AmericasBarometer, 2012

Sample Design

The 2012 AmericasBarometer study is based on interviews with 41,632 respondents in 26 countries. Nationally representative surveys of voting age adults were conducted in all major languages, using face-to-face interviews in Latin America and the Caribbean and web surveys in the United States and Canada. Samples in each country were developed using a multi-stage probabilistic design (with quotas at the household level for most countries), and were stratified by major regions of the country, size of municipality and by urban and rural areas within municipalities.

Table 1: Sample sizes and Sampling errors in the 2012 AmericasBarometer

Country	Sample Size	Sampling Error
Mexico/ Central America		
Mexico	1,560	±2.5%
Guatemala	1,509	±2.5%
El Salvador	1,497	±2.5%
Honduras	1,728	±2.4%
Nicaragua	1,686	±2.4%
Costa Rica	1,498	±2.5%
Panama	1,620	±2.4%
Andean/Southern Cone		
Colombia	1,512	±2.5%
Ecuador	1,500	±2.5%
Peru	1,500	±2.5%
Bolivia	3,029	±1.8%
Paraguay	1,510	±2.5%
Chile	1,571	±2.5%
Uruguay	1,512	±2.5%
Brazil	1,500	±2.5%

Venezuela	1,500	±2.5%
Argentina	1,512	±2.5%
Caribbean		
Belize	1,512	±2.5%
Dominican Republic	1,512	±2.5%
Guyana	1,529	±2.5%
Haiti	1,836	±2.3%
Jamaica	1,500	±2.5%
Suriname	1,492	±2.5%
Trinidad & Tobago	1,506	±2.5%
United States and Canada		
Canada	1,501	±2.5%
United States	1,500	±2.5%
Total	**41,632**	

*Confidence intervals based on unweighted sample sizes. For cross-national analysis purposes, LAPOP weights each sample to 1,500. These sampling errors are based on SRS and not adjusted for stratification and clustering. For information on the impact of the complex sample design on confidence intervals, see section VII of this document.

In its effort to collect the best quality data possible and therefore produce the highest quality studies, the Latin American Public Opinion Project (LAPOP) adopted a new sample design for the AmericasBarometer 2012 round of surveys. The two main reasons for this decision were: (1) updating the sample designs to reflect the population changes as revealed by recent census information, and (2) making the samples representative at the municipal level, to enable the use of the municipality as a unit of analysis for multilevel statistical analysis

1) Prior LAPOP surveys were based on the 2000 round of national census data. Since new censuses have been carried out in many countries in Latin America and the Caribbean over the last few years, the samples were updated in order to take into account population shifts, so that sample designs are based on the most current population distributions available (by sex and age and also across geographical units within each country). Unfortunately, not all nations in our sample had updated census data available at the time LAPOP designed the 2012 AmericasBarometer.

2) With the objective of making it possible to perform subnational multi-level analyses and therefore assess the impact of both contextual and individual level characteristics at the subnational level, LAPOP adopted a new strategy for designing survey samples that allocate a somewhat larger number of cases to municipalities within each country. Recent studies have demonstrated the importance of considering both the effects of municipal as well as regional characteristics on citizens' attitudes and behaviors; however, multilevel analyses are only feasible if a reasonable number of interviews are carried out in each municipality, and if those interviews are reasonably well distributed throughout each municipality. Prior to 2012, a municipality was often covered by only a single sampling

point, which itself could be located in either an urban or a rural area, but not both. Thus, by increasing the number of interviews per municipality, LAPOP seeks to facilitate investigating subnational patterns using multilevel modeling techniques.

Simulations were carried out using the 2010 data set in order to determine the impact of revising the sample designs. Those simulations demonstrated the efficacy of the new design proposal, but required some modification for the largest countries in the sample.

Traditionally, the LAPOP samples have been stratified by regions and by urban and rural areas. In the 2012 round all country samples continue to utilize the very same strata as in prior years in order to maintain the reporting continuity of prior studies. However in the 2012 round, LAPOP introduced a new level of stratification by the size of the municipalities. The new level of stratification includes three different strata of municipalities classified according to their size[1].

The remaining pages of this technical note describe the sample design of the AmericasBarometer 2012 survey.

I.   Universe, Population, Unit of Observation

Universe: The surveys provide national coverage of voting age adults. The universe is comprised of the population living in urban and rural areas and it is representative at the national and regional level.

Population: The survey is designed to collect information from a nationally representative sample of the entire voting age population. Only non-institutionalized voting age adults are eligible to participate in the survey. Therefore, the sample excludes people in boarding schools, hospitals, police academies, military barracks, and inmates of the country's jails.

Unit of Observation: Only one respondent is interviewed per household. The questionnaire almost exclusively includes topics focused on that single respondent, but also does include some questions related to other members of the household and the condition of the household itself. Thus, the statistical unit of observation is the household. However, some respondents live in dwellings that are shared with other households. For this reason, it is more appropriate to consider the dwelling as the final unit of analysis. Additionally, the dwelling is an easily identifiable unit in the field, with relative permanence over time, a characteristic that allows it to be considered as the final unit of selection.

II.   Sample frame

The sampling frame covers 100% of the eligible voting age population in the surveyed country. This means that every eligible person in the country has an equal and known chance of being

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[1] Municipalities were grouped in sizes appropriate for the country. One common grouping was (1) Municipalities with less than 25,000 inhabitants, (2) Municipalities with between 25,000 and 100,000 inhabitants, (3) Municipalities with more than 100,000 inhabitants. Users of the data should consult the individual country questionnaire for details.

included in the survey sample. It also means that no particular ethnic group or geographical areas are excluded from the sampling frame unless the country sample design indicates otherwise. For example, certain Island areas and territories might be excluded. See the country study sample descriptions for such exceptions.

III.   Sampling Method

The sampling method chosen takes into consideration a series of elements pre-established by LAPOP.

On the basis of these requirements, the method that is used corresponds to a **stratified multi-stage cluster sampling.** The sample is stratified based on three factors:

1) Size of the Municipalities
2) Urban/Rural areas
3) Regions

The stratified sampling ensures a greater reliability in our sample by reducing the variance of the estimates. Stratification improves the quality of estimates, with the sole condition that the whole sample unit belongs to only one stratum, and the strata in combination cover the total population. Stratification also enables us to ensure the inclusion in the sample of the most important geographic regions in the country while requiring geographic sample dispersion.

IV.   Stratification

Stratification is the process by which the population is divided into subgroups. Sampling is then conducted separately in each subgroup. Stratification allows subgroups of interest to be included in the sample whereas in a non-stratified sample some key subgroups may have been left out due to the random nature of the selection process. In an extreme case, samples that are not stratified can, by chance, exclude the nation's capital or largest city. Stratification helps us increase the precision of the sample. It reduces the sampling error. In a stratified sample, the sampling error depends on population variance within strata and not between them.

V.   Weighting of individual country datasets

Most of the 2012 AmericasBarometer samples are self-weighted except for Honduras, Nicaragua, Panama, Bolivia, Chile, Haiti, Trinidad & Tobago, the US and Canada. Each country data set contains a variable called WT which is the "country weight" variable. In countries in which the sample is self-weighted, the value of each case = 1. In addition, in order to give each country in the study an identical weight in the pooled sample, LAPOP reweights each country data set in the merged files so that each country has an N of 1,500. The variable "WEIGHT1500" should be activated to produce representative national results. In SPSS this is done via the "weight" command.

VI. Fieldwork dates

Fieldwork dates for each country for the 2012 round are reported in Table 2.

Table 2: Fieldwork dates by country, 2012 AmericasBarometer

Country	Fieldwork start date	Fieldwork end date
Mexico/ Central America		
Mexico	January 25th	February 19th
Guatemala	March 7th	April 5th
El Salvador	April 18th	May 12th
Honduras	January 27th	February 17th
Nicaragua	February 4th	March 1st
Costa Rica	January 28th	February 29th
Panama	January 23rd	March 17th
Andean/Southern Cone		
Colombia	March 1st	April 20th
Ecuador	February 4th	February 12th
Peru	January 20th	February 10th
Bolivia	March 3rd	April 22nd
Paraguay	February 1st	February 28th
Chile	March 30th	May 1st
Uruguay	March 1st	March 30th
Brazil	March 1st	April 18th
Venezuela	February 28th	March 29th
Argentina	March 3rd	April 4th
Caribbean		
Belize	March 14th	April 3rd
Dominican Republic	January 15th	February 15th
Guyana	January 23rd	February 24th
Haiti	January 20th	February 20th
Jamaica	February 27th	May 24th
Suriname	April 22nd	May 10th
Trinidad & Tobago	March 23rd	April 13th
United States and Canada		
Canada	May 15th	May 22nd
United States	April	

VII.   Design Effects

Accuracy of the Findings

Two types of errors affect all surveys: non-sampling errors and sampling ones. Non-sampling errors are those that are committed during the data collection and processing. These can be controlled using a good measuring instrument, adequately training the surveyors, supervising the fieldwork, and with appropriate data collection programs. These errors can be controlled but not quantified. However, comparing the sample results with those of the population gives us an idea of whether these errors have generated biases that reduce the representativeness of the sample. The use of handheld computers (palm pilots) probably reduced these errors by carrying out consistency checks of the responses and flow of the interview at the same time and place that it was done. Additionally, by eliminating the process of data entry, we eliminated the errors that this activity generates. With the traditional procedures of paper-based questionnaires, processes of coding and critiquing the data must be carried out in the office (eliminated by using palm pilots), which can also generate errors. With paper questionnaires, computer-based consistency checks can only be run several weeks after the data was collected. Correcting errors detected in the office during the critique or by programs that detect inconsistencies is difficult or impossible given the separation in time and space between the moment of the interview on paper and the detection of these errors.

Sampling errors are a product of chance and from surveying a sample and not the entire population. When a sample is selected, this sample is one of many possible samples that could be selected from the population. The variability that exists between all these possible samples is the sampling error, which we could measure if all these samples were available, obviously an impossible situation. In practice, what is done is to estimate this over the variance obtained from the sample itself. To estimate the sampling error of a statistic (average, percentage, or ratio), we calculate the standard error, which is the square root of the population variance of the statistic. This allows us to measure how close the statistic is to the result that would have been obtained if the entire population were interviewed under the same conditions.

$$DEFT = SE_{complex} / SE_{URS}$$

To calculate this error, it is very important to consider the design with which the sample was selected. The design effect (DEFT –above is DEFT) indicates the efficiency of the design used in relation to an unrestricted random sampling design (URS). A value of 1 indicates that the standard error (SE) obtained for both designs (the complex and the URS) is equal; that is, the complex sampling is as efficient as the URS with the same-sized sample. If the value is greater than 1, the complex sampling produces a SE greater than that obtained with a URS.

Table 3 show the value of the statistic in question (average or percentage) and the design effects (DEFT) of the 2012 round of the AmericasBarometer. The table also reports the design effects of the 2010 round (for the same variables) before the implementation of the new sample design. The SE were estimated with the Stata 12 computational package. Extreme values come from a high degree of homogeneity within each cluster. In other words, in these cases there is an important spatial segregation of people according to their socioeconomic condition, which reduces the efficiency of cluster sampling to measure these characteristics.

It is worth stating that sampling error is usually 10% to 40% greater than that which would have been obtained with unrestricted random sampling. In general for a well design study, the design effect usually ranges from 1 to 3. For example, in the case of Costa Rica, the Support for Democracy (Ing4r) has a sampling error of 1.35. This means that the 95% confidence interval (1.96 times the SE) for the average of this variable (75.11) goes from 72.46 to 77.76. According to the DEFT of the table, this interval is 31% greater than that which would have been obtained with a URS (see Table 3).

As can be seem from the table, the new sample design followed in the 2012 round has improved the DEFT for most of the variables and countries, which indicates that the stratification used in the 2012 round produces more precise survey estimates than the ones obtained in previous rounds of the AmericasBarometer. This also mean that the 2012 sample design produces smaller confidence intervals for each variable/estimates in the survey compare to the ones obtained in 2010 (and previous years).

Table 3: Design effects, 2012 AmericasBarometer Survey

| Country | Ing4r | | | | it1r | | | |
| | 2012 | | | 2010 Round | 2012 | | | 2010 Round |
	Average	Std. Error	DEFT	DEFT	Average	Std. Error	DEFT	DEFT
México	68.03	1.23	1.33	1.53	56.35	1.10	1.58	1.48
Guatemala	61.74	1.30	1.32	1.22	62.09	2.15	2.83	1.37
El Salvador	65.64	0.76	0.98	1.10	59.05	0.96	1.11	1.08
Honduras	52.65	0.98	1.05	1.74	63.90	1.33	1.71	1.35
Nicaragua	73.81	0.85	1.07	1.39	61.47	0.92	1.13	1.84
Costa Rica	75.11	1.35	1.31	1.52	66.59	1.50	1.87	1.74
Panamá	73.89	1.55	1.37	1.84	67.53	0.93	1.41	1.73
Colombia	68.30	1.35	1.36	1.22	62.37	1.28	1.61	1.81
Ecuador	64.16	1.24	1.23	1.80	59.90	1.09	1.52	1.43
Bolivia	61.78	1.67	1.87	2.27	54.45	0.94	1.93	3.46
Peru	63.58	0.96	1.21	1.49	50.28	1.23	1.63	1.53
Paraguay	69.05	1.01	1.10	1.46	67.13	0.98	1.20	2.02
Chile	74.03	1.19	1.38	1.29	63.15	1.42	1.99	1.54
Uruguay	86.54	0.80	1.15	1.22	66.41	1.28	1.78	1.84
Brazil	70.50	1.22	1.25	3.22	58.01	1.16	1.58	2.51
Venezuela	85.35	1.07	1.35	1.80	60.17	1.01	1.41	2.27
Argentina	83.18	0.94	1.23	2.11	67.65	1.23	1.73	2.22
Dominican Rep.	69.97	0.73	0.96	1.03	60.85	1.01	1.23	1.29
Haiti	70.41	0.72	1.16	1.24	40.28	1.03	1.56	1.24
Jamaica	73.78	1.16	1.29	1.49	60.46	1.17	1.72	1.88
Guyana	75.14	1.41	1.33	1.64	65.87	1.33	2.01	1.61
Trinidad and Tobago	71.85	0.82	1.04	1.30	56.94	0.76	1.05	1.56
Belize	74.94	1.01	1.12	1.29	55.71	1.07	1.52	2.02
Suriname	74.64	0.78	1.01	1.20	65.25	1.37	1.85	1.87
United States	76.36	0.70	1.03	1.03	62.97	0.59	1.06	1.02
Canada	76.27	0.64	1.03	1.02	65.69	0.55	1.07	1.00

Table 3: Design effects, 2012 AmericasBarometer Survey (cont.)

Country	corvic				PSA5			
	2012			2010 Round	2012			2010 Round
	Average	Std. Error	DEFT	DEFT	Average	Std. Error	DEFT	DEFT
México	31.15	1.75	1.48	1.28	55.94	1.04	1.84	1.26
Guatemala	23.51	1.33	1.20	1.13	52.26	1.01	1.96	1.30
El Salvador	11.28	0.93	1.13	1.13	56.69	0.59	0.99	1.48
Honduras	25.75	1.54	1.46	2.33	41.43	0.87	1.69	1.08
Nicaragua	11.39	0.73	0.94	1.37	60.68	0.64	1.12	1.20
Costa Rica	20.72	3.45	3.29	1.26	55.88	0.55	1.00	1.47
Panamá	8.97	1.14	1.60	3.23	43.98	0.82	1.42	2.06
Colombia	16.14	1.44	1.52	1.27	55.53	0.83	1.55	2.11
Ecuador	40.87	1.88	1.48	1.52	53.63	0.95	1.66	1.87
Bolivia	44.78	2.69	2.98	2.41	48.07	0.99	2.82	2.57
Peru	28.49	1.39	1.19	1.20	49.54	0.80	1.65	1.64
Paraguay	20.97	1.40	1.33	1.30	46.99	0.72	1.22	1.17
Chile	5.78	0.88	1.49	1.14	55.04	1.15	2.28	1.40
Uruguay	8.20	0.65	0.93	1.08	59.54	0.67	1.17	1.35
Brazil	11.53	1.24	1.50	3.21	45.44	1.04	1.74	1.96
Venezuela	15.34	1.11	1.19	1.23	56.24	1.08	1.70	1.43
Argentina	19.25	1.77	1.74	2.02	55.41	1.25	2.09	2.03
Dominican Rep.	21.69	0.94	0.89	1.31	48.80	0.68	1.14	1.12
Haiti	67.01	1.73	1.57	1.22	44.47	0.86	1.97	1.35
Jamaica	7.47	0.77	1.14	1.12	53.56	0.90	1.67	1.60
Guyana	19.36	1.54	1.53	1.50	58.23	1.23	2.33	2.33
Trinidad and Tobago	14.75	1.15	1.26	1.09	49.67	0.82	1.28	1.20
Belize	11.91	0.90	1.08	1.13	61.74	0.77	1.49	1.64
Suriname	11.94	0.90	1.07	0.96	61.20	0.69	1.24	1.55
United States	5.35	0.63	1.08	1.03	53.52	0.59	1.05	1.01
Canada	3.36	0.51	1.08	1.04	60.67	0.59	1.06	1.01

Table 3: Design effects, 2012 AmericasBarometer Survey (cont.)

Country	tol				m1r			
	2012			2010 Round	2012			2010 Round
	Average	Std. Error	DEFT	DEFT	Average	Std. Error	DEFT	DEFT
México	48.31	1.26	1.96	1.47	58.02	0.92	1.62	1.30
Guatemala	47.27	1.16	2.04	1.23	56.14	0.75	1.52	1.31
El Salvador	43.71	0.58	0.91	1.27	61.77	0.71	1.20	1.20
Honduras	36.64	0.93	1.62	1.59	45.11	0.73	1.37	1.10
Nicaragua	56.14	0.77	0.99	1.38	67.32	0.64	1.15	1.43
Costa Rica	53.02	1.51	1.83	1.32	48.61	0.68	1.16	1.54
Panamá	50.97	1.26	1.89	3.37	47.75	0.82	1.48	1.32
Colombia	50.40	1.00	1.46	1.37	62.26	0.62	1.26	1.01
Ecuador	43.44	1.14	1.88	2.14	68.26	0.73	1.26	1.76
Bolivia	44.69	0.98	2.55	2.24	51.32	0.99	2.67	4.42
Peru	43.76	0.78	1.52	1.92	56.26	0.64	1.43	1.34
Paraguay	52.42	1.07	1.33	1.43	57.34	0.72	1.23	1.26
Chile	56.60	1.56	2.38	1.75	46.18	1.21	2.15	1.26
Uruguay	64.37	1.69	2.09	1.88	62.93	0.65	1.12	1.03
Brazil	57.00	1.30	1.77	4.04	65.62	0.67	1.31	3.12
Venezuela	54.24	1.88	2.54	2.63	59.97	1.07	1.52	1.60
Argentina	58.94	1.37	1.90	2.69	62.33	0.86	1.33	1.65
Dominican Rep.	54.18	0.96	1.38	1.30	50.94	0.73	1.01	1.21
Haiti	46.97	0.88	2.16	1.30	59.43	0.61	1.29	1.46
Jamaica	60.07	1.37	2.14	2.02	51.74	0.87	1.40	1.62
Guyana	67.94	1.89	2.76	2.36	56.47	1.20	2.09	2.10
Trinidad and Tobago	69.10	0.88	1.29	1.44	50.12	1.08	1.41	1.24
Belize	61.11	1.13	1.40	1.22	51.75	0.63	1.20	1.73
Suriname	55.39	0.84	1.18	1.75	55.93	0.95	1.62	1.84
United States	72.60	0.66	1.05	1.01	44.74	0.98	1.02	1.00
Canada	67.57	0.63	1.06	1.00	47.88	0.81	1.07	1.00

For more information on the sample within each country, please see the country reports and technical information sheets on the AmericasBarometer website, http://www.AmericasBarometer.org.