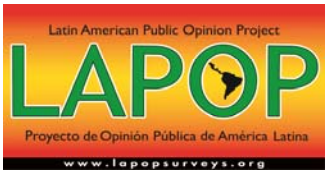

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AmericasBarometer, 2010

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. To calculate this error, it is very important to consider the design with which the sample was selected. The design effect (DEF – above is DEF) indicates the efficiency of the design used in relation to a 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.

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

The tables show the 95% confidence intervals (1.96 times the SE) and the design effects (DEF). The tables also show the value of the statistic in question (average or percentage). The SE were estimated with the Stata 10 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. For example, in the case of Costa Rica, the important index of support for democracy (PSA5) has a sampling error of 0.84. This means that the 95% confidence interval (1.96 times the SE) for the average of this index (63.23) goes from 61.58 to 64.88. According to the DEF of the table, this interval is 56% greater than that which would have been obtained with a URS.

Country	Average	Std. Error	DEF	Average	Std. Error.	DEF	Average	Std. Error	DEF
	Ing4r			it1r			corvic		
Mexico	66.84	1.08	1.59	56.15	1.20	1.54	35.02	1.55	1.33
Guatemala	62.78	0.92	1.29	57.37	1.13	1.46	21.21	1.18	1.19
El Salvador	64.12	0.73	1.15	61.88	0.91	1.13	11.42	0.91	1.18
Honduras	62.58	1.17	1.79	63.81	1.03	1.39	16.23	2.15	2.40
Nicaragua	71.25	1.18	1.46	58.65	1.56	1.93	12.08	1.14	1.44
Costa Rica	80.39	1.24	1.61	70.22	1.45	1.85	10.07	0.97	1.33
Panama	75.48	1.30	1.93	59.83	1.23	1.81	9.44	2.41	3.39
Colombia	72.29	0.84	1.29	62.79	1.37	1.92	10.42	1.00	1.35
Ecuador	68.42	0.92	1.36	54.17	0.83	1.07	21.13	1.13	1.14
Bolivia	70.32	1.01	1.71	52.64	1.82	2.59	32.34	2.05	1.80
Peru	60.08	1.09	1.58	46.23	1.13	1.63	32.00	1.44	1.27
Paraguay	63.31	1.18	1.55	61.59	1.63	2.15	27.10	1.49	1.38
Chile	76.10	0.74	1.20	62.94	1.03	1.42	5.15	0.57	1.06
Uruguay	86.24	0.71	1.29	64.08	1.41	1.95	7.33	0.73	1.15
Brazil	73.69	1.90	2.66	55.13	1.53	2.07	23.60	2.72	2.64
Venezuela	74.01	1.50	1.91	56.69	1.84	2.41	18.47	1.23	1.30
Argentina	79.63	1.63	2.31	55.62	1.65	2.43	23.48	2.26	2.20
Dominican R.	68.55	0.83	1.09	57.72	1.11	1.37	17.53	1.28	1.39
Haiti	65.80	0.80	1.22	32.66	0.73	1.22	53.61	1.46	1.20
Jamaica	69.63	1.18	1.58	56.88	1.41	1.99	7.78	0.78	1.19
Guyana	72.89	1.38	1.72	63.73	1.15	1.69	17.08	1.44	1.57
Trinidad & Tobago	69.69	1.03	1.38	63.49	1.11	1.65	9.05	0.81	1.16
Belize	70.88	1.22	1.37	46.56	1.69	2.14	17.15	1.10	1.20
Suriname	78.88	0.71	1.27	57.94	1.29	1.97	11.78	0.80	1.02
United States	77.50	0.68	1.09	68.20	0.64	1.08	6.26	0.65	1.10
Canada	73.52	0.64	1.08	68.98	0.56	1.07	4.23	0.54	1.10

Country	Average	Std. Error	DEF	Average	Std. Error.	DEF	Average	Std. Error	DEF
	PSA5			tol			m1r		
Mexico	56.79	0.69	1.31	49.25	0.93	1.53	54.11	0.77	1.36
Guatemala	49.55	0.75	1.38	50.24	0.84	1.31	48.18	0.73	1.39
El Salvador	58.70	0.72	1.55	45.10	0.71	1.32	67.13	0.64	1.25
Honduras	60.42	0.46	1.11	47.52	0.79	1.64	66.18	0.58	1.13
Nicaragua	51.69	0.72	1.26	60.02	1.01	1.44	50.15	0.98	1.51
Costa Rica	63.23	0.84	1.56	66.67	1.10	1.40	58.47	0.90	1.64
Panama	60.17	0.97	2.16	50.93	2.08	3.53	61.59	0.62	1.39
Colombia	60.30	1.08	2.23	51.79	0.96	1.46	68.01	0.58	1.07
Ecuador	48.92	0.69	1.41	50.24	0.99	1.61	61.24	0.72	1.32
Bolivia	53.98	0.84	1.93	47.18	0.90	1.67	60.99	1.64	3.33
Peru	46.82	0.83	1.74	47.52	1.19	2.04	44.74	0.69	1.42
Paraguay	46.28	0.66	1.24	48.42	1.03	1.51	62.45	0.71	1.33
Chile	56.75	0.66	1.30	51.86	1.18	1.63	58.77	0.57	1.17
Uruguay	68.01	0.70	1.43	61.36	1.50	2.00	72.83	0.58	1.10
Brazil	49.96	0.94	1.62	59.03	2.45	3.34	70.26	1.40	2.58
Venezuela	49.03	1.00	1.52	63.44	1.92	2.79	48.85	1.15	1.70
Argentina	45.15	1.39	2.22	67.35	2.06	2.94	42.46	1.08	1.81
Dominican R.	53.91	0.67	1.19	49.36	0.93	1.38	57.96	0.78	1.29
Haiti	31.99	0.54	1.32	43.41	0.63	1.27	27.57	0.77	1.43
Jamaica	48.57	0.92	1.70	58.48	1.37	2.14	37.07	1.10	1.72
Guyana	54.87	1.34	2.44	64.53	1.67	2.48	54.88	1.41	2.21
Trinidad & Tobago	44.02	0.75	1.27	66.64	0.98	1.53	39.57	0.87	1.32
Belize	53.58	0.94	1.74	59.02	0.89	1.29	43.74	1.07	1.84
Suriname	57.14	0.80	1.64	60.39	1.08	1.85	45.61	1.14	1.94
United States	53.54	0.58	1.08	70.41	0.66	1.07	45.73	0.96	1.06
Canada	57.78	0.57	1.08	64.58	0.64	1.07	47.22	0.72	1.06