
Selecting a Sampling Methodology for Social Indicators

The SEEP Network

CGAP/Ford Foundation Social Indicators Project

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Preface

The purpose of this paper is to describe the various sampling options for MFIs interested in testing social indicators and/or poverty tools, such as the Grameen Foundation Progress out of Poverty Index™ (PPI) and the USAID Poverty Assessment Tool (PAT). The paper guides readers through the steps required to use different sampling methods necessary for a successful sampling strategy for social indicators.

The paper draws on real examples of sampling methods from MFIs that have participated in the three phases of the Ford Foundation and CGAP-initiated Social Indicators Project to illustrate what has worked for the MFIs and what has been a learning experience.

The paper is organized as follows. A brief discussion on the census versus sampling debate highlights situations where a census approach would be more relevant. This is followed by a description of types of sampling—probability and non-probability sampling methods, as well as longitudinal and cross-sectional sampling techniques. A brief discussion on appropriate sample size is followed by a description of sampling requirements and strategy for implementing the PPI and PAT poverty tools. In the conclusion is presented a sampling matrix to help MFIs select the right sampling method for their organization.

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SEEP Technical Note Series on the CGAP/Ford Foundation Social Indicators Project

Technical Note 1, “Selecting a Sampling Methodology for Social Indicators”

Technical Note 2, “Microfinance Social Indicators in Practice: Dissecting the SIP Partners’ Experience”

Technical Note 3, “Why Use Social Indicators: Making the Case to MFIs and Other Stakeholders”

SIP Partner Organizations

PARTNERS	COUNTRY
Networks	
Opportunity International - 10 MFIs	
Opportuniti Timor Leste (OTL)	East Timor
Tanaoba Lais Maneka (TLM)	West Timor
Centre for Development Studies (CDS)	India
Dinari Foundation (Dian Bhuana Lestar)	Indonesia
Dian Mandiri (Diman)	
Hagdan sa Pag-uswag Foundation, Inc (HSPFI)	Philippines
Sinapi Aba Savings and Loan (SASL)	Ghana
Oportunidad LatinoAmerica Colombia (OLC)	Colombia
Albanian Partner in Microcredit (PSHM)	Albania
Opportunity Bank Montenegro (OBM)	Montenegro
FINCA - 2 MFIs	
FINCA Ecuador	Ecuador
FINCA Uganda	Uganda
Grameen Foundation - 2 MFIs	
Alternativa Solidaria Chiapas (AISol)	Mexico
Negro Women for Tomorrow Foundation (NWTF)	Philippines
Pro Mujer - 3 MFIs	
Pro Mujer Nicaragua	Nicaragua
Pro Mujer Bolivia	Bolivia
Pro Mujer Peru	Peru
Trickle Up - 3 MFIs	
TUP Africa: AVS	Mali
TUP Africa: Selle	
TUP Asia: TSHED	India
Ford Foundation Partners	
BASIX	India
Capital Aid Fund for the Employment of the Poor (CEP)	Vietnam
China Foundation for Poverty Alleviation (CFPA)	China
Fondo de Desarrollo Local (FDL)	Nicaragua
Fondo de Inversion Social (FIS)	Argentina
Independent MFIs	
Action for Social Advancement (ASA)	India
Amhara Credit and Saving Institution (ACSI)	Ethiopia
K-Rep	Kenya
Nirdhan Utthan Bank Limited (Nirdhan)	Nepal
Prizma	Bosnia
Small Enterprise Foundation (SEF)	South Africa

Abbreviations

ASCI	Amhara Credit and Savings Institution
CEP	Capital Aid Fund for Employment of the Poor
CGAP	Consultative Group to Assist the Poor
FDL	Fondo de Desarrollo Local
FCAT	FINCA Client Assessment Tool
MDGs	Millennium Development Goals
MFI	microfinance institution
MIS	management information system
NWTF	Negros Women for Tomorrow Foundation
PAT	Poverty Assessment Tool
PPI	Progress out of Poverty Index
SEEP	Small Enterprise Education and Promotion Network
PPP	purchasing power parity
SIP	Social Indicators Project
USAID	United States Agency for International Development

1. Introduction

To reach the poor and help them work their way out of poverty has always been paramount in microfinance. In recent years, global efforts have been made to *establish targets for poverty outreach and alleviation*. The United States Congress passed the Microenterprise for Self-Reliance Act in 2000, mandating that 50 percent of all U.S. Agency for International Development (USAID) microenterprise development funds must benefit very poor people.¹ The Microcredit Summit Campaign has adopted the goal of reaching 175 million of the world's poorest families, especially the women of these families, with credit for self-employment and other financial and business services and ensuring that 100 million families rise above the US\$ 1-per-day poverty threshold by 2015.

In 2005, the Ford Foundation and the Consultative Group to Assist the Poor (CGAP) initiated its three-phase Social Indicators Project (SIP), partnering with 31 microfinance institutions (MFIs) in 24 countries, to assess the extent to which MFIs are reaching the very poor (clients below \$1 and \$2 per day), as well as how their programs impact other social dimensions, such as education and gender equity (i.e., women's empowerment). SIP focused on developing globally applicable industry indicators to track outreach to clients below \$1 and \$2 a day, changes in client well-being, and children's education, as well as to help MFIs develop simple and context-specific proxy indicators. After three rounds of surveys, the Progress out of Poverty Index™ (PPI)² was chosen by some partners to track outreach to clients below US\$ 1 per day. Capital Aid Fund for Employment of the Poor (CEP) developed proxy social indicators, and other MFIs in Vietnam collected baseline data on the poverty status and income of all their entry level clients using proxy indicators.

In the three surveys, sampling was one area of the process where the partners required the most technical assistance. While this paper provides general information about sampling for practitioners (e.g., sampling size, population, and methodology), it is not a comprehensive guide or a training manual. Rather, it offers a general overview of sampling for MFIs and places it into real-world contexts, with illustrative examples from the SIP partners' experience testing the indicators. In addition, annex 3 lists resources for further information on this topic. The paper has four parts:

1. The sampling and census debate
2. Descriptions of different methods of sampling, potential for bias and error, and a discussion of the sampling strategies for the PPI and PAT
3. Examples of sampling strategies drawn from the diverse experience of the SIP partners and Fonkoze³
4. Three annexes including Frequently Asked Questions.

¹ Very poor people are defined as those living in the bottom 50% below the poverty line as established by the national government of each country. See U.S. Congress, "Microenterprise for Self-Reliance and International Anti-Corruption Act of 2000, "Public Law 106-309, 106th Congress, October 17, 2000 (114 STAT. 1078), http://www.microlinks.org/ev02.php?ID=7750_201&ID2=DO_TOPIC.

² http://www.grameenfoundation.org/what_we_do/microfinance_support/social_performance/the_ppi_tool/; <http://www.microfinance.com/>

³ Although Fonkoze was not a part of SIP, they graciously responded to SEEP's questionnaires about collecting data on social indicators and allowed a SEEP team to interview Fonkoze staff for this Technical Note series. See the Fonkoze web site for more information, <http://www.fonkoze.org/>.

2. Sampling and Census Defined

An MFI interested in understanding and tracking the well being and poverty status of its clients needs to survey them directly. It can do so by either surveying all clients or by surveying a representative part of the client population, a sample, in order to determine the characteristics of the client population. Table 1 presents short definitions of the most commonly used terms in sampling and survey methods; this will help in the following discussion on the merits and demerits of sampling and census methods.

Table 1: Sampling Survey Terminology

Population	The entire group of people about whom the information is required, for example, a population of all microfinance clients of an organization.
Census	When data is collected from every member of the population.
Sample	A part of the population from whom information is collected on the basis of which conclusions about the whole population are drawn.
Representative sample	An accurate sample that provides, at random, a true indication of what the population is comprised; can also be called a probability sample or a random sample.
Sampling frame	The listing of the accessible population from which the sample will be drawn, for example, a list of all the clients of an MFI.
Sampling design	The selection process or technique for obtaining a sample from the sampling frame is sample design, for example, selecting a sample from the list of clients of a MFI.
Sample survey	Survey conducted on the basis of sampling is called sample survey.
Sampling error	An error that may result from incorrect sampling techniques.
Non-sampling Error	An error that results solely from the manner in which the observations are made during the course of survey activities other than sampling.
Confidence interval	<p>The confidence interval is the plus-or-minus (+/-) figure usually reported with any sample survey.</p> <p>For example, assume a confidence interval of 5, a confidence level (see below) of 95, and that 57% percent of the sample population selects answer "A." If the entire relevant population is asked that question, between 52% (57 minus 5) and 62% (57 plus 5) would pick answer "A" 95% of the time; however, 5% of the time, the answer would be outside of the range of the confidence interval. (They would select anything but "A.")</p>
Confidence level	<p>This is an index of certainty, expressed as a percentage, and represents the "true" percentage of the population within the confidence interval that would pick an answer. The 95% confidence level means one can be 95% certain; the 99% confidence level means one can be 99% certain. (Most researchers use the 95% confidence level.)</p> <p>For example, if an MFI uses the same sample size 100 times, then 95 out of the 100 times the response will fall within the confidence interval, and 5 times of 100, the response from the sampled population will be outside of the confidence interval.</p>
Statistical significance (p-value)	<p>An estimated measure of the degree to which the result is "true" or valid (in the sense of "representative of the population"). The p-value represents the probability of error that is involved in accepting the observed result as valid.</p> <p>For example, the p-value of .05 (i.e., 1/20) indicates that there is a 5% probability that the relation between the variables found in the sample is a "fluke," or coincidence, and cannot be relied upon to make a decision.</p>

The **census method**, in which the MFI surveys *all* clients, is one option for producing accurate and valid data. If the MFI controls for non-sampling bias or error (see definitions in table 1), such as rigorous training of the implementing staff to avoid interviewer error or bias in the questionnaire, the census method can most reliably gather the characteristics of the population. However, there are several variables that must be considered: resources, willingness of clients to participate, time frame for the survey, heterogeneity of the population, and the “law of large numbers” (also called the “law of averages” where the larger the number of people surveyed, the more likely it will reflect the population). MFIs participating in SIP—such as Negros Women for Tomorrow Foundation (NWTF) in the Philippines, Prizma in Bosnia, Fondo de Desarrollo Local (FDL) in Nicaragua, CEP in Vietnam—have enhanced their management information systems (MIS) to enable them to collect information from all their clients.

There are several advantages to the census approach. An information system collecting both routine and follow-up information on all clients provides the MFI with reliable and timely data that allows them to understand and track changes in their clients’ lives. Further, by comparing the poverty results with product-cost information available in the MIS, an MFI can examine the relative cost of its products designed to help poorer clients. This in turn enables the MFI to identify and create more cost-effective services.

On the flip side, for MFIs with a large client base, undertaking a census can prove to be a resource-intensive exercise (money and staff time). Several questions must be answered. 1) Who will interview the clients: outside consultants, specially-trained staff, or the loan officers in the course of their daily routines? 2) How much training will be required to implement the census? 3) How much time will each interview take? The PPI usually requires 10 minutes, while FINCA International’s FCAT (FINCA Client Assessment Tool) requires 30–40 minutes.⁴ Multiply either option by an interview with *every* client in the MFI’s portfolio,

Box 1: Fondo de Desarrollo Local

Fondo de Desarrollo Local (Local Development Fund, or FDL) is a non-profit association created by the Nitlapán-UCA Institute to provide financial services to small and medium enterprises in rural and urban areas of Nicaragua, to help them increase their standard of living and capital.

FDL collects information on social indicators (housing quality, poverty, gender, and education) from all its 70,000 clients at the time of loan approval and feeds this information into its MIS. Gathering this data allows them to compare changes in poverty levels of their clients over time. Once a year, usually in June/July, data is exported from the MIS and is analyzed by the key managers using the statistical package SPSS. The results are then discussed with the board.

With this historical data, FDL can measure changes in their clients’ lives—although this *does not prove the impact* of the program (at least with any statistical rigor). However, the census methodology is not necessarily better for measuring change over time because the quality of the interviews and data collected may actually be better from a representative sample of clients interviewed by a smaller team of trained staff. Further, sampling may be useful for testing the validity of the data to see if it actually measures change in clients’ lives. Once the data is proven or management is convinced, an MFI can collect data on the tested and proven old indicator or add the tested and proven new indicators. This process of sampling to test census data works best when the data collection is completely integrated into operations and should not raise issues of quality control.

Some of the disadvantages of FDL’s census approach (but perhaps not for other MFIs) include difficulty in adding new indicators to the MIS, maintaining quality of data, and including an incentive scheme for loan officers to ensure quality of data.

Source: Interview with Francisco Perez; also see <http://www.fdl.org.ni/>.

⁴ Development of the FCAT began in 1997 and was in use by 2003. In a 2004 report, FINCA founder John Hatch reported that the 40-indicator survey took 10 minutes; in 2006, it included 97 indicators and required 15–20 min; and its current 110 indicators require 30–40 minutes. See John Hatch, 2004, “Expanding Microcredit Services to Young Adults: Research Findings, Rationale, Blind Spots, and Recommendations,” unpublished paper (<http://www.haas.berkeley.edu/HaasGlobal/docs/RosaMelgar.doc>); and Brock Smith, “The Varying Economic Impact of Village Banking,” paper presented at FINCA International’s “2006 Research Symposium,” Washington, DC, March 24, 2006 (<http://www.scribd.com/doc/917010/The-Varying-Economic-Impact-of-Villagebanking>).

and the task of surveying each client could potentially overwhelm the MFI. 3) Consider also the difficulty of reaching clients in regions not easily accessible—whether because the terrain is particularly difficult or the location is extremely remote—these locations will require more time and cost of travel to the MFI.

In many situations, the sampling method has an advantage over the census method, provided that the appropriate level of rigor is invested into the preparations (explained in detail below). Surveying a relatively small number of clients permits an MFI to obtain nearly equally reliable data that can be generalized to the rest of its client population. Moreover, a smaller team that interviews only a subset of truly representative clients can be better trained and supervised, which improves quality control and ensures more accurate data, than a large survey team that interviews all the clients.

The **sampling method** is the process of selecting units (e.g., people or organizations) from a population of interest, whereby the results of studying the sample can be generalized to the whole population.⁵ By directly observing only a sample, which accurately (proportionately) includes each subset of the population, one can draw conclusions about the population, just as one can with a census. Sampling includes probability sampling methods and non-probability sampling methods.

The most significant advantage of sampling is the reduced personnel time and cost to the institution. Because fewer clients are contacted, the results are gathered and processed more quickly. Further, it is easier for an MFI with limited resources to monitor the quality of data from a smaller, more manageable sample size. Challenges many MFIs face, including those that participated in SIP, are selecting a large-enough and broad-enough sample—throughout the life of the sampling project—that is truly representative of the population being studied. Otherwise the process could produce misleading data for analysis. A sample is effective only if it reflects the degree of variation in the population being surveyed. If an MFI does not have a complete list of the population it desires to survey, the sampling method (and any method, really) will be biased; each unit of the population must have an equal opportunity of being selected.

If an MFI uses social indicators and/or poverty tools to gather data on the poverty levels of its clients and the depth of its outreach to the very poorest, it may also want to know about their gender empowerment, health, and education. To use this kind of data in decision-making, the MFI must *know* that the sample is representative of the population. Otherwise, the MFI may make decisions based on incorrect or biased sampling results.

3. Representation, Bias, and Error in Sampling

A sample is expected to mirror the population from which it is taken, and is representative only if every individual or subgroup has an equal chance of being selected and the sample is large enough to be statistically relevant. In this case, the results can be extrapolated to make generalizations about the population.

However, a sample is rarely completely representative of the population, and one of the most frequent causes is sampling error. *Sampling error comprises the differences between the sample and the population that are due solely to the particular units that happen to have been selected.*⁶ In simpler terms, sampling error can result when unusual units—in the case of MFIs, unusual branches or clients—end up

⁵ <http://www.socialresearchmethods.net/kb/sampling.php>

⁶ <http://www.socialresearchmethods.net/tutorial/Mugo/tutorial.htm>

being disproportionately represented, such that the resulting sample does not mirror the population. The best prevention for sampling error is to ensure an equal chance of selection (of people or branches) and a large enough sample.

Another source of a non-representative sample is *sampling bias*, error that arises when estimating a quantity and the data is influenced in one way or another so that the data no longer represents the entire population.⁷ In this instance, certain sections of an MFI's clients or branches with particular characteristics are favored or, alternatively, some clients or branches are not included in the sample. Sampling bias results from an incomplete list of clients or exclusion of clients living in remote areas. Additionally, the issues of homogeneity and heterogeneity of the population are important in sampling, and the MFI needs to adjust the sampling accordingly. There is bias if a subgroup in the population with unique characteristics is over- or under-represented. To control for this possibility, an MFI may select fewer clusters if the targeted population is homogenous or select more clusters to properly represent all types of characteristics in a heterogeneous population.⁸

The other main cause of non-representative samples is *non-sampling error*, which results solely from the manner in which the observations are made during the course of survey activities, other than sampling.⁹ Unlike sampling errors, they can be present in both sample surveys and censuses. Non-sampling errors can occur by chance and can generally be cancelled out if a large-enough representative sample is used. However, some non-sampling errors are systemic and have a tendency to accumulate over the entire sample. For example, an improperly designed questionnaire or shoddy interviewing techniques will result in wrong answers by the respondents and lead to a biased final result. This type of bias or error cannot be reduced by increasing the sample size.

There is no substitute for good interviewing techniques. Bias can result from the manner in which the interview is conducted: how the interviewers ask the questions or even how their behavior affects respondents. The respondent, in turn, may not provide accurate answers. If respondents think that providing correct answers (especially those related to income or assets) will impact their chances of getting a loan, there may be a tendency to fabricate or embellish their answers. Therefore, it is important to create good rapport with the clients and make all efforts to ensure they are comfortable. Properly training the interviewers will help in preventing biases arising from shoddy interviews.

Last, errors can also appear during data coding or data entry, which is another reason overall quality control is so important. To produce accurate and valid results from a survey, it is important that an organization invest not only in proper training of interviewers but in people and systems to check the validity of the data. This will help prevent some of the sampling biases and errors.

⁷ <http://www.sixsigmaspc.com/dictionary/sampling-bias.html>

⁸ Cluster sampling is a technique where the entire population is divided into groups, or "clusters," and a random sample from *each* cluster is selected. All observations in the selected clusters are included in the sample.

<http://www.stats.gla.ac.uk/steps/glossary/sampling.html#clustsamp>

⁹ <http://www.socialresearchmethods.net/tutorial/Mugo/tutorial.htm>

4. Sampling and Survey Methodologies

There are two classes of sampling procedures, probability sampling methods and non-probability sampling methods. A probability sample is one that has the following fundamental characteristics¹⁰:

- 1) that each element has an equal chance (greater than zero) of being selected in the sample;
- 2) that the probability can be accurately defined; and
- 3) that the selection is completely random.

Non-probability sample is characterized by the absence of any characteristics that define probability sampling. It is used when probability sampling cannot be done by an organization, or when the financial resources are very limited. It is also used when an organization wants more information on a certain group of clients. Whatever the reason for choosing a non-probability sample, it cannot be used to draw conclusions about the overall population.

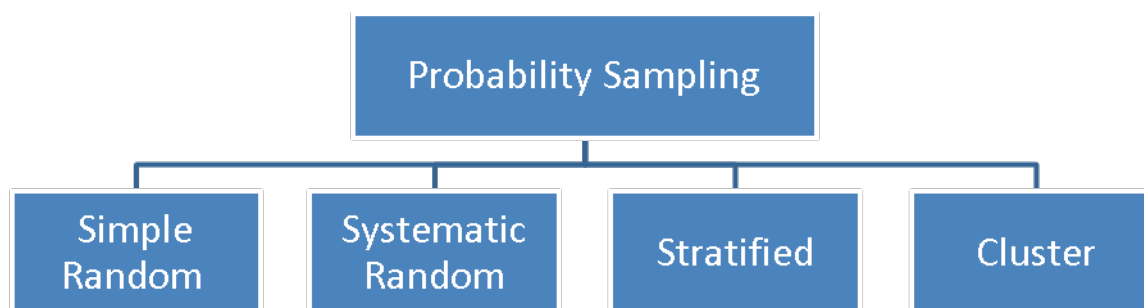
An additional element of designing a study is whether to undertake a longitudinal survey over a period of time or cross-sectional survey done at just one single point in time. These two methods are used to compare clients at different stages in order to observe changes or differences among the clients that could be correlated to independent variables like loan size. The fundamental difference between the two is that cross-section compares a subset of clients all at once (choosing them from different stages in the MFI's loan cycles, for example) whereas longitudinal studies track the same clients over a period of time as they progress to different loan cycles.

Review the snapshots throughout the paper to see how the MFIs designed their studies using these techniques (boxes 1-9).

Probability Sampling

As mentioned earlier, probability sampling methods are based on probability sampling theory and utilize some form of *random* selection.¹¹ This type of sampling is used in lotteries, raffles, and political polling. The figure below shows the four probability sampling methods discussed here.

Figure 1: Probability Sampling Methods



¹⁰ Corbetta, Piergiorgio, 2003, *Social Research – Theory, Methods and Technique*, (London: Sage Publication), p.218.

¹¹ <http://www.socialresearchmethods.net/kb/sampprob.php>

Simple Random Sampling

Definition: In a simple random sample, all the units in the reference population have the same probability of being included in the sample,¹²

Use: Simple random sampling should be the first choice, provided it is not too difficult or time consuming. However, to obtain a simple random sample, a complete list of the members of the population is required.

Method: The MFI should decide on a sample size (a brief discussion on sample size comes later in section 5), draw up a complete list of all clients, and create a random-number table (which can be generated with Excel or found online¹³). Number each client, starting from 1, until all the clients are numbered and make note of the total. From a random-number table, select the sample.¹⁴ A simplistic method of simple random sampling is to assign a number to each person/client, write the numbers on individual slips of paper, put them in a closed bag or covered box, mix the slips up thoroughly, and then draw out the number of slips required, as if in a lottery.

Problems: For organizations with a large, geographically dispersed client base, this method of sampling will be too costly. For example, for an MFI with branches in different regions of a country, a simple random sample would include samples from all regions, which would increase the time and cost required for the sample survey. Further, organizations with client lists that are incomplete or not up-to-date will exclude certain clients and thereby adversely affect the randomness of their sample

Systematic Random Sampling

Definition: Systematic random sampling is like simple random sampling except that the technique of choosing the sample is different.¹⁵

Use: Because it does not require a random-number table, practitioners not familiar with sampling techniques may be more comfortable with this method.

Method: By selecting a random starting point and choosing every “nth case” after that in a systematic manner from a complete list. For systematic random sampling, a complete list of all clients should be readily available, and a sample size should be decided on. To get the “nth” number, divide the total target population (total number of clients) by the selected sample size. For example, if an MFI has 3,000 clients and the sample size is determined to be 300, then dividing 3,000 by 300 yields “10” as the “nth” number. Select one random client from the complete list as the starting point and then select every 10th client to be included in the sample, until the desired sample size of 300 is reached. So if the random starting point is 6, then the clients selected will be 6, 16 (6+10), 26 (16+10), 36 (26+10), and so on.

However, in the event that the division of target population with the sample size yields a fraction, it may become difficult to choose the correct the “nth” number. For example, if an MFI has 5,000 clients and the sample size is 300, then dividing 5,000 by 300 will yield the fraction 16.66. In this case, should the MFI

¹² Corbetta, p. 218

¹³ For example, see <http://stattrek.com/Tables/Random.aspx>.

¹⁴ For details on how to use random number table, see

http://www.indiana.edu/~educy520/sec6342/week_04/random_num_table.pdf

¹⁵ Corbetta, p.218

choose 16 or 17? If 16 is the random starting point, then multiplying 16 by 300 will yield 4800. This means that the last 200 clients will not have a chance to be chosen for the sample and the sample will be biased. A simple way to overcome this problem is to choose the random starting point between 1 and 20 so that the last 200 clients have a chance to be in the sample. On the other hand, if the MFI chooses 17 as the “nth” number, then multiplying 17 with 300 will yield 5100. In this case, the last 100 clients do not even exist! To overcome this problem, the MFI should choose the random starting point between 1 and 10. This will avoid the “fictional” 100 clients from being in the sample. It is to be noted that the resulting sample from the above examples may not be completely random, but in practice, a systematic sample is almost always acceptable as being random.¹⁶

Problems: Systematic random sampling has the same potential for bias as simple random sampling, if the list from which the sample is drawn is not drawn from a complete list of clients. Also, the way the list is ordered may lead to some periodic feature coinciding with the sampling interval, which will bias the sample. For example, an MFI has a list that is organized by villages and within each village clients are listed according to the number of years they have been with the organization. If, in the process of systematic sampling, the sampling interval coincides with the clients’ length of time with the organization, the resulting sample may end up having only clients that have been with the MFI for more than two years.

Stratified Random Sampling

Definition: “Stratified random sampling involves dividing the population into homogeneous subgroups and then taking a simple random sample in each subgroup.”¹⁷ In other words, before sampling, members of a population are grouped so that they form a homogenous subgroup.

Use: Stratified sampling ensures that the overall population, including the key subgroups and small minority groups, is represented in the sample.

Method: Stratified random sampling follows three stages. 1) The population is divided into different groups based on one or more characteristics, such as religion, gender, or occupation (these groups are called strata); 2) a random sample is selected from the strata; and 3), the samples drawn from each stratum are combined together to get an overall sample.¹⁸ Suppose an MFI has both rural and urban clients with 90 percent of clients in rural areas and 10 percent in urban areas. The MFI decides to select a proportionate sample because of the uneven distribution of its clients. Therefore, if the sample is 500, 450 will be rural and 50 will be urban, ensuring that the results will be generalized to the population. This will be called a *proportionate stratified sample*. However, if the MFI decides to over-represent or under-represent certain strata, the resulting sample will be called *non-proportionate stratified sample*; this might be done if the MFI wanted to get more information on its urban clients and so it would over-represent them in the sample.

Problems: The availability and accuracy of the information to form strata of the population can be challenging. Sometimes information is there but the budget for the survey is limited. For example, if the MFI does not have accurate information concerning the number of clients belonging to a particular subgroup, the resulting strata and sample will be biased. When stratifying a population, it is important that at least two sample unit be selected from each stratum created. Also, each stratum should be as different as possible from the others. One can see the differences easily with a rural and urban stratum. The

¹⁶ The example was based on a systematic sampling module by Neville Hunt and Sidney Tyrrell from Coventry University at the website: <http://www.coventry.ac.uk/ec/~nhunt/meths/system.html>.

¹⁷ <http://www.socialresearchmethods.net/kb/sampprob.php>

¹⁸ Corbetta, p.219

following examples from BASIX (box 2) and Amhara Credit and Savings Institution (ACSI) in box 3 show how stratified random sampling can be used effectively.

Box 2: BASIX

BASIX is an institution in India that promotes livelihoods, and works with over a million and a half rural poor households and urban slum dwellers. The organization works in 15 states and over 10,000 villages. BASIX group companies understand that their mission is the promotion of a large number of livelihoods. They believe that financial sustainability is not an end in itself but a critical means to the achieving their mission. Thus, knowing the impact of its products and services on its clients has always been important to BASIX.

BASIX participated in SIP, in all three rounds of surveys, to develop and test social indicators that would correspond to the MDGs. Sampling was a critical element requiring considerable attention. BASIX clients were spread across the geographic regions of southern, central, and eastern India, encompassing a variety of agro-climatic zones and populations divided among tribes, castes, and religions.

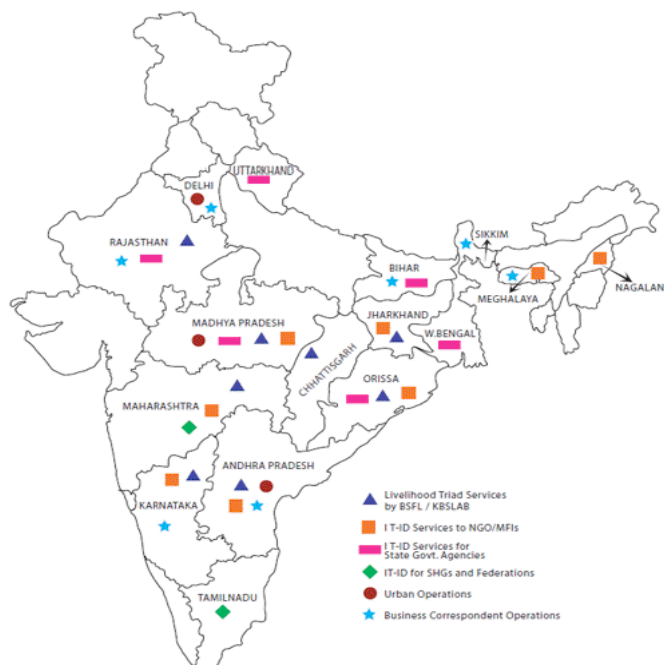
In the first phase of the project, the sampling strategy favored by BASIX was “stratified random” to make the study statistically robust. However, this methodology resulted in a sampling distribution that included all its operating areas. Given the geographic disparities and accessibility issues in certain regions, the survey took longer to complete and used more resources than originally planned. In addition, the absence of a social research team and lack of an adequate number of staff members with research skills to design and manage the survey adversely affected the survey process and subsequent data analysis.

BASIX rectified these shortfalls of SIP round 1 and streamlined its analysis in the subsequent phases of SIP in 2007 and 2008. During 2007, the organization established an incipient Social Research Department and dedicated trained research staff to the subsequent phases of SIP. This staff cohort handled instrument development, data collection, coordination and, organization of the survey implementation, supervision of data collection at the field level, and data analysis.

The size and nature of the sample also changed over the three SIP rounds of data collection. In round 1, the time spent by clients with BASIX was not a criterion for sample selection. In round 2, one of the objectives was to compare differences between new and repeat clients and track the same clients to see differences in their lives. Thus, the sample consisted of a certain proportion of new clients and old clients from the previous sample. In round 3, a proportionate stratified random sample was selected, wherein client occupation was a measure of stratification. Also, an appropriately smaller sample size was chosen. SIP round 3 was also tested the new, revised PPI and further refined a few indicators that would be incorporated into BASIX registration forms, going forward. Once this is completed, BASIX will collect additional data on these indicators on a routine basis, using a census approach.

Source: From verbal and written discussion with BASIX and from the organization’s website, <http://www.basixindia.com/>.

Basix Services



Box 3: Amhara Credit and Savings Institution

ACSI is the largest MFI in Ethiopia. ACSI operates in the Amhara region of Ethiopia with 10 branches, 185 sub-branches, and more than 2,000 employees. To create its survey sample for SIP, ACSI followed these steps:

They first stratified two subgroups from all branch offices of ACSI, based on the following two criteria: 1) level of rainfall (whether sufficient or insufficient), and 2) performance of the sub-branches.

This was followed by a random selection of sub-branches.

ACSI then sampled clients from the selected sub-branches, using random sampling and further stratification of clients based on 1) time with the MFI (old and new clients), 2) gender of client (male and female), and 3) location of the village (remote or accessible).

ACSI decided on a random sample of more than 1,000 clients based on the above method. Its goal was to get as representative a sample as possible, given the diversity of its operational region and clients. Also, ACSI was interested in obtaining information on clients living in remote areas. While this sample size did not reduce traveling time or the cost of the survey, it helped ACSI ensure that all types of its clients were represented.

Source: http://www.grameenfoundation.org/where_we_work/sub_saharan_africa/ethiopia/acsi/

Cluster Sampling

Definition: The entire population is divided into groups (clusters) and a random sample of these clusters is selected.¹⁹ Cluster sampling is the most widely used type of probability sampling. It is important to note that although population is divided into groups for both stratified sampling and cluster sampling, these two techniques are very different. Clusters are naturally occurring units and pre-exist in the population (e.g., a village block or apartments in an urban area). Strata, on the other hand, are formed to study some required characteristic, like gender, age, employment etc.

Use: Cluster sampling is often the most economical method. For MFIs that find it too difficult or too costly to construct a complete list of their clients (total population), selecting branches or sub-branches by first clustering them seems an easier approach. Also, when the client population is geographically dispersed, a simple random sample may yield units that are far flung, which increases the cost and time of the survey. To mitigate the effects of a large geographic spread, an organization can use cluster sampling.

Method: An MFI can cluster by any number of criteria: geographic location (states, counties, villages, or branches), particular social groups, or time spent in the program. Because members of a cluster tend to be more similar than they are different, it is important to include as many clusters as possible. The number of clusters chosen and the total sample size should ideally be adjusted based on the degree of heterogeneity within and among clusters. In the one-stage sampling method, all clients from the selected clusters are included in the sample. In the two-stage or multi-stage sampling method, a randomly selected subset of clients from the chosen clusters is sampled.

Problems: It is important to have a variety of clusters to prevent homogeneity. Further, for good geographic clusters, it is important that the MFI know as much as possible about the geographical area and a good way to get this information may be from government data or maps. Care also needs to be taken that important subgroups are not left out, to prevent any potential bias in analysis. If, for example, the MFI works in both large and small villages, but the selected clusters include only small villages, the sample will be biased.

¹⁹ <http://www.socialresearchmethods.net/kb/sampprob.php>

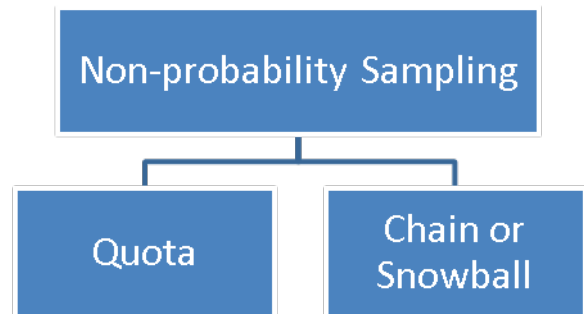
Non-probability Sampling

Non-probability sampling includes a number of approaches that are *not* based on random selection.²⁰ In general, researchers prefer probability or random sampling methods over non-probability ones, and consider them to be more accurate and rigorous.

However, in some circumstances where it is not feasible or practical to conduct random sampling, non-probability sampling methods are used. Quota and purposive sampling are two examples of non-probability sampling.

Further, when the purpose of any study or survey is to find specific groups of people about whom more information is needed, non-random (or non-probability) methods of sampling may yield better results. This type of sampling is usually *not representative* of the population. In fact, it is *usually not meant to be representative*, but is used to give a quick snapshot of a question a MFI needs answering.

Figure 2: Non-probability Sampling Methods



Quota Sampling

Definition: In quota sampling (not to be confused with quota or stratified *random* sampling above), the population is first segmented into mutually exclusive subgroups, just as in stratified random sampling. Then judgment is used to select the clients from each segment, based on a proportion specified by the MFI.²¹

Use: This type of sampling may be used when it is important to include a larger percentage of a subgroup (such as minorities or male microfinance clients) than they represent in the overall population.

Method: Based on information about a population, quotas of certain types of people or organizations are selected to be interviewed; common criteria for quotas are age, gender, or occupation. For example, an MFI decides to sample 25 percent of its clients from a specific occupation, regardless of the actual percentage of clients with that particular occupation.

Problems: The non-random nature of the sample makes it unrepresentative, and this method should not be used to generalize about all clients—such as when measuring the prevalence of poverty for the entire population of clients.

Chain Sampling or Snowballing

Definition: “Snowball sampling involves identifying subjects for inclusion in the sample by referrals from other subjects.”²²

Use: This method is useful for identifying minority groups or occupations within communities that are hard to find. It is also be useful when an MFI is expanding into new areas and is interested in gathering information about a certain area or type of client.

²⁰ <http://www.socialresearchmethods.net/kb/sampron.php>

²¹ Corbetta, p.221

²² Corbetta, p.222

Method: In this type of sampling, a first contact is selected. During the interview, the client is asked to recommend the next client for the MFI to survey. The chain builds one person at a time, becoming larger like a rolling snowball.

Problems: Chain sampling is subject to biases and *should not be used for assessing the poverty of the overall client population*. It can be useful when identifying clients or potential clients who are similar to the initial client selected, but the choice of initial contact and the number of people that the contact knows (and will recommend) are crucial factors in the success of this method.

Longitudinal and Cross-sectional Survey

Longitudinal and cross-sectional surveys form a class of research methods that were conducted by the SIP partners to collect and compare data.

Longitudinal Study

Definition: This is a research study that involves repeated observations of the same people over long periods of time. Longitudinal studies are primarily used to measure impact or used when data are needed to capture seasonal variations or before and after situations, for example.

There are two types of longitudinal studies, cohort studies and panel studies. A *cohort study* is a type of purposive sampling where a group of people sharing a common characteristic or experience within a selected time period are identified and studied at (usually regular) intervals through time. *Panel studies* measure the same sample of respondents at different points in time.²³

Use: For an MFI eager to demonstrate change in the poverty levels of its clients over a period of time, or to get a “before and after” picture of clients, a longitudinal study is useful. This type of study also captures seasonal variations. However, it is important to note that *attributing positive changes in a client’s poverty profile to the client’s participation in microfinance requires a control group to measure their change*.

Method: Longitudinal studies compare a sample of clients at two or more points in time (always the same people). Longitudinal studies are often used to establish a baseline (when the client began the program, for example) and subsequent benchmarks (two years later). Some of the SIP participants did longitudinal surveys; see the mini case on Capital Aid Fund for Employment of the Poor (CEP) in box 4.

Problems: For a longitudinal study, it is especially important to select the sample carefully and to have a large enough sample to minimize the effects of clients dropping out of the program. This ensures that a large enough sample will still be available at the end of the study for it to be statistically significant. The K-Rep Development Agency (box 5) example highlights this constraint of a longitudinal study, where the initial sample was not large enough to be representative over time. The problem of non-response is faced in almost all surveys. A high rate of non-response can bias the survey. This is because there may be a difference between people who respond to the survey and those that do not. This can be addressed by making allowance for non-responses when calculating sample size, where the sample size is increased to cushion the non-responses.

²³<http://www.socialresearchmethods.net/tutorial/Cho2/panel.html>

The issue of drop-out²⁴ is very important for a robust longitudinal study. To make generalizations about observed changes in “all” clients—and especially to draw any kind of conclusions about impact over time—clients that have dropped-out need to be interviewed as well. For example, if the poorer clients have dropped out because they could not afford to pay back their loans, then the comparison of clients over two periods of time will show a false *decrease* in poverty levels. On the other hand, if better-off clients dropped out because they no longer needed the MFI’s services, then the results will show a false *increase* in poverty levels. Hence, in order to draw any credible conclusions from a longitudinal study, it is important to survey *everyone who was interviewed during the first round*, regardless of whether or not they left the program. If the MFI lacks the capacity to track and interview drop-outs, it can use a poverty tool as an “exit survey” and interview anyone from the original sample of clients who leaves the program.

Further, for repeat sampling mentioned above, it is important that the MFI have unique client identification, such as those based on national identification cards (food ration cards in India or any other government identification, for example). If the MFI does not maintain unique client identifiers, it may be more difficult to track the clients in a subsequent survey. Further, in a group-lending methodology, individual clients’ names may not be listed separately. In this case, the group number of the client with full name and address can be used as identification.

Box 4: Capital Aid Fund for Employment of the Poor

CEP is a poverty-focused MFI, operating in Ho Chi Minh City, Vietnam, with a mission to provide credit to the poor for income generation and employment creation.

For SIP, CEP conducted a thorough longitudinal survey, where it selected three random subsamples of laborer clients; new clients, those who participated in the CEP program for two loan cycles, and those who participated for five loan cycles. The sample was drawn randomly from the head office client database. This same sample was surveyed in three successive years. The sample size in the first round was 471, which dropped to 347 the following year, and the last round had only 278 clients, due to drop outs. CEP attempted to mitigate the effect of drop outs with periodic impact assessments and establishing a well-trained and staffed research department equipped to handle such a study.

Comparison of the portion of the sample that remained with the program over these three years showed that their well being improved, but in order to draw any firm conclusions concerning the average amount of change for all clients, CEP needs to control for the effect of the drop-out rate on the results.

Source: <http://www.cep.org.vn/>.

Box 5: K-Rep Development Agency

K-Rep Development Agency (K-Rep) is a microfinance development organization in Kenya whose mission is to “empower low-income people, serve as a catalyst for them to increase their participation in the development process, and to enhance their quality of life.”

In SIP round I, K-Rep chose a random cluster sample of 120 new-entry clients from two of its branches. These branches had merged with another program and combined their clients. The clients were from the FAHIDA project, a savings and credit project for HIV and AIDS-infected people. K-Rep was interested in getting a poverty profile of these new clients. However, when it was time to repeat the survey in round 2 of SIP, using the same sample of clients, K-Rep discovered that almost 50% of sampled clients had either dropped out or were deceased, which left only a small sample of repeat clients. In this case, it was not only the high mortality rate of the sampled clients, but other issues with the merger that led to increased drop out rate.

Source: <http://www.k-rep.org/devagency.asp>.

²⁴ M-CRIL defines a drop-out as “any client who has had no significant transaction with the MFI for the last 6 months.” See M-CRIL, 2007, rev., “Estimating Client Exit Rate,” Technical Note, no. 1 (Gurgaon, India: M-CRIL), <http://www.m-cril.com/publications.html>.

Cross-Sectional Study

Definition: Cross-sectional studies compare clients from different points of a loan-cycle at a single point in time. The differences between cross-sectional and longitudinal studies is that cross-sectional studies take place at a single point in time with a different random sample, while longitudinal studies are done over a period of time with the same set of people each time.

Use: A cross-sectional sample is useful when the MFI needs a “snapshot” of the impact of services offered on newer versus older clients or to measure change, but the MFI does not have the time or the resource to do a longitudinal study. It is also useful for testing a poverty assessment tool without a lengthy time commitment. For their surveys, most of the SIP partners took a cross-sectional sample comprising new-entry clients and clients that had been with the organization for two years and more.

Method: A cross-section of an MFI’s clients may be new clients, clients for two consecutive years, or clients for four consecutive years, for example.

Problems: Compared to longitudinal studies, cross-sectional studies are quick and easy; however, longitudinal studies can note changes over time for the group being sampled, whereas cross-sectional studies cannot. In addition, observed differences between new and old clients may exist because of differences in the clients’ situations—not because of services offered. Hence, this kind of study may not be useful for demonstrating change in clients’ status and is particularly limited for demonstrating actual impact.

5. Sample Size

The feasibility of the sample size is often dependent on the resources of the organization, number and qualification of staff (whether the organization needs to hire researchers), and how much time it can devote to this exercise. However, the bigger the sample of clients, the more closely it will mirror the entire client population and the more likely the results will be statistically significant. But, a large sample can be costly. So, the trade off is a larger sample at a greater cost or a smaller sample with some diminishing of statistical significance. Hence, the sample should be neither too large nor too small, but an optimal size that is reliable and cost-effective.

The table below offers a quick look at determining minimum sample size. It is worth noting that the sample size does not increase proportionally to the population size for a 95-percent confidence level. For SIP, the minimum recommended sample size was 350. However, there were some participating MFIs that could not manage more than 150–200 in their samples, while other had sample sizes of more than 1,000.

Table 2: Selecting the Minimum Sample Size According to the Population

Population size	Confidence interval*	Confidence level**	Minimum sample size
1,000	5	95%	278
5,000	5	95%	357
10,000	5	95%	370
50,000	5	95%	381
100,000	5	95%	383
1,000,000	5	95%	384

Source: www.surveysystem.com/sscalc.htm
* The plus-or-minus (+/-) figure usually reported with any sample survey.
** An index of certainty that subjects of a sample would pick a certain answer.

For a longitudinal survey, it is important to start with a larger sample to compensate for attrition over time. Sample-size requirements are also affected if an MFI wants to analyze by different groups (e.g., gender, geographic location, or length of time in program). A larger sample is required so that there are enough observations in each category for valid results; the same holds true for cluster and stratified sampling. An adequate sample size from each cluster and stratum is necessary to compare the results between the different subgroups. For assessing the poverty level of all clients in the sampling frame, the sample size can be determined using table 2.²⁵

6. Sampling for Poverty Measurement Tools (PPI and PAT)

Grameen Foundation's Progress out of Poverty Index (PPI)²⁶ is a poverty assessment tool built on the notion that simple, observable indicators can be used as proxies to determine a person's likelihood of poverty. The PPI is a unique, 10-indicator composite index with easy-to-collect, country-specific social indicators (such as family size, number of children attending school, type of housing, land ownership, and what a family typically eats). The PPI allows an MFI to estimate its poverty outreach at any point in time, in addition to tracking the change in clients' poverty status over time. Many SIP partners, such as Pro Mujer, Small Enterprise Foundation, ASA, Negros Women for Tomorrow Foundation, and Trickle Up, tested the PPI (see [annex 1](#)).

²⁵ EDA Rural has a technical note on estimating sampling size. This can be accessed at <http://www.edarural.com/publication.html>.

²⁶ <http://www.progressoutofpoverty.org/>. The PPI was developed by Mark Schreiner (<http://www.microfinance.com/>).

The PPI can be used by MFIs for a quick poverty profile of their clients, but the MFI must follow a rigorous sampling strategy. If not, it may not get accurate results (see Pro Mujer in box 6). For Trickle Up, it was important to ensure accurate sampling for the PPI with its partners (see box 7).

Box 6: Pro Mujer

Pro Mujer, microfinance and women's development network, has a network of five MFIs in Argentina, Bolivia, Mexico, Nicaragua, and Peru. The Pro Mujer network members share the same philosophy and mission, employ similar methodology, and work together to share best practices and innovations.

Pro Mujer-Bolivia, -Peru, and -Nicaragua participated in the SIP. During SIP round 2, each decided to implement the PPI. Pro Mujer-Bolivia received technical assistance from Grameen to do a PPI pilot. Pro Mujer-Peru used its own resources, and managed a fairly large cross-sectional sample. With more limited resources, Pro Mujer-Nicaragua decided to focus the PPI on incoming clients in select branches over a period of time.

Pro Mujer-Peru was not happy with the results of its PPI, which showed poverty outreach in single digits, and felt that it might have been the result of sampling that was not representative of its clients. Meanwhile, Pro Mujer International began a big push for its subsidiaries to use the PPI. Drawing on Pro Mujer-Bolivia's well-planned and implemented PPI pilot, the network began to integrate it into its operations. With the help of Pro Mujer International, a baseline profile of all incoming clients of Pro Mujer partners in Peru, Nicaragua, Mexico, and Argentina was constructed with the PPI. Given the support and assistance by Pro Mujer International, the subsequent PPI survey by Pro Mujer Peru was a better experience.

A similar strategy of sampling incoming clients from selected branches was adopted by all Pro Mujer partners. The results of the most recent well-coordinated survey using the PPI have been well received.

Source: Pro Mujer International PPI Pilot Summary Report; <https://promujer.org/>.

Box 7: Trickle Up

Trickle Up network, based in New York, empowers people living on less than \$1 per day to take the first steps out of poverty, providing them with resources to build microenterprises for a better quality of life.

Concerned about whether its partners were truly reaching people living on less than \$ 1 a day, in 2008, Trickle Up implemented both the PAT and PPI to assess the outreach of its partners in Uganda, Mali, and India. This was the first time that they focused on outreach; earlier they felt that the tools available earlier were not very helpful for its efforts to measure poverty outreach and to make comparisons across partners in different countries.

Trickle Up decided to sample all new incoming clients. The PAT was integrated into the loan intake form and the interviews were held at the time of home visits by loan officers. The clients had already been pre-selected by using the poverty wealth ranking tool, and the results were positive. With such tools, Trickle Up feels that not only can they track their partners' poverty outreach in line with its mission, but also, by enabling comparisons across partners and countries, they can take suitable action to bring up the poor targeting facing certain partners.

However, to do all this, Trickle Up wants the data collection and analysis to be as robust as possible. For this reason, Trickle Up holds regional "training of trainers" workshops on the PAT and PPI. Field officers are encouraged to enter the data themselves as soon as possible so that any errors can be corrected immediately. The analyses are done at the headquarters and the results are shared with the partner organizations' management.

Source: Interview with Vimala Palaniswamy of Trickle UP, and Jan Maes. See also <http://www.trickleup.org/>.

The PPI can also be used as a management and operational tool to provide valuable insights to the management into clients' status, as well being easily integrated into a MFI's operations. To do this, the MFI selects a few branches using cluster sampling from all its branches and administers the PPI to all new clients and "renewing" clients²⁷ at the time of the Loan Officers' visit to the clients' home. To

²⁷ Renewal clients are those that are renewing their loans and have been with the MFI for more than two years.

administer the PPI, credit agents from the sample branches are trained and assigned randomly selected clients for PPI interviews. A simple selection of clients can be used in which credit agents tear up small pieces of paper, one for each client at a center meeting, and mark only a certain number of those papers with an “X.” The clients draw from a closed container and those with a marked paper will be interviewed by the credit agent.²⁸ This selection of clients can be random or based on a judgment of the organization, if it only wants a quick snapshot of the poverty characteristics of clients in a particular area. But, keep in mind that *if the sample is not random, then the MFI cannot make generalizations about all of its clients—only about those types of clients who were interviewed.*

The rationale is to incorporate the PPI into the current processes and operations without going through a long and costly sample survey. For this reason, MFIs with limited resources may find it easier to sample all incoming clients at only a few randomly selected branches for a select period of time. The advantage of this approach is that, while helping the MFI learn about the tool, it creates a baseline against which the MFI can track changes in poverty levels of the surveyed clients over time. It is critical to note that this “baseline” *will only pertain to those clients selected*, and if the initial sampling is not representative of all clients, then all findings will only pertain to those clients selected in the sampling—not all clients in the program. The examples from Fonkoze and NWTf illustrate this use of the PPI (see boxes 8 and 9, respectively).

Box 8: Fonkoze

Fonkoze is Haiti’s alternative bank for the poor with 40 branches across the country. Fonkoze measures its success in terms of achieving poverty reduction and views microfinance as a tool to achieve its broad developmental and poverty reduction goals. Fonkoze’s organizational culture is thus characterized by a deep poverty focus.

Fonkoze has adopted the PPI as a social performance tool to gather information on poverty outreach and change in the clients’ life. Its social impact monitors (SIMs), who are select individuals working full time in a branch on social indicator data collection and analyses, are given the responsibility of integrating social performance into the organization and helping to influence branch culture towards one of social performance. Fonkoze has selected eight branches that collect social information from clients. In every branch, SIMs administer the PPI to one client in each five-person group that joins the bank. They then repeat the survey of the same people each loan cycle to measure change longitudinally. Drop-outs from the sample being studied are interviewed one final time using an exit survey.

In addition, Fonkoze has decided to sample 20% of users of each loan product to determine whether it is targeting correctly.

Note: While one would like to measure impact, interviewing the same clients repeatedly will show only *change* in the clients. In order to prove impact, the MFI must have a control group to prove that the observed changes can be attributed to participation in the program.

²⁸ Other methods include drawing numbers, as in a lottery, using a random number table, or systematically selecting every “5th” or 10th” case (for example), from a complete list of clients.

Box 9: Negros Women for Tomorrow Foundation

NWTF¹ in the Philippines was one of the first MFIs to adopt the PPI. With more than 70,000 clients, NWTF is one of the largest MFIs in the Grameen Foundation network. It operates 37 branches spread throughout the Visayas region, which comprises six major islands of the Philippines. The region has a 51% poverty rate. In such a complex operating environment, targeting the poorest and tracking their progress out of poverty have been serious challenges faced by the MFI.

NWTF management felt that their primary targeting tool, the housing index section of its means test, was not very effective. They needed a tool that would help it compare data at the branch level so that it could assess a client's progression out of poverty and evaluate the unique products and services that may have distinguished the social performance of one branch versus another. Perhaps most important, NWTF management sought a tool that was objectively benchmarked to national and international poverty lines, using national-level household income and expenditure data. Implementing the PPI throughout the NWTF branches would meet NWTF's information requirements; each branch would be connected to the head office and data would be gathered and analyzed seamlessly. But, before any of this could be possible, the PPI had to become operational.

NWTF developed an action plan to integrate the PPI into its operations:

- The MFI chose to pilot the PPI at its branch in Cauayan, using a census of clients. (NWTF was able to compare this new data with the results from the same sample of clients tested in 2003 as part of an impact assessment.)
- It administered the PPI to clients in the pilot branch at program entry and at the time of loan renewal.
- It also trained loan officers in selected branches to administer the PPI.

From the time of the initial testing period to today, NWTF has:

- integrated the PPI into its operations in all 37 branches, replacing the housing index as its client targeting tool;
- set a target of 90% of entering clients to be below the national poverty line, ensuring that it is reaching out to the poorest of the poor;
- refined its census approach to gather data on every entering and existing client at every loan cycle, giving it comprehensive results to analyze;
- adjusted its initial loan size and loan-cycle period, and provided pre-payment options to be more suitable for the poor;
- compared data by branch to understand what products and services are most effective;
- collected information on other indicators (such as repayment rates, savings balances, client age, type of business, number of clients' entrepreneurial activities, and whether client is in a rural or urban setting) to use as it refines its products and services; and
- worked to fully automate PPI data collection and analysis in all of its branches.

Source: Grameen case-study on NWTF; <http://www.progressoutofpoverty.org/>.

In addition to the PPI, there is the "PAT" (the USAID Poverty Assessment Tool). To meet practitioner demand and the previously mentioned U.S. Congressional mandate, USAID's Microenterprise Development Office contracted the IRIS Center at the University of Maryland to develop low-cost and practical survey tools for assessing the prevalence of extreme poverty among USAID's microenterprise beneficiaries. The USAID Poverty Assessment Tools (PATs) are simple survey toolkits to assess extreme poverty in specific countries. Similar to Grameen's PPI, the USAID PATs use nationally representative household surveys (such as the World Bank Living Standards Measurement Study) and indirectly capture household poverty status with proxy indicators of household welfare. The IRIS PAT team employed multiple regression techniques to select the combination of 15–20 indicators that most accurately predicts the prevalence of poverty among a sample of households in a given country.

Although it initially focused on the Congressional reporting requirement, the IRIS PAT team is currently working on adding a second poverty line to each existing PAT, as well as updating the existing PATs

from the “\$1 per day” extreme poverty line to the new \$1.25-per-day (PPP, or purchasing power parity) international extreme poverty line. The USAID PAT toolkit for each country includes a questionnaire, usually with 15–20 questions; a data entry template with a simple program for calculating the poverty prevalence; and a set of support materials consisting of a full online course in PAT implementation, an implementation manual, and other materials that can be used to train one’s own assessment team.

As of June 2009, there were 27 current USAID Poverty Assessment Tools (three were developed in consultation with the Grameen Foundation), and 5 new tools are expected to be available in late 2009. To see a list of countries, see [annex 1](#) (or visit <http://povertytools.org/tools.html>).

Key Steps for Proper Implementation

The USAID PATs are designed to accurately predict the prevalence of poverty among a group of people (such as microfinance clients). However, like any quantitative survey, the accuracy of the results is greatly influenced by the manner in which the tools are implemented. The following are some of the chief steps that help ensure that the poverty assessments will yield valid and reliable results:

- Team selection—select personnel suited to, and preferably with experience in, their tasks and functions.
- Training—The feedback IRIS has received from implementers of the PAT highlights the importance of spending adequate time to properly train the implementation team. The interviewers need to understand the meaning and purpose of each question and have adequate time to practice implementing the tool with actual clients. They also need discussion time to fine tune their interviewing techniques and to resolve any doubts about the translation or wording of the questions.
- Representative sampling—When selecting who to interview, the MFI needs to make sure that everyone in the target population has an equal chance of being selected so that the sample is a good approximation of the entire client base. If the sample does not come from ALL the clients, then the results will not accurately represent the entire client population.
- Logistics and planning—Spending adequate time scheduling interviews so that travel time is minimized for the interviewers, and notifying those selected for an interview, can greatly reduce the amount of time to carry out the PAT. Time needed to implement a PAT can also be reduced significantly by having loan officers help with the scheduling, since they know where the clients live and when they meet.
- Quality control—This is important during all stages of PAT implementation and should include processes to ensure that the sampling is truly representative, observations of each interviewer’s technique during actual client interviews, meetings with the interview team soon after their initial interviews to discuss challenges and make sure everyone is consistent in the application of the survey instrument, reviews of each survey for completeness and consistency (returning it to the interviewer if necessary), and double checks that the data has been properly entered into the database.

By spending sufficient time on sampling, training, logistics, and quality control, the time and effort spent on the poverty assessment will yield a valid estimate of poverty prevalence. Poverty tools can also be reapplied over time in order to note any change in the prevalence of poverty among interviewees. However, care should be taken when attributing the changes in clients’ poverty status to participation in a specific MFI program. Proving program impact is much more involved than noting differences over time.

Incorporating into Operations

There are a few options for applying a poverty tool. It can be an annual survey of a sample of clients by a trained team (either internal staff or contractors). It can also be applied to all clients (a census) on a regular basis. A drawback of applying the PAT to all clients is that a much larger team of interviewers is needed, and it is harder to ensure the quality and reliability of the information being collected than with a smaller, trained team interviewing a representative sample.

If an organization already collects data from its clients on a regular basis, then the PAT can be combined with the existing monitoring tool to increase efficiency. However, when the PAT is combined with another tool, the PAT should come first, followed by the other questions, in order to maintain consistency among all institutions implementing a PAT survey.

The forthcoming second poverty line will allow an organization to segment its clients into three different poverty bands (non-poor, poor, and very poor). By tracking this poverty data regularly, the organization can design its mix of products and services even more precisely to best meet the needs of each segment of its market.

7. Conclusion

While there are a variety of sampling design options, choosing the right one often depends on the budget of the organization, their existing resources (in terms of research officers, data-entry staff and field officers to conduct the surveys), available information about the target population, and the local context. An MFI situated in a hilly region with clients in remote villages may find cluster sampling more useful than other techniques. MFIs that have a smaller area of operation with clients heavily concentrated in a small area may choose to go for simple random sampling. Hence, there is no standard sampling strategy.

However, each MFI can identify a “suitable” sampling strategy for it that offers several advantages in terms of helping the MFI save time and money while also yielding valid and reliable information on their depth of poverty outreach, which will help the MFI demonstrate whether it is meeting its social goals. The trend towards standardization of social indicators by various stakeholders including the Social Performance Task Force²⁹, and the increasing demand by donors and international community for MFIs to report their depth of poverty outreach, means that the onus is on the MFIs to test social indicators quickly and to incorporate these in their operations. Testing additional indicators that need to be added by the MFI or testing a standardized poverty tool means that the MFI has to undertake a sample survey. The following summary highlights the important guidelines for sampling:

- Try to use random sampling techniques at every stage of selection.
- Ensure an appropriate sample size and methodology and build in checks and systems to correct any sampling or non-sampling errors

²⁹ The Social Performance Task Force defines social performance as: "The effective translation of an institution's social mission into practice in line with accepted social values that relate to serving larger numbers of poor and excluded people; improving the quality and appropriateness of financial services; creating benefits for clients; and improving social responsibility of an MFI." (Source: www.microfinancegateway.org). For more details on the Social Performance Task Force, go to their website: www.sptf.info.

- Try for an adequately large sample size that reflects the variations in the population.³⁰
- Increase minimum sample size to compensate for attrition and non-responses.
- Cluster sampling requires a larger sample size to maintain heterogeneity of sample.
- For a longitudinal survey, make sure that the sample is adequate and the MFI has a unique identification for each client.
- Provide adequate training to survey staff.
- Have a system of checks and quality control.

The matrix in table 3 presents a rundown of the issues faced by an MFI in selecting its “suitable” sampling strategy as well as the advantages and disadvantages of each.

Table 3: Sampling Matrix: How to Select the Right Method for Your Organization

	When to use	Issues	What has worked	What has not
Census				
	1. When the MFI has tested and is sure of the social indicators it wants to use; 2. The MFI has integrated the indicators in its operations; 3. When the MFI is small and can do a census survey cost-effectively	1. Census can be very expensive; 2. Is prone to non-sampling errors.	CEP, Vietnam developed its own set of client poverty classification that it uses to collect baseline data from all entering clients.	Maintaining quality and adding new indicators is an area of concern for FDL.
Sampling				
SRS	Ideally for all sample surveys; when the MFI has a complete list of clients and the area of operations of the MFI is not too large	1. Potential for bias if the MFI does not have a complete list or the list excludes certain groups; 2. If the sample is spread out over a large area of operations, then the cost and time to do a survey will go up significantly.	For small population that is accessible, SRS is simple and easy to do. .	For BASIX, using SRS in SIP round 1 led to a sample distribution that included all of the organization’s operating areas that was not time and cost effective.

³⁰ R.V. Lenth, 2001, “Some Practical Guidelines for Effective Sample-Size Determination,” unpublished paper, Department of Statistics, University of Iowa, <http://www.stat.uiowa.edu/techrep/tr303.pdf>.

	When to use	Issues	What has worked	What has not
Stratified	When an organization wants to collect information on certain groups of clients - occupation, religion etc.	If the MFI does not have accurate information concerning the number of clients belonging to a particular subgroup, the resulting strata and sample will be biased	ACSI first stratified sub-branches based on the level of rainfall as well as branch performance. It further stratified the clients based on their time with the MFI, gender and location. BASIX followed this method in the second and third round of SIP where client occupation was used as a measure of stratification.	If the MFI has difficulty identifying appropriate strata, then this method of sampling will not be effective. Also, the process of stratification as well as analyzing results by strata may require more resources, which would be a problem for a small MFI or an MFI without a research department.
Cluster	When an organization's area of operations is too large	For good geographic clusters, it is important to have as much information about the area as possible.	For an organization looking for a quick snapshot of poverty profile of its clients in a particular area using the PPI, a few branches are selected using cluster sampling from the full list of branches; this selection can be random or based on a judgment of the organization.	If the clusters are not very different from each other and there are similarities in the chosen clusters, then they will be less likely to represent the population.
Longitudinal	When an organization wants to get a 'before-and after picture of its clients; when measuring change over time	Maintaining a large enough sample that is representative over time and accounting for 'drop-outs'.	CEP was able to do a thorough longitudinal survey with a reasonable sample size of 471 clients, with 271 remaining by the third round of survey. This was because the organization had a well-trained and staffed research department that was equipped to deal with such a study.	For K-Rep, the selection and size of the sample became a stumbling block. The selected sample for the longitudinal study was from the savings and credit project for HIV & AIDS-infected people. Between the the high mortality rate and program drop-outs, K-Rep was left with a greatly reduced sample by the second round of survey.

	When to use	Issues	What has worked	What has not
Cross-sectional	A cross-sectional sample is useful when the MFI needs a “snapshot” of the affect of services offered on newer versus older clients or to measure change, but the MFI does not have the time or the resource to do a longitudinal study.	While cross-sectional studies are quick and easy; this kind of study may not be useful for demonstrating change in clients’ status and especially limited in demonstrating actual impact	Many SIP partners followed a cross-sectional methodology to get a snapshot of differences in lives of new and older clients.	If the organization does not analyze the data differentiating for new and older clients, then the purpose for doing a cross-sectional survey is defeated.

Annex 1: Availability of PAT and PPI

PAT	PPI
Americas	
Colombia	Bolivia**
Guatemala	Colombia
Haiti*	Ecuador
Jamaica	El Salvador
Mexico*	Guatemala
Peru	Haiti
Paraguay	Mexico**
Bolivia	Nicaragua**
	Peru**
Africa & Middle East	
Ethiopia	Ghana
Ghana (updated)	Kenya**
Madagascar	Malawi
Malawi	Morocco
Uganda	Mali
Liberia	Nigeria
Nigeria	Palestine
Senegal	South Africa**
West Bank	
Asia	
Bangladesh	Bangladesh
Cambodia	India**
East Timor	Indonesia
India	Nepal**
Indonesia	Pakistan
Nepal	Philippines**
Philippines*	Vietnam
Vietnam	
Eastern Europe & Newly Independent States	
Albania	
Azerbaijan	
Bosnia & Herzegovina	
Kazakhstan	
Kosovo	
Serbia	
Tajikistan	
Countries in bold = PATs coming in 2009 * Developed by USAID in consultation with Grameen Foundation ** One of the SIP partners in this country used the PPI Source: www.povertytools.org/tools.html (PAT) and http://www.progressoutofpoverty.org/ (PPI)	

Annex 2: Frequently Asked Questions

My MFI's clients are mostly in urban areas but there are a couple of branches in rural areas that are not easily accessible. How do we include the rural clients in the sample so that it is representative?

Many MFIs may have branches in areas that are far-flung and not easily reached. In this scenario, cluster sampling is appropriate. The MFI may also choose to do only urban sample for 3 years and only rural sample the 4th year. However, when reporting your results, you must be sure to specifically state which portion of your client population was studied that year, and not say that the results were representative of all of your clients.

My MFI is very small and my client size is about 500. What would be a good sample size for my MFI?

One can use the sample size table to get a sample (see table 2). For a population of 1,000, and a 95% confidence level, the sample size is 278.

Do I need a client ID?

Having a unique client ID helps MFIs track clients and drop-outs. This is especially relevant for any longitudinal study as the MFI needs to make sure that those clients can be found. The client ID can be any government ID issued to the client (e.g., a ration card or pass-book) or an ID number issued by the MFI.

What do I do if certain sampling areas are inaccessible?

Sometimes it may not be possible to reach certain areas because of bad weather, or communal or other violence, or impassable roads. In this case, if the sample has been drawn from a cluster, the best approach is to replace the cluster with another randomly selected cluster with similar characteristics. For example, if the cluster in question is located in the hilly regions of the MFI's operational area, and it is not possible to choose another cluster in the same area, then the MFI should choose a replacement cluster that has the same general characteristics as the previously chosen cluster. If the cluster in the hilly region was characterized by lack of resources, inaccessibility and poverty, another cluster with the same characteristics can be a good replacement.

What if some of the clients in the sample cannot be reached?

Non-response is a problem common to all surveys. Typically, non-response is encountered when no one is home at sample households. Revisiting the client's home should help. However, it is very important to build in some level of non-response into the calculation of sample size. The USAID PAT recommends sampling 40% extra in order to have alternative clients/list available in each area or subgroup.

What can we do if we have only limited funds for the survey?

Adequate resources are a challenge for most MFIs. Both the PPI and PAT require less intensive data analysis than other types of surveys so the MFI has some leeway in using more of the available resources for the survey process. However, for impact studies, or when the MFI is collecting information on a large number of social indicators that require a full analysis, it may be useful to spend about one half of the total amount for data collection and the other half for data analysis. This constraint will obviously influence the sample size.

What kind of training is required for the interviewer?

It is very important to provide training to the interviewer to reduce bias and error. Training on how to interview someone, what would be a good timing for the interview, the correct way to ask questions etc. will help the interviewer. It is also very important for the interviewer to know and understand why h/she is collecting this information. Where there is no buy-in or understanding of social indicators, it will be much less likely to end up with accurate data. It can be seen from the examples in this paper that MFIs and networks have invested in training to get the best results from the poverty assessment tools as well as other social indicators.

How do I handle it if my repeat clients do not like answering the same questions every cycle?

For repeat sample, it is important for the both the interviewer and interviewee to understand the purpose of the survey. The interviewer needs to explain to the interviewee the motive for asking the same questions at every loan cycle. Also, if the survey is part of client-intake or loan application form, the clients will more likely to accept it as part of standard loan process.

Are there any online resources on poverty tools and sampling?

Both the PPI and PAT have websites and resources for practitioners. The PAT website (www.povertytools.org) has comprehensive and detailed information on the tool as well as an implementation manual (with a chapter on sampling). It also provides online training on implementing the tool. The PPI website also has a detailed section on sampling. Other online resources and tools are listed below.

Annex 3: References and Sampling Resources

Research Methods Knowledge Base

Stat Trak

<http://stattrek.com/AP-Statistics-2/Survey-Sampling-Methods.aspx?Tutorial=AP>

Australian Bureau of Statistics

<http://www.abs.gov.au/websitedbs/d3310116.NSF/4a255eef008309e44a255eef00061e57/116e0f93f17283eb4a2567ac00213517!OpenDocument>

Other

<http://www.socialresearchmethods.net/kb/index.php>

<http://www.scribd.com/doc/2034905/Research-Methodology-Part-5-Sampling-Sampling-Strategy-or-Plan>

http://en.wikipedia.org/wiki/Category:Sampling_techniques

[http://en.wikipedia.org/wiki/Sample_\(statistics\)](http://en.wikipedia.org/wiki/Sample_(statistics))

[http://en.wikipedia.org/wiki/Sampling_\(statistics\)](http://en.wikipedia.org/wiki/Sampling_(statistics))

Statistics Glossaries

<http://www.stats.gla.ac.uk/steps/glossary/sampling.html#clustsamp>

<http://www.statsoft.com/textbook/glosfra.html>

<http://www.stat.berkeley.edu/~stark/SticiGui/Text/gloss.htm#s>

<http://www.marketresearchterms.com/s.php>

Generating Random Numbers

<http://www.random.org/>

<http://stattrek.com/Tables/Random.aspx>

Sample Size Calculator

<http://www.surveysystem.com/sscale.htm>

Poverty Measurement Tools

Grameen Foundation Progress out of Poverty Index™ (PPI), <http://www.progressoutofpoverty.org>

CGAP, Grameen Foundation, and the Ford Foundation endorse the use of rigorous poverty assessment tools and believe the PPI is a highly effective tool for institutions interested in measuring the likelihood of client poverty. The PPI, based on an approach developed by Mark Schreiner of Microfinance Risk Management LLC, is a tool that estimates the likelihood that an MFI's clients fall

below the national poverty line (the poorest half below the national poverty line) or the US\$ 1-per-day (PPP) and US\$ 2-per-day (PPP) international poverty lines.

USAID Poverty Assessment Tools (PAT), www.povertytools.org

The USAID Poverty Assessment Tools include short, country-specific surveys that gather household data on indicators that have been identified as the best predictors of whether a given set of households is very poor, according to the legislative definition of extreme poverty applicable to the country in question. Each tool is meant to be administered in 20 minutes or less, and produce data which can be easily used by partner organizations to determine generally what percentage of clients fall into the definition of *very poor* according to the legislation.

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About the CGAP/Ford Foundation Social Indicators Program

In 2005, the Ford Foundation and the Consultative Group to Assist the Poor (CGAP) initiated the three-phase Social Indicators Project (SIP) to assess the extent to which microfinance institutions (MFIs) are reaching the very poor, as well as how their programs are affecting other social dimensions, such as education and gender equity (i.e., women's empowerment). Partnering with more than 31 MFIs in 24 countries, the SIP developed and tracked indicators that provide insight related to several of the Millennium Development Goals (<http://www.un.org/millenniumgoals>), especially MDG 1, which aims to halve, between 1990 and 2015, the proportion of people whose income is less than US\$ 1 a day. The phase 1 survey, completed in 2005, captured the range of social indicators used by the participating MFIs in gathering information on the poverty, education, health, and empowerment of their clients. The Phase 2 survey, completed in 2007, saw the consolidation of indicators with a focus on MDG 1—measuring outreach to clients living on less than \$1–\$2 per day and change in their well-being. The phase 3 survey is an opportunity for partners to attempt to integrate their choice of social indicators or poverty tool in their social performance goals.

About The SEEP Network

The mission of the Small Enterprise Education and Promotion (SEEP) Network is to connect microenterprise practitioners in a global learning community. It brings together microenterprise practitioners from around the world to develop practical guidance and tools, build capacity, and help set standards to advance our common vision: a sustainable income in every household.

In 1985, SEEP was founded by a group of practitioners who believed that sharing practical experiences within a trusting environment would result in improved microenterprise development practices. Today, our members are active in more than 180 countries and reach 23 million microentrepreneurs and their families. SEEP's most valuable resource is the experience of its members and their commitment to collaboration. This exchange utilizes problem solving, experimentation, and peer-to-peer learning in order to identify common obstacles and develop solutions for reducing poverty.

The unique ability to convene practitioners in a global learning network results in credible, practical approaches that increase the power of enterprise to reduce poverty worldwide.

About the Author

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