

A Simple Poverty Scorecard for Mexico

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Abstract

This study uses Mexico's 2006 National Household Survey of Income and Expenditure to construct an easy-to-use scorecard that estimates the likelihood that a household has income below a given poverty line. The scorecard uses ten simple indicators that field workers can quickly collect and verify. Poverty scores can be computed on paper in the field in about five to ten minutes. The scorecard's accuracy and precision are reported for a range of poverty lines. The poverty scorecard is a practical way for pro-poor programs in Mexico to monitor poverty rates, track changes in poverty rates over time, and target services.

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1. Introduction

This paper presents an easy-to-use poverty scorecard that pro-poor programs in Mexico can use to estimate the likelihood that a household has income below a given poverty line, to monitor groups' poverty rates at a point in time, to track changes in groups' poverty rates between two points in time, and to target services to households.

The direct approach to poverty measurement via surveys is difficult and costly, asking households about a lengthy list of items. Mexico's 2006 National Household Survey of Income and Expenditure (ENIGH, for its initials in Spanish), for example, runs 211 pages.

In contrast, the indirect approach via poverty scoring is simple, quick, and inexpensive. It uses ten verifiable indicators (such as "What fuel do you usually use to cook or heat food?" or "How many color televisions does the household have?") to get a score that is highly correlated with poverty status as measured by income from the exhaustive survey.

The poverty scorecard here differs from "proxy means tests" (Coady, Grosh, and Hoddinott, 2002) in that it is tailored to the capabilities and purposes not of national governments but rather of local, pro-poor organizations. The feasible poverty-measurement options for these local organizations are typically subjective and relative (such as participatory wealth ranking by skilled field workers) or blunt (such as rules

based on land-ownership or housing quality). These approaches may be costly, their results are not comparable across organizations nor across countries, and their accuracy and precision are unknown.

Suppose an organization wants to know what share of its participants are below a poverty line; for example, it might want to report using the Millennium Development Goals' \$1.25/day poverty line at 2005 purchase-power parity. Or it might want to report how many of its participants are among the poorest half of people below the national poverty line (as required of USAID microenterprise partners). Or an organization might want to measure movement across a poverty line, for example, to report to the Microcredit Summit Campaign. In all these cases, the organization needs an income-based, objective tool with known accuracy. While income surveys are costly even for governments, many small, local organizations can implement an inexpensive scorecard that can serve for monitoring, management, and targeting.

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, they must first trust that it works. Transparency and simplicity build trust. Getting “buy-in” matters; proxy means tests and regressions on the “determinants of poverty” have been around for three decades, but they are rarely used to inform decisions. This is not because they do not work, but because they are presented (when they are presented at all) as tables of regression coefficients incomprehensible to non-specialists (with cryptic indicator names such as “LGHHSZ_2”, negative values, and many

decimal places). Thanks to the predictive-modeling phenomenon known as the “flat max”, simple scorecards are about as accurate as complex ones.

The technical approach here is also innovative in how it associates scores with poverty likelihoods, in the extent of its accuracy tests, and in how it derives formulas for standard errors. Although these techniques are simple and standard in the for-profit field of credit-risk scoring, they have rarely or never been applied to poverty scorecards.

The scorecard (Figure 1) is based on the 2006 (ENIGH) by Mexico’s Instituto Nacional de Estadística, Geografía e Informática. Indicators are selected to be:

- Inexpensive to collect, easy to answer quickly, and simple to verify
- Strongly correlated with poverty
- Liable to change over time as poverty status changes

All points in the scorecard are 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 five to 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 income below a given poverty line.

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

Third, poverty scoring can estimate changes in the poverty rate for a given group of households (or for two independent representative samples of households from the

same population) between two points in time. This estimate is the change in the average poverty likelihood of the group(s) of households over time.

Poverty scoring can also be used for targeting services to poorer households. To help managers choose a targeting cut-off, this paper reports several measures of targeting accuracy for a range of possible cut-offs.

This paper presents a single scorecard (Figure 1) whose indicators and points are derived from household income data and Mexico’s national asset poverty line. Scores from this scorecard are calibrated to poverty likelihoods for eight poverty lines.

The scorecard is constructed and calibrated using a sub-sample of the data from the 2006 ENIGH. Its accuracy is then validated on a different sub-sample from the 2006 ENIGH as well as on the entire 2004 and 2005 ENIGH.¹ While all three scoring estimators are unbiased when applied to the population from which they were derived (that is, they match the true value on average in repeated samples from the same population from which the scorecard was built), they are—like all predictive models—biased to some extent when applied to a different population.²

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

¹ Accuracy is not tested on the 2002 ENIGH because it collected some scorecard indicators differently than did the 2004, 2005, and 2006 ENIGH.

² Examples of “different populations” include nationally representative samples at another point in time or a non-representative sub-group (Tarozzi and Deaton, 2007).

between indicators and poverty will be the same as in the data used to build the scorecard. It must also assume that these relationships will be the same in all sub-groups as in the population as a whole.³ Of course, these assumptions—ubiquitous and inevitable in predictive modeling—hold only partly.

When applied to the 2006 validation sample for Mexico with $n = 16,384$, the difference between scorecard estimates of groups' poverty rates and the true rates at a point in time is +2.4 percentage points for the national asset poverty line. Across all eight lines, the average absolute difference is 0.7 percentage points. Because the 2006 validation sample is representative of the same population as the data that was used to construct the scorecard and because all the data comes from the same time frame, the scorecard estimators are unbiased and these observed differences are due to sampling variation; the average difference would be zero if the whole 2006 ENIGH were to be repeatedly redrawn and divided into sub-samples before repeating the entire scorecard-building and accuracy-testing process.

For $n = 16,384$, the 90-percent confidence intervals for these estimates are ± 0.6 percentage points or less. For $n = 1,024$, these intervals are ± 2.4 percentage points or less.

³ Bias may also result from changes in the quality of data collection, from changes over time in the real value of poverty lines, from imperfect adjustment of poverty lines to account for differences in cost-of-living across time or geographic regions, or from sampling variation across surveys.

When the scorecard built from the 2006 construction and calibration samples is applied both to the 2006 validation sample and to the entire 2005 ENIGH with $n = 16,384$ to measure change between two points in time, the difference between scorecard estimates and true values for changes in groups' poverty rates is +0.1 percentage points for the national asset line. That is, while the true change was -5.2 percentage points (Figure 2), the scorecard estimates a change of -5.1 percentage points. Across all eight lines, the average difference between the estimated change and the true change is about +0.7 percentage points. With an average true change of -3.2 percentage points, the estimates are about 21 percent too low. For $n = 16,384$, the 90-percent confidence intervals for these estimates of change are ± 0.8 percentage points or less.

Section 2 below describes data and poverty lines. Section 3 places the new scorecard here in the context of existing poverty maps and poverty scorecards for Mexico. Sections 4 and 5 describe scorecard construction and offer practical guidelines for use. Sections 6 and 7 detail the estimation of households' poverty likelihoods and of groups' poverty rates at a point in time. Section 8 discusses estimating changes in poverty rates, and Section 9 covers targeting. The final section is a summary.

2. Data and poverty lines

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

2.1 Data

The scorecard is based on data from the 20,875 households in the 2006 ENIGH.⁴ This is the best, most recent national income survey available for Mexico.⁵ Households are randomly divided into three sub-samples (Figure 2):

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

⁴ In 2006, the average surveyed household represented about 1,200 households. To prevent the breakdown of some bootstrap estimates (see Singh, 1998), 108 households who each represented more than 5,000 households were omitted from scorecard analysis for 2006, 180 were omitted for 2005, and 216 were omitted for 2004. Furthermore, before random assignment to sub-samples, remaining households representing more than 4,000 households were duplicated and their weights divided by two. Thus, the newly replicated pair of households together represent the same number of households as the original heavily weighted household. Replication helps spread heavily weighted households across the construction, calibration, and validation sub-samples, which in turn reduces the influence of any single heavily weighted household on scorecard construction and validation. This does not affect the unbiasedness of scoring estimators, but it does increase precision and thus decreases the average difference between estimates and true values in any given sample.

⁵ A couple days before this paper was completed, the 2008 ENIGH was released, and work will soon commence on a poverty scorecard with that newer data.

In addition, the 23,174 and 22,595 households in the 2004 and 2005 ENIGH are used in the validation of estimates of changes in poverty rates for two independent samples between two points in time.

2.2 Poverty rates and poverty lines

2.2.1 Rates

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

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

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

number of people in it and so gives a poverty rate for the group of $2 \div (1 + 2) = 67$ percent.

Whether the household-level rate or the person-level rate is most relevant depends on the situation. If an organization's "participants" include all the people in a household, then the person-level rate is relevant. Governments, for example, are concerned with the well-being of their people, regardless of how those people are arranged in households, so governments typically report person-level poverty rates.

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

Based on Mexico's 2004, 2005, and 2006 ENIGH, this paper reports poverty rates and poverty lines by urban/rural at both the household level and the person level (Figure 3). The poverty scorecard is constructed using the 2006 ENIGH and household-level lines, scores are calibrated to household-level poverty likelihoods, and accuracy is measured for household-level rates. This use of household-level rates reflects the belief that they are the most relevant for most pro-poor organizations.

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

2.2.2 Poverty lines

Mexico's three national poverty lines are defined in terms of income (Comité Técnico para la Medición de la Pobreza, 2002). Usually, expenditure—not income—is preferred for measuring poverty (Deaton and Zaidi, 2002). In Mexico, however, income and expenditure both give about the same poverty rates and about the same changes over time (de la Torre, 2005). Furthermore, de la Torre points out that income tracks expenditure closely for households in the poorest four deciles. Finally, the measure of income in Mexico includes the value of self-produced/self-consumed goods as well as the rental value of owner-occupied housing, two values that are usually omitted from income and whose omission contributes to the usual preference for expenditure. All these factors suggest that for poverty measurement in Mexico, income is more or less equivalent to expenditure.

The first national poverty line represents the income required for basic nutrition (Comité Técnico para la Medición de la Pobreza, 2002; Rascón Ramírez, 2002). In 2006, this “food” line is MXN26.63 per person per day in urban areas and MXN19.68 in rural areas, implying household-level poverty rates of 5.9 percent and 19.5 percent (Figure 3).

The second national poverty line (the *capacidades* or capacity line) is the food line plus the income required for basic education and health care. In 2006, the capacity line is MXN32.66 per person per day in urban areas and MXN23.27 in rural areas, giving household-level poverty rates of 10.6 percent and 26.5 percent (Figure 3).

Finally, the third national poverty line (the *patrimonio* or asset line) is the capacity line plus the income required for clothing, shoes, housing, and transportation. The scorecard in this paper is constructed using this asset line. In 2006, this line is MXN53.42 per person per day in urban areas and MXN35.72 in rural areas, giving household-level poverty rates of 29.3 percent and 47.2 percent (Figure 3).

For Mexico as a whole, poverty rates for these three lines fell an average of about 0.2 percentage points in 2004/5 before falling an average of about 3.2 percentage points in 2005/6 (Figure 2).

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

- National food
- National capacity
- National asset
- 125% of national asset
- 150% of national asset
- USAID “extreme”
- USD1.25/day 2005 PPP
- USD2.50/day 2005 PPP

The 125-percent asset line and the 150-percent asset line are multiples of the national asset line.

The USAID “extreme” line is defined as the median income of people (not households) below the national line (U.S. Congress, 2002).

The USD1.25/day line (2005 PPP) is derived from:

- 2005 PPP exchange rate for “individual consumption expenditure by households” (International Comparison Project, 2008): MXN7.65 per \$1.00
- Price deflators from Banco de México:⁶ 111.4331 for August 2004, 115.2967 for August 2005, and 120.1828 for August 2006, along with 116.3710 for 2005 on average

Using the formula in Sillers (2006), the USD1.25/day 2005 PPP line for Mexico as a whole in 2006 is:

$$\begin{aligned} & (\text{2005 PPP exchange rate}) \cdot \text{USD1.25} \cdot \frac{\text{CPI}_{\text{August 2006}}}{\text{CPI}_{\text{Ave. 2005}}} = \\ & \left(\frac{\text{MXN7.65}}{\text{USD1.00}} \right) \cdot \text{USD1.25} \cdot \frac{120.1828}{116.3710} = \text{MXN9.88}. \end{aligned}$$

The 2004 and 2005 all-Mexico USD1.25/day 2005 PPP lines are computed in the same way. The USD2.50/day line is twice the USD1.25/day line.

The 2005 PPP lines above apply to Mexico as a whole. These are adjusted for urban/rural differences in cost-of-living as implicitly reflected in the national food poverty lines using:

- L , a given national-level PPP poverty line
- p_i , population proportion by urban/rural
- π_i , national food poverty line by urban/rural

For example, the cost-of-living-adjusted poverty line $L_{urban, 2006}$ is:

$$\begin{aligned} L_{urban, 2006} &= \frac{L \cdot \pi_{urban, 2006}}{p_{urban, 2006} \cdot \pi_{urban, 2006} + p_{rural, 2006} \cdot \pi_{rural, 2006}}, \\ &= \frac{9.88 \cdot 26.63}{0.6325 \cdot 26.63 + (1 - 0.6325) \cdot 19.68} = 10.92. \end{aligned}$$

⁶ <http://www.banxico.org.mx/polmoneinflacion/estadisticas/indicesPrecios/indicesPreciosConsumidor.html>, accessed 31 July 2009.

The all-Mexico poverty lines L in Figure 3 are the household- or person-weighted average of the urban and rural lines L_i , with the differences in the lines reflecting urban/rural differences in the cost of living.

3. The context of poverty scorecards for Mexico

This section discusses existing Mexico scorecards in terms of their goals, methods, poverty lines, indicators, accuracy, precision, and cost. The relative strengths of the new scorecard here are as follows. First, its estimates are tested out-of-sample, and accuracy, precision, and formulas for sample size and standard errors are reported. Second, the new scorecard here is based on the largest sample and on the latest nationally representative data. Third, its accuracy compares well with that of others (when comparisons are possible).

3.1 López-Calva *et al.*

López-Calva *et al.* (2005) use poverty scorecards to construct a “poverty map” (Elbers, Lanjouw, and Lanjouw, 2003) to estimate poverty rates for Mexico at the level of municipalities. Their goal is to raise awareness by providing detailed information on the geographic distribution of poverty, thus improving the policy process.

They construct ten scorecards (urban and rural for each of five developmental groupings of states) using stepwise ordinary least squares on the logarithm of expenditure of per-capita income for households in the 2000 ENIGH, considering only indicators also found in the 2000 census.

López-Calva *et al.* then apply the resulting scorecards to all households in the 2000 census to estimate average income levels (not poverty rates) by municipality and state. These estimates are more precise for these smaller areas than would be possible

with only ENIGH data. They then make “poverty maps” that quickly show how average income varies across municipalities in a way that makes sense to lay people.

Poverty mapping and poverty scoring are similar in that they both:

- Build scorecards with nationally representative survey data and then apply them to other data on sub-groups that may not be nationally representative
- Use simple, verifiable indicators that are quick and inexpensive to collect
- Provide unbiased estimates when their assumptions hold
- Can be used to estimate poverty rates for groups
- 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 beyond poverty rates
- Requires less data for construction and calibration
- Includes community-level indicators
- Uses only indicators that appear in a census

Strengths of poverty scoring include that it:

- Is simpler in terms of both construction and application
- Tests accuracy empirically
- Associates poverty likelihoods with scores non-parametrically
- Uses judgment and theory in scorecard construction to reduce overfitting
- Estimates poverty likelihoods for individual households
- Reports simple formulas for standard errors

The basic difference between the two approaches is that poverty mapping seeks to help governments design pro-poor policies, while poverty scoring seeks to help small, local pro-poor organizations to manage their outreach when implementing policies.⁷

⁷ Another apparent difference is that the developers of the poverty-mapping approach say that it is too inaccurate to be used for targeting individual households or persons, while this paper supports such targeting as a legitimate, potentially useful application (Schreiner, 2008c).

López-Calva *et al.* use the following indicators in their scorecards for Mexico:

- Demographics:
 - Logarithm of household size
 - Share of household members older than 60
 - Share of household members younger than 6
 - Share of household members who are women
 - Share of children who are girls
 - Number of children
 - Number of children younger than 12
 - Structure of headship
 - Marital status of head
- Education:
 - Lowest grade passed by a household member
 - Highest grade passed by a household member
 - Highest grade passed by the household head (and its square)
 - Share of household members under 15 who are illiterate
- Employment:
 - Hours worked by head
 - Whether the head is self-employed
 - Job description of the head
- Residence:
 - Type of floors
 - Type of walls
 - Type of roof
 - Type of water supply
 - Type of sewer connection
 - Type of fuel for cooking
 - Whether anyone sleeps in the kitchen
 - Tenancy status
- Ownership of durable assets:
 - Blender
 - Television
 - Land-line telephone
 - Video-game machine
 - Washing machine
 - Refrigerator
 - Computer
 - Water heater
 - Automobile

- Community characteristics:
 - Average low temperature
 - Average high temperature
 - Average annual rainfall
- Municipality characteristics:
 - Composition of employment by sector
 - Share of population that is literate
 - Share of population that speaks only one language
 - Average people per room
 - Share of households with a dirt floor
 - Share of population that is indigenous
 - Infant mortality rate
- State characteristics:
 - Share of post-secondary schools
 - Average people per room
 - Nurses per person
 - Rate of use of medical services

The five urban scorecards are built using about 1,300 households and 21 indicators each, and the five rural scorecards are built using about 600 households and 12 indicators each.

Because the census measure of income differs from that in ENIGH, López-Calva *et al.* do not test accuracy out-of-sample, that is, using data that was not already used to construct the scorecard. Furthermore, even though a central strength of the poverty-mapping approach (like the poverty scoring approach here) is that it allows the reporting of standard errors, López-Calva *et al.* do not report them.

Like the scorecard here (or at least its predecessors based on the 2002 ENIGH, see Schreiner, 2006a and 2006b), the poverty maps in López-Calva *et al.* stand out because they have actually been used (López-Calva, Rodríguez-Chamussy, and Székely, 2007), informing federal budget distributions to local governments, leading to targeted

interventions in the 50 poorest municipalities, and generally increasing awareness and the quality of the public debate on poverty and policy. Still, the complexity of their methods has hindered understanding and thus slowed acceptance.⁸

3.2 Tarozzi and Deaton, and Demombynes *et al.*

A broader debate on the general accuracy of the poverty-mapping approach (and by extension, of the poverty-scoring approach here) has played out against the background of Mexico in Tarozzi and Deaton (2007) and Demombynes *et al.* (2007).

3.2.1 Tarozzi and Deaton

Tarozzi and Deaton point out that sub-groups in a population (such as a given municipality, or the clients of a given pro-poor organization) may differ from the population as a whole in ways that are both linked with poverty and not fully captured by a poverty map or scorecard. These differences cause estimates based on poverty mapping/scoring to differ from true values, so that reports of accuracy should include not only standard errors but also differences from true values.

Tarozzi and Deaton use Monte Carlo tests to show that sub-group differences can matter. To show that their concern is not merely theoretical, they also use the 2000 Mexico census (the same data source as in López-Calva *et al.*) to create synthetic household surveys of rural households in Chiapas, Oaxaca, and Veracruz. Using a

⁸ CONEVAL (2007) produces poverty maps combining the 2005 ENIGH with the 2005 *II Conteo de Población y Vivienda*, a mid-decade mini-census, but the documentation does not provide enough detail to permit an analysis here.

poverty line of MXN6.57/day per person in 2000 prices (about \$1/day PPP, according to Tarozzi and Deaton), they apply poverty mapping to these surveys, generate estimates of poverty rates, and compare the estimates out-of-sample to census data from surveyed households not used in scorecard construction. At the time, such an accuracy test had not yet been done for poverty mapping, although, as in this paper, it has been done since the birth of the poverty-scoring approach.⁹

As in the present paper, Tarozzi and Deaton use logit to estimate the likelihood that a household has income below a given poverty line. Their 35 indicators are:

- Demographics:
 - Number of members ages 0 to 12 (and its square)
 - Number of members older than 65 (and its square)
 - Number of male members ages 13–65 (and its square)
 - Number of female members ages 13–65 (and its square)
 - Whether head is a woman
 - Age of head
 - Whether head belongs to indigenous group
 - Language(s) spoken
- Education: Whether head is literate
- Employment:
 - Whether head works
 - Whether head works in agriculture, fishing, forestry, or mining

⁹ Tarozzi (2008) further shows that the poverty-mapping approach, when applied to literacy in the 2000 Mexico census, leads to inaccuracies for sub-groups, suggesting that there would probably also be inaccuracies when applying the approach to income or poverty rates.

- Residence:
 - Type of cooking fuel
 - Type of floor
 - Type of roof
 - Primary building material
 - Presence of toilet inside residence
 - Whether there is an electrical connection
 - Number of rooms
- Ownership of consumer durables:
 - Radio
 - Television
 - Refrigerator
- Municipality characteristics:
 - Average years of schooling of head
 - Share of heads who are literate
 - Share of households who speak only an indigenous language
 - Share of households with a dirt floor
 - Share of households with electricity
 - Share of households with a toilet in the residence
 - Share of households with a residence built primarily of brick/stone
 - Share of households with a masonry/concrete/tile roof
 - Share of households whose head works in agriculture/fishing/forestry
 - Share of households who own a radio

Tarozzi and Deaton report bias, standard errors, and a general formula for the standard error of their estimates.

3.2.2 Demombynes *et al.*

Demombynes *et al.* (2007) defend poverty mapping against the critique of Tarozzi and Deaton. They use expenditure data from a census of 20,544 households in some communities served by Mexico's Progresa/Oportunidades conditional-cash-transfer program.

Demombynes *et al.* draw a series of synthetic surveys (like Tarozzi or Deaton), perform poverty mapping using a poverty line of MXN5.23 per person per day in

November 1997 prices, and then apply it to out-of-sample households, comparing estimates with true values. To get large enough “small areas” to test whether sub-groups effects matter, Demombynes *et al.* join 50 localities at random.¹⁰ Stepwise ordinary least-squares is used to estimate the log of per-capita expenditure for 10 synthetic surveys. The average scorecard has 17 indicators, about half of them at the community-level. A total of 35 indicators appear in the 10 scorecards, suggesting that overfitting is a risk:¹¹

- Demographics:
 - Household size
 - Share of adults who are male
 - Share of adults who are female
 - Presence of a single head
 - Presence of a bilingual head
 - **rethead**
- Education of the head
- Residence:
 - Type of wall
 - Type of roof
 - Presence of a toilet
- Ownership of consumer durables:
 - Blender
 - Radio
 - Stereo
 - Gas stove
 - Television
 - Refrigerator
 - Vehicle

¹⁰ Tarozzi and Deaton point out that this way of forming “small areas” wipes out most sub-group differences, invalidating it as a test for the influence of such differences.

¹¹ Demombynes *et al.* do not define their indicators, so the descriptions here are based on guesses from labels such as **ragehead2** and **adultfracf**.

- “Small area” characteristics:
 - Average household size (and its square)
 - Average share of adults who are male
 - Average age of head (and its square)
 - Share of female-headed households
 - Share of single-headed households
 - Share of households with a concrete roof
 - Share of households with brick walls
 - Share of households with running water
 - Share of households with a toilet
 - Share of households with a blender
 - Share of households with a radio
 - Share of households with a television
 - Share of households with a water heater
 - Share of households with a washing machine
 - Share of households with a refrigerator
 - Average education level of head
 - Average persons per room (and its square)
 - Share of **rethead**

From Table 5 in Demombynes *et al.*, the average difference between estimated poverty rates and true values across 20 “small areas” with an average sample size of about 1,010 is +0.7 percentage points, and the average 90-percent confidence interval for this difference is ± 0.7 percentage points. For the scorecard here and the poverty line that gives a poverty rate closest to the 61 percent in Demombynes *et al.*’s Figure 5 (150% of the national asset line), the 2006 scorecard applied to the 2006 validation sample with $n = 1,024$ gives a difference +1.7 percentage points and a 90-percent confidence interval of ± 2.7 percentage points. Thus, Demombynes *et al.* is more accurate, perhaps because they use about 17 indicators instead of 10, about half of which are at the community level (versus none in the scorecard here). Indeed,

Demombynes *et al.* find that community-level indicators reduce standard errors by 41 percent.

In the end, Demombynes *et al.* concede that accuracy is reduced when a sub-group is not representative of the population from which the scorecard was built. They also contend, however, that the use of community-level indicators mitigates inaccuracies. After all, if a sub-group is different, then group-level indicators should help control for these differences. While acknowledging Tarozzi and Deaton's point, Demombynes *et al.* conclude that "bias is low" (p. 18) and that the use of community-level indicators "can go a long way" (p. 19) toward mitigating sub-group differences.

Similar conclusions come out of another paper that shares two authors with Demombynes *et al.* Using data from a census of the Brazilian state of Minas Gerais that asked about income, Elbers, Lanjouw, and Leite (2008) state that the poverty-mapping approach "performs reasonably well" (p. 30). They find that differences between estimates and true values are small and that confidence intervals have about the right width. While acknowledging that Deaton and Tarozzi have a point, they conclude that in practice "a hypothetical policy maker, presented with [a poverty map] and its accompanying standard errors, would not come away with a wildly unrealistic picture of the spatial distribution of poverty" (p. 30).

3.2.3 Significance for poverty scoring

In some senses, poverty scoring is a simpler version of poverty mapping, designed to be accurate enough to be useful, inexpensive enough to be used by local pro-poor

organizations, and straightforward enough for non-specialists to understand and accept. Given this, does the academic debate about poverty mapping among some heavyweights¹² in development economics mean that poverty mapping and poverty scoring should be abandoned?

In their concluding remarks, Tarozzi and Deaton say (pp. 24–25):

Overall, we believe that efforts to calculate welfare estimates for small areas . . . are certainly worthwhile, but we also believe that the current literature has not emphasized enough the limitations of the current methodologies and the very strong assumptions that they require in order to allow for meaningful inference. Such limitations must be stressed, and the precision of the estimates should be judged accordingly . . . [Users] should be aware that such maps may be subject to much more uncertainty and error than previously thought.

In essence, Tarozzi and Deaton ask that documentation report the differences between estimates and true values (and not just standard errors) and the limitations of the approach. This is reasonable; users of any tool need to know what it can and cannot do, and in what contexts. In fact, this type of reporting has been standard for poverty scoring since the beginning of 2008. In particular, reporting includes both bias and standard errors and explicitly points out that reported accuracy holds only for subgroups that are representative of a given country's population. Thus, the issue is not that poverty mapping (or poverty scoring) is imperfect—nothing is—but rather that poverty mapping's imperfections were not fully reported.

¹² Deaton in particular has a chance at a future Noble Prize.

But is poverty mapping/scoring accurate enough? When thinking about a framework for this question, it helps to consider for-profit lenders with billions of dollars at risk in loans underwritten largely via credit-risk scorecards. Not only are these scorecards much less accurate for their purpose than poverty maps/scorecards, but they are also subject to the same sub-group critiques. They are imperfect, but nevertheless more useful from a benefit/cost perspective than alternatives.

The question is then, accurate enough for what purpose? And what is the benefit of improved decisions versus the cost of improved decision-making? If national governments are targeting funds at the state-level, then the cost of poverty mapping/scoring is probably not worth the benefit; after all, governments already know which states are poorest. If, however, federal governments are targeting funds at lower levels, then they may not know what the poorest entities are (although state governments should know). In any case, poverty mapping provides an objectivity that will likely favor poorer entities in the budget process, raising awareness among the polity and allowing politicians to deflecting accusations of political bias by referring to the poverty map.

In the case of local, pro-poor organizations, no alternative for targeting households is as inexpensive, accurate, and objective as poverty scoring. Other targeting tools may be more accurate, but they cost more, are less objective, and their accuracy is unquantified. For raising organizational awareness about performance in terms of poverty outreach, scoring's measures of poverty rates are also valuable, showing

managers which branches and field agents serve poorer people, and whether the pro-poor organization as a whole is indeed pro-poor.

In short, no tool is a silver bullet, and poverty mapping and poverty scoring are accurate enough for some uses and not accurate enough for others. A central strength of the approaches—highlighted by Tarozzi and Deaton’s critique of the poverty-mapping literature—is their ability to report quantitative measures of accuracy.

In most cases, the errors in poverty scoring are likely to be small, relative to the benefit/cost of additional accuracy. Given the alternatives for their purposes, poverty scorecards are usually “good enough for government work”.

In any case, Tarozzi and Deaton apply their critique only to estimates of poverty rates. It may not apply as strongly to estimates of changes in poverty rates or to rankings used for targeting. For example, Schreiner (2006a) finds little degradation for targeting when a single all-Mexico scorecard is applied to urban and rural sub-groups. Of course, on the continuum of sub-groups between urban/rural down to a single household, at some point rankings may become too inaccurate for a given purpose. Still, even relatively inaccurate credit-risk scorecards have proven useful for targeting individual households, and, depending on the context and alternatives, poverty scorecards may likewise be the best choice for targeting and other uses.

Given that Demombynes *et al.* emphasize that community-level indicators improve accuracy, a final question is whether poverty scorecards should also include them. Local pro-poor organizations, however, do not seek estimates of poverty rates for

a community; they want measures for their clients (a sub-group within a community or across a group of communities).

3.3 CIMMYT

Bellon *et al.* (2004, “CIMMYT”, the Spanish acronym for the “International Maize and Wheat Improvement Center”, the authors’ institution) produce a poverty map for Mexico using the 2002 ENIGH and the 2000 census which they then test out-of-sample on the 2000 ENIGH. At the time, household-level data from these sources was not being released, so CIMMYT follows Bigman *et al.* (2000) in using only community-level indicators at the level of the municipality. CIMMYT also differ from López-Calva *et al.* and Deaton and Tarozzi in that they consider expenditure rather than income, consider only rural areas (localities with less than 2,500 people) rather than all areas, and use the national food line instead of income levels or a \$1/day PPP line.

The scorecard aggregates indicators from the 2002 ENIGH over municipalities to predict the logarithm of the ratio of per-capita household income to the national food line. CIMMYT’s 16 indicators are:

- Average household size
- Education levels of household members older than 15
- Residence:
 - Share of households with a dirt floor
 - Share of households with a one-room residence
 - Share of households with potable water
 - Share of households with a sewer connection
 - Share of households with an electrical connection
 - Share of households with a telephone

- Municipal-level indicators:
 - State identity
 - Fraction of people older than five who speak an indigenous language
 - Average minutes from nearest urban center
 - Average minimum temperature
 - Average maximum temperature
 - Average annual rainfall
 - Share of population that is rural
 - Population density

CIMMYT does not report standard errors, but they do report correlations in levels and ranks based on the out-of-sample test. The estimated poverty rate is 41.5 percent while the true rate is 32.4 percent, so bias is -9.1 percentage points.

Despite the limits on its data and accuracy, CIMMYT stands out for the relevance and depth of its application. The authors use the poverty map to inform CIMMYT policy as it relates to its mandate by comparing the map to the placement of agricultural test plots (finding that test plots tend to be in flat, fertile areas, while the poor tend to live in sloped, infertile areas), to the distribution of the variety of corn germplasm (finding that the poor are not necessarily the caretakers of genetic diversity), and to the distribution of farm production (finding that the poor grow corn and beans rather than wheat).

CIMMYT further uses the poverty-mapping approach to create a food-security map, finding that the indicators and weights for the food-security map are similar to those of the poverty map and that food-security is more difficult to predict than poverty status. Overall, CIMMYT is more impressive in its application than in its technique, inverting the strengths of most poverty-mapping exercises to date.

3.4 McKenzie

McKenzie (2007) applies principal components analysis to Mexico’s 1998 ENIGH to make an “asset index” from simple, low-cost indicators of the type available from surveys that do not collect detailed income or expenditure. The index is like the poverty scorecard here except that it is based on a relative definition of poverty. Because of this and because the ENIGH includes expenditure data, McKenzie compares the use of his index versus direct measures of expenditure, finding that the index is a good proxy for his purposes.¹³ Other examples of the PCA asset-index approach are Stifel and Christiaensen (2007), Zeller *et al.* (2006), Sahn and Stifle (2000 and 2003), and Filmer and Pritchett (2001).

McKenzie’s index uses almost all of the asset indicators available in the 1998 ENIGH. These 27 indicators are simple and inexpensive to collect and verify:

- Residence characteristics:
 - Wall
 - Roof
 - Floor
 - Water supply
 - Toilet
 - Garbage collection
 - Electricity supply
 - Tenancy status
 - Number of rooms

¹³ For similar tests, see Filmer and Scott (2008), Bollen, Glanville, and Stecklov (2007), Lindelow (2006), Wagstaff and Watanabe (2003), and Montgomery *et al.* (2000).

- Ownership of durable assets:
 - Car
 - Van
 - Motorcycle
 - Bicycle
 - Radio
 - Television
 - Video-game machine
 - Computer
 - Fan
 - Sewing machine
 - Stove
 - Fridge
 - Washing machine
 - Clothes dryer
 - Microwave
 - Central air conditioning
 - Space heater
 - Telephone

McKenzie's purpose is not to proxy wealth levels but rather to estimate wealth inequality, which he then relates to state-level school attendance for Mexican youth ages 14 to 18. Thus, the asset index, while related to policy issues, is less directly related than poverty mapping or poverty scoring. McKenzie does not present the index in a form that is ready to take to the field.

McKenzie derives an inequality measure from the index by dividing the standard deviation of households' index values in a given state in the 1998 ENIGH by the standard deviation of households' indices across all of Mexico. Higher ratios represent states with higher inequality.

McKenzie reports two basic findings. On the policy front, states with higher inequality also have higher rates of school drop-out by male (but not female) youth. On

the methodological front, “relative inequality in the overall asset index does appear to be a reasonable proxy for both inequality in non-durable consumption and inequality in food expenditure” (p. 18).

3.5 Oportunidades

In Mexico, the most important poverty scorecard is that used to target households for the conditional cash-transfer program Oportunidades (formerly known as Progresa). While the indicators collected from applicants are public knowledge, and while it is known that the scorecard was built with discriminant analysis, the scorecard’s points are secret and do not seem to appear in the vast literature on Oportunidades.

Thus, while it would be highly policy-relevant to compare targeting accuracy for the scorecard here versus that of Oportunidades, it is also impossible. Indeed, two papers that purport to evaluate the targeting effectiveness of Oportunidades (Medina, Hubert, and Soto, 2000, and Skoufias, Davis, and Behrman, 1999) actually only test different statistical approaches to targeting, because even these authors do not have access to the full Oportunidades scorecard.

4. Scorecard construction

For the Mexico scorecard, about 120 potential indicators are initially prepared in the areas of:

- Family composition (such as household size)
- Education (such as school attendance of children)
- Employment (such as number of household members working in agriculture)
- Housing (such as the main construction material of the floors, walls and roof)
- Ownership of durable goods (such as color televisions and refrigerators)

Each indicator is first screened with the entropy-based “uncertainty coefficient” (Goodman and Kruskal, 1979), a measure of how well the indicator predicts poverty on its own. Figure 4 lists all the candidate indicators, ranked by uncertainty coefficient. Responses for each indicator in Figure 4 are ordered starting with those most strongly associated with greater poverty likelihood.

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

The scorecard itself is built using the national asset poverty line and Logit regression on the construction sub-sample (Figure 2). Indicator selection uses both judgment and statistics (forward stepwise, based on “c”). The first step is to use Logit to build one scorecard for each candidate indicator. Each scorecard’s accuracy is taken as “c”, a measure of ability to rank by poverty status (SAS Institute Inc., 2004).

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

A series of two-indicator scorecards are then built, each based on the one-indicator scorecard selected from the first step, with a second candidate indicator added. The best two-indicator scorecard is then selected, again based on “c” and judgment. These steps are repeated until the scorecard has 10 indicators. Feedback on practical considerations from pro-poor organizations in Mexico then led to the removal and replacement of a few indicators.

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

This algorithm is the Logit analogue to the familiar R^2 -based stepwise with least-squares regression. It differs from naïve stepwise in that the criteria for selecting indicators include not only statistical accuracy but also judgment and non-statistical factors. The use of non-statistical criteria can improve robustness through time and helps ensure that indicators are simple and make sense to users.

The single poverty scorecard here applies to all of Mexico. Evidence from Mexico and India (Schreiner, 2006a and 2006c), Sri Lanka (Narayan and Yoshida, 2005), and

Jamaica (Grosh and Baker, 1995) suggests that segmenting scorecards by urban/rural does not improve targeting accuracy much, although—as pointed out by Tarozzi and Deaton—such segmentation may improve the accuracy of estimated poverty rates.

5. Practical guidelines for scorecard use

The main challenge of scorecard design is not to squeeze out the last drops of accuracy but rather to improve the chances that scoring is actually used (Schreiner, 2005b). When scoring projects fail, the reason is not usually technical inaccuracy but rather the failure of an organization to decide to do what is needed to integrate scoring in its processes and to learn to use it properly (Schreiner, 2002). After all, most reasonable scorecards predict tolerably well, thanks to the empirical phenomenon known as the “flat max” (Hand, 2006; Baesens *et al.*, 2003; Lovie and Lovie, 1986; Kolesar and Showers, 1985; Stillwell, Barron, and Edwards, 1983; Dawes, 1979; Wainer, 1976; Myers and Forgy, 1963). The bottleneck is less technical and more human, not statistics but organizational change management. Accuracy is easier to achieve than adoption.

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

To this end, the scorecard here fits on one page (Figure 1). The construction process, indicators, and points are simple and transparent. “Extra” work is minimized; non-specialists can compute scores by hand in the field because the scorecard has:

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

The scorecard in Figure 1 is ready to be photocopied and can be used with a simple spreadsheet database (Microfinance Risk Management, L.L.C., 2009) that records identifying information for the participant, dates, indicator values, scores, and poverty likelihoods.

A field worker using the paper scorecard would:

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

Of course, field workers must be trained. Quality outputs depend on quality inputs. If organizations or field workers gather their own data and have an incentive to exaggerate poverty rates (for example, if funders reward them for higher poverty rates), then it is wise to do on-going quality control via data review and random audits (Matul and Kline, 2003).¹⁴ IRIS Center (2007a) and Toohig (2008) are useful nuts-and-bolts guides for planning, 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 most alternatives, it is still absolutely difficult. Training and explicit definitions of terms and

¹⁴ If an organization does not want field workers to know the points associated with indicators, then they can use the version of Figure 1 without points and apply the points later in a spreadsheet or database at the central office.

concepts in the scorecard is essential.¹⁵ For the example of Nigeria, one test finds distressingly low inter-rater and test-retest correlations for indicators as seemingly simple and obvious as whether the household owns an automobile (Onwujekwe, Hanson, and Fox-Rushby, 2006). At the same time, Grosh and Baker (1995) find that gross underreporting of assets does not affect targeting.

For the first stage of targeting in Mexico's Oportunidades program, Martinelli and Parker (2007) find that "underreporting [of asset ownership] is widespread but not overwhelming, except for a few goods . . . [and] overreporting is common for a few goods, which implies that self-reporting may lead to the exclusion of deserving households" (pp. 24–25). Still, as Oportunidades does in the second stage of their targeting process, most false self-reports can be corrected by field agents who verify responses with a home visit, and this is the suggested procedure for the poverty scoring approach here.

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

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

¹⁵ For definitions for the indicators in Mexico's poverty scorecard, see Appendix A.

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

- Employees of the organization
- Third-party contractors

Responses, scores, and poverty likelihoods can be recorded:

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

The subjects to be scored can be:

- All participants (or all new participants)
- A representative sample of all participants (or of all new participants)
- All participants (or all new participants) in a representative sample of branches
- A representative sample of all participants (or of all new participants) in a representative sample of branches

If not determined by other factors, the number of participants to be scored can be derived from sample-size formulas (presented later) for a desired confidence level and a desired confidence interval.

Frequency of application can be:

- At in-take of new clients only (precluding measuring change in poverty rates)
- As a once-off project for current participants (precluding measuring change)
- Once a year or at some other fixed time interval (allowing measuring change)
- Each time a field worker visits a participant at home (allowing measuring change)

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

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

An example set of design choices is illustrated by BRAC and ASA, two microlenders in Bangladesh (each with more than 7 million participants) who are applying a poverty scorecard similar to the one here (Chen and Schreiner, 2009a). Their design is that loan officers in a random sample of branches score all their clients each time they visit a homestead (about once a year) as part of their standard due diligence prior to loan disbursement. Responses are recorded on paper in the field before being sent to a central office to be entered into a database. The sampling plans of ASA and BRAC cover 50,000–100,000 participants each.

6. Estimates of household poverty likelihoods

The sum of scorecard points for a household is called the *score*. For Mexico, scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line). While higher scores indicate less likelihood of being below a poverty line, the scores themselves have only relative units. For example, doubling the score does not double the likelihood of being above a poverty line.

To get absolute units, scores must be converted to *poverty likelihoods*, that is, probabilities of being below a poverty line. This is done via simple look-up tables. For the example of the national food line, scores of 10–14 have a poverty likelihood of 41.2 percent, and scores of 40–44 have a poverty likelihood of 7.5 percent (Figure 5).

The poverty likelihood associated with a score varies by poverty line. For example, scores of 40–44 are associated with a poverty likelihood of 7.5 percent for the national food line but 44.2 percent for the national asset line.¹⁶

¹⁶ Starting with Figure 5, many figures have 24 versions, one for each of the eight poverty lines for the 2006 scorecard applied to the 2006 validation sample, one for each of the eight poverty lines for the 2006 scorecard applied to the 2005 ENIGH, and one for each of the eight poverty lines for the 2006 scorecard applied to the 2004 ENIGH. To keep them straight, they are grouped by poverty line and by the data used for validation. Single tables that pertain to all poverty lines are placed with the tables for the national food line and the 2006 validation sample.

6.1 Calibrating scores with poverty likelihoods

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

For the example of the national food line (Figure 6), there are 1,699 (normalized) households in the calibration sub-sample with a score of 10–14, of whom 701 (normalized) are below the poverty line. The estimated poverty likelihood associated with a score of 10–14 is then 41.2 percent, as $701 \div 1,699 = 41.2$ percent.

To illustrate with the national food line and a score of 40–44, there are 8,703 (normalized) households in the calibration sample, of whom 655 (normalized) are below the line (Figure 6). Thus, the poverty likelihood for this score is $655 \div 8,703 = 7.5$ percent.

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

Figure 7 shows, for all scores, the likelihood that income falls in a range demarcated by two adjacent poverty lines. For example, the daily income of someone with a score of 35–39 falls in the following ranges with probability:

- 0.2 percent below the \$1.25/day 2005 PPP line
- 6.9 percent between the \$1.25/day 2005 PPP and \$2.50/day 2005 PPP lines
- 6.5 percent between the \$2.50/day 2005 PPP and the national food lines
- 7.4 percent between the national food and the national capacity lines
- 36.1 percent between the national capacity and the national asset lines
- 18.6 percent between the national asset and 125% of the national asset lines
- 6.3 percent between 125% of national asset and 150% of national asset lines
- 18.1 percent above 150% of the national asset line

Even though the scorecard is constructed partly based on judgment, this calibration process produces poverty likelihoods that are objective, that is, derived from survey data on income and quantitative poverty lines. The poverty likelihoods would be objective even if indicators and/or points were selected without any data at all. In fact, objective scorecards of proven accuracy are often based only on judgment (Fuller, 2006; Caire, 2004; Schreiner *et al.*, 2004). Of course, the scorecard here is constructed with both data and judgment. The fact that this paper acknowledges that some choices in scorecard construction—as in any statistical analysis—are informed by judgment in no way impugns the objectivity of the poverty likelihoods, as this depends on using data in score calibration, not on using data (and nothing else) in scorecard construction.

Although the points in Mexico’s poverty scorecard are transformed coefficients from a Logit regression, scores are not converted to poverty likelihoods via the Logit formula of $2.718281828^{\text{score}} \times (1 + 2.718281828^{\text{score}})^{-1}$. This is because the Logit formula is esoteric and difficult to compute by hand. Non-specialists find it more intuitive to define

the poverty likelihood as the share of households with a given score in the calibration sample who are below a poverty line. In the field, converting scores to poverty likelihoods requires no arithmetic at all, just a look-up table. This non-parametric calibration can also improve accuracy, especially with large calibration samples.

6.2 Accuracy of estimates of households' poverty likelihoods

As long as the relationship between indicators and poverty does not change and the scorecard is applied to households that are representative of the same population from which it was constructed, this calibration process produces unbiased estimates of poverty likelihoods. *Unbiased* means that in repeated samples from the same population, the average estimate matches the true poverty likelihood. The scorecard also produces unbiased estimates of poverty rates at a point in time, as well as unbiased estimates of changes in poverty rates between two points in time.¹⁷

As Tarozzi and Deaton point out, the relationship between indicators and poverty does change with time and also across sub-groups in Mexico's population, so the scorecard will generally be biased when applied after the end date of fieldwork for the 2006 ENIGH (as it must be in practice) or when applied with non-nationally representative groups (as it probably would be for a local, pro-poor organization).

¹⁷ 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? To check, the scorecard is applied to 1,000 bootstrap samples of size $n = 16,384$ from the validation sub-sample. Bootstrapping entails (Efron and Tibshirani, 1993):

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

For each score range and for $n = 16,384$, Figure 8 shows the average difference between estimated and true poverty likelihoods as well as confidence intervals for the differences.

For the national food line in the 2006 validation sample, the average poverty likelihood across bootstrap samples for scores of 10–14 is too low by 9.4 percentage points (Figure 8). For scores of 5–9, the estimate is too high by 4.0 percentage points.¹⁸

The 90-percent confidence interval for the differences for scores of 10–14 is +/- 7.6 percentage points (Figure 8). This means that in 900 of 1,000 bootstraps, the difference between the estimate and the true value is between -17.0 and -1.8 percentage

¹⁸ These differences are not zero, in spite of the estimator's unbiasedness, because the scorecard comes from a single sample. The average difference by score would be zero if samples were repeatedly drawn from the population and split into sub-samples before repeating the entire construction and calibration process.

points (because $-9.4 - 7.6 = -17.0$, and $-9.4 + 7.6 = -1.8$). In 950 of 1,000 bootstraps (95 percent), the difference is -9.4 ± 8.1 percentage points, and in 990 of 1,000 bootstraps (99 percent), the difference is -9.4 ± 9.2 percentage points.

For almost all scores below 55, Figure 8 shows differences—some of them large—between estimated poverty likelihoods and true values. This is because the validation sub-sample is a single sample that—thanks to sampling variation—differs in distribution from the construction/calibration sub-samples and from Mexico’s population. Differences when the 2006 scorecard is applied to the 2004 and 2005 ENIGH also are due in part to changes in the relationships between indicators and poverty over time. For targeting, however, what matters is less the differences across all score ranges and more the differences in score ranges just above and below the targeting cut-off. This mitigates the effects of bias and sampling variation on targeting (Friedman, 1997). Section 9 below looks at targeting accuracy in detail.

Of course, if estimates of groups’ poverty rates are to be usefully accurate, then errors for individual households must largely cancel each other out. This is generally the case, as discussed in the next section.

Another possible source of bias is overfitting. By construction, the scorecard here is unbiased, but it may still be *overfit* when applied after the August 2006 end of field work for the 2006 ENIGH. That is, it may fit the 2006 ENIGH data 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 2006 ENIGH. Or the scorecard may be overfit

in the sense that it becomes biased as the relationships between indicators and poverty change through time or when it is applied to samples from non-nationally representative sub-groups.

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

In any case, most errors in individual households' likelihoods cancel out in the estimates of groups' poverty rates (see later sections). Furthermore, much of the differences between scorecard estimates and true values may come from non-scorecard sources such as changes in the relationship between indicators and poverty, sampling variation, changes in poverty lines, inconsistencies in data quality across time, and inconsistencies/imperfections in cost-of-living adjustments across time and space. These factors can be addressed only by improving data quantity and quality (which is beyond the scope of the scorecard) or by reducing overfitting (which likely has limited returns, given the scorecard's parsimony).

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

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

To illustrate, suppose a program samples three households on Jan. 1, 2009 and that they have scores of 20, 30, and 40, corresponding to poverty likelihoods of 33.9, 16.3, and 7.5 percent (national food line, Figure 5). The group's estimated poverty rate is the households' average poverty likelihood of $(33.9 + 16.3 + 7.5) \div 3 = 19.2$ percent.¹⁹

7.1 Accuracy of estimated poverty rates at a point in time

How accurate is this estimate? For a range of sample sizes, Figure 10 reports average differences between estimated and true poverty rates as well as precision (confidence intervals for the differences) for the Mexico scorecard applied to 1,000 bootstrap samples from the 2006 validation sample and the 2004 and 2005 ENIGH.

Summarizing Figure 10 across poverty lines and years for $n = 16,384$, Figure 9 shows that the absolute differences at a point in time between the estimated poverty rate and the true rate for the validation samples are 2.9 percentage points or less. The average absolute difference across the eight poverty lines for the 2006 validation sample is 0.7 percentage points, and across all lines for all three years, this figure is 1.1

¹⁹ The group's poverty rate is *not* the poverty likelihood associated with the average score. Here, the average score is $(20 + 30 + 40) \div 3 = 30$, and the poverty likelihood associated with the average score is 16.3 percent. This is not the 19.2 percent found as the average of the three poverty likelihoods associated with each of the three scores.

percentage points. At least part of these differences is due to sampling variation in the 2006 validation sample as part of the division of the 2006 ENIGH into three subsamples, and some other part is due to changes in the relationships between indicators and poverty over time, as well as to differences in the 2004, 2005, and 2006 ENIGH.

In terms of precision, the 90-percent confidence interval for a group's estimated poverty rate at a point in time in 2004–2006 with $n = 16,384$ is ± 0.6 percentage points or less (Figure 9). This means that in 900 of 1,000 bootstraps of this size, the absolute difference between the estimate and the average estimate is 0.6 percentage points or less.

In the specific case of the national asset line and the 2006 validation sample, 90 percent of all samples of $n = 16,384$ produce estimates that differ from the true value in the range of $+2.4 + 0.6 = +3.0$ to $+2.4 - 0.6 = +1.8$ percentage points. This is because $+2.4$ is the average difference, and ± 0.6 is its 90-percent confidence interval. The average difference is $+2.4$ because the average scorecard estimate is too high by 2.4 percentage points; it tends to estimate a poverty rate of 36.8 percent for the 2006 validation sample, but the true value is 34.4 percent (Figure 2).

For the Mexico scorecard based on the 2006 ENIGH applied to the 2004 and 2005 ENIGH with $n = 16,384$, the absolute differences at a point in time are 2.9 percentage points or less (Figure 9), and the average absolute difference across lines and years is 1.3 percentage points. The 90-percent confidence intervals are ± 0.6 percentage points or less.

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

How precise are the point-in-time estimates? Because they are averages, the estimates have a Normal distribution and can be characterized by their average difference vis-à-vis true values, along with the standard error of the average difference.

To derive a formula for the standard errors of estimated poverty rates at a point in time for indirect measurement via poverty scorecards (Schreiner, 2008a), note that the textbook formula (Cochran, 1977) that relates confidence intervals with standard errors in the case of direct measurement of poverty status is $c = +/- z \cdot \sigma$, where:

c is the confidence interval as a proportion (*e.g.*, 0.2 for +/-2 percentage points),

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

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

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

n is the sample size.

For example, with a sample $n = 16,384$, 90-percent confidence ($z = 1.64$), and a poverty rate p of 34.4 percent (the true rate in the 2006 validation sample for the national asset line in Figure 2), the confidence interval c is

$$+/- z \cdot \sqrt{\frac{p \cdot (1-p)}{n}} = +/- 1.64 \cdot \sqrt{\frac{0.344 \cdot (1-0.344)}{16,384}} = 0.61 \text{ percentage points.}$$

Poverty scorecards, however, do not measure poverty directly, so this formula is not immediately applicable. To derive a formula for the Mexico scorecard, consider Figure 10, which reports empirical confidence intervals c for the differences for the scorecard applied to 1,000 bootstrap samples of various sample sizes from a validation sample. For $n = 16,384$, the national asset line, and the 2006 validation sub-sample, the 90-percent confidence interval is 0.555 percentage points.²⁰ Thus, the ratio of confidence intervals with poverty scoring and with direct measurement is $0.555 \div 0.61 = 0.91$.

Now consider the same case, but with $n = 8,192$. The confidence interval under direct measurement is $+/- 1.64 \cdot \sqrt{\frac{0.344 \cdot (1-0.344)}{8,192}} = 0.86$ percentage points. The empirical confidence interval with the Mexico scorecard for the national asset line (Figure 10) is 0.790 percentage points. Thus for $n = 8,192$, the ratio is $0.790 \div 0.86 = 0.92$.

This ratio of 0.92 for $n = 8,182$ is not far from the ratio of 0.91 for $n = 16,384$. Indeed, across all sample sizes of 256 or more in Figure 10, the average ratio turns out to be 0.91, implying that confidence intervals for indirect estimates of poverty rates via

²⁰ Due to rounding, Figure 10 displays 0.6, not 0.555.

the Mexico scorecard and this poverty line are about nine-tenths as wide as those for direct estimates. This 0.91 appears in Figure 9 as the “ α factor” because if $\alpha = 0.91$, then the formula relating confidence intervals c and standard errors σ for the Mexico scorecard is $c = +/- z \cdot \alpha \cdot \sigma$. The standard error σ for point-in-time estimates of

poverty rates via scoring is $\alpha \cdot \sqrt{\frac{p \cdot (1 - p)}{n}}$.

In general, α could be more or less than 1.00. When α is less than 1.00, it means that the scorecard is more precise than direct measurement. This occurs for 14 of 24 cases in Figure 9.

The formula relating confidence intervals to standard errors for poverty scoring can be rearranged to give a formula for determining sample size n before measurement.²¹

If \hat{p} is the expected poverty rate before measurement, then the formula for n based on the desired confidence level that corresponds to z and the desired confidence interval

$+/-c$ under poverty scoring is $n = \left(\frac{\alpha \cdot z}{c}\right)^2 \cdot \hat{p} \cdot (1 - \hat{p})$.

To illustrate how to use this, suppose $c = 0.045$ and $z = 1.64$ (90-percent confidence), and $\hat{p} = 0.360$ (the poverty rate for the national asset line in the 2006 construction and calibration sub-samples). Then the formula gives

²¹ IRIS Center (2007a and 2007b) says that a sample size of $n = 300$ is sufficient for USAID reporting. If a scorecard is as precise as direct measurement, if the expected (before measurement) poverty rate is 50 percent, and if the confidence level is 90 percent, then $n = 300$ implies a confidence interval of $+/-2.2$ percentage points. In fact, USAID has not specified confidence levels or intervals. Furthermore, the expected poverty rate may not be 50 percent, and the scorecard could be more or less precise than direct measurement.

$$n = \left(\frac{0.91 \cdot 1.64}{0.045} \right)^2 \cdot 0.360 \cdot (1 - 0.360) = 254, \text{ close to the sample size of 256 observed for}$$

these parameters in Figure 10.

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

In practice after the date of the end of field work for the 2006 ENIGH, an organization would select a poverty line (say, the national asset line), select a desired confidence level (say, 90 percent, or $z = 1.64$), select a desired confidence interval (say, ± 2.0 percentage points, or $c = 0.02$), make an assumption about \hat{p} (perhaps based on a previous measurement such as the 35.5 percent average for the national asset line in the 2006 ENIGH in Figure 2), look up α (here, 0.91), assume that the scorecard will still work in the future and/or for non-nationally representative sub-groups,²² and then compute the required sample size. In this illustration,

$$n = \left(\frac{0.91 \cdot 1.64}{0.02} \right)^2 \cdot 0.355 \cdot (1 - 0.355) = 1,275.$$

²² This paper reports accuracy for the scorecard applied to the validation sample and to the 2004 and 2005 ENIGH, but it cannot test accuracy for later years or for other groups. Still, performance after the end of fieldwork for the 2006 ENIGH will probably resemble that in the 2006 ENIGH, with some deterioration as time passes.

8. Estimates of changes in group poverty rates over time

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

8.1 Warning: Change is not impact

Scoring can estimate change. Of course, change could be for the better or for the worse, and scoring does not indicate what caused change. This point is often forgotten, confused, or ignored, so it bears repeating: poverty scoring simply estimates change, and it does not, in and of itself, indicate the reason for the change. In particular, estimating the impact of program participation requires knowing what would have happened to participants if they had not been participants (Moffitt, 1991). 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 program impact only if there is some way to know what would have happened in the absence of the program. And that information must come from somewhere beyond poverty scoring. Even measuring simple change usually requires assuming that the population is constant over time and that program drop-outs happen at random.

8.2 Calculating estimated changes in poverty rates over time

Consider the illustration begun in the previous section. On Jan. 1, 2009, a program samples three households who score 20, 30, and 40 and so have poverty

likelihoods of 33.9, 16.3, and 7.5 percent (national food line, Figure 5). The group's baseline estimated poverty rate is the households' average poverty likelihood of $(33.9 + 16.3 + 7.5) \div 3 = 19.2$ percent.

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

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

By way of illustration, suppose that a year later on Jan. 1, 2010, the program samples three additional households who are in the same cohort as the three households originally sampled (or suppose that the program scores the same three original households a second time) and finds that their scores are now 25, 35, and 45 (poverty likelihoods of 25.2, 13.5, and 5.5 percent, national food line, Figure 5). Their average poverty likelihood at follow-up is $(25.2 + 13.5 + 5.5) \div 3 = 14.7$ percent, an improvement of $19.2 - 14.7 = 4.5$ percentage points.²³

This suggests that about one of 22 participants crossed the poverty line in 2009. (This is a net figure; some people start above the line and end below it, and vice versa.) Among those who started below the line, about one in four ($4.5 \div 19.2 = 23.4$ percent) ended up above the line. Of course, poverty scoring does not reveal the reasons for this change.

²³ Of course, such a huge reduction in poverty is unlikely in a year's time, but this is just an example to show how change is calculated with poverty scoring.

8.3 Estimated changes in poverty rates in Mexico

Given the Mexico poverty scorecard built from the construction and calibration samples from the 2006 ENIGH, an estimate of the change in the poverty rate between 2006 and 2005 in Mexico is the difference between the estimated poverty rate in the 2006 validation sample and the estimated poverty rate in the 2005 ENIGH.

In Figure 11 (summarizing Figure 12 across years and poverty lines), the difference between this estimate and the true value is +0.1 percentage points for the national asset line. This is because the true change was -5.2 percentage points (Figure 2), while the scorecard estimates a change of -5.1 percentage points. Across all eight lines for 2005/6, the average absolute difference is 0.8 percentage points, while the average true change is -3.2 percentage points (Figure 2). Thus, the scorecard correctly captured about three-fourths of the reduction in poverty. In terms of precision, the 90-percent confidence interval is +/-0.8 percentage points or less (Figure 11).

For changes between the 2006 validation sample and the 2004 ENIGH, the figures are similar (Figure 11). The average absolute difference between the estimated change and the true change is 1.0 percentage points, which is about 71 percent of the average true change of -3.4 percentage points (Figure 2).

Because the scorecard estimate is unbiased, these differences are due to changes over time in the relationship between indicators and poverty, sampling variation, and changes in poverty lines and/or data collection. The magnitude of the differences here

are similar to those in other tests (Schreiner, 2009a, 2009b, and 2008b; Chen and Schreiner, 2009a and 2009b; Mathiassen, 2008).

8.4 Accuracy for estimated change in two independent samples

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

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

z , c , and p are defined as above, n is the sample size at both baseline and follow-up,²⁴ and α is the average (across a range of bootstrapped sample sizes) of the ratio of the observed confidence intervals from a poverty scorecard and the theoretical confidence intervals from the textbook formula for direct measurement for two equal-sized independent samples. The α factors for Mexico are generally greater than 1.00 (Figure 11), so scoring in this case is less precise than direct measurement.

²⁴ This means that, for a given precision and with direct measurement, estimating the change in a poverty rate over time requires four times as many measurements (not twice as many) as does estimating a poverty rate at a point in time.

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

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

To illustrate the use of the formula above to determine sample size for estimating changes in poverty rates across two independent samples from 2005 and 2006, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is 2 percentage points ($c = 0.02$), the poverty line is the national asset line, $\alpha = 1.29$ (from Figure 11), and $\hat{p} = 0.355$ (from Figure 2). Then the baseline sample size is

$$n = 2 \cdot \left(\frac{1.29 \cdot 1.64}{0.02} \right)^2 \cdot 0.355 \cdot (1 - 0.355) = 5,125, \text{ and the follow-up sample is also } 5,125.$$

8.5 Accuracy for estimated change for one sample, scored twice

The general formula relating the confidence interval c to the standard error σ when using scoring to estimate change for a single group of households, all of whom are scored at two points in time, is:²⁵

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

²⁵ See McNemar (1947) and Johnson (2007). John Pezzullo helped find this formula.

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

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

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

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

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

Given this, a sample-size formula for a group of households to whom the Mexico poverty scorecard is applied twice (once after the end of field work for the 2006 ENIGH and then again later) is:

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

In Peru (the only other country for which there is a data-based estimate, Schreiner 2009a), the average α across years and poverty lines is about 1.3.

To illustrate the use of this formula, suppose the desired confidence level is 90 percent ($z = 1.64$), the desired confidence interval is 2.0 percentage points ($c = 0.02$), the poverty line is the national asset line, and the sample will be scored first in 2009 and then again in 2012 ($y = 3$). The before-baseline poverty rate is 39.6 percent ($p_{2005} = 0.396$, Figure 2), and suppose $\alpha = 1.3$. Then the baseline sample size is

$$n = 2 \cdot \left(\frac{1.3 \cdot 1.64}{0.02} \right)^2 \cdot \{-0.02 + 0.016 \cdot 3 + 0.47 \cdot [0.396 \cdot (1 - 0.396)]\} = 3,192. \text{ The same}$$

group of 3,192 households is scored at follow-up as well.

9. Targeting

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

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

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

Figure 13 depicts these four possible targeting outcomes. Targeting accuracy varies by cut-off; a higher cut-off has better inclusion (but greater leakage), while a lower cut-off has better exclusion (but higher undercoverage).

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

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

Figure 14 shows the distribution of households by targeting outcome. For an example cut-off of 44 or less and the 2006 scorecard applied to the 2006 validation sample, outcomes for the national asset line are:

- Inclusion: 25.9 percent are below the line and correctly targeted
- Undercoverage: 8.5 percent are below the line and mistakenly not targeted
- Leakage: 13.8 percent are above the line and mistakenly targeted
- Exclusion: 51.8 percent are above the line and correctly not targeted

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

- Inclusion: 30.0 percent are below the line and correctly targeted
- Undercoverage: 4.4 percent are below the line and mistakenly not targeted
- Leakage: 22.7 percent are above the line and mistakenly targeted
- Exclusion: 42.9 percent are above the line and correctly not targeted

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

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

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

- Assign benefits and costs to possible outcomes, based on its values and mission
- Tally total net benefits for each cut-off using Figure 14 for a given poverty line
- Select the cut-off with the highest total net benefit

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

how it values successful inclusion or exclusion versus errors of undercoverage and leakage. It is healthy to go through a process of thinking explicitly and intentionally about how possible targeting outcomes are valued.

A common choice of benefits and costs is “Total Accuracy” (IRIS Center, 2005; Grootaert and Braithwaite, 1998). With “Total Accuracy”, total net benefit is the number of households correctly included or correctly excluded:

$$\begin{array}{rclcl}
 \text{Total Accuracy} = & 1 & \times & \text{Households correctly included} & - \\
 & 0 & \times & \text{Households mistakenly undercovered} & - \\
 & 0 & \times & \text{Households mistakenly leaked} & + \\
 & 1 & \times & \text{Households correctly excluded.} &
 \end{array}$$

Figure 14 shows “Total Accuracy” for all cut-offs for Mexico’s scorecard. For the national asset line in the 2006 validation sample, total net benefit is greatest (78.5) for a cut-off of 39 or less, with about four in five Mexican households correctly classified.

“Total Accuracy” weighs successful inclusion of households below the line the same as successful exclusion of households above the line. If a program valued inclusion more (say, twice as much) than exclusion, it could reflect this by setting the benefit for inclusion to 2 and the benefit for exclusion to 1. Then the chosen cut-off would maximize $(2 \times \text{Households correctly included}) + (1 \times \text{Households correctly excluded})$.²⁶

²⁶ Figure 14 also reports “BPAC”, the Balanced Poverty Accuracy Criteria adopted by USAID as its criterion for certifying poverty scorecards. IRIS Center (2005) says that BPAC considers accuracy both in terms of the estimated poverty rate and in terms of targeting inclusion. After normalizing by the number of people below the poverty line, the formula is:

$$\text{BPAC} = (\text{Inclusion} + |\text{Undercoverage} - \text{Leakage}|) \times [100 \div (\text{Inclusion} + \text{Undercoverage})].$$

As an alternative to assigning benefits and costs to targeting outcomes and then choosing a cut-off to maximize total net benefit, a program could set a cut-off to achieve a desired poverty rate among targeted households. The third column of Figure 15 (“% targeted who are poor”) shows the expected poverty rate among Mexican households who score at or below a given cut-off. For the example of the national asset line and the 2006 validation sample, targeting households who score 39 or less would target 31.0 percent of all households (second column) and produce a poverty rate among those targeted of 70.8 percent (third column).

Figure 15 also reports two other measures of targeting accuracy. The first is a version of inclusion (“% of poor who are targeted”). For the example of the national asset line and the 2006 validation sample with a cut-off of 39, 63.9 percent of all poor households are covered.

The final targeting measure in Figure 15 is the number of successfully targeted poor households for each non-poor household mistakenly targeted (right-most column). For the national asset line, the 2006 validation sample, and a cut-off of 39, covering 2.4 poor households means leaking to 1 non-poor household.

10. Conclusion

This paper presents a simple poverty scorecard for Mexico that can be used to estimate the likelihood that a household has income below a given poverty line, to estimate the poverty rate of a group of households at a point in time, and to estimate changes in the poverty rate of a group of households between two points in time. The scorecard can also be used for targeting.

The scorecard is inexpensive to use and can be understood by non-specialists. It is designed to be practical for local pro-poor organizations who want to improve how they monitor and manage their social performance in order to speed up their participants' progress out of poverty.

The scorecard is built with a sub-sample of data from the 2006 ENIGH, tested on a different sub-sample from the 2006 ENIGH and on the 2004 and 2005 ENIGH, and calibrated to eight poverty lines (national food, national capacity, national asset, 125% of the national asset, 150% of the national asset, USAID "extreme", \$1.25/day 2005 PPP, and \$2.50/day 2005 PPP).

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

When the scorecard is applied to the 2006 validation sample with $n = 16,384$, the absolute difference between estimates and true poverty rates at a point in time is always less than 2.4 percentage points and averages—across the eight poverty lines—about 0.7 percentage points. With 90-percent confidence, the precision of these differences is ± 0.6 percentage points or less. In this case, the scorecard is usually more precise than direct measurement.

When used to measure change across independent samples of $n = 16,384$ between the 2006 validation sample and the 2004 or 2005 ENIGH, the average absolute difference between estimates and true changes across poverty lines and years is 0.8 percentage points, with a 90-percent confidence interval of ± 0.8 percentage points or less. The scorecard generally captures about three-fourths of the change in poverty rates.

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

Although the statistical technique is innovative, and although technical accuracy is important, the design of the scorecard here focuses on transparency and ease-of-use. After all, a perfectly accurate scorecard is worthless if programs feel so daunted by its complexity or its cost that they do not even try to use it. For this reason, the poverty scorecard is kept simple, using ten indicators that are inexpensive to collect and that are straightforward to verify. Points are all zeros or positive integers, and scores range from 0 (most likely below a poverty line) to 100 (least likely below a poverty line).

Scores are related to poverty likelihoods via simple look-up tables, and targeting cut-offs are likewise simple to apply. The design attempts to facilitate adoption by helping managers understand and trust scoring and by allowing non-specialists to generate scores quickly in the field.

In sum, the poverty scorecard is a practical, objective way for pro-poor programs in Mexico to monitor poverty rates, track changes in poverty rates over time, and target services. The same approach can be applied to any country with similar data from a national income or expenditure survey.

References

- Adams, Niall M.; and David J. Hand. (2000) “Improving the Practice of Classifier Performance Assessment”, *Neural Computation*, Vol. 12, pp. 305–311.
- Baesens, Bart; Van Gestel, Tony; Viaene, Stijn; Stepanova, Maria; Suykens, Johan A. K.; and Jan Vanthienen. (2003) “Benchmarking State-of-the-Art Classification Algorithms for Credit Scoring”, *Journal of the Operational Research Society*, Vol. 54, pp. 627–635.
- Bellon, M.R.; Hodson, D.P.; Martínez-Romero, Y.; Montoya, Y.; Becceril, J.; and J.W. White. (2004) “Geospatial Dimensions of Poverty and Food Security—A Case Study for Mexico”, Mexico City: International Maize and Wheat Improvement Center, http://www.cimmyt.org/GIS/povertymexico/poverty_mapping_final_draft.pdf, accessed 29 July 2009.
- Bigman, David; Dercon, Stefan; Guillaume, Dominique; and Michel Lambotte. (2000) “Community Targeting for Poverty Reduction in Burkina Faso”, *World Bank Economic Review*, Vol. 14, No. 1, pp. 167–193.
- Bollen, Kenneth A.; Glanville, Jennifer L.; and Guy Stecklov. (2007) “Socio-Economic Status, Permanent Income, and Fertility: A Latent-Variable Approach”, *Population Studies*, Vol. 61, No. 1, pp. 15–34.
- Caire, Dean. (2004) “Building Credit Scorecards for Small Business Lending in Developing Markets”, Bannock Consulting, http://www.microfinance.com/English/Papers/Scoring_SMEs_Hybrid.pdf, accessed 31 July 2009.
- Chen, Shiyuan; and Mark Schreiner. (2009a) “A Simple Poverty Scorecard for Bangladesh”, http://www.microfinance.com/English/Papers/Scoring_Poverty_Bangladesh.pdf, accessed 30 July 2009.
- (2009b) “A Simple Poverty Scorecard for Vietnam”, http://www.microfinance.com/English/Papers/Scoring_Poverty_Vietnam_EN.pdf, accessed 30 July 2009.

- Coady, David; Grosh, Margaret; and John Hoddinott. (2002) “The Targeting of Transfers in Developing Countries: Review of Experience and Lessons”, <http://info.worldbank.org/etools/docs/library/79646/Dc%202003/courses/dc2003/readings/targeting.pdf>, accessed 31 July 2009.
- Cochran, William G. (1977) *Sampling Techniques, Third Edition*, New York: Wiley, ISBN 0-471-16250-X.
- Comité Técnico para la Medición de la Pobreza. (2002) “Medición de la Pobreza: Variantes Metodológicas y Estimación Preliminar”, Secretaria de Desarrollo Social, México, D.F., ISBN 968-838-476-3, <http://www.sedesol.gob.mx/archivos/801588/file/Docu01.pdf>, accessed 26 July 2009.
- CONEVAL. (2007) “Los Mapas de Pobreza en México”, México, D.F.: Consejo Nacional de Evaluación de la Política de Desarrollo Social, http://www.coneval.gob.mx/mapas/mapas/Informe_Tecnico.zip, accessed 29 July 2009.
- Dawes, Robyn M. (1979) “The Robust Beauty of Improper Linear Models in Decision Making”, *American Psychologist*, Vol. 34, No. 7, pp. 571-582.
- de la Torre, Rodolfo. (2005) “Ingreso y Gasto en la Medición de la Pobreza”, SEDESOL Documentos de Investigación No. 22, México, D.F., http://www.sedesol.gob.mx/archivos/801588/file/Docu_22_2003.pdf, accessed 26 July 2009.
- Deaton, Angus; and Salman Zaidi. (2002) “Guidelines for Constructing Consumption Aggregates for Welfare Analysis”, Living Standards Measurement Study Working Paper No. 135, Washington, D.C.: World Bank, <http://go.worldbank.org/8YRCR9ERJ0>, accessed 26 July 2009.
- Demombynes, Gabriel; Elbers, Chris; and Peter Lanjouw. (2007) “How Good a Map? Putting Small-Area Estimation to the Test”, World Bank Policy Research Working Paper No. 4155, Washington, D.C., http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2007/03/26/000016406_20070326150728/Rendered/PDF/wps4155.pdf, accessed 28 July 2009.
- Efron, Bradley; and Robert J. Tibshirani. (1993) *An Introduction to the Bootstrap*, New York: Chapman and Hall, ISBN 0-412-04241-2.

- Elbers, Chris; Lanjouw, Jean O.; and Peter Lanjouw. (2003) “Micro-Level Estimation of Poverty and Inequality”, *Econometrica*, Vol. 71, No. 1, pp. 355–364, <http://siteresources.worldbank.org/DEC/Resources/micestpovineq.pdf>, accessed 31 July 2009.
- Elbers, Chris; Lanjouw, Peter; and Phillippe George Leite. (2008) “Brazil within Brazil: Testing the Poverty Map Methodology in Minas Gerais”, Policy Research Working Paper No. 4513, Washington, D.C.: World Bank, http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2008/02/26/000158349_20080226134003/Rendered/PDF/wps4513.pdf, accessed 28 July 2009.
- Filmer, Deon; and Lant Pritchett. (2001) “Estimating Wealth Effects without Expenditure Data—or Tears: An Application to Educational Enrollments in States of India”, *Demography*, Vol. 38, No. 1, pp. 115–132.
- ; and Kinnon Scott. (2008) “Assessing Asset Indices”, World Bank Policy Research Working Paper No. 4605, Washington, D.C., http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1149108, accessed 31 July 2009.
- 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”, http://www.microfinance.com/English/Papers/Scoring_Poverty_Haiti_Fuller.pdf, accessed 31 July 2009.
- Goodman, L.A.; and Kruskal, W.H. (1979) *Measures of Association for Cross Classification*, New York, NY: Springer-Verlag, ISBN 0–38–790443–3.
- Grootaert, Christiaan; and Jeanine Braithwaite. (1998) “Poverty Correlates and Indicator-Based Targeting in Eastern Europe and the Former Soviet Union”, World Bank Policy Research Working Paper No. 1942, Washington, D.C., <http://go.worldbank.org/VPMWVLU8E0>, accessed 31 July 2009.
- Grosh, Margaret; and Judy L. Baker. (1995) “Proxy Means Tests for Targeting Social Programs: Simulations and Speculation”, LSMS Working Paper No. 118, Washington, D.C.: World Bank, <http://go.worldbank.org/W90WN57PD0>, accessed 31 July 2009.
- Hand, David J. (2006) “Classifier Technology and the Illusion of Progress”, *Statistical Science*, Vol. 22, No. 1, pp. 1–15.

- Hoadley, Bruce; and Robert M. Oliver. (1998) “Business Measures of Scorecard Benefit”, *IMA Journal of Mathematics Applied in Business and Industry*, Vol. 9, pp. 55–64.
- International Comparison Project. (2008) “Tables of Results”, Washington, D.C.: World Bank, <http://siteresources.worldbank.org/ICPINT/Resources/icp-final-tables.pdf>, accessed 31 July 2009.
- IRIS Center. (2007a) “Manual for the Implementation of USAID Poverty Assessment Tools”, http://www.povertytools.org/training_documents/Manuals/USAID_PAT_Manual_Eng.pdf, accessed 31 July 2009.
- (2007b) “Introduction to Sampling for the Implementation of PATs”, http://www.povertytools.org/training_documents/Sampling/Introduction_Sampling.ppt, accessed 31 July 2009.
- (2005) “Notes on Assessment and Improvement of Tool Accuracy”, http://www.povertytools.org/other_documents/AssessingImproving_Accuracy.pdf, accessed 31 July 2009.
- Johnson, Glenn. (2007) “Lesson 3: Two-Way Tables—Dependent Samples”, http://www.stat.psu.edu/online/development/stat504/03_2way/53_2way_compare.htm, accessed 31 July 2009.
- Kolesar, Peter; and Janet L. Showers. (1985) “A Robust Credit Screening Model Using Categorical Data”, *Management Science*, Vol. 31, No. 2, pp. 124–133.
- Lindelow, Magnus. (2006) “Sometimes More Equal Than Others: How Health Inequalities Depend on the Choice of Welfare Indicator”, *Health Economics*, Vol. 15, pp. 263–279.
- López-Calva, Luís F.; Meléndez, Alvaro; Rascón, Ericka G.; Rodríguez-Chammusy, Lourdes; and Miguel Székely Pardo. (2005) “Poniendo al Ingreso de los Hogares en el Mapa de México”, Documento de Trabajo EGAP–2005–04, Tecnológico de Monterrey, Campus Ciudad de México, <http://alejandria.ccm.itesm.mx/egap/documentos/EGAP-2005-04.pdf>, accessed 27 July 2009.

- ; Rodríguez-Chamussy, L.; and Miguel Székely. (2007) “Poverty Maps and Public Policy in Mexico” pp. 188–207 in T. Bedi, A. Coudouel, and K. Simler (eds) *More Than a Pretty Picture: Using Poverty Maps to Design Better Policies and Interventions*, Washington, D.C.: World Bank, ISBN 978–0–8213–6931–9, <http://go.worldbank.org/P6S3FQP0U0>, accessed 29 July 2009.
- Lovie, Alexander D.; and Patricia Lovie. (1986) “The Flat Maximum Effect and Linear Scoring Models for Prediction”, *Journal of Forecasting*, Vol. 5, pp. 159–168.
- Martinelli, César; and Susan W. Parker. (2007) “Deception and Misreporting in a Social Program”, Centro de Investigación Económica and Instituto Tecnológico Autónomo de México, <http://ciep.itam.mx/~martinel/lies4.pdf>, accessed 31 July 2009.
- Mathiassen, Astrid. (2008) “The Predictive Ability of Poverty Models: Empirical Evidence from Uganda”, Discussion Paper No. 560, Statistics Norway, Division for Development Cooperation, <http://www.ssb.no/publikasjoner/DP/pdf/dp560.pdf>, accessed 31 July 2009.
- Matul, Michal; and Sean Kline. (2003) “Scoring Change: Prizma’s Approach to Assessing Poverty”, MFC Spotlight Note No. 4, Warsaw, Poland: Microfinance Centre for Central and Eastern Europe and the New Independent States, http://www.mfc.org.pl/doc/Research/ImpAct/SN/MFC_SN04_eng.pdf, accessed 31 July 2009.
- McKenzie, David J. (2005) “Measuring Inequality with Asset Indicators”, *Journal of Population Economics*, Vol. 18, No. 2, pp. 229–260.
- McNemar, Quinn. (1947) “Note on the Sampling Error of the Difference between Correlated Proportions or Percentages”, *Psychometrika*, Vol. 17, pp. 153–157.
- Medina, Cinthia; Hubert, Celia; and Humberto Soto. (2000) “Comparación de distintas metodologías para la identificación de familias beneficiarias”, Secretaría de Desarrollo Social, México, D.F.
- Microfinance Risk Management, L.L.C. (2009) “Data-Entry Software for a Simple Poverty Scorecard for Mexico”, <http://www.microfinance.com/#Mexico>, accessed 31 July 2009.
- Moffitt, Robert. (1991) “Program Evaluation with Non-Experimental Data”, *Evaluation Review*, Vol. 15, No. 3, pp. 291–314.

- Montgomery, Mark; Gragnolati, Michele; Burke, Kathleen A.; and Edmundo Paredes. (2000) “Measuring Living Standards with Proxy Variables”, *Demography*, Vol. 37, No. 2, pp. 155–174.
- 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”, Report No. SASPR–7, Washington, D.C.: World Bank,
<http://siteresources.worldbank.org/EXTSAREGTOPPOVRED/Resources/493440-1102216396155/572861-1102221461685/Proxy+Means+Test+for+Targeting+Welfare+Benefits.pdf>,
 accessed 31 July 2009.
- Onwujekwe, Obinna; Hanson, Kara; and Julia Fox-Rushby. (2006) “Some Indicators of Socio-Economic Status May Not Be Reliable and Use of Indices with These Data Could Worsen Equity”, *Health Economics*, Vol. 15, pp. 639–644.
- Rascón Ramírez, Erica Gabriela. (2002) “Nota Técnica para la Medición de la Pobreza con Base en los Resultados de la Encuesta Nacional de Ingresos y Gastos de los Hogares, 2002”, Secretaria de Desarrollo Social, México City,
http://sedesol2006.sedesol.gob.mx/subsecretarias/prospectiva/medicion_pobreza/Nota_tecnica_pobreza_2002.pdf, accessed 27 July 2009.
- Sahn, David E.; and David C. Stifel. (2003) “Exploring Alternative Measures of Welfare in the Absence of Expenditure Data”, *Review of Income and Wealth*, Series 49, No. 4, pp. 463–489.
- (2000) “Poverty Comparisons Over Time and Across Countries in Africa”, *World Development*, Vol. 28, No. 12, pp. 2123–2155.
- SAS Institute Inc. (2004) “The LOGISTIC Procedure: Rank Correlation of Observed Responses and Predicted Probabilities”, in *SAS/STAT User’s Guide, Version 9*, Cary, NC,
http://support.sas.com/documentation/cdl/en/statug/59654/HTML/default/statug_logistic_sect035.htm, accessed 31 July 2009.
- Schreiner, Mark. (2009a) “A Simple Poverty Scorecard for Peru”,
http://www.microfinance.com/English/Papers/Scoring_Poverty_Peru.pdf,
 accessed 31 July 2009.

- (2009b) “A Simple Poverty Scorecard for the Philippines”,
http://www.microfinance.com/English/Papers/Scoring_Poverty_Philippines.pdf, accessed 31 July 2009.
- (2008a) “A Simple Poverty Scorecard for Peru”,
http://www.microfinance.com/English/Papers/Scoring_Poverty_Peru_May_2008.pdf, accessed 31 July 2009.
- (2008b) “A Simple Poverty Scorecard for India”,
http://www.microfinance.com/English/Papers/Scoring_Poverty_India.pdf,
 accessed 31 July 2009.
- (2008c) “A Simple Poverty Scorecard for Ecuador”,
http://www.microfinance.com/English/Papers/Scoring_Poverty_Ecuador.pdf,
 accessed 31 July 2009.
- (2006a) “Un índice de pobreza para México”, memo for Grameen Foundation,
http://www.microfinance.com/Castellano/Documentos/Scoring_Pobreza_Mexico_2002.pdf, accessed 31 July 2009.
- (2006b) “A Simple Poverty Scorecard for Mexico”, memo for Grameen Foundation,
http://www.microfinance.com/English/Papers/Scoring_Poverty_Mexico_2002.pdf, accessed 31 July 2009.
- (2006c) “Is One Simple Poverty Scorecard Enough for India?”, memo for Grameen Foundation,
http://www.microfinance.com/English/Papers/Scoring_Poverty_India_Segments.pdf, accessed 31 July 2009.
- (2005) “IRIS Questions on Poverty Scorecards”, memo for Grameen Foundation,
http://www.microfinance.com/English/Papers/Scoring_Poverty_Response_to_IRIS.pdf, accessed 31 July 2009.
- (2002) *Scoring: The Next Breakthrough in Microfinance?* Occasional Paper No. 7, Consultative Group to Assist the Poor, Washington, D.C.,
http://pdf.usaid.gov/pdf_docs/PNACQ633.pdf, accessed 31 July 2009.
- ; Matul, Michal; Pawlak, Ewa; and Sean Kline. (2004) “Poverty Scorecards: Lessons from a Microlender in Bosnia-Herzegovina”, Microfinance Risk Management,
http://www.microfinance.com/English/Papers/Scoring_Poverty_in_BiH_Short.pdf, accessed 31 July 2009.

- Sillers, Don. (2006) “National and International Poverty Lines: An Overview”, Washington, D.C.: United States Agency for International Development, http://www.microlinks.org/file_download.php/Poverty_lines___An_Overview_1_4_06.pdf?URL_ID=12247&filename=11549869641Poverty_lines___An_Overview_1_4_06.pdf&filetype=application%2Fpdf&filesize=108185&name=Poverty_lines___An_Overview_1_4_06.pdf&location=user-S/, accessed 31 July 2009.
- Singh, Kesar. (1998) “Breakdown Theory for Bootstrap Quantiles”, *Annals of Statistics*, Vol. 26, pp. 1719–1732.
- Skoufias, Emmanuel; Davis, Benjamin; and Jere R. Behrman. (1999) “An Evaluation of the Selection of Beneficiary Households in the Education, Health, and Nutrition Program (PROGRESA) of Mexico”, http://www.ifpri.org/themes/progresas/pdf/skoufias_target.pdf, accessed 30 July 2009.
- Stifel, David; and Luc Christiaensen. (2007) “Tracking Poverty over Time in the Absence of Comparable Consumption Data”, *World Bank Economic Review*, Vol. 21, No. 2, pp. 317–341.
- 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, Alesandro. (2008) “Can Census Data Alone Signal Heterogeneity in the Estimation of Poverty Maps?”, <http://www.econ.duke.edu/~taroz/TarozziHet2008.pdf>, accessed 28 July 2009.
- Tarozzi, Alessandro; and Angus Deaton. (2007) “Using Census and Survey Data to Estimate Poverty and Inequality for Small Areas”, http://www.princeton.edu/~deaton/downloads/20080301SmallAreas_FINAL.pdf, accessed 28 July 2009.
- Toohig, Jeff. (2008) “PPI Pilot Training Guide”, Grameen Foundation, <http://www.progressoutofpoverty.org/toolkit>, accessed 31 July 2009.

- United States Congress. (2002) “Amendments to the Microenterprise for Self-Reliance Act of 2000 (Public Law 106–309)”, October 8, http://www.microlinks.org/file_download.php/AmendMicroenterpriseAct2000.pdf?URL_ID=7744&filename=11205460851AmendMicroenterpriseAct2000.pdf&filetype=application%2Fpdf&filesize=95834&name=AmendMicroenterpriseAct2000.pdf&location=user-S/, accessed 27 July 2009.
- Wagstaff, Adam; and Naoko Watanabe. (2003) “What Difference Does the Choice of SES Make in Health Inequality Measurement?”, *Health Economics*, Vol. 12, No. 10, pp. 885–890.
- Wainer, Howard. (1976) “Estimating Coefficients in Linear Models: It Don’t Make No Nevermind”, *Psychological Bulletin*, Vol. 83, pp. 223–227.
- Zeller, Manfred. (2004) “Review of Poverty Assessment Tools”, Accelerated Microenterprise Advancement Project, http://www.microlinks.org/file_download.php/Review.pdf?URL_ID=7761&filename=11205482561Review.pdf&filetype=application%2Fpdf&filesize=443998&name=Review.pdf&location=user-S/, accessed 31 July 2009.
- ; Sharma, Manohar; Henry, Carla; and Cécile Lapenu. (2006) “An Operational Method for Assessing the Poverty Outreach Performance of Development Policies and Projects: Results of Case Studies in Africa, Asia, and Latin America”, *World Development*, Vol. 34, No. 3, pp. 446–464.

Appendix A: Definitions of Scorecard Indicators

The definitions here come from INEGI's *Manual de Encuestador: ENIGH 2006*. This document is available after a free, no-obligation registration at <http://www.inegi.org.mx/lib/usuarios/default.aspx?s=est&sistema=enigh&c=>. The *Manual* is then found at http://www.inegi.org.mx/prod_serv/contenidos/espanol/biblioteca/Default.asp?accion=1&upc=702825001614&s=est&c=14408.

1. How many household members are ages 0 to 17?

According to page 6:

“A *household* is defined as the group formed by one or more people who normally live in the same residence and who share consumption expenses, especially for food. The *members of the household* are those people in a residence who normally eat and sleep there, and who share expenses for meals. They may or may not be relatives.”

2. What is the highest grade or year a household member has passed in school?

According to page 118, “college preparatory” provides the student “the knowledge that allows him/her to be admitted to an institution of higher education.” The scholastic levels below college preparatory are none, pre-school, grade school, and high school.

“Normal school” trains teachers for pre-school, grade school, or high school.

“Technical/commercial” training is for “secretaries, information technology, clerks, electricians, dental technicians, dieticians, hotel and restaurant management, etc. This level may follow grade school, high school, or college preparatory. Advanced technical training is also classified here, because even though it requires college preparatory as a prerequisite, it does not award a degree” (p. 119).

“Professionals” are “those who have received degrees from universities, technical universities, polytechnic schools, and other institutions of higher education, be they public or private, whose prerequisites for admission include college preparatory”. This includes engineers.

“Master’s” includes “those people who have passed one or two years at this level, after having completed an undergraduate degree. Medical doctors are considered to be at this level if their course of studies lasted for at least two years”

“Doctorates” includes “those people who have passed 1 to 4 years at this level, after having received a master’s degree. Medical doctors with a specialization are counted here.”

3. How many household members have a written employment contract for a salary or for an indefinite period?

According to p. 150, a written employment contract is a “pact or covenant establishing in writing the rights and obligations of the labor relationship between an employee and an employer”

A contract for a salary or indefinite period is used for “employees whose labor relationship is governed by a written contract for an unspecified period of time.”

4. What is the main material of the floor of this residence?

According to p. 82, “If there is no covering in the floor, mark ‘Dirt’. If the floor has various coverings, mark the main one. If the respondent says that two or more coverings are used in equal proportions, then mark the lowest-quality one.”

5. Does the residence have a small basin for washing hands?

According to p. 93, the response should “count the equipment that the household has use of, regardless of whether it is owned by household members.”

6. What fuel do you usually use to cook or heat food?

According to p. 85, “when firewood and some other fuel are used equally, mark firewood.”

7. Does the household have an electric coffee maker?

According to p. 166, only electric coffee makers owned by the household should be counted.

8. Does the household have an electric iron?

According to p. 166, only electric irons owned by the household should be counted. Also, “do not count portable irons used only when travelling.”

9. How many color televisions does the household have?

According to p. 166, only color televisions owned by the household should be counted.

10. Does the household have a stereo system?

According to p. 166, only stereo systems owned by the household should be counted. “Consider as ‘stereo systems’ both stand-alone and integrated equipment, for example, a tape player without a turntable, a CD placer, or combined cassette/CD players.”

Figure 1: Simple poverty scorecard for Mexico (with points)

<u>Entity</u>	<u>Name</u>	<u>ID</u>	<u>Date</u> (DD/MM/YY)
Member:	_____	_____	Joined: _____
Loan officer:	_____	_____	Today: _____
Branch:	_____	_____	Household size: _____

Indicator	Value	Points	Score
1. How many household members are ages 0 to 17?	A. Four or more	0	
	B. Three	7	
	C. Two	15	
	D. One	22	
	E. None	29	
2. What is the highest grade or year a household member has passed in school?	A. College preparatory or less	0	
	B. Normal/technical/commercial	4	
	C. Professional or graduate	10	
3. How many household members have a written employment contract for a salary or for an indefinite period?	A. None	0	
	B. One	7	
	C. Two or more	14	
4. What is the main material of the floor of this residence?	A. Dirt	0	
	B. Cement/concrete	8	
	C. Other	12	
5. Does the residence have a small basin for washing hands?	A. No	0	
	B. Yes	3	
6. What fuel do you usually use to cook or heat food?	A. Firewood	0	
	B. Other	5	
7. Does the household have an electric coffee maker?	A. No	0	
	B. Yes	10	
8. Does the household have an electric iron?	A. No	0	
	B. Yes	3	
9. How many color televisions does the household have?	A. One or none	0	
	B. Two	5	
	C. Three or more	11	
10. Does the household have a stereo system?	A. No	0	
	B. Yes	3	

Microfinance Risk Management, L.L.C., http://www.microfinance.com	Score:
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Figure 1: Simple poverty scorecard for Mexico (no points)

<u>Entity</u>	<u>Name</u>	<u>ID</u>	<u>Date</u> (DD/MM/YY)
Member:	_____	_____	Joined: _____
Loan officer:	_____	_____	Today: _____
Branch:	_____	_____	Household size: _____

Indicator	Value
1. How many household members are ages 0 to 17?	A. Four or more B. Three C. Two D. One E. None
2. What is the highest grade or year a household member has passed in school?	A. College preparatory or less B. Normal/technical/commercial C. Professional or graduate
3. How many household members have a written employment contract for a salary or for an indefinite period?	A. None B. One C. Two or more
4. What is the main material of the floor of this residence?	A. Dirt B. Cement/concrete C. Other
5. Does the residence have a small basin for washing hands?	A. No B. Yes
6. What fuel do you usually use to cook or heat food?	A. Firewood B. Other
7. Does the household have an electric coffee maker?	A. No B. Yes
8. Does the household have an electric iron?	A. No B. Yes
9. How many color televisions does the household have?	A. One or none B. Two C. Three or more
10. Does the household have a stereo system?	A. No B. Yes

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

Sub-sample	Round	Households	% with income below a poverty line							International 2005 PPP	
			National Food	National Capacity	National Asset	125% Natl. Asset	150% Natl. Asset	USAID 'Extreme'	\$1.25/day	\$2.50/day	
All Mexico	2006	20,875	10.6	16.1	35.5	47.1	56.2	16.8	1.2	6.9	
	2005	23,174	14.1	19.4	39.6	51.0	60.4	18.5	2.2	9.1	
	2004	22,595	13.8	19.9	39.7	51.6	60.2	19.0	2.4	9.4	
Construction											
Selecting indicators and weights	2006	6,994	10.7	15.9	36.0	47.4	56.0	16.8	1.0	7.0	
Calibration											
Associating scores with likelihoods	2006	6,997	10.7	16.3	36.0	47.4	56.2	16.8	1.4	7.0	
Validation											
Measuring accuracy	2006	6,884	10.5	16.1	34.4	46.4	56.5	16.8	1.3	6.8	
Change in poverty rate (percentage points)											
From 2006 construction/calibration to 2006 validation			+0.2	-0.0	+1.6	+1.1	-0.4	+0.0	-0.2	+0.2	
From 2006 validation to 2005 for all Mexico			-3.6	-3.3	-5.2	-4.6	-3.9	-1.7	-0.8	-2.3	
From 2006 validation to 2004 for all Mexico			-3.4	-3.8	-5.3	-5.3	-3.7	-2.2	-1.1	-2.6	

Source: ENIGH, full sample.

Figure 3: Poverty lines and poverty rates by survey round and by urban/rural/all Mexico (household level)

		Line or rate	Poverty line (Nuevos Pesos/person/day) and poverty rate (%)							International 2005 PPP	
			National Food	National Capacity	National Asset	125% Natl. Asset	150% Natl. Asset	USAID 'Extreme'	\$1.25/day	\$2.50/day	
Urban	2004	Line	24.32	29.82	48.79	60.98	73.18	32.35	10.14	20.28	
		Rate	8.7	14.2	34.3	45.8	55.0	16.5	1.0	5.3	
	2005	Line	26.00	31.89	52.16	65.20	78.24	34.56	10.49	20.98	
		Rate	7.7	12.4	32.0	43.8	53.7	15.2	0.7	4.1	
	2006	Line	26.63	32.66	53.42	66.78	80.13	36.53	10.92	21.85	
		Rate	5.9	10.6	29.3	40.7	50.0	14.0	0.5	3.3	
Rural	2004	Line	18.02	21.31	32.70	40.88	49.05	18.20	7.52	15.03	
		Rate	22.9	29.9	49.3	61.9	69.3	23.3	5.0	16.6	
	2005	Line	19.21	22.71	34.86	43.58	52.29	18.70	7.75	15.50	
		Rate	26.1	32.9	53.9	64.6	73.0	24.9	4.9	18.5	
	2006	Line	19.68	23.27	35.72	44.65	53.58	20.94	8.08	16.15	
		Rate	19.5	26.5	47.2	59.1	68.1	22.1	2.7	13.7	
All Mexico	2004	Line	22.04	26.74	42.97	53.71	64.46	27.24	9.19	18.38	
		Rate	13.8	19.9	39.7	51.6	60.2	19.0	2.4	9.4	
	2005	Line	23.65	28.71	46.18	57.72	69.26	29.07	9.54	19.08	
		Rate	14.1	19.4	39.6	51.0	60.4	18.5	2.2	9.1	
	2006	Line	24.23	29.42	47.32	59.15	70.97	31.15	9.94	19.88	
		Rate	10.6	16.1	35.5	47.1	56.2	16.8	1.2	6.9	

Source: ENIGH, full sample. "All Mexico" figures are population-weighted averages of urban and rural figures.

Figure 3 (cont.): Poverty lines and poverty rates by survey round and by urban/rural/all Mexico (person level)

		Line or rate	Poverty line (Nuevos Pesos/person/day) and poverty rate (%)							International 2005 PPP	
			National Food	National Capacity	National Asset	125% Natl. Asset	150% Natl. Asset	USAID 'Extreme'	\$1.25/day	\$2.50/day	
Urban	2004	Line	24.32	29.82	48.79	60.98	73.18	32.35	10.14	20.28	
		Rate	11.0	17.8	41.1	53.2	62.5	20.6	1.0	6.5	
	2005	Line	26.00	31.89	52.16	65.20	78.24	34.56	10.49	20.98	
		Rate	9.9	15.8	38.3	51.1	61.2	19.1	0.7	5.4	
	2006	Line	26.63	32.66	53.42	66.78	80.13	36.53	10.92	21.85	
		Rate	7.5	13.6	35.6	48.4	57.9	17.8	0.5	4.2	
Rural	2004	Line	18.02	21.31	32.70	40.88	49.05	18.20	7.52	15.03	
		Rate	28.0	36.2	57.4	69.5	75.8	28.7	6.6	20.9	
	2005	Line	19.21	22.71	34.86	43.58	52.29	18.70	7.75	15.50	
		Rate	32.3	39.8	61.8	72.1	79.3	30.9	6.6	23.5	
	2006	Line	19.68	23.27	35.72	44.65	53.58	20.94	8.08	16.15	
		Rate	24.5	32.7	54.6	66.6	75.6	27.3	3.7	17.6	
All Mexico	2004	Line	21.96	26.63	42.76	53.45	64.14	27.05	9.16	18.31	
		Rate	17.4	24.7	47.2	59.3	67.5	23.6	3.1	11.9	
	2005	Line	23.48	28.48	45.74	57.18	68.61	28.68	9.47	18.95	
		Rate	18.2	24.7	47.0	58.9	67.9	23.5	2.9	12.1	
	2006	Line	24.07	29.21	46.92	58.64	70.37	30.80	9.88	19.75	
		Rate	13.8	20.7	42.6	55.0	64.4	21.3	1.7	9.1	

Source: ENIGH, full sample. "All Mexico" figures are population-weighted averages of urban and rural figures.

Figure 4: Poverty indicators by uncertainty coefficient

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly indicative of poverty)</u>
1398	How many electric lights does the residence have? (None, one, two, three, or four; Five; Six; Seven or eight; Nine or ten; Eleven or more)
1257	How many household members are ages 0 to 17? (Four or more; Three; Two; One; None)
1247	How many household members are ages 0 to 16? (Four or more; Three; Two; One; None)
1241	What is the highest grade or year a family member has passed in school? (College preparatory or less; Normal/technical/commercial; Professional or graduate)
1230	How many household members are ages 0 to 14? (Four or more; Three; Two; One; None)
1221	How many household members are ages 0 to 18? (Four or more; Three; Two; One; None)
1218	How many household members are ages 0 to 15? (Four or more; Three; Two; One; None)
1194	What is the main material of the floor of this residence? (Dirt; Cement/concrete; Other)
1159	What is the highest grade in school that the female head/spouse passed? (None; Third grade or less; Fourth grade to ninth grade; College preparatory 1, 2, or 3; No female head/spouse present; Normal or normal/technical/commercial 1, 2, 3 or 4; Professional or graduate)
1143	Does the residence have a medium sink for washing dishes? (No; Yes)
1135	Does the residence have a small basin for washing hands? (No; Yes)
1134	How many household members are ages 0 to 13? (Three or more; Two; One; None)
1098	Does the residence have a shower? (No; Yes)
1094	How many household members are ages 0 to 12? (Three or more; Two; One; None)
1062	How many household members are ages 0 to 11? (Three or more; Two; One; None)
1036	This toilet . . .? (There is no toilet, or it cannot be filled with water; Is filled with water from a bucket; Is connected to piped water)
985	What is the highest grade in school that the male head/spouse passed? (None; Second grade or less; Third grade to eighth grade; Ninth grade; No male head/spouse present; College preparatory 1, 2, or 3; Normal or normal/technical/commercial level 1, 2, 3 or 4; Professional or graduate)

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

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly associated with poverty)</u>
972	Does the household have a land-line telephone or a mobile or cellular telephone? (No; Yes)
958	What did the female head/spouse do in her job last month? (Worker in agriculture, animal husbandry, forestry, hunting, and fishing or other occupations incompletely specified; Skilled worker in manufacturing, maintenance, and repair; The female head/spouse does not work; Domestic servant; Travelling salesperson and mobile service worker; Personal service worker, machine operator in industrial manufacturing, or transportation operator and assistant; No female head/spouse present; Helper, unskilled laborer, and the like in artisanal and industrial manufacturing, repair, and maintenance, salesperson and other retail worker, or police, security guard, and the armed forces; Administrative assistant, technicians, sports and entertainment figure, manager and supervisor in manufacturing (artisanal and industrial) and in repair and maintenance, educational worker, professional, director and executive in the public, private, and non-profit sectors, and mid- and upper-level manager and administrator)
948	Does the household have a computer? (No; Yes)
942	Does the household have a microwave oven? (No; Yes)
941	How many black-and-white and color televisions does the household have? (One or more black-and-white, no color; None of any kind; One color, regardless of black-and-white; Two color, regardless of black-and-white; Three or more color, regardless of black-and-white)
940	How many color televisions does the household have? (One or none; Two; Three or more)
921	Does the residence have a water heater?(No; Yes)
865	Does the household have a land-line telephone? (No; Yes)

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

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly associated with poverty)</u>
859	What did the male head/spouse do in his job last month? (Helper, unskilled laborer, and the like in artisanal and industrial manufacturing, repair, and maintenance; Worker in agriculture, animal husbandry, forestry, hunting, and fishing, or other occupations incompletely specified; Domestic servant, travelling salesperson and mobile service worker, or machine operator in industrial manufacturing; Male head/spouse does not work; Skilled worker in manufacturing, maintenance, and repair, or personal service worker; No male head/spouse present; Transportation operator and assistant, or police, security guard, and the armed forces; Salesperson and other retail worker, administrative assistant, or technician; Sports and entertainment figure, manager and supervisor in manufacturing (artisanal and industrial) and in repair and maintenance, educational worker, professional, director and executive in the public, private, and non-profit sectors, and mid- and upper-level manager and administrator)
854	How many household members are workers, employees, or day laborers with a written contract for a salary or for an indefinite period, or who work in agriculture, animal husbandry, forestry, hunting, or fishing? (Someone works in agriculture, animal husbandry, forestry, hunting, or fishing; No one works in agriculture, animal husbandry, forestry, hunting, or fishing, and no one has a written contract for a salary or for an indefinite period; Regardless of whether anyone works in agriculture, animal husbandry, forestry, hunting, or fishing, no one has a written contract for a salary or for an indefinite period; Regardless of whether anyone works in agriculture, animal husbandry, forestry, hunting, or fishing, one person has a written contract for a salary or for an indefinite period)
834	What is the household's source of water? (Other; Public network, inside the residence)
805	What is the main material of the roof of this residence? Does it leak? (Roof of scrap material, cardboard sheets, metal sheets or asbestos, reeds, bamboo, or palm leaves, or straw that does not leak, or no data; Roof of scrap material, cardboard sheets, metal sheets or asbestos, reeds, bamboo, or palm leaves, or straw that leaks, or no data; Flat roof made of rafters or steel beams with breeze blocks, cinder blocks, or formed plastic, regardless of whether or not it leaks; Roof made of wood or shingles, solid concrete or concrete with breeze blocks or cinder blocks, or other material that does not leak; Roof made of wood or shingles, solid concrete or concrete with breeze blocks or cinder blocks, or other material that leaks)

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

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly associated with poverty)</u>
787	How many household members are there? (Seven or more; Six; Five; Four; Three; Two; One)
771	Does the household have a mobile or cellular telephone? (No; Yes)
762	How many rooms does this residence have overall, counting kitchens but not counting hallways or bathrooms? (One or two; Three or no data; Four; Five or more)
757	How many household members have a written employment contract for a salary or for an indefinite period? (None; One; Two or more)
650	If the female head/spouse is working, what kind of contract does she have? (The female head/spouse does not work; No written contract; Temporary or for a specific job; No female head/spouse present; Salaried for an indefinite period)
636	How many electric juice extractors or squeezers does the household have? (None; One; Two or more)
632	Does the household have an electric coffee maker? (No; Yes)
632	What fuel do you usually use to cook or heat food? (Firewood; Other)
631	What is the main material of the roof of this residence? (No data, scrap material, cardboard sheets, metal sheets or asbestos, or reeds, bamboo, palm leaves, or straw; Flat roof made of rafters or steel beams with breeze blocks, cinder blocks, or formed plastic; Wood or shingles, solid concrete or concrete with breeze blocks or cinder blocks, or other;)
614	How many bathrooms are in this residence? (None; One; Two or more)
597	How many household members work as domestic servants, or in agriculture, animal husbandry, forestry, hunting, and fishing, or as workers, helpers, unskilled laborers, and the like in artisanal and industrial manufacturing, maintenance, and repair? (Three or more; Two; One; None)
597	Does the household have cable television, SKY, or Multivision? (No; Yes)
590	How many household members are ages 0 to 5? (Two or more; One; None)
589	Do all children in the household ages 5 to 14 attend school? (No; Yes; There are no children in this age range)
583	Does the household have a vacuum cleaner?(No; Yes)
580	Do all children in the household ages 5 to 12 attend school? (No; Yes; There are no children in this age range)

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

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly associated with poverty)</u>
579	Does the household have a clothes washer? (No; Yes)
579	How many household members work as domestic servants or in agriculture, animal husbandry, forestry, hunting, and fishing, or as helpers, unskilled laborers, and the like in artisanal and industrial manufacturing, maintenance, and repair? (Two or more; One; None)
575	Do all children in the household ages 5 to 13 attend school? (No; Yes; There are no children in this age range)
568	Does the household have a DVD player? (No; Yes)
563	Do all children in the household ages 5 to 11 attend school? (No; Yes; There are no children in this age range)
559	Do all children in the household ages 5 to 15 attend school? (No; Yes; There are no children in this age range)
559	Does the household have a mixer? (No; Yes)
558	Do all children in the household ages 5 to 17 attend school? (No; Yes; There are no children in this age range)
557	Does the residence have a water tank on the roof? (No; Yes)
545	Is any household member receiving a scholarship to attend school this year from OPORTUNIDADES? (No; Yes)
545	Do all children in the household ages 5 to 16 attend school? (No; Yes; There are no children in this age range)
540	Does the household have a toaster? (No; Yes)
529	If the male head/spouse is working, what kind of contract does he have? (No written contract; Temporary or for a specific job; Male head/spouse does not work; No male head/spouse present; Salaried for an indefinite period)
527	Does the household have internet? (No; Yes)
504	Does the household have a refrigerator? (No; Yes)
483	Does the household have an automobile, a van or minivan, or a pick-up truck? (No; Yes)

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

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly associated with poverty)</u>
481	Do all children in the household ages 5 to 18 attend school? (No; Yes; There are no children in this age range)
475	What position did the female head/spouse hold in her job last month? (Day laborer, unremunerated worker in a business not owned by the family, self-employed (alone or with non-remunerated employees), or the female head/spouse does not work; Unremunerated worker in a family business; Worker or employee; No female head/spouse present, employer with one or more paid employees, or member of a cooperative)
458	Can the female head/spouse read and write a letter? (No; Yes; No female head/spouse present)
458	Does the household have a drain or sewer connected to . . .? (Other; Public sewer network)
452	Does the roof of this residence leak? (No; Yes)
421	Does the residence have a water pump? (No; Yes)
404	What position did the male head/spouse hold in his job last month? (Day laborer or unremunerated worker in a business not owned by the family; Unremunerated worker in a family business or self-employed (alone or with non-remunerated employees); Male head/spouse does not work; No male head/spouse present; Worker or employee or member of a cooperative; Employer with one or more paid employees)
403	How many fans does the household have? (None; One; Two; Three or more)
377	Does the household have an electric sandwich griddle? (No; Yes)
364	How many household members work in agriculture, animal husbandry, forestry, hunting, or fishing? (Two or more; One; None)
357	Does the household have a VCR? (No; Yes)
354	How many household members work as day laborers? (One or more; None)
351	What is the main material of the walls of this residence? (Other; Bricks, breeze blocks, cinder blocks, or concrete)
335	How many household members work without remuneration or as day laborers? (One or more; None)
332	Does the residence have a propane tank? (No; Yes)
331	What is the current marital status of the female head/spouse? (Co-habiting; Widowed; Married; Separated; Single; No female head/spouse present; Divorced)

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

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly associated with poverty)</u>
322	Does the household have a stereo system? (No; Yes)
302	How many household members work as workers or employees? (None; One; Two or more)
299	Does the household have a radio/tape player with out without a CD player? (Yes; No)
299	Does the household have a gas or electric stove? (No; Yes)
297	Does anyone sleep in the room used for cooking? (Yes; No)
292	Does the household have an electric iron? (No; Yes)
289	How old is the female head/spouse? (Up to 29; 30 to 39; 60 or more; 40 to 59; No female head/spouse present)
286	Does any household member attend a private or self-pay school? (No; Yes)
284	Did the female head/spouse work last month? (No; Yes; No female head/spouse present)
275	Does the household have a blender? (No; Yes)
274	Does the residence have a cistern or rain-catchment system? (No; Yes)
270	Does the household have an electric can opener? (No; Yes)
262	Does the household have an electric oven? (No; Yes)
260	What is the current marital status of the male head/spouse? (Co-habiting, or no data; Married, or no male head/spouse present; Widowed, separated, single or divorced)
249	How many household members are workers, employees, or day laborers who work without a written contract? (One or more; None)
240	Does the household have a CD player? (No; Yes)
236	Is this toilet used only by people who live in this household? (There is no toilet; No; Yes)
233	Does the household have a window air conditioner? (No; Yes)
218	Can the male head/spouse read and write a letter? (No; Yes, or no male head/spouse present)
211	Does the household have a video-game machine? (No; Yes)
189	What is the structure of household headship? (Both male and female heads/spouses present; Only female head/spouse present; Only male head/spouse present)
183	Does the residence have a lavatory, toilet, latrine, or outhouse? (No; Yes)

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

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly associated with poverty)</u>
166	Does the residence have a large sink for washing clothes, a medium sink for washing dishes, or a small basin for washing hands? (No; Yes)
162	Does the household have a space heater? (No; Yes)
147	Do any of the people living here . . .? (Live here without paying a relative or friend, other situation, or no data; Rent or lease the residence; Own the home free-and-clear; Live here without paying an employer, or is paying a mortgage)
145	How many rooms are used as bedrooms, not counting hallways? (One; Two; Three or more)
134	Does the residence have central heating or air conditioning? (No; Yes)
133	Does the household have a bicycle used as a means of transport? (Yes; No)
123	Does the household have a sewing machine? (No; Yes)
117	How long ago was this residence built? (Less than one year; 1 to 5 years; 6 to 10 years, or no data; 11 to 20 years; 21 years or more, or unknown)
99	Does the residence have a water tank on the roof, a cistern or rain-catchment system, or a water storage tank? (No; Yes)
98	Does this residence have room for cooking? (No; Yes)
90	Does the household have a hand mill? (Yes; No)
89	How old is the male head/spouse? (Up to 39; 40 to 49, 60 or more, or no male head/spouse present; 50 to 59)
78	Does the residence have a water storage tank? (No; Yes)
76	Does the household have a radio/tape player with CD player? (No; Yes)
70	Does the household have a black-and-white television? (Yes; No)
55	How many household members work without remuneration? (One or more; None)
43	In the past month, how many household members worked? (One; None; Three or more; Two)
41	How many household members work as travelling salespeople or mobile workers, or as factory workers in manufacturing, maintenance, and repair? (Two or more; One; None)
36	What is the household's source of electricity? (Other; Public grid)

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

<u>Uncertainty coefficient</u>	<u>Indicator (Answers ordered starting with those most strongly associated with poverty)</u>
34	Does the residence have a large sink for washing clothes? (No; Yes)
32	How many household members are self-employed or run their own businesses? (Two or more; One; None)
22	Did the male head/spouse work last month? (No; Yes; No male head/spouse)
20	Does the household have a radio? (No; Yes)
11	Does the household have a radio/tape player with or without a CD player? (No; Yes)
8	Does the household have a motorcycle or scooter? (No; Yes)
1	Does the household have a radio/tape player with CD player? (No; Yes)
0	How many household members are workers, employees, or day laborers with a written contract for a fixed time or a specific task? (None; One or more)

Source: ENIGH 2006 and the national asset poverty line.

National Food Poverty Line Tables

2006 Scorecard Applied to 2006 Validation Sample

(and tables pertaining to all eight poverty lines)

Figure 5 (National 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	77.5
5-9	73.8
10-14	41.2
15-19	47.9
20-24	33.9
25-29	25.2
30-34	16.3
35-39	13.5
40-44	7.5
45-49	5.5
50-54	1.6
55-59	1.0
60-64	0.4
65-69	0.5
70-74	0.0
75-79	0.0
80-84	0.0
85-89	0.0
90-94	0.0
95-100	0.0

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

Score	Households below poverty line		All households at score		Poverty likelihood (estimated, %)
0-4	718	÷	927	=	77.5
5-9	681	÷	923	=	73.8
10-14	701	÷	1,699	=	41.2
15-19	1,429	÷	2,983	=	47.9
20-24	1,145	÷	3,376	=	33.9
25-29	1,335	÷	5,292	=	25.2
30-34	1,309	÷	8,043	=	16.3
35-39	1,049	÷	7,761	=	13.5
40-44	655	÷	8,703	=	7.5
45-49	708	÷	12,965	=	5.5
50-54	131	÷	8,424	=	1.6
55-59	96	÷	10,031	=	1.0
60-64	29	÷	7,543	=	0.4
65-69	32	÷	6,417	=	0.5
70-74	0	÷	4,898	=	0.0
75-79	0	÷	3,958	=	0.0
80-84	0	÷	2,472	=	0.0
85-89	0	÷	2,075	=	0.0
90-94	0	÷	1,135	=	0.0
95-100	0	÷	375	=	0.0

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

Score	Likelihood of having income in range demarcated by poverty lines per day per capita							
	<\$1.25/day	=>\$1.25/day and <\$2.50/day	=>\$2.50/day and <Natl. Food	=>Natl. Food and <Natl. Capacity	=>Natl. Capacity and <Natl. Asset	=>Natl. Asset and <125% Natl. Assets	=>125% Natl. Assets and <150% Natl. Assets	=>150% Natl. Assets
	<MXN9.94	=>MXN9.94 and <MXN19.88	=>MXN19.88 and <MXN24.23	=>MXN24.23 and <MXN29.42	=>MXN29.42 and <MXN47.32	=>MXN47.32 and <MXN59.15	=>MXN59.15 and <MXN70.97	=>MXN70.97
0-4	22.8	45.0	9.8	9.5	12.4	0.0	0.6	0.0
5-9	22.4	37.5	13.9	11.1	11.4	1.2	2.2	0.3
10-14	5.3	20.5	15.4	17.7	24.8	10.6	3.9	1.7
15-19	4.8	28.7	14.4	13.8	24.3	7.4	4.1	2.6
20-24	3.9	17.3	12.8	14.9	34.3	10.9	2.9	3.2
25-29	3.6	12.0	9.6	16.1	38.2	12.1	3.0	5.4
30-34	0.9	6.5	8.9	12.6	40.1	13.5	8.7	8.8
35-39	0.2	6.9	6.5	7.4	36.1	18.6	6.3	18.1
40-44	1.7	4.0	1.9	6.1	30.6	18.6	13.4	23.9
45-49	0.1	2.4	3.0	3.5	21.3	15.7	11.4	42.6
50-54	0.1	1.0	0.5	1.0	18.7	12.5	14.6	51.7
55-59	0.0	0.5	0.5	1.2	12.1	13.2	9.8	62.7
60-64	0.1	0.3	0.1	2.3	7.9	10.3	8.0	71.2
65-69	0.0	0.2	0.3	0.2	4.0	6.7	8.1	80.6
70-74	0.0	0.0	0.0	0.5	4.1	3.6	9.9	82.0
75-79	0.0	0.0	0.0	0.0	1.0	3.0	2.9	93.2
80-84	0.0	0.0	0.0	0.0	2.2	0.7	5.5	91.6
85-89	0.0	0.0	0.0	0.0	1.2	2.2	1.1	95.5
90-94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
95-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0

Note: All poverty likelihoods in percentage units.

The USAID 'extreme' line is very similar to the national capacities line.

Figure 8 (National food line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2006 validation sample

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-11.0	7.7	8.1	8.9
5-9	+4.0	7.3	8.8	11.5
10-14	-9.4	7.6	8.1	9.2
15-19	-5.5	5.0	5.5	7.0
20-24	+1.6	3.7	4.3	5.4
25-29	+0.8	2.8	3.3	4.4
30-34	+3.0	1.6	1.8	2.5
35-39	+4.2	1.5	1.8	2.2
40-44	+0.7	1.2	1.4	1.9
45-49	-0.1	0.9	1.0	1.4
50-54	-2.0	1.5	1.6	1.7
55-59	+0.6	0.2	0.2	0.3
60-64	+0.4	0.0	0.0	0.0
65-69	+0.5	0.0	0.0	0.0
70-74	-1.3	1.1	1.2	1.4
75-79	+0.0	0.0	0.0	0.0
80-84	+0.0	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 9 (All poverty lines): Differences, precision of differences, and the α factor for bootstrapped estimates of poverty rates for groups of households at a point in time, 2006 scorecard applied to the 2006 validation sample and to the 2005 and 2004 ENIGH

	Poverty line								
	National	National	National	125% Natl.	150% Natl.	USAID	International 2005 PPP		
	Food	Capacity	Asset	Asset	Asset	'Extreme'	\$1.25/day	\$2.50/day	
Estimate minus true value									
2006 scorecard applied to 2006 validation	+0.2	+0.3	+2.4	+1.4	+0.1	+0.8	-0.0	-0.1	
2006 scorecard applied to all 2005	-0.5	+0.3	+2.5	+2.6	+1.2	+2.2	-0.4	-0.7	
2006 scorecard applied to all 2004	-0.2	-0.5	+1.3	+2.9	+2.1	+1.9	-0.8	-0.4	
Precision of difference									
2006 scorecard applied to 2006 validation	0.3	0.4	0.6	0.6	0.6	0.4	0.2	0.3	
2006 scorecard applied to all 2005	0.4	0.5	0.6	0.6	0.6	0.5	0.2	0.4	
2006 scorecard applied to all 2004	0.5	0.6	0.6	0.6	0.6	0.6	0.3	0.4	
α for sample size									
2006 scorecard applied to 2006 validation	0.88	0.86	0.91	0.93	0.94	0.89	0.95	0.89	
2006 scorecard applied to all 2005	1.06	0.99	0.91	0.93	0.95	1.03	1.42	1.17	
2006 scorecard applied to all 2004	1.23	1.16	1.00	0.95	0.94	1.16	1.68	1.23	
Precision is measured as 90-percent confidence intervals in units of +/- percentage points.									
Differences and precision estimated from 500 bootstraps of size $n = 16,384$.									
α is estimated from 1,000 bootstrap samples of $n = 256, 512, 1,024, 2,048, 4,096, 8,192, \text{ and } 16,384$.									

Figure 10 (National food line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2006 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-0.8	50.0	60.2	77.7
4	-0.1	23.7	29.1	38.3
8	+0.0	15.8	19.9	26.4
16	+0.3	10.6	12.8	18.3
32	+0.2	7.6	9.2	11.5
64	+0.3	5.3	6.3	8.3
128	+0.4	3.8	4.5	5.7
256	+0.3	2.8	3.2	4.1
512	+0.3	1.9	2.3	2.8
1,024	+0.2	1.4	1.6	2.1
2,048	+0.3	1.0	1.2	1.5
4,096	+0.3	0.7	0.8	1.1
8,192	+0.2	0.5	0.6	0.8
16,384	+0.2	0.3	0.4	0.5

Figure 11 (All poverty lines): Differences, precision of differences, and the α factor for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and to the 2004 and 2005 ENIGH

	Poverty line							
	National	National	National	125% Natl.	150% Natl.	USAID	International 2005 PPP	
	Food	Capacity	Asset	Asset	Asset	'Extreme'	\$1.25/day	\$2.50/day
Estimated change minus true change								
2006 scorecard applied to 2006 validation and all 2005	-0.7	-0.0	+0.1	+1.3	+1.1	+1.3	-0.4	-0.6
2006 scorecard applied to 2006 validation and all 2004	-0.4	-0.8	-1.0	+1.5	+2.0	+1.0	-0.8	-0.2
Precision of estimated change minus true change								
2006 scorecard applied to 2006 validation and all 2005	0.6	0.6	0.8	0.8	0.8	0.7	0.2	0.5
2006 scorecard applied to 2006 validation and all 2004	0.6	0.7	0.8	0.9	0.8	0.7	0.3	0.5
α for sample size								
2006 scorecard applied to 2006 validation and all 2005	1.35	1.32	1.29	1.32	1.31	1.36	1.73	1.46
2006 scorecard applied to 2006 validation and all 2004	1.12	1.04	0.93	0.94	0.89	1.05	1.83	1.13
Precision is measured as 90-percent confidence intervals in units of +/- percentage points.								
Differences and precision estimated from 500 bootstraps of size n = 16,384.								
α is estimated from 1,000 bootstrap samples of n = 256, 512, 1,024, 2,048, 4,096, 8,192, and 16,384.								

Figure 12 (National food line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time

This figure does not exist. It exists for the 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH, and for the 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH.

Figure 13 (All poverty lines): Possible types of outcomes from targeting by poverty score

		<u>Targeting segment</u>	
		<u>Targeted</u>	<u>Non-targeted</u>
<u>True poverty status</u>	<u>Below poverty line</u>	<u>Inclusion</u> Under poverty line Correctly Targeted	<u>Undercoverage</u> Under poverty line Mistakenly Non-targeted
	<u>Above poverty line</u>	<u>Leakage</u> Above poverty line Mistakenly Targeted	<u>Exclusion</u> Above poverty line Correctly Non-targeted

Figure 14 (National food line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2006 validation sample

Score	<u>Inclusion:</u>	<u>Undercoverage:</u>	<u>Leakage:</u>	<u>Exclusion:</u>	<u>Total Accuracy</u>	<u>BPAC</u>
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line correctly non-targeted	Inclusion + Exclusion	See text
0–4	0.8	10.0	0.1	89.1	89.9	–83.9
5–9	1.5	9.3	0.4	88.8	90.3	–69.2
10–14	2.4	8.4	1.1	88.1	90.5	–44.6
15–19	4.0	6.8	2.5	86.7	90.7	–2.5
20–24	5.2	5.6	4.7	84.5	89.7	+39.9
25–29	6.6	4.2	8.6	80.6	87.3	+20.8
30–34	8.0	2.8	15.2	74.0	82.0	–41.0
35–39	8.9	1.9	22.1	67.1	75.9	–104.9
40–44	9.6	1.2	30.1	59.1	68.7	–178.4
45–49	10.4	0.4	42.2	47.0	57.4	–290.7
50–54	10.7	0.1	50.4	38.8	49.5	–366.4
55–59	10.8	0.0	60.4	28.8	39.6	–458.5
60–64	10.8	0.0	67.9	21.3	32.1	–528.3
65–69	10.8	0.0	74.3	14.9	25.6	–587.7
70–74	10.8	0.0	79.2	10.0	20.8	–632.6
75–79	10.8	0.0	83.1	6.1	16.9	–669.3
80–84	10.8	0.0	85.6	3.6	14.4	–692.1
85–89	10.8	0.0	87.7	1.5	12.3	–711.3
90–94	10.8	0.0	88.8	0.4	11.2	–721.8
95–100	10.8	0.0	89.2	0.0	10.8	–725.3

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

Figure 15 (National food line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2006 validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	0.9	87.6	7.5	7.1:1
5-9	1.8	79.9	13.7	4.0:1
10-14	3.5	68.8	22.6	2.2:1
15-19	6.5	61.3	37.0	1.6:1
20-24	9.9	52.6	48.3	1.1:1
25-29	15.2	43.7	61.4	0.8:1
30-34	23.2	34.4	74.1	0.5:1
35-39	31.0	28.6	82.0	0.4:1
40-44	39.7	24.2	89.1	0.3:1
45-49	52.7	19.8	96.6	0.2:1
50-54	61.1	17.5	98.9	0.2:1
55-59	71.1	15.1	99.6	0.2:1
60-64	78.7	13.7	99.6	0.2:1
65-69	85.1	12.7	99.6	0.1:1
70-74	90.0	12.0	100.0	0.1:1
75-79	93.9	11.5	100.0	0.1:1
80-84	96.4	11.2	100.0	0.1:1
85-89	98.5	11.0	100.0	0.1:1
90-94	99.6	10.8	100.0	0.1:1
95-100	100.0	10.8	100.0	0.1:1

National Capacity Poverty Line Tables

2006 Scorecard Applied to 2006 Validation Sample

Figure 5 (National capacity line): Estimated poverty likelihoods associated with scores

If a household's score is then the likelihood (%) of being below the poverty line is:
0-4	86.9
5-9	84.9
10-14	58.9
15-19	61.7
20-24	48.8
25-29	41.3
30-34	28.9
35-39	20.9
40-44	13.6
45-49	8.9
50-54	2.6
55-59	2.2
60-64	2.6
65-69	0.7
70-74	0.5
75-79	0.0
80-84	0.0
85-89	0.0
90-94	0.0
95-100	0.0

Figure 8 (National capacity line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2006 validation sample

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-11.7	6.4	6.4	6.5
5-9	-6.1	4.9	5.2	5.7
10-14	-11.3	8.2	8.6	9.9
15-19	-11.4	7.5	7.9	8.4
20-24	+4.1	3.9	4.7	6.1
25-29	+5.0	3.1	3.7	4.9
30-34	+6.9	2.1	2.6	3.2
35-39	-1.6	2.3	2.8	3.5
40-44	+1.1	1.5	1.8	2.2
45-49	-0.3	1.1	1.3	1.6
50-54	-2.8	2.0	2.1	2.3
55-59	+1.5	0.3	0.3	0.4
60-64	+2.4	0.2	0.2	0.3
65-69	+0.2	0.3	0.4	0.5
70-74	-0.8	0.8	1.0	1.3
75-79	+0.0	0.0	0.0	0.0
80-84	+0.0	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (National capacity line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2006 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.7	60.2	67.6	79.5
4	-0.5	26.4	32.0	45.8
8	-0.2	18.6	21.8	31.5
16	+0.3	12.8	14.8	20.5
32	+0.3	8.9	10.7	14.1
64	+0.4	6.4	7.8	10.7
128	+0.4	4.6	5.5	6.7
256	+0.4	3.1	3.7	4.9
512	+0.3	2.3	2.8	3.6
1,024	+0.3	1.6	1.9	2.5
2,048	+0.3	1.1	1.3	1.8
4,096	+0.3	0.8	1.0	1.3
8,192	+0.3	0.6	0.7	0.9
16,384	+0.3	0.4	0.5	0.6

Figure 12 (National capacity line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points

This figure does not exist. It exists for the 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH, and for the 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH.

Figure 14 (National capacity line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2006 validation sample

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line correctly non-targeted	Inclusion + Exclusion	See text
0-4	0.9	15.0	0.0	84.1	85.0	-88.5
5-9	1.7	14.2	0.1	84.0	85.7	-77.6
10-14	3.0	12.9	0.6	83.5	86.5	-59.1
15-19	5.0	10.9	1.6	82.6	87.5	-27.5
20-24	6.6	9.3	3.3	80.8	87.4	+3.9
25-29	8.7	7.2	6.5	77.6	86.3	+50.4
30-34	10.8	5.1	12.5	71.6	82.4	+21.5
35-39	12.5	3.4	18.5	65.6	78.2	-16.3
40-44	13.9	2.0	25.9	58.3	72.1	-62.7
45-49	15.2	0.7	37.5	46.7	61.9	-135.8
50-54	15.6	0.3	45.5	38.7	54.3	-186.1
55-59	15.8	0.1	55.4	28.8	44.5	-248.4
60-64	15.8	0.1	62.9	21.3	37.1	-295.6
65-69	15.8	0.0	69.2	14.9	30.7	-335.8
70-74	15.9	0.0	74.1	10.0	25.9	-366.4
75-79	15.9	0.0	78.1	6.1	21.9	-391.3
80-84	15.9	0.0	80.5	3.6	19.5	-406.8
85-89	15.9	0.0	82.6	1.5	17.4	-419.9
90-94	15.9	0.0	83.7	0.4	16.3	-427.0
95-100	15.9	0.0	84.1	0.0	15.9	-429.4

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

Figure 15 (National capacity line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2006 validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	0.9	96.9	5.7	30.8:1
5-9	1.8	92.8	10.8	12.8:1
10-14	3.5	83.2	18.6	5.0:1
15-19	6.5	76.2	31.3	3.2:1
20-24	9.9	66.7	41.6	2.0:1
25-29	15.2	57.2	54.8	1.3:1
30-34	23.2	46.3	67.7	0.9:1
35-39	31.0	40.4	78.9	0.7:1
40-44	39.7	34.9	87.2	0.5:1
45-49	52.7	28.9	95.7	0.4:1
50-54	61.1	25.6	98.4	0.3:1
55-59	71.1	22.2	99.2	0.3:1
60-64	78.7	20.1	99.5	0.3:1
65-69	85.1	18.6	99.8	0.2:1
70-74	90.0	17.7	100.0	0.2:1
75-79	93.9	16.9	100.0	0.2:1
80-84	96.4	16.5	100.0	0.2:1
85-89	98.5	16.1	100.0	0.2:1
90-94	99.6	15.9	100.0	0.2:1
95-100	100.0	15.9	100.0	0.2:1

National Asset Poverty Line Tables

2006 Scorecard Applied to 2006 Validation Sample

Figure 5 (National asset 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	99.4
5-9	96.4
10-14	83.8
15-19	85.9
20-24	83.0
25-29	79.5
30-34	69.0
35-39	57.0
40-44	44.2
45-49	30.2
50-54	21.3
55-59	14.3
60-64	10.6
65-69	4.7
70-74	4.6
75-79	1.0
80-84	2.2
85-89	1.2
90-94	0.0
95-100	0.0

Figure 8 (National asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2006 validation sample

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-0.7	0.3	0.3	0.3
5-9	+2.3	3.4	4.0	5.5
10-14	-1.1	4.1	4.8	6.1
15-19	-6.8	4.5	4.7	5.0
20-24	+4.7	3.5	4.3	5.5
25-29	+12.0	3.1	3.6	4.7
30-34	+7.9	2.6	3.1	4.0
35-39	+5.5	2.7	3.2	4.5
40-44	+3.5	2.4	2.9	3.7
45-49	+0.1	1.9	2.3	3.0
50-54	-2.3	2.3	2.7	3.5
55-59	+2.2	1.4	1.7	2.1
60-64	+4.2	1.3	1.5	2.0
65-69	+2.2	0.7	0.9	1.1
70-74	-1.2	1.6	1.9	2.5
75-79	-0.4	0.7	0.9	1.2
80-84	+2.2	0.0	0.0	0.0
85-89	+1.2	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (National asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2006 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+0.4	66.4	76.5	89.4
4	+1.8	35.5	42.1	53.6
8	+2.1	25.5	32.0	38.4
16	+2.4	17.1	21.1	28.2
32	+2.6	12.2	15.0	19.0
64	+2.5	8.5	10.6	14.4
128	+2.4	6.2	7.4	9.8
256	+2.3	4.5	5.2	6.8
512	+2.3	3.1	3.6	4.6
1,024	+2.4	2.2	2.4	3.0
2,048	+2.4	1.5	1.9	2.4
4,096	+2.4	1.1	1.4	1.8
8,192	+2.4	0.8	0.9	1.2
16,384	+2.4	0.6	0.6	0.8

Figure 12 (National asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time

This figure does not exist. It exists for the 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH, and for the 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH.

Figure 14 (National asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2006 validation sample

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line correctly non-targeted	Inclusion + Exclusion	See text
0-4	0.9	33.4	0.0	65.6	66.6	-94.6
5-9	1.8	32.6	0.1	65.6	67.4	-89.4
10-14	3.3	31.1	0.3	65.3	68.6	-80.2
15-19	6.0	28.3	0.5	65.1	71.2	-63.4
20-24	8.8	25.5	1.1	64.6	73.4	-45.4
25-29	12.6	21.8	2.6	63.0	75.6	-19.2
30-34	17.8	16.6	5.4	60.2	78.0	+19.4
35-39	22.0	12.4	9.1	56.6	78.5	+54.1
40-44	25.9	8.5	13.8	51.8	77.6	+59.7
45-49	30.0	4.4	22.7	42.9	72.9	+34.0
50-54	32.0	2.4	29.1	36.5	68.5	+15.3
55-59	33.4	1.0	37.7	27.9	61.3	-9.8
60-64	33.8	0.5	44.8	20.8	54.6	-30.5
65-69	34.1	0.3	51.0	14.6	48.7	-48.5
70-74	34.3	0.1	55.7	9.9	44.3	-62.0
75-79	34.4	0.0	59.6	6.1	40.4	-73.3
80-84	34.4	0.0	62.0	3.6	38.0	-80.5
85-89	34.4	0.0	64.1	1.5	35.9	-86.6
90-94	34.4	0.0	65.3	0.4	34.7	-89.9
95-100	34.4	0.0	65.6	0.0	34.4	-91.0

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

Figure 15 (National asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2006 validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	0.9	100.0	2.7	Only poor targeted
5-9	1.8	97.1	5.2	33.3:1
10-14	3.5	91.9	9.5	11.4:1
15-19	6.5	92.4	17.6	12.2:1
20-24	9.9	89.3	25.7	8.3:1
25-29	15.2	82.7	36.6	4.8:1
30-34	23.2	76.6	51.8	3.3:1
35-39	31.0	70.8	63.9	2.4:1
40-44	39.7	65.1	75.2	1.9:1
45-49	52.7	56.9	87.3	1.3:1
50-54	61.1	52.4	93.1	1.1:1
55-59	71.1	47.0	97.2	0.9:1
60-64	78.7	43.0	98.4	0.8:1
65-69	85.1	40.0	99.1	0.7:1
70-74	90.0	38.1	99.8	0.6:1
75-79	93.9	36.6	100.0	0.6:1
80-84	96.4	35.6	100.0	0.6:1
85-89	98.5	34.9	100.0	0.5:1
90-94	99.6	34.5	100.0	0.5:1
95-100	100.0	34.4	100.0	0.5:1

125% of the National Asset Poverty Line Tables

2006 Scorecard Applied to 2006 Validation Sample

Figure 5 (125% of national asset 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	99.4
5-9	97.5
10-14	94.4
15-19	93.3
20-24	93.9
25-29	91.6
30-34	82.5
35-39	75.6
40-44	62.8
45-49	46.0
50-54	33.8
55-59	27.5
60-64	20.8
65-69	11.3
70-74	8.2
75-79	3.9
80-84	2.9
85-89	3.4
90-94	0.0
95-100	0.0

Figure 8 (125% of national asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2006 validation sample

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-0.6	0.3	0.3	0.3
5-9	+3.3	3.4	4.0	5.4
10-14	+2.8	3.0	3.6	4.8
15-19	-4.9	2.9	3.0	3.1
20-24	+0.4	2.4	2.9	3.9
25-29	+10.9	2.7	3.2	4.2
30-34	+5.4	2.2	2.8	3.9
35-39	+7.4	2.5	2.9	4.3
40-44	+3.1	2.4	3.0	3.7
45-49	-2.3	2.1	2.2	3.2
50-54	-3.1	2.8	3.0	3.7
55-59	+0.3	2.0	2.4	2.9
60-64	+1.2	2.0	2.4	3.1
65-69	+1.2	1.7	2.0	2.6
70-74	-2.3	2.2	2.4	3.1
75-79	+2.3	0.8	0.9	1.2
80-84	+1.5	0.8	1.0	1.2
85-89	+2.2	0.9	1.0	1.4
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (125% of national asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2006 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+0.8	74.1	80.9	92.7
4	+2.2	37.5	44.8	55.9
8	+2.1	27.0	32.8	42.0
16	+1.8	19.0	22.6	28.7
32	+1.8	13.9	16.9	21.8
64	+1.7	9.5	11.0	14.7
128	+1.5	6.4	7.4	10.4
256	+1.3	4.7	6.0	7.4
512	+1.4	3.3	4.1	5.5
1,024	+1.4	2.4	2.9	3.7
2,048	+1.4	1.7	2.1	2.7
4,096	+1.4	1.2	1.4	1.9
8,192	+1.4	0.9	1.0	1.4
16,384	+1.4	0.6	0.7	0.9

Figure 12 (125% of national asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points

This figure does not exist. It exists for the 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH, and for the 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH.

Figure 14 (125% of national asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2006 validation sample

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
	0-4	0.9	45.4	0.0	53.7	54.6
5-9	1.8	44.5	0.0	53.7	55.5	-92.1
10-14	3.4	42.9	0.2	53.5	56.9	-85.0
15-19	6.3	40.0	0.3	53.5	59.7	-72.3
20-24	9.5	36.8	0.4	53.3	62.7	-58.2
25-29	13.8	32.5	1.4	52.3	66.2	-37.3
30-34	20.3	26.0	2.9	50.8	71.1	-5.9
35-39	25.8	20.5	5.2	48.5	74.3	+22.7
40-44	31.2	15.1	8.5	45.2	76.5	+53.3
45-49	37.6	8.7	15.1	38.6	76.2	+67.4
50-54	40.8	5.5	20.3	33.4	74.2	+56.1
55-59	43.6	2.7	27.6	26.1	69.7	+40.4
60-64	44.9	1.4	33.7	20.0	64.9	+27.1
65-69	45.6	0.7	39.5	14.2	59.9	+14.7
70-74	46.1	0.2	43.9	9.8	55.9	+5.2
75-79	46.2	0.1	47.7	6.0	52.2	-3.1
80-84	46.3	0.0	50.2	3.6	49.8	-8.4
85-89	46.3	0.0	52.2	1.5	47.8	-12.8
90-94	46.3	0.0	53.3	0.4	46.7	-15.2
95-100	46.3	0.0	53.7	0.0	46.3	-16.0

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

Figure 15 (125% of national asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2006 validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	0.9	100.0	2.0	Only poor targeted
5-9	1.8	97.3	3.9	36.6:1
10-14	3.5	95.1	7.3	19.4:1
15-19	6.5	96.1	13.6	24.9:1
20-24	9.9	95.5	20.4	21.3:1
25-29	15.2	91.0	29.9	10.2:1
30-34	23.2	87.3	43.8	6.9:1
35-39	31.0	83.2	55.7	4.9:1
40-44	39.7	78.7	67.5	3.7:1
45-49	52.7	71.3	81.2	2.5:1
50-54	61.1	66.7	88.1	2.0:1
55-59	71.1	61.2	94.1	1.6:1
60-64	78.7	57.1	97.1	1.3:1
65-69	85.1	53.6	98.5	1.2:1
70-74	90.0	51.2	99.6	1.1:1
75-79	93.9	49.2	99.8	1.0:1
80-84	96.4	48.0	99.9	0.9:1
85-89	98.5	47.0	100.0	0.9:1
90-94	99.6	46.5	100.0	0.9:1
95-100	100.0	46.3	100.0	0.9:1

150% of the National Asset Poverty Line Tables

2006 Scorecard Applied to 2006 Validation Sample

Figure 5 (150% of national asset 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	99.8
10-14	98.3
15-19	97.4
20-24	96.8
25-29	94.6
30-34	91.2
35-39	81.9
40-44	76.1
45-49	57.4
50-54	48.4
55-59	37.3
60-64	28.8
65-69	19.4
70-74	18.0
75-79	6.8
80-84	8.4
85-89	4.5
90-94	0.0
95-100	0.0

Figure 8 (150% of national asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2006 validation sample

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	+0.0	0.0	0.0	0.0
5-9	+5.5	3.4	4.0	5.5
10-14	+2.9	2.4	2.8	3.5
15-19	-2.5	1.3	1.3	1.3
20-24	-2.2	1.3	1.4	1.4
25-29	+6.9	2.1	2.5	3.2
30-34	+2.2	1.7	2.0	2.5
35-39	+3.6	2.3	2.7	3.7
40-44	+0.2	2.3	2.6	3.2
45-49	-3.1	2.5	2.8	3.1
50-54	-3.6	3.0	3.2	4.0
55-59	+0.2	2.2	2.7	3.4
60-64	-0.8	2.3	2.7	3.7
65-69	-2.2	2.4	2.8	3.6
70-74	+2.3	2.3	2.9	3.8
75-79	+1.3	1.6	1.8	2.4
80-84	+5.5	1.3	1.5	2.0
85-89	+2.2	1.2	1.4	1.9
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (150% of national asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2006 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-2.0	69.4	81.3	88.3
4	+0.7	36.1	43.7	54.2
8	+0.6	26.7	31.4	40.0
16	+0.7	19.2	22.4	29.6
32	+0.8	13.5	16.0	21.6
64	+0.5	9.3	11.1	14.6
128	+0.4	6.5	7.7	10.3
256	+0.2	4.8	5.7	7.4
512	+0.2	3.4	4.0	5.3
1,024	+0.2	2.3	2.8	3.6
2,048	+0.1	1.7	2.1	2.6
4,096	+0.1	1.2	1.4	1.8
8,192	+0.1	0.9	1.0	1.4
16,384	+0.1	0.6	0.7	0.9

Figure 12 (150% of national asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points

This figure does not exist. It exists for the 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH, and for the 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH.

Figure 14 (150% of national asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2006 validation sample

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line correctly non-targeted	Inclusion + Exclusion	See text
0–4	0.9	54.5	0.0	44.6	45.5	–96.7
5–9	1.8	53.6	0.0	44.5	46.3	–93.4
10–14	3.4	52.0	0.1	44.5	47.9	–87.4
15–19	6.4	49.0	0.1	44.4	50.8	–76.7
20–24	9.7	45.7	0.2	44.4	54.1	–64.6
25–29	14.4	41.0	0.8	43.8	58.2	–46.6
30–34	21.7	33.8	1.6	43.0	64.6	–19.0
35–39	27.9	27.5	3.1	41.5	69.4	+6.3
40–44	34.5	20.9	5.2	39.4	73.9	+33.9
45–49	42.5	13.0	10.2	34.4	76.8	+71.6
50–54	46.9	8.6	14.2	30.4	77.2	+74.3
55–59	50.7	4.7	20.4	24.1	74.8	+63.1
60–64	52.9	2.6	25.8	18.8	71.6	+53.4
65–69	54.2	1.2	30.9	13.7	67.9	+44.3
70–74	55.0	0.4	35.0	9.6	64.6	+36.9
75–79	55.3	0.2	38.7	5.9	61.1	+30.2
80–84	55.4	0.1	41.1	3.5	58.9	+25.9
85–89	55.4	0.0	43.1	1.5	56.9	+22.3
90–94	55.4	0.0	44.2	0.4	55.8	+20.3
95–100	55.4	0.0	44.6	0.0	55.4	+19.6

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

Figure 15 (150% of national asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2006 validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	0.9	100.0	1.7	Only poor targeted
5-9	1.8	97.4	3.3	38.1:1
10-14	3.5	97.0	6.2	32.0:1
15-19	6.5	98.0	11.6	49.8:1
20-24	9.9	98.0	17.5	48.6:1
25-29	15.2	94.7	26.0	18.0:1
30-34	23.2	93.2	39.1	13.6:1
35-39	31.0	90.0	50.3	9.0:1
40-44	39.7	87.0	62.3	6.7:1
45-49	52.7	80.6	76.6	4.2:1
50-54	61.1	76.7	84.6	3.3:1
55-59	71.1	71.3	91.5	2.5:1
60-64	78.7	67.2	95.4	2.0:1
65-69	85.1	63.7	97.8	1.8:1
70-74	90.0	61.1	99.2	1.6:1
75-79	93.9	58.8	99.7	1.4:1
80-84	96.4	57.4	99.9	1.3:1
85-89	98.5	56.3	100.0	1.3:1
90-94	99.6	55.6	100.0	1.3:1
95-100	100.0	55.4	100.0	1.2:1

USAID “Extreme” Poverty Line Tables

2006 Scorecard Applied to 2006 Validation Sample

Figure 5 (USAID “extreme” line): Estimated poverty likelihoods associated with scores

If a household's score is then the likelihood (%) of being below the poverty line is:
0–4	80.4
5–9	81.5
10–14	49.0
15–19	58.2
20–24	49.5
25–29	43.3
30–34	31.6
35–39	28.5
40–44	16.6
45–49	10.5
50–54	4.3
55–59	3.1
60–64	4.1
65–69	0.8
70–74	0.5
75–79	0.1
80–84	0.3
85–89	0.0
90–94	0.0
95–100	0.0

Figure 8 (USAID “extreme” line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2006 validation sample

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-14.5	8.5	8.7	9.1
5-9	+0.6	5.9	7.1	9.5
10-14	-5.2	5.8	6.8	9.3
15-19	-9.4	6.7	7.0	7.7
20-24	+6.8	4.0	4.7	6.0
25-29	+6.8	3.1	3.7	4.9
30-34	+4.2	2.3	2.7	3.5
35-39	+5.3	2.2	2.5	3.3
40-44	+0.9	1.7	2.0	2.5
45-49	-0.8	1.3	1.5	1.7
50-54	-2.4	1.9	2.0	2.2
55-59	+1.8	0.5	0.5	0.7
60-64	+1.1	1.0	1.2	1.5
65-69	+0.0	0.4	0.5	0.6
70-74	-0.8	0.8	1.0	1.3
75-79	+0.1	0.0	0.0	0.0
80-84	+0.3	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (USAID “extreme” line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2006 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.2	57.4	67.9	76.9
4	-0.4	29.1	33.1	46.3
8	+0.2	19.9	22.4	31.9
16	+0.9	13.9	16.4	22.2
32	+0.9	9.7	11.1	15.0
64	+0.9	6.9	8.2	10.8
128	+0.9	4.8	5.6	7.3
256	+0.9	3.4	3.9	5.2
512	+0.9	2.5	2.9	3.7
1,024	+0.8	1.7	2.0	2.6
2,048	+0.8	1.2	1.4	1.9
4,096	+0.8	0.9	1.1	1.4
8,192	+0.8	0.6	0.8	1.0
16,384	+0.8	0.4	0.5	0.7

Figure 12 (USAID “extreme” line): Differences and precision of differences for bootstrapped estimates of changes in group’s poverty rates between two points

This figure does not exist. It exists for the 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH, and for the 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH.

Figure 14 (USAID “extreme” line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2006 validation sample

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line correctly non-targeted	Inclusion + Exclusion	See text
0-4	0.9	15.8	0.1	83.3	84.1	-89.3
5-9	1.6	15.1	0.3	83.1	84.7	-79.4
10-14	2.6	14.0	0.9	82.4	85.0	-63.0
15-19	4.5	12.1	2.0	81.3	85.9	-33.6
20-24	6.1	10.6	3.9	79.5	85.6	-4.1
25-29	8.1	8.5	7.1	76.3	84.4	+40.1
30-34	10.5	6.1	12.7	70.6	81.1	+23.5
35-39	12.4	4.3	18.6	64.7	77.1	-12.0
40-44	13.9	2.7	25.8	57.6	71.5	-54.9
45-49	15.6	1.1	37.1	46.3	61.9	-122.9
50-54	16.2	0.5	44.9	38.4	54.6	-170.1
55-59	16.3	0.3	54.8	28.6	44.9	-229.2
60-64	16.5	0.1	62.1	21.2	37.7	-273.5
65-69	16.6	0.0	68.5	14.9	31.5	-311.6
70-74	16.6	0.0	73.3	10.0	26.7	-340.8
75-79	16.6	0.0	77.3	6.1	22.7	-364.6
80-84	16.6	0.0	79.8	3.6	20.2	-379.4
85-89	16.6	0.0	81.9	1.5	18.1	-391.9
90-94	16.6	0.0	83.0	0.4	17.0	-398.7
95-100	16.6	0.0	83.4	0.0	16.6	-400.9

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

Figure 15 (USAID “extreme” line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2006 validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	0.9	92.1	5.1	11.7:1
5-9	1.8	85.6	9.5	5.9:1
10-14	3.5	73.4	15.7	2.8:1
15-19	6.5	69.1	27.1	2.2:1
20-24	9.9	61.1	36.4	1.6:1
25-29	15.2	53.3	48.7	1.1:1
30-34	23.2	45.2	63.2	0.8:1
35-39	31.0	39.9	74.3	0.7:1
40-44	39.7	35.1	83.7	0.5:1
45-49	52.7	29.6	93.7	0.4:1
50-54	61.1	26.4	97.1	0.4:1
55-59	71.1	23.0	98.2	0.3:1
60-64	78.7	21.0	99.3	0.3:1
65-69	85.1	19.5	99.8	0.2:1
70-74	90.0	18.5	100.0	0.2:1
75-79	93.9	17.7	100.0	0.2:1
80-84	96.4	17.3	100.0	0.2:1
85-89	98.5	16.9	100.0	0.2:1
90-94	99.6	16.7	100.0	0.2:1
95-100	100.0	16.6	100.0	0.2:1

\$1.25/day 2005 PPP Poverty Line Tables

2006 Scorecard Applied to 2006 Validation Sample

Figure 5 (\$1.25/day 2005 PPP line): Estimated poverty likelihoods associated with scores

If a household's score is then the likelihood (%) of being below the poverty line is:
0-4	22.8
5-9	22.4
10-14	5.3
15-19	4.8
20-24	3.9
25-29	3.6
30-34	0.9
35-39	0.2
40-44	1.7
45-49	0.1
50-54	0.1
55-59	0.0
60-64	0.1
65-69	0.0
70-74	0.0
75-79	0.0
80-84	0.0
85-89	0.0
90-94	0.0
95-100	0.0

Figure 8 (\$1.25/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2006 validation sample

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	+16.4	2.7	3.2	4.2
5-9	+2.6	5.8	6.8	9.6
10-14	-4.9	4.1	4.5	5.2
15-19	-1.0	2.3	2.8	3.7
20-24	-1.5	2.0	2.5	3.3
25-29	+1.8	0.6	0.7	1.0
30-34	-0.6	0.6	0.7	0.9
35-39	-0.4	0.3	0.4	0.5
40-44	+1.7	0.0	0.0	0.1
45-49	-0.7	0.5	0.5	0.6
50-54	+0.0	0.0	0.0	0.1
55-59	-0.1	0.1	0.1	0.1
60-64	+0.1	0.0	0.0	0.0
65-69	+0.0	0.0	0.0	0.0
70-74	-1.3	1.1	1.2	1.4
75-79	+0.0	0.0	0.0	0.0
80-84	+0.0	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (\$1.25/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2006 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+0.1	2.4	2.7	60.0
4	-0.1	4.3	11.1	22.5
8	-0.1	5.5	10.0	14.2
16	-0.0	4.8	6.0	8.1
32	+0.0	3.1	3.8	5.3
64	+0.0	2.1	2.5	3.5
128	-0.0	1.5	1.8	2.4
256	+0.0	1.1	1.2	1.6
512	+0.0	0.8	0.9	1.2
1,024	-0.0	0.5	0.6	0.8
2,048	+0.0	0.4	0.5	0.6
4,096	+0.0	0.3	0.3	0.5
8,192	-0.0	0.2	0.2	0.3
16,384	-0.0	0.2	0.2	0.2

Figure 12 (\$1.25/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points

This figure does not exist. It exists for the 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH, and for the 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH.

Figure 14 (\$1.25/day 2005 PPP line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2006 validation sample

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line non-targeted	Inclusion + Exclusion	See text
0-4	0.1	1.3	0.8	97.8	97.9	-23.9
5-9	0.3	1.1	1.5	97.1	97.4	-9.0
10-14	0.5	0.9	3.0	95.6	96.1	-118.3
15-19	0.7	0.7	5.9	92.7	93.4	-320.7
20-24	0.8	0.6	9.1	89.5	90.3	-553.6
25-29	1.0	0.4	14.2	84.4	85.3	-921.6
30-34	1.1	0.3	22.1	76.5	77.6	-1,489.1
35-39	1.2	0.2	29.8	68.8	69.9	-2,041.9
40-44	1.2	0.2	38.5	60.1	61.2	-2,665.7
45-49	1.3	0.1	51.3	47.3	48.6	-3,585.3
50-54	1.3	0.1	59.8	38.8	40.2	-4,189.3
55-59	1.4	0.0	69.8	28.8	30.2	-4,907.6
60-64	1.4	0.0	77.3	21.3	22.6	-5,449.0
65-69	1.4	0.0	83.7	14.9	16.2	-5,909.6
70-74	1.4	0.0	88.6	10.0	11.4	-6,258.3
75-79	1.4	0.0	92.6	6.1	7.4	-6,542.4
80-84	1.4	0.0	95.0	3.6	5.0	-6,719.8
85-89	1.4	0.0	97.1	1.5	2.9	-6,868.7
90-94	1.4	0.0	98.2	0.4	1.8	-6,950.2
95-100	1.4	0.0	98.6	0.0	1.4	-6,977.1

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

Figure 15 (\$1.25/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2006 validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	0.9	14.4	9.6	0.2:1
5-9	1.8	17.9	23.8	0.2:1
10-14	3.5	14.3	36.4	0.2:1
15-19	6.5	10.3	48.2	0.1:1
20-24	9.9	8.1	57.5	0.1:1
25-29	15.2	6.4	69.3	0.1:1
30-34	23.2	4.7	79.1	0.0:1
35-39	31.0	3.7	83.3	0.0:1
40-44	39.7	3.0	84.1	0.0:1
45-49	52.7	2.5	95.0	0.0:1
50-54	61.1	2.2	95.6	0.0:1
55-59	71.1	1.9	97.2	0.0:1
60-64	78.7	1.7	97.2	0.0:1
65-69	85.1	1.6	97.2	0.0:1
70-74	90.0	1.5	100.0	0.0:1
75-79	93.9	1.5	100.0	0.0:1
80-84	96.4	1.4	100.0	0.0:1
85-89	98.5	1.4	100.0	0.0:1
90-94	99.6	1.4	100.0	0.0:1
95-100	100.0	1.4	100.0	0.0:1

\$2.50/day 2005 PPP Poverty Line Tables

2006 Scorecard Applied to 2006 Validation Sample

Figure 5 (\$2.50/day 2005 PPP line): Estimated poverty likelihoods associated with scores

If a household's score is then the likelihood (%) of being below the poverty line is:
0-4	67.7
5-9	59.9
10-14	25.8
15-19	33.5
20-24	21.1
25-29	15.6
30-34	7.3
35-39	7.1
40-44	5.7
45-49	2.5
50-54	1.1
55-59	0.5
60-64	0.3
65-69	0.2
70-74	0.0
75-79	0.0
80-84	0.0
85-89	0.0
90-94	0.0
95-100	0.0

Figure 8 (\$2.50/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2006 validation sample

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-4.0	7.0	8.2	11.0
5-9	+0.3	7.6	9.4	12.2
10-14	-20.6	13.2	13.8	15.0
15-19	-6.2	5.4	5.9	6.9
20-24	-0.1	3.3	3.9	5.1
25-29	+1.2	2.3	2.9	3.8
30-34	+0.8	1.1	1.3	1.6
35-39	+4.0	0.8	0.9	1.2
40-44	+1.8	0.9	1.0	1.3
45-49	-1.0	0.8	0.9	1.0
50-54	-0.5	0.7	0.8	1.0
55-59	+0.2	0.2	0.2	0.2
60-64	+0.3	0.0	0.0	0.0
65-69	+0.2	0.0	0.0	0.0
70-74	-1.3	1.1	1.2	1.4
75-79	+0.0	0.0	0.0	0.0
80-84	+0.0	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (\$2.50/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2006 validation sample

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-0.8	47.7	55.1	78.7
4	-0.4	19.0	25.2	37.2
8	-0.4	13.6	16.6	25.2
16	-0.2	8.9	11.1	14.9
32	-0.2	6.4	7.6	9.8
64	-0.1	4.4	5.1	7.0
128	+0.0	3.1	3.8	5.1
256	-0.0	2.2	2.7	3.4
512	-0.1	1.6	1.8	2.4
1,024	-0.1	1.1	1.3	1.7
2,048	-0.1	0.8	0.9	1.2
4,096	-0.1	0.6	0.7	0.9
8,192	-0.1	0.4	0.5	0.6
16,384	-0.1	0.3	0.4	0.4

Figure 12 (\$2.50/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points

This figure does not exist. It exists for the 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH, and for the 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH.

Figure 14 (\$2.50/day 2005 PPP line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2006 validation sample

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line non-targeted	Inclusion + Exclusion	See text
0-4	0.6	6.4	0.3	92.7	93.4	-77.6
5-9	1.2	5.8	0.6	92.4	93.6	-55.8
10-14	2.1	4.9	1.5	91.5	93.6	-19.4
15-19	3.2	3.8	3.3	89.7	92.9	+39.0
20-24	4.0	3.0	6.0	87.0	91.0	+14.9
25-29	4.8	2.2	10.4	82.6	87.3	-49.3
30-34	5.5	1.5	17.8	75.2	80.7	-154.3
35-39	5.8	1.2	25.2	67.8	73.6	-260.0
40-44	6.3	0.7	33.5	59.5	65.8	-378.2
45-49	6.8	0.2	45.9	47.1	53.9	-555.7
50-54	6.9	0.1	54.2	38.8	45.7	-674.5
55-59	7.0	0.0	64.2	28.8	35.8	-817.1
60-64	7.0	0.0	71.7	21.3	28.2	-924.9
65-69	7.0	0.0	78.1	14.9	21.8	-1,016.6
70-74	7.0	0.0	83.0	10.0	17.0	-1,086.1
75-79	7.0	0.0	86.9	6.1	13.1	-1,142.7
80-84	7.0	0.0	89.4	3.6	10.6	-1,178.0
85-89	7.0	0.0	91.5	1.5	8.5	-1,207.6
90-94	7.0	0.0	92.6	0.4	7.4	-1,223.9
95-100	7.0	0.0	93.0	0.0	7.0	-1,229.2

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

Figure 15 (\$2.50/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2006 validation sample

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	0.9	69.2	9.2	2.2:1
5-9	1.8	67.2	17.8	2.1:1
10-14	3.5	58.9	29.9	1.4:1
15-19	6.5	48.9	45.6	1.0:1
20-24	9.9	39.9	56.5	0.7:1
25-29	15.2	31.3	68.0	0.5:1
30-34	23.2	23.5	77.9	0.3:1
35-39	31.0	18.8	83.1	0.2:1
40-44	39.7	15.7	89.3	0.2:1
45-49	52.7	12.9	97.1	0.1:1
50-54	61.1	11.3	98.7	0.1:1
55-59	71.1	9.8	99.4	0.1:1
60-64	78.7	8.8	99.4	0.1:1
65-69	85.1	8.2	99.4	0.1:1
70-74	90.0	7.8	100.0	0.1:1
75-79	93.9	7.4	100.0	0.1:1
80-84	96.4	7.3	100.0	0.1:1
85-89	98.5	7.1	100.0	0.1:1
90-94	99.6	7.0	100.0	0.1:1
95-100	100.0	7.0	100.0	0.1:1

National Food Poverty Line Tables
2006 Scorecard Applied to the 2005 ENIGH

Figure 8 (National food line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2005 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-16.1	9.3	9.5	9.9
5-9	+1.9	6.0	7.2	9.6
10-14	-21.4	13.0	13.3	13.8
15-19	+1.5	4.0	4.9	6.1
20-24	-4.0	3.8	4.3	5.8
25-29	+1.5	2.4	2.7	3.6
30-34	-3.1	2.7	3.0	3.4
35-39	+2.1	1.6	1.9	2.4
40-44	-0.3	1.1	1.3	1.6
45-49	+2.5	0.8	0.9	1.1
50-54	+0.4	0.5	0.5	0.7
55-59	+0.4	0.3	0.4	0.5
60-64	-0.2	0.4	0.4	0.5
65-69	+0.3	0.2	0.2	0.3
70-74	-0.0	0.1	0.1	0.1
75-79	-0.3	0.4	0.4	0.5
80-84	+0.0	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (National food line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2005 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-2.2	50.0	60.2	70.7
4	-0.8	25.3	32.3	44.5
8	-0.7	18.9	23.1	31.5
16	-0.7	12.9	15.9	21.0
32	-0.6	9.3	11.9	15.5
64	-0.4	6.5	7.7	10.7
128	-0.4	4.6	5.3	6.9
256	-0.4	3.3	3.8	5.1
512	-0.4	2.3	2.7	3.7
1,024	-0.4	1.6	1.9	2.4
2,048	-0.4	1.1	1.4	1.9
4,096	-0.4	0.9	1.0	1.4
8,192	-0.5	0.6	0.7	0.9
16,384	-0.5	0.4	0.5	0.6

Figure 12 (National food line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.4	97.0	101.7	104.5
4	-0.7	37.2	45.1	60.8
8	-0.7	26.4	30.4	43.2
16	-1.0	17.6	21.7	29.7
32	-0.8	12.6	15.6	20.3
64	-0.7	8.5	10.1	13.9
128	-0.8	6.0	7.1	9.1
256	-0.8	4.2	5.1	6.7
512	-0.7	3.1	3.6	4.4
1,024	-0.7	2.1	2.5	3.3
2,048	-0.7	1.5	1.8	2.3
4,096	-0.7	1.0	1.2	1.8
8,192	-0.7	0.8	0.9	1.2
16,384	-0.7	0.6	0.7	0.8

Figure 14 (National food line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2005 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
	0-4	1.1	12.9	0.1	85.8	87.0
5-9	2.2	11.8	0.5	85.4	87.7	-64.7
10-14	3.9	10.2	1.6	84.4	88.3	-33.8
15-19	5.9	8.1	3.5	82.5	88.4	+8.7
20-24	7.5	6.5	6.2	79.8	87.3	+51.5
25-29	9.6	4.4	11.8	74.2	83.8	+16.0
30-34	11.1	2.9	17.9	68.1	79.2	-27.3
35-39	12.3	1.7	25.9	60.0	72.4	-84.7
40-44	13.4	0.7	37.5	48.5	61.9	-166.9
45-49	13.8	0.3	46.9	39.0	52.8	-234.4
50-54	13.9	0.1	55.6	30.3	44.2	-296.3
55-59	14.0	0.1	63.2	22.8	36.8	-350.0
60-64	14.0	0.0	69.4	16.6	30.6	-394.2
65-69	14.0	0.0	74.4	11.5	25.5	-430.4
70-74	14.0	0.0	78.5	7.4	21.5	-459.4
75-79	14.0	0.0	81.8	4.2	18.2	-482.8
80-84	14.0	0.0	83.6	2.3	16.4	-495.8
85-89	14.0	0.0	85.0	1.0	15.0	-505.3
90-94	14.0	0.0	85.6	0.3	14.4	-510.1
95-100	14.0	0.0	86.0	0.0	14.0	-512.5

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

Figure 15 (National food line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2005 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.2	90.1	7.9	9.1:1
5-9	2.7	81.2	15.8	4.3:1
10-14	5.4	71.3	27.6	2.5:1
15-19	9.4	62.8	41.9	1.7:1
20-24	13.7	54.8	53.7	1.2:1
25-29	21.4	44.9	68.5	0.8:1
30-34	29.0	38.4	79.4	0.6:1
35-39	38.2	32.2	87.8	0.5:1
40-44	50.8	26.3	95.3	0.4:1
45-49	60.7	22.7	98.0	0.3:1
50-54	69.5	20.0	99.0	0.2:1
55-59	77.1	18.1	99.5	0.2:1
60-64	83.4	16.8	99.8	0.2:1
65-69	88.5	15.8	99.9	0.2:1
70-74	92.5	15.2	99.9	0.2:1
75-79	95.8	14.6	100.0	0.2:1
80-84	97.7	14.4	100.0	0.2:1
85-89	99.0	14.2	100.0	0.2:1
90-94	99.7	14.1	100.0	0.2:1
95-100	100.0	14.0	100.0	0.2:1

National Capacity Poverty Line Tables
2006 Scorecard Applied to the 2005 ENIGH

Figure 8 (National capacity line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2005 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-9.5	5.6	5.8	6.0
5-9	+3.0	4.8	5.7	8.0
10-14	-19.8	11.6	12.0	12.8
15-19	+3.4	3.9	4.6	6.3
20-24	-5.1	4.4	4.8	5.7
25-29	+4.3	2.7	3.3	3.9
30-34	+0.6	2.5	2.9	3.8
35-39	+0.9	2.0	2.4	3.2
40-44	+0.1	1.5	1.7	2.2
45-49	+2.8	1.1	1.3	1.7
50-54	+0.5	0.6	0.7	0.8
55-59	+0.8	0.6	0.7	0.9
60-64	+1.7	0.5	0.6	0.8
65-69	+0.4	0.3	0.3	0.4
70-74	+0.5	0.1	0.1	0.1
75-79	-0.3	0.4	0.4	0.5
80-84	+0.0	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (National capacity line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2005 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.1	60.2	67.6	79.5
4	-0.5	29.1	35.0	46.9
8	-0.2	21.6	25.6	33.5
16	+0.2	15.0	17.6	25.8
32	+0.2	10.3	12.6	16.3
64	+0.3	7.3	8.7	11.4
128	+0.3	5.3	6.3	8.1
256	+0.4	3.8	4.6	5.7
512	+0.4	2.6	3.1	4.5
1,024	+0.4	1.8	2.2	3.1
2,048	+0.4	1.3	1.6	2.1
4,096	+0.4	0.9	1.1	1.5
8,192	+0.3	0.6	0.8	1.1
16,384	+0.3	0.5	0.6	0.7

Figure 12 (National capacity line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+0.7	101.3	104.0	106.4
4	-0.0	41.3	49.7	64.5
8	-0.1	29.3	35.1	49.8
16	-0.1	20.3	24.5	33.8
32	-0.1	13.7	16.5	22.3
64	-0.0	9.5	11.6	15.2
128	-0.1	7.0	8.3	10.8
256	+0.0	5.0	5.9	7.9
512	+0.1	3.5	4.3	5.6
1,024	+0.1	2.4	2.8	4.0
2,048	+0.1	1.8	2.1	2.9
4,096	+0.0	1.2	1.4	1.9
8,192	+0.0	0.9	1.0	1.4
16,384	+0.0	0.6	0.7	0.9

Figure 14 (National capacity line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2005 ENIGH

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line non-targeted	Inclusion + Exclusion	See text
0-4	1.2	18.4	0.1	80.4	81.6	-87.7
5-9	2.4	17.1	0.3	80.1	82.5	-73.7
10-14	4.5	15.1	1.0	79.5	84.0	-49.4
15-19	7.0	12.6	2.4	78.1	85.0	-16.4
20-24	9.3	10.2	4.5	76.0	85.3	+17.9
25-29	12.3	7.2	9.1	71.4	83.6	+53.3
30-34	14.6	5.0	14.4	66.0	80.6	+26.1
35-39	16.5	3.0	21.7	58.7	75.3	-11.3
40-44	18.3	1.2	32.6	47.9	66.2	-66.7
45-49	19.0	0.5	41.7	38.8	57.8	-113.5
50-54	19.3	0.3	50.3	30.2	49.5	-157.3
55-59	19.4	0.1	57.7	22.8	42.2	-195.6
60-64	19.5	0.0	63.9	16.6	36.1	-227.2
65-69	19.5	0.0	68.9	11.5	31.0	-253.1
70-74	19.5	0.0	73.0	7.4	27.0	-273.9
75-79	19.5	0.0	76.3	4.2	23.7	-290.8
80-84	19.5	0.0	78.1	2.3	21.9	-300.1
85-89	19.5	0.0	79.5	1.0	20.5	-306.9
90-94	19.5	0.0	80.1	0.3	19.9	-310.4
95-100	19.5	0.0	80.5	0.0	19.5	-312.1

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

Figure 15 (National capacity line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2005 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.2	94.3	6.0	16.5:1
5-9	2.7	87.7	12.3	7.1:1
10-14	5.4	82.1	22.8	4.6:1
15-19	9.4	74.3	35.6	2.9:1
20-24	13.7	67.6	47.5	2.1:1
25-29	21.4	57.4	62.9	1.3:1
30-34	29.0	50.2	74.6	1.0:1
35-39	38.2	43.2	84.6	0.8:1
40-44	50.8	36.0	93.6	0.6:1
45-49	60.7	31.3	97.3	0.5:1
50-54	69.5	27.7	98.6	0.4:1
55-59	77.1	25.2	99.4	0.3:1
60-64	83.4	23.4	99.8	0.3:1
65-69	88.5	22.1	99.9	0.3:1
70-74	92.5	21.1	99.9	0.3:1
75-79	95.8	20.4	100.0	0.3:1
80-84	97.7	20.0	100.0	0.2:1
85-89	99.0	19.7	100.0	0.2:1
90-94	99.7	19.6	100.0	0.2:1
95-100	100.0	19.5	100.0	0.2:1

National Asset Poverty Line Tables
2006 Scorecard Applied to the 2005 ENIGH

Figure 8 (National asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2005 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-0.7	0.3	0.3	0.3
5-9	-1.0	2.0	2.5	3.2
10-14	-12.7	7.0	7.1	7.3
15-19	-3.0	2.7	3.0	4.0
20-24	-3.5	3.0	3.3	3.7
25-29	+7.1	2.4	3.0	3.8
30-34	+6.4	2.8	3.4	4.4
35-39	+4.7	2.4	2.9	3.7
40-44	+2.2	2.0	2.3	3.2
45-49	+0.7	2.1	2.6	3.4
50-54	+7.1	1.6	1.9	2.6
55-59	+3.6	1.6	1.9	2.6
60-64	+4.0	1.4	1.7	2.1
65-69	+0.6	1.2	1.5	1.9
70-74	+0.6	1.5	1.8	2.3
75-79	-0.0	0.6	0.8	1.0
80-84	+1.5	0.6	0.7	0.9
85-89	+1.2	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (National asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2005 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+1.1	63.4	73.9	85.3
4	+1.1	35.0	41.5	55.1
8	+1.4	24.1	28.3	40.9
16	+2.2	17.6	21.4	28.5
32	+2.3	12.3	15.5	20.6
64	+2.5	9.3	11.0	13.9
128	+2.4	6.6	7.7	10.6
256	+2.4	4.3	5.4	7.1
512	+2.4	3.2	3.8	4.8
1,024	+2.5	2.2	2.7	3.6
2,048	+2.5	1.5	1.9	2.7
4,096	+2.5	1.1	1.4	1.7
8,192	+2.5	0.8	1.0	1.2
16,384	+2.5	0.6	0.7	0.8

Figure 12 (National asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+0.7	104.2	106.4	100.0
4	-0.7	48.6	56.7	78.0
8	-0.7	34.9	42.2	56.4
16	-0.2	25.9	30.5	40.3
32	-0.4	18.3	21.3	26.1
64	-0.0	12.7	14.9	21.2
128	-0.0	8.9	10.5	14.2
256	+0.1	6.4	7.5	9.7
512	+0.1	4.6	5.4	6.5
1,024	+0.1	3.2	3.8	4.8
2,048	+0.1	2.2	2.7	3.5
4,096	+0.1	1.6	1.9	2.6
8,192	+0.1	1.1	1.4	1.8
16,384	+0.1	0.8	1.0	1.2

Figure 14 (National asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2005 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0-4	1.2	38.3	0.0	60.5	61.7	-93.7
5-9	2.7	36.8	0.0	60.4	63.1	-86.3
10-14	5.2	34.3	0.2	60.3	65.5	-73.0
15-19	8.8	30.8	0.6	59.9	68.6	-54.2
20-24	12.5	27.1	1.3	59.2	71.6	-33.8
25-29	18.1	21.4	3.3	57.2	75.3	-0.1
30-34	23.0	16.5	6.0	54.5	77.5	+31.6
35-39	28.0	11.6	10.3	50.2	78.2	+67.5
40-44	33.3	6.2	17.5	43.0	76.3	+55.7
45-49	36.3	3.2	24.4	36.1	72.4	+38.4
50-54	37.8	1.8	31.7	28.7	66.5	+19.7
55-59	38.6	0.9	38.5	22.0	60.6	+2.7
60-64	39.1	0.4	44.3	16.2	55.3	-12.0
65-69	39.3	0.2	49.1	11.3	50.6	-24.3
70-74	39.5	0.1	53.1	7.4	46.8	-34.3
75-79	39.5	0.0	56.3	4.1	43.6	-42.5
80-84	39.5	0.0	58.1	2.3	41.9	-47.0
85-89	39.5	0.0	59.5	1.0	40.5	-50.4
90-94	39.5	0.0	60.1	0.3	39.9	-52.1
95-100	39.5	0.0	60.5	0.0	39.5	-53.0

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

Figure 15 (National asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2005 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.2	100.0	3.1	Only poor targeted
5-9	2.7	98.4	6.8	59.7:1
10-14	5.4	96.5	13.2	27.2:1
15-19	9.4	93.5	22.1	14.3:1
20-24	13.7	90.7	31.5	9.7:1
25-29	21.4	84.7	45.8	5.5:1
30-34	29.0	79.4	58.3	3.9:1
35-39	38.2	73.1	70.8	2.7:1
40-44	50.8	65.6	84.3	1.9:1
45-49	60.7	59.9	91.9	1.5:1
50-54	69.5	54.3	95.6	1.2:1
55-59	77.1	50.1	97.8	1.0:1
60-64	83.4	46.9	98.9	0.9:1
65-69	88.5	44.5	99.5	0.8:1
70-74	92.5	42.6	99.8	0.7:1
75-79	95.8	41.2	99.9	0.7:1
80-84	97.7	40.5	100.0	0.7:1
85-89	99.0	39.9	100.0	0.7:1
90-94	99.7	39.7	100.0	0.7:1
95-100	100.0	39.5	100.0	0.7:1

125% of the National Asset Poverty Line Tables

2006 Scorecard Applied to the 2005 ENIGH

Figure 8 (125% of national asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2005 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-0.6	0.3	0.3	0.3
5-9	-2.1	1.2	1.2	1.2
10-14	-3.8	2.3	2.4	2.5
15-19	-1.6	1.7	2.0	2.6
20-24	+1.7	2.0	2.3	3.0
25-29	+8.1	2.1	2.4	3.1
30-34	+3.6	2.4	2.9	3.7
35-39	+3.3	2.3	2.8	3.5
40-44	+4.4	2.0	2.4	3.3
45-49	-1.1	2.4	2.9	3.7
50-54	+3.7	2.2	2.5	3.3
55-59	+4.3	2.3	2.8	3.9
60-64	+7.9	1.9	2.2	2.9
65-69	-0.7	2.3	2.6	3.4
70-74	-1.0	2.3	2.7	3.4
75-79	-0.7	1.7	2.0	2.6
80-84	+1.1	1.1	1.3	1.7
85-89	+3.0	0.6	0.7	0.9
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (125% of national asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2005 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+3.0	70.9	77.5	90.1
4	+1.7	34.6	40.0	53.1
8	+1.8	26.5	31.7	39.7
16	+2.6	18.7	22.2	30.0
32	+2.9	13.2	16.4	22.5
64	+2.9	9.5	11.3	14.6
128	+2.7	6.8	8.0	10.3
256	+2.7	4.7	5.7	7.6
512	+2.5	3.5	4.2	5.3
1,024	+2.6	2.4	2.9	3.9
2,048	+2.6	1.7	2.0	2.5
4,096	+2.6	1.2	1.4	1.9
8,192	+2.6	0.8	1.0	1.3
16,384	+2.6	0.6	0.7	0.9

Figure 12 (125% of national asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+2.2	104.5	106.4	108.4
4	-0.5	50.1	59.1	73.7
8	-0.3	36.8	42.5	57.5
16	+0.9	26.6	31.7	44.5
32	+1.1	18.7	22.0	30.0
64	+1.2	13.2	16.2	21.7
128	+1.3	9.5	11.2	14.3
256	+1.4	7.1	8.4	11.2
512	+1.2	4.8	5.8	7.7
1,024	+1.2	3.4	4.1	5.3
2,048	+1.3	2.3	2.7	3.7
4,096	+1.2	1.7	2.1	2.6
8,192	+1.3	1.2	1.4	1.9
16,384	+1.3	0.8	1.0	1.3

Figure 14 (125% of national asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2005 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
	0-4	1.2	49.6	0.0	49.1	50.4
5-9	2.7	48.1	0.0	49.1	51.9	-89.3
10-14	5.3	45.5	0.1	49.1	54.4	-78.8
15-19	9.1	41.8	0.3	48.9	57.9	-63.7
20-24	13.1	37.8	0.6	48.5	61.6	-47.2
25-29	19.6	31.3	1.8	47.3	66.9	-19.4
30-34	25.7	25.2	3.4	45.8	71.4	+7.5
35-39	32.3	18.5	5.9	43.2	75.5	+38.8
40-44	39.7	11.2	11.2	38.0	77.7	+78.0
45-49	44.3	6.5	16.3	32.8	77.1	+67.9
50-54	47.1	3.7	22.4	26.8	73.9	+56.0
55-59	48.8	2.0	28.3	20.9	69.7	+44.4
60-64	49.7	1.1	33.6	15.5	65.3	+33.9
65-69	50.3	0.5	38.1	11.0	61.3	+25.0
70-74	50.6	0.2	41.9	7.2	57.9	+17.6
75-79	50.8	0.1	45.0	4.1	54.9	+11.4
80-84	50.8	0.0	46.8	2.3	53.2	+7.9
85-89	50.9	0.0	48.1	1.0	51.9	+5.3
90-94	50.9	0.0	48.8	0.3	51.2	+4.0
95-100	50.9	0.0	49.1	0.0	50.9	+3.3

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

Figure 15 (125% of national asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2005 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.2	100.0	2.4	Only poor targeted
5-9	2.7	99.5	5.4	204.7:1
10-14	5.4	98.3	10.5	56.5:1
15-19	9.4	96.9	17.9	31.5:1
20-24	13.7	95.3	25.7	20.4:1
25-29	21.4	91.5	38.5	10.8:1
30-34	29.0	88.4	50.5	7.6:1
35-39	38.2	84.5	63.6	5.5:1
40-44	50.8	78.0	78.0	3.6:1
45-49	60.7	73.1	87.2	2.7:1
50-54	69.5	67.8	92.7	2.1:1
55-59	77.1	63.3	96.1	1.7:1
60-64	83.4	59.7	97.8	1.5:1
65-69	88.5	56.9	99.0	1.3:1
70-74	92.5	54.7	99.6	1.2:1
75-79	95.8	53.0	99.9	1.1:1
80-84	97.7	52.1	100.0	1.1:1
85-89	99.0	51.4	100.0	1.1:1
90-94	99.7	51.0	100.0	1.0:1
95-100	100.0	50.9	100.0	1.0:1

150% of the National Asset Poverty Line Tables

2006 Scorecard Applied to the 2005 ENIGH

Figure 8 (150% of national asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2005 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	+0.0	0.0	0.0	0.0
5-9	-0.2	0.1	0.1	0.1
10-14	-1.0	0.8	0.8	0.8
15-19	+1.4	1.6	1.9	2.4
20-24	+0.6	1.5	1.8	2.3
25-29	+3.4	1.6	1.8	2.2
30-34	+3.1	1.9	2.3	2.9
35-39	+0.2	2.2	2.5	3.3
40-44	+5.3	1.9	2.3	3.2
45-49	-3.5	3.0	3.1	3.6
50-54	+1.9	2.5	2.9	3.9
55-59	-1.1	2.7	3.1	4.4
60-64	+2.4	2.7	3.1	4.2
65-69	+1.7	2.5	3.1	4.0
70-74	+0.3	3.1	3.7	4.9
75-79	-0.6	2.1	2.4	3.1
80-84	+2.9	2.6	3.1	4.3
85-89	+0.7	2.2	2.7	3.4
90-94	-1.6	1.9	2.2	2.7
95-100	+0.0	0.0	0.0	0.0

Figure 10 (150% of national asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2005 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+2.2	69.4	76.6	88.3
4	+1.6	35.0	41.3	57.6
8	+0.7	25.6	30.1	41.8
16	+1.2	18.8	22.3	29.6
32	+1.6	13.6	15.7	21.5
64	+1.5	9.5	11.5	14.6
128	+1.3	6.9	8.2	10.8
256	+1.2	4.8	5.7	7.1
512	+1.2	3.4	4.1	5.3
1,024	+1.2	2.5	2.9	4.0
2,048	+1.2	1.7	2.1	2.5
4,096	+1.2	1.2	1.4	1.9
8,192	+1.2	0.8	1.0	1.4
16,384	+1.2	0.6	0.7	0.9

Figure 12 (150% of national asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+4.2	102.9	105.5	109.4
4	+0.9	50.7	60.1	75.5
8	+0.0	35.7	43.8	56.6
16	+0.5	27.1	32.1	42.3
32	+0.8	19.1	22.6	29.7
64	+0.9	13.9	16.1	21.7
128	+1.0	9.3	11.3	14.6
256	+1.1	6.7	8.2	10.5
512	+1.1	4.7	5.6	7.3
1,024	+1.0	3.4	4.1	5.2
2,048	+1.1	2.3	2.8	3.7
4,096	+1.1	1.7	2.0	2.5
8,192	+1.1	1.2	1.5	1.9
16,384	+1.1	0.8	1.0	1.3

Figure 14 (150% of national asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2005 ENIGH

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line non-targeted	Inclusion + Exclusion	See text
0-4	1.2	58.7	0.0	40.0	41.3	-95.9
5-9	2.7	57.3	0.0	40.0	42.7	-90.9
10-14	5.4	54.6	0.0	40.0	45.4	-82.0
15-19	9.2	50.8	0.2	39.8	49.0	-69.1
20-24	13.4	46.6	0.4	39.7	53.1	-54.8
25-29	20.4	39.6	1.0	39.0	59.4	-30.4
30-34	27.1	32.9	1.9	38.1	65.2	-6.5
35-39	34.7	25.3	3.6	36.4	71.1	+21.6
40-44	43.5	16.5	7.3	32.7	76.2	+57.3
45-49	49.5	10.5	11.2	28.8	78.4	+81.4
50-54	53.6	6.4	15.9	24.1	77.8	+73.5
55-59	56.4	3.6	20.7	19.3	75.7	+65.5
60-64	58.0	1.9	25.3	14.7	72.7	+57.8
65-69	58.9	1.0	29.5	10.5	69.4	+50.8
70-74	59.6	0.4	33.0	7.0	66.6	+45.0
75-79	59.8	0.2	36.0	4.0	63.8	+39.9
80-84	59.9	0.1	37.7	2.3	62.2	+37.1
85-89	60.0	0.0	39.0	1.0	61.0	+34.9
90-94	60.0	0.0	39.7	0.3	60.3	+33.8
95-100	60.0	0.0	40.0	0.0	60.0	+33.3

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

Figure 15 (150% of national asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2005 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.2	100.0	2.1	Only poor targeted
5-9	2.7	99.9	4.6	891.1:1
10-14	5.4	99.3	9.0	141.9:1
15-19	9.4	98.0	15.3	50.2:1
20-24	13.7	97.4	22.3	38.1:1
25-29	21.4	95.2	34.0	19.8:1
30-34	29.0	93.4	45.2	14.1:1
35-39	38.2	90.6	57.8	9.7:1
40-44	50.8	85.6	72.6	6.0:1
45-49	60.7	81.6	82.6	4.4:1
50-54	69.5	77.1	89.4	3.4:1
55-59	77.1	73.2	94.1	2.7:1
60-64	83.4	69.6	96.8	2.3:1
65-69	88.5	66.6	98.3	2.0:1
70-74	92.5	64.4	99.3	1.8:1
75-79	95.8	62.4	99.7	1.7:1
80-84	97.7	61.4	99.9	1.6:1
85-89	99.0	60.6	100.0	1.5:1
90-94	99.7	60.2	100.0	1.5:1
95-100	100.0	60.0	100.0	1.5:1

USAID “Extreme” Poverty Line Tables
2006 Scorecard Applied to the 2005 ENIGH

Figure 8 (USAID “extreme” line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2005 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-11.4	7.4	7.7	8.2
5-9	+10.4	6.0	7.3	10.0
10-14	-19.4	11.8	12.2	12.9
15-19	+6.3	3.8	4.6	6.1
20-24	+2.0	3.6	4.4	5.7
25-29	+4.6	2.8	3.2	4.4
30-34	+2.8	2.6	3.1	4.1
35-39	+7.1	2.1	2.5	3.1
40-44	+2.6	1.4	1.6	2.1
45-49	+3.6	1.1	1.3	1.8
50-54	+1.3	0.7	0.8	1.1
55-59	+1.3	0.7	0.8	0.9
60-64	+2.7	0.7	0.8	1.0
65-69	+0.2	0.4	0.4	0.6
70-74	+0.4	0.2	0.2	0.2
75-79	-0.2	0.4	0.4	0.5
80-84	+0.3	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (USAID “extreme” line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2005 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-0.4	57.4	66.4	75.4
4	+0.8	31.0	36.9	49.0
8	+1.6	23.1	27.1	35.3
16	+2.0	15.8	19.0	25.6
32	+2.0	11.3	13.4	16.8
64	+2.2	7.9	9.1	11.8
128	+2.1	5.5	6.6	8.5
256	+2.2	4.0	4.7	6.1
512	+2.2	2.8	3.3	4.3
1,024	+2.2	1.9	2.3	3.1
2,048	+2.2	1.4	1.7	2.1
4,096	+2.2	1.0	1.2	1.5
8,192	+2.2	0.7	0.8	1.1
16,384	+2.2	0.5	0.6	0.7

Figure 12 (USAID “extreme” line): Differences and precision of differences for bootstrapped estimates of changes in group’s poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+0.8	101.5	105.9	106.2
4	+1.2	46.0	53.9	70.3
8	+1.4	30.5	37.2	51.4
16	+1.1	22.2	26.1	36.4
32	+1.1	14.7	17.7	23.8
64	+1.3	10.3	12.6	17.3
128	+1.2	7.3	8.4	11.4
256	+1.3	5.3	6.2	8.3
512	+1.3	3.8	4.5	5.8
1,024	+1.4	2.6	3.1	4.1
2,048	+1.4	1.8	2.1	2.9
4,096	+1.3	1.3	1.5	2.0
8,192	+1.3	0.9	1.1	1.4
16,384	+1.3	0.7	0.8	1.0

Figure 14 (USAID “extreme” line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2005 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0-4	1.1	17.8	0.1	80.9	82.1	-87.6
5-9	2.2	16.7	0.5	80.6	82.8	-73.8
10-14	4.0	14.9	1.4	79.7	83.7	-50.1
15-19	6.3	12.6	3.1	78.0	84.3	-17.3
20-24	8.4	10.6	5.4	75.7	84.1	+16.7
25-29	11.4	7.6	10.0	71.0	82.4	+47.0
30-34	13.6	5.3	15.4	65.6	79.2	+18.5
35-39	15.6	3.3	22.6	58.4	74.0	-19.5
40-44	17.4	1.5	33.4	47.7	65.1	-76.4
45-49	18.2	0.7	42.5	38.6	56.8	-124.3
50-54	18.6	0.4	50.9	30.1	48.7	-169.1
55-59	18.8	0.2	58.4	22.7	41.5	-208.3
60-64	18.9	0.1	64.5	16.6	35.4	-240.8
65-69	18.9	0.0	69.6	11.5	30.4	-267.4
70-74	18.9	0.0	73.6	7.4	26.4	-288.9
75-79	18.9	0.0	76.9	4.2	23.1	-306.2
80-84	18.9	0.0	78.7	2.3	21.3	-315.8
85-89	18.9	0.0	80.1	1.0	19.9	-322.9
90-94	18.9	0.0	80.7	0.3	19.3	-326.4
95-100	18.9	0.0	81.1	0.0	18.9	-328.2

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

Figure 15 (USAID “extreme” line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2005 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.2	90.3	5.9	9.3:1
5-9	2.7	81.4	11.8	4.4:1
10-14	5.4	74.2	21.3	2.9:1
15-19	9.4	67.2	33.2	2.0:1
20-24	13.7	60.9	44.2	1.6:1
25-29	21.4	53.1	60.0	1.1:1
30-34	29.0	46.8	71.8	0.9:1
35-39	38.2	40.8	82.5	0.7:1
40-44	50.8	34.3	92.1	0.5:1
45-49	60.7	30.0	96.2	0.4:1
50-54	69.5	26.7	98.1	0.4:1
55-59	77.1	24.3	99.1	0.3:1
60-64	83.4	22.6	99.6	0.3:1
65-69	88.5	21.4	99.9	0.3:1
70-74	92.5	20.4	99.9	0.3:1
75-79	95.8	19.8	100.0	0.2:1
80-84	97.7	19.4	100.0	0.2:1
85-89	99.0	19.1	100.0	0.2:1
90-94	99.7	19.0	100.0	0.2:1
95-100	100.0	18.9	100.0	0.2:1

\$1.25/day 2005 PPP Poverty Line Tables

2006 Scorecard Applied to the 2005 ENIGH

Figure 8 (\$1.25/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2005 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-7.0	6.8	7.4	9.3
5-9	+6.1	4.6	5.6	7.1
10-14	-5.2	4.3	4.6	5.2
15-19	-1.4	1.8	2.1	2.6
20-24	+0.6	1.0	1.2	1.5
25-29	-0.1	1.1	1.2	1.7
30-34	-1.7	1.3	1.4	1.6
35-39	-2.1	1.5	1.6	1.8
40-44	+0.5	0.5	0.6	0.8
45-49	-0.1	0.1	0.1	0.2
50-54	-0.1	0.1	0.2	0.2
55-59	-0.2	0.2	0.2	0.2
60-64	+0.1	0.0	0.0	0.0
65-69	-0.1	0.1	0.1	0.1
70-74	+0.0	0.0	0.0	0.0
75-79	-0.3	0.4	0.4	0.5
80-84	+0.0	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (\$1.25/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2005 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.1	2.4	41.3	61.0
4	-0.2	8.1	15.7	28.7
8	-0.5	8.7	12.9	18.4
16	-0.4	6.5	8.3	11.5
32	-0.4	4.4	5.2	7.2
64	-0.4	3.2	3.8	5.0
128	-0.5	2.2	2.6	3.8
256	-0.5	1.7	2.0	3.0
512	-0.5	1.2	1.4	2.0
1,024	-0.5	0.8	1.0	1.3
2,048	-0.5	0.6	0.7	0.9
4,096	-0.4	0.4	0.5	0.6
8,192	-0.4	0.3	0.4	0.5
16,384	-0.4	0.2	0.2	0.3

Figure 12 (\$1.25/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.3	2.1	50.0	100.5
4	-0.1	11.9	21.8	41.4
8	-0.4	11.8	18.6	27.4
16	-0.4	9.1	12.0	16.0
32	-0.5	6.2	7.7	10.4
64	-0.4	4.1	5.0	6.8
128	-0.5	2.9	3.5	4.9
256	-0.5	2.1	2.5	3.4
512	-0.5	1.4	1.7	2.4
1,024	-0.5	1.0	1.1	1.5
2,048	-0.4	0.7	0.8	1.1
4,096	-0.4	0.5	0.6	0.8
8,192	-0.4	0.3	0.4	0.5
16,384	-0.4	0.2	0.3	0.4

Figure 14 (\$1.25/day 2005 PPP line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2005 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
	0-4	0.4	1.8	0.8	96.9	97.3
5-9	0.7	1.6	2.1	95.7	96.4	+7.3
10-14	0.9	1.3	4.5	93.3	94.2	-102.8
15-19	1.2	1.0	8.2	89.6	90.8	-267.1
20-24	1.4	0.8	12.3	85.4	86.8	-454.9
25-29	1.7	0.6	19.7	78.0	79.7	-787.9
30-34	1.8	0.4	27.2	70.6	72.4	-1,122.2
35-39	2.0	0.2	36.2	61.5	63.6	-1,529.9
40-44	2.1	0.1	48.7	49.1	51.2	-2,091.0
45-49	2.2	0.1	58.5	39.2	41.4	-2,532.9
50-54	2.2	0.0	67.3	30.4	32.6	-2,929.2
55-59	2.2	0.0	74.9	22.8	25.0	-3,270.6
60-64	2.2	0.0	81.2	16.6	18.8	-3,551.2
65-69	2.2	0.0	86.3	11.5	13.7	-3,779.9
70-74	2.2	0.0	90.3	7.4	9.7	-3,963.4
75-79	2.2	0.0	93.6	4.2	6.4	-4,111.2
80-84	2.2	0.0	95.4	2.3	4.6	-4,192.9
85-89	2.2	0.0	96.8	1.0	3.2	-4,253.0
90-94	2.2	0.0	97.4	0.3	2.6	-4,283.4
95-100	2.2	0.0	97.8	0.0	2.2	-4,298.4

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

Figure 15 (\$1.25/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2005 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.2	31.3	17.4	0.5:1
5-9	2.7	24.6	30.3	0.3:1
10-14	5.4	16.9	41.3	0.2:1
15-19	9.4	12.9	54.2	0.1:1
20-24	13.7	10.2	63.0	0.1:1
25-29	21.4	7.7	74.5	0.1:1
30-34	29.0	6.3	82.7	0.1:1
35-39	38.2	5.3	90.4	0.1:1
40-44	50.8	4.2	95.9	0.0:1
45-49	60.7	3.6	97.0	0.0:1
50-54	69.5	3.1	97.9	0.0:1
55-59	77.1	2.9	99.0	0.0:1
60-64	83.4	2.6	99.1	0.0:1
65-69	88.5	2.5	99.3	0.0:1
70-74	92.5	2.4	99.4	0.0:1
75-79	95.8	2.3	100.0	0.0:1
80-84	97.7	2.3	100.0	0.0:1
85-89	99.0	2.2	100.0	0.0:1
90-94	99.7	2.2	100.0	0.0:1
95-100	100.0	2.2	100.0	0.0:1

\$2.50/day 2005 PPP Poverty Line Tables

2006 Scorecard Applied to the 2005 ENIGH

Figure 8 (\$2.50/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2005 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-6.8	6.5	7.5	9.6
5-9	+3.4	6.4	7.7	10.2
10-14	-14.0	9.4	9.9	10.6
15-19	+1.1	3.6	4.3	5.5
20-24	-2.2	3.1	3.7	4.9
25-29	+0.5	2.0	2.4	3.1
30-34	-7.1	4.6	4.9	5.4
35-39	-0.4	1.4	1.6	2.1
40-44	+0.5	1.0	1.1	1.5
45-49	+1.2	0.5	0.5	0.7
50-54	+0.6	0.3	0.3	0.4
55-59	+0.2	0.2	0.2	0.3
60-64	+0.2	0.1	0.1	0.2
65-69	+0.2	0.1	0.1	0.1
70-74	+0.0	0.0	0.0	0.0
75-79	-0.3	0.4	0.4	0.5
80-84	+0.0	0.0	0.0	0.0
85-89	+0.0	0.0	0.0	0.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (\$2.50/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2005 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-2.1	47.7	59.0	69.8
4	-1.0	23.2	30.2	41.3
8	-1.1	16.8	20.7	28.7
16	-1.0	11.9	13.8	18.3
32	-0.8	8.8	10.7	14.3
64	-0.7	6.1	7.2	9.6
128	-0.7	4.4	5.0	6.7
256	-0.7	3.1	3.7	4.8
512	-0.7	2.0	2.4	3.4
1,024	-0.7	1.5	1.7	2.2
2,048	-0.7	1.1	1.3	1.7
4,096	-0.7	0.8	0.9	1.2
8,192	-0.7	0.5	0.6	0.8
16,384	-0.7	0.4	0.4	0.6

Figure 12 (\$2.50/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2005 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.4	52.1	99.9	104.1
4	-0.6	33.2	44.5	59.4
8	-0.7	23.5	28.4	41.6
16	-0.8	15.7	18.8	25.5
32	-0.7	11.7	13.4	18.2
64	-0.6	7.6	8.9	12.2
128	-0.7	5.5	6.2	8.4
256	-0.7	3.8	4.7	5.9
512	-0.6	2.7	3.2	4.0
1,024	-0.6	1.9	2.3	3.0
2,048	-0.6	1.3	1.6	2.1
4,096	-0.6	0.9	1.1	1.4
8,192	-0.6	0.7	0.8	1.1
16,384	-0.6	0.5	0.6	0.7

Figure 14 (\$2.50/day 2005 PPP line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2005 ENIGH

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line non-targeted	Inclusion + Exclusion	See text
0-4	0.9	8.4	0.3	90.3	91.3	-76.9
5-9	1.9	7.5	0.9	89.8	91.6	-51.0
10-14	2.9	6.4	2.5	88.1	91.1	-10.8
15-19	4.3	5.0	5.0	85.6	90.0	+46.4
20-24	5.4	4.0	8.3	82.3	87.7	+11.0
25-29	6.7	2.7	14.7	75.9	82.6	-57.2
30-34	7.7	1.7	21.3	69.3	77.0	-127.7
35-39	8.4	1.0	29.8	60.8	69.2	-218.5
40-44	9.0	0.3	41.8	48.8	57.9	-346.2
45-49	9.2	0.1	51.5	39.2	48.4	-449.4
50-54	9.3	0.1	60.2	30.4	39.7	-542.9
55-59	9.3	0.0	67.8	22.8	32.2	-623.8
60-64	9.3	0.0	74.0	16.6	26.0	-690.3
65-69	9.4	0.0	79.1	11.5	20.9	-744.5
70-74	9.4	0.0	83.2	7.4	16.8	-788.1
75-79	9.4	0.0	86.5	4.2	13.5	-823.1
80-84	9.4	0.0	88.3	2.3	11.7	-842.5
85-89	9.4	0.0	89.6	1.0	10.4	-856.8
90-94	9.4	0.0	90.3	0.3	9.7	-864.0
95-100	9.4	0.0	90.6	0.0	9.4	-867.6

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

Figure 15 (\$2.50/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2005 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.2	75.1	9.9	3.0:1
5-9	2.7	67.8	19.8	2.1:1
10-14	5.4	54.1	31.3	1.2:1
15-19	9.4	46.4	46.4	0.9:1
20-24	13.7	39.3	57.7	0.6:1
25-29	21.4	31.2	71.2	0.5:1
30-34	29.0	26.5	82.0	0.4:1
35-39	38.2	22.0	89.8	0.3:1
40-44	50.8	17.8	96.5	0.2:1
45-49	60.7	15.2	98.5	0.2:1
50-54	69.5	13.4	99.3	0.2:1
55-59	77.1	12.1	99.6	0.1:1
60-64	83.4	11.2	99.8	0.1:1
65-69	88.5	10.6	99.8	0.1:1
70-74	92.5	10.1	99.9	0.1:1
75-79	95.8	9.8	100.0	0.1:1
80-84	97.7	9.6	100.0	0.1:1
85-89	99.0	9.5	100.0	0.1:1
90-94	99.7	9.4	100.0	0.1:1
95-100	100.0	9.4	100.0	0.1:1

National Food Poverty Line Tables
2006 Scorecard Applied to the 2004 ENIGH

Figure 8 (National food line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2004 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-3.3	6.2	7.5	9.6
5-9	+1.5	6.7	8.2	9.9
10-14	-3.0	5.0	5.8	7.5
15-19	+2.8	3.6	4.4	5.2
20-24	+4.3	3.3	3.9	5.0
25-29	-2.8	2.5	2.8	3.9
30-34	-0.2	2.0	2.4	3.0
35-39	+0.7	1.8	2.1	2.7
40-44	-0.9	1.2	1.4	1.8
45-49	+0.8	1.2	1.3	2.0
50-54	-1.7	1.4	1.5	1.7
55-59	+0.5	0.3	0.4	0.5
60-64	+0.1	0.2	0.2	0.3
65-69	-0.5	0.7	0.8	1.1
70-74	-0.4	0.4	0.4	0.5
75-79	-0.2	0.3	0.3	0.4
80-84	+0.0	0.0	0.0	0.0
85-89	-0.1	0.2	0.2	0.3
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (National food line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2004 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-0.3	58.8	67.2	84.2
4	+0.4	29.4	35.8	48.2
8	-0.5	22.1	25.3	35.8
16	+0.0	14.6	18.4	24.3
32	-0.1	11.3	13.2	17.7
64	-0.0	8.1	9.4	12.3
128	-0.1	5.7	6.5	7.8
256	-0.1	4.0	4.7	6.3
512	-0.2	2.7	3.2	4.2
1,024	-0.2	1.9	2.4	2.9
2,048	-0.2	1.3	1.6	2.0
4,096	-0.2	1.0	1.1	1.6
8,192	-0.2	0.7	0.8	1.1
16,384	-0.2	0.5	0.6	0.7

Figure 12 (National food line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+0.5	97.2	103.3	107.0
4	+0.5	39.0	47.3	64.9
8	-0.5	27.2	33.5	47.9
16	-0.3	18.0	21.6	31.3
32	-0.3	13.2	15.8	22.4
64	-0.4	9.8	11.5	15.6
128	-0.5	6.8	8.1	10.0
256	-0.5	4.9	5.7	7.3
512	-0.5	3.2	3.9	5.6
1,024	-0.5	2.3	2.8	3.7
2,048	-0.5	1.6	2.0	2.7
4,096	-0.4	1.2	1.5	1.8
8,192	-0.4	0.8	1.0	1.3
16,384	-0.4	0.6	0.7	0.9

Figure 14 (National food line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2004 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0-4	1.3	12.7	0.2	85.9	87.1	-80.1
5-9	2.2	11.7	0.5	85.5	87.8	-64.4
10-14	3.4	10.5	1.7	84.3	87.7	-38.4
15-19	5.6	8.3	4.1	82.0	87.6	+9.8
20-24	7.2	6.8	7.2	78.8	86.0	+48.2
25-29	9.6	4.3	13.1	72.9	82.5	+5.9
30-34	11.0	3.0	19.5	66.5	77.5	-39.9
35-39	12.1	1.9	27.9	58.2	70.2	-100.0
40-44	13.2	0.8	39.7	46.4	59.5	-184.6
45-49	13.6	0.4	48.7	37.4	50.9	-248.9
50-54	13.8	0.2	57.9	28.1	41.9	-315.2
55-59	13.8	0.1	64.6	21.5	35.3	-362.8
60-64	13.9	0.1	70.6	15.4	29.3	-406.4
65-69	13.9	0.0	75.5	10.6	24.5	-441.1
70-74	13.9	0.0	79.2	6.8	20.8	-467.8
75-79	13.9	0.0	82.3	3.8	17.7	-489.9
80-84	13.9	0.0	84.3	1.8	15.7	-504.0
85-89	13.9	0.0	85.5	0.6	14.5	-512.9
90-94	13.9	0.0	85.8	0.2	14.2	-515.3
95-100	13.9	0.0	86.1	0.0	13.9	-516.9

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

Figure 15 (National food line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2004 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.5	86.7	9.3	6.5:1
5-9	2.7	81.6	16.0	4.4:1
10-14	5.2	66.2	24.5	2.0:1
15-19	9.7	57.9	40.3	1.4:1
20-24	14.4	49.9	51.6	1.0:1
25-29	22.7	42.3	68.9	0.7:1
30-34	30.5	36.0	78.7	0.6:1
35-39	40.0	30.2	86.6	0.4:1
40-44	52.9	24.9	94.5	0.3:1
45-49	62.2	21.8	97.3	0.3:1
50-54	71.7	19.2	98.9	0.2:1
55-59	78.4	17.7	99.2	0.2:1
60-64	84.5	16.4	99.5	0.2:1
65-69	89.4	15.6	99.7	0.2:1
70-74	93.1	15.0	99.9	0.2:1
75-79	96.2	14.5	100.0	0.2:1
80-84	98.2	14.2	100.0	0.2:1
85-89	99.4	14.0	100.0	0.2:1
90-94	99.8	14.0	100.0	0.2:1
95-100	100.0	13.9	100.0	0.2:1

National Capacity Poverty Line Tables
2006 Scorecard Applied to the 2004 ENIGH

Figure 8 (National capacity line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2004 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-4.2	4.6	5.3	7.2
5-9	-1.1	5.4	6.4	8.1
10-14	-8.0	6.3	6.6	7.6
15-19	-3.3	3.4	4.1	5.7
20-24	-0.2	3.7	4.4	6.2
25-29	+1.9	2.7	3.3	4.2
30-34	+0.8	2.4	2.8	3.7
35-39	-0.3	2.1	2.5	3.3
40-44	-1.5	1.5	1.8	2.3
45-49	+1.4	1.4	1.6	2.2
50-54	-3.5	2.5	2.6	2.9
55-59	+0.9	0.5	0.6	0.9
60-64	+2.0	0.3	0.4	0.5
65-69	-0.3	0.7	0.8	1.1
70-74	+0.1	0.3	0.4	0.5
75-79	-0.2	0.3	0.3	0.4
80-84	+0.0	0.0	0.0	0.0
85-89	-0.1	0.2	0.2	0.3
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (National capacity line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2004 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-0.1	63.9	67.6	79.5
4	+0.3	34.6	41.0	51.1
8	-0.8	24.9	29.3	38.0
16	-0.2	17.4	20.6	26.3
32	-0.3	12.6	15.2	21.0
64	-0.4	9.0	10.6	14.1
128	-0.5	6.4	7.8	9.6
256	-0.5	4.4	5.2	6.8
512	-0.5	3.0	3.7	4.7
1,024	-0.5	2.2	2.7	3.6
2,048	-0.5	1.5	1.8	2.4
4,096	-0.5	1.1	1.3	1.6
8,192	-0.5	0.8	0.9	1.2
16,384	-0.5	0.6	0.7	0.8

Figure 12 (National capacity line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+1.6	100.1	101.6	106.7
4	+0.7	42.7	53.2	71.3
8	-0.6	30.8	37.5	51.4
16	-0.4	22.0	26.2	34.8
32	-0.6	15.6	18.4	24.3
64	-0.7	10.9	12.5	16.4
128	-0.9	8.1	9.6	12.7
256	-0.9	5.6	6.5	8.1
512	-0.9	3.6	4.4	6.0
1,024	-0.8	2.7	3.3	4.2
2,048	-0.8	1.9	2.2	2.9
4,096	-0.8	1.3	1.6	2.2
8,192	-0.8	1.0	1.2	1.5
16,384	-0.8	0.7	0.8	1.1

Figure 14 (National capacity line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2004 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0-4	1.4	18.9	0.1	79.6	81.0	-85.8
5-9	2.5	17.8	0.2	79.5	81.9	-74.2
10-14	4.1	16.2	1.0	78.7	82.8	-54.2
15-19	7.1	13.2	2.6	77.1	84.2	-17.2
20-24	9.5	10.8	4.9	74.8	84.2	+17.7
25-29	12.9	7.4	9.8	69.9	82.8	+51.8
30-34	15.1	5.2	15.4	64.3	79.5	+24.3
35-39	17.0	3.3	23.0	56.7	73.8	-13.1
40-44	18.9	1.4	33.9	45.7	64.7	-67.2
45-49	19.6	0.7	42.6	37.0	56.6	-110.0
50-54	20.0	0.3	51.7	28.0	48.0	-154.5
55-59	20.2	0.2	58.2	21.4	41.6	-186.8
60-64	20.2	0.1	64.3	15.4	35.6	-216.6
65-69	20.3	0.0	69.1	10.6	30.8	-240.4
70-74	20.3	0.0	72.9	6.8	27.1	-258.7
75-79	20.3	0.0	75.9	3.8	24.1	-273.9
80-84	20.3	0.0	77.9	1.8	22.1	-283.6
85-89	20.3	0.0	79.1	0.6	20.9	-289.7
90-94	20.3	0.0	79.5	0.2	20.5	-291.3
95-100	20.3	0.0	79.7	0.0	20.3	-292.4

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

Figure 15 (National capacity line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2004 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.5	93.7	6.9	14.8:1
5-9	2.7	91.2	12.3	10.4:1
10-14	5.2	79.9	20.3	4.0:1
15-19	9.7	73.3	35.0	2.8:1
20-24	14.4	65.8	46.7	1.9:1
25-29	22.7	56.9	63.7	1.3:1
30-34	30.5	49.6	74.5	1.0:1
35-39	40.0	42.6	83.8	0.7:1
40-44	52.9	35.8	93.2	0.6:1
45-49	62.2	31.5	96.5	0.5:1
50-54	71.7	27.9	98.7	0.4:1
55-59	78.4	25.7	99.2	0.3:1
60-64	84.5	23.9	99.6	0.3:1
65-69	89.4	22.7	99.8	0.3:1
70-74	93.1	21.8	99.9	0.3:1
75-79	96.2	21.1	100.0	0.3:1
80-84	98.2	20.7	100.0	0.3:1
85-89	99.4	20.4	100.0	0.3:1
90-94	99.8	20.4	100.0	0.3:1
95-100	100.0	20.3	100.0	0.3:1

National Asset Poverty Line Tables
2006 Scorecard Applied to the 2004 ENIGH

Figure 8 (National asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2004 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-0.6	0.3	0.3	0.3
5-9	-3.0	1.8	1.8	1.8
10-14	-9.5	5.8	5.9	6.2
15-19	-6.5	4.1	4.3	4.6
20-24	+0.0	2.6	3.1	4.2
25-29	+2.7	2.1	2.5	3.7
30-34	+5.8	2.6	3.1	4.1
35-39	+0.7	2.4	3.0	3.9
40-44	+4.7	2.1	2.4	3.4
45-49	-2.3	2.5	2.9	3.8
50-54	+3.5	2.0	2.3	2.9
55-59	+2.9	1.8	2.2	2.7
60-64	+3.4	1.6	1.9	2.4
65-69	-0.7	1.9	2.2	2.9
70-74	+1.3	1.4	1.6	2.1
75-79	+0.6	0.3	0.4	0.4
80-84	+1.7	0.6	0.7	0.8
85-89	+1.0	0.3	0.3	0.4
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (National asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2004 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+2.6	69.4	74.6	86.2
4	+2.3	37.1	41.5	53.1
8	+1.6	26.8	32.2	42.4
16	+1.5	20.1	23.6	31.0
32	+1.4	14.6	17.4	21.6
64	+1.4	10.1	12.0	15.4
128	+1.3	6.9	8.4	11.5
256	+1.4	4.9	5.9	8.0
512	+1.4	3.5	4.2	5.5
1,024	+1.3	2.5	3.0	4.0
2,048	+1.3	1.7	2.0	2.6
4,096	+1.4	1.2	1.4	1.9
8,192	+1.4	0.9	1.0	1.3
16,384	+1.3	0.6	0.7	0.9

Figure 12 (National asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+2.2	101.5	104.6	100.0
4	+0.5	51.0	61.2	81.7
8	-0.5	37.9	43.8	59.5
16	-0.9	26.6	30.6	40.8
32	-1.3	18.4	22.6	28.4
64	-1.1	12.9	15.4	20.2
128	-1.1	9.5	11.5	15.9
256	-0.9	6.9	8.1	11.2
512	-1.0	4.7	5.6	7.2
1,024	-1.1	3.3	4.0	5.3
2,048	-1.0	2.2	2.7	3.5
4,096	-1.0	1.6	2.1	2.5
8,192	-1.0	1.2	1.4	1.7
16,384	-1.0	0.8	1.0	1.2

Figure 14 (National asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2004 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0-4	1.5	39.3	0.0	59.2	60.7	-92.7
5-9	2.7	38.0	0.0	59.2	62.0	-86.6
10-14	5.0	35.8	0.2	59.0	64.0	-75.2
15-19	9.1	31.6	0.6	58.7	67.8	-53.8
20-24	13.0	27.7	1.4	57.8	70.9	-32.7
25-29	19.3	21.4	3.4	55.9	75.2	+3.3
30-34	24.2	16.5	6.2	53.0	77.2	+34.3
35-39	29.5	11.3	10.5	48.7	78.2	+70.4
40-44	34.6	6.1	18.3	41.0	75.6	+55.2
45-49	37.4	3.3	24.8	34.4	71.8	+39.1
50-54	39.1	1.7	32.7	26.6	65.6	+19.8
55-59	39.9	0.9	38.5	20.7	60.6	+5.5
60-64	40.4	0.4	44.2	15.1	55.5	-8.4
65-69	40.6	0.2	48.8	10.4	51.0	-19.8
70-74	40.7	0.0	52.4	6.8	47.5	-28.7
75-79	40.7	0.0	55.5	3.7	44.5	-36.2
80-84	40.7	0.0	57.5	1.8	42.5	-41.0
85-89	40.7	0.0	58.7	0.6	41.3	-44.0
90-94	40.7	0.0	59.0	0.2	41.0	-44.9
95-100	40.7	0.0	59.3	0.0	40.7	-45.4

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

Figure 15 (National asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2004 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.5	99.9	3.7	1,216.3:1
5-9	2.7	99.5	6.7	200.6:1
10-14	5.2	95.8	12.2	22.8:1
15-19	9.7	94.0	22.4	15.6:1
20-24	14.4	90.2	31.9	9.3:1
25-29	22.7	85.1	47.5	5.7:1
30-34	30.5	79.5	59.5	3.9:1
35-39	40.0	73.7	72.3	2.8:1
40-44	52.9	65.5	85.0	1.9:1
45-49	62.2	60.1	91.8	1.5:1
50-54	71.7	54.5	95.8	1.2:1
55-59	78.4	50.9	97.9	1.0:1
60-64	84.5	47.8	99.1	0.9:1
65-69	89.4	45.4	99.6	0.8:1
70-74	93.1	43.7	99.9	0.8:1
75-79	96.2	42.3	99.9	0.7:1
80-84	98.2	41.5	100.0	0.7:1
85-89	99.4	41.0	100.0	0.7:1
90-94	99.8	40.8	100.0	0.7:1
95-100	100.0	40.7	100.0	0.7:1

125% of the National Asset Poverty Line Tables

2006 Scorecard Applied to the 2004 ENIGH

Figure 8 (125% of national asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2004 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-0.6	0.3	0.3	0.3
5-9	-2.0	1.2	1.2	1.2
10-14	-3.7	2.4	2.5	2.7
15-19	-3.8	2.4	2.5	2.7
20-24	+1.7	1.7	2.0	2.5
25-29	+3.7	1.7	2.0	2.7
30-34	+0.8	2.0	2.4	3.1
35-39	+4.9	2.3	2.7	3.6
40-44	+7.8	2.1	2.6	3.3
45-49	+0.7	2.5	3.0	4.3
50-54	+4.5	2.3	2.8	3.8
55-59	+2.3	2.7	3.2	4.1
60-64	+4.5	2.4	2.8	3.6
65-69	+2.4	2.0	2.4	3.0
70-74	+3.3	1.6	1.9	2.3
75-79	+1.8	1.1	1.3	1.7
80-84	+0.9	1.3	1.6	2.1
85-89	+2.8	0.7	0.8	1.0
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (125% of national asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2004 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+4.3	64.8	77.5	91.3
4	+3.1	38.2	44.5	54.2
8	+3.4	26.4	32.4	44.8
16	+3.4	19.4	23.6	30.6
32	+3.1	14.4	16.8	23.3
64	+3.0	9.9	12.0	15.6
128	+2.8	7.1	8.4	11.5
256	+2.9	5.0	6.0	7.8
512	+2.8	3.5	4.1	5.3
1,024	+2.9	2.4	2.9	4.0
2,048	+2.9	1.7	2.1	2.7
4,096	+2.9	1.2	1.4	1.8
8,192	+2.9	0.8	1.0	1.3
16,384	+2.9	0.6	0.7	0.9

Figure 12 (125% of national asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+3.5	102.6	105.3	108.4
4	+0.9	52.8	62.8	83.1
8	+1.3	39.3	47.0	61.5
16	+1.6	27.3	33.0	43.3
32	+1.2	18.6	22.6	29.4
64	+1.3	13.6	16.5	21.8
128	+1.3	9.4	11.7	15.4
256	+1.6	7.3	8.8	11.6
512	+1.5	5.0	5.9	8.2
1,024	+1.4	3.6	4.3	5.9
2,048	+1.5	2.4	3.0	3.9
4,096	+1.5	1.7	2.1	2.8
8,192	+1.5	1.2	1.4	2.0
16,384	+1.5	0.9	1.0	1.3

Figure 14 (125% of national asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2004 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
	0-4	1.5	50.2	0.0	48.4	49.8
5-9	2.7	48.9	0.0	48.3	51.1	-89.4
10-14	5.1	46.5	0.1	48.3	53.4	-80.1
15-19	9.5	42.2	0.2	48.1	57.6	-62.9
20-24	13.8	37.9	0.6	47.7	61.5	-45.4
25-29	21.0	30.6	1.7	46.6	67.7	-15.3
30-34	27.2	24.4	3.2	45.1	72.3	+11.8
35-39	34.0	17.7	6.0	42.3	76.3	+43.2
40-44	41.2	10.5	11.7	36.6	77.8	+77.3
45-49	45.3	6.4	16.9	31.4	76.7	+67.2
50-54	48.1	3.5	23.6	24.8	72.9	+54.4
55-59	49.8	1.9	28.6	19.7	69.5	+44.6
60-64	50.8	0.8	33.7	14.7	65.5	+34.8
65-69	51.3	0.4	38.1	10.2	61.5	+26.2
70-74	51.5	0.2	41.6	6.7	58.2	+19.4
75-79	51.6	0.1	44.7	3.7	55.3	+13.5
80-84	51.6	0.0	46.6	1.8	53.4	+9.8
85-89	51.6	0.0	47.8	0.6	52.2	+7.5
90-94	51.6	0.0	48.1	0.2	51.9	+6.8
95-100	51.6	0.0	48.4	0.0	51.6	+6.4

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

Figure 15 (125% of national asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2004 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.5	100.0	2.9	9,307.4:1
5-9	2.7	99.7	5.3	391.8:1
10-14	5.2	98.8	9.9	84.3:1
15-19	9.7	97.7	18.3	41.8:1
20-24	14.4	95.5	26.7	21.4:1
25-29	22.7	92.5	40.7	12.3:1
30-34	30.5	89.3	52.7	8.4:1
35-39	40.0	84.9	65.8	5.6:1
40-44	52.9	77.8	79.7	3.5:1
45-49	62.2	72.8	87.7	2.7:1
50-54	71.7	67.1	93.2	2.0:1
55-59	78.4	63.5	96.4	1.7:1
60-64	84.5	60.1	98.4	1.5:1
65-69	89.4	57.3	99.3	1.3:1
70-74	93.1	55.3	99.7	1.2:1
75-79	96.2	53.6	99.9	1.2:1
80-84	98.2	52.6	100.0	1.1:1
85-89	99.4	51.9	100.0	1.1:1
90-94	99.8	51.8	100.0	1.1:1
95-100	100.0	51.6	100.0	1.1:1

150% of the National Asset Poverty Line Tables

2006 Scorecard Applied to the 2004 ENIGH

Figure 8 (150% of national asset line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2004 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	+0.0	0.0	0.0	0.0
5-9	+0.2	0.6	0.8	1.0
10-14	-1.4	0.9	0.9	0.9
15-19	-0.5	0.9	1.1	1.5
20-24	+1.1	1.3	1.5	2.0
25-29	+3.2	1.5	1.7	2.4
30-34	+3.6	1.8	2.1	2.8
35-39	-0.3	1.9	2.3	3.1
40-44	+6.9	2.0	2.5	3.4
45-49	-5.7	4.0	4.2	4.9
50-54	+5.5	2.5	2.9	4.0
55-59	+1.7	2.9	3.4	4.5
60-64	+2.4	2.8	3.2	4.1
65-69	+1.3	2.8	3.3	4.3
70-74	+9.1	2.2	2.7	3.6
75-79	+1.3	1.9	2.3	3.0
80-84	+2.0	2.8	3.3	4.2
85-89	+3.6	0.8	1.0	1.1
90-94	-0.3	0.6	0.8	1.1
95-100	+0.0	0.0	0.0	0.0

Figure 10 (150% of national asset line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2004 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+2.3	69.4	81.2	88.3
4	+3.1	37.2	45.8	56.8
8	+2.7	26.8	33.0	43.8
16	+2.5	19.3	23.3	29.3
32	+2.3	13.5	15.6	22.2
64	+2.2	9.5	11.3	14.9
128	+2.0	6.8	8.0	10.7
256	+2.2	5.0	5.8	7.3
512	+2.1	3.4	4.0	5.2
1,024	+2.1	2.5	2.9	3.7
2,048	+2.1	1.7	1.9	2.5
4,096	+2.1	1.2	1.3	1.8
8,192	+2.2	0.8	0.9	1.3
16,384	+2.1	0.6	0.7	0.9

Figure 12 (150% of national asset line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+4.3	100.4	104.4	109.4
4	+2.4	54.9	64.4	80.6
8	+2.0	40.0	46.9	59.6
16	+1.8	29.1	33.3	42.7
32	+1.5	19.3	22.7	29.8
64	+1.7	13.9	16.4	20.1
128	+1.6	9.2	11.0	14.2
256	+2.0	7.1	8.5	10.4
512	+2.0	4.8	5.8	7.3
1,024	+2.0	3.5	4.2	5.2
2,048	+2.0	2.3	2.7	3.7
4,096	+2.0	1.6	2.0	2.8
8,192	+2.0	1.2	1.4	1.9
16,384	+2.0	0.8	1.0	1.3

Figure 14 (150% of national asset line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2004 ENIGH

Score	Inclusion:	Undercoverage:	Leakage:	Exclusion:	Total Accuracy	BPAC
	< poverty line correctly targeted	< poverty line mistakenly non-targeted	=> poverty line mistakenly targeted	=> poverty line non-targeted	Inclusion + Exclusion	See text
0-4	1.5	58.9	0.0	39.6	41.1	-95.1
5-9	2.7	57.7	0.0	39.6	42.3	-90.9
10-14	5.1	55.3	0.0	39.6	44.7	-82.9
15-19	9.6	50.8	0.1	39.5	49.0	-68.1
20-24	14.0	46.4	0.4	39.2	53.2	-52.9
25-29	21.7	38.7	1.1	38.5	60.2	-26.5
30-34	28.4	32.0	2.1	37.5	65.9	-2.5
35-39	36.1	24.3	3.9	35.7	71.9	+26.0
40-44	45.1	15.3	7.8	31.8	77.0	+62.3
45-49	50.7	9.7	11.5	28.1	78.8	+80.9
50-54	54.8	5.7	17.0	22.6	77.4	+71.9
55-59	57.2	3.2	21.2	18.4	75.5	+64.8
60-64	58.8	1.6	25.7	13.9	72.7	+57.5
65-69	59.7	0.7	29.7	9.9	69.6	+50.8
70-74	60.1	0.3	33.1	6.5	66.6	+45.2
75-79	60.3	0.2	36.0	3.6	63.9	+40.4
80-84	60.4	0.0	37.8	1.8	62.2	+37.4
85-89	60.4	0.0	39.0	0.5	60.9	+35.4
90-94	60.4	0.0	39.4	0.2	60.6	+34.8
95-100	60.4	0.0	39.6	0.0	60.4	+34.4

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

Figure 15 (150% of national asset line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2004 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.5	100.0	2.5	9,307.4:1
5-9	2.7	99.7	4.5	391.8:1
10-14	5.2	99.6	8.5	232.9:1
15-19	9.7	98.6	15.8	69.0:1
20-24	14.4	97.3	23.2	36.6:1
25-29	22.7	95.2	35.8	20.0:1
30-34	30.5	93.1	47.0	13.5:1
35-39	40.0	90.3	59.8	9.4:1
40-44	52.9	85.3	74.7	5.8:1
45-49	62.2	81.5	84.0	4.4:1
50-54	71.7	76.3	90.6	3.2:1
55-59	78.4	72.9	94.6	2.7:1
60-64	84.5	69.6	97.4	2.3:1
65-69	89.4	66.8	98.8	2.0:1
70-74	93.1	64.5	99.4	1.8:1
75-79	96.2	62.6	99.8	1.7:1
80-84	98.2	61.5	100.0	1.6:1
85-89	99.4	60.7	100.0	1.5:1
90-94	99.8	60.5	100.0	1.5:1
95-100	100.0	60.4	100.0	1.5:1

USAID “Extreme” Poverty Line Tables
2006 Scorecard Applied to the 2004 ENIGH

Figure 8 (USAID “extreme” line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2004 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-1.1	6.3	7.6	9.7
5-9	+2.8	6.1	7.3	9.0
10-14	-8.6	6.8	7.4	8.3
15-19	+1.0	3.6	4.4	5.4
20-24	+1.5	3.6	4.2	5.7
25-29	+4.3	2.6	3.1	4.3
30-34	+5.4	2.3	2.8	3.9
35-39	+6.8	2.1	2.4	3.4
40-44	+1.8	1.5	1.8	2.4
45-49	+2.0	1.4	1.7	2.3
50-54	-2.6	2.0	2.2	2.5
55-59	+1.1	0.7	0.9	1.2
60-64	+3.4	0.3	0.4	0.5
65-69	-0.3	0.7	0.9	1.1
70-74	+0.1	0.3	0.4	0.5
75-79	-0.1	0.3	0.3	0.4
80-84	+0.3	0.0	0.0	0.0
85-89	-0.1	0.2	0.2	0.3
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (USAID “extreme” line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2004 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+2.4	60.5	68.6	88.7
4	+2.5	34.0	39.7	50.9
8	+1.7	24.9	29.3	37.6
16	+2.0	17.7	20.5	26.1
32	+1.9	12.5	14.8	19.4
64	+1.9	9.2	10.8	13.8
128	+1.8	6.5	7.4	10.0
256	+1.9	4.3	5.5	6.9
512	+1.8	3.2	3.8	5.0
1,024	+1.8	2.3	2.8	3.8
2,048	+1.8	1.6	1.8	2.4
4,096	+1.9	1.1	1.3	1.8
8,192	+1.9	0.8	0.9	1.2
16,384	+1.9	0.6	0.7	0.8

Figure 12 (USAID “extreme” line): Differences and precision of differences for bootstrapped estimates of changes in group’s poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	+3.5	100.0	104.4	110.0
4	+2.8	45.2	54.7	72.3
8	+1.5	31.6	39.3	48.3
16	+1.1	22.0	25.9	36.0
32	+1.0	15.6	18.9	24.8
64	+1.0	11.3	13.0	17.3
128	+0.9	7.9	9.7	12.6
256	+1.0	5.6	6.7	8.7
512	+1.0	3.9	4.7	6.1
1,024	+1.0	2.7	3.4	4.5
2,048	+1.0	1.9	2.2	3.0
4,096	+1.0	1.4	1.7	2.2
8,192	+1.0	1.0	1.2	1.5
16,384	+1.0	0.7	0.8	1.0

Figure 14 (USAID “extreme” line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2004 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0-4	1.3	18.7	0.2	79.8	81.1	-86.0
5-9	2.3	17.7	0.4	79.6	81.9	-74.8
10-14	3.8	16.2	1.4	78.6	82.4	-55.2
15-19	6.5	13.5	3.2	76.8	83.4	-18.9
20-24	8.9	11.1	5.5	74.5	83.3	+16.5
25-29	12.3	7.7	10.4	69.6	81.8	+47.8
30-34	14.5	5.5	16.0	64.0	78.5	+19.9
35-39	16.5	3.5	23.5	56.5	72.9	-17.6
40-44	18.4	1.6	34.5	45.5	63.9	-72.4
45-49	19.2	0.9	43.1	36.9	56.1	-115.5
50-54	19.7	0.3	52.1	27.9	47.6	-160.3
55-59	19.8	0.2	58.6	21.4	41.2	-192.9
60-64	19.9	0.1	64.6	15.4	35.3	-223.0
65-69	20.0	0.0	69.4	10.6	30.5	-247.1
70-74	20.0	0.0	73.2	6.8	26.8	-265.8
75-79	20.0	0.0	76.2	3.8	23.8	-281.2
80-84	20.0	0.0	78.2	1.8	21.8	-291.0
85-89	20.0	0.0	79.4	0.6	20.6	-297.2
90-94	20.0	0.0	79.8	0.2	20.2	-298.9
95-100	20.0	0.0	80.0	0.0	20.0	-300.0

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

Figure 15 (USAID “extreme” line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2004 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.5	88.1	6.6	7.4:1
5-9	2.7	84.4	11.6	5.4:1
10-14	5.2	73.4	19.0	2.8:1
15-19	9.7	67.3	32.6	2.1:1
20-24	14.4	61.5	44.4	1.6:1
25-29	22.7	54.1	61.5	1.2:1
30-34	30.5	47.5	72.4	0.9:1
35-39	40.0	41.2	82.3	0.7:1
40-44	52.9	34.8	92.0	0.5:1
45-49	62.2	30.8	95.7	0.4:1
50-54	71.7	27.4	98.3	0.4:1
55-59	78.4	25.3	99.1	0.3:1
60-64	84.5	23.6	99.6	0.3:1
65-69	89.4	22.3	99.8	0.3:1
70-74	93.1	21.5	99.9	0.3:1
75-79	96.2	20.8	100.0	0.3:1
80-84	98.2	20.4	100.0	0.3:1
85-89	99.4	20.1	100.0	0.3:1
90-94	99.8	20.0	100.0	0.3:1
95-100	100.0	20.0	100.0	0.3:1

\$1.25/day 2005 PPP Poverty Line Tables
2006 Scorecard Applied to the 2004 ENIGH

Figure 8 (\$1.25/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2004 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-14.0	10.2	10.9	12.7
5-9	+9.0	4.0	4.6	6.9
10-14	-4.2	3.7	4.1	5.0
15-19	-0.2	1.5	1.7	2.1
20-24	+1.1	1.0	1.3	1.7
25-29	-1.0	1.2	1.4	1.8
30-34	-1.3	1.1	1.2	1.5
35-39	-2.2	1.6	1.6	1.8
40-44	-0.5	0.6	0.8	1.1
45-49	-1.0	0.8	0.9	1.0
50-54	-0.1	0.2	0.2	0.3
55-59	-0.0	0.1	0.1	0.1
60-64	+0.0	0.1	0.1	0.1
65-69	-0.7	0.7	0.8	0.9
70-74	-0.1	0.1	0.2	0.2
75-79	-0.2	0.2	0.3	0.3
80-84	+0.0	0.0	0.0	0.0
85-89	-0.1	0.2	0.2	0.3
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (\$1.25/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2004 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.0	2.4	41.3	60.7
4	-0.7	12.3	17.8	28.3
8	-0.8	10.8	14.2	21.8
16	-0.7	7.6	9.6	12.6
32	-0.6	5.0	6.0	7.6
64	-0.7	3.5	4.2	5.8
128	-0.7	2.7	3.2	4.2
256	-0.7	2.0	2.3	2.8
512	-0.8	1.3	1.6	2.1
1,024	-0.8	1.0	1.2	1.6
2,048	-0.8	0.7	0.8	1.1
4,096	-0.8	0.5	0.6	0.8
8,192	-0.8	0.4	0.4	0.6
16,384	-0.8	0.3	0.3	0.4

Figure 12 (\$1.25/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.1	2.1	46.4	100.9
4	-0.6	13.6	23.9	41.2
8	-0.7	12.9	19.4	29.2
16	-0.7	10.0	12.6	17.3
32	-0.6	6.3	7.8	10.4
64	-0.7	4.4	5.1	7.1
128	-0.7	3.1	3.8	5.3
256	-0.7	2.3	2.7	3.5
512	-0.8	1.5	1.8	2.4
1,024	-0.8	1.1	1.3	1.8
2,048	-0.8	0.8	1.0	1.2
4,096	-0.8	0.6	0.7	0.9
8,192	-0.8	0.4	0.5	0.7
16,384	-0.8	0.3	0.3	0.4

Figure 14 (\$1.25/day 2005 PPP line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2004 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0-4	0.6	2.0	0.9	96.5	97.1	-19.4
5-9	0.8	1.7	1.9	95.5	96.4	+26.2
10-14	1.0	1.5	4.1	93.3	94.3	-61.3
15-19	1.3	1.2	8.4	89.1	90.4	-226.5
20-24	1.5	1.1	12.9	84.5	86.0	-404.0
25-29	1.8	0.7	20.9	76.5	78.4	-714.4
30-34	2.0	0.6	28.5	68.9	70.9	-1,011.1
35-39	2.2	0.4	37.8	59.6	61.8	-1,374.5
40-44	2.4	0.2	50.5	47.0	49.4	-1,868.0
45-49	2.5	0.1	59.8	37.7	40.2	-2,229.9
50-54	2.5	0.1	69.2	28.2	30.7	-2,598.7
55-59	2.5	0.1	75.9	21.5	24.1	-2,858.9
60-64	2.5	0.0	82.0	15.4	18.0	-3,097.2
65-69	2.5	0.0	86.9	10.6	13.1	-3,286.4
70-74	2.6	0.0	90.6	6.8	9.4	-3,432.3
75-79	2.6	0.0	93.7	3.8	6.3	-3,552.7
80-84	2.6	0.0	95.6	1.8	4.4	-3,629.3
85-89	2.6	0.0	96.9	0.6	3.1	-3,677.7
90-94	2.6	0.0	97.2	0.2	2.8	-3,690.6
95-100	2.6	0.0	97.4	0.0	2.6	-3,699.2

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

Figure 15 (\$1.25/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2004 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.5	38.7	22.5	0.6:1
5-9	2.7	30.9	32.9	0.4:1
10-14	5.2	20.0	40.2	0.2:1
15-19	9.7	13.7	51.8	0.2:1
20-24	14.4	10.4	58.3	0.1:1
25-29	22.7	8.1	72.1	0.1:1
30-34	30.5	6.5	77.7	0.1:1
35-39	40.0	5.4	84.7	0.1:1
40-44	52.9	4.6	94.0	0.0:1
45-49	62.2	4.0	97.1	0.0:1
50-54	71.7	3.5	97.7	0.0:1
55-59	78.4	3.2	98.0	0.0:1
60-64	84.5	3.0	98.4	0.0:1
65-69	89.4	2.8	99.2	0.0:1
70-74	93.1	2.7	99.5	0.0:1
75-79	96.2	2.7	99.9	0.0:1
80-84	98.2	2.6	99.9	0.0:1
85-89	99.4	2.6	100.0	0.0:1
90-94	99.8	2.6	100.0	0.0:1
95-100	100.0	2.6	100.0	0.0:1

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Figure 8 (\$2.50/day 2005 PPP line): Bootstrapped differences between estimated and true household poverty likelihoods with confidence intervals in a large sample ($n = 16,384$), 2006 scorecard applied to the 2004 ENIGH

Score	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
0-4	-8.8	7.6	7.9	9.3
5-9	+4.9	7.5	9.0	11.9
10-14	-7.0	5.8	6.2	7.1
15-19	+1.9	3.1	3.8	5.3
20-24	+6.3	2.5	2.9	3.9
25-29	-0.5	1.8	2.1	2.8
30-34	-2.0	1.7	1.9	2.5
35-39	-1.8	1.7	1.8	2.2
40-44	+0.2	0.9	1.1	1.4
45-49	-0.4	0.8	1.0	1.2
50-54	-0.9	0.9	1.0	1.3
55-59	+0.1	0.3	0.4	0.5
60-64	+0.2	0.1	0.2	0.2
65-69	-0.6	0.7	0.8	1.1
70-74	-0.1	0.1	0.2	0.2
75-79	-0.2	0.2	0.3	0.3
80-84	+0.0	0.0	0.0	0.0
85-89	-0.1	0.2	0.2	0.3
90-94	+0.0	0.0	0.0	0.0
95-100	+0.0	0.0	0.0	0.0

Figure 10 (\$2.50/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of poverty rates for groups of households at a point in time, by sample size, 2006 scorecard applied to the 2004 ENIGH

Sample Size n	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-1.2	53.7	63.2	78.7
4	+0.3	24.4	29.3	41.8
8	-0.4	17.2	21.6	30.5
16	-0.1	12.3	15.5	20.7
32	-0.2	8.8	11.1	15.1
64	-0.1	6.3	7.8	10.1
128	-0.2	4.7	5.4	7.2
256	-0.3	3.2	3.8	5.3
512	-0.4	2.2	2.6	3.5
1,024	-0.4	1.6	1.9	2.5
2,048	-0.4	1.1	1.3	1.8
4,096	-0.4	0.8	1.0	1.3
8,192	-0.4	0.6	0.7	0.9
16,384	-0.4	0.4	0.5	0.6

Figure 12 (\$2.50/day 2005 PPP line): Differences and precision of differences for bootstrapped estimates of changes in group's poverty rates between two points in time, 2006 scorecard applied to the 2006 validation sample and the 2004 ENIGH

Sample Size <i>n</i>	Difference between estimate and true value			
	Diff.	Confidence interval (+/- percentage points)		
		90-percent	95-percent	99-percent
1	-0.4	95.3	100.9	106.2
4	+0.7	32.2	41.9	58.3
8	+0.0	23.7	30.3	43.5
16	+0.1	16.0	19.3	25.3
32	+0.0	10.8	13.4	18.2
64	-0.1	8.2	9.5	12.4
128	-0.2	5.5	6.4	8.3
256	-0.2	3.7	4.5	6.3
512	-0.3	2.6	3.2	4.3
1,024	-0.2	1.9	2.3	3.0
2,048	-0.2	1.4	1.6	2.0
4,096	-0.2	1.0	1.2	1.6
8,192	-0.2	0.7	0.9	1.2
16,384	-0.2	0.5	0.6	0.7

Figure 14 (\$2.50/day 2005 PPP line): Households by targeting classification and score, along with “Total Accuracy” and BPAC, 2006 scorecard applied to the 2004 ENIGH

Score	Inclusion: < poverty line correctly targeted	Undercoverage: < poverty line mistakenly non-targeted	Leakage: => poverty line mistakenly targeted	Exclusion: => poverty line correctly non-targeted	Total Accuracy Inclusion + Exclusion	BPAC See text
0-4	1.2	8.3	0.3	90.2	91.4	-71.8
5-9	2.0	7.6	0.8	89.7	91.7	-50.6
10-14	2.8	6.7	2.3	88.1	91.0	-16.1
15-19	4.4	5.1	5.3	85.2	89.6	+44.7
20-24	5.3	4.2	9.1	81.4	86.7	+4.5
25-29	6.8	2.7	15.9	74.5	81.3	-67.2
30-34	7.6	2.0	22.9	67.6	75.1	-140.3
35-39	8.3	1.2	31.7	58.8	67.1	-232.1
40-44	9.0	0.5	43.9	46.6	55.6	-360.0
45-49	9.3	0.2	52.9	37.5	46.8	-455.3
50-54	9.4	0.1	62.3	28.2	37.6	-553.5
55-59	9.5	0.1	68.9	21.5	31.0	-623.2
60-64	9.5	0.1	75.0	15.4	24.9	-687.2
65-69	9.5	0.0	79.9	10.6	20.1	-738.0
70-74	9.5	0.0	83.6	6.8	16.4	-777.2
75-79	9.5	0.0	86.7	3.8	13.3	-809.6
80-84	9.5	0.0	88.7	1.8	11.3	-830.2
85-89	9.5	0.0	89.9	0.6	10.1	-843.2
90-94	9.5	0.0	90.2	0.2	9.8	-846.7
95-100	9.5	0.0	90.5	0.0	9.5	-849.0

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

Figure 15 (\$2.50/day 2005 PPP line): Households below the poverty line and all households at a given score or at or below a given score cut-off, 2006 scorecard applied to the 2004 ENIGH

Targeting cut-off	% all households who are targeted	% targeted who are poor	% of poor who are targeted	Poor households targeted per non-poor household targeted
0-4	1.5	80.2	12.5	4.1:1
5-9	2.7	72.0	20.7	2.6:1
10-14	5.2	54.8	29.7	1.2:1
15-19	9.7	45.6	46.4	0.8:1
20-24	14.4	36.9	55.8	0.6:1
25-29	22.7	29.9	71.3	0.4:1
30-34	30.5	24.9	79.5	0.3:1
35-39	40.0	20.8	87.4	0.3:1
40-44	52.9	17.1	94.8	0.2:1
45-49	62.2	15.0	97.6	0.2:1
50-54	71.7	13.1	98.9	0.2:1
55-59	78.4	12.1	99.3	0.1:1
60-64	84.5	11.2	99.5	0.1:1
65-69	89.4	10.6	99.8	0.1:1
70-74	93.1	10.2	99.9	0.1:1
75-79	96.2	9.9	100.0	0.1:1
80-84	98.2	9.7	100.0	0.1:1
85-89	99.4	9.6	100.0	0.1:1
90-94	99.8	9.6	100.0	0.1:1
95-100	100.0	9.5	100.0	0.1:1