Methodological Note #008

Improving Interview Quality in Phone Surveys via LAPOP's Multi-Faceted "FALCON-CATI" Approach

Sebastián Larrea, Valerie Schweizer, and Elizabeth J. Zechmeister
Vanderbilt University

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Key Findings:

- LAPOP has adapted its FALCON quality control protocol to use in phone surveys
- Like its predecessor, FALCON-CATI makes it possible to give interviewers feedback, make adjustments, and cancel-and-replace interviews while surveys are still in the field
- FALCON-CATI's Quality Control Assurance Chapter (QuAC) documents errors within LAPOP's phone surveys and assigns scores to each type of error
- The approach also includes capturing audio of interviewers and respondents, which allows for a comprehensive way to evaluate errors
- Another component is the recording of Key Performance Indicators (KPIs), which provide feedback on research productivity throughout data collection
- LAPOP tested the multi-faceted FALCON-CATI in surveys in 2020; analyses of data from the 2020 Mexico survey demonstrate how the system improves survey quality

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Phone interviewing has been atypical in general population surveys in Latin America and the Caribbean, yet its utility increased in recent years. In some places, crime and instability already made it difficult to conduct face-to-face research. Then, in 2020-21, the COVID-19 pandemic presented a new challenge to our ability to safely conduct interviews in the field. Under these conditions, phone surveys are a next-best-option. Yet, because this mode is not the norm, there is a need to build capacity and methods for high quality general population phone surveys in the region. These efforts must address all aspects of survey design and implementation, including sample and questionnaire design, pre-testing, and data processing. In this *Methodological Note*, we focus on interview quality control.

In computer-assisted personal interviewing (CAPI), quality control can be facilitated by using specialized software to monitor audio clips, location, timing, and more. The result is higher quality data: the typically small number of fabricated interviews are replaced in near real time and robust feedback to interviewers results in fewer errors over the course of fieldwork.[1] In what follows, we document how these methods can be transferred to computer-assisted telephone interviewing (CATI). Specifically, we describe how LAPOP's FALCON (Fieldwork Algorithm for LAPOP Control over survey Operations and Norms) quality control program – designed for face-to-face interviewing – was adapted and applied to a series of phone surveys conducted by our lab in 2020, and we provide evidence regarding several distinct ways that the FALCON-CATI approach improves the quality of phone surveys.

LAPOP's FALCON Provides Real-Time Oversight of Face-to-Face Interviews

To meet the challenge of increasing quality control in face-to-face interviews, LAPOP developed an unrivaled system for rigorous real-time survey oversight. This monitoring system – FALCON – identifies quality control issues in data collection while fieldwork is in progress. FALCON

works with SurveyToGo (STG) software and enables quality control teams to assess the quality of interviews while they are still in progress. This allows opportunities to provide feedback and request replacements of interviews or other necessary corrections before data collection is complete. The original FALCON was developed for face-to-face surveys and includes some elements specific to this type of survey administration (i.e., a geo-fencing system, interviewer identity monitoring checks, audits of interviewer routes, etc.). LAPOP has written reports that describe a number of these features and their consequences.[2]

Auditing within FALCON happens in real time, which ensures high quality data throughout fieldwork. In fact, FALCON has been shown to improve interview quality as data collection progresses.[3] In most surveys, the majority of errors occur by interviewers reading questions incorrectly or incompletely. However, even these most common errors decrease over time when FALCON is deployed.[4] In recent years FALCON has been adapted to follow the advice of Cohen and Warner (2021), by implementing a multi-stage auditing process, applying automated quality control flags, and recording select questions within STG.[5] Analyzing data from FALCON's preliminary efforts, Cohen and Warner (2021) identified the 30 most useful data points for predicting quality (versus canceled) interviews. A number of these are particular to face-to-face area probability surveys: size and dispersion of sampling cluster, GPS capture (or not), GPS settings altered (set to off), imbalances in response rates in rural versus urban areas, and wrong location. However, a number of the indicators that they identify as effective can be easily transferred over to phone surveys by adapting FALCON to this mode. A table of items on Cohen and Warner's list and whether they are transferable to CATI is available in the Appendix.

FALCON-CATI Enhances Quality Control in Phone Surveys

To transfer the benefits of FALCON to phone surveys, we revised quality control protocols in three core areas: the Quality Control Assurance Chapter, recorded audio, and Key Performance Indicators. We then tested the new FALCON-CATI approach in a series of general population, national phone surveys conducted in 2020. We note that FALCON focuses predominantly on fieldwork oversight. Quality control processes enter into all stages of LAPOP's work. For example, prior to fieldwork all interviewers must pass a post-training test; during fieldwork, sample distributions and data indicators (e.g., item non-response) are routinely checked; and after fieldwork, datasets are audited for duplicates and other quality indicators. Here we present an overview of the FALCON-CATI approach, and we demonstrate how we use it to make decisions on interview quality using data drawn from our 2020 Mexico phone survey.

QuAC for CATI. The Quality Control Assurance Chapter (QuAC) is situated within the STG interface as a list of various quality control issues that could occur in an interview. QuAC is designed to be filled out by the auditing team. In adapting to phone mode, we deprioritized or removed items that are less relevant to phone surveys, such as information on clusters (removed) and GPS information (deprioritized). FALCON-CATI uses the QuAC to score individual interviews based on the severity of the deviation from interview protocol. Lower values indicate less severe quality control problems, higher scores indicate more severe failures. Some examples of items and scores are available in Table 1. The full QuAC is available in the Appendix.

Table 1: QuAC Items and Scores

Item	Score
The interviewer skips 1 (one) question of the questionnaire without reading it or, if they do read it, they do not give time for the interviewee to answer	5
Connection with the call is lost and the interviewer DOES NOT call the interviewee again	20
The interviewer interviews themself	100

In adapting FALCON to phone surveys, we focused our attention on five core factors within the QuAC: incomplete interviews, interview duration problems, problems reading the study information script, issues reading the questions, and skipped questions. Within these core factors are items closely related to those in the list of useful data points created by Cohen and Warner (2021), including the number of skipped questions, the number of questions interpreted by the interviewer, whether an interview was completed too quickly or took too long, and whether the consent (study information) form was not read or read incompletely.

Recorded Audio in CATI. One way the quality control process is enhanced is by making use of audio files. In FALCON, these are recorded via STG, which is programmed to capture a set of key questions, plus the consent process for each interview. We note that these audio files are only collected following interviewee informed consent. Key questions are chosen from the beginning, middle, and end of the questionnaire based on the length of text in the question and/or based on requests from team members for additional oversight to a particular module. Questions with lengthier text are good options for recording, since text could be easily skipped or misread by the interviewer. In our experience, team members sometimes request certain questions to be recorded. For example, a question had high item non-response in a previous round of the survey, and the team wanted to ensure the item non-response was accurate and not the result of interviewer behavior.

The FALCON audio recordings are used to conduct a set of quality control checks: ensuring the interviewer read items completely, correctly, and without interpreting the question, skipping items, or influencing respondents' answers. The FALCON-CATI process is similar to that of FALCON-CAPI. However, in our 2020 phone surveys, respondents could not be heard because STG only recorded the interviewer on the telephone line, and not the respondent. This gave us an opportunity to focus even more on the quality of the interviewer. At the same time, to ensure there was a valid respondent, we worked with each local team to set up a process by which their call center recorded the entire interview, capturing both interviewer and respondent voices (with permission). Each call center had the ability to record the entire interview audio, which allowed for additional quality checks.[6]

Future FALCON-CATI efforts will be able to take advantage of a new tool within STG that records audio for both interviewers and respondents on certain questions. In addition, when possible, FALCON-CATI will continue to recommend recording entire interviews through call centers. This dual system permits the auditing team to investigate the call center's full audio files when the audio spot checks on selected questions indicate a possible fraudulent interview and an audit of the full file would help confirm or disconfirm that.

Using QuAC and Audio Data to Generate Interview Quality Scores. In the LAPOP protocols, if an interview has a score of 20 or above in the QuAC, the interview is canceled for quality control purposes. We assign values higher than 20 to some interviews in order to easily identify highly problematic cases among more common errors (e.g., falsifying an interview receives a score of 100). Each uploaded interview is carefully audited and, based on the errors found during this review, auditors select errors in the QuAC. STG automatically populates a score for each interview based on the scores listed in the Appendix.

To provide an example of how FALCON-CATI works, and to what end, we focus on LAPOP's 2020 Mexico phone survey. In this dataset, there are 820 scores (and 2,332 total interviews). Missing scores are due to two

factors. First, we did not require that auditors enter a score for every interview during the 2020 surveys (but will require this in future surveys). Second, interviews that were canceled (either for early termination or for other reasons) often did not get scores because auditors canceled the interviews before inserting a score. Only 8 interviews were canceled for quality control reasons; all were missing QuAC scores and so the specific reasons why they were canceled cannot be determined. In all, 1,512 interviews are missing QuAC scores.

Among interviews in Mexico that were not missing quality control scores, 353 of them had scores above 0 but below 20. This means that some interviews had quality control scores for minor issues, but the scores were not high enough to merit canceling the interview. Meanwhile, 467 interviews had scores of 0, meaning that auditors found no quality control problems in these interviews. The overall average QuAC score among all scored interviews was 1.25. Figure 1 shows the mean score per interviewer fieldwork day, over the course of data collection. Overall, despite some volatility, the QuAC score declined over the course of fieldwork, a pattern that replicates what we have found with FALCON-CAPI.[7]

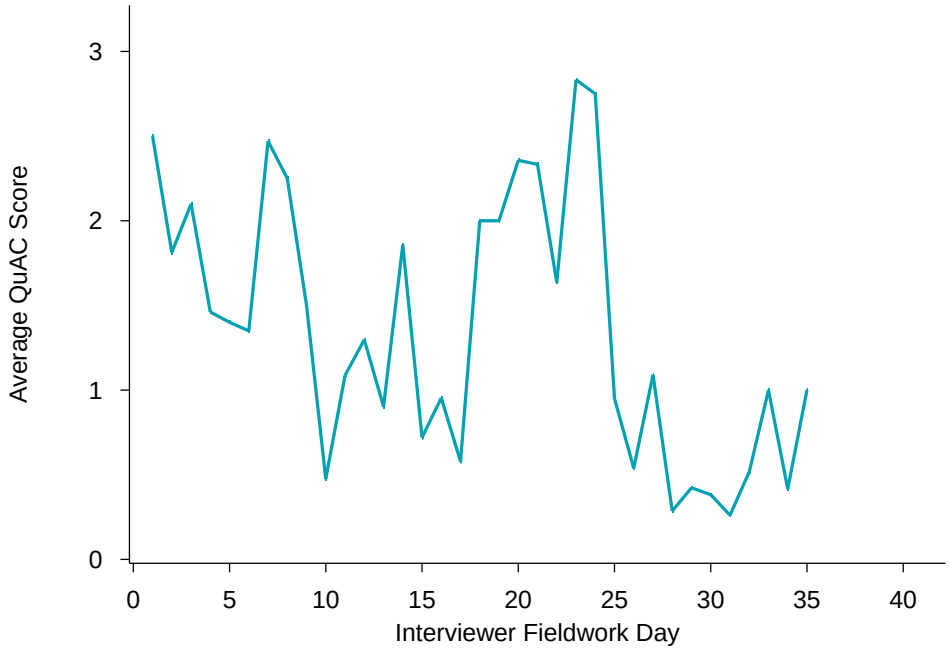

Figure 1: Average QuAC Score by Interviewer Fieldwork Day

Note: Interviewer field days actually ran for 39 days, but given the missing QuAC scores, averages could only be calculated for 35 days of fieldwork.

In Figure 2 we provide the percentage of interviews with QuAC scores, by QuAC item. As the figure shows, again consistent with what we have found for FALCON-CAPI,[8] the most common problems are reading errors.

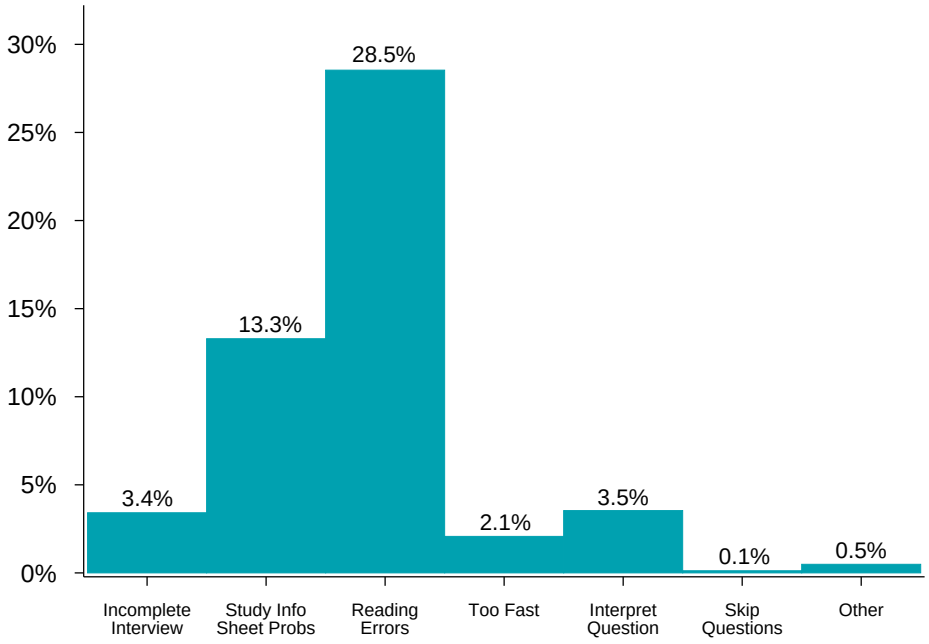

Figure 2: Percentage of Interviews with Quality Control Scores, by QuAC Item

Note: These percentages are among interviews with QuAC scores, including those with a score of 0.

Key Performance Indicators. In addition to the QuAC and interview recordings, we also examine Key Performance Indicators (KPIs) to track interview progress in the field and as a review after fieldwork ends. KPIs for the Mexico 2020 study are shown in Table 2. KPIs help the team to identify and adapt to unanticipated issues. For example, when the survey first began in Mexico, auditors noticed that a low rate of daily completed interviews would likely delay the completion of fieldwork from the expected timeline. This allowed for an adjustment in the survey protocols, in which interviewer working hours were updated to full-time rather than part-time schedules in order to progress at a faster pace. That change was successful: Figure 3 shows an increase in the number of interviews per day as the course of fieldwork progressed. So, while quality control efforts are helpful in correcting errors and the rare instances of interview fabrication, they also provide feedback on research

productivity and allow for changes while the survey is in the field.

Table 2: Key Performance Indicators

Interview Average Duration (Minutes)	% of Approved Interviews	% of Canceled Interviews	% of Total interviews (Approved and Canceled)
<25	22.82%	32.28%	24.10%
25-45	35.66%	27.22%	34.52%
45-60	11.90%	11.08%	11.79%
60+	29.61%	29.43%	29.59%

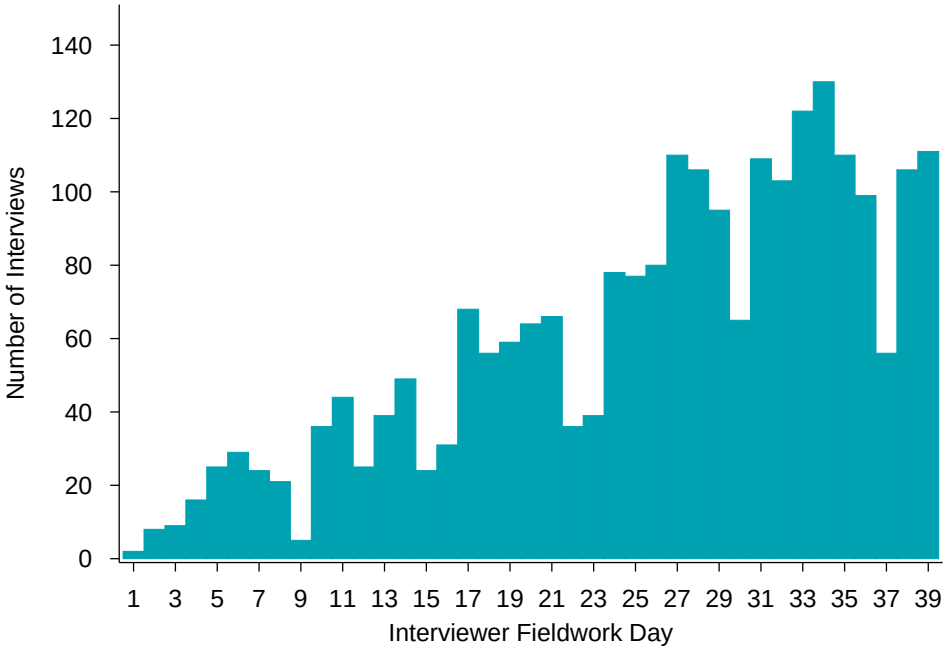

Figure 3: Number of Interviews by Interviewer Fieldwork Day

Fieldwork Oversight for Phone Surveys Comes with Unique Challenges

We identified three core challenges when implementing FALCON-CATI. First, new training protocols had to be developed to adapt quality control

procedures to the CATI mode. For example, we developed new training materials for interviewers to use STG on computers and created a new step-by-step procedure for auditors to check the quality of interviews in STG. While this endeavor takes time and effort, LAPOP encourages other survey projects to re-evaluate their protocols and materials to ensure they make sense and are effective for CATI surveys.

Second, modifications had to be made to LAPOP's QuAC chapter module to account for the CATI survey mode. As our discussion in this report makes clear, quality control measures are guaranteed to look different depending on the mode of survey, and it is important to apply relevant changes to assure high quality data. Third, also as discussed, in 2020 STG was only capable of recording interviewer audio in phone surveys, so an additional step was required to capture both interviewer and respondent audio. These factors caused the auditing team to spend more time evaluating interviews with both STG and full interview recordings collected by the call centers, to check that there was a valid respondent. As we indicated above, STG has recently implemented a feature that allows the audio recording of interviewers and respondents. In future CATI studies, when possible, LAPOP will utilize this new STG feature so that the same audit process we deploy for face-to-face surveys can be conducted for CATI surveys.

FALCON-CATI Offers Robust Quality Control for Phone Surveys

With a set of best practice quality control checks in place, FALCON-CATI works to ensure the highest quality data possible. As public opinion surveys transition from in-person to over the phone during the pandemic, or for other reasons, FALCON-CATI offers an effective approach to quality control, as demonstrated in LAPOP's recent phone surveys.

FALCON-CATI improves the quality of phone surveys in three key ways. First, the approach includes a "Quality Control Assurance Chapter" (QuAC)

that is aligned to capture and log errors that can occur in phone surveys. Coupled with information from auditing recorded audio, the QuAC flags poor quality interviews and documents the errors that occur most frequently so that researchers can make changes and/or corrections in real time. Second, when possible, FALCON-CATI captures the entire call audio, which allows auditors a comprehensive resource with which to catch and investigate errors. Third, FALCON-CATI's use and monitoring of KPIs in STG provides an additional set of checks to catch unforeseen errors while the survey is still in the field.

The use of FALCON-CATI can expand the scope of interview quality control beyond these standard checks. Compared to FALCON for face-to-face interviewing, FALCON-CATI is more streamlined via more built-in efficiencies (automatic flags) and fewer quality control indicators. These efficiencies allow teams to focus additional time on other aspects of interview quality. An example comes from our 2020 Haiti phone survey. When auditors were listening to interviews, they noticed that question COVID4N, which asked who respondents thought was most responsible for the increase in COVID-19 cases, was getting a lot of "Other" category responses. When the full audio recordings were checked, it became clear that when respondents mentioned they thought a specific government institution (i.e. "the health department") was responsible, many interviewers were selecting "Other" instead of the correct response: "The government." The auditors were able to alert the interview team and correct the issue while the survey was still in the field. This is just one example of how FALCON-CATI can improve data quality above and beyond what is gained from conventional interview performance reviews.[9]

LAPOP Recommends the Use of FALCON-CATI for Ensuring High Quality Phone Surveys

FALCON-CATI has advantages for researchers seeking to implement rigorous quality control in phone surveys. LAPOP successfully made the transition from face-to-face to CATI surveys during a quite uncer-

tain time, and we encourage other survey administrators to similarly adopt or update quality control protocols when they conduct surveys via phone. We further note that, when needed, allowing interviewers to work from home reduces the opportunity for COVID-19 transmission, and FALCON-CATI still maintains interview quality control standards in these cases. Using the FALCON-CATI quality control protocol, survey administrators can guarantee high quality data even amid difficult external circumstances. Our team acknowledges that there are challenges that come with this kind of transition, but we maintain the position that the advantages far outweigh these challenges.

Moving forward, LAPOP will continue using FALCON-CATI in phone surveys. It is an innovative and effective solution to data quality issues for these types of interviews. As the LAPOP team moved into fieldwork for the next round of the AmericasBarometer, FALCON-CATI was deployed to ensure that data of the highest quality possible are collected.

Appendix

Table 3: Cohen and Warner (2021) Most Informative Quality Control Procedures and Compatibility with CATI

Cohen and Warner (2021) Recommendations	Possible to Transfer to CATI?
1. Completion percentage (S): The proportion of substantive questions which the respondent completed. A numeric value bounded between 0 and 1.	Yes
2. Sampling cluster too big (S): Whether the sampling cluster contained more than 10 interviews (fieldwork protocols require just 6). Binary.	No
3. Interview duration, net (S): The duration of the interview, net of screening questions, in seconds. A non-negative and integer-valued numeric.	Yes
4. Consent not read (A): Whether the enumerator began the interview without reading the consent form, as heard by an auditor. Binary.	Yes
5. Enumerator success rate (S): The proportion of interview attempts made by the enumerator that resulted in successful interviews. A numeric value bounded between 0 and 1.	Yes
6. One question skipped (A): Whether the enumerator skipped a survey question, as heard by an auditor. Binary.	Yes
7. Enumerator "no one home" rate (S): The proportion of interview attempts made by the enumerator that resulted in "no one home" designations. A numeric value bounded between 0 and 1.	No
8. Two questions skipped (A): Whether the enumerator skipped two survey questions, as heard by an auditor. Binary.	Yes
9. Percentmatch (S): The maximum Percent match value for the interview (i.e., the maximum proportion of identical responses to substantive questions shared with any other interview). A numeric value bounded between 0 and 1.	Yes
10. Interview duration (S): The total duration of the interview in seconds. A non-negative and integer-valued numeric.	Yes

Table 4: Cohen and Warner (2021) Most Informative Quality Control Procedures and Compatibility with CATI, cont.

Cohen and Warner (2021) Recommendations	Possible to Transfer to CATI?
11. No real GPS captures (S): Whether any "real" GPS coordinates (as opposed to approximate coordinates from Wi-Fi or mobile connections) were captured during the interview. Binary.	No
12. Enumerator success, rural gap (S): The (absolute-valued) difference in proportions of interview attempts made by the enumerator that resulted in successful interviews between urban and rural sampling units. A numeric value bounded between 0 and 1.	No
13. Enumerator refusal rate (S): The proportion of interview attempts made by the enumerator that resulted in refusals. A numeric value bounded between 0 and 1.	Yes
14. Interviewee abandoned (A): Whether the respondent abandoned the interview for any reason, as discovered by an auditor (using audio/image captures and the interview log). Binary.	Yes (Break-Offs)
15. One question interpreted (A): Whether the enumerator interpreted a single survey question for the respondent, as heard by an auditor. Binary.	Yes
16. Percent match, top decile (S): Whether the maximum Percent match value for the interview was in the top decile for that country-year. Binary.	Yes
17. No respondent heard (A): Whether a respondent could be discerned on audio captures, as heard by an auditor. Binary.	Yes
18. Many questions skipped (A): Whether the enumerator skipped three or more survey questions, as heard by an auditor. Binary.	Yes
19. Sampling cluster dispersed (S): The compactness and separation of sampling clusters, computed using the global average silhouette within a sampling unit. A numeric value bounded between -1 and 1.	No
20. Wrong location type (A): Whether the interview took place in a proscribed location, such as a supermarket, as discovered by an auditor (using audio, image, and GPS captures). Binary.	No

Table 5: Cohen and Warner (2021) Most Informative Quality Control Procedures and Compatibility with CATI, cont.

Cohen and Warner (2021) Recommendations	Possible to Transfer to CATI?
21. Consent form incomplete (A): Whether an enumerator began the survey after only partially reading the consent form, as heard by an auditor. Binary.	Yes
22. Many questions misread (A): Whether the enumerator misread three or more survey questions, as heard by an auditor. Binary.	Yes
23. Too short or too long (A): Whether the interview was completed too quickly or took too long to complete, based on country-specific thresholds (typically less than 25 minutes or more than 2 hours, respectively), as discovered by an auditor (using the log). Binary.	Yes
24. GPS settings altered (S): Whether the "use GPS" setting was set to "off" by the enumerator. Binary.	No
25. Other enumerator error (A): Whether the enumerator erred in a manner not described by other quality control procedures (such as conducting the interview over an intercom), as discovered by the auditor (using all available information). Binary.	No
26. "No one home" rate, rural gap (S): The (absolute-valued) difference in proportions of interview attempts made by the enumerator that resulted in "no one home" designations between urban and rural sampling units. A numeric value bounded between 0 and 1.	No
27. One question misread (A): Whether the enumerator misread a single survey question, as heard by an auditor. Binary.	Yes
28. Stopped and restarted (F): Whether the interview stopped and then subsequently restarted. Binary.	Yes
29. Enumerator completion, rural gap (S): The (absolute-valued) difference in mean proportion of substantive questions the respondent completed, by enumerator, between urban and rural sampling units. A numeric value bounded between 0 and 1.	No
30. Manually set as complete (F): Whether the enumerator manually marked the interview as "complete," as opposed to its completion being automatically recorded after the final survey item. Binary.	No

Table 6: QuAC Items for FALCON-CATI

	Score
AUDIT REPORT L1 (LOCAL FIRMS)	
FRAUD. EVIDENCE OF FRAUD	
The interviewer interviews themself	100
INC. INCOMPLETE INTERVIEW[10]	
Attempts are exhausted	20
The respondent does not allow the interview to end and abandons it	20
The interviewer decides to end the interview for any other reason	20
Connection with the call is lost and the interviewer DOES NOT call the interviewee again	20
Connection with the call is lost and the interviewer DOES call the interviewee again	0
NETGEO. LOCATION AND/OR INTERVIEW DURATION PROBLEMS	
The interview was conducted under the wrong phone number (dialed a phone number that was not assigned to the interviewer)	50
The net duration of the interview was less than 10 minutes or more than 1 hour	20
The interview took place between 10PM and 5AM	30
MISREAD1. PROBLEMS IN READING THE STUDY INFORMATION SHEET	
Does not read anything on the study information sheet	10
Reads only parts of the study information sheet	5
Changes words on the study information sheet	5
Changes the approximate duration of the interview	5
MISREAD2. READS QUESTIONS FROM THE QUESTIONNAIRE INCOMPLETELY OR INCORRECTLY	
Reads 1 (one) question incompletely or incorrectly	1
Reads 2 (two) questions incompletely or incorrectly	3
Reads 3 or + (three or more) questions incompletely or incorrectly	5

Table 7: QuAC Items for FALCON-CATI, cont.

	Score
MISREAD3. READS QUESTIONS FROM THE QUESTIONNAIRE TOO QUICKLY OR NOT UNDERSTANDABLE	
Reads 1 (one) question too quickly or unintelligible	1
Reads 2 (two) questions too quickly or in an unintelligible way	3
Reads 3 or + (three or more) too quickly or in an unintelligible way	5
MISREAD4. INTERPRETS THE MEANING OF THE QUESTIONS	
Interprets the meaning of a question 1 (one) time	5
Interprets the meaning of a question 2 (two) times	10
Interprets the meaning of a question 3 or + (three or more) times	15
MISREAD5. GIVE THEIR OPINION ON SURVEY ISSUES	
Interviewer gives their opinion on survey topics	0
MISREAD6. SKIP OR DO NOT READ QUESTIONS	
The interviewer skips 1 (one) question of the questionnaire without reading it, or if they do read it, they do not give time for the interviewee to answer	5
The interviewer skips 2 (two) questions of the questionnaire without reading them, or if the read them, they do not give time for the interviewee to answer	10
The interviewer skips 3 (three) questions of the questionnaire without reading them, or if they read them, they do not give time for the interviewee to answer	15
QAC. OTHER PROBLEM	
Double-click on this text, and in the "Other" box below describe the problem. Then write an "alert" to the quality supervisor in the "review comments" section in the "data" tab of this interview	0
QAC. NO PROBLEMS	
The interview has no problems to report	0

Notes

1. Cohen and Larrea (2018); Cohen and Warner (2021); Gomila et al. (2017).

2. See Cohen and Larrea (2018); Montalvo, Seligson, and Zechmeister (2018).

3. Cohen and Larrea (2018).

4. Cohen and Larrea (2018).

5. Cohen and Larrea (2018).

6. When the complete interview audio is available, there is very little possibility for interview fabrication to go unnoticed. In FALCON-CATI in 2020, no interviews were flagged for this reason. At the same time, in telephone interviews, it is much easier for respondents to end the interview than it is to end a conversation with someone face-to-face. The use of this mode leads to an increase in incomplete interviews, while FALCON-CATI ensures that the interviews that are completed are of high quality. For example, the 2019 AmericasBarometer survey in Mexico had 16 early terminated interviews, while the 2020 Mexico CATI survey had 273 early terminated interviews.

7. Cohen and Larrea (2018).

8. Cohen and Larrea (2018).

9. In face-to-face interviews, it is generally impossible to record the entire interview because of the challenges imposed by large electronic files in the field, especially when internet access and bandwidth is limited.

10. Some categories receive scores for reasons that are not the interviewer's fault, but still signal that the interview is not of sufficient quality (e.g., not of sufficient duration) to be retained in the dataset.

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Sebastián Larrea (sebastian.c.larrea@vanderbilt.edu) is a Research Assistant and the Quality Control Lead at LAPOP.

Valerie Schweizer (valerie.j.schweizer@vanderbilt.edu) is a statistician at LAPOP.

Dr. Elizabeth J. Zechmeister, (liz.zechmeister@vanderbilt.edu) is Cornelius Vanderbilt Professor of Political Science at Vanderbilt University and Director of LAPOP.

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vanderbilt.edu/lapop
@lapop_barometro
@LAPOPLab
lapop@vanderbilt.edu
+1-615-322-4033
230 Appleton Place, PMB 505, Suite 304, Nashville, TN 37203, USA