Simple Poverty Scorecard® Poverty-Assessment Tool Ecuador

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15 November 2015

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Abstract

The Simple Poverty Scorecard-brand poverty-assessment tool uses ten low-cost indicators from Ecuador's 2013/14 Living Standards Survey to estimate the likelihood that a household has consumption below a given poverty line. Field workers can collect responses in about ten minutes. The scorecard's accuracy is reported for a range of poverty lines. The scorecard is a practical way for pro-poor programs in Ecuador to measure poverty rates, to track changes in poverty rates over time, and to segment clients for differentiated services.

Version note

This paper uses 2013/14 data, replacing Schreiner (2008a), which uses 2005/6 data. The new 2013/14 scorecard here should be used from now on. Existing users of Schreiner (2008a) can still measure change over time with a baseline from the old 2005/6 scorecard and a follow-up from the new 2013/14 scorecard because it is reasonable to proceed as if the two scorecards use the same definition of *poverty* and thus have comparable results.

Acknowledgements

This paper was funded by Grameen Foundation (GF). Data are from Ecuador's *Instituto Nacional de Estadística y Censos*. Thanks go to Andrea Molina, Wilman Páez, Julie Peachey, and Sharada Ramanathan. This scorecard was re-branded by GF as a Progress out of Poverty Index® tool. The PPI® is a performance-management tool that GF promotes to help organizations achieve their social objectives more effectively. PPI learning materials and resources are at `progressoutofpoverty.org`. "Progress out of Poverty Index" and "PPI" are Registered Trademarks of Innovations for Poverty Action. "Simple Poverty Scorecard" is a Registered Trademark of Microfinance Risk Management, L.L.C. for its brand of poverty-assessment tools.

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Simple Poverty Scorecard® Poverty-Assessment Tool

			Name	Identifier
Interview ID:				
Interview date:		Participant:		
Country:	ECU	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. Six or more	0	
	B. Five	9	
	C. Four	16	
	D. Three	25	
	E. Two	32	
	F. One	40	
2. How many household members 12-years-old or older have an activated cellular telephone?	A. None	0	
	B. One	3	
	C. Two	7	
	D. Three or more	11	
3. Does the household have a car (for its exclusive use), air conditioner, video camera, or exercise machine?	A. No	0	
	B. Yes	100	
4. What is the main material of the floor of the residence?	A. Dirt	0	
	B. Untreated planks, reeds, or other	4	
	C. Cement/bricks	5	
	D. Ceramic tile, stone, vinyl, marble, faux marble, treated planks, or concrete slab	8	
5. Does the household have a place with running water to take a bath or shower?	A. No	0	
	B. Yes	3	
6. Is the bathroom inside the residence?	A. No	0	
	B. Yes	4	
7. Does the household have a blender, waffle iron/sandwich grill, or electric mixer?	A. No	0	
	B. Only blender	3	
	C. Waffle iron/sandwich grill, or electric mixer (regardless of blender)	8	
8. Does the household have an iron?	A. No	0	
	B. Yes	5	
9. How many color or plasma/LCD/LED televisions does the household have?	A. None	0	
	B. One	5	
	C. Two or more	10	
10. How many light bulbs does the household use?	A. None, one, or two	0	
	B. Three	1	
	C. Four	2	
	D. Five	4	
	E. Six or seven	6	
	F. Eight or more	10	

Score (maximum of 100):

Back-page Worksheet:
Household Members, Ages, and Cell Phones

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 unique identification number of the participant, of yourself as the field agent, and of the service point that the participant uses.

Say to the respondent: *Please tell me the name and age of each member of this household. A* household *is one person or a group of people—regardless of blood or marital relationship—who normally live in the same residence and eat from the same kitchen. Live-in domestic servants (and their relatives), boarders, guests, and others who have slept and ate in the household for at least six months and who do not have another residence count as* household members*. Start with the head of the household.*

Pay special attention to those who are temporarily absent, children, newborns, and the elderly.

In the header under "Number of household members:", record the number of members. Also mark the response that corresponds to the first scorecard indicator.

For each member 12-years-old or older, ask: *Does <name> have an activated cellular telephone?* For the second indicator, mark the response that corresponds to the number of members with an activated cellular telephone.

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

Name	Age	If <name> is 12-years-old or older, ask: "Does <name> have an activated cellular telephone?"		
1.		<12 years	Yes	No
2.		<12 years	Yes	No
3.		<12 years	Yes	No
4.		<12 years	Yes	No
5.		<12 years	Yes	No
6.		<12 years	Yes	No
7.		<12 years	Yes	No
8.		<12 years	Yes	No
9.		<12 years	Yes	No
10.		<12 years	Yes	No
11.		<12 years	Yes	No
12.		<12 years	Yes	No
13.		<12 years	Yes	No
# household members:		**# household members w/cell phone:**		

Look-up table to convert scores to poverty likelihoods:

	Poverty likelihood (%)									
	National				Poorest half	International 2005 PPP				
Score	**Food**	**100%**	**150%**	**200%**	**< 100% natl.**	**$1.25**	**$2.00**	**$2.50**	**$5.00**	**$8.44**
0–4	85.6	99.8	100.0	100.0	92.0	34.7	84.7	96.8	100.0	100.0
5–9	68.7	98.3	100.0	100.0	80.3	25.9	67.5	81.2	100.0	100.0
10–14	59.2	95.1	100.0	100.0	76.8	17.9	57.3	71.5	99.9	100.0
15–19	37.8	93.0	99.7	100.0	70.3	9.0	36.6	64.3	99.0	100.0
20–24	25.1	84.7	98.2	100.0	58.9	3.7	23.9	51.6	96.3	100.0
25–29	16.6	74.2	97.1	99.7	41.7	1.8	16.2	34.3	95.0	99.9
30–34	8.8	64.1	93.7	98.9	27.8	0.8	8.0	23.0	89.1	99.5
35–39	6.0	50.0	88.9	98.2	20.1	0.4	5.6	15.1	83.5	99.3
40–44	4.3	36.6	80.5	95.0	11.5	0.2	3.8	10.3	73.8	98.1
45–49	2.1	24.6	65.2	87.8	8.1	0.2	2.0	6.1	57.7	93.7
50–54	0.9	12.9	51.9	81.6	3.3	0.0	0.9	2.5	43.2	89.9
55–59	0.2	6.5	36.4	67.7	1.2	0.0	0.2	0.9	28.7	81.0
60–64	0.0	3.1	24.0	55.1	0.5	0.0	0.0	0.1	17.3	67.9
65–69	0.0	1.1	12.1	33.0	0.2	0.0	0.0	0.1	10.3	52.9
70–74	0.0	0.9	6.4	21.8	0.2	0.0	0.0	0.1	4.6	38.8
75–79	0.0	0.9	6.4	16.4	0.2	0.0	0.0	0.1	4.6	26.6
80–84	0.0	0.9	6.4	16.4	0.2	0.0	0.0	0.1	4.6	24.2
85–89	0.0	0.9	6.4	16.4	0.2	0.0	0.0	0.1	4.6	24.2
90–94	0.0	0.9	6.4	16.4	0.2	0.0	0.0	0.1	4.6	24.2
95–100	0.0	0.9	6.4	16.4	0.2	0.0	0.0	0.1	4.6	24.2

Note on measuring changes in poverty rates over time with the old 2005/6 and new 2013/14 scorecards

This paper uses data from Ecuador's 2013/14 Living Standards Survey (*Encuesta de Condiciones de Vida*, ECV). It replaces Schreiner (2008a), which uses data from the 2005/6 ECV. The new 2013/14 scorecard here should be used from now on.

Some pro-poor programs in Ecuador already use the old 2005/6 scorecard. Even after switching to the new 2013/14 scorecard, these legacy users can still estimate changes in poverty rates over time with existing baseline estimates from the old 2005/6 scorecard and follow-up estimates from the new 2013/14 scorecard. This is possible because both the new and old scorecards are calibrated to what amounts to the same definition of *poverty* (see below). For a given poverty line supported for both scorecards, valid estimates of change can be found as the difference between estimated poverty rates from a baseline measure with the old 2005/6 scorecard and from a follow-up measure with the new 2013/14 scorecard.

The definition of *poverty* in Ecuador's ECV changed between 2005/6 and 2013/14. In particular, the National Institute of Statistics and Censuses (*Instituto Nacional de Estadística y Censos*, INEC) changed from a single, all-country poverty line to a line that is adjusted for price differences across three regions (Costa, Sierra, and Amazonia). Nevertheless, INEC (2015) compares poverty rates from the 2005/6 ECV

(with a single all-Ecuador poverty line) with poverty rates from the 2013/14 ECV (with three regional poverty lines) without noting any caveats. It seems that INEC views the two definitions of *poverty* as comparable.

Beyond INEC's change, the definition of *poverty* used here with the new 2013/14 scorecard differs from that used with the old 2005/6 scorecard because this paper matches INEC's 2013/14 definition of *poverty* but Schreiner (2008a) mistakenly deviated from INEC's 2005/6 definition of *poverty* by:

- Adjusting regional poverty lines for differences across eight cities in the cost of a basic food basket
- Assuming monetary values are in average prices from November 2005 to October 2006, when in fact they are in average prices in April/May/June 2006

Following INEC, the scorecard assumes that the differences in poverty estimates due to these differences in the definition of *poverty* between 2005/6 and 2013/14 are not material. And the differences are indeed small between the results with INEC's official definitions in 2005/6 and 2013/14 versus with the mistaken definition in Schreiner (2008a with the old 2005/6 scorecard and INEC's official definition with the new 2013/14 scorecard. In particular, estimates for the food poverty line match exactly in 2013/14 and differ by 0.3 percentage points for the level in 2005/6 and for the change between 2005/6 and 2013/14. For the national poverty line, estimates match exactly in 2013/14 and differ by 1.0 percentage point for the level in 2005/6 and for the change between 2005/6 and 2013/14. This is not likely material for most purposes of pro-poor organizations in Ecuador, and it is likely a minor source of error relative to others (such as getting a representative sample from an unchanging population). Of course,

estimates of change for the national poverty line based on the old 2005/6 scorecard (as a baseline) and the new 2013/14 scorecard (as a follow-up) should be corrected by subtracting one percentage point from the uncorrected estimate of change.

In sum, both first-time and legacy users should use the new 2013/14 scorecard from now on. Looking forward, this establishes the best baseline. Looking backward, legacy users of Ecuador's old 2005/6 scorecard can still use existing estimates when measuring change.

Simple Poverty Scorecard® Poverty-Assessment Tool Ecuador

1. Introduction

The Simple Poverty Scorecard poverty-assessment tool is a low-cost way for pro-poor programs in Ecuador to estimate the likelihood that a household has consumption below a given poverty line, to measure groups' poverty rates at a point in time, to track changes in groups' poverty rates over time, and to segment clients for differentiated services.

The new scorecard here uses data from Ecuador's 2013/14 Living Standards Survey (*Encuesta de Condiciones de Vida*, ECV). It replaces the old scorecard in Schreiner (2008a) that uses data from the 2005/6 ECV. Only the new 2013/14 scorecard should be used from now on, as it is more accurate. The new and old scorecards are calibrated to different definitions of *poverty*, but their estimates are similar, and Ecuador's National Institute of Statistics and Censuses (*Instituto Nacional de Estadística y Censos*, INEC) treats estimates from the two definitions as comparable. Thus, existing users of the old 2005/6 scorecard can still estimate changes in poverty rates over time with a baseline from the old 2005/6 scorecard and a follow-up from the new 2013/14 scorecard.

The direct approach to poverty measurement via consumption surveys is difficult and costly. As a case in point, Ecuador's 2013/14 ECV runs 88 pages and includes more than 900 questions, a large share of which may be asked multiple times (for example, for each household member, each consumption item, each consumer durable, or each species of livestock). INEC's enumerators visited each surveyed household twice, and each visit lasted half a day.

In comparison, the indirect approach of the scorecard is simple, quick, and low-cost. It uses ten verifiable indicators (such as "Does the household have an iron?" and "What is the main material of the floor of the residence?") to get a score that is correlated with poverty status as measured by the exhaustive ECV survey.

The scorecard differs from "proxy-means tests" (Coady, Grosh, and Hoddinott, 2004) in that it is transparent, it is freely available,[1] and it is tailored to the capabilities and purposes not of national governments but rather of local, pro-poor organizations. The feasible poverty-measurement options for local organizations are typically blunt (such as rules based on land ownership or housing quality) or subjective and relative (such as participatory wealth ranking facilitated by skilled field workers). Poverty measures from these approaches may be costly, their accuracy is unknown, and they are not comparable across places, organizations, nor time.

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

Poverty scoring can be used to measure the share of a program's participants who are below a given poverty line, for example, the Millennium Development Goals' line of $1.25/day at 2005 purchase-power parity (PPP). USAID microenterprise partners in Ecuador can use scoring with the line that marks the poorest half of people with consumption below 100% of the national poverty line to report how many of their participants are "very poor".[2] Scoring can also be used to measure net movement across a poverty line over time. In all these applications, scoring provides a consumption-based, objective tool with known accuracy. While consumption surveys are costly even for governments, some local pro-poor organizations may be able to implement a low-cost scorecard to help with monitoring poverty and (if desired) segmenting clients for differentiated services.

The statistical approach here aims to be understood by non-specialists. After all, if managers are to adopt poverty scoring 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 they do not work, but because they

[2] USAID defines a household as *very poor* if its daily per-capita consumption is less than the highest of the $1.25/day line—USD0.96 in average prices for all of Ecuador in April/May/June 2014—or the line (USD2.12) that marks the poorest half of people below 100% of the national line (Table 1). USAID (2014, p. 8) has approved the scorecard—branded as a Progress Out of Poverty Index®—for use by its microenterprise partners.

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).

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

The scorecard is based on data from the 2013/14 ECV from Ecuador's INEC. Indicators are selected to be:

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

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.

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

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

Third, poverty scoring can estimate changes in the poverty rate between two points in time. With two independent samples from the same population, this estimate is the change in the average poverty likelihood in the baseline group versus the average likelihood in the follow-up group. With one sample in which each household is scored twice, this estimate is the average of each household's change from baseline to follow-up (Schreiner, 2015a).

Poverty scoring can also be used to segment participants for differentiated services. To help managers choose appropriate targeting cut-offs for their purposes, this paper reports several measures of targeting accuracy for a range of possible cut-offs.

This paper presents a single scorecard whose indicators and points are derived with 100% of the national poverty line applied to data from the 2013/14 ECV. Scores from this one scorecard are calibrated with data from the 2013/14 ECV to poverty likelihoods for 10 poverty lines.

The new 2013/14 scorecard is constructed using half of the data from the 2013/14 ECV. That same half of the 2013/14 data is also used to calibrate scores to poverty likelihoods for 10 poverty lines. The other half of the 2013/14 ECV data is used to validate the scorecard's accuracy for estimating households' poverty likelihoods, for estimating groups' poverty rates at a point in time, and for segmenting clients.

All three scoring-based estimators (the poverty likelihood of a household, the poverty rate of a group of households at a point in time, and the change in the poverty rate between two points in time) are *unbiased*. That is, they match the 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 here is constructed from a single sample and so misses the mark to some unknown extent when applied (as in this paper) to validation samples. Furthermore, it makes errors when applied (in practice) to a different population or when applied after 2013/14 (because the relationships between indicators and poverty change over time).[3]

Thus, while the indirect scoring approach is less costly than the direct survey approach, it makes errors when applied in practice. (Estimates from the survey approach are correct by definition.) There are errors because scoring necessarily assumes that future relationships between indicators and poverty in all possible groups of households 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 2013/14 validation sample, the difference between scorecard estimates of groups' poverty rates versus the true rates at a point in time for 100% of the national poverty line is +1.4 percentage

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

points. Across all 10 poverty lines, the average absolute difference is about 1.6 percentage points, and the maximum absolute difference is 4.1 percentage points. These differences reflect estimation errors due to sampling variation, not bias; the average difference would be zero if the whole 2013/14 ECV survey were to be repeatedly re-fielded and divided into sub-samples before repeating the entire process of scorecard construction and validation.

With $n = 16{,}384$, the 90-percent confidence intervals are ± 0.6 percentage points or less. For $n = 1{,}024$, the 90-percent intervals are ± 2.5 percentage points or less.

It is not possible to check the accuracy of estimates of changes in poverty rates over time by applying the new 2013/14 scorecard both to the 2013/14 validation sample (as a baseline) and to all of the 2005/6 ECV (as a follow-up) because most of the indicators in the new 2013/14 scorecard do not appear in the 2005/6 ECV or were asked differently.

Section 2 below documents data and the definition of *poverty*. Sections 3 and 4 describe scorecard construction and offer guidelines for use in practice. Sections 5 and 6 tell how to estimate households' poverty likelihoods and groups' poverty rates at a point in time. Section 7 discusses estimating changes in poverty rates over time. Section 8 covers targeting. Section 9 places the scorecard here in the context of two related poverty-measurement tools for Ecuador. The last section is a summary.

The "Guidelines for the Interpretation of Indicators" appear after the reference section. The "Guidelines" tell how to ask questions (and how to interpret responses) so as to mimic practice in Ecuador's ECV as closely as possible. These "Guidelines" (and the "Back-page Worksheet") are integral parts of the Simple Poverty Scorecard tool.

2. Data and the definition of *poverty*

This section discusses the data used to construct and validate the scorecard. It also documents the definition of *poverty* as well as the 10 poverty lines to which scores are calibrated.

2.1 Data

Indicators and points for the new 2013/14 scorecard are selected (*constructed*) based on a random half of the data from the 28,621 households in the 2013/14 ECV, Ecuador's most recent national consumption survey.

For the purposes of poverty scoring, the households in the 2013/14 ECV are randomly divided into two sub-samples:

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

Fieldwork for Ecuador's 2013/14 ECV ran from November 2013 to October 2014. Consumption is measured in United States of America dollars (USD) in average prices for the country as a whole during April/May/June 2014.

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

A *poverty rate* is the share of units in households in which total household consumption (divided by the number of household members) is below a given poverty

line. The unit of analysis is either the household itself or a person in the household. By assumption, each household member has the same poverty status (or estimated poverty likelihood) as the other household members.

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

Poverty rates are in terms of either households or people. If the program defines its *participants* as households, then the household level is relevant. The estimated household-level poverty rate is the weighted[4] 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" is the first household's poverty status (poor). In the "$1 \cdot 0$" term in the numerator, the "1" is the second household's weight, and the "0" is the second household's poverty status (non-poor). 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

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

person-level rate is the household-size-weighted[5] 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" is its poverty status (poor). 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 is its poverty status (non-poor). 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 are direct participants in the program. For the example here, this means that some—but not all—household members are counted. The person-level rate is now the participant-weighted average[6] of the poverty statuses 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" is its poverty status (poor). 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 is its poverty status (non-poor). The "$1 + 2$" in the denominator is the sum of the weights of the two

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

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—the weights are the number of relevant units in the household. When reporting, organizations should make explicit the unit of analysis—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 2005/6 and 2013/14 ECV for Ecuador as a whole, for the 2013/14 construction/calibration sample, and for the 2013/14 validation sample. Table 2 reports these same things for urban/rural/overall for Ecuador as a whole and for its three broad regions (Costa, Sierra, and Amazonias). Table 3 reports these same things for Ecuador's 24 provinces. 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. This is also why the scorecard is constructed, calibrated, and validated with household weights. Person-level poverty rates are also included in Tables 1, 2, and 3 because these are the rates reported by the government of Ecuador. Furthermore, popular and policy discussions alway use person-level rates.

2.3 Definition of *poverty*, and poverty lines

Poverty is whether a household is poor or non-poor. In Ecuador and for the purposes here, poverty status is determined by whether per-capita aggregate household consumption is below a given poverty line. Thus, a definition of *poverty* has two aspects: a measure of aggregate household consumption, and a poverty line.

The derivation of Ecuador's two official poverty lines follows the cost-of-basic-needs approach of Ravallion (1998). The food poverty line (*línea de pobreza extrema*, or *línea de indigencia*) is the average cost—based on data from the 2005/6 ECV—of a food basket with 2,141 Calories for a reference group of households in the 12^{th} to 27^{th} percentiles of per-capita consumption (INEC, 2015 and 2007).

The national poverty line (*línea de pobreza*, usually called here "100% of the national line") is then the food line, plus a minimum non-food component that is defined as the average non-food consumption observed in the 2005/6 ECV for people whose food consumption is within 10 percent of the food line.

For the 2005/6 ECV, the food line is USD1.05 per person per day in average prices for all of Ecuador in April/May/June of 2006, leading to poverty rates for Ecuador as a whole of 9.1 percent (households) and 13.2 percent (people, Table 1). The national (food-plus-non-food line) for the 2005/6 ECV is USD1.86, giving all-Ecuador poverty rates of 30.3 percent (households) and 38.7 percent (people).

The official poverty lines for the 2013/14 ECV are the 2005/6 lines, adjusted for increases in the prices of food and non-food (INEC, 2015). A weighted-average increase

of 49.0 percent is applied to both the national (food-plus-non-food) line and the food line.[7]

In the 2013/14 ECV (unlike in the 2005/6 ECV), the food and national (food-plus-non-food) poverty lines are also adjusted for relative differences in prices across three poverty-line regions:

- Urban Sierra
- Urban Costa and urban Amazonias
- Rural Costa, rural Sierra, and rural Amazonias

Even though the definition of consumption is the same in both the 2005/6 ECV and the 2013/14 ECV, this change in the definition of poverty lines across the two ECV rounds implies a change in the definition of *poverty*. This means that INEC's poverty estimates for 2005/6 are not strictly comparable with its poverty estimates for 2013/14 and thus that changes in poverty rates between the two ECV rounds are not meaningfully estimated.

[7] The food line is not inflated by the increase in food prices only, but rather by the weighted-average increase in both food and non-food prices.

In addition, the poverty lines used with the old 2005/6 scorecard mistakenly differ from INEC's 2005/6 definition of *poverty* in that they:

- Adjust regional poverty lines for differences across eight cities in the cost of a basic food basket[8]
- Assume monetary values are in average prices from November 2005 to October 2006, when in fact they are in average prices in April/May/June 2006[9]

This also implies that estimates from the old 2005/6 scorecard (Schreiner, 2008a) are not strictly comparable with estimates from the new 2013/14 scorecard here, invalidating estimates of changes in poverty over time based on the old 2005/6 scorecard as a baseline and the new 2013/14 scorecard as a follow-up.

The definition of *poverty* used here with the new 2013/14 scorecard is identical to that used by INEC in 2013/14. This is known because the all-Ecuador person-level poverty rates in Table 1 here match those of INEC (2015, p. 37). In particular, the food line of USD1.56 per person per day in average prices for all of Ecuador in April/May/June of 2014 gives a household-level poverty rate of 3.6 percent and a

[8] The eight cities and their associated provinces are Ambato (Tungurahua, Bolívar, Cotopaxi, Chimborazo, Morona Santiago, Napo, Pastaza, Sucumbíos, and Puerto Francisco de Orellana), Cuenca (Axuay), Esmeraldas (Esmeraldas), Guayaquil (Guayas, Los Ríos, and Santa Elena), Loja (Loja and Zamora-Chinchipe), Machala (El Oro), Manta (Manabí), and Quito (Pichincha, Carchi, Imbabura, and Santo Domingo de los Tsáchilas). Galápagos is not included anywhere. `www.inec.gov.ec/c/document_library/get_file?folderId=104043&name=DLFE-16811.xls`, accessed December 23, 2008.

[9] Jofre Calderón Tobar, then an employee with INEC, said in a message to the author on 23 December 2008 that the monetary values in 2005/6 ECV data were not adjusted for price changes during the fieldwork. This is contradicted, however, by INEC (2015, p. 24), which is the first formal documentation of the price units in the 2005/6 ECV data.

person-level poverty rate of 5.7 percent. In turn, the national line of USD2.77 gives poverty rates of 19.2 percent (households) and 25.8 percent (people).

INEC (2015, p. 37) ignores incompatibilities due to its change in the official definition of *poverty*, reporting estimated changes in poverty rates without caveats.

Furthermore, measuring change over time using the old 2005/6 scorecard as a baseline (with its mistakes on top of INEC's different definition of *poverty*) leads to differences (compared with INEC, 2015) in changes in poverty rates over time of +0.3 percentage points (food line) and +1.0 percentage points (national line). These differences in estimated changes are small, relative to the size of INEC's estimated changes (7.2 percentage points for the food line and 12.5 percentage points for the national line).

Given that INEC accepts the incompatibilities in the definition of *poverty* without even a footnote, and given that the mistakes in Schreiner (2008a) lead only to small differences, this paper treats as legitimate estimates of change over time with a baseline from the old 2005/6 scorecard and a follow-up from the new 2013/14 scorecard. The small inaccuracies involved are unlikely to be material for the purposes of most pro-poor organizations in Ecuador, and users can always subtract an additional 0.3 or 1.0 percentage points (depending on the poverty line) from the scorecards' estimates of change.

2.4 Supported poverty lines

Because pro-poor organizations in Ecuador may want to use different or various poverty lines, this paper calibrates scores from its single new 2013/14 scorecard to poverty likelihoods for 10 lines:

- Food
- 100% of national
- 150% of national
- 200% of national
- Line marking the poorest half of people below 100% of the national line
- $1.25/day 2005 PPP
- $2.00/day 2005 PPP
- $2.50/day 2005 PPP
- $5.00/day 2005 PPP
- $8.44/day 2005 PPP

Five of these 10 lines are supported for both the new 2013/14 scorecard and for the old 2005/6 scorecard:

- Food
- 100% of national
- $1.25/day 2005 PPP
- $2.50/day 2005 PPP
- $5.00/day 2005 PPP

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

The line that marks the poorest half of people below 100% of the national line is defined—separately in each of Ecuador's poverty-line regions in a given ECV round—as the median aggregate household per-capita consumption of people (not households) below 100% of the national line (U.S. Congress, 2004).

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

- 2005 PPP exchange rate for "individual consumption expenditure by households" (World Bank, 2008): USD0.501 per $1.00
- Average Consumer Price Index (CPI) for all of Ecuador:[10]
  - In the twelve months of 2005: 68.0453
  - In April/May/June 2006: 70.2979
- INEC's inflation factor between the 2005/6 and 2013/14 ECV: 1.48996
- Average national poverty line (per-person, per-day) in Ecuador as a whole in prices as of April/May/June 2014 (Table 1): USD2.77
- Region-specific national poverty lines in Ecuador's three poverty-line regions in 2013/14 (Table 2)

Given this, the $1.25/day 2005 PPP line in average prices in Ecuador overall during April/May/June 2014 is (Sillers, 2006):[11]

$$(\text{2005 PPP exchange rate}) \cdot \$1.25 \cdot \left(\frac{\text{CPI}_{\text{AprMayJun2006}}}{\text{CPI}_{\text{2005 average}}} \right) \cdot \text{INEC inflation factor} =$$

$$\left(\frac{\text{USD0.501}}{\$1.00} \right) \cdot \$1.25 \cdot \left(\frac{70.2979}{68.0453} \right) \cdot 1.48996 = \text{USD0.964}.$$

The 2005 PPP lines are multiples of the $1.25/day line. The $8.44/day line is the 75th percentile of per-capita income (not consumption) worldwide as measured by Hammond *et al.* (2007).

The 2005 PPP lines in Table 1 are all-Ecuador averages. In a given poverty-line region in a given year, the $1.25/day line is the all-Ecuador $1.25/day line in the year, multiplied the national line in that region in the year, and divided by Ecuador's average national line in the year.

[10] `www.ecuadorencifras.gob.ec/documentos/web-inec/Inflacion/2015/Inflacion Octubre2015/SERIE%20HISTORICA%20IPC_10_2015.xls`, retrieved 14 November 2015.
[11] To adjust prices from 2005/6 to 2013/14, INEC's factor of 49.0 percent is used.

For example, the $1.25/day 2005 PPP line in rural Costa in 2013/14 is the all-Ecuador $1.25/day line in 2013/14 of USD0.964 (Table 1), multiplied by the national line in rural Costa in 2013/14 of USD2.78 (Table 2), and divided by the average all-Ecuador national line in 2013/14 of USD2.77 (Table 1). This gives a $1.25/day line in rural Costa in 2013/14 of 0.964 x 2.78 ÷ 2.77 = USD0.97 (Table 2).

The World Bank's PovcalNet[12] reports person-level poverty rates for the $1.25/day line in 2005/6 and 2013/14 of 6.3 and 1.8 percent. These are higher than the 3.8 and 1.1 percent in Table 1 here. The $1.25/day estimates here are to be preferred because PovcalNet does not use the ECV but rather INEC's annual Survey of Employment, Unemployment, and Underemployment (*Encuesta de Empleo, Desempleo y Subempleo*, EEDS). From the point of view of poverty measurement, the EEDS measure of income is inferior to the ECV measure of consumption. Furthermore, PovCalNet does not report:

- Its poverty lines in USD
- The time/place of its price units
- Whether/how it adjusts for regional differences in prices
- How it adjusts 2005 PPP factors over time

[12] `iresearch.worldbank.org/PovcalNet/index.htm`, retrieved 9 November 2015.

USAID microenterprise partners in Ecuador who use the scorecard to report the number of their participants who are "very poor" should use the line that marks the poorest half of people below 100% of the national poverty line. This is because USAID defines the "very poor" as those people in households whose daily per-capita consumption is below the highest of the following two poverty lines:

- The line that marks the poorest half of people below 100% of the national line (USD2.12 in 2013/14, with a person-level poverty rate of 12.9 percent, Table 1)
- $1.25/day 2005 PPP (BOL0.96 in 2013/14, with a person-level poverty rate of 1.1 percent)

3. Scorecard construction

For Ecuador, about 100 candidate indicators are initially prepared in the areas of:

- Household composition (such as the number of members)
- Education (such as the literacy of the female head/spouse)
- Housing (such as the type of floor)
- Ownership of durable assets (such as irons or color televisions)
- Employment (such as whether the male head/spouse works)

Table 4 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.[13]

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

The scorecard itself is built using 100% of the national poverty line and Logit regression on the 2013/14 construction sub-sample. Indicator selection uses both judgment and statistics. The first step is to use Logit to build one scorecard for each candidate indicator. Each scorecard's power to rank households by poverty status is measured as "c" (SAS Institute Inc., 2004).

[13] The uncertainty coefficient is not used to help select scorecard indicators; it is just a way to order the candidate indicators listed in Table 4.

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

A series of two-indicator scorecards are then built, each adding a second indicator to the one-indicator scorecard selected from the first round. The best two-indicator scorecard is then selected, again using judgment to balance "c" with the non-statistical criteria. These steps are repeated until the scorecard has 10 indicators that work well together.[14]

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).

[14] For Ecuador, indicator selection was also informed by feedback from a field test by VisionFund/Ecuador with support from Vision Fund International.

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[15] and non-statistical criteria. The use of non-statistical criteria can improve robustness through time and helps ensure that indicators are simple, sensible, and acceptable to users.

The single scorecard here applies to all of Ecuador. Tests for 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) suggest that segmenting scorecards by urban/rural does not improve targeting accuracy much. In general, segmentation may improve the accuracy of estimates of poverty rates (Diamond *et al.*, 2016; Tarozzi and Deaton, 2007), but it may also increase the risk of overfitting (Haslett, 2012).

[15] The statistical criterion for selecting an indicator is not the p values of its coefficients but rather the indicator's contribution to the ranking of households by poverty status.

4. Practical guidelines for scorecard use

The main challenge of scorecard design is not to maximize statistical accuracy but rather to improve the chances that the scorecard is actually used (Schreiner, 2005b). When scoring projects fail, the reason is not usually statistical inaccuracy but rather the failure of an organization to decide to do what is needed to integrate scoring in its processes and to 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 simplicity, ease-of-use, and "face validity". Programs are more likely to collect data, compute scores, and pay attention to the results if, in their view, scoring does not imply a lot of additional work and if the whole process generally seems to them to make sense.

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

- Only 10 indicators
- Only "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 Ecuador's new 2013/14 scorecard would:

- Record the interview identifier, interview date, county code ("ECU"), scorecard code ("002") and the sampling weight assigned by the survey design to the household of the participant
- Record the names and unique identifiers of the participant (who may not be the same as the respondent), field agent, and relevant organizational service point
- Complete the back-page worksheet with each household member's first name, age, and—for household members 12-years-old or older—whether the member has an activated cellular telephone
- Record household size in the scorecard header next to "Number of household members:"
- Record the response to the first scorecard indicator based on the number of household members listed on the back-page worksheet
- Record the response to the second scorecard indicator based on the number of household members who are 12-years-old or older and who have an activated cellular telephone, as recorded on the back-page worksheet
- Read each of the remaining eight questions one-by-one from the scorecard, drawing a circle around the relevant responses and their points, and writing each point value in the far right-hand column
- Add up the points to get a total score. If the sum of the points is 100 or more, then the score is capped at 100
- Implement targeting policy (if any)
- Deliver the paper scorecard to a central office for data entry and filing

Of course, field workers must be trained. The quality of outputs depends on the quality of inputs. If organizations or field workers gather their own data and believe that they have an incentive to exaggerate poverty rates (for example, if 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).[16] IRIS Center (2007a) and Toohig (2008) are useful nuts-and-bolts guides for budgeting, training field workers and supervisors, logistics, sampling, interviewing, piloting, recording data, and controlling quality.

In particular, while collecting scorecard indicators is relatively easier than alternative ways of measuring poverty, it is still absolutely difficult. Training and explicit definitions of terms and concepts in the scorecard are essential, and field workers should scrupulously study and follow the "Guidelines for the Interpretation of Indicators" found at the end of this paper, as the "Guidelines"—along with the "Back-page Worksheet"—are integral parts of the Simple Poverty Scorecard tool.[17]

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 simple as whether the household owns an automobile. At the same time, Grosh and Baker (1995) suggest that gross under-reporting of assets does not affect

[16] If a program does not want field workers and respondents to know the points associated with responses, then it can use 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, field workers and respondents can apply 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.

[17] 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 Ecuador's INEC does in the ECV.

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 local, pro-poor organizations who use scoring for targeting in Ecuador.

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

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

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

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

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
- A representative sample of relevant participants in a representative sample of relevant field offices

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 not be on having a sample size large enough to achieve some arbitrary level of statistical significance but rather on having a representative sample from a well-defined population.

The frequency of application can be:

- As a once-off project (precluding measuring change)
- Every two 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 change 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 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 household poverty likelihoods

The sum of scorecard points for a household is called the *score*. For Ecuador, 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 must be converted to *poverty likelihoods*, that is, probabilities of being below a poverty line. This is done via simple look-up tables. For the example of 100% of the national line, scores of 35–39 correspond with a poverty likelihood of 50.0 percent, and scores of 40–44 correspond with a poverty likelihood of 36.6 percent (Table 5).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 35–39 are associated with a poverty likelihood of 50.0 percent for 100% of the national line but of 0.4 percent for the $1.25/day line.[18]

[18] Starting with Table 5, many tables have 10 versions, one for each poverty line. To keep them straight, tables are grouped by line. Tables pertaining to all lines are placed with the 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 consumption below a given poverty line.

For the example of 100% of the national line (Table 6), there are 5,717 (normalized) households in the 2013/14 calibration sub-sample with a score of 35–39. Of these, 2,860 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 35–39 is then 50.0 percent, because 2,860 ÷ 5,717 = 50.0 percent.

To illustrate with 100% of the national line and a score of 40–44, there are 7,153 (normalized) households in the 2013/14 calibration sample, of whom 2,617 (normalized) are below the line (Table 6). The poverty likelihood for this score range is then 2,617 ÷ 7,153 = 36.6 percent.

The same method is used to calibrate scores with estimated poverty likelihoods for all 10 poverty lines.[19]

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

[19] 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.

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 this objectivity depends on using data in score calibration, not on using data (and nothing else) in scorecard construction.

Although the points in the Ecuador 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. 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.[20]

Of course, the relationships between indicators and poverty do change to some unknown extent over time and also across sub-national groups in Ecuador's population. Thus, the scorecard will generally be biased when applied after October 2014 (the last month of fieldwork in the 2013/14 ECV) or when applied with sub-groups that are not nationally representative.

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

How accurate are estimates of households' poverty likelihoods, given the assumption of unchanging relationships between indicators and poverty over time and the assumption of a sample that is representative of Ecuador as a whole? To find out, the scorecard is applied to 1,000 bootstrap samples of size $n = 16{,}384$ from the 2013/14 validation sample. Bootstrapping means to:

- Score each household in the 2013/14 validation sample
- Draw a bootstrap sample *with replacement* from the 2013/14 validation sample
- For each score, compute the true poverty likelihood in the bootstrap sample, that is, the share of households with the score and with consumption below a poverty line
- For each score, record the difference between the estimated poverty likelihood (Table 5) and the true poverty likelihood in the bootstrap sample
- Repeat the previous three steps 1,000 times
- For each score, report the average difference between estimated and true poverty likelihoods across the 1,000 bootstrap samples
- For each score, report the two-sided intervals containing the central 900, 950, and 990 differences between estimated and true poverty likelihoods

For each score range and for $n = 16{,}384$, Table 7 shows the average difference between estimated and true poverty likelihoods as well as confidence intervals for the differences.

For the example of 100% of the national line, the average poverty likelihood across bootstrap samples for scores of 35–39 in the 2013/14 validation sample is too high by 3.8 percentage points. For scores of 40–44, the estimate is too high by 4.3 percentage points.[21]

[21] These differences are not zero, despite the estimator's unbiasedness, because the scorecard comes from a single sample from the 2013/14 ECV. The average difference by score range would be zero if the ECV was repeatedly applied to samples of the

The 90-percent confidence interval for the differences for scores of 35–39 is ±3.0 percentage points (100% of the national line, Table 7). This means that in 900 of 1,000 bootstraps, the difference between the estimate and the true value is between +0.8 and +6.8 percentage points (because +3.8 – 3.0 = +0.8, and +3.8 + 3.0 = +6.8). In 950 of 1,000 bootstraps (95 percent), the difference is +3.8 ± 3.5 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is +3.8 ± 4.6 percentage points.

A few differences between estimated poverty likelihoods and true values in Table 7 are large, and all the differences are non-negative. 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 Ecuador's population. For targeting, however, what matters is less the difference in all score ranges and more the differences accumulated across the score ranges above and below the targeting cut-off. This mitigates the effects of bias and sampling variation on targeting (Friedman, 1997). Section 8 below looks at targeting accuracy in detail.

In addition, if estimates of groups' poverty rates are to be usefully accurate, then errors for individual households' poverty likelihoods must largely balance out. As discussed in the next section, this is generally the case for nationally representative samples, although it holds less well for sub-national groups.

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population of Ecuador and then split into sub-samples before repeating the entire process of scorecard construction/calibration and validation.

Another possible source of differences between estimates and true values is overfitting. The scorecard here is unbiased, but it may still be *overfit* when applied after the end of the ECV fieldwork in October 2014. That is, the scorecard may fit the data from the 2013/14 ECV 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 2013/14 ECV but not in the overall population of Ecuador. 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 groups' poverty rates for nationally representative samples (see the next two sections). Furthermore, at least some of the differences in change-through-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 cost-of-living 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 group's poverty rate at a point in time

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

To illustrate, suppose an organization samples three households on 1 January 2016 and that they have scores of 20, 30, and 40, corresponding to poverty likelihoods of 84.7, 64.1, and 36.6 percent (100% of the national line, Table 5). The group's estimated poverty rate is the households' average poverty likelihood of (84.7 + 64.1 + 36.6) ÷ 3 = 61.8 percent.

Be careful; the group's poverty rate is *not* the poverty likelihood associated with the average score. Here, the average score is 30, which corresponds to a poverty likelihood of 64.1 percent. This differs from the 61.8 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 nor 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 targeting. The safest rule to follow is: Always use poverty likelihoods, never scores.

Scores from the new 2013/14 scorecard are calibrated with data from the 2013/14 ECV for all 10 poverty lines. The process of calibrating scores to poverty likelihoods and the approach to estimating poverty rates is exactly the same for all

lines, regardless of their definition. For users, the only difference is in the specific look-up table used to convert scores to poverty likelihoods.

Existing users of the old 2005/6 scorecard can switch to the new 2013/14 scorecard and still salvage existing poverty-rate estimates for measuring change over time by using supported poverty lines to estimate poverty rates for use in estimates of change with a baseline from the old 2005/6 scorecard and a follow-up from the new 2013/14 scorecard.

6.1 Accuracy of estimated poverty rates at a point in time

For the new 2013/14 scorecard applied to 1,000 bootstraps of $n = 16{,}384$ from the 2013/14 validation sample and 100% of the national poverty line, the average difference between the estimated poverty rate at a point in time versus the true rate is +1.4 percentage points (Table 9, summarizing Table 8 across all poverty lines). Across all 10 poverty lines in the 2013/14 validation sample, the maximum absolute difference is 4.1 percentage points, and the average absolute difference is about 1.6 percentage points. At least part of these differences is due to sampling variation in the division of the 2013/14 ECV into two sub-samples.

When estimating poverty rates at a point in time for a given poverty line, the average error reported in Table 9 should be subtracted from the average poverty likelihood to give a corrected estimate. For the example of the new 2013/14 scorecard and 100% of the national line in the 2013/14 validation sample, the error is +1.4

percentage points, so the corrected estimate in the three-household example above is 61.8 – (+1.4) = 60.4 percent.

In terms of precision, the 90-percent confidence interval for a group's estimated poverty rate at a point in time with n = 16,384 is ±0.6 percentage points or better for all poverty lines (Table 9). This means that in 900 of 1,000 bootstraps of this size, the estimate (after correcting for the known average error) is within 0.6 percentage points of the true value.

For example, suppose that the (uncorrected) average poverty likelihood in a sample of n = 16,384 with the Ecuador scorecard and 100% of the national line is 61.8 percent. Then corrected estimates in 90 percent of such samples would be expected to fall in the range of 61.8 – (+1.4) – 0.3 = 60.1 percent to 61.8 – (+1.4) + 0.3 = 60.7 percent, with the most likely true value being the corrected estimate in the middle of this range, that is, 61.8 – (+1.4) = 60.4 percent. This is because the original (uncorrected) estimate is 61.8 percent, the average error to be corrected is +1.4 percentage points, and the 90-percent confidence interval for 100% of the national line in the 2013/14 validation sample with this sample size is ±0.3 percentage points (Table 9).

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 average difference vis-à-vis true values (*error*), together with their standard error (*precision*).

Schreiner (2008b) proposes an approach to deriving a formula for the standard errors of estimated poverty rates at a point in time from indirect measurement via scorecards. 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 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, Ecuador's 2013/14 ECV gives a direct-measurement estimate of the household-level poverty rate for 100% of the national line in the 2013/14 validation sample of $\hat{p} = 19.2$ percent (Table 1). If this estimate came from a sample of $n =$ 16,384 households from a population N of 4,282,825 (the number of households in Ecuador in 2013/14 according to the ECV sampling weights), then the finite population correction ϕ is $\sqrt{\frac{4{,}282{,}825 - 16{,}384}{4{,}282{,}825 - 1}} = 0.9981$, which very close to $\phi = 1$. If the desired confidence level is 90-percent ($z = 1.64$), then the confidence interval $\pm c$ is

$$\pm\, z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.192 \cdot (1 - 0.192)}{16{,}384}} \cdot \sqrt{\frac{4{,}282{,}825 - 16{,}384}{4{,}282{,}825 - 1}} = \pm 0.504$$

percentage points. (If ϕ were taken as 1, then the interval is ± 0.505 percentage points.)

Scorecards, however, do not measure poverty directly, so this formula is not applicable. To derive a formula for Ecuador's new 2013/14 scorecard, consider Table 8, which reports empirical confidence intervals $\pm c$ for the differences for the scorecard applied to 1,000 bootstraps of various sizes from the 2013/14 validation sample. For example, with $n = 16{,}384$ and 100% of the national line in the 2013/14 validation sample, the 90-percent confidence interval is ± 0.297 percentage points.[22]

Thus, the 90-percent confidence interval with $n = 16{,}384$ is ± 0.297 percentage points for the Ecuador scorecard and ± 0.504 percentage points for direct measurement. The ratio of the two intervals is $0.297 \div 0.504 = 0.59$.

[22] Due to rounding, Table 8 displays 0.3, not 0.297.

Now consider the same exercise, but with $n = 8{,}192$. The confidence interval under direct measurement and 100% of the national line in the 2013/14 validation sample is $\pm 1.64 \cdot \sqrt{\frac{0.192 \cdot (1 - 0.192)}{8{,}192}} \cdot \sqrt{\frac{4{,}282{,}825 - 8{,}192}{4{,}282{,}825 - 1}} = \pm 0.713$ percentage points. The empirical confidence interval with Ecuador's scorecard (Table 8) is ±0.461 percentage points. Thus for $n = 8{,}192$, the ratio of the two intervals is $0.461 \div 0.713 = 0.65$.

This ratio of 0.65 for $n = 8{,}192$ is not too far from the ratio of 0.59 for $n = 16{,}384$. Across all sample sizes of 256 or more in Table 8, these ratios are generally close to each other, and their average in the 2013/14 validation sample turns out to be 0.59, implying that confidence intervals for indirect estimates of poverty rates via Ecuador's scorecard and 100% of the national poverty line are—for a given sample size—about 40-percent narrower than confidence intervals for direct estimates via the 2013/14 ECV. This 0.59 appears in Table 9 as the "α factor for precision" because if $\alpha = 0.59$, then the formula for confidence intervals c for Ecuador's scorecard is $\pm c = \pm z \cdot \alpha \cdot \sigma$. That is, the formula for the standard error σ for point-in-time estimates of poverty rates via scoring is $\alpha \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}}$.

In general, α can be more or less than 1.00. When α is less than 1.00, it means that the scorecard is more precise than direct measurement. It turns out that α is less than 1.00 for nine of 10 poverty lines in Table 9.

The formula relating confidence intervals with standard errors for poverty scoring can be rearranged to give a formula for determining sample size before measurement. If $\tilde{p}$ 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

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

To illustrate how to use this, suppose the population N is 4,282,825 (the number of households in Ecuador in 2013/14), suppose $c = 0.02396$, $z = 1.64$ (90-percent confidence), and the relevant poverty line is 100% of the national line so that the most sensible expected poverty rate $\tilde{p}$ is Ecuador's overall poverty rate for that line in 2013/14 (19.2 percent at the household level, Table 1). The α factor is 0.59 (Table 9). Then the sample-size formula gives

$$n = 4{,}282{,}825 \cdot \left(\frac{1.64^2 \cdot 0.59^2 \cdot 0.192 \cdot (1 - 0.192)}{1.64^2 \cdot 0.59^2 \cdot 0.192 \cdot (1 - 0.192) + 0.02396^2 \cdot (4{,}282{,}825 - 1)} \right) = 253,$$

which almost the same as the sample size of 256 observed for these parameters in Table

8 for 100% of the national line. Taking the finite population correction factor ϕ as one (1) gives the same result, as $n = \left(\frac{0.59 \cdot 1.64}{0.02396}\right)^2 \cdot 0.192 \cdot (1 - 0.192) = 253$.[23]

Of course, the α factors in Table 9 are specific to Ecuador, its poverty lines, its poverty rates, and its scorecard. The derivation of the formulas for standard errors using the α factors, however, is valid for any poverty-measurement tool following the approach in this paper.

In practice after the end of fieldwork for the ECV in October 2014, 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 Ecuador of 19.2 percent in the 2013/14 ECV in Table 1), look up α (here, 0.59 in Table 9), assume that the scorecard will still work in the future and for sub-groups that are

[23] 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 microenterprise partners in Ecuador should report using the line marking the poorest half of people below 100% of the national line. Given the α factor of 0.60 for this line in 2013/14 (Table 9), an expected before-measurement household-level poverty rate of 8.7 percent (the all-Ecuador rate in 2013/14, Table 1), and a confidence level of 90 percent ($z = 1.64$), then $n = 300$ implies a confidence interval of $\pm 1.64 \cdot 0.60 \cdot \sqrt{\frac{0.087 \cdot (1 - 0.087)}{300}} = \pm 1.6$ percentage points.

not nationally representative,[24] and then compute the required sample size. In this illustration, $n = 10{,}000 \cdot \left(\frac{1.64^2 \cdot 0.59^2 \cdot 0.192 \cdot (1 - 0.192)}{1.64^2 \cdot 0.59^2 \cdot 0.192 \cdot (1 - 0.192) + 0.02^2 \cdot (10{,}000 - 1)} \right) = 351.$

[24] This paper reports accuracy for the scorecard applied to its validation sample, but it cannot test accuracy for later years or for sub-groups. Performance after October 2014 will resemble that in the 2013/14 ECV with deterioration over time 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 group's poverty rate between two points in time is estimated as the change in the average poverty likelihood of the households in the group.

Unfortunately, it is not possible to test the accuracy of estimates of change over time for Ecuador by applying the new 2013/14 scorecard with data from the 2005/6 and 2013/14 ECV because six of the ten scorecard indicators are not in the 2005/6 ECV or are worded differently there. Thus, this paper can only suggest approximate formulas for standard errors. Nonetheless, the relevant concepts are presented here because, in practice, pro-poor organizations in Ecuador can apply the scorecard to collect their own data and measure change through time.

7.1 Warning: Change is not necessarily impact

Scoring can estimate change. Of course, poverty could get better or worse, and scoring does not indicate what caused change. This point is often forgotten or confused, so it bears repeating: The scorecard only estimates change, and it does not, in and of itself, indicate the reason for the 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, poverty scoring 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 poverty scoring.

7.2 Estimating changes in poverty rates over time

Consider the illustration begun in the previous section. On 1 January 2016, an organization samples three households who score 20, 30, and 40 and so have poverty likelihoods of 84.7, 64.1, and 36.6 percent (100% of the national line, Table 5). Correcting for the known average error in the 2013/14 validation sample of +1.4 percentage points (Table 9), the group's corrected baseline estimated poverty rate is the households' average poverty likelihood of [(84.7 + 64.1 + 36.6) ÷ 3] – (+1.4) = 60.4 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 two years later on 1 January 2018, 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 74.2, 50.0, and 24.6 percent, 100% of the national line, Table 5). Adjusting for the known average error, the average poverty likelihood at follow-up is [(74.2 + 50.0 + 24.6) ÷ 3] – (+1.4) = 48.2 percent, an improvement of 60.4 – 48.2 =

12.2 percentage points.[25] Supposing that exactly two years passed between the average baseline interview and the average follow-up interview, the estimated annual decrease in poverty is 12.2 ÷ 2 = 6.1 percentage points per year. About one in eight participants in this hypothetical example cross the poverty line in 2016/8.[26] Among those who start below the line, about one in five (12.2 ÷ 60.4 = 20.2 percent) on net end up above the line.[27]

Alternatively, suppose that the three original households who were scored at baseline are scored again on 1 January 2018. Given scores of 25, 35, and 45, their follow-up poverty likelihoods are 74.2, 50.0, and 24.6 percent. The average across households of the difference in each given household's baseline poverty likelihood and its follow-up poverty likelihood is (again) [(84.7 – 74.2) + (64.1 – 50.0) + (36.6 – 24.6)] ÷ 3 = 12.2 percentage points. Assuming in this example that there are exactly two years between each household's interviews, the estimated annual decrease in poverty is (again) 12.2 ÷ 2 = 6.1 percentage points per year.

Both approaches to estimating change through time are unbiased. In general (and unlike in the simple hypothetical example here), however, they will give different estimates due to differences in the timing of interviews, in the composition of the

[25] Of course, such a huge reduction in poverty in two years is highly unlikely, but this is just an example to show how the scorecard can be used to estimate change.
[26] This is a net figure; some start above the line and end below it, and vice versa.
[27] The scorecard does not reveal the reasons for this change.

samples, and in the nature of two samples being scored once versus one sample being scored twice (Schreiner, 2015a).

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 scorecard's estimate of the change in poverty rates over time:

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

Here, z, c, $\hat{p}$ and N are defined as above, n is the sample size at both baseline and follow-up,[28] 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 size before indirect measurement via a scorecard, where $\tilde{p}$ is based on previous measurements and is assumed equal at both baseline and follow-up:

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

[28] 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 measurements (not twice as many) as does estimating a poverty rate at a point in time.

This α has been measured for 12 countries (Schreiner, 2015b, 2015c, 2015d, 2015e, 2013a, 2013b, 2012c, 2010, 2009a, 2009b, 2009c; and Chen and Schreiner, 2009). The simple average of α across countries—after averaging α across poverty lines and survey years within each country—is 1.02. This rough figure is as reasonable as any to use for Ecuador.

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, $\alpha = 1.02$, $\hat{p} = 0.192$ (the household-level poverty rate in 2013/14 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. Then the baseline sample size is $n = 2 \cdot \left(\frac{1.02 \cdot 1.64}{0.02} \right)^2 \cdot 0.192 \cdot (1 - 0.192) \cdot 1 = 2{,}171$, and the follow-up sample size is also 2,171.

7.4 Precision for estimated change for one sample, scored twice

Analogous to previous derivations, the general formula relating the confidence interval $\pm c$ to the standard error σ when using a scorecard to estimate change for a single group of households, all of whom are scored at two points in time, is:[29]

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

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.

Because the ECV data for Ecuador does not cover the same households in more than one round (except by pure chance, and even then, there is no way to identify such households), 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 simple assumption is that the change in the poverty rate will be zero, which implies $\tilde{p}_{12} = \tilde{p}_{21} = \tilde{p}_{*}$, giving:

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

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

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

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

Given this, a sample-size formula for a group of households to whom Ecuador's new 2013/14 scorecard is applied twice (once after October 2014 and then again later) is

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

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

To illustrate the use of this formula, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is ±2.0 percentage points ($\pm c = \pm 0.02$), the poverty line is 100% of the national line, the sample will first be scored in 2016 and then again in 2019 ($y = 3$), 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. The pre-baseline poverty rate p_{2016} is taken as 19.2 percent (Table 1), and α is assumed to be 1.30. Then the baseline sample size is

$n = 2 \cdot \left(\frac{1.30 \cdot 1.64}{0.02}\right)^2 \cdot \{-0.02 + 0.016 \cdot 3 + 0.47 \cdot [0.192 \cdot (1 - 0.192)]\} \cdot 1 = 2{,}294$. The same group of 2,294 households is scored at follow-up as well.

8. Targeting

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

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

Households who score at or below a given cut-off should be labeled as *targeted*,[30] 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 scoring, the terms *poor* and *non-poor* have specific definitions. Using these same terms for targeting status is incorrect and misleading.

[30] A label is acceptable as long as it describes the segment and does 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 scoring 29 or less, 30 to 69, or 70 or more*; and *Households who qualify for reduced fees, or do not qualify for reduced fees*.

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

Table 10 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 11 shows the distribution of households by targeting outcome for Ecuador. For an example cut-off of 39 or less, outcomes for 100% of the national line in the 2013/14 validation sample are:

- Inclusion: 12.0 percent are below the line and correctly targeted
- Undercoverage: 7.2 percent are below the line and mistakenly not targeted
- Leakage: 5.7 percent are above the line and mistakenly targeted
- Exclusion: 75.1 percent are above the line and correctly not targeted

Increasing the cut-off to 44 or less improves inclusion and undercoverage but worsens leakage and exclusion:

- Inclusion: 14.8 percent are below the line and correctly targeted
- Undercoverage: 4.4 percent are below the line and mistakenly not targeted
- Leakage: 10.1 percent are above the line and mistakenly targeted
- Exclusion: 70.7 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 11 for a given poverty line
- Select the cut-off with the highest total net benefit

The most difficult step is assigning benefits and costs to targeting outcomes. A program that uses targeting—with or without scoring—should thoughtfully consider how it values successful inclusion 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 11 shows the hit rate for all cut-offs for the new 2013/14 scorecard for Ecuador. For 100% of the national line in the 2013/14 validation sample, total net benefit—when defined by the hit rate—is greatest (87.1) for a cut-off of 39 or less or of 34 or less, with about eight in nine households in Ecuador 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).[31]

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 12 ("% targeted HHs who are poor") shows, for Ecuador's new 2013/14 scorecard applied to the 2013/14 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 2013/14 validation sample who score 39 or less would target 17.7 percent of all households (second column) and would be associated with a poverty rate among those targeted of 67.8 percent (third column).

[31] Table 11 also reports BPAC, the Balanced Poverty Accuracy Criteria adopted by USAID for certifying poverty-assessment tools. It is discussed in Section 9.

Table 12 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 2013/14 validation sample and a cut-off of 39 or less, 62.5 percent of all poor households are targeted.

The final targeting measure in Table 12 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 2013/14 validation sample and a cut-off of 39 or less, covering 2.1 poor households means leaking to 1 non-poor household.

9. Context for poverty-measurement tools in Ecuador

This section discusses USAID's poverty-assessment tool for Ecuador as well as a number of poverty maps (a type of poverty-measurement tool) in terms of their goals, methods, definitions of *poverty*, data, indicators, bias, precision, targeting accuracy and cost. In general, the advantages of the scorecard are its:

- Use of data from the most recent available nationally representative consumption survey
- Fewer and lower-cost indicators
- Use of a consumption-based definition of *poverty* that is widely understood and that is used by government of Ecuador
- Reporting errors and precision for estimates of poverty rates at a point in time from out-of-sample tests, including simple formulas for standard errors
- Targeting accuracy that is similar to that of alternative approaches
- Feasibility for local, pro-poor programs, due to its simplicity and transparency

9.1 Poverty mapping

Ecuador is the birthplace of "poverty mapping" (Araujo, 2007; Snel and Henninger, 2002). Several papers—mostly by World Bank researchers—develop the approach using data from Ecuador's 1994 ECV and 1990 Census:

- Hentschel *et al.*, 2000
- Elbers, Lanjouw, and Lanjouw, 2000
- Elbers, Lanjouw, and Lanjouw, 2003
- Demombynes *et al.*, 2004
- World Bank, 2004 (which also uses the 1999 ECV and the 2001 Census)
- Elbers *et al.*, 2005
- Calero León *et al.* 2008 (which uses only the 2005/6 ECV and the 2001 Census)

Poverty maps are made from poverty-assessment tools based on indicators matched across a national consumption survey (in Ecuador, the 1994 ECV with about 4,500 households) and a census (in Ecuador, the 1999 Census with about 2 million households). Poverty mapping then applies the tools to census data to estimate measures of well-being (for example, poverty rates) for smaller regions than would be possible with only data from the national consumption survey. The estimates are summarized in maps that show how measures of well-being vary across regions in a way that makes sense to non-specialists.

Poverty mapping has much in common with poverty scoring. They both:

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

Strengths of poverty mapping include that it:

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

Strengths of poverty scoring include that it:

- Is simpler in terms of both construction and application
- Tests accuracy *out-of-sample* (that is, with data not used in scorecard construction)
- Associates poverty likelihoods with scores non-parametrically
- Reduces overfitting by selecting indicators with statistical and non-statistical criteria and by having only a single, all-Ecuador scorecard[32]
- Surfaces estimates of poverty likelihoods for individual households
- Reports standard errors (and straightforward formulas for standard errors)
- Reports prediction errors

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

In terms of goals, the two approaches differ in that poverty mapping seeks to help governments to target pro-poor policies to poor regions, while poverty scoring seeks to help local, pro-poor organizations to manage their social performance. These different goals lead directly to their differences in cost, complexity, and transparency.

In terms of the technical approach, poverty maps estimate consumption, while scorecards estimate poverty likelihood. Poverty maps—unlike poverty scoring—report standard errors that account for survey design and for uncertainty in a tool's point values.

In terms of targeting, poverty scoring supports household-level targeting as a legitimate, potentially useful application, while the poverty-assessment tools behind poverty maps are said by their developers to be too inaccurate for targeting individual households.

The sub-sections below provide details on a couple of example poverty maps for Ecuador, discuss their prediction errors, their standard errors, and their targeting accuracy, and what poverty mapping implies for poverty scoring.

9.1.1 Hentschel *et al.*

Hentschel *et al.* (2000) is the earliest well-known poverty map for Ecuador. They say (p. 147) that "poverty maps . . . are an important tool for policy makers, who rely on them to allocate transfers and to inform policy design." They construct poverty-assessment tools with ordinary least-squares on data from the 1994 ECV to relate indicators that are in both the ECV and the 1990 Census with the logarithm of per-

capita consumption, building one tool for each of the 1994 ECV's eight regional strata.[33] The tools' indicators and points are not reported.

Rather than assigning a poverty likelihood of either 100 or 0 percent according to whether a household's estimated consumption is below a poverty line, Hentschel *et al.* convert estimates of consumption into poverty likelihoods that range between 0 and 100 percent.

Hentschel *et al.* apply their tools to census data to estimate poverty rates at the level of Ecuador's *cantones* (one level below provinces) and *parroquías* (one level below *cantones*).

9.1.2 Calero León *et al.*

Calero León *et al.* (2008) is the most-recent poverty map for Ecuador. It is based on the 2005/6 ECV (rather than the 2004 ECV) and the 2001 Census (rather than the 1990 Census). "The goal is to produce a tool that ranks small regions so as to better target social spending" (p. 28).

Like earlier poverty maps, Calero León *et al.* estimate poverty rates for provinces, *cantones*, and *parroquías*. They make poverty-assessment tools for each of the 20 regional strata in the 2005/6 ECV, using indicators matched to those in the 2001 Census. They also include some *parroquía*-level indicators derived from Census averages or from other geo-referenced databases. The region-specific tools and *parroquía*-level

[33] Metropolitan Quito, metropolitan Guayaquil, urban Litoral, rural Litoral, urban Sierra, rural Sierra, urban Amazonia, and rural Amazonia.

indicators are remedies prescribed by Elbers, Lanjouw, and Leite (2008) to reduce the prediction error that Tarozzi and Deaton (2007) and Diamond *et al.* (2016) warn against.

Calero León *et al.* report indicators and points for their 20 tools. As an example, the tool for Guayaquil has 36 indicators:

- Demographics:
  - Number of household members ages:
    - 5 or younger
    - 6 to 14
    - 15 to 24
    - 24 to 64
  - Dependency ratio (number of household members 14-years-old or younger and 65-years-old or older, divided by the number of members ages 15 to 64)
- Education:
  - Number of female household members ages 15 or older who are illiterate
  - Percentage of household members who have completed primary school
  - Percentage of household members who have completed secondary school
  - Percentage of household members who have completed primary school but who have not completed secondary school (and its square)
  - Whether the household head has a college degree
  - Number of household members with a college degree, excluding the head and his/her spouse
- Employment:
  - Hours worked per week by the spouse of the household head (squared)
  - Number of working-age household members who are unemployed
  - Whether the household head owns or co-owns a business
  - Whether the household head works in the service sector

- Characteristics of the residence:
  - Number of bedrooms (squared)
  - An index (and its square) comprising:
    - Type of structure
    - Presence of electrical connection
    - Presence of a land-line telephone
    - Type of floor
    - Type of wall
    - Type of roof
    - Source of drinking water
    - Connection to sanitary sewer
    - Method of disposal of trash
- Indicators at the level of the *parroquía*:
  - Average number of children born to women ages 35 to 49
  - Share of household heads who have not completed primary school
  - Share of household heads who speak only Spanish
  - Share of spouses of household heads who own or co-own a business
  - Share of spouses of household heads who work in the manufacturing sector
  - Average number of household members ages 7 to 17 who do not go to school
  - Average share of household members ages 12 to 17 who go to school
  - Share of residences that are pre-fabricated
  - Share of residences with floors of finished wood
  - Share of residences with "other" roofs
  - Share of households that cook with firewood or charcoal

While all these indicators are feasible to collect (and are collected in the Census), local, pro-poor organizations cannot apply poverty-map tools with their participants because finding the index involves ratios, squares, a housing index (whose formula is not reported), and knowledge of a number of *parroquía*-specific averages from the Census.

9.1.3 Prediction error

The accuracy of poverty maps versus poverty scoring can be compared in terms of absolute prediction error (the absolute difference between estimated poverty rates vis-à-vis "true" rates in the ECV). While both approaches report out-of-sample tests, the comparison here is imperfect because the tools are applied with different rounds of the ECV. Also, poverty maps use eight to 20 stratum-specific tools while there is a single all-Ecuador scorecard.

Average absolute errors (in percentage points) across the ECV survey strata reported for poverty maps are:[34]

- Hentschel *et al.*, 2000: 5.8
- Demombynes *et al.*, 2004: 4.2
- World Bank, 2004: 4.4
- Elbers *et al.*, 2005: 4.3
- Calero León *et al.*, 2008: 3.3

The average of the average absolute error across these five poverty maps is 4.4 percentage points.

For comparison, the average absolute error when applying the old 2005/6 scorecard in Schreiner (2008a)[35] out-of-sample to the 2005/6 validation sample in the same 15 provinces in Calero León *et al.* is 4.1 percentage points.[36]

[34] Calero León *et al.* report errors for 15 provinces based on the 2005/6 ECV and 2001 Census. World Bank reports errors for eight strata for two maps, the first with the 1994 ECV and 1990 Census and the second with the 1999 ECV and 2001 Census. Here, the figures for the two maps are averaged. The other three maps report errors for eight strata with the 1994 ECV and 1990 Census. Poverty mapping was refined over time, so errors differ across maps even when they use the same data.

Thus, prediction errors for the scorecard are about the same as those of poverty maps at the level of Ecuador's regions and provinces. Of course, the poverty maps should be more accurate at the levels of *cantones* and *parroquías*.

9.1.4 Benchmarks for prediction error

Is this prediction error "big" or "small"? Hentschel *et al.*—with an average absolute error of 5.8 percentage points—conclude that "in general, poverty rates in the ECV are reasonably close to . . . those [estimated] from the census" (p. 157). Demombynes *et al.* (2004)—with an average absolute error of 4.2 percentage points—say that their estimates are "plausible in that they match well with stratum-level estimates calculated directly from the [ECV]." Finally, Elbers *et al.* (2005, p. 12)—with an average absolute error of 4.3 percentage points—exclaim, "It is striking how closely the point estimates match."

These authors, however, do not establish a benchmark by which prediction error might be judged as *reasonably close*, *plausible*, or *striking*. Just as these three papers can label errors between 4 and 6 percentage points as reservedly as "plausible" and as enthusiastically as "striking", someone else could label them—with the same (lack of) scientific force—as "unacceptably large".

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[35] Sub-national errors have not been computed for the new 2013/14 scorecard.

[36] When applied to all 21 provinces in the 2005/6 ECV (the survey excludes Galápagos, and Santa Elena and Santo Domingo de los Tsáchilas did not exist as provinces until 2007), the scorecard's average absolute error is 4.0 percentage points.

While smaller errors are better than larger errors, the question of whether a given level of error is acceptable depends on how the estimate is used. Without a context and objective, there is no scientific—that is, transparent and open to improvement—way to determine whether a given level of error is generally "good enough" (McCloskey and Ziliak, 1996; McCloskey, 1985).

9.1.5 Standard errors

Standard errors indicate precision as the spread of estimates' distribution in repeated samples. For indirect estimates of poverty rates by poverty-measurement tools, precision is summarized by the α factor (the ratio of standard errors with the tool versus with direct measurement). Finding α for comparing precision between poverty scoring (Table 9) and poverty mapping is possible for poverty maps that report:

- Standard errors, and
- Estimated poverty rates, and
- Sample sizes

Hentschel *et al.* graph standard errors against sample sizes in *parroquías* and find that poverty rates are "precisely measured even at fairly disaggregated levels" (p. 147).[37] But they do not report the corresponding estimated poverty rates, precluding a comparison of α factors.

An α factor can be found for Elbers, Lanjouw, and Lanjouw (2000, p. 37). With an estimated poverty rate of about 52 percent, their α is about 1.00. For the new

[37] Hentschel *et al.* do not establish benchmarks for how precise is *precise* nor for how disaggregated is *fairly disaggregated*, so these positive-sounding labels mean little.

2013/14 scorecard here and 150% of the national poverty line, the person-level poverty rate is about 50 percent (Table 1), and α is 0.80 (Table 9). Given that poverty maps—unlike poverty scoring—account for survey design when finding standard errors, it is likely that the two approaches have similar precision.

Is this precise enough? A simple benchmark is the precision of direct measures (α = 1.00). After all, the main purpose of the ECV is to estimate poverty rates, so this level of precision is apparently acceptable to INEC and to the government of Ecuador. Nine of 10 poverty lines supported for the new 2013/14 scorecard have $\alpha < 1.00$ (Table 9)[38] and so are more precise than direct measurement in the ECV. And as noted above, Elbers, Lanjouw, and Lanjouw (2000) have α of about 1.00.

Elbers, Lanjouw, and Lanjouw (2000 and 2003) use similar reasoning to establish a different benchmark. They say that their standard errors are "quite reasonable . . . if one takes as a benchmark the precision which is achieved with [ECV] data at the representative stratum level" (pp. 13–14).

The poverty mappers do not directly say, however, what this precision is. Elbers, Lanjouw, and Lanjouw (2003) say that their Ecuador poverty map meets this standard for estimated rates of 51 percent, sample sizes of 15,000, and standard errors of 2.4 percentage points (p. 355). This implies an α factor of almost 6.00 along with 90-percent confidence intervals of about ±4 percentage points. Elbers, Lanjouw, and Lanjouw

[38] All seven lines for the old 2005/6 scorecard in Schreiner (2008a) have $\alpha < 1.00$.

(2000) also imply that precision is "very reliable" when 90-percent intervals are ±4 percentage points or smaller.[39]

If absolute prediction errors of 4–6 percentage points are acceptable (as suggested by Ecuador's poverty mappers, albeit in the absence of an explicit context and objective), and if 90-percent confidence intervals of ±4 percentage points are acceptable (as suggested by the standard errors that Ecuador's poverty mappers say are similar to those that are typical for stratum-level poverty-rate estimates in data from national consumption surveys), then estimates are acceptable as long as they do not vary from the true value by about ±10 percentage points.

This seems like a safe upper bound on what is generally acceptable. For psychological reasons (if not also for technical ones), most users will distrust poverty-rate estimates that they know could be off—after accounting both for prediction error and for standard errors—by 10 percentage points or more.

What does this mean for the scorecard? At the level of the ECV's strata, poverty scoring and poverty maps have similar prediction errors, so if the errors of poverty mapping are acceptable, then so are those of poverty scoring. Likewise, if poverty mapping's precision is adequate, then so is that of the new 2013/14 scorecard, as its α

[39] Demombynes *et al.* (2004) also use this reasoning to benchmark precision. The typical ratio of standard errors to point estimates in the 1994 ECV is about 6 percent (rural) and 10 percent (urban), and they say that "satisfactory" precision may be had with sample sizes of 1,000 to 2,000. For an estimated poverty rate of 50 percent, this implies an α factor of between 1.90 to 2.70 (rural) and 3.20 to 4.50 (urban), and thus 90-percent confidence intervals of about ±5 (rural) and ±8 percentage points (urban).

factors are no higher than poverty maps' (and are better than those of direct measurement). In other words, if the accuracy of poverty maps is "good enough" at a country's first administrative level, then so is the accuracy of poverty scoring.

9.1.6 Targeting accuracy

The developers of poverty maps warn that their poverty-assessment tools (and by extension, scorecards) are too inaccurate for household-level targeting. Because the accuracy of estimated poverty rates falls as sample size shrinks down to $n = 1$, Elbers, Lanjouw, and Lanjouw (2003, p. 15) say that "it would be ill-advised to use this approach to determine the poverty of . . . single households". Likewise, Demonbynes *et al.* (2004, p. 13) say, "Any attempt to identify poor households in the Census would be ill-advised because confidence bounds on the household-level poverty estimates would likely encompass the entire range between zero and one." Hentschel *et al.* (p. 158) point out—implicitly assuming $\alpha = 1.00$—that the 90-percent confidence interval ($z = 1.64$) for a household's ($n = 1$) estimated poverty likelihood of 48 percent ($\hat{p} = 0.48$) is $48.0 \pm 1.00 \cdot 1.64 \cdot \sqrt{\frac{0.48 \cdot (1 - 0.52)}{1}} = 48.0 \pm 81.9$ percentage points. This interval includes the true poverty likelihoods for both the truly poor (100 percent) and the truly non-poor (0 percent).[40]

[40] IRIS Center—developer of USAID's poverty-assessment tool, see below—echo this interdiction against using poverty-measurement tools to target individual households.

Nonetheless, this paper argues that targeting with the scorecard (and similar poverty-measurement tools) can at least sometimes be worthwhile. The argument rests on three points:

- Whether a given tool's accuracy is "good enough" depends on the context and objective and whether the tool's net benefits exceed those of alternative means to accomplish the same goal
- Targeting tools with no more accuracy than the scorecard are used every day by governments, non-profits, and for-profits around the world
- Targeting usefulness depends not on the accuracy and precision of estimated likelihoods but rather on ranking power, that is, how well the poorest households are concentrated in the poorer end of the distribution of poverty likelihoods

9.1.6.1 What is *adequate* depends on the context and objective

Like passing judgement on the accuracy of poverty maps in the absence of an explicit benchmark, claiming categorically that poverty-measurement tools are too inaccurate for targeting individual households is meaningless. Is your personal car adequate? Yes, if you need to drive five miles to pick up groceries and do not want to pay a taxi or walk an hour there and then an hour back (with bags); No, if you need to cross the Atlantic to get to a business meeting by tomorrow and your employer will pay for a plane ticket. Yes, if you need to take an uninsured heart-attack patient to a hospital down the street; No, if you need to take an insured heart-attack patient to a hospital on the other side of town.

The accuracy requirement is tied to the objective. Poverty-assessment tools are surely inadequate for some targeting purposes (for example, if only the truly poor are to be targeted and leakage must be zero), but they probably are adequate for other

purposes (for example, excluding the richest third of households). It is as wrong to say that scoring is never adequate as it is to say that scoring is always adequate.

Is this just a classic case of a milquetoast economist saying, "It depends"? Yes, except that it really does depend. In practice, some choices take work. When deciding whether and how to use scoring for targeting, pro-poor programs need to intentionally discuss their goals and values. This is work, and uncertainty and risk will remain after the choice is made, but it irresponsible to promulgate or apply a context-free rule.

Targeting aims to include as many poor people as possible while leaking to as few non-poor people as possible. As discussed in Section 8, more inclusion implies more leakage, so balancing the trade-off requires assigning net benefits to the four possible outcomes of targeting. This choice of whether to target with a tool—and what cut-off to use, and how exactly to differentiate services by segment—falls to the managers of the pro-poor organization. This paper does what it can by reporting targeting accuracy for the new 2013/14 scorecard for a range of cut-offs and for a range of poverty lines and by laying out an approach for determining what is *adequate*.

9.1.6.2 Targeting individual households with poverty-assessment tools is common

Many national governments—often with the support of the World Bank—use poverty-assessment tools (called *proxy-means tests*) to target individual households (Coady, Grosh, and Hoddinott, 2004).[41] Some non-profits also target the poor with poverty-measurement tools that are even simpler than the scorecard.[42]

Of course, this need not say much about targeting accuracy; after all, governments and non-profits might make (repeated) mistakes. For-profits, however, have strong, self-interested incentives to use scoring if its accuracy is adequate. And it apparently sometimes is. For example, credit-risk scorecards are used to approve/deny loan applicants,[43] direct-mail-response scorecards are used to add/delete households in mailing lists, and movie-preference scorecards are used to suggest films to cable subscribers. In general, these scorecards are less accurate for their purposes than poverty-assessment tools are for identifying the poor, yet they are still accurate enough to be profitable. Indeed, much of the "big data" movement stems from the benefits of

[41] In Pakistan, the World Bank (2009) used the scorecard to make a tool to target cash transfers, applying it with millions of rural households.

[42] For example, the one-hectare-of-arable-land rule used by the Grameen Bank in Bangladesh (Matin, 1998) and the housing index used by the CASH-POR network (Simanowitz, Nkuna, and Kasim, 2000).

[43] Credit-risk scorecards classify defaulters less accurately than poverty-measurement tools classify the poor, but they are still used because the benefit of avoiding one defaulter compensates for the cost of losing several good borrowers (Anderson, 2007).

targeting with these tools.[44] The market disagrees with the developers of poverty maps in terms of the usefulness of scoring for targeting individual households.

9.1.6.3 For targeting, what matters is ranking

In practice, no one follows the supposed approach of the developers of poverty mapping, classifying a household as *targeted* based on whether the 90-percent confidence interval of its estimated poverty likelihood includes 100 percent and excludes 0 percent. Instead, users set a cut-off so as to target a desired share of the population (say, x percent). Scoring is imperfect, so some targeted households will not be truly poor, but in some contexts and for some objectives the successes compensate for the mistakes. Because out-of-sample targeting accuracy is reported for the scorecard (Tables 11 and 12), users can set the cut-off to meet a variety of types of goals, and they can know whether meeting a given goal is even possible.[45]

What matters for targeting accuracy in practice is how well the scorecard concentrates poor households in lower end of the distribution of scores.[46] For example, a scorecard for which 75 percent of households in the lowest decile of scores are truly poor is better for targeting that a scorecard for which 50 percent of households in the lowest

[44] Of course, for-profit firms often target rich households, using what might be called wealth-measurement tools.

[45] The cut-off can be set to target a desired share of the population (based on the second column in Table 12), to achieve a desired poverty rate among targeted households (third column, for a given poverty line) or to target a desired share of poor households (fourth column). For a given poverty line, Table 11 can be used—along with the net benefits of the four possible targeting outcomes as determined by the user—to find the cut-off that maximizes net benefits.

[46] Or equivalently, in the higher end of the distribution of poverty likelihoods.

decile of scores are truly poor. The accuracy and precision of each household's estimated poverty likelihood is irrelevant. Indeed, the pre-eminence of ranking is why the statistical process of selecting indicators and points for the scorecard focuses on ranking power.

Ranking power determines the average accuracy of targeting for the group of households below the cut-off (Friedman, 1997). For example, if a pro-poor organization in Ecuador targeted households who score 39 or less, it would target 17.7 percent of all households. The targeted group would include 62.5 percent of all poor households (given the 19.2-percent household poverty rate in the 2013/14 ECV by 100% of the national poverty line, Tables 1 and 12), and about two-thirds would be truly poor (versus about one-fifth in Ecuador as a whole). This level of accuracy may or may not be adequate for a given context and objective, but at least a user can make that decision without reference to the accuracy and precision of each household's estimated poverty likelihood.

9.1.7 Targeting and the scorecard

Targeting is one possible application of poverty scoring. As argued here, it may be useful in some contexts for some objectives. At the same time, targeting is probably less relevant for most pro-poor programs than is estimating poverty rates at a point in time or estimating changes in poverty rates over time. Furthermore, targeting need not be used to determine which households can participate. Rather, targeting can be used to segment existing participants for differentiated services (for example, scaled fees, or extra attention from field agents).

Poverty scoring is more accurate than the one Ecuador poverty map that reports targeting accuracy. Hentschel *et al.* test targeting accuracy in the 1994 ECV out-of-sample and find that 51 percent of households in the bottom predicted quintile of consumption are also in the bottom quintile of actual consumption (p. 155). When the new 2013/14 scorecard here is applied out-of-sample with the 2013/14 validation sample, the figure is 66.5 percent. Of course, the comparison is imperfect because the two tools are applied with different rounds of the ECV.

In Elbers *et al.* (2007), the developers of poverty mapping seem to start to back away from their previous warnings against targeting individual households. They state (pp. 211) that "even highly imprecise poverty estimates still convey some useful information. Indeed, preliminary calculations . . . suggest that household-level targeting could . . . yield significant reductions in expected poverty. . . . An assessment of the merits of household-level targeting . . . requires a broader perspective . . . [and] is an important subject for future research."

9.2 IRIS Center

USAID commissioned IRIS Center (2010) to build a "Poverty Assessment Tool" (PAT) using data from the 2005/6 ECV so that USAID's microenterprise partners in Ecuador could report the share of their participants who are "very poor". In general, the PAT for Ecuador is like the scorecard, except that the PAT:

- Estimates consumption (rather than poverty likelihoods) and then converts estimated consumption into a poverty likelihood of either 0 or 100 percent (rather than a poverty likelihood that is between 0 and 100 percent)
- Has more indicators (17 rather than 10)

The PAT supports two poverty lines:

- The line marking the poorest half of households (not people) below 100% of the national line
- 100% of the national line

IRIS (2010) 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 household consumption. It uses 17 indicators:

- Household demographics:
  - Household size (and its square)
  - Age of the household head (and its square)
- Education:
  - Highest level completed by the household head
  - Share of household members who have never attended school
- Residence:
  - Number of rooms
  - Type of floor
- Asset ownership:
  - Presence of:
    - Blender
    - Refrigerator
    - Stove
  - Number of:
    - Hand mixers
    - Irons
    - Color televisions
    - Computers
    - Washing machines
    - Cars
- Location of residence:
  - Region
  - Urban/rural

All these indicators are simple, inexpensive, and verifiable.

Schreiner (2014) reports an apples-to-apples comparison of accuracy for IRIS (2010) versus the old 2005/6 scorecard from Schreiner (2008a).[47] In out-of-sample tests, the PAT and the scorecard have about the same absolute bias (0.2 versus 0.3 percentage points).[48] The PAT is less precise (α of 1.06 versus 0.77). For targeting, the PAT correctly classifies 2.2 more people per 100 than does the scorecard. Thus, in terms of accuracy in Ecuador, the PAT targets a little better than the old 2005/6 scorecard.

In its documentation of accuracy, IRIS focuses on the Balanced Poverty Accuracy Criterion. IRIS Center (2005) introduced BPAC, and USAID adopted it as its criterion for approving poverty-assessment tools for use by its microenterprise partners. BPAC considers accuracy in terms of targeting inclusion and in terms of the absolute difference between targeting undercoverage and leakage (which, under the PAT's approach, is equal to the absolute value of the error in the estimated poverty rate). The formula is:

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

[47] Schreiner (2014) describes how the line that marks the poorest half of people below 100% of the national line in Schreiner (2008a) is adjusted to correct its mistakes and to match the value of that line for IRIS (2010). This ensures that the household-level poverty rates in the test are the same for both the scorecard and the PAT.

[48] Because bias is known, it can be removed, so both the PAT and scorecard are unbiased.

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

Expressing BPAC as $\text{Inclusion} - |\text{Average error}|$ helps to show why BPAC is not useful for comparing the PAT with the scorecard (Schreiner, 2014). Given the assumptions discussed earlier,[49] the scorecard produces unbiased estimates of poverty rates, regardless of whether undercoverage differs from leakage. While BPAC can be used to compare alternative scorecards 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—unlike the PAT—the scorecard does not use a single 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 poverty-scorecard user sets a targeting cut-off, then that cut-off matters only for targeting, without affecting the estimation of poverty rates at all.

[49] The unbiasedness of the PAT also requires these same assumptions.

Although IRIS reports the PAT's targeting accuracy and although the BPAC formula considers targeting accuracy, IRIS—following the developers of poverty-mapping—says that the PAT should not be used for targeting.[50]

IRIS also doubts that the PAT can be useful for measuring change over time, noting that "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."[51]

That is, IRIS asserts[52] that the confidence interval for estimates of change—for some unstated confidence level, some unstated sample size, and some unstated true change—will usually include zero. As noted earlier, it is not possible to test the accuracy of estimates of change over time with the new 2013/14 scorecard for Ecuador. Nevertheless, tests for other countries—for example, Bolivia, see Schreiner (2015b)—suggest that it is not uncommon for scorecard estimates of change to be in the right direction as well as statistically different from zero.

In the same way and as discussed earlier, targeting is a possible use that is supported for the scorecard, despite IRIS' doubts. In particular, this paper reports targeting accuracy so users can decide for themselves whether scoring targets adequately for their purposes.

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[50] `povertytools.org/faq/faq.html#11`, retrieved 19 February 2009.
[51] `povertytools.org/faq/faq2.html`, retrieved 7 December 2012.
[52] IRIS has never reported the PAT's accuracy for estimates of change over time.

10. Conclusion

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

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

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

The scorecard is constructed with half of the data from Ecuador's 2013/14 ECV. Its scores are then calibrated with that same data to poverty likelihoods for 10 poverty lines. Five of these lines are also supported for the old 2005/6 scorecard in Schreiner (2008a). Given the assumption—made by Ecuador's INEC—that the change in the official definition of *poverty* between the 2005/6 ECV and the 2013/14 ECV has little effect on estimated poverty rates and given the fact that the mistakes in the implementation of the old official definition of *poverty* in the old 2005/6 scorecard by Schreiner (2008a) have little effect on estimates of changes in poverty rates between 2005/6 and 2013/14, existing users of Ecuador's old 2005/6 scorecard can switch to the new 2013/14 scorecard here and still estimate of changes in poverty rates over time with a baseline with the old 2005/6 scorecard and a follow-up with the new 2013/14 scorecard. The new 2013/14 scorecard should be used from now on.

The accuracy of the new 2013/14 scorecard is tested on data from the 2013/14 ECV that is not used in scorecard construction. Errors and precision are reported for estimates of households' poverty likelihoods, of populations' poverty rates at a point in time, and of changes in populations' poverty rates over time. Of course, the scorecard's estimates of change are not necessarily the same as estimates of program impact. Targeting accuracy is also reported.

When the scorecard is applied to the 10 poverty lines in the 2013/14 validation sample, the maximum absolute error for estimates versus true poverty rates for groups of households at a point in time is 4.1 percentage points. The average absolute error is about 1.6 percentage points. Corrected estimates may be had by subtracting the known average error for a given poverty line from the original, uncorrected estimates.

For $n = 16{,}384$ and 90-percent confidence, the precision of point-in-time estimates of poverty rates is ± 0.6 percentage points or better. With $n = 1{,}024$, the 90-percent confidence intervals are ± 2.5 percentage points or better.

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

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

For this reason, the scorecard uses ten 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 simple 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 trust scoring and by allowing non-specialists to add up scores quickly in the field.

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

References

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

Anderson, Raymond. (2007) *The Credit Scoring Toolkit: Theory and Practice for Retail Credit-Risk Management and Decision Automation*.

Araujo, María Caridad. (2007) "The 1990 and 2001 Ecuador Poverty Maps", pp. 153–173 in Tara Bedi, Aline Coudouel, and Kenneth Simler (eds) *More Than a Pretty Picture: Using Poverty Maps to Design Better Policies and Interventions*.

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

Caire, Dean. (2004) "Building Credit Scorecards for Small-Business Lending in Developing Markets", `microfinance.com/English/Papers/Scoring_SMEs_Hybrid.pdf`, retrieved 14 November 2015.

_____; and Mark Schreiner. (2012) "Cross-Tab Weighting for Credit Scorecards in Developing Markets", `business-school.ed.ac.uk/crc/conferences/conference-archive?a=46055`, retrieved 14 November 2015.

Calero León, Carla; Maldonado Cabrera, Rosario; Molina Vera, Andrea; Robles Chávez, Marcos; y Pavel Luengas Sierra. (2008) "Mapa de Pobreza y Desigualdad en Ecuador", `sites.google.com/site/roblesmarcos/EcuadorPovertyMap2008.pdf`, retrieved 14 November 2015.

Camacho, Adriana; and Emily Conover. (2011) "Manipulation of Social-Program Eligibility", *American Economic Journal: Economic Policy*, Vol. 3, No. 2, pp. 41–65.

Chen, Shiyuan; and Mark Schreiner. (2009) "Simple Poverty Scorecard Poverty-Assessment Tool: Vietnam", `SimplePovertyScorecard.com/VNM_2006_ENG.pdf`, retrieved 14 November 2015.

Coady, David; Grosh, Margaret; and John Hoddinott. (2004) *Targeting of Transfers in Developing Countries*, `hdl.handle.net/10986/14902`, retrieved 14 November 2015.

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

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

Demombynes, Gabriel; Elbers, Chris; Lanjouw, Jenny; Lanjouw, Peter; Mistiaen, Johan; and Berk Özler. (2004) "Producing an Improved Geographic Profile of Poverty: Methodology and Evidence from Three Developing Countries", pp. 154–176 in Anthony Shorrocks and Rolph van der Hoeven (eds) *Growth, Inequality, and Poverty*.

Diamond, Alexis; Gill, Michael; Rebolledo Dellepiane, Miguel Angel; Skoufias, Emmanuel; Vinha, Katja; and Yiqing Xu. (2016) "Estimating Poverty Rates in Target Populations: An Assessment of the Simple Poverty Scorecard and Alternative Approaches", World Bank Policy Research Working Paper No. 7793, `hdl.handle.net/10986/25038`, retrieved 11 January 2017.

Elbers, Chris; Fujii, Tomoki; Lanjouw, Peter; Özler, Berk; and Wesley Yin. (2007) "Poverty Alleviation through Geographic Targeting: How Much Does Disaggregation Help?", *Journal of Development Economics*, Vol. 83, pp. 198–213.

_____; Lanjouw, Jean O.; and Peter Lanjouw. (2003) "Micro-Level Estimation of Poverty and Inequality", *Econometrica*, Vol. 71, No. 1, pp. 355–364.

_____. (2000) "Welfare in Villages and Towns: Micro-Measurement of Poverty and Inequality", Tinbergen Institute Working Paper No. 2000–029/2, `go.worldbank.org/VQ7EJD4M10`, accessed 14 November 2015.

_____; Lanjouw, Peter; and Phillippe George Leite. (2008) "Brazil within Brazil: Testing the Poverty-Map Methodology in Minas Gerais", World Bank Policy Research Working Paper No. 4513, `papers.ssrn.com/sol3/papers.cfm?abstract_id=1092691`, retrieved 14 November 2014.

_____; Lanjouw, Peter; Mistiaen, Johan; Özler, Berk; and Kenneth Simler. (2005) "Are Neighbors Equal? Estimating Local Inequality in Three Developing Countries", pp. 37–60 in Ravi Kanbur and Anthony J. Venables (eds.), *Spatial Inequality and Development*.

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

Fuller, Rob. (2006) "Measuring the Poverty of Microfinance Clients in Haiti", microfinance.com/English/Papers/Scoring_Poverty_Haiti_Fuller.pdf, retrieved 14 November 2015.

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

Grosh, Margaret; and Judy L. Baker. (1995) "Proxy-Means Tests for Targeting Social Programs: Simulations and Speculation", World Bank LSMS Working Paper No. 118, go.worldbank.org/W9OWN57PD0, retrieved 14 November 2015.

Hammond, Allen L.; Kramer, William J.; Katz, Robert S.; Tran, Julia T.; and Courtland Walker. (2007) *The Next 4 Billion: Market Size and Business Strategy at the Base of the Pyramid*, wri.org/publication/next-4-billion, retrieved 14 November 2015.

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

Haslett, Stephen. (2012) "Practical Guidelines for the Design and Analysis of Sample Surveys for Small-Area Estimation", *Journal of the Indian Society of Agricultural Statistics*, Vol. 66, No. 1, pp. 203–212.

Hentschel, Jesko; Lanjouw, Jean Olsen; Lanjouw, Peter; and Javier Poggi. (2000) "Combining Census and Survey Data to Trace the Spatial Dimensions of Poverty: A Case Study of Ecuador", *World Bank Economic Review*, Vol. 14, No. 1, pp. 147–165.

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

Instituto Nacional de Estadística y Censos. (2015) "Metodología de construcción del agregado del consumo y estimación de línea de pobreza en el Ecuador", ecuadorencifras.gob.ec/documentos/web-inec/ECV/ECV_2015/documentos/150410%20ECVMetodologia.pdf, retrieved 14 November 2015.

_____. (2007) "Homologación Metodológica de Cálculo de Pobreza: Desigualdad e Indicadores Sociales, a Partir de la Encuesta de Condiciones de Vida (ECV)", ecuadorencifras.gob.ec/documentos/web-inec/ECV/Publicaciones/ECV_Homologacion_Metodologica.pdf, retrieved 14 November 2015.

IRIS Center. (2010) "Poverty-Assessment Tool Accuracy Submission: USAID/IRIS Tool for Ecuador", 30 June, pdf.usaid.gov/pdf_docs/pnaeb042.pdf, retrieved 14 November 2015.

_____. (2007a) "Manual for the Implementation of USAID Poverty Assessment Tools", povertytools.org/training_documents/Manuals/USAID_PAT_Manual_Eng.pdf, retrieved 14 November 2015.

_____. (2007b) "Introduction to Sampling for the Implementation of PATs", povertytools.org/training_documents/Sampling/Introduction_Sampling.ppt, retrieved 14 November 2015.

_____. (2005) "Notes on Assessment and Improvement of Tool Accuracy", povertytools.org/other_documents/AssessingImproving_Accuracy.pdf, retrieved 14 November 2015.

Johnson, Glenn. (2007) "Lesson 3: Two-Way Tables—Dependent Samples", onlinecourses.science.psu.edu/stat504/node/96, retrieved 14 November 2015.

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

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

Mahadevan, Meera; Yoshida, Nobou; and Larisa Praslova. (2013) "Poverty Mapping in the Kyrgyz Republic: Methodology and Key Findings", World Bank Report No. 76690, documents.worldbank.org/curated/en/2013/04/17584758/kyrgyz-republic-poverty-mapping-methodology-key-findings, retrieved 14 November 2015.

Martinelli, César; and Susan W. Parker. (2007) "Deception and Misreporting in a Social Program", *Journal of the European Economic Association*, Vol. 4, No. 6, pp. 886–908.

Matin, Imran. (1998) "Mis-targeting by the Grameen Bank: A Possible Explanation", *IDS Bulletin*, Vol. 29, No. 4, pp. 51–58.

Matul, Michal; and Sean Kline. (2003) "Scoring Change: Prizma's Approach to Assessing Poverty", Microfinance Centre for Central and Eastern Europe and the New Independent States Spotlight Note No. 4, mfc.org.pl/sites/mfc.org.pl/files/spotlight4.PDF, retrieved 14 November 2015.

McCloskey, Diedre; and Stephen T. Ziliak. (1996) "The Standard Error of Regressions", *Journal of Economic Literature*, Vol. 34, pp. 97–114.

McCloskey, Donald N. (1985) "The Loss Function Has Been Mislaid: The Rhetoric of Significance Tests", *American Economic Review*, Vol. 75, No. 2, pp. 201–205.

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

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

Narayan, Ambar; and Nobuo Yoshida. (2005) "Proxy-Means Tests for Targeting Welfare Benefits in Sri Lanka", World Bank Report No. SASPR–7, Washington, D.C.: documents.worldbank.org/curated/en/2005/07/6209268/proxy-means-test-targeting-welfare-benefits-sri-lanka, retrieved 14 November 2015.

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

Ravallion, Martin. (1998) "Poverty Lines in Theory and Practice", World Bank LSMS Working Paper No. 133, go.worldbank.org/8P3IBJPQS1, retrieved 14 November 2014.

SAS Institute Inc. (2004) "The LOGISTIC Procedure: Rank Correlation of Observed Responses and Predicted Probabilities", *SAS/STAT User's Guide, Version 9*, support.sas.com/documentation/cdl/en/statug/63033/HTML/default/viewer.htm#statug_logistic_sect035.htm, retrieved 14 November 2015.

Schreiner, Mark. (2015a) "The Process of Poverty-Scoring Analysis", microfinance.com/English/Papers/Scoring_Poverty_Outline_Analysis.pdf, retrieved 14 November 2015.

_____. (2015b) "Simple Poverty Scorecard Poverty-Assessment Tool: Bolivia", SimplePovertyScorecard.com/BOL_2013_ENG.pdf, retrieved 1 December 2015.

_____. (2015c) "Simple Poverty Scorecard Poverty-Assessment Tool: Malawi", SimplePovertyScorecard.com/MWI_2010_ENG.pdf, retrieved 14 November 2015.

_____. (2015d) "Simple Poverty Scorecard Poverty-Assessment Tool: Ghana", SimplePovertyScorecard.com/GHA_2012_ENG.pdf, retrieved 14 November 2015.

_____. (2015e) "Simple Poverty Scorecard Poverty-Assessment Tool: Cambodia", microfinance.com/English/Papers/Scoring_Poverty_Cambodia_2011_EN.pdf, retrieved 14 November 2015.

_____. (2014) "How Do the Simple Poverty Scorecard and the PAT Differ?", microfinance.com/English/Papers/Scorecard_versus_PAT.pdf, retrieved 14 November 2015.

_____. (2013a) "Simple Poverty Scorecard Poverty-Assessment Tool: Bangladesh", SimplePovertyScorecard.com/BGD_2010_ENG.pdf, retrieved 14 November 2015.

_____. (2013b) "Simple Poverty Scorecard Poverty-Assessment Tool: Nicaragua", SimplePovertyScorecard.com/NIC_2009_ENG.pdf, retrieved 14 November 2015.

_____. (2012a) "An Expert-Based Poverty Scorecard for Rural China", microfinance.com/English/Papers/Scoring_Poverty_China_EN.pdf, retrieved 14 November 2015.

_____. (2012b) "Simple Poverty Scorecard Poverty-Assessment Tool: Colombia", SimplePovertyScorecard.com/COL_2009_ENG.pdf, retrieved 14 November 2015.

_____. (2012c) "Simple Poverty Scorecard Poverty-Assessment Tool: Peru", SimplePovertyScorecard.com/PER_2010_ENG.pdf, retrieved 14 November 2015.

_____. (2010) "Simple Poverty Scorecard Poverty-Assessment Tool: Honduras", SimplePovertyScorecard.com/HND_2007_ENG.pdf, retrieved 14 November 2015.

_____. (2009a) "Simple Poverty Scorecard Poverty-Assessment Tool: Philippines", SimplePovertyScorecard.com/PHL_2002_ENG.pdf, retrieved 14 November 2015.

_____. (2009b) "Simple Poverty Scorecard Poverty-Assessment Tool: Pakistan", SimplePovertyScorecard.com/PAK_2005_ENG.pdf, retrieved 14 November 2015.

_____. (2009c) "Simple Poverty Scorecard Poverty-Assessment Tool: Mexico", SimplePovertyScorecard.com/MEX_2008_ENG.pdf, retrieved 14 November 2015.

_____. (2009d) "Simple Poverty Scorecard Poverty-Assessment Tool: Peru", SimplePovertyScorecard.com/PER_2007_ENG.pdf, retrieved 14 November 2015.

_____. (2008a) "Simple Poverty Scorecard Poverty-Assessment Tool: Ecuador", SimplePovertyScorecard.com/ECU_2005_ENG.pdf, retrieved 14 November 2015.

_____. (2008b) "Simple Poverty Scorecard Poverty-Assessment Tool: Peru", SimplePovertyScorecard.com/PER_2003_ENG.pdf, retrieved 14 November 2015.

_____. (2006) "Is One Simple Poverty Scorecard Poverty-Assessment Tool Enough for India?", microfinance.com/English/Papers/ Scoring_Poverty_India_Segments.pdf, retrieved 14 November 2015.

_____. (2005a) "La Herramienta del Índice de Calificación de la Pobreza™: México", SimplePovertyScorecard.com/MEX_2002_SPA.pdf, retrieved 14 November 2015.

_____. (2005b) "IRIS Questions on the Simple Poverty Scorecard Poverty-Assessment Tool", microfinance.com/English/Papers/ Scoring_Poverty_Response_to_IRIS.pdf, retrieved 14 November 2015.

_____. (2002) *Scoring: The Next Breakthrough in Microfinance?* CGAP Occasional Paper No. 7, pdf.usaid.gov/pdf_docs/PNACQ633.pdf, retrieved 14 November 2015.

_____; Matul, Michal; Pawlak, Ewa; and Sean Kline. (2014) "Poverty Scoring: Lessons from a Microlender in Bosnia-Herzegovina", *Poverty and Public Policy*, Vol. 6, No. 4, pp. 407–428.

Sharif, Iffath Anwar. (2009) "Building a Targeting System for Bangladesh Based on Proxy-Means Testing", World Bank Social Protection Discussion Paper No. 0914, siteresources.worldbank.org/SOCIALPROTECTION/ Resources/SP-Discussion-papers/Safety-Nets-DP/0914.pdf, retrieved 14 November 2015.

Sillers, Don. (2006) "National and International Poverty Lines: An Overview", USAID, pdf.usaid.gov/pdf_docs/Pnadh069.pdf, retrieved 14 November 2015.

Simanowitz, Anton; Nkuna, Ben; and Sukor Kasim. (2000) "Overcoming the Obstacles of Identifying the Poorest Families", ww.w.sa-dhan.net/Adls/Microfinance/ PerspectivePoverty/Povertyassessmentofpoorest.pdf, retrieved 14 November 2015.

Snel, Mathilde; and Norbert Henninger. (2002) "Where Are the Poor? Experiences with the Use and Development of Poverty Maps", pdf.wri.org/wherepoor.pdf, retrieved 14 November 2015.

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

Tarozzi, Alessandro; and Angus Deaton. (2007) "Using Census and Survey Data to Estimate Poverty and Inequality for Small Areas", *Review of Economics and Statistics*, Vol. 91, No. 4, pp. 773–792.

Toohig, Jeff. (2008) "PPI Pilot Training Guide", microfinancegateway.org/sites/default/files/mfg-en-paper-progress-out-of-poverty-index-ppi-pilot-training-mar-2008.pdf, retrieved 14 November 2015.

USAID. (2014) *Microenterprise Results Reporting: Annual Report to Congress, Fiscal Year 2013*, eads.usaid.gov/mrr/publications/ar2013.pdf, retrieved 14 November 2015.

United States Congress. (2004) "Microenterprise Results and Accountability Act of 2004 (HR 3818 RDS)", November 20, smith4nj.com/laws/108-484.pdf, retrieved 14 November 2015.

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

World Bank. (2012) *Targeting Poor and Vulnerable Households in Indonesia*, documents.worldbank.org/curated/en/2012/01/15879773/targeting-poor-vulnerable-households-indonesia, retrieved 14 November 2015.

_____. (2009) "Poverty Scorecard for Pakistan: A Recommended Approach for Targeting the Poor".

_____. (2008) "International Comparison Project: Tables of Results", siteresources.worldbank.org/ICPINT/Resources/icp-final-tables.pdf, retrieved 14 November 2015.

_____. (2004) "Ecuador Poverty Assessment", Report No. 27061–EC, www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2004/06/15/000160016_20040615095708/Rendered/PDF/270610EC.pdf, accessed 14 November 2015.

Zeller, Manfred. (2004) “Review of Poverty Assessment Tools”,
pdf.usaid.gov/pdf_docs/PNADH120.pdf, retrieved 14 Novembert 2015.

Guidelines for the Interpretation of Indicators

The following comes from:

Instituto Nacional de Estadística y Censos. (2013) "Manual del Encuestador de la Encuesta Condiciones de Vida, Sexta Ronda, 2013–2014", [the *Manual*], Quito,

and

Instituto Nacional de Estadística y Censos. (2013) "Cuestionario de la Encuesta Condiciones de Vida, Sexta Ronda, 2013–2014", [the *Questionnaire*], Quito.

When an issue arises that is not addressed here, its resolution should be left to the unaided judgment of the enumerator, as that apparently was the practice of Ecuador's INEC in the 2013/14 ECV. 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 the individual enumerator.

General Guidelines

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 compiled as part of the "Back-page Worksheet".

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

Likewise, do not ask the second scorecard indicator directly ("How many household members 12-years-old or older have an activated cellular telephone?"). Instead, determine the proper response based on the information that you already recorded on the "Back-page Worksheet".

Do ask the third scorecard indicator directly ("Does the household have a car (for its exclusive use), air conditioner, video camera, or exercise machine?"). (Of course, ask it only after filling out the scorecard header and the "Back-page Worksheet".) Mark response option "B. Yes" if the household has *any* of the five assets: car (for its exclusive use), air conditioner, video camera, or exercise machine. If the household does not have any of the four assets, then mark "A. No." Even though any household that has at least one of the four assets will get 100 points and have a total score of 100, you should go ahead and complete the rest of the questionnaire. That is, do not end the interview just because the household gets 100 points for this question; ask all the questions, and record responses for all of them.

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

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

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

In general, the application of the scorecard should mimic as closely as possible the application of the 2013/14 ECV. For example, poverty-scoring interviews should take place in respondents' homestead because the 2013/14 ECV took place in respondents' homesteads.

Questionnaire Translation:
The 2013/14 ECV left translation of the survey instrument to languages other than Spanish to each individual enumerator (or perhaps to local translators). When such translation was needed, they (apparently) did it on the fly.

While the application of the scorecard should, in general, mimic the application of the 2013/14 ECV, it nevertheless makes sense to have a standard, well-done, checked translation to languages and dialects that are common in Ecuador (such as Quechua). Without a standard translation, the variation in translations and interpretations across enumerators could greatly harm data quality. Of course, any translation should reflect the meaning in the original Spanish ECV survey instrument as closely as possible. In particular, such a translation should be based on the questionnaire and its documentation from INEC in Spanish, not on this documentation in English. Ideally, all organizations using the scorecard in a given language or dialect in Ecuador would coordinate and use a single translation.

Who to interview:
According to p. 40 of the *Manual*, the preferred respondent is the housewife or the head of the household.

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

According to p. 48 of the *Manual*, "The respondent should be the head of the household or his/her spouse/conjugal partner, as these are the people responsible for the up-keep and management of the household and who know best the answers to the questions."

Administering the interview:
According to p. 11 of the *Manual*, you as the enumerator must:

- "Study [these Guidelines] carefully until you know them inside and out
- Behave with strict professionalism . . .
- Arrive at the interviews appropriately groomed and dressed; this helps to earn the cooperation of the responding household and contributes a lot to the success of the interview and to the quality of the information
- Perform your duties with impeccable integrity and honesty
- Introduce yourself to each household by presenting your identification card from [your organization]
- Use appropriate, simple, and understandable language
- Carry [these Guidelines] with you at all times, obeying its instructions"

According to p. 5 of the *Manual*, "All enumerators must carry [these Guidelines] with them to the field and refer to them as needed."

According to p. 10 of the *Manual*, enumerators cannot delegate their job to others.

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

According to p. 12 of the *Manual*, it is prohibited to:

- "Have someone other than yourself do the work that has been assigned to you
- Do other tasks during an interview
- Alter data provided by a respondent, assume responses, or make up responses
- Divulge in information from a respondent to third parties
- Bring unauthorized companions with you to the interview
- Pressure respondents to cooperate or induce them to cooperate with false promises
- Consume alcohol while at work"

According to p. 12 of the *Manual*, you should carry with you to the interview:

- "An identification card from [your organization] that shows your authorization
- A map of the areas where you will work
- A list of the sampled households which you will interview
- A letter of introduction to the heads of sampled households asking for their cooperation
- The [scorecard] itself
- [These Guidelines]
- Writing instruments"

According to pp. 21–24 of the *Manual*:

"Responding households will come from a wide range of cultural backgrounds. They will exhibit varying attitudes and behaviors in relation to the survey. As an enumerator, you will work with households that are very different from your own in terms of their socio-economic status, education, employment situation, customs, religion, etc. You must be able to get along with them all, and you must be able to communicate with a diverse range of people. This is the road to success in the wide variety of situations that you will run into. In addition, you must cultivate an atomosphere of trust with the responding household, as this will encourage them to provide accurate, high-quality data.

Meeting the responding household:

"The responding household's first impression—based on your physical appearance, your first actions, and your first words—are key to building trust.

"Arrive at the interview well-dressed. Ask for the head of the household or for his/her spouse/conjugal partner.

"Greet the household cordially. Show your identification card, and give the head of the household the letter of introduction. Clearly and concisely, explain the purpose of the interview and the need for the household to cooperate by providing the information requested by the questionnnaire concerning [how participants with your organization live].

"Then ask the responding household to be so kind as to answer the questions that you will ask.

"One way to introduce yourself is as follows:

> *Good day, my name is [your name], and I work with [your organization. We are doing a survey to understand better how participants with our organization live]. Your cooperation and responses are important to us . . . . I would appreciate it if you and the members of your household would answer a few questions for us.*

"You should exude an aura of confidence, safety, and friendship. If you seem to the respondent to be nervous or unsure of yourself, then he or she will be less likely to be motivated to provide the needed cooperation, participation, and attention.

"Find a way to keep an even keel. If you find yourself getting upset for some reason, take a break for a few minutes to calm down. Gather yourself together before resuming your work or starting a new interview.

Communication:

"Some respondents have second thoughts after their initial indication of being willing to cooperate. Establishing communication in a friendly atmosphere of confidence will often help the respondent to give his or her assent to the interview enthusiastically. This atmosphere of healthy communication has to be built in the few short moments between when you greet the household and when you bring out the questionnaire and pencil. In this time, you must explain that you are surveying [a sample of households with participants with your organization] and that the household's responses will help [the managers of your organization to improve their decision-making]. You must also explain—without rousing worries that the respondent might otherwise not have had—that all data will be kept strictly confidential and will be reported only in statistical analyses that cannot be linked back to any particular household.

"Keep in mind that the respondent's attention, trust, interest, and willingness to share is lowest at the start. Your job as enumerator is to keep the respondent focused as intently as possible on the survey for its entire duration. A successful interview depends heavily on artful details such as rhythm of questioning, tone of voice, speed of progress through the questionnaire, your knowledge of questions, and the general dynamic. If you recite the questions in an insecure monotone, without rhythm, then you run the risk of low-quality data and constant attempts by the respondent to get by without making much effort, due to low levels of cooperation and attention.

<u>The interview</u>:
"Before the interview starts and then while it is going on, follow the following rules:

- Plan enough time for the interview
- Be always on your best behavior
- Do not say anything about which you are not completely certain; it is better to appear uninformed but honest
- Avoid any themes or attitudes that might spark a disagreement with the respondent. Stay on-topic
- Do not create false expectations, for example, by offering some reward in order to convince the respondent to cooperate
- To the extent possible, do the interview out of ear-shot of people who are not members of the responding household. [The presence of neighbors or other third parties] can cause the respondent to change his/her responses or to clam up completely
- Do not show any surprise or have any other reaction to any response that you may receive. Be sure to control your facial expressions as well as the tone of your voice
- Strictly follow the order of the questions and their wording in the questionnaire. In other words, stick closely to the directions that you receive in [these Guidelines]. Changes harm the uniformity of the data and may lead to problems due to:
  — Omitted responses (if you assume the respondent will not answer a question)
  — Biased responses (if you change the way in which the question is asked)
- State the questions in a way that does not lead the respondent to shade his or her answers in any way or that suggests that there is a "correct" answer. For example, never say anything like, "You worked at least an hour last week, right?"
- In terms of rhythm when asking questions, keep in mind that an interview consists of questions, responses, pauses, and periods of silences. When you read questions, try to keep an even pace. Do not start nor end a given question too quickly nor too slowly. Pay close attention to figure out how well the client is understanding the questions, and adjust your reading speed accordingly. In any case, always be sure to pronounce each word you read clearly

- Always read each question word-for-word, exactly as it is in the questionnaire. If the response does not address the question or contradicts something else that the respondent has said, then ask the question again. In the same way, if you notice that the respondent has not understood the question, then you should explain/clarify in a way that does not suggest any particular response
- Step back and give the respondent the time he or she needs to formulate a response. Keep the respondent on-topic, but do so in a nice, friendly way
- Do not put on airs that give the impression that you think you are a big shot just because you work for [your organization]. Be frank, friendly, and forthright. Show that you are good at your job, without being bossy or aggressive. The best communication happens when the respondent identifies with you as an honest, hard worker who knows his or her business
- Review the questionnaire and the responses you have marked before telling the respondent that the interview is finished. Check to make sure there are no errors nor omissions
- If you arrive for the interview and realize that it is not a good time for the responding household (for example, because a household member is ill), then make plans with them to return at a better time
- Once you finish asking all the questions, carefully review the questionnaire to make sure that you have not skipped anything nor recorded something in error. If you do find an omission or an error, go ahead and fix them then and there. Remember that it will be inconvenient if you have to return at a later date to fix something
- Finish the visit by profusely and politely thanking the household for its generous cooperation. Try to leave a good impression of your visit with them, remembering that it is possible that someone—perhaps you yourself—may have to return later to ask them more questions
- Do not offer the household copies of the questionnaire nor of anything else that you are not authorized to offer. Take your leave, thanking the household for their gracious and generous cooperation

Remember that your work as an enumerator, at its most basic, is to:

- Read the questions word-for-word, exactly as they appear in the questionnaire, in the established order, to the appropriate respondents, in such a way that the questions are clearly understood
- Listen attentively to the responses, recording them based on standard protocol"

According to pp. 37–38 of the *Manual*, "All the questions have been carefully crafted, and you should read them word-for-word exactly as they appear. You are not at liberty to re-word the questions based on your own judgment; quite the opposite, you must stick strictly to the wording as it is in the questionnaire. The only exception is when the respondent does not understand the question in its current form. In that case, you should explain the meaning of the question without changing its fundamental sense, or ask probing questions in an attempt to help the respondent to understand better."

Guidelines for specific scorecard indicators

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

According to p. 73 of the *Manual*, a *household* is "those people who normally live together in the same residence and who eat from the same kitchen, including children, newborns, the elderly, the ill, the temporarily absent, live-in domestic servants (and their family members), boarders, and guests."

According to p. 75 of the *Manual*, a *household* is "a social unit composed of one person or a group of people who together share food and a residence. . . .

Three criteria serve to define whether a person is a *household member*:

- Normally living under the same roof
- Normally sharing meals (eating from the same kitchen as other household members)
- In general, depending on a shared budget"

According to pp. 25–26 of the *Manual*, a *household* is "a social unit of one or more people who together share shelter and food.

"That is, a *household* is a group of people who normally live in the same residence or in part of a residence (under the same roof) and who—regardless of blood or marital ties—cook and eat together (eat from the same pot or the same kitchen).

"Domestic servants (and their relatives) are members of a given household as long as they sleep in the same household and share food.

"A given residence may provide shelter to more than one household (for example, if there are more than one group of people who live in a residence and who cook and eat separately from one another). Also, a household can be made up of people who have no blood or marital relationship (for example, four college students who get together to live as roommates and who also cook and eat together)."

According to pp. 27 and 76 of the *Manual*, *household members* are those who are:

- "Normal residents present in the household at the time of the interview
- Normal residents who happen to be temporarily absent at the time of the interview due to work, health, studies, or vacation, as long as they will be absent for less than a total of six months
- Live-in domestic servants (and their live-in relatives) who are normal residents
- Lodgers who pay for room and board and who, at the time of the interview, are not normal residents anywhere else
- Guests (and others who are not related with the head of the household) who normally eat and sleep in the household and who have done so for at least six months

A person is not a household member if he or she:

- Has been absent from the household for six months or more in the past year or who has another place of residence. Included in this category are people serving in the military, training for the military, living with religious congregations, or prisoners
- Is a normal resident elsewhere. Included in this category are visitors who stay with the household for less than six months
- Eats with the household but does not normally sleep there, or sleeps in the household but does not normally share meals with the household
- Is the head of more than one household and normally spends more time in some other household or residence than in this household or residence

"In the following examples, the people are to be counted as *household members*:

- People who work for Petroecuador (or other companies) who normally work for 7, 15, or 21 days away from their normal residence and who then return to their home. These are to be counted as *household members* because 'the household is economically dependent on them'
- Members of the armed forces and of the National Police who stay in their stations/barracks and who then return to their homes
- Live-in domestic servants who normally eat and sleep (Monday through Friday) in the household, even though they may visit another household on week-ends

"Students who, during the school year, live in the city where their school is and who go to the household of their parents or guardians on week-ends or when school is out are to be counted a normal residents—and thus as household members—of the household where they live during the school year"

Note that some of these examples do not follow the rules presented earlier and so constitute exceptions.

According to p. 5 of the *Questionnaire*, "Record all people who normally eat and sleep in the household.

"Start the list with the head of the household."

According to p. 77 of the *Manual*, "The compilation of the list of household members should be done using the following instructions so as to include all household members (and only household members)."

According to p. 4 of the *Questionnaire*, "Read the following to the respondent:

- "Sir or Madam, I would like to make a list of the first names of all the people who normally eat and sleep in this household. Do not include anyone who, for whatever reason, has been away from the household for more than six months or who lives in another household
- "Please give me the first name of the household's head (regardless of whether he or she is male or female) who normally eats and sleeps in this household. (Do not read: If the head has been absent for more than six months or lives in another household, then record the first name of the household member whom is recognized by the other household members as acting in the place of the absent head)
- "Now please tell me the first name of the head's spouse or conjugal partner who normally eats and sleeps in this household
- "Please tell me the first names of each one of the single children of the head (or of the head's spouse) who are single, never-married and without children. Please start with the oldest child who normally eats and sleeps in this household. Be sure to include newborns
- "Please tell me the first names of each one of the single, never-married children of the head (or of the head's spouse) who is single and who has children, starting with the oldest child who normally eats and sleeps in this household. Be sure to include newborns
- "Please tell me the first names of each of the married children of the head (or of the head's spouse), the first names of their spouses or conjugal partners, and the names of their children who normally eat and sleep in this household
- "If there are any other relatives of the head (or of the head's spouse) who normally eat and sleep in this household, then please tell me their first names
- "If there are any domestic servants who normally eat and sleep in this household, then please give me their first names (and those of their family members)
- "Now please tell me the first names of any boarders who are not relatives of the head who normally eat and sleep in the household but who pay for their room and board

- Is there anyone else that you have not already mentioned—friends, god-parents, guests, exchange students, etc.—who have normally ate and slept in the household for at least six months? If so, then please tell me their first names
- Please tell me the first names of anyone else that you have not already mentioned and who is now temporarily absent from the household (for less than six months) due to health issues, studies, work, vacation, etc."

Do not record as a *household member* anyone who has been absent from the household for more than six months.

According to pp. 25–26 of the *Manual*, a *normal resident* is "anyone who eats and sleeps on a permanent basis in the same residence in which the household lives. A normal resident may happen to be temporarily absent at the time of the interview due to health issues, studies, or vacation.

"If a person is a normal resident of more than one household, then he or she is to be counted as a *household member* only in the household in which he or she spent the most time in the 12 months before the interview.

A *guest* is "a person who eats with the household where he or she is staying without paying. A guest is to be considered as a *household member* if he or she has been staying there for more than six months."

A *boarder* is "a person who pays a household for room and board. Boarders participate in the household's consumption (food, shelter, and services) and so shares in its economic activity. Therefore, boarders are counted as *household members*.

A *renter* is "a person who rents one or more rooms in a residence and who eats his or her meals on his or her own, apart from the household. Thus, renters are not counted as *household members*.

Domestic servants are "people who work for in-cash or in-kind remuneration performing services for the household. Examples include nannies, cooks, maids, gardeners, etc. Domestic servants may or may not normally eat and sleep in the household. If they are live-in servants who normally eat and sleep in the household, then they are counted as *household members*.

2. How many household members 12-years-old of older have an activated cellular telephone?
    A. None
    B. One
    C. Two
    D. Three or more

According to p. 130 of the *Manual*, "This question is seeks to count the number of household members who have and use an activated cellular telephone."

Note that this question counts the number of *household members* who have an activated cell phone, not the number of *activated cell phones* that members of the household have. For example, if the male head/spouse has two activated cell phones, the female head/spouse has one activated cell phone, and their only child (age 14) has no activated cell phones, then the response to be marked is "C. Two", not "D. Three or more", as two household members have activated cell phones.

According to the *Questionnaire*, this question applies only to household members who are 12-years-old or older. Do not count household members who are 11-years-old or younger as having an activated cellular telephone, even if they do have one.

3. Does the household have a car (for its exclusive use), air conditioner, video camera, or exercise machine?
    A. No
    B. Yes

According to p. 266 of the *Manual*, count "cars (for the household's exclusive use), air conditioners, video cameras, and exercise machines regardless of their condition at the time of the interview, even if they are used or damaged. But do not count cars, air conditioners, video cameras, and exercise machines that are damaged beyond repair."

Note that if the response to this indicator is "B. Yes", then the total score will be 100—regardless of the household's responses to the other nine indicators—given that the total score is the maximum of 100 and the sum of the points.

If the household has any of the four types of assets, then mark "B. Yes" as follows:

Car	**Air conditioner**	**Video camera**	**Exercise machine**	**Response**
No	No	No	No	A
No	No	No	Yes	B
No	No	Yes	No	B
No	No	Yes	Yes	B
No	Yes	No	No	B
No	Yes	No	Yes	B
No	Yes	Yes	No	B
No	Yes	Yes	Yes	B
Yes	No	No	No	B
Yes	No	No	Yes	B
Yes	No	Yes	No	B
Yes	No	Yes	Yes	B
Yes	Yes	No	No	B
Yes	Yes	No	Yes	B
Yes	Yes	Yes	No	B
Yes	Yes	Yes	Yes	B

4. What is the main material of the floor of the residence?
    A. Dirt
    B. Untreated planks, reeds, or other
    C. Cement/bricks
    D. Ceramic tile, stone, vinyl, marble, faux marble, treated planks, or concrete slab

According to p. 51 of the *Manual*, "This question concerns the main material (the one making up the largest share) of the floors of the residence.

"If the respondent says that there is more than one type of material, then ask which one is the *main* one, and mark the corresponding response option.

"If the response does not match straightforwardly with one of the specific types of materials listed, then mark 'B. Untreated planks, reeds, or other'.

"If the floors have wall-to-wall carpeting—whether natural wool or synthetic fiber—record the construction material of the floor that is underneath the carpet.

"If the floor happens to be made of two types of construction materials and each covers exactly the same area, then mark the response option that corresponds to the highest-quality material of the two."

According to p. 25 of the *Manual*, a *residence* is "an area of shelter that is structurally separate and that has an independent entrance. A residence is something that is constructed, built, transformed, or available for habitation by a person or by a group of people. Mobile shelters (such as barges, cars, etc.) and improvised shelters are also considered to be residences if they are inhabited on the day of the interview."

According to p. 44 of the *Manual*, "Use the option 'other' for answers that are not covered by the pre-coded response options."

5. Does the household have a place with running water to take a bath or shower?
    A. No
    B. Yes

According to p. 60 of the *Manual*, a *place to take a bath or shower* is "a place in the residence dedicated to bathing, with walls and a roof (regardless of the material of construction). It may or may not also have a latrine or toilet. It may or may not be inside the residence, and it may or may not be actually used for personal hygiene.

The place is considered to *have running water* "as long as there is a faucet through which piped water flows. There need not be a shower head.

"In some regions—and especially in rural areas—the structure housing the place to take a bath or shower might not have a roof and may have flimsy walls or partitions made of materials such as cardboard, oilcloth, rags, etc."

6. Is the bathroom inside the residence?
    A. No
    B. Yes

According to p. 54 of the *Manual*, a *bathroom* is "an arrangement for the disposal of human waste (solid and liquid), regardless of whether the arrangement is for the exclusive use of the household or whether it is shared with other households."

According to p. 25 of the *Manual*, a *residence* is "an area of shelter that is structurally separate and that has an independent entrance. A residence is something that is constructed, built, transformed, or available for habitation by a person or by a group of people. Mobile shelters (such as barges, cars, etc.) and improvised shelters are also considered to be residences if they are inhabited on the day of the interview."

7. Does the household have a blender, waffle iron/sandwich grill, or electric mixer?
    A. No
    B. Only blender
    C. Waffle iron/sandwich grill, or electric mixer (regardless of blender)

According to p. 266 of the *Manual*, count "blenders, waffle irons/sandwich grills, and electric mixers regardless of their condition at the time of the interview, even if they are used or damaged. But do not count blenders, waffle irons/sandwich grills, or electric mixers that are damaged beyond repair."

Mark the response that corresponds the household's particular combination of assets:

Blender	**Waffle iron/sandwich grill**	**Mixer**	**Response**
No	No	No	A
No	No	Yes	C
No	Yes	No	C
No	Yes	Yes	C
Yes	No	No	B
Yes	No	Yes	C
Yes	Yes	No	C
Yes	Yes	Yes	C

8. Does the household have an iron?
    A. No
    B. Yes

According to p. 266 of the *Manual*, count "irons regardless of their condition at the time of the interview, even if they are used or damaged. But do not count irons that are damaged beyond repair."

9. How many color or plasma/LCD/LED televisions does the household have?
    A. None
    B. One
    C. Two or more

According to p. 266 of the *Manual*, count "color or plasma/LCD/LED televisions regardless of their condition at the time of the interview, even if they are used or damaged. But do not count color or plasma/LCD/LED televisions that are damaged beyond repair."

10. How many light bulbs does the household use?
    A. None, one, or two
    B. Three
    C. Four
    D. Five
    E. Six or seven
    F. Eight or more

The *Manual* does not have any additional information about this indicator.

Table 1: Poverty lines, poverty rates, and sample sizes for all of Ecuador and for the construction and validation samples, by households and people, for 2005/6 and 2013/14

	Line or	HHs or		% with consumption below a poverty line									
				National				Poorest half	International 2005 PPP				
Year	Rate	people	HHs Surveyed	Food	100%	150%	200%	< 100% natl.	$1.25	$2.00	$2.50	$5.00	$8.44
All of Ecuador													
2005/6	Line			1.05	1.86	2.79	3.72	1.29	0.65	1.04	1.29	2.59	4.37
	Rate	HHs	13,520	9.1	30.3	50.4	64.2	13.7	2.4	8.8	15.0	46.6	70.0
	Rate	People		13.2	38.7	59.3	72.0	19.3	3.8	12.8	20.8	55.6	76.9
2013/14	Line			1.56	2.77	4.16	5.55	2.12	0.96	1.54	1.93	3.86	6.51
	Rate	HHs	28,621	3.6	19.2	40.8	57.7	8.7	0.6	3.4	7.2	36.5	65.7
	Rate	People		5.7	25.8	49.5	66.0	12.9	1.1	5.5	10.8	45.0	73.2
Construction and calibration (Selecting indicators and weights, and associating scores with likelihoods)													
2013/14	Rate	HHs	14,412	3.6	19.1	40.9	57.6	8.7	0.6	3.4	7.3	36.4	65.7
Validation (Measuring accuracy)													
2013/14	Rate	HHs	14,209	3.7	19.2	40.7	57.7	8.7	0.6	3.5	7.2	36.5	65.6

Source: 2005/6 and 2013/14 *Encuesta Condiciones de Vida*

Poverty lines in 2005/6 and 2013/14 are daily per-capita USD in average prices for all of Ecuador in April/May/June. of 2006 and 2014.

The definition of poverty for the figures here for 2005/6 follows INEC (2015), not Schreiner (2008a).

Table 2 (All of Ecuador): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.05	1.86	2.79	3.72	1.38	0.65	1.03	1.29	2.58	4.36
		Rate	HHs	8,030	3.5	19.2	38.8	53.9	8.9	0.5	3.4	7.2	34.7	60.7
		Rate	People		5.2	25.7	47.3	62.2	12.9	0.7	5.0	10.4	43.0	68.3
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	5,490	21.5	54.6	76.0	86.9	24.1	6.6	20.8	32.1	72.9	90.4
		Rate	People		29.0	64.2	82.9	91.3	32.1	9.9	28.1	41.3	80.3	93.9
	Overall	Line			1.05	1.86	2.79	3.72	1.29	0.65	1.04	1.29	2.59	4.37
		Rate	HHs	13,520	9.1	30.3	50.4	64.2	13.7	2.4	8.8	15.0	46.6	70.0
		Rate	People		13.2	38.7	59.3	72.0	19.3	3.8	12.8	20.8	55.6	76.9
2013/14	Urban	Line			1.56	2.77	4.16	5.54	2.21	0.96	1.54	1.92	3.85	6.50
		Rate	HHs	13,704	1.2	11.0	30.0	47.6	5.1	0.1	1.1	3.0	25.8	56.6
		Rate	People		1.9	15.5	38.0	56.4	7.8	0.2	1.8	4.6	33.3	64.9
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	14,917	8.9	37.2	64.5	79.9	16.6	1.7	8.5	16.6	59.9	85.8
		Rate	People		13.8	47.4	73.7	86.2	23.7	3.0	13.2	23.7	69.5	90.6
	Overall	Line			1.56	2.77	4.16	5.55	2.12	0.96	1.54	1.93	3.86	6.51
		Rate	HHs	28,621	3.6	19.2	40.8	57.7	8.7	0.6	3.4	7.2	36.5	65.7
		Rate	People		5.7	25.8	49.5	66.0	12.9	1.1	5.5	10.8	45.0	73.2

Table 2 (*Costa*): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	556	0.4	5.5	17.7	33.4	2.7	0.0	0.4	1.1	15.3	43.3
		Rate	People		0.6	6.9	22.1	38.8	3.2	0.0	0.6	1.1	19.3	48.6
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	421	13.8	44.0	67.0	82.9	17.0	2.4	13.2	22.4	63.3	87.7
		Rate	People		16.1	50.6	72.7	87.3	20.3	2.1	15.3	26.6	69.7	90.5
	Overall	Line			1.05	1.87	2.81	3.74	1.28	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	977	6.4	22.7	39.8	55.6	9.1	1.1	6.1	10.6	36.8	63.2
		Rate	People		7.9	27.3	45.7	61.4	11.2	1.0	7.5	13.0	42.9	68.2
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	1,040	0.6	5.8	19.7	35.6	2.2	0.0	0.4	1.0	16.1	43.6
		Rate	People		1.0	8.4	25.3	42.1	3.4	0.0	0.5	1.5	21.0	50.6
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	902	3.8	28.5	57.2	74.7	10.3	0.2	3.7	10.2	51.4	81.0
		Rate	People		5.5	35.6	67.0	81.8	13.8	0.4	5.4	13.7	60.7	86.9
	Overall	Line			1.57	2.79	4.18	5.57	2.11	0.97	1.55	1.94	3.87	6.54
		Rate	HHs	1,942	2.0	15.8	36.2	52.8	5.8	0.1	1.8	5.1	31.7	60.1
		Rate	People		3.0	20.9	44.5	60.4	8.2	0.2	2.8	7.1	39.2	67.3

Table 2 (*Sierra*): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	121	4.0	11.5	42.7	58.3	8.1	1.8	4.0	6.5	36.5	62.5
		Rate	People		4.1	13.9	48.6	62.5	10.3	2.5	4.1	8.0	40.6	67.9
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	384	31.3	68.0	83.9	92.3	34.0	10.3	29.7	41.3	81.1	94.9
		Rate	People		43.4	77.9	89.7	95.6	46.1	14.5	41.4	53.1	87.9	97.3
	Overall	Line			1.05	1.87	2.80	3.74	1.19	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	505	23.9	52.7	72.8	83.1	27.0	8.0	22.8	31.9	69.1	86.1
		Rate	People		33.6	62.0	79.5	87.3	37.1	11.5	32.1	41.9	76.1	90.0
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	143	1.3	7.0	21.2	41.3	3.1	0.0	0.8	1.9	16.2	50.6
		Rate	People		1.4	8.2	26.2	51.3	4.0	0.0	0.7	2.9	18.7	60.9
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	752	13.5	43.1	68.0	82.6	22.6	2.0	13.1	22.5	65.0	88.3
		Rate	People		20.3	54.1	77.5	88.2	32.0	3.4	19.8	31.8	75.1	91.8
	Overall	Line			1.57	2.78	4.18	5.57	2.01	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	895	10.3	33.7	55.8	71.8	17.5	1.5	9.9	17.1	52.3	78.5
		Rate	People		15.8	43.3	65.5	79.5	25.4	2.6	15.3	25.0	61.9	84.5

Table 2 (*Amazonias*): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	192	2.2	14.7	38.8	58.9	4.9	0.0	2.2	3.8	36.1	68.4
		Rate	People		2.9	21.5	47.6	66.9	6.4	0.0	2.9	4.1	44.7	74.4
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	311	14.9	43.6	67.6	78.1	17.2	4.8	14.9	21.9	62.1	83.6
		Rate	People		20.1	53.3	75.3	83.9	23.8	5.6	20.1	30.0	70.7	88.7
	Overall	Line			1.05	1.87	2.80	3.74	1.24	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	503	9.8	32.0	56.1	70.4	12.3	2.9	9.8	14.6	51.7	77.5
		Rate	People		13.5	41.0	64.6	77.4	17.0	3.5	13.5	20.0	60.6	83.1
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	225	0.9	12.9	30.5	43.5	4.0	0.0	0.9	1.4	26.5	48.9
		Rate	People		2.6	19.7	40.7	54.8	7.3	0.0	2.6	3.2	36.1	58.7
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	710	4.5	29.2	56.9	74.2	10.4	0.8	4.2	10.3	52.0	80.6
		Rate	People		6.9	36.7	65.3	80.8	14.7	1.5	6.6	14.6	60.6	85.9
	Overall	Line			1.57	2.79	4.18	5.57	2.07	0.97	1.55	1.94	3.87	6.54
		Rate	HHs	935	3.0	22.3	45.7	61.2	7.7	0.5	2.8	6.5	41.2	67.2
		Rate	People		5.0	29.4	54.7	69.6	11.5	0.8	4.9	9.7	50.0	74.2

Table 3 (Axuay): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	556	0.4	5.5	17.7	33.4	2.7	0.0	0.4	1.1	15.3	43.3
		Rate	People		0.6	6.9	22.1	38.8	3.2	0.0	0.6	1.1	19.3	48.6
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	421	13.8	44.0	67.0	82.9	17.0	2.4	13.2	22.4	63.3	87.7
		Rate	People		16.1	50.6	72.7	87.3	20.3	2.1	15.3	26.6	69.7	90.5
	Overall	Line			1.05	1.87	2.81	3.74	1.28	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	977	6.4	22.7	39.8	55.6	9.1	1.1	6.1	10.6	36.8	63.2
		Rate	People		7.9	27.3	45.7	61.4	11.2	1.0	7.5	13.0	42.9	68.2
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	1,040	0.6	5.8	19.7	35.6	2.2	0.0	0.4	1.0	16.1	43.6
		Rate	People		1.0	8.4	25.3	42.1	3.4	0.0	0.5	1.5	21.0	50.6
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	902	3.8	28.5	57.2	74.7	10.3	0.2	3.7	10.2	51.4	81.0
		Rate	People		5.5	35.6	67.0	81.8	13.8	0.4	5.4	13.7	60.7	86.9
	Overall	Line			1.57	2.79	4.18	5.57	2.11	0.97	1.55	1.94	3.87	6.54
		Rate	HHs	1,942	2.0	15.8	36.2	52.8	5.8	0.1	1.8	5.1	31.7	60.1
		Rate	People		3.0	20.9	44.5	60.4	8.2	0.2	2.8	7.1	39.2	67.3

Table 3 (Bolívar): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	121	4.0	11.5	42.7	58.3	8.1	1.8	4.0	6.5	36.5	62.5
		Rate	People		4.1	13.9	48.6	62.5	10.3	2.5	4.1	8.0	40.6	67.9
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	384	31.3	68.0	83.9	92.3	34.0	10.3	29.7	41.3	81.1	94.9
		Rate	People		43.4	77.9	89.7	95.6	46.1	14.5	41.4	53.1	87.9	97.3
	Overall	Line			1.05	1.87	2.80	3.74	1.19	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	505	23.9	52.7	72.8	83.1	27.0	8.0	22.8	31.9	69.1	86.1
		Rate	People		33.6	62.0	79.5	87.3	37.1	11.5	32.1	41.9	76.1	90.0
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	143	1.3	7.0	21.2	41.3	3.1	0.0	0.8	1.9	16.2	50.6
		Rate	People		1.4	8.2	26.2	51.3	4.0	0.0	0.7	2.9	18.7	60.9
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	752	13.5	43.1	68.0	82.6	22.6	2.0	13.1	22.5	65.0	88.3
		Rate	People		20.3	54.1	77.5	88.2	32.0	3.4	19.8	31.8	75.1	91.8
	Overall	Line			1.57	2.78	4.18	5.57	2.01	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	895	10.3	33.7	55.8	71.8	17.5	1.5	9.9	17.1	52.3	78.5
		Rate	People		15.8	43.3	65.5	79.5	25.4	2.6	15.3	25.0	61.9	84.5

Table 3 (Cañar): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	192	2.2	14.7	38.8	58.9	4.9	0.0	2.2	3.8	36.1	68.4
		Rate	People		2.9	21.5	47.6	66.9	6.4	0.0	2.9	4.1	44.7	74.4
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	311	14.9	43.6	67.6	78.1	17.2	4.8	14.9	21.9	62.1	83.6
		Rate	People		20.1	53.3	75.3	83.9	23.8	5.6	20.1	30.0	70.7	88.7
	Overall	Line			1.05	1.87	2.80	3.74	1.24	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	503	9.8	32.0	56.1	70.4	12.3	2.9	9.8	14.6	51.7	77.5
		Rate	People		13.5	41.0	64.6	77.4	17.0	3.5	13.5	20.0	60.6	83.1
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	225	0.9	12.9	30.5	43.5	4.0	0.0	0.9	1.4	26.5	48.9
		Rate	People		2.6	19.7	40.7	54.8	7.3	0.0	2.6	3.2	36.1	58.7
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	710	4.5	29.2	56.9	74.2	10.4	0.8	4.2	10.3	52.0	80.6
		Rate	People		6.9	36.7	65.3	80.8	14.7	1.5	6.6	14.6	60.6	85.9
	Overall	Line			1.57	2.79	4.18	5.57	2.07	0.97	1.55	1.94	3.87	6.54
		Rate	HHs	935	3.0	22.3	45.7	61.2	7.7	0.5	2.8	6.5	41.2	67.2
		Rate	People		5.0	29.4	54.7	69.6	11.5	0.8	4.9	9.7	50.0	74.2

Table 3 (Carchi): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	265	6.1	28.5	47.7	63.4	18.5	1.4	5.8	15.3	44.0	72.0
		Rate	People		8.8	36.0	55.5	70.1	25.2	2.5	8.6	21.5	51.5	78.4
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	240	33.5	65.7	83.6	91.5	35.7	16.7	33.1	49.7	80.9	93.8
		Rate	People		42.1	76.0	89.1	94.8	44.2	21.1	41.8	60.2	87.3	96.1
	Overall	Line			1.05	1.87	2.81	3.74	1.28	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	505	18.9	45.9	64.4	76.5	26.5	8.5	18.5	31.4	61.2	82.1
		Rate	People		24.9	55.4	71.8	82.1	34.4	11.5	24.7	40.3	68.8	87.0
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	299	1.8	11.9	36.9	53.8	6.4	0.0	1.8	4.8	33.2	62.8
		Rate	People		2.2	16.5	46.4	62.8	9.2	0.0	2.2	6.7	41.1	70.1
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	562	10.0	38.8	69.9	80.8	17.3	1.6	9.7	16.8	65.1	87.8
		Rate	People		14.4	47.6	74.9	84.2	24.3	2.5	14.1	24.1	71.2	91.0
	Overall	Line			1.57	2.79	4.18	5.57	2.09	0.97	1.55	1.94	3.87	6.54
		Rate	HHs	861	6.1	25.9	54.2	67.9	12.1	0.8	5.9	11.1	49.9	75.9
		Rate	People		8.5	32.6	61.2	74.0	17.0	1.3	8.4	15.7	56.8	81.0

Table 3 (Cotopaxi): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	156	3.3	15.2	32.6	46.5	8.2	0.0	2.6	6.5	27.8	59.0
		Rate	People		4.7	21.5	40.9	53.4	12.1	0.0	4.4	9.4	36.0	64.2
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	458	22.6	50.7	73.3	83.8	24.3	9.2	22.2	33.7	70.9	87.9
		Rate	People		28.5	59.7	81.3	89.7	30.6	13.4	28.0	39.9	79.4	92.5
	Overall	Line			1.05	1.87	2.80	3.74	1.19	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	614	17.2	40.8	62.0	73.5	19.8	6.7	16.8	26.2	58.9	79.9
		Rate	People		22.3	49.7	70.8	80.3	25.8	9.9	21.9	32.0	68.1	85.1
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	226	1.7	13.7	31.7	49.1	8.4	0.0	1.7	5.3	28.7	58.9
		Rate	People		2.7	19.0	39.9	57.4	13.1	0.0	2.7	8.6	36.2	65.6
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	887	12.6	45.7	73.4	86.1	23.6	1.8	12.1	23.6	69.2	90.3
		Rate	People		17.4	55.3	79.9	89.9	30.9	2.8	16.8	30.9	76.8	92.9
	Overall	Line			1.57	2.78	4.18	5.57	2.03	0.97	1.55	1.94	3.87	6.53
		Rate	HHs	1,113	9.2	35.7	60.4	74.5	18.8	1.3	8.9	17.8	56.5	80.4
		Rate	People		13.3	45.1	68.6	80.8	25.9	2.0	12.9	24.7	65.4	85.2

Table 3 (Chimborazo): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	240	4.3	16.6	28.7	44.4	8.7	0.8	4.3	6.9	27.4	54.7
		Rate	People		4.8	19.3	32.4	51.8	10.6	0.6	4.8	8.4	30.5	61.3
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	371	36.6	68.7	84.1	91.3	39.7	10.4	35.2	49.8	82.3	93.5
		Rate	People		45.8	76.2	89.0	94.7	49.4	15.1	44.6	59.1	87.5	96.2
	Overall	Line			1.05	1.87	2.80	3.74	1.23	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	611	23.2	47.1	61.2	71.9	26.9	6.4	22.4	32.0	59.5	77.4
		Rate	People		30.0	54.3	67.2	78.2	34.5	9.5	29.3	39.5	65.5	82.7
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	306	0.7	11.4	29.9	45.6	4.5	0.0	0.7	2.6	27.0	56.8
		Rate	People		1.1	15.7	37.2	52.7	6.1	0.0	1.1	3.7	33.7	63.3
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	841	17.1	55.9	80.8	91.5	30.1	4.4	16.2	30.0	76.9	94.5
		Rate	People		24.3	65.5	85.3	93.4	39.4	6.7	23.1	39.3	82.4	95.9
	Overall	Line			1.57	2.78	4.18	5.57	2.02	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	1,147	13.1	45.1	68.4	80.4	23.9	3.3	12.4	23.4	64.8	85.3
		Rate	People		18.7	53.5	73.7	83.6	31.4	5.1	17.8	30.7	70.7	88.0

Table 3 (El Oro): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.34	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	691	1.6	15.0	39.7	56.8	6.0	0.1	1.5	5.4	35.0	66.6
		Rate	People		2.6	19.7	47.5	64.4	9.0	0.1	2.4	8.3	43.1	73.1
	Rural	Line			1.05	1.87	2.80	3.74	1.21	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	213	9.6	44.6	71.4	82.4	14.7	3.6	9.1	20.7	67.2	86.6
		Rate	People		12.5	52.2	79.0	87.4	19.4	4.1	11.8	25.9	75.3	90.5
	Overall	Line			1.04	1.85	2.78	3.71	1.31	0.64	1.03	1.29	2.58	4.35
		Rate	HHs	904	3.5	22.1	47.3	62.9	8.1	0.9	3.3	9.1	42.7	71.4
		Rate	People		5.1	27.7	55.2	70.1	11.6	1.1	4.7	12.6	51.0	77.4
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.18	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	1,396	0.5	11.7	31.5	52.7	4.1	0.0	0.5	1.7	27.6	62.9
		Rate	People		1.1	17.3	40.9	62.2	6.8	0.0	1.1	2.9	36.4	72.0
	Rural	Line			1.57	2.78	4.17	5.57	2.03	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	565	2.2	21.7	52.1	72.6	6.4	0.5	2.2	5.0	45.9	81.5
		Rate	People		2.9	29.7	61.6	80.1	8.6	1.1	2.9	6.8	55.3	86.8
	Overall	Line			1.56	2.76	4.14	5.52	2.15	0.96	1.54	1.92	3.84	6.48
		Rate	HHs	1,961	0.9	14.2	36.5	57.5	4.7	0.1	0.9	2.5	32.1	67.4
		Rate	People		1.5	20.2	45.8	66.4	7.2	0.3	1.5	3.8	40.8	75.5

Table 3 (Esmeraldas): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.34	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	409	5.8	25.8	44.2	56.7	12.5	0.5	5.5	10.6	41.1	65.0
		Rate	People		8.7	37.9	56.9	68.1	19.5	1.0	8.5	16.2	53.8	75.1
	Rural	Line			1.05	1.87	2.80	3.74	1.21	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	300	28.3	54.9	76.6	88.7	34.5	7.0	28.0	39.3	73.8	91.4
		Rate	People		39.2	67.2	85.9	94.6	45.9	10.7	38.6	52.5	84.0	96.0
	Overall	Line			1.05	1.86	2.79	3.71	1.28	0.65	1.03	1.29	2.58	4.36
		Rate	HHs	709	15.0	37.8	57.6	69.9	21.6	3.2	14.8	22.5	54.6	75.9
		Rate	People		21.4	50.2	69.1	79.2	30.5	5.1	21.1	31.4	66.5	83.8
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.18	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	504	4.4	20.3	47.1	65.9	13.3	0.6	4.2	8.7	43.3	73.7
		Rate	People		7.2	29.2	58.6	75.4	20.0	1.0	6.9	13.6	54.9	81.6
	Rural	Line			1.57	2.78	4.17	5.57	2.03	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	583	14.8	50.1	75.2	86.7	30.1	3.1	14.4	27.9	70.8	90.3
		Rate	People		22.9	63.5	85.7	92.7	42.6	5.7	22.7	39.9	81.9	94.9
	Overall	Line			1.56	2.77	4.15	5.53	2.12	0.96	1.54	1.92	3.85	6.49
		Rate	HHs	1,087	8.5	32.1	58.2	74.2	20.0	1.6	8.2	16.3	54.2	80.3
		Rate	People		13.6	43.2	69.6	82.4	29.2	2.9	13.3	24.4	65.9	87.0

Table 3 (Guayas): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.34	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	1,625	3.0	22.0	43.3	59.1	9.2	0.3	2.8	7.5	39.1	65.8
		Rate	People		4.9	29.7	52.5	67.1	13.7	0.3	4.6	11.3	48.2	72.9
	Rural	Line			1.05	1.87	2.80	3.74	1.21	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	252	16.2	48.5	73.0	86.6	23.2	1.6	15.5	25.9	71.9	91.9
		Rate	People		23.6	60.7	83.2	92.4	31.8	2.4	22.5	35.8	82.4	96.6
	Overall	Line			1.04	1.85	2.78	3.70	1.32	0.64	1.03	1.29	2.57	4.35
		Rate	HHs	1,877	4.8	25.7	47.4	62.9	11.1	0.5	4.6	10.1	43.7	69.4
		Rate	People		7.7	34.3	57.1	70.9	16.4	0.6	7.3	14.9	53.3	76.4
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.18	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	2,191	1.0	10.7	30.5	49.3	4.7	0.1	0.9	2.8	25.3	58.5
		Rate	People		1.4	14.9	38.3	58.6	6.8	0.1	1.3	3.9	32.5	67.3
	Rural	Line			1.57	2.78	4.17	5.57	2.03	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	817	4.3	29.7	60.6	78.9	10.0	0.2	4.2	8.6	55.7	85.3
		Rate	People		7.1	38.6	70.8	86.7	15.3	0.3	7.0	13.3	65.8	91.6
	Overall	Line			1.56	2.76	4.14	5.52	2.16	0.96	1.53	1.92	3.84	6.47
		Rate	HHs	3,008	1.4	13.3	34.6	53.3	5.4	0.1	1.4	3.5	29.4	62.1
		Rate	People		2.2	18.1	42.7	62.4	7.9	0.1	2.1	5.2	37.0	70.6

Table 3 (Imbabura): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	384	6.0	22.5	45.0	56.0	11.5	1.7	6.0	8.4	39.5	64.4
		Rate	People		8.7	27.7	52.7	63.2	15.5	3.3	8.7	11.4	47.2	72.1
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	229	32.5	67.9	84.6	92.0	36.2	11.1	31.0	46.7	82.7	93.5
		Rate	People		40.2	74.1	88.9	95.5	44.2	15.6	38.8	55.6	86.8	96.7
	Overall	Line			1.05	1.87	2.81	3.74	1.31	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	613	15.1	37.9	58.5	68.3	19.9	4.9	14.6	21.5	54.2	74.3
		Rate	People		20.4	45.0	66.2	75.3	26.3	7.9	19.9	27.9	62.0	81.3
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	534	0.9	11.3	33.0	47.2	5.1	0.2	0.9	3.2	28.0	56.0
		Rate	People		1.2	16.0	42.9	57.1	7.9	0.0	1.2	5.5	37.3	65.4
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	530	14.4	46.8	74.3	88.1	24.6	1.9	13.9	24.6	70.8	91.3
		Rate	People		20.1	58.9	83.5	92.8	34.2	3.3	19.4	34.2	80.7	95.0
	Overall	Line			1.57	2.79	4.18	5.58	2.13	0.97	1.55	1.94	3.87	6.54
		Rate	HHs	1,064	5.6	23.7	47.4	61.4	11.9	0.8	5.5	10.7	43.0	68.3
		Rate	People		8.4	32.4	58.4	70.7	17.9	1.3	8.2	16.4	53.9	76.7

Table 3 (Loja): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	263	1.7	9.4	28.1	40.7	3.1	0.0	1.7	3.1	22.4	49.8
		Rate	People		2.6	12.1	33.6	45.8	5.4	0.0	2.6	5.4	28.0	54.9
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	347	26.6	63.7	81.9	90.3	29.1	10.4	25.8	40.7	78.7	92.6
		Rate	People		34.3	74.7	87.9	93.8	37.2	15.1	33.4	51.6	85.5	95.5
	Overall	Line			1.05	1.87	2.80	3.74	1.25	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	610	15.4	39.4	57.8	68.1	17.4	5.8	15.0	23.8	53.5	73.4
		Rate	People		20.7	47.8	64.6	73.2	23.6	8.6	20.2	31.8	60.8	78.1
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	387	1.0	11.4	29.0	43.3	5.5	0.0	1.0	3.1	24.3	52.5
		Rate	People		2.1	15.0	34.5	49.0	8.1	0.0	2.1	4.9	29.9	58.0
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	776	8.2	38.0	68.5	83.7	17.0	1.0	7.8	17.0	63.8	88.9
		Rate	People		12.6	50.3	78.5	89.9	24.4	2.0	11.9	24.4	74.3	93.5
	Overall	Line			1.57	2.79	4.18	5.57	2.11	0.97	1.55	1.94	3.87	6.54
		Rate	HHs	1,163	4.4	23.9	47.5	62.2	10.9	0.5	4.2	9.6	42.8	69.6
		Rate	People		7.0	31.3	54.8	67.9	15.6	0.9	6.6	13.9	50.4	74.4

Table 3 (Los Ríos): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.34	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	466	7.8	33.3	56.5	70.5	18.3	0.9	7.5	16.2	53.1	77.2
		Rate	People		10.8	42.5	66.1	79.1	24.7	1.1	10.6	22.3	62.7	83.8
	Rural	Line			1.05	1.87	2.80	3.74	1.21	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	345	10.2	46.2	73.8	87.5	15.4	1.5	9.6	20.8	70.8	92.0
		Rate	People		16.9	57.5	82.1	93.0	22.7	1.9	16.1	30.2	78.9	96.3
	Overall	Line			1.05	1.86	2.79	3.72	1.28	0.65	1.03	1.29	2.58	4.36
		Rate	HHs	811	8.8	38.7	63.9	77.7	17.1	1.2	8.4	18.1	60.6	83.5
		Rate	People		13.5	49.0	73.0	85.1	23.8	1.5	13.0	25.7	69.7	89.2
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.18	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	569	3.5	20.6	47.2	65.8	11.2	0.5	3.5	7.4	43.1	73.4
		Rate	People		5.6	27.8	57.2	74.0	17.3	0.9	5.6	11.6	53.2	81.1
	Rural	Line			1.57	2.78	4.17	5.57	2.03	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	680	4.4	31.3	64.3	80.6	13.7	0.3	4.3	11.0	57.2	86.8
		Rate	People		6.9	41.1	75.1	88.9	19.6	0.5	6.6	16.5	68.9	92.9
	Overall	Line			1.56	2.77	4.15	5.53	2.12	0.96	1.54	1.92	3.85	6.49
		Rate	HHs	1,249	3.9	25.2	54.5	72.1	12.3	0.4	3.8	8.9	49.2	79.1
		Rate	People		6.2	33.3	64.7	80.2	18.2	0.7	6.0	13.6	59.7	86.0

Table 3 (Manabí): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.34	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	542	9.2	31.5	52.9	65.7	16.7	1.6	8.8	15.3	49.3	72.5
		Rate	People		13.0	38.5	60.4	72.7	22.2	2.1	12.5	20.3	56.5	78.9
	Rural	Line			1.05	1.87	2.80	3.74	1.21	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	420	19.0	63.8	84.8	92.8	27.3	1.2	17.8	32.9	82.4	95.2
		Rate	People		27.1	73.5	90.6	95.9	36.5	1.7	25.5	42.6	88.4	97.3
	Overall	Line			1.05	1.86	2.79	3.72	1.28	0.65	1.03	1.29	2.58	4.36
		Rate	HHs	962	13.3	45.0	66.2	77.0	21.1	1.5	12.6	22.6	63.1	82.0
		Rate	People		19.1	53.8	73.6	82.9	28.5	1.9	18.2	30.0	70.4	86.9
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.18	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	597	1.5	15.2	39.4	58.8	6.9	0.2	1.5	4.7	36.3	66.4
		Rate	People		1.9	19.3	47.8	67.7	9.7	0.3	1.9	6.4	44.3	74.6
	Rural	Line			1.57	2.78	4.17	5.57	2.03	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	678	8.2	38.6	67.8	84.4	18.7	0.7	7.0	15.6	63.7	90.3
		Rate	People		12.9	50.1	77.8	90.6	27.0	1.6	11.2	22.7	74.1	94.3
	Overall	Line			1.56	2.77	4.15	5.53	2.12	0.96	1.54	1.92	3.84	6.49
		Rate	HHs	1,275	4.2	24.5	50.7	68.9	11.6	0.4	3.7	9.0	47.1	75.9
		Rate	People		6.3	31.3	59.6	76.6	16.5	0.8	5.6	12.8	56.0	82.3

Table 3 (Morona Santiago): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.33	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	82	1.0	15.8	26.1	36.9	3.6	0.0	1.0	3.6	22.0	45.9
		Rate	People		0.8	23.5	33.1	43.1	4.4	0.0	0.8	4.4	30.1	52.0
	Rural	Line			1.05	1.87	2.80	3.74	0.67	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	119	61.8	74.5	88.9	91.1	39.9	39.4	61.8	67.2	86.6	93.5
		Rate	People		72.6	82.5	93.3	94.5	53.3	52.7	72.6	76.9	91.7	96.3
	Overall	Line			1.05	1.86	2.80	3.73	0.81	0.65	1.04	1.30	2.59	4.37
		Rate	HHs	201	44.7	58.0	71.3	75.9	29.7	28.4	44.7	49.3	68.4	80.1
		Rate	People		57.3	69.9	80.5	83.6	42.9	41.6	57.3	61.6	78.6	86.9
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.11	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	93	2.8	12.8	24.7	44.5	6.5	0.0	2.8	3.7	23.7	54.5
		Rate	People		6.7	21.0	37.8	53.3	12.4	0.0	6.7	7.9	36.1	62.6
	Rural	Line			1.57	2.78	4.17	5.57	1.58	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	638	27.5	58.3	75.6	85.0	27.7	11.5	27.0	37.5	72.7	88.8
		Rate	People		38.8	69.8	82.9	89.7	39.0	18.1	38.4	48.9	80.9	92.8
	Overall	Line			1.56	2.78	4.17	5.55	1.70	0.96	1.54	1.93	3.86	6.51
		Rate	HHs	731	21.2	46.8	62.8	74.8	22.4	8.6	20.9	29.0	60.4	80.1
		Rate	People		31.5	58.7	72.6	81.4	32.9	14.0	31.1	39.5	70.6	85.9

Table 3 (Napo): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.33	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	84	12.3	27.5	45.2	53.2	15.9	6.0	12.3	15.9	39.5	58.5
		Rate	People		28.2	42.2	59.3	64.6	32.4	16.3	28.2	32.4	52.0	69.2
	Rural	Line			1.05	1.87	2.80	3.74	0.67	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	60	45.0	68.7	79.1	87.6	28.2	28.2	45.0	55.5	76.7	89.7
		Rate	People		56.4	79.0	84.9	90.8	38.3	38.3	56.4	67.1	84.0	93.6
	Overall	Line			1.05	1.86	2.79	3.72	0.99	0.65	1.03	1.29	2.58	4.36
		Rate	HHs	144	27.6	46.8	61.1	69.3	21.7	16.4	27.6	34.5	56.9	73.1
		Rate	People		42.7	61.2	72.5	78.1	35.4	27.6	42.7	50.3	68.5	81.8
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.11	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	213	3.3	13.1	29.4	45.0	6.1	0.0	3.3	5.1	26.6	56.2
		Rate	People		7.0	20.3	38.9	55.6	10.2	0.0	7.0	9.0	35.0	66.7
	Rural	Line			1.57	2.78	4.17	5.57	1.58	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	511	32.5	56.8	73.8	84.6	32.9	12.4	31.7	42.1	71.2	87.2
		Rate	People		44.0	68.9	83.4	91.6	44.5	18.9	43.1	54.6	81.3	93.3
	Overall	Line			1.56	2.77	4.16	5.55	1.74	0.96	1.54	1.93	3.86	6.51
		Rate	HHs	724	21.1	39.8	56.5	69.2	22.5	7.6	20.7	27.7	53.9	75.2
		Rate	People		32.8	54.2	69.9	80.7	34.2	13.2	32.1	40.8	67.3	85.2

Table 3 (Pastaza): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.33	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	96	3.7	10.3	31.3	44.6	4.3	0.0	2.2	4.3	28.1	57.6
		Rate	People		5.1	11.4	37.0	51.8	6.0	0.0	3.1	6.0	32.5	62.4
	Rural	Line			1.05	1.87	2.80	3.74	0.67	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	47	64.6	76.8	84.0	87.8	45.4	43.7	64.6	64.6	81.2	88.9
		Rate	People		77.9	85.8	90.8	93.3	60.5	59.4	77.9	77.9	88.3	94.4
	Overall	Line			1.05	1.86	2.79	3.72	0.94	0.65	1.03	1.29	2.59	4.36
		Rate	HHs	143	33.5	42.8	57.1	65.7	24.4	21.4	32.7	33.8	54.0	72.9
		Rate	People		48.4	55.6	68.9	76.5	38.4	35.3	47.6	48.7	65.6	81.4
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.11	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	272	2.3	12.4	30.1	42.2	5.6	0.4	2.0	4.5	26.8	53.6
		Rate	People		5.0	17.9	39.0	50.7	9.6	0.7	4.6	8.1	35.4	62.1
	Rural	Line			1.57	2.78	4.17	5.57	1.58	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	443	22.5	51.7	74.7	83.8	22.6	6.7	22.0	31.7	68.3	88.2
		Rate	People		34.0	65.0	84.2	91.4	34.1	11.6	33.5	45.4	78.6	94.4
	Overall	Line			1.56	2.77	4.16	5.54	1.81	0.96	1.54	1.93	3.85	6.50
		Rate	HHs	715	12.5	32.2	52.6	63.2	14.2	3.6	12.1	18.3	47.8	71.1
		Rate	People		21.5	44.7	64.7	73.8	23.5	6.9	21.0	29.3	60.0	80.5

Table 3 (Pichincha): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	1,257	2.1	13.5	30.7	46.1	6.5	0.3	2.1	4.4	26.3	50.7
		Rate	People		2.8	18.4	38.5	55.0	9.0	0.5	2.8	5.9	33.6	59.3
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	240	13.7	44.2	63.3	77.5	15.5	4.4	13.7	22.4	58.4	81.1
		Rate	People		17.4	50.4	68.3	80.8	20.5	6.3	17.4	28.9	64.1	84.0
	Overall	Line			1.05	1.87	2.81	3.74	1.38	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	1,497	3.8	18.1	35.6	50.8	7.9	0.9	3.8	7.1	31.1	55.3
		Rate	People		5.1	23.5	43.3	59.1	10.9	1.4	5.1	9.6	38.5	63.3
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	1,809	0.7	6.4	20.1	35.8	3.0	0.2	0.6	1.5	16.9	45.4
		Rate	People		1.1	9.6	25.8	42.7	4.9	0.4	0.9	2.3	22.2	52.3
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	1,079	3.0	21.3	46.0	63.6	7.0	0.5	2.9	7.0	41.0	71.6
		Rate	People		5.3	27.3	54.2	71.1	10.3	1.1	5.2	10.3	49.5	77.6
	Overall	Line			1.57	2.79	4.18	5.58	2.20	0.97	1.55	1.94	3.88	6.54
		Rate	HHs	2,888	1.0	8.4	23.7	39.6	3.5	0.2	0.9	2.2	20.2	49.0
		Rate	People		1.7	12.1	29.9	46.8	5.7	0.5	1.5	3.4	26.2	56.0

Table 3 (Tungurahua): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.06	1.87	2.81	3.75	1.43	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	374	2.0	12.4	26.5	41.6	4.8	0.0	2.0	3.8	23.4	49.4
		Rate	People		2.4	16.5	33.5	49.3	6.0	0.0	2.4	4.5	29.9	56.3
	Rural	Line			1.05	1.87	2.80	3.74	1.11	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	446	15.4	48.2	74.6	86.8	17.0	3.4	14.3	23.1	68.7	90.5
		Rate	People		18.8	55.1	78.9	90.1	20.8	4.2	17.4	27.6	74.5	93.3
	Overall	Line			1.05	1.87	2.81	3.74	1.26	0.65	1.04	1.30	2.60	4.39
		Rate	HHs	820	8.9	30.8	51.2	64.8	11.1	1.7	8.3	13.7	46.7	70.5
		Rate	People		11.3	37.3	58.0	71.4	14.0	2.3	10.5	17.0	54.0	76.3
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	340	0.5	5.0	20.7	34.4	2.1	0.0	0.5	1.5	15.7	43.9
		Rate	People		0.8	6.9	25.9	41.3	2.6	0.0	0.8	1.7	20.0	50.8
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	815	5.9	34.2	58.0	75.0	12.9	0.4	5.3	12.5	53.6	81.8
		Rate	People		8.2	40.8	64.2	79.4	16.9	0.6	7.3	16.4	59.7	85.7
	Overall	Line			1.57	2.79	4.18	5.57	2.07	0.97	1.55	1.94	3.87	6.54
		Rate	HHs	1,155	3.6	21.6	41.9	57.4	8.2	0.2	3.3	7.7	37.2	65.4
		Rate	People		5.2	26.8	48.4	63.7	11.0	0.4	4.6	10.3	43.3	71.2

Table 3 (Zamora-Chinchipe): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.33	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	49	3.8	20.7	38.1	61.2	5.7	0.0	3.8	5.7	34.5	67.6
		Rate	People		5.7	30.5	50.1	71.0	9.8	0.0	5.7	9.8	46.2	77.9
	Rural	Line			1.05	1.87	2.80	3.74	0.67	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	71	35.6	68.0	84.7	87.0	14.9	13.1	35.6	41.5	83.3	90.5
		Rate	People		43.6	75.7	91.1	93.1	23.7	21.4	43.6	49.1	89.9	95.9
	Overall	Line			1.05	1.86	2.79	3.73	0.85	0.65	1.04	1.29	2.59	4.37
		Rate	HHs	120	25.2	52.6	69.5	78.6	11.9	8.8	25.2	29.8	67.4	83.0
		Rate	People		33.2	63.4	79.9	87.0	19.9	15.5	33.2	38.4	77.9	91.0
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.11	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	119	0.8	11.7	35.2	56.2	4.2	0.0	0.8	1.7	30.2	64.6
		Rate	People		1.9	19.2	43.5	66.9	6.9	0.0	1.9	3.2	38.8	75.3
	Rural	Line			1.57	2.78	4.17	5.57	1.58	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	602	7.7	39.0	65.8	79.8	7.8	1.1	7.2	15.7	61.9	85.4
		Rate	People		11.5	50.1	76.3	87.8	11.7	2.3	10.8	21.8	72.9	91.7
	Overall	Line			1.56	2.78	4.16	5.55	1.72	0.96	1.54	1.93	3.86	6.51
		Rate	HHs	721	5.7	31.3	57.1	73.2	6.8	0.8	5.4	11.8	53.0	79.5
		Rate	People		9.0	42.0	67.7	82.3	10.5	1.7	8.5	16.9	63.9	87.4

Table 3 (Galápagos): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.55	2.76	4.13	5.51	2.18	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	421	0.0	0.0	0.5	3.6	0.0	0.0	0.0	0.0	0.5	7.6
		Rate	People		0.0	0.0	0.6	4.4	0.0	0.0	0.0	0.0	0.6	9.5
	Rural	Line			1.57	2.78	4.17	5.57	2.03	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	136	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	12.5
		Rate	People		0.0	0.0	0.0	4.9	0.0	0.0	0.0	0.0	0.0	16.1
	Overall	Line			1.56	2.77	4.15	5.53	2.12	0.96	1.54	1.92	3.85	6.49
		Rate	HHs	557	0.0	0.0	0.3	3.3	0.0	0.0	0.0	0.0	0.3	9.5
		Rate	People		0.0	0.0	0.4	4.6	0.0	0.0	0.0	0.0	0.4	12.2
2013/14	Urban	Line			1.04	1.85	2.77	3.70	1.33	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	120	3.8	10.3	25.4	39.4	3.8	0.0	3.8	3.8	19.4	48.0
		Rate	People		5.9	14.6	36.1	51.8	5.9	0.0	5.9	5.9	28.7	60.1
	Rural	Line			1.05	1.87	2.80	3.74	0.67	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	133	16.6	51.1	76.4	89.9	4.7	4.7	16.6	28.3	70.3	92.7
		Rate	People		22.5	59.9	83.0	93.3	9.5	9.5	22.5	34.6	75.8	95.2
	Overall	Line			1.05	1.86	2.79	3.72	0.88	0.65	1.04	1.29	2.59	4.37
		Rate	HHs	253	11.8	35.9	57.4	71.1	4.4	3.0	11.8	19.1	51.3	76.1
		Rate	People		17.2	45.6	68.2	80.2	8.3	6.5	17.2	25.6	60.9	84.2

Table 3 (Sucumbíos): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.33	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	120	3.8	10.3	25.4	39.4	3.8	0.0	3.8	3.8	19.4	48.0
		Rate	People		5.9	14.6	36.1	51.8	5.9	0.0	5.9	5.9	28.7	60.1
	Rural	Line			1.05	1.87	2.80	3.74	0.67	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	133	16.6	51.1	76.4	89.9	4.7	4.7	16.6	28.3	70.3	92.7
		Rate	People		22.5	59.9	83.0	93.3	9.5	9.5	22.5	34.6	75.8	95.2
	Overall	Line			1.05	1.86	2.79	3.72	0.88	0.65	1.04	1.29	2.59	4.37
		Rate	HHs	253	11.8	35.9	57.4	71.1	4.4	3.0	11.8	19.1	51.3	76.1
		Rate	People		17.2	45.6	68.2	80.2	8.3	6.5	17.2	25.6	60.9	84.2
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.11	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	274	0.7	8.3	31.6	51.6	3.3	0.0	0.7	1.8	25.1	63.3
		Rate	People		0.5	12.7	39.7	60.4	5.5	0.0	0.5	2.6	31.4	71.2
	Rural	Line			1.57	2.78	4.17	5.57	1.58	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	511	16.5	49.2	70.0	82.8	17.1	3.1	15.6	26.8	66.6	88.8
		Rate	People		24.8	61.1	79.9	89.2	25.4	5.7	23.9	37.2	77.2	94.0
	Overall	Line			1.56	2.77	4.16	5.55	1.78	0.96	1.54	1.93	3.85	6.50
		Rate	HHs	785	10.0	32.2	54.0	69.9	11.4	1.8	9.4	16.4	49.4	78.2
		Rate	People		15.5	42.6	64.5	78.2	17.8	3.5	15.0	24.0	59.7	85.3

Table 3 (Puerto Francisco de Orellana): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			1.04	1.85	2.77	3.70	1.33	0.64	1.03	1.29	2.57	4.34
		Rate	HHs	58	3.5	23.9	54.1	67.3	11.3	0.0	3.5	6.1	47.7	79.1
		Rate	People		5.8	33.8	68.1	78.2	16.0	0.0	5.8	9.4	59.7	87.2
	Rural	Line			1.05	1.87	2.80	3.74	0.67	0.65	1.04	1.30	2.60	4.38
		Rate	HHs	83	39.4	66.8	81.5	90.9	26.8	26.4	36.2	49.8	79.0	91.2
		Rate	People		48.9	76.2	87.2	94.3	36.2	35.8	44.5	61.7	85.4	94.5
	Overall	Line			1.05	1.86	2.79	3.72	0.95	0.65	1.03	1.29	2.58	4.36
		Rate	HHs	141	21.8	45.8	68.1	79.4	19.2	13.5	20.2	28.5	63.7	85.3
		Rate	People		30.6	58.2	79.1	87.5	27.6	20.6	28.0	39.5	74.5	91.4
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.11	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	286	1.3	12.8	33.9	50.7	6.6	0.0	1.3	4.4	27.5	58.8
		Rate	People		2.3	18.2	43.6	61.6	9.6	0.0	2.3	6.7	36.7	68.6
	Rural	Line			1.57	2.78	4.17	5.57	1.58	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	449	20.3	46.0	69.2	85.1	20.5	7.5	19.8	30.9	64.5	89.3
		Rate	People		33.1	62.0	81.2	91.9	33.5	13.3	32.4	46.3	77.8	94.3
	Overall	Line			1.56	2.77	4.16	5.54	1.81	0.96	1.54	1.93	3.85	6.50
		Rate	HHs	735	10.8	29.5	51.6	68.0	13.6	3.8	10.6	17.7	46.1	74.1
		Rate	People		19.6	42.7	64.7	78.6	23.0	7.5	19.2	28.9	59.7	83.0

Table 3 (Santa Elena): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			—	—	—	—	—	—	—	—	—	—
		Rate	HHs	—	—	—	—	—	—	—	—	—	—	—
		Rate	People		—	—	—	—	—	—	—	—	—	—
	Rural	Line			—	—	—	—	—	—	—	—	—	—
		Rate	HHs	—	—	—	—	—	—	—	—	—	—	—
		Rate	People		—	—	—	—	—	—	—	—	—	—
	Overall	Line			—	—	—	—	—	—	—	—	—	—
		Rate	HHs	—	—	—	—	—	—	—	—	—	—	—
		Rate	People		—	—	—	—	—	—	—	—	—	—
2013/14	Urban	Line			1.57	2.79	4.19	5.58	2.25	0.97	1.55	1.94	3.88	6.55
		Rate	HHs	701	2.0	15.6	39.2	57.5	7.6	0.3	1.9	4.5	35.9	66.0
		Rate	People		3.2	20.6	47.0	64.6	10.7	0.2	3.1	6.8	43.4	73.1
	Rural	Line			1.57	2.78	4.17	5.57	1.94	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	285	3.4	31.9	57.2	73.9	10.8	0.6	3.0	10.8	51.7	82.8
		Rate	People		4.3	42.3	67.4	82.2	15.8	0.6	3.9	15.8	62.4	88.1
	Overall	Line			1.57	2.79	4.18	5.58	2.18	0.97	1.55	1.94	3.88	6.54
		Rate	HHs	986	2.3	19.0	43.0	60.9	8.3	0.4	2.1	5.8	39.2	69.6
		Rate	People		3.5	25.3	51.4	68.4	11.8	0.3	3.2	8.7	47.5	76.3

Table 3 (Santo Domingo de los Tsáchilas): Poverty lines and poverty rates (for households and people) by urban/rural/overall in 2005/6 and 2013/14

Year	Area	Line or rate	HHs or People	n	National				Poorest half	International 2005 PPP				
					Food	100%	150%	200%	< 100% Natl.	$1.25	$2.00	$2.50	$5.00	$8.44
2005/6	Urban	Line			—	—	—	—	—	—	—	—	—	—
		Rate	HHs	—	—	—	—	—	—	—	—	—	—	—
		Rate	People		—	—	—	—	—	—	—	—	—	—
	Rural	Line			—	—	—	—	—	—	—	—	—	—
		Rate	HHs	—	—	—	—	—	—	—	—	—	—	—
		Rate	People		—	—	—	—	—	—	—	—	—	—
	Overall	Line			—	—	—	—	—	—	—	—	—	—
		Rate	HHs	—	—	—	—	—	—	—	—	—	—	—
		Rate	People		—	—	—	—	—	—	—	—	—	—
2013/14	Urban	Line			1.55	2.76	4.13	5.51	2.18	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	759	1.4	21.9	47.5	67.9	9.7	0.1	1.4	5.0	41.5	75.3
		Rate	People		2.1	29.4	57.9	77.8	13.5	0.1	2.1	6.9	52.3	83.6
	Rural	Line			1.57	2.78	4.17	5.57	2.03	0.97	1.55	1.93	3.87	6.53
		Rate	HHs	165	3.5	28.5	58.5	76.5	9.5	0.0	3.5	6.4	54.9	87.3
		Rate	People		5.0	39.1	69.5	83.0	13.1	0.0	5.0	8.2	66.3	91.6
	Overall	Line			1.55	2.76	4.14	5.52	2.16	0.96	1.53	1.92	3.83	6.47
		Rate	HHs	924	1.7	22.7	48.8	68.9	9.6	0.1	1.7	5.1	43.1	76.7
		Rate	People		2.4	30.6	59.4	78.4	13.4	0.1	2.4	7.1	54.1	84.7

Table 4: Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
1,529	How many household members are 18-years-old or younger? (Four or more; Three; Two; One; None)
1,522	How many household members are 17-years-old or younger? (Four or more; Three; Two; One; None)
1,520	How many household members are 16-years-old or younger? (Four or more; Three; Two; One; None)
1,507	How many household members are 15-years-old or younger? (Four or more; Three; Two; One; None)
1,376	How many household members are 14-years-old or younger? (Three or more; Two; One; None)
1,342	How many members does the household have? (Six or more; Five; Four; Three; Two; One)
1,333	How many household members are 13-years-old or younger? (Three or more; Two; One; None)
1,325	How many household members are 12-years-old or younger? (Three or more; Two; One; None)
1,238	How many household members are 11-years-old or younger? (Three or more; Two; One; None)
907	Does any household member currently receive the Human-Development Grant? (Yes; No)
870	Is the bathroom inside the residence? (No; Yes)
854	What is the main material of the floor of the residence? (Dirt; Untreated planks, reeds, or other; Cement/bricks; Ceramic tile, stone, vinyl, marble, faux marble, treated planks, or concrete slab)
811	In their main job or occupation in the past week, how many household members worked in an elementary occupation or as a skilled agricultural, forestry, or fishery worker? (Two or more; One; None)
800	The toilet arrangement that this household uses is . . .? (None, latrine, or flush toilet and pit; Flush toilet and septic tank; Flush toilet to sewer system)
795	In which province does the household live? (Carchi, or Chimborazo; Cotopaxi, or Imbabura; Morona Santiago, or Tungurahua; Bolívar, Cañar, Loja, Napo, or Pichincha; Axuay, Esmeraldas, Los Ríos, Manabí, Pastaza, Santa Elena, Santo Domingo de los Tsáchilas, Sucumbíos, or Zamora-Chinchipe; El Oro, Galápagos, Guayas, or Puerto Francisco de Orellana)
778	Does the household have a place with running water to take a bath or shower? (No; Yes)
767	How many household members are 6-years-old or younger? (Two or more; Two; One; None)
685	How many light bulbs does the household use? (None, one, or two; Three; Four; Five; Six or seven; Eight or more)

Table 4 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
653	Does the household have a land-line telephone? (No; Yes)
648	Does the household have a land-line telephone? (No; Yes)
633	What is the highest education level completed by the female head/spouse? (None, basic literacy center, pre-primary education, kindergarten, basic education, or grade school; Middle school or *bachillerato*, or high school; No female head/spouse; Post *bachillerato*, or non-university post-secondary, college/university, or post-graduate)
612	In the current (school) year, were all household members ages 6 to 15 enrolled in any class or course of studies in an educational institution of any kind? (No; Yes; There are no household members of in this age range)
607	What is the main means of access to the residence? (Path/trail, river, ocean, or lake, or other; Gravel or dirt road; Cobblestone road; Paved, all-weather road)
606	In the current (school) year, were all household members ages 6 to 14 enrolled in any class or course of studies in an educational institution of any kind? (No; Yes; There are no household members of in this age range)
604	What was the main job or occupation of the female head/spouse last week? (Skilled agricultural, forestry and fishery workers; Elementary occupations; Does not work; Craft and related trades workers; Plant and machine operators, and assemblers; Service and sales workers; No female head/spouse; Armed forces, managers, professionals, technicians and associate professionals, or clerical support workers)
595	In the current (school) year, were all household members ages 6 to 16 enrolled in any class or course of studies in an educational institution of any kind? (No; Yes; There are no household members of in this age range)
590	Does the household have a laptop computer, notebook, tablet, or desktop? (No; Yes)
580	Does the household have a blender, waffle iron/sandwich grill, or electric mixer? (No; Only blender C. Waffle iron/sandwich grill, or electric mixer (regardless of blender)

Table 4 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
568	In the current (school) year, were all household members ages 6 to 13 enrolled in any class or course of studies in an educational institution of any kind? (No; Yes; There are no household members of in this age range)
562	In the current (school) year, were all household members ages 6 to 12 enrolled in any class or course of studies in an educational institution of any kind? (No; Yes; There are no household members of in this age range)
558	In the current (school) year, were all household members ages 6 to 17 enrolled in any class or course of studies in an educational institution of any kind? (No; Yes; There are no household members of in this age range)
555	What was the main job or occupation of the male head/spouse last week? (Skilled agricultural, forestry and fishery workers; Elementary occupations; Does not work; Craft and related trades workers; No male head/spouse; Plant and machine operators, and assemblers; Service and sales workers; Armed forces, managers, professionals, technicians and associate professionals, or clerical support workers)
554	The female head/spouse considers herself to be . . .? (Native or indigenous; Afro-Ecuatoriano, Negro, Mulato, or Montubio; Mestiza; Caucasian, or other; No female head/spouse)
536	Does the household have a clothes-washing machine or a washer-dryer? (No; Yes)
520	In the current (school) year, were all household members ages 6 to 11 enrolled in any class or course of studies in an educational institution of any kind? (No; Yes; There are no household members of in this age range)
512	In the current (school) year, were all household members ages 6 to 18 enrolled in any class or course of studies in an educational institution of any kind? (No; Yes; There are no household members of in this age range)
500	In their main job or occupation in the past week, how many household members worked in an elementary occupation? (Two or more; One; None)

Table 4 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
494	How many batteries does the household use (in remote controls, clocks, and smoke detectors)? (None; One; Two; Three; Four; Five; Six; Seven; Eight; Nine, or ten; Eleven, or twelve; Thirteen)
491	In their main job or occupation in the past week, did any household member work as a skilled agricultural, forestry, or fishery worker? (Yes; No)
489	Does the household have a refrigerator? (No; Yes)
477	What is the highest education level completed by the male head/spouse? (None, basic literacy center, pre-primary education, kindergarten, basic education, or grade school; No female head/spouse; Middle school or *bachillerato*, or high school; Post *bachillerato*, or non-university post-secondary, college/university, or post-graduate)
465	How many color or plasma/LCD/LED televisions does the household have? (None; One; Two or more)
458	What is the type of residence (observed)? (Rural house, shanty, hut, or other; Emergency housing; Rented room(s); Detached house; Apartment in a house or apartment building)
453	What is the main source of water for the household? (River, watershed, stream, or other; Well or spring; Water truck or tricycle; Public network)
440	Can the female head/spouse speak a native/indigenous language? (Yes; No; No female head/spouse)
424	Does the household have a TV (black-and-white, color, plasma/LCD/LED) and a VCR/DVD/Blu-ray/home-theatre system? (No television (regardless of video-playback device); One or more TVs, but no video-playback device; One TV, and a video-playback device; More than one TV, and a video-playback device)
423	In their main job or occupation of the past week, did any household member work as a self-employed farmer? (Yes; No)
405	Does the household have an oven of any type (including microwaves)? (No; Yes)
404	The male head/spouse considers himself to be . . .? (Native or indigenous; Afro-Ecuatoriano, Negro, Mulato, or Montubio; Mestizo; No male head/spouse; Caucasian, or other)

Table 4 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
380	Does the household have an iron? (No; Yes)
372	What is the main material of the roof or covering of the residence? (Tile, palm leaves, straw, or leaves; Tin; Asbestos (Eternit, Eurolit), wood, or other; Reinforced concrete/flagstone/concrete)
364	Can the male head/spouse speak a native/indigenous language? (Yes; No; No male head/spouse)
363	In this household, cooking is mainly with . . .? (Firewood/charcoal, or other; Gas, electricity, or does not cook)
362	What is the main material of the walls of the residence? (Wood, or other; Cane without mud in chinks, wattle and daub, or adobe or mud; Reinforced concrete, or cinder blocks/bricks, or asbestos or cement (Fibrolit))
356	Can any household member speak a native/indigenous language? (Yes; No)
346	Does the household have a blender? (No; Yes)
343	How many bathrooms does that household have that are exclusively for its own use? (None; One; Two or more)
342	Does the household have cable or a satellite dish? (No; Yes)
319	How many square meters is the residence? (1 to 301; 31 to 40; 41 to 49; 50 to 59; 60 to 69; 70 to 79; 80 to 89; 90 to 99; 100 to 119; 120 to 149; 150 or more)
317	Does the household have a fixed stove with four burners (with or without an oven)? (No; Yes)
296	What purification process you apply to water before drinking?(None, straight as-is; Boil, or chlorine tablets; Buy purified water, or filter)
294	In their main job or occupation of the past week, did any household member work as a casual laborer? (Yes; No)
291	What is the current marital status of the female head/spouse? (Married; Cohabiting; Separated; Widowed; Single, never-married; No female head/spouse; Divorced)
284	Does the household have an electric mixer? (No; Yes)

Table 4 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
279	In their main job or occupation in the past week, were any household members a member of the armed forces, manager, professional, technician or associated professional, or clerical support worker? (No; Yes)
261	Does the female head/spouse know how to read and write? (No; Yes; No female head/spouse)
252	The source of piped water is located . . .? (Does not use piped water; Piped outside of the residence but inside the yard or lot, piped outside of the building, yard, or lot, or piped into the residence)
248	The piped water supply is . . .? (Does not use piped water; Intermittent; Continuous)
247	What is the structure of household headship? (Both male and female heads/spouses; Female head/spouse only; Male head/spouse only)
237	What is the current marital status of the male head/spouse? (Cohabiting; Married; No male head/spouse; Widowed; Separated, divorced, or single, never-married)
234	How many household members worked for at least one one hour in the past week? (Three or more; Two; One; None)
216	Does the household have a waffle iron or sandwich maker? (No; Yes)
207	Does the household have a hi-fi stereo system? (No; Yes)
190	Does the household have a fan? (No; Yes)
179	Does your household iron clothes? (No; Yes)
173	Does the male head/spouse know how to read and write? (No; Yes; No male head/spouse)
166	Does the houseold have a movable stove with two burners? (Yes; No)
162	How many rooms does the household have available for use, not counting kitchens, bathrooms, garages, or rooms used only for business? (One, or two; Three; Four or more)
139	Does the residence have an electrical meter? (No; Yes)
131	In the past week, did the female head/spouse work for at least one hour? (No; Yes; No female head/spouse)
112	Does the household have a VCR/DVD/Blu-ray/home-theatre system? (No; Yes)

Table 4 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
101	In their main job or occupation of the past week, how many household members were worked as wage or salaried employees in private enterprise or the government? (None; One; Two or more)
100	The tenancy status of the household in its residence is . . .? (Received as a gift, given in return for service, or other; Owned free-and-clear; Rented, owned with a mortgage, or pre-paid/pre-rented)
91	Did the male head/spouse work for at least one hour in the past week? (No; No male head/spouse; Yes)
87	How many household members 12-years-old or older have an activated cellular telephone? (None; One; Two; Three or more)
69	Where do the members of this household normally cook? (In a room also used for sleeping, in the yard, hallway, or other place, or does not cook; In the living room or dining room; In a room used only for cooking)
68	In what region does the household live? (Amazonía; Sierra; Costa)
67	Does the household have a sewing machine? (No; Yes)
62	Does the household have a video-game machine (Playstation, Nintendo, Wii, etc.)? (No; Sí)
45	In their main job or occupation of the past week, was the make head/spouse or the female head/spouse self-employed outside of agriculture? (No; Yes)
38	In their main job or occupation of the past week, was any household member self-employed outside of agriculture? (No; Yes)
19	Does the household have a bicycle, motorcycle, or car? (None; Only bicycle; Motorcycle, but no car (regardless of bicycle); Car (regardless of others))
18	Does the household have a clothes dryer or a washer/dryer? (No; Yes)
16	How many rooms does the household use only for sleeping? (One; Two; Three or more)
15	Does the household have a bicycle? (No; Yes)
7	Does the household have a motorcycle? (No; Yes)
7	Does the household have a car (for its exclusive use)? (No; Yes)

Table 4 (cont.): Poverty indicators

Uncertainty coefficient	Indicator (Responses ordered starting with those linked with higher poverty likelihoods)
4	Does that household have non-agricultural land? (No; Yes)
4	Does the household have air conditioning? (No; Yes)
4	Does the household have a big exercise machine? (No; Yes)
4	Does the household have a video camera? (No; Yes)
1	Does the household recycle its trash? (No; Sí)
0	Does the household have a radio/tape recorder? (No; Yes)
0	Does the household have a black-and-white TV? (Yes; No)

Source: 2013/14 ECV and 100% of the national poverty line

Tables for
100% of the National Poverty Line

(and tables pertaining to all poverty lines)

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

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	99.8
5–9	98.3
10–14	95.1
15–19	93.0
20–24	84.7
25–29	74.2
30–34	64.1
35–39	50.0
40–44	36.6
45–49	24.6
50–54	12.9
55–59	6.5
60–64	3.1
65–69	1.1
70–74	0.9
75–79	0.9
80–84	0.9
85–89	0.9
90–94	0.9
95–100	0.9

Table 6 (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	155	÷	155	=	99.8
5–9	370	÷	376	=	98.3
10–14	673	÷	708	=	95.1
15–19	1,383	÷	1,488	=	93.0
20–24	1,654	÷	1,952	=	84.7
25–29	2,316	÷	3,119	=	74.2
30–34	2,697	÷	4,210	=	64.1
35–39	2,860	÷	5,717	=	50.0
40–44	2,617	÷	7,153	=	36.6
45–49	2,136	÷	8,676	=	24.6
50–54	1,184	÷	9,200	=	12.9
55–59	541	÷	8,275	=	6.5
60–64	223	÷	7,160	=	3.1
65–69	67	÷	6,065	=	1.1
70–74	37	÷	4,080	=	0.9
75–79	28	÷	3,076	=	0.9
80–84	15	÷	1,668	=	0.9
85–89	3	÷	292	=	0.9
90–94	1	÷	108	=	0.9
95–100	240	÷	26,523	=	0.9

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

Table 7 (100% of the national line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.9	1.1	1.6
5–9	–1.1	0.9	1.1	1.5
10–14	–0.5	3.4	3.8	4.6
15–19	+0.5	2.8	3.6	4.6
20–24	+2.0	4.0	4.6	6.2
25–29	+3.8	4.2	4.9	6.4
30–34	+7.8	3.8	4.4	5.7
35–39	+3.8	3.0	3.5	4.6
40–44	+4.3	2.7	3.2	4.0
45–49	+6.1	1.9	2.2	2.9
50–54	+1.3	1.5	1.8	2.5
55–59	–0.4	1.3	1.6	2.0
60–64	–0.1	1.0	1.2	1.4
65–69	+0.6	0.4	0.4	0.6
70–74	+0.7	0.2	0.3	0.4
75–79	+0.9	0.0	0.0	0.0
80–84	+0.9	0.0	0.0	0.0
85–89	+0.9	0.0	0.0	0.0
90–94	+0.9	0.0	0.0	0.0
95–100	+0.4	0.1	0.2	0.2

Table 8 (100% of the national line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.7	50.0	68.6	86.1
4	+0.2	26.6	33.9	46.6
8	+1.0	16.3	20.4	29.7
16	+1.3	10.7	13.0	18.6
32	+1.4	6.8	8.4	12.3
64	+1.4	5.0	6.2	8.9
128	+1.5	3.5	4.1	5.2
256	+1.5	2.4	2.9	3.9
512	+1.4	1.7	2.1	2.7
1,024	+1.4	1.3	1.5	2.0
2,048	+1.4	0.9	1.1	1.5
4,096	+1.4	0.6	0.7	1.0
8,192	+1.4	0.5	0.5	0.7
16,384	+1.4	0.3	0.4	0.5

Table 9: Average differences between estimates and true values for poverty rates of a group of households at a point in time, precision, and the α factor for precision, 2013/4 scorecard applied to the 2013/14 validation sample

	Poverty line									
		National			Poorest half	International 2005 PPP				
	Food	**100%**	**150%**	**200%**	**< 100% natl.**	**$1.25**	**$2.00**	**$2.50**	**$5.00**	**$8.44**
Estimate minus true value	+0.4	+1.4	+2.7	+3.0	+0.2	+0.1	+0.4	+0.8	+2.9	+4.1
Precision of difference	0.1	0.3	0.5	0.6	0.2	0.0	0.1	0.2	0.4	0.6
α factor for precision	0.53	0.59	0.80	0.96	0.60	0.43	0.52	0.54	0.72	1.07

Results pertain to the 2013/14 scorecard applied to the 2013/14 validation sample.

Differences between estimates and true 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.

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

Table 10 (All poverty lines): Possible targeting outcomes

True poverty status	Targeting segment: Targeted	Targeting segment: Non-targeted
Below poverty line	**Inclusion** Below poverty line correctly targeted	**Undercoverage** Below poverty line mistakenly non-targeted
Above poverty line	**Leakage** Above poverty line mistakenly targeted	**Exclusion** Above poverty line correctly non-targeted

Table 11 (100% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.2	19.1	0.0	80.8	80.9	–98.4
≤9	0.5	18.7	0.0	80.8	81.3	–94.5
≤14	1.2	18.0	0.0	80.7	81.9	–87.3
≤19	2.6	16.7	0.2	80.6	83.2	–72.5
≤24	4.2	15.0	0.5	80.3	84.5	–53.8
≤29	6.6	12.7	1.2	79.5	86.1	–25.3
≤34	9.2	10.0	2.8	77.9	87.1	+10.2
≤39	12.0	7.2	5.7	75.1	87.1	+54.7
≤44	14.8	4.4	10.1	70.7	85.5	+47.5
≤49	16.7	2.5	16.9	63.9	80.6	+12.3
≤54	18.0	1.3	24.8	56.0	74.0	–28.9
≤59	18.6	0.6	32.4	48.4	67.0	–68.6
≤64	18.9	0.4	39.3	41.4	60.3	–104.6
≤69	18.9	0.3	45.3	35.4	54.3	–135.9
≤74	18.9	0.3	49.4	31.4	50.3	–157.0
≤79	18.9	0.3	52.5	28.3	47.2	–173.0
≤84	18.9	0.3	54.2	26.6	45.5	–181.7
≤89	18.9	0.3	54.4	26.3	45.2	–183.2
≤94	18.9	0.3	54.6	26.2	45.1	–183.8
≤100	19.2	0.0	80.8	0.0	19.2	–320.2

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

Table 12 (100% of the national line): Share of all households who are targeted (that is, score at or below a cut-off), share of targeted households who are poor (that is, have consumption below the poverty line), share of poor households who are targeted, and number of poor households successfully targeted (inclusion) per non-poor household mistakenly targeted (leakage), 2013/14 scorecard applied to the 2013/14 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	0.2	99.3	0.8	140.7:1
≤9	0.5	99.0	2.7	94.5:1
≤14	1.2	96.7	6.2	28.9:1
≤19	2.7	94.0	13.3	15.7:1
≤24	4.7	89.7	21.8	8.7:1
≤29	7.8	84.2	34.2	5.3:1
≤34	12.0	76.4	47.7	3.2:1
≤39	17.7	67.8	62.5	2.1:1
≤44	24.9	59.4	76.9	1.5:1
≤49	33.6	49.8	86.8	1.0:1
≤54	42.8	42.0	93.5	0.7:1
≤59	51.0	36.5	96.8	0.6:1
≤64	58.2	32.4	98.1	0.5:1
≤69	64.3	29.4	98.3	0.4:1
≤74	68.3	27.7	98.4	0.4:1
≤79	71.4	26.5	98.4	0.4:1
≤84	73.1	25.9	98.4	0.3:1
≤89	73.4	25.8	98.4	0.3:1
≤94	73.5	25.8	98.4	0.3:1
≤100	100.0	19.2	100.0	0.2:1

Tables for the Food Poverty Line

Table 5 (Food line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	85.6
5–9	68.7
10–14	59.2
15–19	37.8
20–24	25.1
25–29	16.6
30–34	8.8
35–39	6.0
40–44	4.3
45–49	2.1
50–54	0.9
55–59	0.2
60–64	0.0
65–69	0.0
70–74	0.0
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 7 (Food line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	+2.4	13.3	16.2	19.6
5–9	–1.0	11.1	13.6	19.0
10–14	+6.1	9.5	11.7	16.0
15–19	+6.1	5.6	6.5	8.8
20–24	+3.7	4.1	4.9	6.6
25–29	+0.4	3.1	3.6	4.7
30–34	–0.8	2.2	2.6	3.2
35–39	+2.6	1.0	1.2	1.6
40–44	+2.1	0.7	0.8	1.1
45–49	+0.8	0.6	0.7	0.9
50–54	+0.5	0.3	0.4	0.5
55–59	–0.1	0.3	0.4	0.5
60–64	0.0	0.0	0.0	0.0
65–69	0.0	0.0	0.0	0.0
70–74	0.0	0.0	0.0	0.0
75–79	0.0	0.0	0.0	0.0
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 8 (Food line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.1	4.4	43.6	77.0
4	+0.2	9.7	16.1	27.5
8	+0.4	6.6	9.3	16.5
16	+0.4	4.4	6.0	9.0
32	+0.4	3.0	3.6	5.7
64	+0.4	2.0	2.4	3.5
128	+0.4	1.5	1.8	2.3
256	+0.4	1.0	1.2	1.6
512	+0.4	0.7	0.8	1.1
1,024	+0.4	0.5	0.6	0.8
2,048	+0.4	0.4	0.4	0.5
4,096	+0.4	0.3	0.3	0.4
8,192	+0.4	0.2	0.2	0.3
16,384	+0.4	0.1	0.2	0.2

Table 11 (Food line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.1	3.5	0.0	96.3	96.4	–92.3
≤9	0.4	3.3	0.1	96.2	96.6	–74.6
≤14	0.8	2.8	0.4	95.9	96.7	–43.9
≤19	1.4	2.3	1.3	95.0	96.4	+12.3
≤24	1.9	1.8	2.8	93.6	95.5	+23.9
≤29	2.5	1.2	5.3	91.0	93.5	–46.0
≤34	2.9	0.7	9.1	87.2	90.2	–148.6
≤39	3.2	0.5	14.5	81.8	85.0	–297.2
≤44	3.4	0.2	21.4	74.9	78.3	–486.2
≤49	3.5	0.1	30.0	66.3	69.9	–720.3
≤54	3.6	0.0	39.1	57.2	60.8	–970.0
≤59	3.6	0.0	47.4	49.0	52.6	–1,195.3
≤64	3.6	0.0	54.5	41.8	45.4	–1,391.1
≤69	3.6	0.0	60.6	35.7	39.4	–1,556.9
≤74	3.6	0.0	64.7	31.7	35.3	–1,668.4
≤79	3.6	0.0	67.8	28.6	32.2	–1,752.5
≤84	3.6	0.0	69.4	26.9	30.6	–1,798.1
≤89	3.6	0.0	69.7	26.6	30.3	–1,806.1
≤94	3.6	0.0	69.8	26.5	30.2	–1,809.0
≤100	3.7	0.0	96.3	0.0	3.7	–2,533.8

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

Table 12 (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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	82.1	3.5	4.6:1
≤9	0.5	74.7	10.8	3.0:1
≤14	1.2	65.6	22.2	1.9:1
≤19	2.7	50.7	37.8	1.0:1
≤24	4.7	40.5	51.8	0.7:1
≤29	7.8	31.5	67.2	0.5:1
≤34	12.0	24.3	79.7	0.3:1
≤39	17.7	18.0	87.4	0.2:1
≤44	24.9	13.8	93.9	0.2:1
≤49	33.6	10.6	97.0	0.1:1
≤54	42.8	8.5	98.8	0.1:1
≤59	51.0	7.1	99.7	0.1:1
≤64	58.2	6.3	99.7	0.1:1
≤69	64.3	5.7	99.7	0.1:1
≤74	68.3	5.3	99.7	0.1:1
≤79	71.4	5.1	99.7	0.1:1
≤84	73.1	5.0	99.7	0.1:1
≤89	73.4	5.0	99.7	0.1:1
≤94	73.5	5.0	99.7	0.1:1
≤100	100.0	3.7	100.0	0.0:1

Tables for
150% of the National Poverty Line

Table 5 (150% of the national line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	99.7
20–24	98.2
25–29	97.1
30–34	93.7
35–39	88.9
40–44	80.5
45–49	65.2
50–54	51.9
55–59	36.4
60–64	24.0
65–69	12.1
70–74	6.4
75–79	6.4
80–84	6.4
85–89	6.4
90–94	6.4
95–100	6.4

Table 7 (150% of the national line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	+0.8	1.2	1.3	1.6
20–24	0.0	1.3	1.6	2.1
25–29	+1.4	1.9	2.3	3.2
30–34	+0.9	2.0	2.4	3.1
35–39	+0.6	2.3	2.7	3.4
40–44	+7.9	3.7	4.2	5.6
45–49	+3.3	2.8	3.4	4.4
50–54	+3.9	2.9	3.3	4.5
55–59	+1.5	2.6	3.1	4.0
60–64	+2.0	2.3	2.8	4.0
65–69	+2.4	1.6	1.9	2.5
70–74	+3.2	1.1	1.3	1.7
75–79	+5.1	0.7	0.8	1.0
80–84	+6.4	0.0	0.0	0.0
85–89	+6.4	0.0	0.0	0.0
90–94	+6.4	0.0	0.0	0.0
95–100	+2.1	0.6	0.7	0.9

Table 8 (150% of the national line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	+0.4	70.6	76.6	91.2
4	+0.4	33.5	42.1	59.0
8	+1.0	23.8	30.3	43.8
16	+2.3	16.2	20.1	30.1
32	+2.3	11.7	14.3	20.2
64	+2.5	8.2	9.9	13.3
128	+2.7	5.8	7.2	8.7
256	+2.8	4.1	5.2	6.4
512	+2.8	2.8	3.3	4.5
1,024	+2.8	2.0	2.4	3.1
2,048	+2.8	1.3	1.6	2.2
4,096	+2.7	1.0	1.2	1.5
8,192	+2.7	0.7	0.9	1.2
16,384	+2.7	0.5	0.6	0.8

Table 11 (150% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.2	40.5	0.0	59.3	59.5	–99.2
≤9	0.5	40.2	0.0	59.3	59.8	–97.4
≤14	1.2	39.5	0.0	59.3	60.5	–93.9
≤19	2.7	38.0	0.0	59.3	62.0	–86.6
≤24	4.6	36.1	0.1	59.3	63.9	–77.1
≤29	7.6	33.1	0.2	59.1	66.8	–62.1
≤34	11.6	29.1	0.4	58.9	70.5	–42.0
≤39	16.7	24.0	1.0	58.3	75.0	–15.3
≤44	22.4	18.3	2.5	56.8	79.2	+16.2
≤49	28.1	12.6	5.4	53.9	82.0	+51.6
≤54	32.9	7.8	9.9	49.4	82.3	+75.7
≤59	36.1	4.6	14.9	44.4	80.5	+63.3
≤64	37.7	3.0	20.5	38.8	76.5	+49.6
≤69	38.5	2.2	25.7	33.6	72.1	+36.8
≤74	38.7	2.0	29.6	29.7	68.4	+27.3
≤79	38.8	1.9	32.6	26.7	65.5	+19.9
≤84	38.8	1.9	34.3	25.0	63.8	+15.8
≤89	38.8	1.9	34.6	24.7	63.5	+15.1
≤94	38.8	1.9	34.7	24.6	63.4	+14.8
≤100	40.7	0.0	59.3	0.0	40.7	–45.7

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

Table 12 (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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	100.0	0.4	Only poor targeted
≤9	0.5	100.0	1.3	Only poor targeted
≤14	1.2	100.0	3.0	Only poor targeted
≤19	2.7	99.3	6.7	147.1:1
≤24	4.7	98.9	11.4	92.4:1
≤29	7.8	98.0	18.8	48.2:1
≤34	12.0	96.6	28.5	28.1:1
≤39	17.7	94.4	41.1	16.8:1
≤44	24.9	90.0	55.0	9.0:1
≤49	33.6	83.9	69.2	5.2:1
≤54	42.8	76.9	80.8	3.3:1
≤59	51.0	70.7	88.7	2.4:1
≤64	58.2	64.8	92.6	1.8:1
≤69	64.3	60.0	94.7	1.5:1
≤74	68.3	56.7	95.2	1.3:1
≤79	71.4	54.3	95.4	1.2:1
≤84	73.1	53.1	95.4	1.1:1
≤89	73.4	52.9	95.4	1.1:1
≤94	73.5	52.8	95.4	1.1:1
≤100	100.0	40.7	100.0	0.7:1

Tables for
200% of the National Poverty Line

Table 5 (200% of the national line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	100.0
20–24	100.0
25–29	99.7
30–34	98.9
35–39	98.2
40–44	95.0
45–49	87.8
50–54	81.6
55–59	67.7
60–64	55.1
65–69	33.0
70–74	21.8
75–79	16.4
80–84	16.4
85–89	16.4
90–94	16.4
95–100	16.4

Table 7 (200% of the national line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0
20–24	+1.0	1.0	1.1	1.5
25–29	–0.3	0.1	0.1	0.1
30–34	+0.4	1.1	1.2	1.6
35–39	+0.2	1.1	1.3	1.6
40–44	+9.0	3.8	4.5	5.5
45–49	–1.9	1.7	1.8	2.3
50–54	+0.9	2.2	2.8	3.8
55–59	–3.5	3.2	3.4	4.4
60–64	+3.5	2.8	3.4	4.3
65–69	+4.7	2.7	3.2	4.3
70–74	+0.8	3.0	3.4	4.4
75–79	+11.2	1.4	1.7	2.4
80–84	+13.1	1.8	2.2	2.8
85–89	+9.5	7.3	7.9	9.3
90–94	+16.4	0.0	0.0	0.0
95–100	+3.7	1.0	1.2	1.7

Table 8 (200% of the national line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.8	75.6	82.6	89.3
4	+0.3	34.4	43.4	60.0
8	+1.2	24.5	32.6	45.0
16	+2.2	18.0	23.1	32.7
32	+2.3	13.7	16.8	22.4
64	+2.8	9.7	11.8	16.4
128	+3.0	6.9	8.3	10.9
256	+3.1	4.7	5.6	7.6
512	+3.0	3.3	4.0	5.0
1,024	+3.1	2.4	2.9	4.0
2,048	+3.0	1.7	2.1	2.8
4,096	+2.9	1.2	1.4	2.0
8,192	+3.0	0.8	1.0	1.4
16,384	+3.0	0.6	0.7	0.9

Table 11 (200% of the national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.2	57.6	0.0	42.3	42.4	–99.5
≤9	0.5	57.2	0.0	42.3	42.8	–98.2
≤14	1.2	56.5	0.0	42.3	43.5	–95.7
≤19	2.7	55.0	0.0	42.3	45.0	–90.6
≤24	4.7	53.1	0.0	42.2	46.9	–83.8
≤29	7.8	50.0	0.0	42.2	50.0	–73.0
≤34	11.9	45.8	0.1	42.2	54.1	–58.5
≤39	17.6	40.2	0.2	42.1	59.7	–38.9
≤44	24.2	33.5	0.6	41.6	65.9	–14.9
≤49	32.0	25.7	1.5	40.7	72.8	+13.6
≤54	39.5	18.3	3.3	39.0	78.5	+42.4
≤59	45.4	12.3	5.6	36.7	82.1	+67.0
≤64	49.3	8.4	8.9	33.4	82.7	+84.6
≤69	51.6	6.1	12.6	29.6	81.3	+78.1
≤74	52.6	5.1	15.7	26.5	79.1	+72.8
≤79	52.9	4.9	18.5	23.7	76.6	+67.9
≤84	52.9	4.8	20.1	22.1	75.1	+65.1
≤89	53.0	4.8	20.4	21.9	74.8	+64.7
≤94	53.0	4.8	20.5	21.7	74.7	+64.5
≤100	57.7	0.0	42.3	0.0	57.7	+26.8

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

Table 12 (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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	100.0	0.3	Only poor targeted
≤9	0.5	100.0	0.9	Only poor targeted
≤14	1.2	100.0	2.1	Only poor targeted
≤19	2.7	100.0	4.7	Only poor targeted
≤24	4.7	99.6	8.1	277.4:1
≤29	7.8	99.8	13.5	410.7:1
≤34	12.0	99.4	20.7	179.0:1
≤39	17.7	99.1	30.4	111.9:1
≤44	24.9	97.5	42.0	38.4:1
≤49	33.6	95.4	55.5	20.9:1
≤54	42.8	92.3	68.4	12.1:1
≤59	51.0	89.0	78.7	8.1:1
≤64	58.2	84.7	85.4	5.6:1
≤69	64.3	80.4	89.4	4.1:1
≤74	68.3	77.0	91.1	3.3:1
≤79	71.4	74.0	91.6	2.9:1
≤84	73.1	72.4	91.7	2.6:1
≤89	73.4	72.2	91.7	2.6:1
≤94	73.5	72.1	91.7	2.6:1
≤100	100.0	57.7	100.0	1.4:1

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

Table 5 (Line marking poorest half below national line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	92.0
5–9	80.3
10–14	76.8
15–19	70.3
20–24	58.9
25–29	41.7
30–34	27.8
35–39	20.1
40–44	11.5
45–49	8.1
50–54	3.3
55–59	1.2
60–64	0.5
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	0.2

Table 7 (Line marking poorest half below national line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–4.0	5.3	6.4	8.3
5–9	–10.1	7.9	8.3	9.7
10–14	–2.3	7.4	8.7	11.1
15–19	–6.8	5.8	6.2	8.0
20–24	+1.1	5.2	6.4	8.1
25–29	+2.2	4.2	4.9	6.4
30–34	+1.4	3.3	4.0	4.9
35–39	+3.3	2.2	2.5	3.5
40–44	–0.4	1.8	2.2	2.8
45–49	+1.7	1.3	1.5	1.9
50–54	+0.3	0.9	1.0	1.4
55–59	–1.2	1.0	1.1	1.2
60–64	0.0	0.4	0.5	0.6
65–69	+0.2	0.0	0.0	0.1
70–74	+0.2	0.0	0.0	0.0
75–79	+0.2	0.0	0.0	0.0
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	+0.1	0.1	0.1	0.1

Table 8 (Line marking poorest half below national line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.8	46.5	60.8	83.5
4	+0.2	16.7	23.0	39.7
8	+0.2	11.3	14.9	22.2
16	+0.3	7.0	9.3	13.6
32	+0.3	4.9	6.4	9.3
64	+0.3	3.6	4.3	6.0
128	+0.3	2.4	2.9	4.0
256	+0.2	1.7	2.1	2.8
512	+0.2	1.2	1.5	2.2
1,024	+0.2	0.9	1.1	1.4
2,048	+0.2	0.6	0.8	1.0
4,096	+0.2	0.5	0.6	0.7
8,192	+0.2	0.3	0.4	0.5
16,384	+0.2	0.2	0.3	0.3

Table 11 (Line marking poorest half below national line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.1	8.5	0.0	91.3	91.4	–96.5
≤9	0.5	8.2	0.1	91.2	91.7	–88.5
≤14	1.0	7.7	0.2	91.1	92.1	–74.1
≤19	2.1	6.6	0.7	90.6	92.7	–44.8
≤24	3.1	5.5	1.5	89.8	92.9	–10.0
≤29	4.4	4.3	3.4	87.9	92.2	+40.1
≤34	5.5	3.1	6.4	84.8	90.4	+25.8
≤39	6.6	2.1	11.1	80.2	86.7	–28.2
≤44	7.5	1.1	17.3	74.0	81.5	–99.5
≤49	8.1	0.6	25.4	65.8	73.9	–193.3
≤54	8.4	0.3	34.3	56.9	65.3	–295.9
≤59	8.6	0.1	42.4	48.9	57.4	–389.1
≤64	8.6	0.1	49.6	41.7	50.3	–471.3
≤69	8.6	0.1	55.6	35.7	44.3	–541.1
≤74	8.6	0.1	59.7	31.6	40.2	–588.2
≤79	8.6	0.1	62.8	28.5	37.1	–623.6
≤84	8.6	0.1	64.4	26.8	35.5	–642.8
≤89	8.6	0.1	64.7	26.6	35.2	–646.2
≤94	8.6	0.1	64.8	26.4	35.1	–647.5
≤100	8.7	0.0	91.3	0.0	8.7	–952.4

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

Table 12 (Line marking poorest half below 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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	93.2	1.7	13.8:1
≤9	0.5	88.4	5.4	7.6:1
≤14	1.2	81.1	11.6	4.3:1
≤19	2.7	75.5	23.7	3.1:1
≤24	4.7	67.1	36.2	2.0:1
≤29	7.8	56.0	50.4	1.3:1
≤34	12.0	46.1	63.8	0.9:1
≤39	17.7	37.1	75.8	0.6:1
≤44	24.9	30.3	87.0	0.4:1
≤49	33.6	24.1	93.1	0.3:1
≤54	42.8	19.6	96.6	0.2:1
≤59	51.0	16.8	98.7	0.2:1
≤64	58.2	14.8	99.1	0.2:1
≤69	64.3	13.4	99.2	0.2:1
≤74	68.3	12.6	99.2	0.1:1
≤79	71.4	12.0	99.2	0.1:1
≤84	73.1	11.8	99.2	0.1:1
≤89	73.4	11.7	99.2	0.1:1
≤94	73.5	11.7	99.2	0.1:1
≤100	100.0	8.7	100.0	0.1:1

Tables for
the $1.25/day 2005 PPP Poverty Line

Table 5 ($1.25/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	34.7
5–9	25.9
10–14	17.9
15–19	9.0
20–24	3.7
25–29	1.8
30–34	0.8
35–39	0.4
40–44	0.2
45–49	0.2
50–54	0.0
55–59	0.0
60–64	0.0
65–69	0.0
70–74	0.0
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 7 ($1.25/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–16.0	20.3	24.0	30.7
5–9	+0.8	9.7	11.9	15.8
10–14	–4.6	9.3	11.3	14.4
15–19	+4.7	1.8	2.2	2.8
20–24	+0.8	1.4	1.7	2.2
25–29	+0.7	0.6	0.8	1.0
30–34	+0.3	0.4	0.4	0.6
35–39	+0.3	0.1	0.1	0.2
40–44	+0.1	0.1	0.1	0.1
45–49	+0.1	0.1	0.1	0.1
50–54	0.0	0.0	0.0	0.0
55–59	0.0	0.0	0.0	0.0
60–64	0.0	0.0	0.0	0.0
65–69	0.0	0.0	0.0	0.0
70–74	0.0	0.0	0.0	0.0
75–79	0.0	0.0	0.0	0.0
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 8 ($1.25/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.2	0.9	1.8	54.5
4	0.0	0.8	1.9	12.1
8	+0.1	0.6	2.6	6.9
16	+0.1	1.2	2.0	4.1
32	+0.1	1.0	1.5	2.3
64	+0.1	0.7	1.0	1.4
128	+0.1	0.5	0.6	0.9
256	+0.1	0.3	0.4	0.6
512	+0.1	0.2	0.3	0.4
1,024	+0.1	0.2	0.2	0.3
2,048	+0.1	0.1	0.2	0.2
4,096	+0.1	0.1	0.1	0.1
8,192	+0.1	0.1	0.1	0.1
16,384	+0.1	0.0	0.1	0.1

Table 11 ($1.25/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.1	0.6	0.1	99.3	99.3	–65.4
≤9	0.2	0.5	0.3	99.0	99.2	+12.0
≤14	0.3	0.3	0.9	98.4	98.7	–45.5
≤19	0.4	0.2	2.3	97.1	97.5	–258.6
≤24	0.5	0.1	4.2	95.2	95.7	–550.1
≤29	0.6	0.1	7.2	92.1	92.7	–1,028.0
≤34	0.6	0.0	11.4	87.9	88.5	–1,678.8
≤39	0.6	0.0	17.1	82.2	82.9	–2,567.6
≤44	0.6	0.0	24.3	75.1	75.7	–3,679.9
≤49	0.6	0.0	32.9	66.4	67.1	–5,030.9
≤54	0.6	0.0	42.1	57.2	57.9	–6,464.9
≤59	0.6	0.0	50.4	49.0	49.6	–7,754.7
≤64	0.6	0.0	57.6	41.8	42.4	–8,870.6
≤69	0.6	0.0	63.6	35.7	36.4	–9,815.8
≤74	0.6	0.0	67.7	31.7	32.3	–10,451.8
≤79	0.6	0.0	70.8	28.6	29.2	–10,931.2
≤84	0.6	0.0	72.4	26.9	27.5	–11,191.2
≤89	0.6	0.0	72.7	26.6	27.3	–11,236.8
≤94	0.6	0.0	72.8	26.5	27.1	–11,253.6
≤100	0.6	0.0	99.4	0.0	0.6	–15,386.3

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

Table 12 ($1.25/day 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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	43.2	10.4	0.8:1
≤9	0.5	35.3	29.2	0.5:1
≤14	1.2	24.6	47.6	0.3:1
≤19	2.7	15.6	66.3	0.2:1
≤24	4.7	10.8	79.1	0.1:1
≤29	7.8	7.2	87.4	0.1:1
≤34	12.0	5.0	92.8	0.1:1
≤39	17.7	3.4	95.0	0.0:1
≤44	24.9	2.5	97.6	0.0:1
≤49	33.6	1.9	98.8	0.0:1
≤54	42.8	1.5	98.8	0.0:1
≤59	51.0	1.2	98.8	0.0:1
≤64	58.2	1.1	98.8	0.0:1
≤69	64.3	1.0	98.8	0.0:1
≤74	68.3	0.9	98.8	0.0:1
≤79	71.4	0.9	98.8	0.0:1
≤84	73.1	0.9	98.8	0.0:1
≤89	73.4	0.9	98.8	0.0:1
≤94	73.5	0.9	98.8	0.0:1
≤100	100.0	0.6	100.0	0.0:1

Tables for
the $2.00/day 2005 PPP Poverty Line

Table 5 ($2.00/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	84.7
5–9	67.5
10–14	57.3
15–19	36.6
20–24	23.9
25–29	16.2
30–34	8.0
35–39	5.6
40–44	3.8
45–49	2.0
50–54	0.9
55–59	0.2
60–64	0.0
65–69	0.0
70–74	0.0
75–79	0.0
80–84	0.0
85–89	0.0
90–94	0.0
95–100	0.0

Table 7 ($2.00/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	+1.5	13.3	16.2	19.6
5–9	–2.0	11.2	13.6	19.3
10–14	+4.7	9.6	11.6	15.8
15–19	+8.7	5.2	6.4	8.7
20–24	+4.1	4.0	4.7	6.2
25–29	+1.4	3.0	3.5	4.9
30–34	+0.1	1.9	2.2	2.9
35–39	+2.9	0.9	1.0	1.3
40–44	+1.7	0.7	0.8	1.1
45–49	+0.7	0.6	0.7	0.9
50–54	+0.4	0.3	0.4	0.5
55–59	–0.2	0.3	0.4	0.5
60–64	0.0	0.0	0.0	0.0
65–69	0.0	0.0	0.0	0.0
70–74	0.0	0.0	0.0	0.0
75–79	0.0	0.0	0.0	0.0
80–84	0.0	0.0	0.0	0.0
85–89	0.0	0.0	0.0	0.0
90–94	0.0	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 8 ($2.00/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.1	4.0	43.7	76.3
4	+0.3	9.4	14.0	26.3
8	+0.4	6.3	8.9	15.8
16	+0.4	4.3	5.7	8.1
32	+0.4	2.9	3.5	5.3
64	+0.5	1.9	2.3	3.5
128	+0.4	1.4	1.7	2.2
256	+0.4	1.0	1.2	1.6
512	+0.4	0.7	0.8	1.1
1,024	+0.4	0.5	0.6	0.8
2,048	+0.4	0.3	0.4	0.5
4,096	+0.4	0.2	0.3	0.4
8,192	+0.4	0.2	0.2	0.3
16,384	+0.4	0.1	0.1	0.2

Table 11 ($2.00/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.1	3.3	0.0	96.5	96.6	–91.8
≤9	0.4	3.1	0.1	96.4	96.8	–73.1
≤14	0.8	2.6	0.4	96.1	96.9	–40.8
≤19	1.3	2.1	1.4	95.2	96.5	+17.6
≤24	1.8	1.6	2.9	93.7	95.5	+16.9
≤29	2.3	1.1	5.5	91.1	93.4	–58.5
≤34	2.7	0.7	9.3	87.3	90.0	–168.4
≤39	3.0	0.5	14.7	81.8	84.8	–326.8
≤44	3.2	0.2	21.6	74.9	78.1	–527.5
≤49	3.3	0.1	30.2	66.3	69.7	–775.7
≤54	3.4	0.0	39.3	57.2	60.6	–1,040.5
≤59	3.4	0.0	47.6	49.0	52.4	–1,279.4
≤64	3.4	0.0	54.7	41.8	45.2	–1,486.9
≤69	3.4	0.0	60.8	35.7	39.2	–1,662.7
≤74	3.4	0.0	64.9	31.7	35.1	–1,781.0
≤79	3.4	0.0	68.0	28.6	32.0	–1,870.1
≤84	3.4	0.0	69.6	26.9	30.4	–1,918.5
≤89	3.4	0.0	69.9	26.6	30.1	–1,927.0
≤94	3.4	0.0	70.0	26.5	30.0	–1,930.1
≤100	3.5	0.0	96.5	0.0	3.5	–2,698.5

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

Table 12 ($2.00/day 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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	82.1	3.7	4.6:1
≤9	0.5	74.4	11.5	2.9:1
≤14	1.2	64.8	23.3	1.8:1
≤19	2.7	48.9	38.6	1.0:1
≤24	4.7	38.7	52.5	0.6:1
≤29	7.8	29.9	67.5	0.4:1
≤34	12.0	22.9	79.7	0.3:1
≤39	17.7	16.9	86.9	0.2:1
≤44	24.9	13.0	93.6	0.1:1
≤49	33.6	10.0	96.9	0.1:1
≤54	42.8	8.0	98.8	0.1:1
≤59	51.0	6.7	99.7	0.1:1
≤64	58.2	5.9	99.7	0.1:1
≤69	64.3	5.4	99.7	0.1:1
≤74	68.3	5.0	99.7	0.1:1
≤79	71.4	4.8	99.7	0.1:1
≤84	73.1	4.7	99.7	0.0:1
≤89	73.4	4.7	99.7	0.0:1
≤94	73.5	4.7	99.7	0.0:1
≤100	100.0	3.5	100.0	0.0:1

Tables for
the $2.50/day 2005 PPP Poverty Line

Table 5 ($2.50/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	96.8
5–9	81.2
10–14	71.5
15–19	64.3
20–24	51.6
25–29	34.3
30–34	23.0
35–39	15.1
40–44	10.3
45–49	6.1
50–54	2.5
55–59	0.9
60–64	0.1
65–69	0.1
70–74	0.1
75–79	0.1
80–84	0.1
85–89	0.1
90–94	0.1
95–100	0.1

Table 7 ($2.50/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	–2.0	2.1	2.7	3.6
5–9	–9.0	7.3	7.7	10.0
10–14	+0.6	9.3	10.9	14.7
15–19	+8.4	6.5	7.5	9.9
20–24	+4.4	5.4	6.3	8.2
25–29	+2.0	4.0	4.7	5.8
30–34	+4.0	2.8	3.4	4.4
35–39	+4.7	1.7	2.0	2.8
40–44	+2.9	1.3	1.5	2.1
45–49	+3.4	0.8	1.0	1.3
50–54	+0.9	0.5	0.7	0.9
55–59	–1.1	0.9	0.9	1.0
60–64	+0.1	0.0	0.0	0.0
65–69	0.0	0.0	0.0	0.1
70–74	+0.1	0.0	0.0	0.0
75–79	+0.1	0.0	0.0	0.0
80–84	+0.1	0.0	0.0	0.0
85–89	+0.1	0.0	0.0	0.0
90–94	+0.1	0.0	0.0	0.0
95–100	0.0	0.0	0.0	0.0

Table 8 ($2.50/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.6	44.3	55.7	80.0
4	+0.5	15.7	20.3	35.3
8	+0.7	9.4	12.0	21.0
16	+0.8	5.9	7.5	11.3
32	+0.9	4.4	5.5	7.6
64	+0.9	2.9	3.5	4.5
128	+0.9	1.9	2.4	3.1
256	+0.8	1.4	1.8	2.3
512	+0.8	1.0	1.2	1.6
1,024	+0.8	0.7	0.9	1.1
2,048	+0.8	0.5	0.6	0.8
4,096	+0.8	0.4	0.5	0.6
8,192	+0.8	0.3	0.3	0.4
16,384	+0.8	0.2	0.2	0.3

Table 11 ($2.50/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.2	7.0	0.0	92.8	92.9	–95.7
≤9	0.5	6.7	0.0	92.8	93.2	–85.9
≤14	1.0	6.2	0.2	92.6	93.6	–68.9
≤19	1.9	5.3	0.8	92.0	93.9	–35.7
≤24	2.9	4.3	1.8	91.0	93.9	+5.1
≤29	4.0	3.2	3.8	89.0	92.9	+46.8
≤34	5.0	2.2	7.0	85.8	90.7	+2.2
≤39	5.8	1.4	12.0	80.8	86.6	–66.1
≤44	6.5	0.7	18.4	74.4	80.9	–155.5
≤49	6.8	0.4	26.8	66.0	72.8	–271.9
≤54	7.0	0.2	35.8	57.1	64.1	–396.7
≤59	7.2	0.0	43.9	48.9	56.1	–509.6
≤64	7.2	0.0	51.0	41.8	48.9	–609.1
≤69	7.2	0.0	57.1	35.7	42.9	–693.3
≤74	7.2	0.0	61.2	31.6	38.8	–749.9
≤79	7.2	0.0	64.2	28.6	35.7	–792.7
≤84	7.2	0.0	65.9	26.9	34.0	–815.9
≤89	7.2	0.0	66.2	26.6	33.8	–819.9
≤94	7.2	0.0	66.3	26.5	33.6	–821.4
≤100	7.2	0.0	92.8	0.0	7.2	–1,189.4

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

Table 12 ($2.50/day 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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	97.4	2.1	37.0:1
≤9	0.5	91.3	6.7	10.5:1
≤14	1.2	80.9	13.9	4.2:1
≤19	2.7	69.8	26.4	2.3:1
≤24	4.7	61.7	40.1	1.6:1
≤29	7.8	50.9	55.2	1.0:1
≤34	12.0	41.4	69.0	0.7:1
≤39	17.7	32.5	80.2	0.5:1
≤44	24.9	26.1	90.2	0.4:1
≤49	33.6	20.2	94.3	0.3:1
≤54	42.8	16.4	97.3	0.2:1
≤59	51.0	14.0	99.3	0.2:1
≤64	58.2	12.3	99.4	0.1:1
≤69	64.3	11.1	99.5	0.1:1
≤74	68.3	10.5	99.5	0.1:1
≤79	71.4	10.0	99.5	0.1:1
≤84	73.1	9.8	99.5	0.1:1
≤89	73.4	9.8	99.5	0.1:1
≤94	73.5	9.7	99.5	0.1:1
≤100	100.0	7.2	100.0	0.1:1

Tables for
the $5.00/day 2005 PPP Poverty Line

Table 5 ($5.00/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	99.9
15–19	99.0
20–24	96.3
25–29	95.0
30–34	89.1
35–39	83.5
40–44	73.8
45–49	57.7
50–54	43.2
55–59	28.7
60–64	17.3
65–69	10.3
70–74	4.6
75–79	4.6
80–84	4.6
85–89	4.6
90–94	4.6
95–100	4.6

Table 7 ($5.00/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	–0.1	0.0	0.0	0.1
15–19	+0.2	1.2	1.4	1.6
20–24	+1.3	2.8	3.3	4.4
25–29	+0.3	2.0	2.5	3.3
30–34	–0.7	2.4	2.7	3.5
35–39	–0.4	2.6	3.0	3.9
40–44	+5.9	3.5	4.2	5.8
45–49	+4.4	2.7	3.1	4.3
50–54	+9.2	2.4	2.9	3.8
55–59	+0.6	2.4	2.8	3.6
60–64	0.0	2.2	2.6	3.5
65–69	+3.9	1.3	1.6	2.0
70–74	+1.8	1.1	1.2	1.6
75–79	+4.0	0.4	0.5	0.7
80–84	+4.6	0.0	0.0	0.0
85–89	+4.6	0.0	0.0	0.0
90–94	+4.6	0.0	0.0	0.0
95–100	+2.4	0.3	0.4	0.5

Table 8 ($5.00/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–0.5	64.5	80.0	90.8
4	+0.8	32.7	40.1	55.1
8	+1.6	21.7	28.9	36.1
16	+2.5	14.9	18.5	24.7
32	+2.7	10.3	12.4	17.4
64	+2.7	7.4	8.9	11.7
128	+2.9	5.3	6.1	7.8
256	+3.0	3.6	4.4	5.9
512	+3.0	2.5	2.9	3.9
1,024	+3.0	1.7	2.0	2.6
2,048	+3.0	1.3	1.5	1.9
4,096	+2.9	0.9	1.0	1.3
8,192	+2.9	0.6	0.7	1.0
16,384	+2.9	0.4	0.5	0.7

Table 11 ($5.00/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.2	36.3	0.0	63.5	63.7	–99.2
≤9	0.5	35.9	0.0	63.5	64.1	–97.1
≤14	1.2	35.2	0.0	63.5	64.8	–93.2
≤19	2.7	33.8	0.0	63.5	66.2	–85.1
≤24	4.6	31.9	0.1	63.4	68.0	–74.6
≤29	7.6	28.9	0.2	63.3	70.9	–57.9
≤34	11.4	25.1	0.6	62.9	74.3	–35.8
≤39	16.3	20.2	1.4	62.1	78.4	–6.7
≤44	21.6	14.9	3.3	60.3	81.9	+27.5
≤49	26.6	9.9	7.0	56.6	83.2	+64.9
≤54	30.5	6.0	12.3	51.3	81.7	+66.4
≤59	33.1	3.3	17.9	45.6	78.8	+51.0
≤64	34.4	2.0	23.8	39.8	74.2	+34.9
≤69	35.0	1.5	29.3	34.3	69.3	+19.8
≤74	35.2	1.3	33.2	30.3	65.5	+9.0
≤79	35.2	1.3	36.2	27.3	62.5	+0.7
≤84	35.2	1.3	37.9	25.6	60.8	–3.9
≤89	35.2	1.3	38.2	25.3	60.5	–4.7
≤94	35.2	1.3	38.3	25.2	60.4	–5.0
≤100	36.5	0.0	63.5	0.0	36.5	–74.2

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

Table 12 ($5.00/day 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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	100.0	0.4	Only poor targeted
≤9	0.5	100.0	1.5	Only poor targeted
≤14	1.2	99.9	3.4	1,910.4:1
≤19	2.7	99.2	7.4	120.7:1
≤24	4.7	98.0	12.6	48.9:1
≤29	7.8	97.0	20.7	32.2:1
≤34	12.0	94.9	31.3	18.8:1
≤39	17.7	92.0	44.7	11.5:1
≤44	24.9	86.9	59.2	6.6:1
≤49	33.6	79.3	72.9	3.8:1
≤54	42.8	71.3	83.6	2.5:1
≤59	51.0	65.0	90.9	1.9:1
≤64	58.2	59.2	94.4	1.4:1
≤69	64.3	54.5	95.9	1.2:1
≤74	68.3	51.4	96.4	1.1:1
≤79	71.4	49.3	96.5	1.0:1
≤84	73.1	48.2	96.5	0.9:1
≤89	73.4	48.0	96.5	0.9:1
≤94	73.5	47.9	96.5	0.9:1
≤100	100.0	36.5	100.0	0.6:1

Tables for
the $8.44/day 2005 PPP Poverty Line

Table 5 ($8.44/day line): Estimated poverty likelihoods associated with scores

If a household's score is . . .	. . . then the likelihood (%) of being below the poverty line is:
0–4	100.0
5–9	100.0
10–14	100.0
15–19	100.0
20–24	100.0
25–29	99.9
30–34	99.5
35–39	99.3
40–44	98.1
45–49	93.7
50–54	89.9
55–59	81.0
60–64	67.9
65–69	52.9
70–74	38.8
75–79	26.6
80–84	24.2
85–89	24.2
90–94	24.2
95–100	24.2

Table 7 ($8.44/day line): Average differences between estimated and true poverty likelihoods for households by score range, with confidence intervals, from 1,000 bootstraps of n = 16,384, 2013/14 scorecard applied to the 2013/14 validation sample

	Difference between estimate and true value			
		Confidence interval (±percentage points)		
Score	Diff.	90-percent	95-percent	99-percent
0–4	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0
10–14	0.0	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	–0.1	0.1	0.1	0.1
30–34	–0.5	0.3	0.3	0.3
35–39	+0.1	0.7	0.8	1.1
40–44	+0.7	0.9	1.1	1.5
45–49	–2.3	1.6	1.6	1.7
50–54	+2.8	2.2	2.5	3.7
55–59	+0.2	2.6	3.1	4.1
60–64	+0.1	2.7	3.2	4.2
65–69	+13.2	3.2	3.8	4.9
70–74	+7.4	3.4	4.1	5.4
75–79	+6.6	3.0	3.5	4.6
80–84	+10.7	3.5	4.3	5.5
85–89	+17.3	7.3	7.9	9.3
90–94	+24.2	0.0	0.0	0.0
95–100	+5.8	1.2	1.4	1.9

Table 8 ($8.44/day line): Average differences between estimated poverty rates and true values for a group at a point in time by sample size, with confidence intervals, for 1,000 bootstraps of various sample sizes, 2013/14 scorecard applied to the 2013/14 validation sample

Sample Size	Difference between estimate and true value			
		Confidence interval (±percentage points)		
n	Diff.	90-percent	95-percent	99-percent
1	–1.7	64.4	71.8	83.8
4	+1.4	35.5	43.0	56.0
8	+2.6	26.1	32.0	43.8
16	+3.3	20.0	23.5	30.9
32	+3.3	15.0	16.9	23.4
64	+3.8	10.7	13.1	16.4
128	+4.1	7.2	8.9	11.8
256	+4.2	5.3	6.0	7.7
512	+4.1	3.7	4.2	5.2
1,024	+4.2	2.5	3.1	3.9
2,048	+4.2	1.9	2.2	2.9
4,096	+4.2	1.3	1.6	2.2
8,192	+4.2	0.9	1.1	1.5
16,384	+4.1	0.6	0.8	1.0

Table 11 ($8.44/day line): Percentages of households by cut-off score and targeting classification, along with the hit rate and BPAC, 2013/14 scorecard applied to the 2013/14 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: ≥ poverty line mistakenly targeted	Exclusion: ≥ poverty line correctly non-targeted	Hit rate Inclusion + Exclusion	BPAC See text
≤4	0.2	65.5	0.0	34.4	34.5	–99.5
≤9	0.5	65.1	0.0	34.4	34.9	–98.4
≤14	1.2	64.4	0.0	34.4	35.6	–96.2
≤19	2.7	62.9	0.0	34.4	37.1	–91.7
≤24	4.7	61.0	0.0	34.4	39.0	–85.7
≤29	7.8	57.8	0.0	34.4	42.2	–76.2
≤34	12.0	53.6	0.0	34.4	46.4	–63.4
≤39	17.7	47.9	0.0	34.3	52.0	–46.0
≤44	24.7	41.0	0.2	34.1	58.8	–24.5
≤49	32.9	32.7	0.6	33.7	66.7	+1.3
≤54	41.1	24.5	1.6	32.7	73.8	+27.8
≤59	48.0	17.7	3.1	31.3	79.3	+50.8
≤64	53.0	12.6	5.2	29.2	82.2	+69.4
≤69	56.3	9.3	7.9	26.4	82.7	+83.7
≤74	57.8	7.9	10.6	23.8	81.5	+83.9
≤79	58.6	7.1	12.8	21.5	80.1	+80.4
≤84	58.8	6.8	14.2	20.1	79.0	+78.3
≤89	58.9	6.8	14.5	19.9	78.7	+77.9
≤94	58.9	6.8	14.6	19.7	78.6	+77.7
≤100	65.6	0.0	34.4	0.0	65.6	+47.7

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

Table 12 ($8.44/day 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 (that is, have consumption below the poverty line), 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), 2013/14 scorecard applied to the 2013/14 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	0.2	100.0	0.2	Only poor targeted
≤9	0.5	100.0	0.8	Only poor targeted
≤14	1.2	100.0	1.9	Only poor targeted
≤19	2.7	100.0	4.2	Only poor targeted
≤24	4.7	100.0	7.1	Only poor targeted
≤29	7.8	100.0	11.9	Only poor targeted
≤34	12.0	100.0	18.3	4,627.0:1
≤39	17.7	99.8	27.0	589.5:1
≤44	24.9	99.1	37.6	110.8:1
≤49	33.6	98.1	50.2	52.4:1
≤54	42.8	96.2	62.6	25.0:1
≤59	51.0	94.0	73.1	15.7:1
≤64	58.2	91.1	80.8	10.3:1
≤69	64.3	87.6	85.8	7.1:1
≤74	68.3	84.5	88.0	5.5:1
≤79	71.4	82.0	89.2	4.6:1
≤84	73.1	80.5	89.6	4.1:1
≤89	73.4	80.2	89.7	4.1:1
≤94	73.5	80.1	89.7	4.0:1
≤100	100.0	65.6	100.0	1.9:1