

Methodological Note #005

## How Does LAPOP Calculate Response Rates?

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### Key Findings:

- We outline LAPOP's method for calculating response rates for the 2016/17 round of the AmericasBarometer.
- Our method utilizes conservative coding rules within AAPOR's guideline.
- Of the approximately 175,000 interview attempts conducted in 2016/17 using handheld electronic devices, 33,000 resulted in interviews, giving a global response rate of 20%, varying across countries from 10% to 55%.
- We provide response rates for each country in the 2016/17 AmericasBarometer round.



Survey response rates provide important information, but only to the degree that they are tracked accurately and reported with transparency. This *Methodological Note* describes LAPOP's procedures for calculating response rates for the 2016/17 round of the AmericasBarometer. This information can be used to assess the potential for nonresponse bias, a key source of *total survey error* (TSE; see Groves 1989).

In 2010, the American Association for Public Opinion Research (AAPOR) introduced the Transparency Initiative, a system of guidelines and standards for the routine disclosure of methodological information in survey research.<sup>1</sup> As a charter member of this initiative, LAPOP is committed to making publicly available information about our data collection and reporting processes.

## **Step 1: Gather data on attempted interviews**

In most of the countries included in the 2016/17 round of the AmericasBarometer, interviews were conducted face-to-face by enumerators using handheld electronic devices, a method known as computer-assisted personal interviews (CAPI). The CAPI surveys were administered using the SurveyToGo (STG) platform, into which we programmed a module that provides electronic information about every attempted interview. Through LAPOP's quality control suite, FALCON<sup>®</sup>, the LAPOP team monitored the reliability of this information.<sup>2</sup> In Canada and the United States, the AmericasBarometer survey was fielded using a probability-based Internet panel; we do not collect response rates for these studies. In the few countries in 2016/17 where we did not use the STG platform,<sup>3</sup> our information about attempted interviews was recorded on paper. Due to concerns about the comparability of attempts recorded electronically and on paper, and our inability to audit paper records for accuracy, we discuss in this *Methodological Note* only the response rates for countries that used STG.

Enumerators working in STG record each attempted interview, coding

them into one of the following categories:

1. Respondent willing to proceed;
2. Respondent refused;
3. No one home;
4. Respondent unable to be interviewed (e.g., blind, deaf, or ill);
5. Unsuccessful, other reason; or
6. Household unoccupied, abandoned, destroyed, or doesn't exist.

If a respondent indicates that she is willing to proceed, the enumerator then verifies that she lives at the address, that she is a citizen, that she gives her informed consent to be interviewed, and that she meets our sampling quota. If any of these conditions are not met, then the enumerator records the failed attempt and moves on to the next.

## **Step 2: Process the sample for quality**

LAPOP's extensive quality control efforts include a number of checks that lead to canceled interviews. FALCON<sup>®</sup> monitors interview quality in real time, scripts written in the statistical software R are used to spot anomalous patterns in interview logs, and thousands of manual audits supplement these automatic flagging systems. When these processes indicate a strong probability that an interview is of dubious quality, we remove not only the interview but also the attempts reported in connection to the interview. Intuitively, if we have evidence that field protocols were not followed during an interview, we cannot assume that field protocols were followed in the attempts that led up to it. In total, some 35,000 attempts—17% of the 210,000 conducted this round—are excluded from the response rates for quality control reasons. Put differently, our reported response rates are the rates associated with the published dataset.

All other attempts are counted in the response rates, even those that did not eventually lead to an interview included in the final data (e.g., when the interview was terminated early). This is a conservative coding rule in that it likely exaggerates nonresponse; for instance, we include attempts that may have been entered in error and those that did not lead to an interview for unknown reasons.

### Step 3: Classify the attempts into categories

We map each attempt to an AAPOR *final disposition code*. AAPOR's *Standard Definitions* classifies all attempts into four groups: interviews; non-interviews with an eligible respondent; non-interviews with a respondent of unknown eligibility; and non-interviews with ineligible respondents.<sup>4</sup> These categories are given numeric codes 1-4, with more specific categories given by the first and second decimal places.

For example, all eligible non-interviews are given a code that begins with 2. AAPOR's guidelines indicate that eligible respondents who are unable to do an interview for logistical reasons are given codes that begin with 2.3. This code distinguishes them against other eligible non-interviews, such as those who were known to be eligible but refused, which would receive a code beginning with 2.1. Logistical problems can then be disaggregated using a further decimal place, for instance by assigning code 2.33 to attempts that failed because the respondent did not speak the language in which the survey was administered, versus 2.32 for respondents who were physically or mentally unable to complete an interview. In practice, response rates do not typically require this level of granularity, so we collapse codes to the first decimal place.

Our attempts are mapped to disposition codes as follows:

1. Respondent willing to proceed → 1.0;
2. Respondent refused after eligibility screening → 2.1;

3. Respondent unable to be interviewed (e.g., blind, deaf, or ill) → 2.3;
4. Respondent refused before eligibility screening → 3.2;
5. No one home → 3.2;
6. Unsuccessful, other reason → 3.9; and
7. Household unoccupied, abandoned, destroyed, or doesn't exist → 4.0.

Since only the last group has a code beginning with 4, the only attempted interviews for which we assume respondents are ineligible are those for which there is no evidence a respondent even exists. Where we are able to collect data on eligibility through questions about citizenship, residency, and sampling quota, we use these screening questions to place attempts into the correct eligibility classifications—for instance, a refusal *after* the respondent established his or her eligibility is assigned disposition code 2.1. All other non-interviews—including refusals and “no one home”s—are marked as of unknown eligibility and assigned a code 3.

Since our sampling methodology uses gender and age group frequency matches,<sup>5</sup> a very large proportion of attempted interviews (72%) are coded as being of unknown eligibility. This is because the interview was refused before the enumerator could establish whether anyone in the household met the sample requirements, or no one was home who could establish this information. Samples like this thus generate high numbers of cases of unknown eligibility. It is surely the case that some of these cases of unknown eligibility would have met the sample requirements; thus, AAPOR's response rates 5 and 6 (RR5 and RR6), which assume that none of the cases of unknown eligibility were eligible, are not appropriate and we do not report them.

We then break out interviews by completion percentage. Not all respondents who begin an interview (code 1) complete it, but there is no set standard for distinguishing complete (coded as 1.1) from partial (1.2) interviews, and partials from break-offs (2.1). We therefore adopt a conservative rule based on percent of questions answered (excluding “don't

know,” “not applicable,” and “no response” answers). We code interviews as complete only if the respondent answered more than 70% of questions, and partial if she answered 50-70%. Cases in which a respondent began the interview but answered less than 50% of the questions are coded as break-offs. We calculate these proportions using substantive variables only,<sup>6</sup> specific to each country questionnaire, an approach that likely overestimates eligible non-interviews and thus underestimates response rates.

Finally, these codes are then mapped back to *final disposition categories*. This step simply formalizes definitions for well-known categories: attempts coded as 1.1 are completed interviews, 1.2 are partial interviews, 2.1 are refusals (including break-offs), 2.2 are noncontacts of known eligibility, 2.3 are simply “others,” 3.2 are noncontacts and refusals of unknown eligibility, 3.9 are “unknown, other,” and 4.0 are ineligible.

## Step 4: Estimate eligibility ratio

Another challenge in calculating response rates is deciding how to treat attempts with respondents of unknown eligibility. While the most conservative strategy is to simply assume all of these attempts were with eligible respondents, and the most aggressive to assume that none were eligible, scholars commonly adopt a middle ground by attempting to estimate the proportion of such attempts likely to be eligible ( $e$ ). Ideally, fine-grained demographic information could be used to estimate eligibility rates that vary locally. In practice, such data are not generally available, and so scholars instead simply assume that the observed ratio of eligible to ineligible respondents is mirrored among those of unknown eligibility. This approach, known as the CASRO method (named after the Council of American Survey Research Organizations), thus computes the eligibility rate as

$$\hat{e} = \frac{\text{Eligible}}{\text{Eligible} + \text{Ineligible}} \quad (1)$$

and applies it to all attempts with a final disposition code that begins with a 3.<sup>7</sup>

Many of the countries in the AmericasBarometer lack the current census data that would allow us to generate sophisticated estimates of  $\hat{e}$ . We therefore adopt the CASRO method for estimating  $\hat{e}$ . For transparency, however, we report the total number of attempts in each eligibility category, as well as  $\hat{e}$  itself, so that users of our data can examine the effect of this approach on our response rates. In practice, we estimate very high eligibility rates, typically around  $\hat{e} = 0.80$  or greater, partly because so many of our cases of attempted interviews are of unknown eligibility.

## Step 5: Calculate response rates

Finally, we use the disposition categories to compute four response rates, according to the formulas given in AAPOR's *Standard Definitions*. These rates differ only in how partial interviews are classified and how eligibility is estimated.

Response rates are given by

$$\text{Response Rate 1 (RR1)} = \frac{C}{C + P + R + N + O + UH + UO}, \quad (2)$$

$$\text{Response Rate 2 (RR2)} = \frac{C + P}{C + P + R + N + O + UH + UO}, \quad (3)$$

$$\text{Response Rate 3 (RR3)} = \frac{C}{C + P + R + N + O + \hat{e}(UH + UO)}, \quad (4)$$

$$\text{Response Rate 4 (RR4)} = \frac{C + P}{C + P + R + N + O + \hat{e}(UH + UO)}, \quad (5)$$

where C refers to completed interviews, P to partial interviews, R to refusals and break-offs of known eligibility, N for noncontacts of known eligibility, O for other failures of known eligibility, UH for unknown if

household, UO for unknown others, and  $\hat{e}$  is the eligibility rate calculated using the CASRO method. RR2 and RR4 treat partial interviews as a successful “response” while RR1 and RR3 do not. The difference between RR1 and RR3 is only whether respondents whose eligibility is unknown are assumed to be always or sometimes eligible, respectively.

The official response rates published along with this *Methodological Note* provide enough detail to back out these calculations. For example, in Brazil, our enumerators made 7,443 attempts. Among these, we had C=1,532 complete interviews, P=0 partials, R=100 refusals of known eligibility (including break-offs), N=0 noncontacts of known eligibility, O=95 others, and 5,165 cases of unknown eligibility (including categories UH and UO). Thus, RR1 for Brazil this round is calculated to be  $\frac{1532}{1532+0+100+0+95+5165} = \frac{1532}{6892} \approx 0.22$ , for a response rate of 22%. Since we had 1,727 attempts with eligible respondents (C+P+R+N+O) and 551 attempts with ineligible respondents, the CASRO method yields  $\hat{e} = \frac{1727}{1727+551} \approx 0.76$ . RR3 is therefore given by  $\frac{1532}{1532+0+100+0+95+(0.76)(5165)} \approx \frac{1532}{5652} \approx 0.27$ , yielding a response rate of 27%.

From 2016/17 forward, LAPOP is publishing all of these response rates so that researchers can see how these various coding decisions reflect different views of the potential for nonresponse bias in our data. Still, it is not always feasible to report all of these rates and their component categories, so following common practice, we use RR1 as our standard response rate. As noted in the foregoing discussion, this is the most conservative response rate. By adopting this as our default response rate, we are emphasizing the upper bound on nonresponse.

## LAPOP’s response rates

The first section of Table 1 provides a breakdown of all attempted interviews conducted during data collection for this round. Approximately half of all unsuccessful attempts were cases in which there was no respondent home. Among cases where a respondent answered the door,

half of those that did not result in an interview were unsuccessful because the respondent refused to participate. Very few interviewees were known to be ineligible, yielding a very high estimated eligibility rate, with  $\hat{e} = 0.80$ . These attempts data are translated into response rates in the final section of Table 1. The overall response rate for the 2016/2017 AmericasBarometer is 20%, though different response rate definitions yield a higher rate of 23%. This range provides an indication of the uncertainty induced by choosing various coding rules, all within the bounds of AAPOR's *Standard Definitions*.

**Table 1: Attempts conducted in the 2016/17 round**

Total attempts	175,292
...among which noncontacts, eligible respondent	0
...among which refusals, eligible respondent	1,402
...among which other failure, eligible respondent	5,362
...among which unknown if location inhabited	0
...among which other failure, unknown eligibility	125,646
...among which ineligible respondent	9,773
Total interviews published	33,111
...among which partials	139
...among which break-offs	26
Total eligible attempts	39,873
Total attempts of unknown eligibility	125,646
Total ineligible attempts	9,773
Estimated eligibility rate (CASRO method)	0.80
Response rate 1	0.20
Response rate 2	0.20
Response rate 3	0.23
Response rate 4	0.23

These topline results hide substantial variation across countries, presented in Table 2. Response rates in the 2016/17 AmericasBarometer varied from a low of 10% in El Salvador to a high of 56% in Jamaica. The data indicate that response rates tend to be lower in more economically developed countries, though there are clear exceptions. Anecdotally, it is likely that many other factors contribute to this cross-national varia-

tion, including geography and linguistic diversity, although we leave such questions for future research.

**Table 2: Response rates by country**

Argentina	0.12	Guyana	0.46
Bolivia	0.15	Haiti	0.52
Brazil	0.22	Honduras	0.23
Chile	0.14	Jamaica	0.55
Colombia	0.28	Mexico	0.11
Costa Rica	0.16	Nicaragua	0.30
Dominican Republic	0.23	Panama	0.42
Ecuador	0.23	Paraguay	0.45
El Salvador	0.10	Peru	0.17
Guatemala	0.30	Uruguay	0.13
Guyana (capital)	0.45	Venezuela	0.21

These response rates may strike some as low by comparison to other survey studies published in the region. We think there are a number of reasons for this.

First, the AmericasBarometer does not provide financial incentives to participate in the survey and does not rely on a list of individuals selected into a sample. Both features likely decrease response rates. While monetary rewards increase participation by compensating respondents for their time, pre-selecting respondents increases response rates by allowing survey organizations to send letters to selected individuals to introduce the study in advance, and to more accurately track participation *ex post*.

Second, these response rates reflect recent improvements upon standard data collection procedures. The 2016/17 round of the AmericasBarometer is the first in which we collected data about attempted interviews electronically, through our new Automatic Response Tracking (ART) module. We also introduced a sophisticated method of oversight and quality control with the introduction of FALCON<sup>®</sup>.<sup>8</sup> In the past, and in most surveys in the region, information about attempted interviews has been gathered on paper – often by field supervisors and not the enumera-

tors themselves – with no way of verifying their accuracy. Given these substantial improvements in data collection, the response rates for this round may not be directly comparable to those of previous rounds – nor to other public opinion surveys in the Americas.

Third, in computing these response rates, we consistently take the most conservative coding decisions available: canceling the bare minimum of attempts as warranted by quality control procedures, assuming a very high proportion of respondents are eligible, counting respondents unable to participate against our response rates, and so on. As noted above, these response rates therefore characterize an upper bound on nonresponse.

Fourth, shrinking response rates are a concern worldwide, but the scholarly evidence indicates that the problem this poses for substantive interpretations of the data has been largely overstated.<sup>9</sup> Declining response rates certainly hurt statistical power and precision if they produce noisier samples, but do not necessarily bias conclusions about public opinion. While recent research on this problem has largely been confined to surveys in the U.S., we have no reason to expect that survey nonresponse generates greater bias elsewhere in the Americas.

Finally, response rates may be a useful heuristic for evaluating survey quality, but TSE is a more reliable measure. Although nonresponse bias is one component of survey error, minimizing TSE can often require trade-offs that increase nonresponse: for instance, drawing a more precise sample of the population can increase nonresponse by turning away eligible respondents who do not meet demographic targets specific to the sample design. We urge researchers to evaluate our data in the broader context of all of our research methods and efforts to minimize TSE.

## Conclusions

Empirical social science has recently undergone a “credibility revolution,” a movement which seeks to produce more reliable scientific findings.<sup>10</sup> Scholars have increasingly focused their efforts on making their methodological choices more transparent. Transparency facilitates engagement with (and critique of) others’ work, leading to a virtuous cycle of more credible science.

LAPOP and the other members of AAPOR’s Transparency Initiative are at the forefront of such advances in the world of public opinion. Now more than ever, it is possible to evaluate survey research on its methodological merit. However, much more remains to be done. Unexpected outcomes in successive American and British elections have sown distrust in polling. Inquiries by professional organizations in both the United States and the United Kingdom have emphasized the trustworthiness of survey research,<sup>11</sup> yet concerns linger. Improving methodological transparency is a necessary step toward assuaging these concerns about public opinion research.<sup>12</sup>

This *Methodological Note* is part of LAPOP’s series of reports on our research methods. In developing this series, we are expanding our efforts to conduct transparent social science, continuing our work to keep LAPOP at the cutting edge of survey research, and disseminating information on how to adopt improved practices in public opinion research (such as the electronic capture of contact attempts in face-to-face interviews). Our hope is that these *Methodological Notes* not only make our findings more credible and useful to the individuals and organizations who analyze our data, but also help other researchers improve their own survey projects. This methodological dialogue supports LAPOP’s central mission: to advance the quality of survey research in the Americas and beyond.

## Notes

1. See [www.aapor.org/Standards-Ethics/Transparency-Initiative/FAQS](http://www.aapor.org/Standards-Ethics/Transparency-Initiative/FAQS).
2. Cohen and Larrea (2018); Montalvo, Seligson, and Zechmeister (2018).
3. These are Antigua and Barbuda, Dominica, Grenada, St. Kitts, St. Lucia, and St. Vincent and the Grenadines, in which we used a different software platform. Paper-and-pencil interviewing (PAPI) was used to collect approximately half of the interviews in Haiti. We intend to use CAPI and the STG platform to capture attempts data electronically in all interviews in future rounds of the AmericasBarometer.
4. The American Association for Public Opinion Research (2016).
5. See [https://www.vanderbilt.edu/lapop/ab2016/AmericasBarometer\\_2016-17\\_Sample\\_Design.pdf](https://www.vanderbilt.edu/lapop/ab2016/AmericasBarometer_2016-17_Sample_Design.pdf).
6. By “substantive variables” we mean questions asked as part of the survey instrument. This category excludes the metadata about the interview, as well as questions we ask enumerators to answer after completing the interview.
7. Smith (2009).
8. Cohen and Larrea (2018).
9. Keeter et al. (2006); Meterko et al. (2015).
10. Angrist and Pischke (2010).
11. Kennedy et al. (2017) and Sturgis et al. (2016).
12. See Lupu and Michelitch (2018).

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As a charter member of the American Association for Public Opinion Research (AAPOR) Transparency Initiative, LAPOP is committed to routine disclosure of our data collection and reporting processes. More information about the AmericasBarometer sample designs can be found at [vanderbilt.edu/lapop/core-surveys](http://vanderbilt.edu/lapop/core-surveys).

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