



Sampling Strategy

Sample Sizes and Error Margins. An indicator of data quality is the standard error of the estimate, on which the margin for sampling error is based. As survey statistics are mostly proportions, the key measure of data precision is the standard error of a proportion taken from a sample. It is computed as follows:

$$\pm Z * \sqrt{\frac{p(1-p)}{n}}$$

Where Z, at 95% confidence level is 1.96; *p* is the sample proportion estimate and *n* is the sample size. The overall sample size of 1,200 voting-age adults gives a maximum error margin of ± 2.83 % at the 95% confidence level, assuming a simple random sampling design. The sampling error is at its highest when the true proportion being estimated is close to 50%.

The following approximate 95%-confidence margins for sampling error should be made when aggregating data at various levels:

	<u>Sample Size</u>	<u>Error margin</u>
Philippines	1,200	±3%
National Capital Region	300	±6%
Balance Luzon	300	±6%
Visayas	300	±6%
Mindanao	300	±6%

However, somewhat higher error margins should be expected since multi-stage cluster sampling are used; this design-effect is not readily measurable through established statistical software.

Sampling scheme. The Philippines is divided into four study areas: National Capital Region (NCR), Balance Luzon, Visayas, and Mindanao.

Multi-stage probability sampling will be used in the selection of sample spots. The allocation of sample units in each stages are as follows:

	<u>Sample Prov.</u>	<u>Sample Mun.</u>	<u>Spots</u>	<u>Probability Respondents</u>
National Capital Region	--	17	60	300
Balance Luzon	10	15	60	300
Visayas	5	15	60	300
Mindanao	6	15	60	300
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	21	62	240	1200



For the National Capital Region (NCR)

Stage 1. Selection of Sample Spots (Barangays)

For NCR's first stage, 60 barangays will be distributed among the 17 NCR cities and municipalities in such a way that each city/municipality will be assigned a number of barangays that are roughly proportional to its population size. Additional provisions are that each municipality must receive at least one barangay. Barangays will then be selected from within each municipality with probability proportional to size (PPS).

Stage 2. Selection of Sample Households

In each sample barangay, five households will be established by systematic sampling. Designated starting points will be randomly assigned - it will be either: 1) a municipal/barangay hall, 2) a school, 3) the barangay captain's house, or 4) a church/chapel/mosque, 5) a health facility, or 6) a basketball court. A random start from 1-6 will also be randomly generated for each spot. Thus, if a particular spot has a random start of 4, the first sample household should be the 4th household from the designated starting point. Subsequent sample households will be chosen using a fixed interval of 5 households in between the sampled ones; i.e. every 6th household is sampled.

Stage 3. Selection of Sample Adult

For the third stage, in each selected household, a respondent will be randomly chosen among the household members who are 18 years of age and older, using a probability selection table. In selecting the probability respondent of a household, only male family members will be pre-listed in the probability selection table of odd-numbered questionnaires; only female family members will be pre-listed for even-numbered questionnaires. A respondent not contacted during the first attempt will be visited for a second time. If the respondent remains unavailable, or in cases where there are no qualified probability respondent of a given gender, the interval sampling of households will continue until five sample respondents have been identified.

For the rest of the Philippines

Stage 1. Allocation and Selection of Sample Provinces

Balance Luzon is further divided into 6 regions: Region I, CAR + Region II, Region III, Region IV-A, Region IV-B and Region V; Visayas into 3 regions: Region VI, Region VII and Region VIII; and Mindanao into 6 regions; Region IX, Region X, CARAGA, Region XI, Region XII and ARMM.

Using probability proportional to population size (PPS) of the region, the allocation of 10 provinces in Luzon, 5 in Visayas and 6 in Mindanao are as follows:



<u>LUZON</u>		<u>VISAYAS</u>		<u>MINDANAO</u>	
Region I	2	Region VI	2	Region IX	1
CAR/REG II	1	Region VII	2	Reg X	1
Region III	2	Region VIII	1	CARAGA	1
Region IV-A	3			Region XI	1
Region IV-B	1			Region XII	1
Region V	1			ARMM	1
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TOTAL	10		5		6

The non-quota provinces will be selected without replacement using probability proportional to their remainders. The remainders are fractions derived when the proportion of the regions (based on their respective study area) are multiplied by 10 for Luzon, and 5 for Visayas and 6 for Mindanao. For instance, if 1.28 is obtained for Region I, then 1 province is assigned to this region and remaining fraction of 0.28 is included for the allocation of the non-quota province.

Given the target number of provinces for each region, sample provinces will then be selected by PPS, without replacement. An additional provision is that each region must receive at least one province.

Stage 2. Allocation and selection of sample municipalities

Within each study area, 15 municipalities will be allocated among the sample provinces. 15 is multiplied by the proportion of the provinces. The resulting integers become the number of municipalities in that province. If there are remaining municipalities to be allocated, they will be distributed using probability proportional to the remainders.

Sample municipalities will then be selected from within each sample province with probability proportional to population size, without replacement. An additional provision is that each province must receive at least one municipality.

Stage 3. Allocation and Selection of Sample Spots

Once the sample provinces have been selected, 60 spots for each of the major areas will be allocated among the sample provinces. Using the target number set for each spot in each region, the spots will be distributed in such a way that each province will be assigned a number of spots roughly proportional to its population size.



<u>LUZON</u>		<u>VISAYAS</u>		<u>MINDANAO</u>	
Region I	8	Region VI	24	Region IX	9
CAR+REG II	7	Region VII	22	Reg X	12
Region III	15	Region VIII	14	CARAGA	7
Region IV-A	17			Region XI	12
Region IV-B	5			Region XII	11
Region V	8			ARMM	9
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TOTAL	60		60		60

Sample barangays within each sample municipality will be selected with probability proportional to size.

Sample barangays will then be classified as urban or rural based on the latest National Statistics Office classification (2000).

Stage 4. Selection of Sample Households

For the fourth stage, within each sample spot, five households will be established by systematic sampling. In urban barangays as well as in rural barangays, designated starting points will be randomly assigned - it will be either: 1) a municipal/barangay hall, 2) a school, 3) the barangay captain's house, 4) a church/chapel/mosque, 5) a health facility, or 6) a basketball court. A random start from 1-6 is also randomly generated for each spot. Thus, if a particular spot has a random start of 4, the first sample household should be the 4th household from the designated starting point. The sampling interval for urban barangays is six, while for rural barangays, it is two.

Stage 5. Selection of Sample Respondents

For the fifth and final stage, as discussed earlier, a respondent will be randomly chosen from among the voting-age adults in each selected household using a probability respondent selection table. A respondent not contacted during the first attempt will be visited for a second time. If the respondent remained unavailable, or in cases where there are no qualified probability respondent of a given gender, the interval sampling of households will continue until five sample respondents have been identified.


LINDA LUZ GUERRERO
Vice-President SWS and
Principal Investigator WVS