residences on weekends
- If a *marabout* who runs a *dhaara* eats meals with his family (without his *talibés*) and lives with his family (apart from his *talibés*), then he is counted as a member of the household that includes his family. [A *marabout's talibés* are not counted as part of their *marabout's* household]"

According to p. 16 of the *Manual*, "Students who go to school in another place and who are on vacation in their parents' household on the day of the interview are not considered to be members of their parents' household . . . as long as they intend to leave the parents' household to return to school once their vacation is over."

This implies that students who are living away from home when they go to school and who are absent on the day of the interview are likewise not to be counted as members of the interviewed household.

In sum, a person is a member of a household if he or she meets five requirements:

- Has lived with the household for at least six of the past 12 months, or now lives with the household and plans to do so for a total duration of at least six months
- Usually eats with the household
- Usually sleeps in the household's residence
- Shares all or part of his or her resources to help meet the household's basic needs for food and shelter
- Recognizes the authority of the same household head as do the other members of the household

According to pp. 11–12 of the *Manual*, you as the enumerator should "keep in mind the following two concepts when completing the household roster:

- *Unaccompanied persons*: Someone without a spouse or conjugal partner and without children or other dependents in the household
- *Family unit*: This concept corresponds with the 'biological' family. It is made up of parents (or one parent) and their unaccompanied direct descendents (children). Each family unit has a head of the family. A household may be made up of more than one family units. The members of a polygamous man's household make up a single family unit as long as they all live in the same residence or compound. A family unit may include direct ancestors of the head of the family (such as his or her father or mother) as well as the family head's brothers, sisters, nephews, nieces, uncles, . . . and any unaccompanied children who are dependents of the head of the family

"After explaining the purpose of [the survey] and obtaining permission to begin the interview from the head of the household or from his or her representative, you should—keeping mind the concepts and definitions discussed above—make a list of the names or nicknames of all household members (be they present or absent on the day of the interview), that is, all those who normally live and eat together.

"The following suggested order of listing is meant to help ensure that all household members are counted:

- List the head of the household first. Then list the members of the head's family unit in the following order (assuming that the head is male):
  - — His unaccompanied children whose mother is not a member of the household (from oldest to youngest)
  - — His first wife
  - — His unaccompanied children with his first wife (from oldest to youngest)
  - — His second and additional spouses ordered by their rank (if relevant) and their unaccompanied children (from oldest to youngest)
  - — All other members of his family unit, as long as they do not themselves make up a distinct family unit
- After listing the members of the family unit whose head is also the head of the household, list the members of all other family units in the following order:
  - — Family units of direct accompanied descendents of the head of the household (from older to youngest). For example, the head's eldest son or eldest daughter
  - — Older generations who make up a distinct family unit. For example, a grandfather and grandmother
  - — Family units of other blood relatives of the head (brothers, sisters, cousins, nephews, nieces, uncles, aunts, and other blood relatives)
  - — Any other family units of people who are not blood relatives of the head of the household but who nevertheless are members of the household. For example, the family units of hired farm hands (*sourgha*), gardeners, drivers, or maids

"Unaccompanied dependents (for example, informally adopted children) are counted as part of the family unit of which they are dependent.

"Renters, lodgers, and domestic servants are not counted as members of the household (except for domestic servants who usually sleep in their employer's residence).

"To make sure that you did not miss anyone, ask the respondent whether there are any household members—such as new-borns or toddlers—who have not yet been mentioned."

2. In the last seven days, did the male head/spouse work at least one hour in self-employment, as a paid or unpaid employee, or as an apprentice or family worker?
    A. No
    B. Yes
    C. No male head/spouse

Remember that you already know the name of the male head/spouse (and whether he exists) from when you compiled the list of household members on the "Back-page Worksheet". Thus, if there is a male head/spouse, do not mechanically ask, "In the last seven days, did the male head/spouse work at least one hour in self-employment, as a paid or unpaid employee, or as an apprentice or family worker?" Instead, use the actual name of the male head/spouse, for example: "In the last seven days, did Ousmane work at least one hour in self-employment, as a paid or unpaid employee, or as an apprentice or family worker?" If there is no male head/spouse, then do not read the question to the respondent; just mark "C. No male head/spouse" and go on to the next question.

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

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

According to pp. 27 and 28 of the *Manual*, "*Work* is to be understood broadly as *economic activity*. It encompasses all economic activities, be they formal or informal, remunerated or unremunerated, agricultural or non-agricultural. To participate in an economic activity, to hold down a job, or simply to work is to produce goods or services for use by consumers.

"In order to be effective when you ask questions and when you interpret and record a respondent's answers, you as the enumerator must have a firm grasp on the concepts and definitions relevant to this question, including *self-employment*, *paid or unpaid employee*, and *apprentice or family worker*.

- *Self-employment*: Self-employed people work in a business or enterprise/activity that they themselves own and control. They may or may not have associates or employees. An example is Mme. Faye, the self-employed owner of a beauty salon who hires young hairdressers as apprentices. As another example, M. Diouf is likewise self-employed, having recently set up his own tailor shop. Even though M. Diouf shares his locale with other tailors, he is no one's apprentice and so he is self-employed
- *Paid employee*: A wage/salary employee works—with or without a contract—for an employer, whether private or public (if the employer is the national government or one of its sub-divisions such as a local association). In return for his or her labor, a paid employee receives payment or remuneration as a wage or a salary, in cash or in kind or both, usually on a biweekly or monthly basis. If payment/remuneration is not in cash, then it is said to be *in kind*. Examples of paid employees include teachers, security guards, hired farm hands (*sourgha*), and so on
- *Apprentice*: An apprentice learns a profession or skill via on-the-job training. Like a family worker, an apprentice may sometimes receive small gifts or payments from his or her employer. Or an apprentice may have to pay the employer in exchange for training. An example of an apprentice is a young man who learns how to solder by working in a metal-working workshop. Note that regular, substantial payments could be considered as wages or salaries, in which case the apprentice could be classfied as a paid employee
- *Family worker*: A worker who helps in his or her household's business/activity without receiving in return any regular remuneration (wage nor salary) in cash or in kind. He or she may receive irregular gifts or cash

"If the male head/spouse worked even just one hour during the past seven days, then mark 'B. Yes'. If the male head/spouse did not work even one hour in the past seven days, then mark 'A. No'.

"Before marking 'A. No', however, check whether the male head/spouse has a usual occupation. If the male head/spouse's regular economic activity was temporarily interrupted in the past seven days, then you should mark 'B. Yes' because—in a typical

week—the male head/spouse would be working. Examples include male heads/spouses who did not work in the past week because they happened to be on annual leave, because they were sick or recovering from an accident, because repairs are being made, or for any other temporary impediment."

The *Manual* implies that the *head of the household* is the household member whom the other members recognize as the head and who generally has decision-making power.

According to p. 13 of the *Manual*, "The head of the household is not necessarily a male, even though the head usually is a male.

"In some households—in particular, those linked with a polygamous man—the members may consider the polygamous man to be the head even if the polygamous man is a member of another household and not a member of the household being interviewed. In this case (and for the purposes of the scorecard), consider the head to be the wife (or one of the wives) who is a member of the interviewed household and whose decision-making authority in the absence of the polygamous man is acknowledged by the other household members.

"If the person named by the members of the household as the head is not a member of the household, then you as the enumerator for the purposes of the scorecard must identify as the head some other member of the household who has decision-making authority. For example, this person could be a brother, mother, or uncle of the person who was named as head, or it could just as well be any other member of the household who is in charge of household decision-making in the place of the absent (nominal) head.

"If a polygamous man who is not a member of the interviewed household nevertheless spent the night before the interview with the interviewed household, then he is considered to be a visitor and is not counted as a household member.

"By way of illustration, suppose that Fatou Diouf is the second wife of Modou Faye. She lives in a different residence apart from her husband, and her husband spends the majority of his time in his first wife's household. In this case, Modou Faye is not counted as the head of Fatou Diouf's household, even if he spent the night before the interview with her household.

"The term *spouse* means the same thing as *conjugual partner* or *partner*, regardless of whether the head of the household is male or female, and regardless of whether the couple is legally married."

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

3. Does the residence have a separate room for a kitchen?
    A. No
    B. Yes

According to p. 58 of the *Manual*, "This question concerns whether the kitchen is a distinct room within the residence used solely for food preparation ('B. Yes') or whether the kitchen is part of a room that also is used for other purposes besides food preparation ('A. No')."

If the respondent does not know or otherwise cannot respond, and if you as the enumerator are unable to determine whether the household has a separate room for a kitchen, then record "A. No".

4. What is the main toilet arrangement used by the household?
    A. None/bush, open latrine, bowl/bucket, public restroom, covered latrine, improved ventilated latrine, or a neighbor's toilet arrangement
    B. Flush toilet (with a septic tank or connected to sewer system), or other

According to p. 63 of the *Manual*, the definitions of the various toilet arrangements are as follows:

- *Open latrine*: A latrine without a lid or covering
- *Bowl/bucket*: A portable container that may be of various types or sizes used to collect excrement to be dumped in a pit, on the ground, or in a ditch
- *Public restroom*: Toilets for use by the general public in markets, schools, and so on
- *Covered latrine*: A latrine with a lid or covering
- *Improved ventilated latrine*: A pit latrine that has ventilation pipes to conduct gas up from the pit, reducing its smelliness. Such a ventilated (aeriated) latrine is considered to be "modern"
- *Flush toilet connected to a sewer system*: A toilet which uses water to wash waste away into a public sewer system. The water may be piped into the toilet or dumped in by hand from buckets
- *Flush toilet with a septic tank*: A toilet which uses water to wash waste away into a hole which—after it fills up—is emptied by the household"

If the household's response does not correspond with any of the listed response options, then count it as "Other" and mark "B. Flush toilet (with a septic tank or connected to sewer system), or other".

If the respondent does not know what the household's main toilet arrangement is or otherwise cannot respond, and if you as the enumerator are unable to determine the household's main toilet arrangement, then record "A. None/bush, open latrine, bowl/bucket, public restroom, covered latrine, improved ventilated latrine, or a neighbor's toilet arrangement"

5. Does your household have a living-room set in good working order?
    A. No
    B. Yes

According to p. 56 of the *Manual*, "Be sure to ask whether the living-room set is in a state of repair that allows it to serve its purpose, that is, whether it is in good working order. If you discover that it is non-functional, then ask about the nature of the problem. If the living-room set can be repaired, then consider it to be in good working order and record 'B. Yes'. In contrast, if the problem cannot be repaired, then consider the living-room set not to be in good working order and record 'A. No'.

"It does not matter which household member has the living-room set."

If the respondent does not know whether the household has a living-room set or otherwise cannot respond, and if you as the enumerator are unable to determine whether the household has a living-room set, then record "A. No".

6. Does your household have a bedroom set in good working order?
    A. No
    B. Yes

According to p. 56 of the *Manual*, "Be sure to ask whether the bedroom set is in a state of repair that allows it to serve its purpose, that is, whether it is in good working order. If you discover that is non-functional, then ask about the nature of the problem. If the bedroom set can be repaired, then consider it to be in good working order and record 'B. Yes'. In contrast, if the problem cannot be repaired, then consider the bedroom set not to be in good working order and record 'A. No'.

"It does not matter which household member has the bedroom set."

If the respondent does not know whether the household has a bedroom set or otherwise cannot respond, and if you as the enumerator are unable to determine whether the household has a bedroom set, then record "A. No".

7. Does your household have a refrigerator/freezer in good working order?
    A. No
    B. Yes

According to p. 56 of the *Manual*, "Be sure to ask whether the refrigerator/freezer is in a state of repair that allows it to serve its purpose, that is, whether it is in good working order. If you discover that it is non-functional, then ask about the nature of the problem. If the refrigerator/freezer can be repaired, then consider it to be in good working order and record 'B. Yes'. In contrast, if the problem cannot be repaired, then consider the refrigerator/freezer not to be in good working order and record 'A. No'.

"It does not matter which household member has the refrigerator/freezer."

If the respondent does not know whether the household has a refrigerator/freezer or otherwise cannot respond, and if you as the enumerator are unable to determine whether the household has a refrigerator/freezer, then record "A. No".

8. How many fans in good working order does your household currently have?
    A. None
    B. One
    C. Two or more

According to p. 56 of the *Manual*, "Be sure to ask whether the fans are in a state of repair that allows them to serve their purpose, that is, whether they are in good working order. If you discover that a fan is non-functional, then ask about the nature of the problem. If the fan can be repaired, then consider it to be in good working order and record the appropriate response accordingly. In contrast, if the fan cannot be repaired, then consider it not to be in good working order and record the appropriate response.

"It does not matter which household member has the fan."

If the respondent does not know how many fans the household currently has or otherwise cannot respond, and if you as the enumerator are unable to determine how many fans the household currently has, then record "A. None".

9. Does your household have an electric iron in good working order?
    A. No
    B. Yes

According to p. 56 of the *Manual*, "Be sure to ask whether the electric iron is in a state of repair that allows it to serve its purpose, that is, whether it is in good working order. If you discover that it is non-functional, then ask about the nature of the problem. If the electric iron can be repaired, then consider it to be in good working order and record 'B. Yes'. In contrast, if the problem cannot be repaired, then consider the electric iron not to be in good working order and record 'A. No'.

"It does not matter which household member has the electric iron."

If the respondent does not know whether the household has an electric iron or otherwise cannot respond, and if you as the enumerator are unable to determine whether the household has an electric iron, then record "A. No".

10. Does your household have a table in good working order?
    A. No
    B. Yes

According to p. 56 of the *Manual*, "Be sure to ask whether the table is in a state of repair that allows it to serve its purpose, that is, whether it is in good working order. If you discover that it is non-functional, then ask about the nature of the problem. If the table can be repaired, then consider it to be in good working order and record 'B. Yes'. In contrast, if the problem cannot be repaired, then consider the table not to be in good working order and record 'A. No'.

"It does not matter which household member has the table."

If the respondent does not know whether the household has a table or otherwise cannot respond, and if you as the enumerator are unable to determine whether the household has a table, then record "A. No".

11. Does your household have a planter or sprayer in good working order?
    A. No
    B. Yes

You should mark "B. Yes" if the household has *any* of the two items. You should mark "A. No" only if the household has *none* of the two items.

Ask two questions, one for each of the two items:

- Does the household have a planter in good working order?
- Does the household have a sprayer in good working order?

Mark the responses as follows:

Does the household have a . . . in good working order?		**Response to**
Planter	**Sprayer**	**mark**
No	No	A. No
Yes	No	B. Yes
No	Yes	B. Yes
Yes	Yes	B. Yes

According to p. 56 of the *Manual*, "Be sure to ask whether the planter or sprayer is in a state of repair that allows it to serve its purpose, that is, whether it is in good working order. If you discover that it is non-functional, then ask about the nature of the problem. If the planter or sprayer can be repaired, then consider it to be in good working order and record 'B. Yes'. In contrast, if the problem cannot be repaired, then consider the planter or sprayer not to be in good working order and record the appropriate response accordingly.

"It does not matter which household member has the planter or sprayer."

If the respondent does not know whether the household has a planter or sprayer or otherwise cannot respond, and if you as the enumerator are unable to determine whether the household has a planter or sprayer, then record "A. No".

Table 1: National poverty lines, poverty rates, and sample sizes for all of Senegal and for the construction and validation samples, by households and people in 2011

Year	Line or Rate	HHs or People	n	Poverty lines and poverty rates (%)			
					National lines		
				Food	100%	150%	200%
All of Senegal							
	Line	People		339	741	1,112	1,483
2011	Rate	HHs	5,953	4.6	35.6	61.7	77.1
	Rate	People		5.8	46.7	74.8	87.3
Construction and calibration:							
(Selecting indicators and points, and associating scores with poverty likelihoods)							
2011	Rate	HHs	3,013	4.7	35.5	61.5	77.2
Validation:							
(Measuring accuracy)							
2011	Rate	HHs	2,940	4.6	35.6	61.7	77.1

Source: 2011 ESPS

Poverty lines are XOF per day per adult-equivalent in average prices in all of Senegal from 1aug2011 to 15dec2011.

Table 1: International 2005 and 2011 PPP poverty lines, poverty rates, and sample sizes for all of Senegal and for the construction and validation samples, by households and people in 2011

	Line or	HHs or		Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
Year	**Rate**	**People**	n	**$1.25**	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
All of Senegal										
	Line	People		447	715	894	1,787	2,640	474	773
2011	Rate	HHs	5,953	21.4	48.6	62.5	89.2	95.2	24.4	53.3
	Rate	People		29.3	62.4	76.1	85.7	98.6	32.9	67.1
Construction and calibration:										
(Selecting indicators and points, and associating scores with poverty likelihoods)										
2011	Rate	HHs	3,013	21.7	48.3	62.4	89.2	95.1	24.4	53.5
Validation:										
(Measuring accuracy)										
2011	Rate	HHs	2,940	21.4	48.6	62.5	89.2	95.2	24.4	53.3

Source: 2011 ESPS

Poverty lines are XOF per day per person in average prices in all of Senegal from 1aug2011 to 15dec2011.

Table 1: Relative and percentile-based poverty lines, poverty rates, and sample sizes for all of Senegal and for the construction and validation samples, by households and people in 2011

Year	Line or Rate	HHs or People	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
All of Senegal									
	Line	People		409	384	532	607	697	952
2011	Rate	HHs	5,953	17.0	14.5	30.3	37.8	46.7	66.5
	Rate	People		23.4	20.0	40.3	50.0	59.9	80.0
Construction and calibration:									
(Selecting indicators and points, and associating scores with poverty likelihoods)									
2011	Rate	HHs	3,013	17.3	14.6	30.0	38.0	46.6	66.4
Validation:									
(Measuring accuracy)									
2011	Rate	HHs	2,940	17.0	14.5	30.3	37.8	46.7	66.5

Source: 2011 ESPS

Poverty lines are XOF per day per person in average prices in all of Senegal from 1aug2011 to 15dec2011.

Table 2 (All of Senegal): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		487	919	1,378	1,837
		Rate (HHs)	3,063	4.3	23.4	48.9	65.7
		Rate (people)		5.4	33.1	63.6	78.6
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	2,890	4.9	47.6	74.3	88.3
		Rate (people)		6.2	57.1	83.4	94.0
All	2011	Line		339	741	1,112	1,483
		Rate (HHs)	5,953	4.6	35.6	61.7	77.1
		Rate (people)		5.8	46.7	74.8	87.3

Source and definitions: See Table 1 and text.

Table 2 (All of Senegal): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		553	885	1,107	2,214	3,270	587	958
		Rate (HHs)	3,063	11.6	33.7	47.2	82.2	92.4	13.3	38.3
		Rate (people)		16.1	47.5	62.4	91.6	97.4	18.3	53.0
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	2,890	31.1	63.2	77.6	96.0	97.9	35.2	68.0
		Rate (people)		39.4	73.7	86.5	98.9	99.6	44.1	77.9
All	2011	Line		447	715	894	1,787	2,640	474	773
		Rate (HHs)	5,953	21.4	48.6	62.5	89.2	95.2	24.4	53.3
		Rate (people)		29.3	62.4	76.1	95.7	98.6	32.9	67.1

Source and definitions: See Table 1 and text.

Table 2 (All of Senegal): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		506	476	659	752	863	1,180
		Rate (HHs)	3,063	9.4	8.1	17.1	24.7	31.8	52.1
		Rate (people)		12.8	10.9	24.2	35.4	44.8	68.0
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	2,890	24.5	20.9	43.3	50.7	61.2	80.7
		Rate (people)		31.4	27.1	52.6	61.2	71.5	89.2
All	2011	Line		409	384	532	607	697	952
		Rate (HHs)	5,953	17.0	14.5	30.3	37.8	46.7	66.5
		Rate (people)		23.4	20.0	40.3	50.0	59.9	80.0

Source and definitions: See Table 1 and text.

Table 2 (Dakar): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		571	1,014	1,520	2,027
		Rate (HHs)	539	3.1	17.3	40.4	57.7
		Rate (people)		3.7	26.1	55.9	72.3
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	60	1.4	8.3	25.5	44.5
		Rate (people)		2.5	26.7	48.1	72.3
All	2011	Line		564	1,006	1,509	2,011
		Rate (HHs)	599	3.1	17.1	40.1	57.4
		Rate (people)		3.6	26.1	55.7	72.3

Source and definitions: See Table 1 and text.

Table 2 (Dakar): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		611	977	1,221	2,443	3,608	648	1,057
		Rate (HHs)	539	6.8	25.3	38.9	76.5	89.5	8.1	30.3
		Rate (people)		8.9	38.0	54.8	87.9	96.0	10.3	44.7
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	60	5.0	9.9	21.9	59.5	66.2	5.0	13.2
		Rate (people)		16.8	29.4	45.9	84.9	88.5	16.8	32.5
All	2011	Line		606	970	1,212	2,424	3,581	643	1,049
		Rate (HHs)	599	6.8	24.9	38.6	76.1	89.0	8.0	29.9
		Rate (people)		9.1	37.8	54.7	87.9	95.8	10.5	44.5

Source and definitions: See Table 1 and text.

Table 2 (Dakar): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		559	525	727	830	953	1,302
		Rate (HHs)	539	5.2	4.8	10.4	18.2	22.9	44.4
		Rate (people)		6.2	5.4	15.1	27.9	34.2	61.3
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	60	1.4	1.4	6.7	8.3	9.9	26.8
		Rate (people)		2.5	2.5	21.9	26.7	29.4	50.7
All	2011	Line		555	521	721	824	945	1,292
		Rate (HHs)	599	5.1	4.7	10.3	18.0	22.6	44.0
		Rate (people)		6.1	5.3	15.2	27.9	34.1	61.1

Source and definitions: See Table 1 and text.

Table 2 (Ziguinchor): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	195	18.4	47.3	70.7	80.2
		Rate (people)		23.7	57.2	81.2	88.8
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	191	5.7	65.1	79.9	91.1
		Rate (people)		8.5	77.4	89.3	97.6
All	2011	Line		312	712	1,068	1,424
		Rate (HHs)	386	11.6	56.9	75.6	86.0
		Rate (people)		16.4	66.8	85.1	93.0

Source and definitions: See Table 1 and text.

Table 2 (Ziguinchor): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	195	33.9	56.2	63.5	90.3	96.7	35.2	58.5
		Rate (people)		41.0	68.5	75.9	95.3	99.2	42.5	72.4
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	191	45.3	72.5	79.5	94.0	95.1	50.1	74.3
		Rate (people)		58.5	84.9	89.7	98.9	99.0	64.7	86.8
All	2011	Line		429	687	858	1,716	2,536	455	743
		Rate (HHs)	386	40.0	64.9	72.1	92.3	95.8	43.2	67.0
		Rate (people)		49.3	76.3	82.5	97.0	99.1	53.1	79.2

Source and definitions: See Table 1 and text.

Table 2 (Ziguinchor): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	195	31.6	25.6	41.2	45.8	53.4	66.0
		Rate (people)		38.7	32.2	49.2	56.0	64.1	78.2
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	191	37.7	31.8	59.1	64.4	72.5	81.9
		Rate (people)		50.2	44.5	74.6	78.4	84.9	91.9
All	2011	Line		393	369	511	583	669	915
		Rate (HHs)	386	34.9	28.9	50.8	55.8	63.6	74.6
		Rate (people)		44.1	38.0	61.3	66.7	74.0	84.7

Source and definitions: See Table 1 and text.

Table 2 (Diourbel): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	257	2.8	23.5	58.9	78.1
		Rate (people)		1.9	32.7	71.6	87.5
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	181	2.0	39.6	68.7	90.9
		Rate (people)		2.6	49.8	79.2	95.4
All	2011	Line		245	629	943	1,258
		Rate (HHs)	438	2.1	37.2	67.2	89.0
		Rate (people)		2.5	47.8	78.3	94.5

Source and definitions: See Table 1 and text.

Table 2 (Diourbel): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	257	12.5	41.4	59.4	90.5	96.3	14.3	44.1
		Rate (people)		19.1	54.4	72.0	95.7	99.2	22.2	57.5
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	181	22.1	55.7	79.5	97.0	99.2	25.2	64.6
		Rate (people)		31.3	67.7	87.0	99.1	99.9	34.1	74.9
All	2011	Line		379	606	758	1,516	2,239	402	656
		Rate (HHs)	438	20.7	53.6	76.5	96.0	98.8	23.6	61.5
		Rate (people)		30.0	66.2	85.3	98.7	99.8	32.8	73.0

Source and definitions: See Table 1 and text.

Table 2 (Diourbel): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	257	9.8	8.9	17.0	27.3	38.1	63.5
		Rate (people)		15.6	14.1	25.9	40.3	51.8	76.8
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	181	15.9	12.0	34.7	40.9	51.3	83.1
		Rate (people)		23.9	18.5	44.3	51.4	63.4	90.5
All	2011	Line		347	326	451	515	591	808
		Rate (HHs)	438	15.0	11.6	32.0	38.9	49.3	80.2
		Rate (people)		22.9	18.0	42.2	50.2	62.1	88.9

Source and definitions: See Table 1 and text.

Table 2 (Saint-Louis): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	193	3.8	36.5	60.9	76.7
		Rate (people)		5.7	48.3	74.1	84.9
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	220	1.7	22.5	57.1	78.5
		Rate (people)		4.3	31.4	67.8	87.3
All	2011	Line		304	703	1,054	1,405
		Rate (HHs)	413	2.6	28.7	58.7	77.7
		Rate (people)		5.0	39.5	70.8	86.2

Source and definitions: See Table 1 and text.

Table 2 (Saint-Louis): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	193	18.9	49.9	60.8	89.9	95.7	22.5	53.0
		Rate (people)		28.4	65.0	74.1	95.5	98.5	33.1	67.3
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	220	12.3	45.6	60.6	92.8	98.0	14.8	49.5
		Rate (people)		18.4	55.7	71.2	97.1	99.5	21.7	59.7
All	2011	Line		423	677	847	1,694	2,502	449	733
		Rate (HHs)	413	15.2	47.5	60.7	91.6	97.0	18.2	51.0
		Rate (people)		23.2	60.1	72.6	96.3	99.0	27.1	63.3

Source and definitions: See Table 1 and text.

Table 2 (Saint-Louis): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	193	12.9	11.9	29.4	38.2	49.5	63.2
		Rate (people)		20.3	18.0	42.2	51.1	64.6	76.4
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	220	10.3	8.0	18.0	26.8	43.8	66.0
		Rate (people)		16.7	13.5	25.9	39.4	54.4	77.0
All	2011	Line		387	364	504	576	661	902
		Rate (HHs)	413	11.5	9.7	23.0	31.9	46.3	64.8
		Rate (people)		18.4	15.6	33.7	45.0	59.3	76.7

Source and definitions: See Table 1 and text.

Table 2 (Tambacounda): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	156	9.2	38.2	67.8	84.1
		Rate (people)		9.6	46.9	82.7	93.9
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	358	7.6	60.0	81.9	93.2
		Rate (people)		7.1	66.0	89.3	97.0
All	2011	Line		256	643	965	1,287
		Rate (HHs)	514	8.0	55.0	78.7	91.1
		Rate (people)		7.6	62.5	88.1	96.5

Source and definitions: See Table 1 and text.

Table 2 (Tambacounda): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	156	23.9	54.5	69.5	91.7	94.6	28.8	57.5
		Rate (people)		32.3	69.9	83.3	97.9	99.2	38.0	72.3
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	358	47.4	75.5	86.4	97.8	99.3	49.9	80.4
		Rate (people)		51.1	82.9	93.4	99.5	99.9	54.5	88.0
All	2011	Line		388	620	775	1,550	2,290	411	671
		Rate (HHs)	514	42.0	70.7	82.5	96.4	98.2	45.1	75.2
		Rate (people)		47.7	80.5	91.6	99.2	99.8	51.5	85.1

Source and definitions: See Table 1 and text.

Table 2 (Tambacounda): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	156	21.8	19.4	36.1	42.5	51.1	71.1
		Rate (people)		29.1	26.9	43.8	53.8	64.9	84.4
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	358	39.2	32.0	58.3	64.2	74.3	88.6
		Rate (people)		41.0	33.4	63.5	70.6	81.9	94.8
All	2011	Line		355	333	461	527	605	826
		Rate (HHs)	514	35.2	29.2	53.3	59.2	69.0	84.6
		Rate (people)		38.8	32.2	59.9	67.5	78.8	92.9

Source and definitions: See Table 1 and text.

Table 2 (Kaolack): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	268	1.9	19.1	56.5	76.5
		Rate (people)		1.1	24.2	63.7	85.2
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	179	4.0	74.0	92.0	98.6
		Rate (people)		3.3	79.0	94.4	99.4
All	2011	Line		278	670	1,005	1,340
		Rate (HHs)	447	3.2	53.5	78.7	90.3
		Rate (people)		2.6	61.7	84.7	94.9

Source and definitions: See Table 1 and text.

Table 2 (Kaolack): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	268	10.9	41.2	55.4	88.7	97.3	12.1	43.9
		Rate (people)		15.8	49.9	62.4	94.7	99.3	16.9	53.0
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	179	48.8	85.3	94.2	99.8	100.0	53.8	86.5
		Rate (people)		58.7	89.4	96.2	99.9	100.0	63.4	90.5
All	2011	Line		404	646	808	1,615	2,386	428	699
		Rate (HHs)	447	34.6	68.8	79.7	95.6	99.0	38.2	70.6
		Rate (people)		45.1	76.9	85.5	98.3	99.8	48.7	78.6

Source and definitions: See Table 1 and text.

Table 2 (Kaolack): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	268	8.7	5.7	19.6	25.2	41.1	64.8
		Rate (people)		11.8	6.8	24.2	30.8	49.9	76.4
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	179	38.2	31.5	66.2	77.6	83.8	97.9
		Rate (people)		47.2	38.5	72.7	83.6	88.1	98.7
All	2011	Line		370	347	481	549	630	861
		Rate (HHs)	447	27.2	21.9	48.8	58.0	67.8	85.5
		Rate (people)		36.0	28.5	57.4	66.9	76.0	91.7

Source and definitions: See Table 1 and text.

Table 2 (Thiès): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	269	0.5	22.8	53.9	71.6
		Rate (people)		1.3	30.8	66.4	81.6
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	180	3.8	39.8	68.3	81.8
		Rate (people)		4.4	49.8	80.2	91.6
All	2011	Line		300	697	1,045	1,394
		Rate (HHs)	449	2.2	31.5	61.3	76.9
		Rate (people)		3.0	41.3	74.0	87.1

Source and definitions: See Table 1 and text.

Table 2 (Thiès): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	269	8.0	35.5	50.9	90.0	96.5	10.7	40.8
		Rate (people)		11.2	48.9	64.9	95.7	98.7	14.7	54.4
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	180	22.6	54.2	69.1	92.0	94.2	29.0	58.4
		Rate (people)		27.7	65.4	82.5	98.0	98.7	35.5	69.0
All	2011	Line		420	672	840	1,680	2,481	446	727
		Rate (HHs)	449	15.5	45.1	60.2	91.0	95.3	20.1	49.9
		Rate (people)		20.3	58.0	74.7	97.0	98.7	26.2	62.4

Source and definitions: See Table 1 and text.

Table 2 (Thiès): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	269	6.5	4.7	15.5	23.2	35.0	55.1
		Rate (people)		9.5	7.6	20.9	32.8	48.5	69.2
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	180	16.0	14.7	35.8	42.0	51.4	72.2
		Rate (people)		19.5	17.9	43.7	53.0	61.9	85.2
All	2011	Line		384	361	500	571	655	895
		Rate (HHs)	449	11.4	9.8	25.9	32.9	43.4	63.9
		Rate (people)		15.0	13.3	33.5	44.0	55.9	78.1

Source and definitions: See Table 1 and text.

Table 2 (Louga): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	231	0.0	12.8	41.0	69.5
		Rate (people)		0.0	19.9	54.3	81.1
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	193	0.8	23.9	67.6	82.4
		Rate (people)		0.7	28.1	76.1	87.8
All	2011	Line		252	637	956	1,275
		Rate (HHs)	424	0.7	21.7	62.5	79.9
		Rate (people)		0.6	26.8	72.7	86.8

Source and definitions: See Table 1 and text.

Table 2 (Louga): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	231	3.1	24.1	42.3	86.3	95.6	4.3	28.2
		Rate (people)		5.9	36.9	58.3	94.8	98.6	7.0	41.1
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	193	9.5	48.6	67.4	96.3	99.1	12.0	52.2
		Rate (people)		11.4	58.5	76.1	98.5	99.8	14.7	62.3
All	2011	Line		384	614	768	1,536	2,269	407	665
		Rate (HHs)	424	8.3	43.9	62.6	94.4	98.4	10.5	47.6
		Rate (people)		10.6	55.1	73.4	97.9	99.6	13.5	59.0

Source and definitions: See Table 1 and text.

Table 2 (Louga): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	231	1.8	0.9	9.3	15.1	23.4	46.0
		Rate (people)		3.3	1.2	16.7	24.4	35.7	62.0
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	193	7.0	5.7	16.8	28.3	45.6	72.5
		Rate (people)		7.3	6.5	20.5	35.1	54.5	80.5
All	2011	Line		351	330	457	522	599	819
		Rate (HHs)	424	6.0	4.8	15.4	25.7	41.3	67.4
		Rate (people)		6.7	5.6	19.9	33.4	51.6	77.6

Source and definitions: See Table 1 and text.

Table 2 (Fatick): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	202	7.4	43.4	72.3	86.5
		Rate (people)		10.2	54.4	82.9	92.9
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	200	4.7	59.7	84.1	97.1
		Rate (people)		5.5	70.0	91.8	98.7
All	2011	Line		249	634	951	1,268
		Rate (HHs)	402	5.1	57.1	82.2	95.4
		Rate (people)		6.2	67.9	90.5	97.9

Source and definitions: See Table 1 and text.

Table 2 (Fatick): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	202	26.6	53.2	68.5	96.8	99.1	29.3	57.9
		Rate (people)		34.6	65.6	80.2	99.0	99.8	37.2	70.5
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	200	44.1	75.1	88.7	98.8	99.2	50.1	80.8
		Rate (people)		52.9	85.4	95.2	99.8	99.9	60.2	89.0
All	2011	Line		382	611	764	1,528	2,258	405	661
		Rate (HHs)	402	41.3	71.6	85.4	98.5	99.2	46.8	77.1
		Rate (people)		50.3	82.7	93.2	99.7	99.9	57.0	86.4

Source and definitions: See Table 1 and text.

Table 2 (Fatick): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	202	21.6	18.5	35.2	43.9	52.4	74.4
		Rate (people)		29.3	25.2	46.4	55.7	64.8	85.8
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	200	31.9	28.4	58.7	64.1	74.9	90.6
		Rate (people)		37.6	33.1	68.9	75.4	85.2	97.1
All	2011	Line		350	329	455	519	596	814
		Rate (HHs)	402	30.2	26.8	54.9	60.9	71.3	88.1
		Rate (people)		36.4	32.0	65.8	72.7	82.4	95.5

Source and definitions: See Table 1 and text.

Table 2 (Kolda): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	138	7.9	44.3	71.8	84.0
		Rate (people)		10.3	54.5	81.6	90.6
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	250	19.7	69.9	89.3	94.2
		Rate (people)		26.1	81.0	95.0	97.6
All	2011	Line		254	640	960	1,279
		Rate (HHs)	388	17.0	64.1	85.3	91.9
		Rate (people)		23.5	76.6	92.7	96.5

Source and definitions: See Table 1 and text.

Table 2 (Kolda): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	138	31.9	59.5	72.8	95.1	97.7	36.3	65.0
		Rate (people)		41.1	72.5	82.2	98.6	99.4	46.8	77.1
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	250	57.1	84.6	90.2	98.4	99.6	60.6	86.5
		Rate (people)		70.3	92.9	95.6	99.6	99.9	73.6	93.8
All	2011	Line		385	617	771	1,542	2,278	409	667
		Rate (HHs)	388	51.4	78.9	86.2	97.6	99.2	55.1	81.6
		Rate (people)		65.4	89.6	93.4	99.5	99.8	69.2	91.1

Source and definitions: See Table 1 and text.

Table 2 (Kolda): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	138	26.6	22.3	42.5	49.4	59.5	77.2
		Rate (people)		36.2	31.0	52.9	58.6	72.5	85.7
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	250	50.0	46.2	67.4	73.7	83.1	90.4
		Rate (people)		61.9	58.2	79.2	84.6	91.6	95.7
All	2011	Line		353	331	459	524	601	822
		Rate (HHs)	388	44.7	40.8	61.7	68.2	77.8	87.4
		Rate (people)		57.6	53.7	74.8	80.3	88.4	94.1

Source and definitions: See Table 1 and text.

Table 2 (Matam): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	181	16.4	44.5	66.1	77.5
		Rate (people)		22.0	59.5	81.0	90.1
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	178	3.4	31.2	58.7	78.7
		Rate (people)		4.0	42.6	69.1	86.1
All	2011	Line		252	638	957	1,275
		Rate (HHs)	359	5.7	33.5	60.0	78.5
		Rate (people)		6.8	45.2	70.9	86.7

Source and definitions: See Table 1 and text.

Table 2 (Matam): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	181	29.3	55.7	64.3	87.3	95.7	31.5	60.9
		Rate (people)		39.9	72.4	81.3	96.3	99.3	43.3	77.7
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	178	19.4	47.6	63.0	96.7	99.5	22.9	52.4
		Rate (people)		26.4	59.1	73.7	98.5	99.8	31.9	64.3
All	2011	Line		384	615	768	1,537	2,270	408	665
		Rate (HHs)	359	21.1	49.0	63.2	95.1	98.8	24.3	53.9
		Rate (people)		28.5	61.2	74.9	98.1	99.8	33.7	66.4

Source and definitions: See Table 1 and text.

Table 2 (Matam): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	181	28.3	26.0	38.3	45.6	55.2	66.8
		Rate (people)		38.5	36.2	54.1	62.5	72.1	83.9
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	178	14.2	11.6	33.3	37.3	45.2	65.8
		Rate (people)		19.3	16.4	43.2	46.7	56.8	75.9
All	2011	Line		352	330	457	522	599	819
		Rate (HHs)	359	16.6	14.1	34.1	38.7	46.9	66.0
		Rate (people)		22.3	19.5	44.9	49.2	59.2	77.2

Source and definitions: See Table 1 and text.

Table 2 (Kaffrine): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	195	5.2	37.7	67.7	80.7
		Rate (people)		5.9	50.4	79.7	89.4
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	240	7.0	54.5	80.3	87.4
		Rate (people)		7.6	65.3	88.6	93.3
All	2011	Line		243	627	940	1,253
		Rate (HHs)	435	6.7	52.1	78.5	86.5
		Rate (people)		7.4	63.8	87.7	92.9

Source and definitions: See Table 1 and text.

Table 2 (Kaffrine): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	195	21.9	53.8	68.0	90.5	96.8	22.9	59.7
		Rate (people)		33.0	68.2	79.1	95.9	98.9	35.3	72.9
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	240	31.1	71.7	81.2	96.2	98.4	37.4	76.5
		Rate (people)		42.6	81.5	89.8	99.3	99.9	48.8	85.7
All	2011	Line		378	604	755	1,510	2,231	401	654
		Rate (HHs)	435	29.8	69.2	79.4	95.4	98.2	35.3	74.1
		Rate (people)		41.7	80.1	88.7	98.9	99.8	47.4	84.4

Source and definitions: See Table 1 and text.

Table 2 (Kaffrine): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	195	17.8	14.4	32.1	42.8	51.3	70.7
		Rate (people)		25.6	19.8	47.2	57.0	65.4	81.2
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	240	26.3	22.8	45.8	57.2	70.2	83.0
		Rate (people)		37.8	33.0	58.1	69.5	79.8	91.4
All	2011	Line		346	325	450	513	589	805
		Rate (HHs)	435	25.1	21.6	43.9	55.2	67.5	81.2
		Rate (people)		36.5	31.7	57.0	68.2	78.4	90.4

Source and definitions: See Table 1 and text.

Table 2 (Kédougou): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	113	7.2	45.7	69.3	76.3
		Rate (people)		11.0	61.1	79.9	86.2
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	173	10.9	67.2	84.9	95.7
		Rate (people)		14.4	73.8	91.1	97.5
All	2011	Line		259	646	969	1,292
		Rate (HHs)	286	10.1	62.7	81.6	91.6
		Rate (people)		13.7	71.3	88.9	95.3

Source and definitions: See Table 1 and text.

Table 2 (Kédougou): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	113	24.1	59.4	70.6	90.3	98.6	27.5	62.6
		Rate (people)		33.9	71.4	80.9	95.4	99.8	39.1	74.6
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	173	52.2	76.7	86.7	100.0	100.0	55.8	79.9
		Rate (people)		59.4	85.1	92.0	100.0	100.0	63.1	88.5
All	2011	Line		389	623	778	1,557	2,300	413	674
		Rate (HHs)	286	46.2	73.1	83.3	98.0	99.7	49.8	76.2
		Rate (people)		54.3	82.4	89.8	99.1	100.0	58.3	85.8

Source and definitions: See Table 1 and text.

Table 2 (Kédougou): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	113	19.1	17.2	36.4	45.0	54.7	74.1
		Rate (people)		25.5	23.3	49.3	60.3	67.2	85.0
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	173	44.3	43.2	62.3	69.7	75.2	88.4
		Rate (people)		53.0	51.5	70.3	77.2	82.4	93.6
All	2011	Line		356	335	463	529	607	830
		Rate (HHs)	286	39.0	37.7	56.8	64.5	70.8	85.4
		Rate (people)		47.6	46.0	66.2	73.8	79.4	91.9

Source and definitions: See Table 1 and text.

Table 2 (Sédhiou): National poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)			
				National lines			
				Food	100%	150%	200%
Urban	2011	Line		390	809	1,213	1,618
		Rate (HHs)	126	13.6	54.8	71.3	83.6
		Rate (people)		21.0	70.4	83.8	92.3
Rural	2011	Line		226	606	909	1,212
		Rate (HHs)	287	5.2	58.8	85.2	94.1
		Rate (people)		6.7	68.2	91.3	97.1
All	2011	Line		239	622	933	1,244
		Rate (HHs)	413	5.9	58.4	83.9	93.1
		Rate (people)		7.8	68.3	90.8	96.7

Source and definitions: See Table 1 and text.

Table 2 (Sédhiou): International 2005 and 2011 PPP poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	*n*	Poverty lines and poverty rates (%)						
				Intl. 2005 PPP lines					Intl. 2011 PPP lines	
				$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Urban	2011	Line		487	780	975	1,949	2,880	517	844
		Rate (HHs)	126	36.3	62.1	72.6	94.5	98.3	37.9	65.2
		Rate (people)		53.6	76.6	84.6	98.2	99.2	55.1	79.6
Rural	2011	Line		365	584	730	1,461	2,158	387	632
		Rate (HHs)	287	39.4	71.6	86.1	99.2	99.5	44.2	78.6
		Rate (people)		48.2	81.5	92.3	99.9	99.9	53.2	87.9
All	2011	Line		375	600	749	1,499	2,214	398	649
		Rate (HHs)	413	39.1	70.8	84.9	98.8	99.4	43.6	77.4
		Rate (people)		48.6	81.1	91.7	99.7	99.9	53.4	87.2

Source and definitions: See Table 1 and text.

Table 2 (Sédhiou): Relative and percentile-based poverty lines and poverty rates for households and people by urban/rural/all in 2011

Area	Year	Line/rate	n	Poverty lines and poverty rates (%)					
				Poorest half of people below 100% Natl. line	Percentile-based lines				
					20th	40th	50th	60th	80th
Urban	2011	Line		446	419	580	662	760	1,039
		Rate (HHs)	126	33.3	29.2	45.8	52.6	61.2	76.3
		Rate (people)		48.7	43.9	62.6	69.1	76.2	87.1
Rural	2011	Line		334	314	435	496	570	778
		Rate (HHs)	287	32.2	26.9	54.6	63.7	71.2	89.2
		Rate (people)		41.8	35.3	64.0	73.9	81.2	94.4
All	2011	Line		343	322	446	509	585	799
		Rate (HHs)	413	32.3	27.1	53.8	62.7	70.3	88.1
		Rate (people)		42.4	36.0	63.9	73.5	80.8	93.8

Source and definitions: See Table 1 and text.

Table 3: Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
1,006	How many fans in good working order does your household currently have? (None; One; Two or more)
972	What kind of floor does the household's main toilet arrangement have? (Packed earth, wood/planks, or other; Not relevant (no toilet arrangement): Cement; Tile)
972	What is the main material of the roof of the residence? (Thatch/straw; Metal sheets, or other; Tile/slate; Concrete/cement)
957	How many household members are 17-years-old or younger? (Eight or more; Seven; Six; Five; Four; Three; Two; One; None)
951	How does the household dispose of its garbage? (Private dump pile; Street, hole/ditch, or other; Public dump pile; Cart; Trash can (public trash service): Pit)
944	How many household members are 16-years-old or younger? (Eight or more; Seven; Six; Five; Four; Three; Two; One; None)
942	Does your household have a living-room set in good working order? (No; Yes)
941	How many household members are 15-years-old or younger? (Eight or more; Seven; Six; Five; Four; Three; Two; One; None)
902	What is the main toilet arrangement used by the household? (None/bush, open latrine, bowl/bucket, public restroom, covered latrine, improved ventilated latrine, or a neighbor's toilet arrangement; Flush toilet (with a septic tank or connected to sewer system), or other)
885	What is the main material of the floor of the residence? (Packed earth; Sand; Cement, or other; Tile)
876	How many household members are 14-years-old or younger? (Seven or more; Six; Five; Four; Three; Two; One; None)
866	How many household members are 12-years-old or younger? (Seven or more; Six; Five; Four; Three; Two; One; None)
860	How many members does the household have? (Fifteen or more; Thirteen, or fourteen; Eleven, or twelve; Nine, or ten; Eight; Seven; Six; One to five)
857	How many household members are 13-years-old or younger? (Seven or more; Six; Five; Four; Three; Two; One; None)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
826	How many household members are 11-years-old or younger? (Seven or more; Six; Five; Four; Three; Two; One; None)
824	What is the main cooking fuel used by the household? (Firewood, charcoal, kerosene, dung, does not cook, or other; LPG, or electricity)
799	How many household members are 18-years-old or younger? (Eight or more; Seven; Six; Five; Four; Three; Two; One; None)
715	What type of residence does the household live in? (Hut, or shanty; Single-floor detached house, or other; Apartment in an apartment building, or two-floor detached house)
709	What is the main source of drinking water for the household? (Well (protected or unprotected), borewell with a handpump, water truck, bottled or filtered water, or other; Public standpipe, Neighbor's faucet, spring or artesian well, motorized borewell, water vendor, or indoor faucet)
662	How many household members are 6-years-old or younger? (Four or more; Three; Two; One; None)
660	Does your household have a refrigerator/freezer in good working order? (No; Yes)
630	What is the highest grade or level that the male head/spouse has completed? (None, pre-school/kindergarten, CI, CP, CE1, CE2, or CM1; CM2, Sixth, or fifth; No male head/spouse; Fourth, third, second, first, or final; Post-secondary (any year))
627	How does the household dispose of sewage? (No toilet arrangement; Ditch by the road; Sludge tanker; Connection to the sewer system, or other)
624	Does your household have a food processor in good working order? (No; Yes)
613	Does your household have a boat/canoe in good working order? (Yes; No)
538	Does your household have a water-storage tank in good working order? (No; Yes)
537	What is the highest grade or level that the female head/spouse has completed? (None, or pre-school/kindergarten; No female head/spouse; CI, CP, CE1, CE2, or CM1; CM2, Sixth, or fifth; Fourth, third, second, first, or final; Post-secondary (any year))
530	Do all household members ages 7 to 16 currently go to school (current school year)? (No; Yes; No members in this age range)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
519	Do all household members ages 7 to 17 currently go to school (current school year)? (No; Yes; No members in this age range)
517	Do all household members ages 7 to 15 currently go to school (current school year)? (No; Yes; No members in this age range)
504	Can the male head/spouse read and write in French? (No; Yes; No male head/spouse)
498	How many household members who worked for at least one hour in the past seven days was in their main occupation a manual laborer, self-employed without employees, worker in a family business, or paid or unpaid apprentice? (Five or more; Four; Three; Two; One; None)
497	What is the main material of the walls of the residence? (Mud bricks, packed earth, metal sheets, or other; Straw/sticks, cement blocks, tile, or wood)
482	Do all household members ages 7 to 18 currently go to school (current school year)? (No; Yes; No members in this age range)
471	What is the male head/spouse's status in his main job? (Self-employed without employees, worker in a family business, apprentice (paid or unpaid), or unclassifiable; Does not work, or manual laborer; Semi-skilled employee or worker; No male head/spouse; Skilled employee or worker, or business owner with employees; Senior executive, engineer, and related, or middle manager, or supervisor)
471	Do all household members ages 7 to 11 currently go to school (current school year)? (No; Yes; No members in this age range)
470	What is the household's tenancy status in its residence? (Owner without formal title, or rent-to-own; Housed for free by a relative or friend, or other; Owner with formal title, renter, or housed by employer)
467	Do all household members ages 7 to 12 currently go to school (current school year)? (No; Yes; No members in this age range)
460	In the last seven days, how many household members worked at least one hour in self-employment, as a paid or unpaid employee, or as an apprentice or family worker? (None; One; Two; Three; Four; Five or more)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
458	Does your household possess a carpet? (No; Yes)
456	Do all household members ages 7 to 14 currently go to school (current school year)? (No; Yes; No members in this age range)
441	Does your household have a land-line telephone or a cell phone in good working order? (No; Yes)
437	Do all household members ages 7 to 13 currently go to school (current school year)? (No; Yes; No members in this age range)
407	Does your household have a land-line telephone in good working order? (No; Yes)
392	Does your household have a water barrel or water-storage tank in good working order? (No; Yes)
389	Does your household possess a frame (non-foam) mattress in good working order? (No; Yes)
368	Does your household have an axe/hoe in good working order? (Yes; No)
356	Can the male head/spouse read and write in French, Arabic, in a local language, or in some other language? (No; Yes; No male head/spouse)
348	Can the female head/spouse read and write in French? (No; No female head/spouse; Yes)
335	Does your household have a car or truck in good working order? (No; Yes)
312	Does your household have a table in good working order? (No; Yes)
284	How many chairs in good working order does your household currently have? (None; One; Two; Three; Four or more)
276	What is the female head/spouse's status in her main occupation? (Worker in a family business;, apprentice (paid or unpaid), or unclassified; Self-employed without employees; Does not work, or semi-skilled employee or worker; No female head/spouse; Senior executive, engineer, and related, middle manager, supervisor, skilled employee or worker, manual laborer, or business owner with employees)
267	What is the main source of lighting used by the household? (Covered lamp, gas lamp, home-made kerosene lamp, wood, or other; Electric lamp (rechargable battery), candles, solar energy, generator, or electrical grid (Sénélec))

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
230	What is the male head/spouse's marital status? (Polygamous; Widower, or single/never-married; Monogamously married; Cohabiting; Divorced, or no male head/spouse)
217	In the last seven days, did the male head/spouse work at least one hour in self-employment, as a paid or unpaid employee, or as an apprentice or family worker? (No; Yes; No male head/spouse)
212	Does your household have a plow in good working order? (Yes; No)
208	Can the female head/spouse read and write in French, Arabic, in a local language, or in some other language? (No; No female head/spouse; Yes)
204	Does your household have an armchair or sofa in good working order? (No; Yes)
197	How many household members who worked for at least one hour in the past seven days was in their main occupation a senior executive, engineer, or related, middle manager, supervisor, skilled or semi-skilled employee or worker, or a business owner with employees? (None; One; Two or more)
177	How many household members who worked for at least one hour in the past seven days was self-employed without employees in their main occupation? (Three or more; Two; One; None)
164	Does your household have a cell phone in good working order? (No; Yes)
158	How many foam mattresses in good working order does your household currently have? (None; One; Two; Three or more)
142	What is the female head/spouse's marital status? (One wife among others in a polygamous marriage, or cohabiting; Monogamously married; Widow, divorced, single/never-married, or no female head/spouse)
136	How many distinct rooms does the residence have? (One; Two; Three; Four; Five; Six; Seven or more)
133	Does your household have a watch or alarm clock in good working order? (No; Yes)
130	How many wardrobes in good working order does your household currently have? (None; One; Two or more)
128	Does your household have an electric iron in good working order? (No; Yes)
125	How many beds in good working order does your household currently have? (None; One; Two; Three; Four; Five; Six or more)

Table 3 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
106	Does your household have a sewing machine in good working order? (No; Yes)
97	Does your household have a computer in good working order? (No; Yes)
76	Does your household have a modern stove in good working order? (No; Yes)
73	Does your household have a flashlight in good working order? (No; Yes)
70	Does the residence have a separate room for a kitchen? (No; Yes)
69	Does your household possess a trunk in good working order? (Yes; No)
68	Does your household possess a rug in good working order? (No; Yes)
48	In the last seven days, did the female head spouse work at least one hour in self-employment, as a paid or unpaid employee, or as an apprectice or family worker? (Yes; No; No female head/spouse)
43	Does your household have a bedroom set in good working order? (No; Yes)
38	Does your household have a television in good working order? (No; Yes)
34	Was the male head/spouse or the female head/spouse self-employed without employees in non-agriculture in his/her main job in which he/she worked at least one hour in the past seven days? (Yes; No)
31	Does your household have a planter or sprayer in good working order? (No; Yes)
26	Does your household have a cylinder of LPG (2.7, 6, or 12 kg) in good working order? (No; Yes)
24	Does your household have a sprayer in good working order? (No; Yes)
20	Does your household have a planter in good working order? (No; Yes)
3	Does your household have a water barrel in good working order? (No; Yes)

Source: 2011 ESPS with 100% of the national poverty line

Tables for
100% of the National Poverty Line

(and Tables Pertaining
to All Poverty Lines)

Table 4 (100% of the national line)): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	97.7
5–9	89.5
10–14	84.1
15–19	84.1
20–24	77.4
25–29	74.7
30–34	74.5
35–39	52.0
40–44	43.2
45–49	33.4
50–54	28.6
55–59	22.8
60–64	16.5
65–69	5.5
70–74	4.7
75–79	2.4
80–84	1.8
85–89	1.8
90–94	1.8
95–100	0.8

Table 5 (100% of the national line): Derivation of estimated poverty likelihoods associated with scores

Score	Households in range and < poverty line		All households in range		Poverty likelihood (%)
0–4	377	÷	386	=	97.7
5–9	769	÷	859	=	89.5
10–14	2,041	÷	2,427	=	84.1
15–19	2,211	÷	2,629	=	84.1
20–24	2,520	÷	3,257	=	77.4
25–29	2,502	÷	3,347	=	74.7
30–34	5,542	÷	7,440	=	74.5
35–39	5,002	÷	9,626	=	52.0
40–44	4,653	÷	10,764	=	43.2
45–49	2,511	÷	7,516	=	33.4
50–54	2,457	÷	8,606	=	28.6
55–59	1,609	÷	7,068	=	22.8
60–64	1,150	÷	6,966	=	16.5
65–69	411	÷	7,497	=	5.5
70–74	301	÷	6,397	=	4.7
75–79	120	÷	4,949	=	2.4
80–84	89	÷	4,881	=	1.8
85–89	75	÷	4,104	=	1.8
90–94	17	÷	924	=	1.8
95–100	3	÷	358	=	0.8

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

Table 6 (100% of the national line): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–2.3	1.2	1.2	1.2
5–9	–2.5	3.9	4.8	6.3
10–14	–8.3	5.3	5.5	5.8
15–19	–7.4	4.8	4.9	5.3
20–24	–6.3	4.5	4.7	5.2
25–29	–2.3	3.3	3.8	5.0
30–34	+4.2	2.5	3.0	3.8
35–39	+16.3	3.2	3.8	4.8
40–44	–17.1	9.9	10.3	10.7
45–49	+10.7	2.5	2.9	3.7
50–54	+9.8	2.0	2.4	3.1
55–59	–9.8	6.3	6.7	7.4
60–64	+0.5	2.1	2.6	3.4
65–69	–12.6	7.4	7.7	8.0
70–74	+2.5	0.6	0.8	1.1
75–79	–5.8	3.9	4.0	4.6
80–84	+1.8	0.0	0.0	0.0
85–89	+1.8	0.0	0.0	0.0
90–94	+1.7	0.1	0.1	0.1
95–100	+0.8	0.0	0.0	0.0

Table 7 (100% of the national line): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–3.0	64.6	79.0	86.3
4	–0.9	40.4	47.9	57.4
8	–1.0	30.5	36.2	46.8
16	–0.8	22.6	26.8	32.9
32	–0.4	16.7	19.0	23.5
64	–0.2	11.9	14.2	17.9
128	–0.2	8.4	10.0	13.0
256	0.0	5.8	7.2	9.5
512	0.0	4.3	5.1	6.5
1,024	0.0	3.0	3.6	4.4
2,048	+0.1	2.1	2.4	3.1
4,096	+0.1	1.4	1.8	2.2
8,192	+0.1	1.0	1.2	1.5
16,384	+0.1	0.7	0.8	1.1

Table 8 (National lines): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time, precision, and the α factor for precision, 2011 scorecard applied to the validation sample

	Poverty lines			
		National lines		
	Food	**100%**	**150%**	**200%**
Error (estimate minus observed value)	+0.7	+0.1	–1.8	–1.2
Precision of difference	0.2	0.7	0.7	0.5
Alpha factor for precision	0.83	1.17	1.12	1.04

Results pertain to the 2011 scorecard applied to the validation sample.

Differences between estimates and observed values are displayed in units of percentage points.

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

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

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

Table 8 (International 2005 and 2011 PPP poverty lines): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time, precision, and the α factor for precision, 2011 scorecard applied to the validation sample

	Poverty lines						
	Intl. 2005 PPP lines					Intl. 2011 PPP lines	
	$1.25	**$2.00**	**$2.50**	**$5.00**	**$8.44**	**$1.90**	**$3.10**
Error (estimate minus observed value)	+1.5	–1.1	–3.4	0.0	+0.9	+2.1	–1.4
Precision of difference	0.6	0.7	0.6	0.5	0.4	0.6	0.7
Alpha factor for precision	1.10	1.15	0.94	1.37	1.64	1.05	1.04

Results pertain to the 2011 scorecard applied to the validation sample.

Differences between estimates and observed values are displayed in units of percentage points.

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

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

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

Table 8 (Relative and percentile-based poverty lines): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time, precision, and the α factor for precision, 2011 scorecard applied to the validation sample

	Poverty lines					
	Poorest half of people below 100% Natl. line	Percentile-based lines				
		20th	40th	50th	60th	80th
Error (estimate minus observed value)	+3.3	+2.5	+0.4	+1.5	+0.7	–3.7
Precision of difference	0.4	0.3	0.7	0.7	0.8	0.6
Alpha factor for precision	0.77	0.78	1.12	1.14	1.16	1.01

Results pertain to the 2011 scorecard applied to the validation sample.

Differences between estimates and observed values are displayed in units of percentage points.

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

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

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

Table 9 (All poverty lines): Possible targeting outcomes

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

Table 10 (100% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	35.4	0.0	64.2	64.6	–97.8
<=9	1.2	34.6	0.1	64.2	65.4	–93.2
<=14	3.4	32.4	0.3	63.9	67.3	–80.3
<=19	5.8	30.0	0.5	63.7	69.5	–66.2
<=24	8.4	27.4	1.2	63.1	71.5	–49.8
<=29	10.9	24.9	2.0	62.2	73.1	–33.4
<=34	16.2	19.5	4.1	60.1	76.4	+2.3
<=39	20.8	15.0	9.2	55.1	75.9	+41.9
<=44	26.4	9.3	14.3	49.9	76.3	+60.0
<=49	28.8	7.0	19.5	44.8	73.6	+45.6
<=54	30.7	5.0	26.1	38.1	68.9	+27.0
<=59	32.8	3.0	31.1	33.1	65.9	+13.0
<=64	33.9	1.8	36.9	27.3	61.2	–3.3
<=69	35.2	0.5	43.2	21.1	56.3	–20.7
<=74	35.4	0.3	49.4	14.9	50.3	–38.0
<=79	35.8	0.0	54.0	10.3	46.0	–50.9
<=84	35.8	0.0	58.9	5.4	41.1	–64.6
<=89	35.8	0.0	63.0	1.3	37.0	–76.0
<=94	35.8	0.0	63.9	0.4	36.1	–78.6
<=100	35.8	0.0	64.2	0.0	35.8	–79.6

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

Table 11 (100% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	1.1	Only poor targeted
<=9	1.2	94.8	3.3	18.2:1
<=14	3.7	92.1	9.5	11.7:1
<=19	6.3	91.6	16.1	10.8:1
<=24	9.6	87.8	23.5	7.2:1
<=29	12.9	84.5	30.5	5.4:1
<=34	20.3	79.8	45.4	3.9:1
<=39	30.0	69.4	58.1	2.3:1
<=44	40.7	64.9	73.9	1.8:1
<=49	48.3	59.7	80.5	1.5:1
<=54	56.9	54.1	86.0	1.2:1
<=59	63.9	51.3	91.7	1.1:1
<=64	70.9	47.9	94.9	0.9:1
<=69	78.4	44.9	98.5	0.8:1
<=74	84.8	41.8	99.1	0.7:1
<=79	89.7	39.8	100.0	0.7:1
<=84	94.6	37.8	100.0	0.6:1
<=89	98.7	36.2	100.0	0.6:1
<=94	99.6	35.9	100.0	0.6:1
<=100	100.0	35.8	100.0	0.6:1

Tables for the Food Poverty Line

Table 4 (Food line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	25.6
5–9	19.0
10–14	16.4
15–19	14.7
20–24	11.8
25–29	11.8
30–34	10.7
35–39	5.5
40–44	5.3
45–49	4.1
50–54	2.3
55–59	2.3
60–64	1.2
65–69	0.2
70–74	0.2
75–79	0.2
80–84	0.2
85–89	0.2
90–94	0.2
95–100	0.0

Table 6 (Food line): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	**Diff.**	**90-percent**	**95-percent**	**99-percent**
0–4	–59.7	32.8	33.4	34.0
5–9	+6.9	4.8	5.7	7.1
10–14	+9.4	1.8	2.1	3.0
15–19	+0.6	2.6	3.2	4.1
20–24	+5.6	1.8	2.0	2.6
25–29	+3.0	2.4	2.8	3.8
30–34	+4.0	1.2	1.4	1.8
35–39	+3.2	0.5	0.6	0.8
40–44	+0.2	1.1	1.3	1.7
45–49	+3.1	0.3	0.4	0.5
50–54	+2.3	0.0	0.0	0.0
55–59	–1.4	1.2	1.3	1.5
60–64	+1.1	0.0	0.0	0.1
65–69	–1.7	1.2	1.3	1.5
70–74	0.0	0.2	0.2	0.2
75–79	–6.0	3.9	4.1	4.4
80–84	+0.2	0.0	0.0	0.0
85–89	+0.2	0.0	0.0	0.0
90–94	+0.2	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 7 (Food line): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.3	47.7	55.5	59.4
4	–0.5	16.5	23.6	38.4
8	+0.3	10.9	14.9	20.3
16	+0.5	7.3	9.2	12.9
32	+0.7	4.8	6.2	8.3
64	+0.6	3.6	4.3	5.9
128	+0.7	2.5	3.0	4.1
256	+0.7	1.7	2.1	2.9
512	+0.8	1.2	1.5	1.9
1,024	+0.7	0.8	1.0	1.5
2,048	+0.7	0.6	0.8	0.9
4,096	+0.7	0.4	0.5	0.7
8,192	+0.7	0.3	0.4	0.5
16,384	+0.7	0.2	0.3	0.3

Table 10 (Food line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.3	4.2	0.1	95.4	95.7	–85.3
<=9	0.4	4.1	0.9	94.7	95.1	–63.3
<=14	0.7	3.8	3.0	92.6	93.3	–1.9
<=19	1.2	3.3	5.1	90.4	91.6	–15.6
<=24	1.4	3.0	8.1	87.4	88.9	–82.9
<=29	1.7	2.7	11.2	84.4	86.1	–151.2
<=34	2.4	2.1	18.0	77.6	80.0	–304.2
<=39	2.9	1.5	27.1	68.5	71.4	–509.5
<=44	3.6	0.9	37.2	58.4	61.9	–736.7
<=49	3.7	0.7	44.5	51.0	54.8	–902.0
<=54	3.8	0.7	53.1	42.5	46.2	–1,095.2
<=59	4.0	0.4	59.9	35.7	39.7	–1,248.3
<=64	4.0	0.4	66.8	28.7	32.8	–1,404.6
<=69	4.2	0.2	74.2	21.4	25.6	–1,569.4
<=74	4.3	0.2	80.5	15.0	19.3	–1,712.5
<=79	4.4	0.0	85.3	10.3	14.7	–1,819.9
<=84	4.4	0.0	90.2	5.4	9.8	–1,929.8
<=89	4.4	0.0	94.3	1.3	5.7	–2,022.1
<=94	4.4	0.0	95.2	0.4	4.8	–2,042.9
<=100	4.4	0.0	95.6	0.0	4.4	–2,051.0

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

Table 11 (Food line): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	68.9	6.0	2.2:1
<=9	1.2	30.8	8.6	0.4:1
<=14	3.7	18.7	15.4	0.2:1
<=19	6.3	18.5	26.3	0.2:1
<=24	9.6	15.0	32.3	0.2:1
<=29	12.9	13.5	39.3	0.2:1
<=34	20.3	11.8	53.8	0.1:1
<=39	30.0	9.7	65.2	0.1:1
<=44	40.7	8.7	80.2	0.1:1
<=49	48.3	7.7	84.2	0.1:1
<=54	56.9	6.6	84.7	0.1:1
<=59	63.9	6.3	90.6	0.1:1
<=64	70.9	5.7	91.1	0.1:1
<=69	78.4	5.4	95.1	0.1:1
<=74	84.8	5.0	96.0	0.1:1
<=79	89.7	5.0	100.0	0.1:1
<=84	94.6	4.7	100.0	0.0:1
<=89	98.7	4.5	100.0	0.0:1
<=94	99.6	4.5	100.0	0.0:1
<=100	100.0	4.4	100.0	0.0:1

Tables for
150% of the National Poverty Line

Table 4 (150% of the national line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	98.1
20–24	97.8
25–29	97.8
30–34	93.0
35–39	85.4
40–44	74.4
45–49	70.7
50–54	63.5
55–59	57.0
60–64	49.0
65–69	35.5
70–74	25.1
75–79	16.1
80–84	10.4
85–89	3.2
90–94	3.2
95–100	1.4

Table 6 (150% of the national line): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	–1.3	0.8	0.9	0.9
20–24	–1.9	1.1	1.1	1.1
25–29	+1.3	1.2	1.5	1.9
30–34	–2.7	1.8	1.9	2.0
35–39	–8.4	4.7	4.8	4.9
40–44	–11.3	6.5	6.6	7.0
45–49	+19.5	3.7	4.7	6.1
50–54	+5.5	2.6	3.0	4.0
55–59	–1.8	3.0	3.6	4.6
60–64	–4.8	3.9	4.1	5.1
65–69	–12.6	7.6	7.9	8.6
70–74	+2.1	2.6	3.1	3.9
75–79	+5.7	2.0	2.4	3.1
80–84	–1.9	2.1	2.5	3.5
85–89	+1.6	0.4	0.5	0.7
90–94	+0.7	1.4	1.6	2.2
95–100	+1.4	0.0	0.0	0.0

Table 7 (150% of the national line): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.4	67.6	74.6	87.5
4	–2.5	41.0	49.9	62.1
8	–2.2	29.7	35.9	47.9
16	–2.3	22.8	26.1	33.1
32	–1.9	14.9	18.2	23.8
64	–1.9	10.6	13.0	16.7
128	–1.7	7.3	8.6	11.5
256	–1.8	5.4	6.3	8.2
512	–1.9	3.8	4.5	6.1
1,024	–1.9	2.7	3.1	4.0
2,048	–1.8	1.9	2.3	3.1
4,096	–1.8	1.4	1.7	2.2
8,192	–1.8	1.0	1.1	1.6
16,384	–1.8	0.7	0.8	1.0

Table 10 (150% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	61.6	0.0	38.0	38.4	–98.8
<=9	1.2	60.8	0.0	38.0	39.2	–96.0
<=14	3.7	58.3	0.0	38.0	41.7	–88.2
<=19	6.3	55.7	0.0	38.0	44.2	–79.7
<=24	9.5	52.5	0.1	37.9	47.4	–69.3
<=29	12.7	49.3	0.2	37.8	50.5	–58.7
<=34	19.8	42.2	0.6	37.4	57.2	–35.3
<=39	28.2	33.8	1.8	36.2	64.4	–6.2
<=44	37.0	25.0	3.7	34.3	71.3	+25.4
<=49	42.3	19.7	6.0	32.0	74.3	+46.0
<=54	47.6	14.4	9.3	28.7	76.3	+68.4
<=59	51.7	10.3	12.2	25.8	77.5	+80.3
<=64	55.6	6.4	15.3	22.7	78.3	+75.3
<=69	59.0	3.0	19.3	18.7	77.7	+68.8
<=74	60.5	1.5	24.3	13.7	74.1	+60.8
<=79	61.1	0.9	28.6	9.4	70.5	+53.9
<=84	61.7	0.3	32.9	5.1	66.9	+47.0
<=89	61.9	0.1	36.8	1.2	63.1	+40.7
<=94	62.0	0.0	37.6	0.4	62.4	+39.3
<=100	62.0	0.0	38.0	0.0	62.0	+38.7

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

Table 11 (150% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.6	Only poor targeted
<=9	1.2	100.0	2.0	Only poor targeted
<=14	3.7	100.0	5.9	Only poor targeted
<=19	6.3	99.4	10.1	176.0:1
<=24	9.6	99.3	15.3	145.3:1
<=29	12.9	98.5	20.5	65.6:1
<=34	20.3	97.1	31.9	33.6:1
<=39	30.0	94.0	45.5	15.8:1
<=44	40.7	90.9	59.7	10.0:1
<=49	48.3	87.6	68.2	7.1:1
<=54	56.9	83.6	76.7	5.1:1
<=59	63.9	80.9	83.4	4.2:1
<=64	70.9	78.4	89.6	3.6:1
<=69	78.4	75.3	95.2	3.1:1
<=74	84.8	71.3	97.5	2.5:1
<=79	89.7	68.1	98.6	2.1:1
<=84	94.6	65.3	99.6	1.9:1
<=89	98.7	62.7	99.9	1.7:1
<=94	99.6	62.2	100.0	1.6:1
<=100	100.0	62.0	100.0	1.6:1

Tables for
200% of the National Poverty Line

Table 4 (200% of the national line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	100.0
20–24	100.0
25–29	99.7
30–34	98.2
35–39	96.2
40–44	90.1
45–49	89.0
50–54	85.9
55–59	80.1
60–64	72.1
65–69	61.7
70–74	52.0
75–79	37.9
80–84	20.8
85–89	14.9
90–94	14.9
95–100	6.5

Table 6 (200% of the national line): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0
20–24	0.0	0.0	0.0	0.0
25–29	–0.3	0.1	0.1	0.1
30–34	–1.3	0.8	0.8	0.9
35–39	–1.9	1.1	1.2	1.2
40–44	–7.7	4.1	4.1	4.2
45–49	–7.5	4.1	4.1	4.3
50–54	+2.4	2.0	2.3	3.2
55–59	+7.3	2.8	3.3	4.4
60–64	+0.5	2.7	3.3	4.4
65–69	–12.3	7.3	7.5	7.9
70–74	+6.1	3.0	3.5	4.7
75–79	+9.7	3.0	3.6	4.8
80–84	–13.4	8.3	8.7	9.3
85–89	+12.4	0.6	0.7	0.9
90–94	+12.4	1.4	1.6	2.3
95–100	–1.1	4.7	5.6	7.5

Table 7 (200% of the national line): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.3	64.1	82.6	87.7
4	–1.4	36.4	46.1	58.8
8	–1.5	25.0	30.4	40.7
16	–1.2	18.0	21.3	28.4
32	–1.1	12.3	15.0	19.5
64	–1.3	8.6	10.5	14.6
128	–1.1	6.1	7.3	9.5
256	–1.3	4.5	5.3	6.8
512	–1.2	3.2	3.8	5.0
1,024	–1.2	2.1	2.5	3.7
2,048	–1.2	1.6	1.9	2.5
4,096	–1.2	1.1	1.3	1.7
8,192	–1.2	0.8	0.9	1.2
16,384	–1.2	0.5	0.7	0.9

Table 10 (200% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	76.7	0.0	22.9	23.3	–99.0
<=9	1.2	75.8	0.0	22.9	24.2	–96.8
<=14	3.7	73.4	0.0	22.9	26.6	–90.5
<=19	6.3	70.8	0.0	22.9	29.2	–83.6
<=24	9.6	67.5	0.0	22.9	32.5	–75.2
<=29	12.9	64.2	0.0	22.9	35.8	–66.5
<=34	20.3	56.8	0.1	22.9	43.1	–47.3
<=39	29.4	47.7	0.6	22.3	51.7	–23.0
<=44	39.7	37.4	1.1	21.9	61.6	+4.3
<=49	46.6	30.5	1.7	21.2	67.8	+23.0
<=54	53.8	23.2	3.0	19.9	73.8	+43.6
<=59	59.2	17.9	4.7	18.2	77.4	+59.8
<=64	64.4	12.7	6.5	16.4	80.8	+75.5
<=69	69.8	7.3	8.6	14.3	84.0	+88.8
<=74	72.9	4.2	11.9	11.1	84.0	+84.6
<=79	74.7	2.4	15.1	7.9	82.6	+80.5
<=84	76.6	0.5	18.0	4.9	81.5	+76.6
<=89	76.9	0.1	21.8	1.2	78.1	+71.7
<=94	77.0	0.0	22.6	0.3	77.3	+70.6
<=100	77.1	0.0	22.9	0.0	77.1	+70.2

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

Table 11 (200% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.5	Only poor targeted
<=9	1.2	100.0	1.6	Only poor targeted
<=14	3.7	100.0	4.8	Only poor targeted
<=19	6.3	100.0	8.2	Only poor targeted
<=24	9.6	100.0	12.4	Only poor targeted
<=29	12.9	100.0	16.7	Only poor targeted
<=34	20.3	99.6	26.3	268.4:1
<=39	30.0	98.1	38.1	50.4:1
<=44	40.7	97.4	51.5	37.8:1
<=49	48.3	96.5	60.4	27.7:1
<=54	56.9	94.7	69.9	17.9:1
<=59	63.9	92.6	76.8	12.5:1
<=64	70.9	90.8	83.6	9.9:1
<=69	78.4	89.0	90.5	8.1:1
<=74	84.8	86.0	94.6	6.1:1
<=79	89.7	83.2	96.9	5.0:1
<=84	94.6	80.9	99.4	4.2:1
<=89	98.7	77.9	99.8	3.5:1
<=94	99.6	77.3	99.9	3.4:1
<=100	100.0	77.1	100.0	3.4:1

Tables for
the $1.25/day 2005 PPP Poverty Line

Table 4 ($1.25/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	91.7
5–9	79.8
10–14	72.6
15–19	69.2
20–24	60.3
25–29	56.7
30–34	47.1
35–39	27.9
40–44	26.5
45–49	16.8
50–54	10.9
55–59	8.3
60–64	4.6
65–69	0.8
70–74	0.7
75–79	0.6
80–84	0.6
85–89	0.6
90–94	0.6
95–100	0.0

Table 6 ($1.25/day 2005 PPP): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–3.6	3.2	3.7	4.9
5–9	+2.4	6.2	7.5	9.8
10–14	–2.8	3.9	4.6	6.0
15–19	+12.6	4.9	5.8	7.6
20–24	–4.0	4.2	4.9	6.6
25–29	+9.0	4.2	4.9	6.3
30–34	+7.0	2.6	3.2	4.2
35–39	–0.2	3.1	3.8	4.7
40–44	+9.8	1.7	2.0	2.6
45–49	+7.9	1.3	1.6	2.1
50–54	+8.4	0.5	0.6	0.8
55–59	–1.3	1.7	2.0	2.7
60–64	–8.0	5.1	5.2	5.8
65–69	–2.3	1.6	1.7	1.8
70–74	+0.5	0.2	0.2	0.2
75–79	–7.1	4.6	4.7	5.1
80–84	+0.6	0.0	0.0	0.0
85–89	+0.6	0.0	0.0	0.0
90–94	+0.6	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 7 ($1.25/day 2005 PPP): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.5	60.3	74.5	85.9
4	+0.2	34.1	41.5	54.6
8	+0.6	25.4	29.5	41.7
16	+0.8	18.1	22.4	27.8
32	+1.2	13.0	15.5	19.5
64	+1.3	9.4	11.0	14.1
128	+1.4	6.6	8.1	10.4
256	+1.4	4.5	5.2	7.0
512	+1.5	3.1	3.7	4.9
1,024	+1.5	2.3	2.7	3.6
2,048	+1.5	1.6	2.0	2.6
4,096	+1.5	1.2	1.4	1.8
8,192	+1.5	0.8	0.9	1.2
16,384	+1.5	0.6	0.7	0.8

Table 10 ($1.25/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.3	20.8	0.0	78.8	79.2	–96.5
<=9	1.0	20.1	0.2	78.6	79.6	–89.4
<=14	2.8	18.3	0.9	78.0	80.8	–69.4
<=19	4.6	16.5	1.7	77.2	81.8	–48.4
<=24	6.5	14.6	3.0	75.8	82.4	–23.9
<=29	8.3	12.8	4.6	74.3	82.6	+0.4
<=34	11.7	9.4	8.6	70.2	82.0	+51.7
<=39	14.6	6.5	15.4	63.5	78.1	+27.4
<=44	17.4	3.7	23.3	55.5	72.9	–10.3
<=49	18.5	2.6	29.7	49.1	67.6	–40.7
<=54	19.0	2.1	37.8	41.0	60.1	–78.8
<=59	19.8	1.3	44.1	34.8	54.6	–108.6
<=64	20.5	0.6	50.4	28.5	49.0	–138.3
<=69	20.8	0.3	57.6	21.3	42.1	–172.3
<=74	20.9	0.3	63.9	14.9	35.8	–202.3
<=79	21.1	0.0	68.6	10.3	31.4	–224.4
<=84	21.1	0.0	73.5	5.4	26.5	–247.5
<=89	21.1	0.0	77.6	1.3	22.4	–266.9
<=94	21.1	0.0	78.5	0.4	21.5	–271.3
<=100	21.1	0.0	78.9	0.0	21.1	–273.0

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

Table 11 ($1.25/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	89.5	1.6	8.6:1
<=9	1.2	80.5	4.7	4.1:1
<=14	3.7	76.1	13.2	3.2:1
<=19	6.3	73.0	21.7	2.7:1
<=24	9.6	68.3	30.9	2.2:1
<=29	12.9	64.4	39.3	1.8:1
<=34	20.3	57.7	55.5	1.4:1
<=39	30.0	48.8	69.1	1.0:1
<=44	40.7	42.7	82.3	0.7:1
<=49	48.3	38.4	87.6	0.6:1
<=54	56.9	33.5	90.1	0.5:1
<=59	63.9	31.0	93.8	0.4:1
<=64	70.9	28.9	97.0	0.4:1
<=69	78.4	26.6	98.5	0.4:1
<=74	84.8	24.6	98.7	0.3:1
<=79	89.7	23.6	100.0	0.3:1
<=84	94.6	22.3	100.0	0.3:1
<=89	98.7	21.4	100.0	0.3:1
<=94	99.6	21.2	100.0	0.3:1
<=100	100.0	21.1	100.0	0.3:1

Tables for
the $2.00/day 2005 PPP Poverty Line

Table 4 ($2.00/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	98.3
10–14	96.8
15–19	94.6
20–24	93.3
25–29	91.0
30–34	88.9
35–39	72.4
40–44	62.1
45–49	52.1
50–54	43.2
55–59	38.3
60–64	31.1
65–69	14.8
70–74	6.6
75–79	3.4
80–84	2.6
85–89	2.1
90–94	2.1
95–100	0.9

Table 6 ($2.00/day 2005 PPP): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	–1.7	0.8	0.8	0.8
10–14	+2.2	1.9	2.3	3.1
15–19	–4.8	2.6	2.6	2.7
20–24	–4.2	2.6	2.7	2.9
25–29	+0.8	2.3	2.7	3.6
30–34	+0.9	1.8	2.1	2.8
35–39	+4.6	3.2	3.8	5.0
40–44	–13.4	7.8	8.1	8.4
45–49	+10.7	3.4	4.1	5.7
50–54	+4.7	2.7	3.2	4.0
55–59	–11.2	7.1	7.4	8.0
60–64	–2.2	2.8	3.3	4.4
65–69	–8.4	5.4	5.7	6.0
70–74	+2.7	0.8	1.0	1.3
75–79	–5.0	3.5	3.7	4.2
80–84	+2.6	0.0	0.0	0.0
85–89	+2.1	0.0	0.0	0.0
90–94	+2.0	0.1	0.1	0.1
95–100	+0.9	0.0	0.0	0.0

Table 7 ($2.00/day 2005 PPP): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–2.6	61.9	78.8	92.2
4	–2.4	39.9	46.4	59.0
8	–1.7	30.3	37.3	48.1
16	–1.5	22.5	25.9	36.8
32	–1.4	16.5	19.0	24.6
64	–1.2	11.8	13.4	17.8
128	–1.3	7.9	9.6	13.3
256	–1.2	5.7	6.7	9.2
512	–1.1	4.3	4.9	6.6
1,024	–1.1	3.0	3.6	4.8
2,048	–1.1	2.1	2.5	3.3
4,096	–1.1	1.4	1.7	2.2
8,192	–1.1	1.0	1.2	1.7
16,384	–1.1	0.7	0.9	1.2

Table 10 ($2.00/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	48.6	0.0	51.0	51.4	–98.4
<=9	1.2	47.7	0.0	51.0	52.3	–94.9
<=14	3.5	45.4	0.1	50.9	54.4	–85.3
<=19	6.1	42.8	0.2	50.8	57.0	–74.6
<=24	9.3	39.7	0.3	50.7	60.0	–61.6
<=29	12.3	36.7	0.6	50.4	62.7	–48.6
<=34	18.8	30.1	1.5	49.5	68.4	–20.0
<=39	25.7	23.2	4.2	46.8	72.5	+13.8
<=44	33.4	15.6	7.3	43.7	77.1	+51.4
<=49	37.4	11.6	10.8	40.2	77.6	+74.9
<=54	40.9	8.1	15.9	35.1	76.0	+67.4
<=59	44.2	4.8	19.8	31.3	75.5	+59.7
<=64	46.4	2.6	24.5	26.5	72.9	+50.0
<=69	48.1	0.8	30.3	20.8	68.9	+38.2
<=74	48.6	0.4	36.2	14.8	63.4	+26.0
<=79	49.0	0.0	40.8	10.3	59.2	+16.7
<=84	49.0	0.0	45.7	5.4	54.3	+6.8
<=89	49.0	0.0	49.8	1.3	50.2	–1.6
<=94	49.0	0.0	50.7	0.4	49.3	–3.5
<=100	49.0	0.0	51.0	0.0	49.0	–4.2

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

Table 11 ($2.00/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.8	Only poor targeted
<=9	1.2	100.0	2.5	Only poor targeted
<=14	3.7	96.0	7.2	23.8:1
<=19	6.3	97.1	12.5	33.3:1
<=24	9.6	96.9	18.9	30.8:1
<=29	12.9	95.1	25.1	19.3:1
<=34	20.3	92.6	38.5	12.5:1
<=39	30.0	85.9	52.6	6.1:1
<=44	40.7	82.0	68.2	4.5:1
<=49	48.3	77.5	76.4	3.4:1
<=54	56.9	72.0	83.5	2.6:1
<=59	63.9	69.1	90.2	2.2:1
<=64	70.9	65.4	94.7	1.9:1
<=69	78.4	61.4	98.3	1.6:1
<=74	84.8	57.3	99.2	1.3:1
<=79	89.7	54.6	100.0	1.2:1
<=84	94.6	51.7	100.0	1.1:1
<=89	98.7	49.6	100.0	1.0:1
<=94	99.6	49.1	100.0	1.0:1
<=100	100.0	49.0	100.0	1.0:1

Tables for
the $2.50/day 2005 PPP Poverty Line

Table 4 ($2.50/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	99.9
10–14	99.8
15–19	99.8
20–24	99.7
25–29	99.3
30–34	96.4
35–39	88.7
40–44	78.0
45–49	71.4
50–54	61.1
55–59	59.1
60–64	51.8
65–69	34.9
70–74	21.3
75–79	14.0
80–84	10.4
85–89	2.5
90–94	2.5
95–100	1.1

Table 6 ($2.50/day 2005 PPP): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	–0.1	0.0	0.0	0.0
10–14	–0.2	0.1	0.1	0.1
15–19	–0.1	0.1	0.1	0.1
20–24	–0.1	0.2	0.2	0.3
25–29	+1.9	1.1	1.4	1.8
30–34	–2.2	1.4	1.4	1.5
35–39	–3.5	2.3	2.4	2.6
40–44	–7.4	4.6	4.7	5.0
45–49	–18.2	9.8	9.9	10.0
50–54	+6.7	2.7	3.2	4.5
55–59	–3.9	3.4	3.7	4.4
60–64	–1.9	2.9	3.4	4.5
65–69	–18.4	10.5	10.9	11.2
70–74	–2.4	2.6	3.1	4.0
75–79	+2.9	2.1	2.4	3.1
80–84	+9.2	0.4	0.4	0.6
85–89	+1.6	0.4	0.4	0.6
90–94	+2.4	0.1	0.2	0.2
95–100	+1.1	0.0	0.0	0.0

Table 7 ($2.50/day 2005 PPP): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–2.0	58.9	74.9	87.3
4	–2.8	35.8	44.1	56.9
8	–2.9	26.4	31.0	39.8
16	–3.0	18.8	21.9	28.5
32	–2.9	13.1	15.1	20.5
64	–3.3	9.3	11.4	15.6
128	–3.4	6.5	7.4	10.3
256	–3.5	4.6	5.5	6.9
512	–3.5	3.3	3.9	5.1
1,024	–3.4	2.4	2.7	3.5
2,048	–3.4	1.7	2.0	2.7
4,096	–3.4	1.2	1.4	1.8
8,192	–3.4	0.8	1.1	1.3
16,384	–3.4	0.6	0.7	0.9

Table 10 ($2.50/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	62.3	0.0	37.3	37.7	–98.8
<=9	1.2	61.5	0.0	37.3	38.5	–96.0
<=14	3.7	59.0	0.0	37.3	41.0	–88.3
<=19	6.3	56.4	0.0	37.3	43.6	–79.9
<=24	9.5	53.2	0.0	37.3	46.8	–69.6
<=29	12.8	49.9	0.1	37.2	49.9	–59.0
<=34	20.0	42.7	0.3	37.0	57.0	–35.6
<=39	28.4	34.3	1.6	35.7	64.1	–6.9
<=44	37.2	25.5	3.5	33.8	71.0	+24.3
<=49	43.1	19.6	5.1	32.2	75.3	+45.7
<=54	48.3	14.4	8.5	28.7	77.0	+67.7
<=59	52.6	10.1	11.3	26.0	78.7	+82.0
<=64	56.5	6.2	14.4	22.9	79.3	+77.0
<=69	60.1	2.6	18.3	19.0	79.2	+70.9
<=74	61.7	1.0	23.1	14.2	75.8	+63.1
<=79	62.4	0.3	27.4	9.9	72.3	+56.4
<=84	62.6	0.1	32.0	5.3	67.9	+48.9
<=89	62.7	0.0	36.0	1.3	64.0	+42.6
<=94	62.7	0.0	36.9	0.4	63.1	+41.1
<=100	62.7	0.0	37.3	0.0	62.7	+40.6

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

Table 11 ($2.50/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.6	Only poor targeted
<=9	1.2	100.0	2.0	Only poor targeted
<=14	3.7	100.0	5.9	Only poor targeted
<=19	6.3	99.8	10.0	610.7:1
<=24	9.6	99.6	15.2	283.4:1
<=29	12.9	99.0	20.4	101.5:1
<=34	20.3	98.5	32.0	65.9:1
<=39	30.0	94.8	45.3	18.1:1
<=44	40.7	91.4	59.4	10.7:1
<=49	48.3	89.4	68.8	8.4:1
<=54	56.9	85.0	77.0	5.7:1
<=59	63.9	82.4	83.9	4.7:1
<=64	70.9	79.7	90.0	3.9:1
<=69	78.4	76.7	95.9	3.3:1
<=74	84.8	72.7	98.3	2.7:1
<=79	89.7	69.5	99.5	2.3:1
<=84	94.6	66.2	99.8	2.0:1
<=89	98.7	63.5	100.0	1.7:1
<=94	99.6	62.9	100.0	1.7:1
<=100	100.0	62.7	100.0	1.7:1

Tables for
the $5.00/day 2005 PPP Poverty Line

Table 4 ($5.00/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	100.0
20–24	100.0
25–29	100.0
30–34	100.0
35–39	99.9
40–44	98.3
45–49	98.0
50–54	92.8
55–59	92.0
60–64	88.8
65–69	79.9
70–74	79.4
75–79	74.5
80–84	53.1
85–89	47.4
90–94	29.0
95–100	14.2

Table 6 ($5.00/day 2005 PPP): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0
20–24	0.0	0.0	0.0	0.0
25–29	0.0	0.0	0.0	0.0
30–34	0.0	0.0	0.0	0.0
35–39	+0.1	0.1	0.1	0.1
40–44	–0.2	0.4	0.5	0.6
45–49	–1.7	0.9	0.9	0.9
50–54	–4.0	2.4	2.4	2.6
55–59	+10.4	2.8	3.3	4.2
60–64	–7.4	4.2	4.2	4.4
65–69	–8.7	5.2	5.4	5.7
70–74	+0.4	2.5	3.1	4.1
75–79	+16.7	3.4	4.1	5.4
80–84	–9.0	6.3	6.6	7.4
85–89	+19.9	2.9	3.5	4.4
90–94	–22.6	15.4	16.1	17.9
95–100	–60.1	34.3	34.8	36.5

Table 7 ($5.00/day 2005 PPP): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–2.1	60.7	66.3	84.5
4	–1.1	32.2	42.0	54.2
8	–0.9	21.9	27.1	36.0
16	–0.3	16.6	19.5	27.2
32	–0.2	12.1	13.9	18.7
64	–0.3	8.6	10.3	12.8
128	–0.1	6.0	7.2	9.6
256	–0.2	4.3	4.9	6.8
512	–0.1	3.1	3.5	4.9
1,024	–0.1	2.1	2.5	3.3
2,048	0.0	1.5	1.8	2.3
4,096	0.0	1.1	1.3	1.8
8,192	0.0	0.8	0.9	1.1
16,384	0.0	0.5	0.6	0.9

Table 10 ($5.00/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	88.8	0.0	10.8	11.2	–99.1
<=9	1.2	88.0	0.0	10.8	12.0	–97.2
<=14	3.7	85.5	0.0	10.8	14.5	–91.8
<=19	6.3	82.9	0.0	10.8	17.1	–85.9
<=24	9.6	79.6	0.0	10.8	20.4	–78.6
<=29	12.9	76.3	0.0	10.8	23.7	–71.1
<=34	20.3	68.9	0.0	10.8	31.1	–54.4
<=39	29.9	59.3	0.1	10.7	40.7	–32.9
<=44	40.4	48.8	0.3	10.5	50.9	–9.0
<=49	47.8	41.4	0.4	10.4	58.2	+7.7
<=54	56.0	33.2	0.8	10.0	66.0	+26.6
<=59	62.3	26.8	1.6	9.2	71.6	+41.6
<=64	69.0	20.2	1.9	8.9	77.9	+56.8
<=69	75.4	13.8	3.0	7.8	83.3	+72.4
<=74	80.6	8.6	4.2	6.7	87.3	+85.5
<=79	83.8	5.4	5.9	4.9	88.7	+93.4
<=84	87.0	2.2	7.6	3.2	90.1	+91.4
<=89	88.6	0.6	10.2	0.6	89.2	+88.6
<=94	89.0	0.2	10.6	0.2	89.2	+88.1
<=100	89.2	0.0	10.8	0.0	89.2	+87.9

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

Table 11 ($5.00/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.4	Only poor targeted
<=9	1.2	100.0	1.4	Only poor targeted
<=14	3.7	100.0	4.1	Only poor targeted
<=19	6.3	100.0	7.1	Only poor targeted
<=24	9.6	100.0	10.7	Only poor targeted
<=29	12.9	100.0	14.5	Only poor targeted
<=34	20.3	100.0	22.8	Only poor targeted
<=39	30.0	99.8	33.5	521.4:1
<=44	40.7	99.2	45.3	124.7:1
<=49	48.3	99.1	53.6	113.9:1
<=54	56.9	98.6	62.8	68.7:1
<=59	63.9	97.5	69.9	39.6:1
<=64	70.9	97.3	77.3	36.0:1
<=69	78.4	96.2	84.6	25.4:1
<=74	84.8	95.1	90.4	19.4:1
<=79	89.7	93.4	94.0	14.2:1
<=84	94.6	91.9	97.5	11.4:1
<=89	98.7	89.7	99.3	8.7:1
<=94	99.6	89.3	99.8	8.4:1
<=100	100.0	89.2	100.0	8.3:1

Tables for
the $8.44/day 2005 PPP Poverty Line

Table 4 ($8.44/day 2005 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	100.0
20–24	100.0
25–29	100.0
30–34	100.0
35–39	100.0
40–44	99.4
45–49	98.7
50–54	98.7
55–59	96.5
60–64	93.5
65–69	90.4
70–74	90.4
75–79	88.2
80–84	84.0
85–89	78.3
90–94	57.6
95–100	57.6

Table 6 ($8.44/day 2005 PPP): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0
20–24	0.0	0.0	0.0	0.0
25–29	0.0	0.0	0.0	0.0
30–34	0.0	0.0	0.0	0.0
35–39	0.0	0.0	0.0	0.0
40–44	+0.6	0.4	0.5	0.6
45–49	–1.3	0.6	0.6	0.6
50–54	–0.1	0.4	0.5	0.6
55–59	+10.4	2.5	3.1	3.8
60–64	–5.3	2.8	2.9	2.9
65–69	–5.4	3.2	3.3	3.4
70–74	–1.7	1.6	1.7	2.3
75–79	+1.6	2.4	2.9	3.8
80–84	+4.4	3.4	4.1	5.1
85–89	+15.4	3.8	4.6	5.9
90–94	+0.1	8.1	9.6	13.6
95–100	–40.4	20.9	21.0	21.2

Table 7 ($8.44/day 2005 PPP): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.5	8.0	51.4	69.5
4	–0.3	25.5	33.3	47.8
8	–0.2	18.1	21.2	27.9
16	+0.3	13.9	16.3	20.5
32	+0.6	9.8	11.8	15.0
64	+0.6	7.3	8.6	11.5
128	+0.8	5.3	6.4	7.7
256	+0.8	3.6	4.2	5.7
512	+0.8	2.6	3.1	4.2
1,024	+0.9	1.8	2.1	2.8
2,048	+0.9	1.3	1.5	2.0
4,096	+0.9	0.9	1.1	1.5
8,192	+0.9	0.7	0.8	1.0
16,384	+0.9	0.4	0.5	0.7

Table 10 ($8.44/day 2005 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	94.9	0.0	4.7	5.1	–99.2
<=9	1.2	94.0	0.0	4.7	6.0	–97.4
<=14	3.7	91.6	0.0	4.7	8.4	–92.3
<=19	6.3	89.0	0.0	4.7	11.0	–86.8
<=24	9.6	85.7	0.0	4.7	14.3	–79.9
<=29	12.9	82.4	0.0	4.7	17.6	–72.9
<=34	20.3	74.9	0.0	4.7	25.1	–57.3
<=39	30.0	65.3	0.0	4.7	34.7	–37.1
<=44	40.6	54.7	0.2	4.6	45.1	–14.7
<=49	48.1	47.2	0.2	4.6	52.7	+1.1
<=54	56.5	38.8	0.4	4.4	60.9	+19.0
<=59	63.0	32.2	0.9	3.9	66.9	+33.3
<=64	69.8	25.4	1.0	3.7	73.5	+47.7
<=69	76.9	18.3	1.5	3.3	80.2	+63.0
<=74	82.8	12.5	2.0	2.7	85.5	+75.9
<=79	87.1	8.2	2.6	2.1	89.2	+85.6
<=84	91.3	4.0	3.4	1.4	92.6	+95.1
<=89	94.3	0.9	4.4	0.4	94.7	+95.4
<=94	94.9	0.3	4.7	0.0	95.0	+95.1
<=100	95.3	0.0	4.7	0.0	95.3	+95.0

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

Table 11 ($8.44/day 2005 PPP): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.4	Only poor targeted
<=9	1.2	100.0	1.3	Only poor targeted
<=14	3.7	100.0	3.9	Only poor targeted
<=19	6.3	100.0	6.6	Only poor targeted
<=24	9.6	100.0	10.0	Only poor targeted
<=29	12.9	100.0	13.5	Only poor targeted
<=34	20.3	100.0	21.4	Only poor targeted
<=39	30.0	100.0	31.5	Only poor targeted
<=44	40.7	99.6	42.6	252.1:1
<=49	48.3	99.7	50.5	298.8:1
<=54	56.9	99.4	59.3	155.7:1
<=59	63.9	98.6	66.2	71.8:1
<=64	70.9	98.5	73.3	66.6:1
<=69	78.4	98.1	80.8	52.9:1
<=74	84.8	97.7	86.9	41.6:1
<=79	89.7	97.1	91.4	33.3:1
<=84	94.6	96.5	95.8	27.2:1
<=89	98.7	95.6	99.0	21.6:1
<=94	99.6	95.3	99.7	20.2:1
<=100	100.0	95.3	100.0	20.1:1

Tables for
the $1.90/day 2011 PPP Poverty Line

Table 4 ($1.90/day 2011 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	91.7
5–9	81.2
10–14	76.1
15–19	73.6
20–24	66.1
25–29	63.1
30–34	51.7
35–39	33.2
40–44	30.2
45–49	18.0
50–54	12.8
55–59	11.2
60–64	6.7
65–69	2.1
70–74	1.0
75–79	0.7
80–84	0.7
85–89	0.7
90–94	0.7
95–100	0.3

Table 6 ($1.90/day 2011 PPP): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–7.1	4.1	4.1	4.1
5–9	+2.5	6.0	7.4	9.5
10–14	–4.8	4.0	4.3	5.2
15–19	+14.0	5.2	6.1	7.7
20–24	–9.8	6.5	6.8	7.4
25–29	+10.5	4.2	5.0	6.9
30–34	+3.4	2.8	3.4	4.4
35–39	+2.3	3.1	3.8	4.7
40–44	+9.8	1.8	2.1	2.7
45–49	+7.9	1.4	1.7	2.3
50–54	+9.4	0.6	0.7	1.0
55–59	+1.5	1.7	2.0	2.7
60–64	–6.3	4.2	4.3	4.9
65–69	–1.0	0.9	1.0	1.3
70–74	+0.7	0.2	0.2	0.2
75–79	–7.1	4.6	4.7	5.1
80–84	+0.7	0.0	0.0	0.0
85–89	+0.7	0.0	0.0	0.0
90–94	+0.7	0.0	0.0	0.0
95–100	+0.3	0.0	0.0	0.0

Table 7 ($1.90/day 2011 PPP): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–3.4	51.5	75.9	86.9
4	–0.2	34.3	41.7	53.1
8	+0.9	25.5	30.8	41.4
16	+1.3	19.4	22.8	28.2
32	+1.7	13.3	16.2	20.5
64	+1.9	9.6	11.1	14.1
128	+2.0	6.8	8.1	11.2
256	+2.0	4.6	5.3	7.2
512	+2.1	3.2	3.8	4.8
1,024	+2.1	2.3	2.8	3.6
2,048	+2.1	1.7	2.0	2.6
4,096	+2.1	1.1	1.4	1.8
8,192	+2.1	0.8	0.9	1.2
16,384	+2.1	0.6	0.7	0.8

Table 10 ($1.90/day 2011 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	24.0	0.0	75.7	76.0	–96.9
<=9	1.0	23.3	0.2	75.5	76.5	–90.6
<=14	3.0	21.3	0.7	75.0	78.0	–72.6
<=19	4.9	19.4	1.4	74.3	79.2	–54.0
<=24	7.2	17.2	2.4	73.3	80.5	–31.2
<=29	9.2	15.2	3.7	71.9	81.1	–9.3
<=34	13.2	11.1	7.2	68.5	81.7	+37.8
<=39	16.6	7.7	13.3	62.3	79.0	+45.2
<=44	20.1	4.2	20.7	55.0	75.1	+15.1
<=49	21.5	2.9	26.8	48.9	70.3	–10.1
<=54	22.1	2.2	34.7	41.0	63.1	–42.7
<=59	23.0	1.4	41.0	34.7	57.7	–68.3
<=64	23.7	0.6	47.2	28.5	52.2	–94.0
<=69	24.0	0.3	54.4	21.3	45.3	–123.4
<=74	24.1	0.3	60.7	14.9	39.0	–149.5
<=79	24.3	0.0	65.4	10.3	34.6	–168.8
<=84	24.3	0.0	70.3	5.4	29.7	–188.8
<=89	24.3	0.0	74.4	1.3	25.6	–205.7
<=94	24.3	0.0	75.3	0.4	24.7	–209.5
<=100	24.3	0.0	75.7	0.0	24.3	–211.0

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

Table 11 ($1.90/day 2011 PPP): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	96.3	1.5	25.9:1
<=9	1.2	84.3	4.3	5.4:1
<=14	3.7	81.3	12.3	4.3:1
<=19	6.3	77.7	20.1	3.5:1
<=24	9.6	75.1	29.5	3.0:1
<=29	12.9	71.0	37.7	2.5:1
<=34	20.3	64.9	54.2	1.8:1
<=39	30.0	55.5	68.4	1.2:1
<=44	40.7	49.3	82.5	1.0:1
<=49	48.3	44.5	88.2	0.8:1
<=54	56.9	38.9	91.0	0.6:1
<=59	63.9	35.9	94.4	0.6:1
<=64	70.9	33.4	97.4	0.5:1
<=69	78.4	30.6	98.7	0.4:1
<=74	84.8	28.4	98.9	0.4:1
<=79	89.7	27.1	100.0	0.4:1
<=84	94.6	25.7	100.0	0.3:1
<=89	98.7	24.6	100.0	0.3:1
<=94	99.6	24.4	100.0	0.3:1
<=100	100.0	24.3	100.0	0.3:1

Tables for
the $3.10/day 2011 PPP Poverty Line

Table 4 ($3.10/day 2011 PPP): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	99.7
10–14	99.6
15–19	95.5
20–24	94.9
25–29	94.4
30–34	91.6
35–39	79.7
40–44	68.8
45–49	57.2
50–54	51.3
55–59	48.5
60–64	36.5
65–69	19.0
70–74	11.0
75–79	7.6
80–84	6.5
85–89	2.5
90–94	2.5
95–100	1.1

Table 6 ($3.10/day 2011 PPP): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	–0.3	0.1	0.1	0.1
10–14	+3.4	1.9	2.2	2.9
15–19	–3.9	2.1	2.2	2.2
20–24	–4.8	2.5	2.5	2.5
25–29	+0.5	1.7	2.0	2.7
30–34	+3.2	1.8	2.1	2.7
35–39	–8.8	5.1	5.2	5.4
40–44	–10.8	6.4	6.6	7.0
45–49	+11.5	3.6	4.4	5.9
50–54	+7.2	2.7	3.2	4.4
55–59	–2.4	2.9	3.6	4.8
60–64	–4.8	3.8	4.2	5.2
65–69	–10.6	6.7	6.9	7.2
70–74	+6.5	0.9	1.0	1.4
75–79	–0.8	2.0	2.3	3.1
80–84	+6.5	0.0	0.0	0.0
85–89	+1.6	0.4	0.4	0.6
90–94	+2.4	0.1	0.2	0.2
95–100	+1.1	0.0	0.0	0.0

Table 7 ($3.10/day 2011 PPP): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.9	66.1	74.9	91.2
4	–1.1	38.5	45.7	56.6
8	–1.3	28.3	33.4	44.5
16	–1.5	20.3	24.5	30.7
32	–1.4	14.3	17.0	21.3
64	–1.4	10.5	12.3	16.1
128	–1.5	7.1	8.4	11.3
256	–1.5	5.3	6.4	8.2
512	–1.5	3.6	4.3	6.1
1,024	–1.4	2.6	3.0	4.1
2,048	–1.4	1.8	2.2	2.9
4,096	–1.4	1.3	1.6	2.0
8,192	–1.4	0.9	1.1	1.5
16,384	–1.4	0.7	0.8	1.0

Table 10 ($3.10/day 2011 PPP): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	52.7	0.0	47.0	47.3	–98.5
<=9	1.2	51.8	0.0	47.0	48.2	–95.3
<=14	3.6	49.4	0.1	46.9	50.5	–86.3
<=19	6.2	46.9	0.1	46.8	53.0	–76.4
<=24	9.4	43.6	0.1	46.8	56.2	–64.2
<=29	12.5	40.5	0.4	46.6	59.1	–52.1
<=34	19.2	33.9	1.2	45.8	65.0	–25.5
<=39	26.9	26.2	3.1	43.8	70.7	+7.1
<=44	35.0	18.0	5.7	41.2	76.2	+42.8
<=49	39.5	13.5	8.7	38.2	77.8	+65.5
<=54	43.6	9.5	13.3	33.7	77.3	+75.0
<=59	47.1	6.0	16.9	30.1	77.1	+68.2
<=64	49.8	3.2	21.0	25.9	75.8	+60.3
<=69	51.9	1.1	26.5	20.5	72.4	+50.1
<=74	52.5	0.5	32.3	14.7	67.2	+39.2
<=79	52.9	0.1	36.8	10.1	63.1	+30.6
<=84	52.9	0.1	41.7	5.3	58.2	+21.4
<=89	53.0	0.0	45.7	1.3	54.3	+13.9
<=94	53.0	0.0	46.6	0.4	53.4	+12.2
<=100	53.0	0.0	47.0	0.0	53.0	+11.5

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

Table 11 ($3.10/day 2011 PPP): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.7	Only poor targeted
<=9	1.2	100.0	2.3	Only poor targeted
<=14	3.7	98.1	6.8	50.8:1
<=19	6.3	98.3	11.7	58.2:1
<=24	9.6	98.5	17.7	64.4:1
<=29	12.9	97.1	23.6	33.0:1
<=34	20.3	94.2	36.1	16.4:1
<=39	30.0	89.6	50.6	8.7:1
<=44	40.7	85.9	66.0	6.1:1
<=49	48.3	82.0	74.5	4.5:1
<=54	56.9	76.6	82.2	3.3:1
<=59	63.9	73.6	88.7	2.8:1
<=64	70.9	70.3	94.0	2.4:1
<=69	78.4	66.3	97.9	2.0:1
<=74	84.8	62.0	99.0	1.6:1
<=79	89.7	59.0	99.8	1.4:1
<=84	94.6	55.9	99.8	1.3:1
<=89	98.7	53.7	100.0	1.2:1
<=94	99.6	53.2	100.0	1.1:1
<=100	100.0	53.0	100.0	1.1:1

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

Table 4 (Line Marking the Poorest Half of People below 100% of the National Poverty Line): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	91.7
5–9	72.7
10–14	62.5
15–19	55.8
20–24	46.5
25–29	46.2
30–34	37.9
35–39	20.6
40–44	19.8
45–49	13.3
50–54	8.1
55–59	6.5
60–64	3.2
65–69	0.6
70–74	0.6
75–79	0.6
80–84	0.6
85–89	0.6
90–94	0.6
95–100	0.0

Table 6 (Line Marking the Poorest Half of People below 100% of the National Poverty Line): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–3.6	3.2	3.7	4.9
5–9	+6.3	7.2	8.6	11.1
10–14	+17.3	5.0	5.9	7.6
15–19	+5.3	4.7	5.6	7.5
20–24	–11.9	8.2	8.6	9.2
25–29	+7.2	4.0	4.7	6.5
30–34	+9.5	2.4	2.9	3.7
35–39	+12.7	0.9	1.1	1.5
40–44	+5.0	1.6	1.9	2.5
45–49	+5.9	1.2	1.5	2.0
50–54	+6.0	0.5	0.6	0.8
55–59	–2.0	1.8	2.0	2.6
60–64	+1.8	0.5	0.6	0.7
65–69	–2.4	1.6	1.7	1.9
70–74	+0.4	0.2	0.2	0.2
75–79	–7.1	4.6	4.7	5.1
80–84	+0.6	0.0	0.0	0.0
85–89	+0.6	0.0	0.0	0.0
90–94	+0.6	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 7 (Line Marking the Poorest Half of People below 100% of the National Poverty Line): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.1	60.7	66.6	83.5
4	+1.1	26.1	36.0	49.7
8	+2.3	17.9	22.0	32.0
16	+2.8	12.3	15.1	20.0
32	+3.1	8.5	10.2	13.2
64	+3.1	5.8	7.2	9.0
128	+3.2	4.4	5.3	6.8
256	+3.2	3.0	3.6	4.6
512	+3.2	2.0	2.5	3.3
1,024	+3.3	1.4	1.8	2.5
2,048	+3.3	1.0	1.3	1.7
4,096	+3.3	0.7	0.9	1.2
8,192	+3.3	0.5	0.6	0.8
16,384	+3.3	0.4	0.4	0.6

Table 10 (Line Marking the Poorest Half of People below 100% of the National Poverty Line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.3	16.5	0.0	83.2	83.5	–95.6
<=9	0.9	15.9	0.3	82.9	83.8	–87.1
<=14	2.3	14.5	1.4	81.8	84.1	–64.5
<=19	3.9	12.9	2.4	80.8	84.7	–39.2
<=24	5.6	11.2	4.0	79.2	84.8	–9.8
<=29	7.1	9.7	5.8	77.4	84.5	+19.1
<=34	9.7	7.1	10.6	72.6	82.3	+36.9
<=39	11.8	5.0	18.2	65.0	76.8	–8.1
<=44	14.2	2.6	26.5	56.6	70.8	–57.9
<=49	15.0	1.8	33.2	50.0	65.0	–97.7
<=54	15.5	1.3	41.4	41.8	57.3	–146.3
<=59	16.0	0.8	47.9	35.3	51.3	–185.0
<=64	16.2	0.6	54.7	28.5	44.7	–225.4
<=69	16.5	0.3	61.9	21.3	37.8	–268.2
<=74	16.5	0.3	68.2	14.9	31.5	–306.0
<=79	16.8	0.0	72.9	10.3	27.1	–333.9
<=84	16.8	0.0	77.8	5.4	22.2	–362.9
<=89	16.8	0.0	81.9	1.3	18.1	–387.3
<=94	16.8	0.0	82.8	0.4	17.2	–392.8
<=100	16.8	0.0	83.2	0.0	16.8	–395.0

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

Table 11 (Line Marking the Poorest Half of People below 100% of the National Poverty Line): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	89.5	2.1	8.6:1
<=9	1.2	73.6	5.5	2.8:1
<=14	3.7	62.6	13.7	1.7:1
<=19	6.3	62.1	23.3	1.6:1
<=24	9.6	58.6	33.3	1.4:1
<=29	12.9	55.1	42.3	1.2:1
<=34	20.3	47.8	57.9	0.9:1
<=39	30.0	39.4	70.2	0.6:1
<=44	40.7	34.8	84.4	0.5:1
<=49	48.3	31.1	89.4	0.5:1
<=54	56.9	27.2	92.0	0.4:1
<=59	63.9	25.1	95.3	0.3:1
<=64	70.9	22.8	96.3	0.3:1
<=69	78.4	21.0	98.1	0.3:1
<=74	84.8	19.5	98.4	0.2:1
<=79	89.7	18.7	100.0	0.2:1
<=84	94.6	17.8	100.0	0.2:1
<=89	98.7	17.0	100.0	0.2:1
<=94	99.6	16.9	100.0	0.2:1
<=100	100.0	16.8	100.0	0.2:1

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

Table 4 (First-quintile (20th-percentile) line)): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	75.9
5–9	61.1
10–14	51.2
15–19	48.9
20–24	38.5
25–29	37.6
30–34	34.7
35–39	18.3
40–44	16.6
45–49	11.6
50–54	5.9
55–59	4.8
60–64	2.4
65–69	0.5
70–74	0.5
75–79	0.5
80–84	0.5
85–89	0.5
90–94	0.5
95–100	0.0

Table 6 (First-quintile (20th-percentile) line)): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–16.6	10.2	10.5	11.0
5–9	+8.5	7.4	8.9	11.7
10–14	+8.4	4.9	5.8	7.3
15–19	–0.9	4.6	5.5	7.5
20–24	–11.7	8.2	8.5	9.2
25–29	+3.2	3.8	4.4	5.6
30–34	+9.9	2.3	2.8	3.6
35–39	+12.1	0.8	1.0	1.3
40–44	+3.0	1.6	1.8	2.5
45–49	+6.1	1.1	1.3	1.6
50–54	+4.0	0.5	0.6	0.7
55–59	–3.6	2.6	2.8	3.1
60–64	+1.5	0.4	0.4	0.6
65–69	–1.6	1.1	1.2	1.4
70–74	+0.2	0.2	0.2	0.2
75–79	–7.3	4.7	4.8	5.2
80–84	+0.5	0.0	0.0	0.0
85–89	+0.5	0.0	0.0	0.0
90–94	+0.5	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 7 (First-quintile (20th-percentile) line)): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.0	59.6	66.1	80.3
4	+0.7	25.1	34.6	47.7
8	+1.6	16.8	21.3	31.0
16	+2.0	11.6	14.4	19.2
32	+2.4	7.9	9.6	12.9
64	+2.4	5.6	6.7	8.6
128	+2.5	4.0	5.1	6.7
256	+2.4	2.8	3.4	4.2
512	+2.5	2.0	2.3	3.0
1,024	+2.5	1.4	1.7	2.3
2,048	+2.5	1.0	1.2	1.6
4,096	+2.5	0.7	0.8	1.1
8,192	+2.5	0.5	0.6	0.8
16,384	+2.5	0.3	0.4	0.6

Table 10 (First-quintile (20th-percentile) line)): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.3	14.1	0.1	85.5	85.8	–95.1
<=9	0.7	13.7	0.5	85.1	85.8	–86.6
<=14	2.0	12.4	1.6	83.9	85.9	–61.1
<=19	3.5	10.9	2.7	82.8	86.4	–32.0
<=24	4.9	9.5	4.6	81.0	85.9	+0.3
<=29	6.3	8.1	6.6	79.0	85.2	+32.8
<=34	8.6	5.8	11.7	73.8	82.4	+18.6
<=39	10.2	4.2	19.7	65.8	76.0	–36.9
<=44	12.3	2.2	28.4	57.1	69.4	–97.3
<=49	12.9	1.5	35.3	50.2	63.1	–145.2
<=54	13.2	1.2	43.6	42.0	55.2	–202.4
<=59	13.8	0.6	50.1	35.4	49.2	–247.7
<=64	13.9	0.5	57.0	28.6	42.5	–295.3
<=69	14.1	0.3	64.2	21.3	35.4	–345.9
<=74	14.1	0.3	70.6	14.9	29.1	–390.0
<=79	14.4	0.0	75.3	10.3	24.7	–422.5
<=84	14.4	0.0	80.2	5.4	19.8	–456.3
<=89	14.4	0.0	84.3	1.3	15.7	–484.8
<=94	14.4	0.0	85.2	0.4	14.8	–491.2
<=100	14.4	0.0	85.5	0.0	14.4	–493.7

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

Table 11 (First-quintile (20th-percentile) line)): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	83.7	2.2	5.1:1
<=9	1.2	59.2	5.1	1.5:1
<=14	3.7	54.3	13.8	1.2:1
<=19	6.3	56.3	24.6	1.3:1
<=24	9.6	51.8	34.4	1.1:1
<=29	12.9	48.6	43.6	0.9:1
<=34	20.3	42.1	59.4	0.7:1
<=39	30.0	34.0	70.8	0.5:1
<=44	40.7	30.1	85.0	0.4:1
<=49	48.3	26.7	89.3	0.4:1
<=54	56.9	23.3	91.9	0.3:1
<=59	63.9	21.6	95.6	0.3:1
<=64	70.9	19.6	96.3	0.2:1
<=69	78.4	18.0	97.8	0.2:1
<=74	84.8	16.7	98.1	0.2:1
<=79	89.7	16.1	100.0	0.2:1
<=84	94.6	15.2	100.0	0.2:1
<=89	98.7	14.6	100.0	0.2:1
<=94	99.6	14.5	100.0	0.2:1
<=100	100.0	14.4	100.0	0.2:1

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

Table 4 (Second-quintile (40th-percentile) line)): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	97.7
5–9	88.7
10–14	82.9
15–19	82.9
20–24	74.0
25–29	71.8
30–34	66.1
35–39	44.4
40–44	36.2
45–49	25.1
50–54	17.0
55–59	16.0
60–64	11.4
65–69	2.6
70–74	1.2
75–79	1.1
80–84	1.0
85–89	1.0
90–94	1.0
95–100	0.5

Table 6 (Second-quintile (40th-percentile) line)): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–2.3	1.2	1.2	1.2
5–9	–3.2	3.9	4.8	6.3
10–14	–6.7	4.7	5.0	5.4
15–19	–2.4	3.3	3.9	5.4
20–24	–6.8	4.9	5.1	5.4
25–29	+10.5	4.2	5.0	6.8
30–34	–0.3	2.6	3.1	4.3
35–39	+11.5	3.1	3.6	4.7
40–44	–11.2	7.0	7.3	7.9
45–49	+4.1	2.5	2.9	3.6
50–54	+8.0	1.2	1.4	1.7
55–59	+0.7	2.0	2.4	3.2
60–64	–2.7	2.4	2.7	3.2
65–69	–4.3	2.7	2.9	3.0
70–74	+1.0	0.2	0.2	0.2
75–79	–6.7	4.4	4.5	4.9
80–84	+1.0	0.0	0.0	0.0
85–89	+1.0	0.0	0.0	0.0
90–94	+1.0	0.0	0.0	0.0
95–100	+0.5	0.0	0.0	0.0

Table 7 (Second-quintile (40th-percentile) line)): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–3.8	63.7	75.0	90.8
4	–1.0	38.0	42.7	54.1
8	–0.3	27.6	32.8	40.2
16	–0.4	20.8	23.6	29.6
32	0.0	15.0	18.1	21.6
64	+0.2	10.9	12.4	15.8
128	+0.2	7.7	9.1	11.5
256	+0.3	5.1	6.2	8.1
512	+0.4	3.8	4.5	5.9
1,024	+0.4	2.7	3.1	4.1
2,048	+0.5	1.8	2.2	2.8
4,096	+0.4	1.3	1.6	2.2
8,192	+0.4	0.9	1.1	1.5
16,384	+0.4	0.7	0.8	1.0

Table 10 (Second-quintile (40th-percentile) line)): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	29.8	0.0	69.3	69.7	–97.4
<=9	1.2	29.0	0.1	69.3	70.4	–92.0
<=14	3.3	26.9	0.3	69.0	72.3	–76.8
<=19	5.6	24.6	0.7	68.6	74.2	–60.6
<=24	8.1	22.1	1.5	67.9	76.0	–41.5
<=29	10.4	19.8	2.5	66.8	77.2	–22.8
<=34	15.4	14.7	4.9	64.4	79.9	+18.5
<=39	19.5	10.7	10.5	58.9	78.4	+63.9
<=44	23.6	6.6	16.7	52.7	76.3	+44.8
<=49	25.7	4.5	22.1	47.3	73.0	+26.9
<=54	27.1	3.1	29.3	40.1	67.2	+3.0
<=59	28.4	1.8	35.1	34.3	62.6	–16.2
<=64	29.3	0.9	41.1	28.2	57.5	–36.1
<=69	29.9	0.3	48.0	21.3	51.2	–59.1
<=74	29.9	0.3	54.4	14.9	44.8	–80.2
<=79	30.2	0.0	59.1	10.3	40.5	–95.7
<=84	30.2	0.0	63.9	5.4	35.6	–111.8
<=89	30.2	0.0	68.0	1.3	31.5	–125.4
<=94	30.2	0.0	69.0	0.4	30.5	–128.5
<=100	30.2	0.0	69.3	0.0	30.2	–129.7

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

Table 11 (Second-quintile (40th-percentile) line)): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	1.3	Only poor targeted
<=9	1.2	94.8	3.9	18.2:1
<=14	3.7	90.5	11.0	9.5:1
<=19	6.3	88.8	18.5	7.9:1
<=24	9.6	84.8	26.8	5.6:1
<=29	12.9	80.6	34.5	4.2:1
<=34	20.3	75.9	51.1	3.1:1
<=39	30.0	65.1	64.7	1.9:1
<=44	40.7	57.9	78.1	1.4:1
<=49	48.3	53.3	85.2	1.1:1
<=54	56.9	47.7	89.8	0.9:1
<=59	63.9	44.4	94.0	0.8:1
<=64	70.9	41.3	97.1	0.7:1
<=69	78.4	38.1	98.9	0.6:1
<=74	84.8	35.3	99.1	0.5:1
<=79	89.7	33.6	100.0	0.5:1
<=84	94.6	31.9	100.0	0.5:1
<=89	98.7	30.6	100.0	0.4:1
<=94	99.6	30.3	100.0	0.4:1
<=100	100.0	30.2	100.0	0.4:1

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

Table 4 (Median (40^{th}-percentile) line)): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	93.3
10–14	88.8
15–19	88.8
20–24	82.5
25–29	81.0
30–34	77.6
35–39	55.8
40–44	46.7
45–49	34.9
50–54	28.8
55–59	27.3
60–64	20.3
65–69	6.3
70–74	4.4
75–79	1.7
80–84	1.2
85–89	1.2
90–94	1.2
95–100	0.5

Table 6 (Median (40^{th}-percentile) line)): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	–6.2	3.4	3.4	3.4
10–14	–3.6	3.0	3.1	3.5
15–19	–5.6	3.7	3.8	4.0
20–24	–3.7	3.1	3.3	4.1
25–29	+2.3	3.1	3.9	4.7
30–34	–1.9	2.2	2.6	3.3
35–39	+19.5	3.1	3.7	4.7
40–44	–15.5	9.1	9.4	9.9
45–49	+11.0	2.5	3.0	4.0
50–54	+5.7	2.2	2.7	3.5
55–59	–1.2	2.7	3.2	4.0
60–64	+5.7	2.1	2.5	3.2
65–69	–9.6	5.9	6.1	6.4
70–74	+3.6	0.3	0.4	0.6
75–79	–6.5	4.3	4.4	5.0
80–84	+1.2	0.0	0.0	0.0
85–89	+1.2	0.0	0.0	0.0
90–94	+1.2	0.0	0.0	0.0
95–100	+0.5	0.0	0.0	0.0

Table 7 (Median (40th-percentile) line)): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–2.4	64.3	67.7	89.1
4	+0.1	40.3	47.0	56.7
8	+0.4	30.1	35.3	47.7
16	+0.6	22.2	26.3	33.5
32	+1.0	16.4	18.6	22.9
64	+1.2	11.5	13.7	18.0
128	+1.2	8.1	9.7	13.1
256	+1.4	5.7	6.9	9.2
512	+1.5	4.2	5.1	6.4
1,024	+1.5	2.9	3.4	4.2
2,048	+1.6	2.0	2.4	2.9
4,096	+1.5	1.4	1.7	2.3
8,192	+1.6	1.0	1.2	1.6
16,384	+1.5	0.7	0.8	1.1

Table 10 (Median (40th-percentile) line)): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	37.2	0.0	62.4	62.8	–97.9
<=9	1.2	36.4	0.0	62.4	63.6	–93.4
<=14	3.4	34.2	0.2	62.1	65.6	–81.1
<=19	5.9	31.7	0.4	62.0	67.9	–67.6
<=24	8.7	29.0	0.9	61.5	70.2	–51.6
<=29	11.3	26.4	1.6	60.7	72.0	–35.8
<=34	17.1	20.5	3.2	59.2	76.3	–0.4
<=39	22.0	15.6	8.0	54.4	76.4	+38.1
<=44	28.0	9.6	12.7	49.6	77.6	+66.1
<=49	30.7	6.9	17.6	44.8	75.5	+53.3
<=54	32.9	4.7	23.9	38.5	71.4	+36.4
<=59	35.0	2.6	28.9	33.4	68.4	+23.1
<=64	36.1	1.6	34.8	27.5	63.6	+7.4
<=69	37.2	0.4	41.2	21.2	58.3	–9.5
<=74	37.3	0.3	47.5	14.9	52.2	–26.3
<=79	37.6	0.0	52.1	10.3	47.9	–38.5
<=84	37.6	0.0	57.0	5.4	43.0	–51.5
<=89	37.6	0.0	61.1	1.3	38.9	–62.4
<=94	37.6	0.0	62.0	0.4	38.0	–64.9
<=100	37.6	0.0	62.4	0.0	37.6	–65.8

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

Table 11 (Median (40th-percentile) line)): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	1.0	Only poor targeted
<=9	1.2	98.9	3.3	90.5:1
<=14	3.7	93.7	9.2	15.0:1
<=19	6.3	93.5	15.7	14.3:1
<=24	9.6	90.7	23.0	9.7:1
<=29	12.9	87.3	29.9	6.9:1
<=34	20.3	84.2	45.5	5.3:1
<=39	30.0	73.3	58.4	2.7:1
<=44	40.7	68.7	74.4	2.2:1
<=49	48.3	63.6	81.6	1.7:1
<=54	56.9	57.9	87.6	1.4:1
<=59	63.9	54.7	93.0	1.2:1
<=64	70.9	50.9	95.8	1.0:1
<=69	78.4	47.4	98.8	0.9:1
<=74	84.8	44.0	99.1	0.8:1
<=79	89.7	41.9	100.0	0.7:1
<=84	94.6	39.8	100.0	0.7:1
<=89	98.7	38.1	100.0	0.6:1
<=94	99.6	37.8	100.0	0.6:1
<=100	100.0	37.6	100.0	0.6:1

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

Table 4 (Third-quintile (60^{th}-percentile) line)): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	98.3
10–14	94.3
15–19	94.1
20–24	91.3
25–29	90.3
30–34	87.4
35–39	70.4
40–44	59.3
45–49	51.0
50–54	40.1
55–59	35.7
60–64	28.9
65–69	12.6
70–74	5.8
75–79	3.3
80–84	2.6
85–89	2.1
90–94	2.1
95–100	0.9

Table 6 (Third-quintile (60th-percentile) line)): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	–1.7	0.8	0.8	0.8
10–14	–0.2	1.9	2.3	3.1
15–19	–5.3	2.9	2.9	2.9
20–24	–1.5	2.0	2.3	3.1
25–29	+0.9	2.3	2.7	3.7
30–34	+2.4	2.0	2.4	3.1
35–39	+7.3	3.3	3.9	5.1
40–44	–10.5	6.5	6.8	7.2
45–49	+15.6	3.0	3.6	5.1
50–54	+9.1	2.4	2.8	3.5
55–59	–8.9	6.0	6.3	6.8
60–64	–0.5	2.6	3.1	4.1
65–69	–6.8	4.6	4.8	5.1
70–74	+2.2	0.8	0.9	1.2
75–79	–4.9	3.5	3.6	4.2
80–84	+2.6	0.0	0.0	0.0
85–89	+2.1	0.0	0.0	0.0
90–94	+2.0	0.1	0.1	0.1
95–100	+0.9	0.0	0.0	0.0

Table 7 (Third-quintile (60th-percentile) line)): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–2.6	61.8	78.9	92.5
4	–0.9	40.5	47.3	58.9
8	–0.1	31.0	36.5	48.1
16	+0.2	22.2	26.3	33.9
32	+0.3	15.6	19.0	24.3
64	+0.5	11.3	13.6	17.1
128	+0.4	8.2	9.8	12.4
256	+0.6	5.8	7.1	9.4
512	+0.6	4.4	5.2	6.3
1,024	+0.7	3.0	3.6	4.7
2,048	+0.7	2.1	2.5	3.4
4,096	+0.7	1.5	1.7	2.3
8,192	+0.7	1.0	1.3	1.6
16,384	+0.7	0.8	0.9	1.1

Table 10 (Third-quintile (60th-percentile) line)): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	46.3	0.0	53.2	53.6	–98.3
<=9	1.2	45.4	0.0	53.2	54.4	–94.7
<=14	3.5	43.1	0.1	53.0	56.6	–84.6
<=19	6.1	40.5	0.2	53.0	59.1	–73.4
<=24	9.1	37.5	0.4	52.8	61.9	–59.9
<=29	12.1	34.5	0.8	52.4	64.5	–46.4
<=34	18.5	28.1	1.8	51.4	69.9	–16.7
<=39	25.0	21.6	5.0	48.2	73.2	+17.9
<=44	32.4	14.3	8.4	44.8	77.2	+56.7
<=49	36.1	10.5	12.1	41.1	77.2	+74.0
<=54	39.3	7.3	17.5	35.6	75.0	+62.4
<=59	42.4	4.2	21.5	31.7	74.1	+53.8
<=64	44.3	2.3	26.4	26.8	71.2	+43.5
<=69	45.9	0.7	32.3	20.9	66.8	+30.7
<=74	46.3	0.3	38.3	14.9	61.2	+17.8
<=79	46.6	0.0	42.9	10.3	56.9	+8.0
<=84	46.6	0.0	47.8	5.4	52.0	–2.5
<=89	46.6	0.0	51.9	1.3	47.9	–11.3
<=94	46.6	0.0	52.8	0.4	47.0	–13.3
<=100	46.6	0.0	53.2	0.0	46.6	–14.0

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

Table 11 (Third-quintile (60th-percentile) line)): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.8	Only poor targeted
<=9	1.2	100.0	2.7	Only poor targeted
<=14	3.7	96.0	7.6	23.8:1
<=19	6.3	97.1	13.1	33.3:1
<=24	9.6	95.6	19.6	21.7:1
<=29	12.9	93.8	26.0	15.1:1
<=34	20.3	91.0	39.7	10.1:1
<=39	30.0	83.4	53.6	5.0:1
<=44	40.7	79.4	69.4	3.9:1
<=49	48.3	74.9	77.5	3.0:1
<=54	56.9	69.1	84.3	2.2:1
<=59	63.9	66.3	90.9	2.0:1
<=64	70.9	62.6	95.1	1.7:1
<=69	78.4	58.6	98.4	1.4:1
<=74	84.8	54.6	99.3	1.2:1
<=79	89.7	52.0	100.0	1.1:1
<=84	94.6	49.3	100.0	1.0:1
<=89	98.7	47.2	100.0	0.9:1
<=94	99.6	46.8	100.0	0.9:1
<=100	100.0	46.6	100.0	0.9:1

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

Table 4 (Fourth-quintile (80th-percentile) line)): Scores and their associated estimates of poverty likelihoods

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	100.0
20–24	99.8
25–29	99.3
30–34	96.9
35–39	90.4
40–44	82.1
45–49	75.9
50–54	70.1
55–59	66.7
60–64	56.5
65–69	38.5
70–74	31.7
75–79	19.8
80–84	11.4
85–89	3.7
90–94	3.7
95–100	1.6

Table 6 (Fourth-quintile (80th-percentile) line)): Average errors (differences between estimated and observed poverty likelihoods) for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2011 scorecard applied to the validation sample

	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	+0.1	0.1	0.1	0.1
20–24	–0.2	0.1	0.1	0.1
25–29	–0.4	0.3	0.3	0.3
30–34	–1.7	1.1	1.1	1.2
35–39	–4.1	2.5	2.6	2.8
40–44	–8.0	4.7	4.7	5.0
45–49	–14.8	8.0	8.1	8.2
50–54	+11.5	2.7	3.2	4.3
55–59	–1.8	2.9	3.4	4.5
60–64	+1.5	2.9	3.4	4.5
65–69	–24.3	13.4	13.7	14.1
70–74	–6.9	5.0	5.3	5.8
75–79	+2.0	2.6	3.2	4.1
80–84	+3.8	1.7	2.1	2.6
85–89	+2.8	0.4	0.4	0.6
90–94	+1.2	1.4	1.6	2.3
95–100	+1.6	0.0	0.0	0.0

Table 7 (Fourth-quintile (80th-percentile) line)): Errors (average differences between estimated and observed poverty rates) for samples of households at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2011 scorecard applied to the validation sample

Sample Size	Difference between estimate and observed value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.3	65.8	75.2	87.4
4	–2.6	37.9	44.9	60.7
8	–3.1	27.9	32.2	42.8
16	–3.2	19.3	23.5	29.8
32	–3.2	13.5	15.8	21.8
64	–3.6	9.4	11.7	15.4
128	–3.7	6.3	7.8	10.8
256	–3.8	4.8	5.7	7.6
512	–3.9	3.3	3.8	5.3
1,024	–3.8	2.3	2.7	3.7
2,048	–3.8	1.6	2.1	2.8
4,096	–3.8	1.2	1.4	1.9
8,192	–3.7	0.8	1.0	1.2
16,384	–3.7	0.6	0.7	0.9

Table 10 (Fourth-quintile (80th-percentile) line)): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2011 scorecard applied to the validation sample

Targeting cut-off	Inclusion: Poor correctly targeted	Undercoverage: Poor mistakenly not targeted	Leakage: Non-poor mistakenly targeted	Exclusion: Non-poor correctly not targeted	Hit rate Inclusion + Exclusion	BPAC See text
<=4	0.4	66.2	0.0	33.4	33.8	–98.8
<=9	1.2	65.4	0.0	33.4	34.6	–96.3
<=14	3.7	63.0	0.0	33.4	37.0	–89.0
<=19	6.3	60.3	0.0	33.4	39.7	–81.1
<=24	9.5	57.1	0.0	33.4	42.9	–71.3
<=29	12.9	53.8	0.0	33.3	46.2	–61.3
<=34	20.1	46.5	0.2	33.2	53.3	–39.2
<=39	28.8	37.8	1.2	32.2	61.0	–11.8
<=44	38.1	28.5	2.6	30.8	68.9	+18.3
<=49	44.2	22.4	4.0	29.3	73.5	+38.8
<=54	49.9	16.8	7.0	26.4	76.3	+60.2
<=59	54.6	12.0	9.3	24.1	78.7	+77.9
<=64	58.6	8.0	12.3	21.1	79.7	+81.6
<=69	62.8	3.8	15.6	17.8	80.6	+76.6
<=74	65.1	1.6	19.7	13.6	78.7	+70.4
<=79	66.0	0.6	23.7	9.7	75.7	+64.4
<=84	66.4	0.2	28.2	5.2	71.6	+57.7
<=89	66.6	0.1	32.2	1.2	67.8	+51.7
<=94	66.6	0.0	33.0	0.4	67.0	+50.5
<=100	66.6	0.0	33.4	0.0	66.6	+49.9

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

Table 11 (Fourth-quintile (80th-percentile) line)): Share of all households who are targeted (that is, score at or below a cut-off), the share of targeted households who are poor, the share of poor households who are targeted, and the number of poor households who are successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2011 scorecard applied to the validation sample

Targeting cut-off	% all HHs who are targeted	% targeted HHs who are poor	% poor HHs who are targeted	Poor HHs targeted per non-poor HH targeted
<=4	0.4	100.0	0.6	Only poor targeted
<=9	1.2	100.0	1.9	Only poor targeted
<=14	3.7	100.0	5.5	Only poor targeted
<=19	6.3	99.8	9.4	610.7:1
<=24	9.6	99.9	14.3	926.8:1
<=29	12.9	99.7	19.3	328.6:1
<=34	20.3	99.0	30.2	98.0:1
<=39	30.0	96.1	43.2	24.3:1
<=44	40.7	93.6	57.2	14.6:1
<=49	48.3	91.6	66.3	10.9:1
<=54	56.9	87.7	74.9	7.1:1
<=59	63.9	85.4	82.0	5.9:1
<=64	70.9	82.7	87.9	4.8:1
<=69	78.4	80.1	94.2	4.0:1
<=74	84.8	76.7	97.6	3.3:1
<=79	89.7	73.6	99.1	2.8:1
<=84	94.6	70.2	99.7	2.4:1
<=89	98.7	67.4	99.9	2.1:1
<=94	99.6	66.9	100.0	2.0:1
<=100	100.0	66.6	100.0	2.0:1