AUDIO CHECKS: IDENTIFYING FRAUD IN 9 COUNTRIES

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OVERVIEW

Issue

Interview falsification has been long established as a significant issue in the collection of survey data. Even a modest number of falsified cases can have a significant impact on analysis of the dataset, and some types of falsification and other poor interviewing practices can be particularly difficult to catch.

Audio Checking

Audio checking records a sample of interview questions to be listened to and checked for falsification or poor interviewing.

Results

- Detected data fabrication in 7% to 24% of our surveys.
- Undetected fabrication would have introduced significant bias in our analyses.
- The audio check performs well compared to more traditional methods of detecting fabrication.

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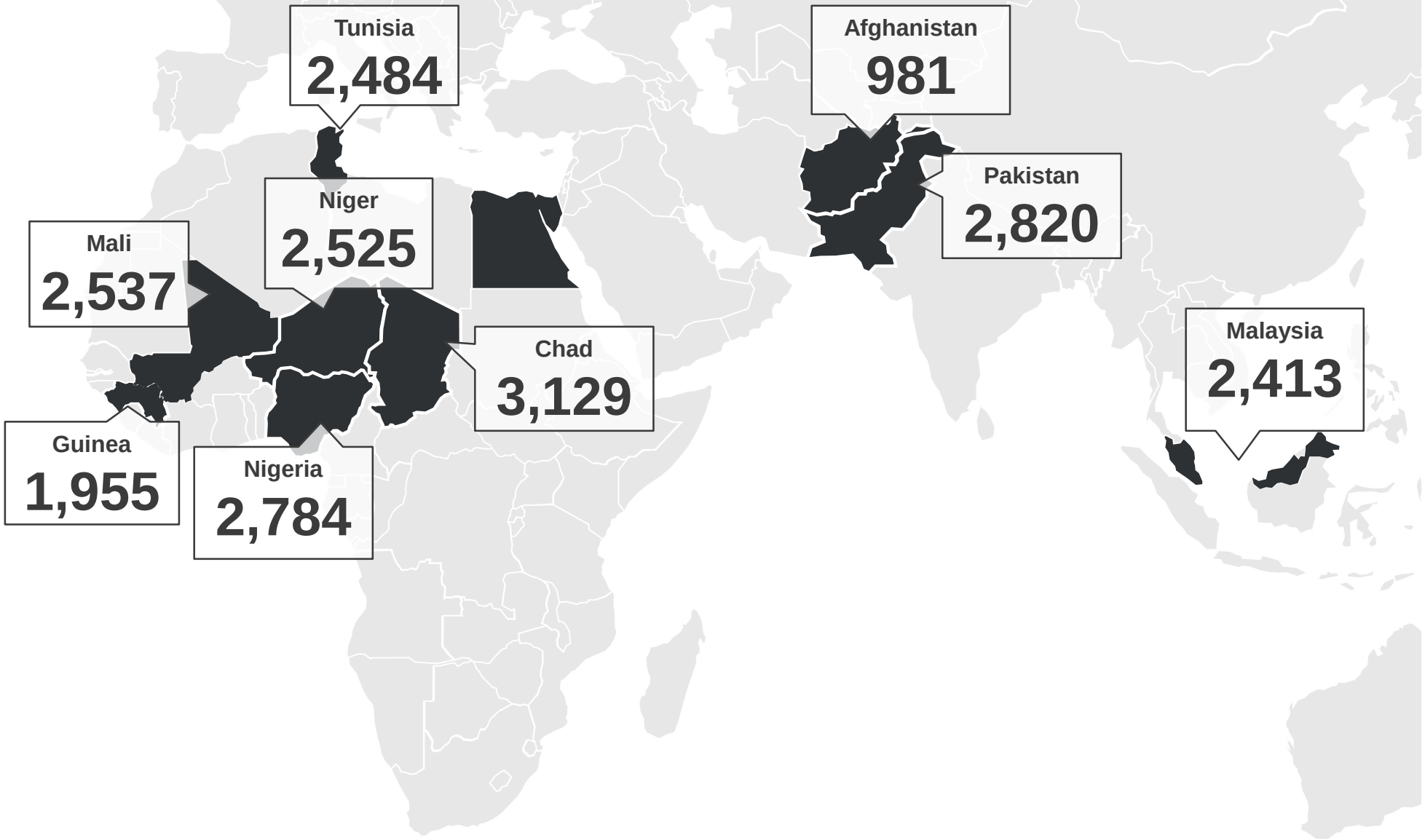
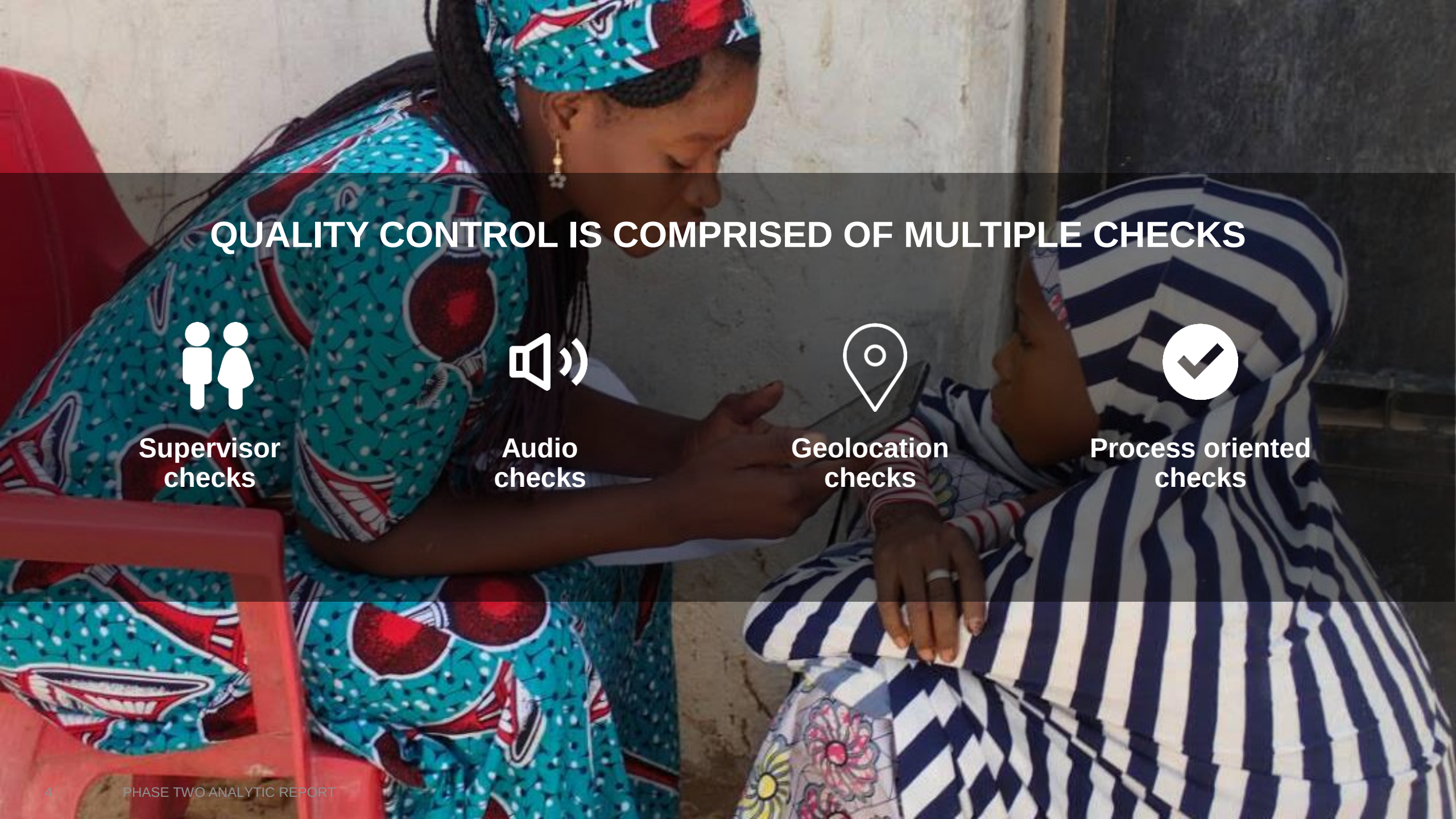
ACHIEVED CAPI SAMPLE

All Muslim

Male/Female

All education levels





QUALITY CONTROL IS COMPRISED OF MULTIPLE CHECKS

Supervisor checks

Audio checks

Geolocation checks

Process oriented checks

TRADITIONAL APPROACHES AND LIMITATIONS

Backchecking	Statistical Methods	Detecting Cheating Interviewers
Supervisors contacting, in person or by telephone, a sample (generally between five and fifteen percent) of each interviewer's respondents and confirming that an interview took place and that the answers were recorded correctly	Use of interview data and metadata to identify cases or interviewers who are likely to be false based on duplicated/matching interviews, contradictory time, location, and lengths of interviews, etc.	Identify interviewers who are likely to be fabricating data thought analysis of skipping/extreme answers/skipped questions patterns, patterns of rare combinations in participants' responses**,** non-response, straightlining, etc.
Only addresses complete fraud, does not address skipped question	Conducted after fieldwork completion, long time and costly to refield	Limited in their ability to highlight specific cases as being likely to be fabricated, because of the often-unpredictable nature of genuine responses to surveys.

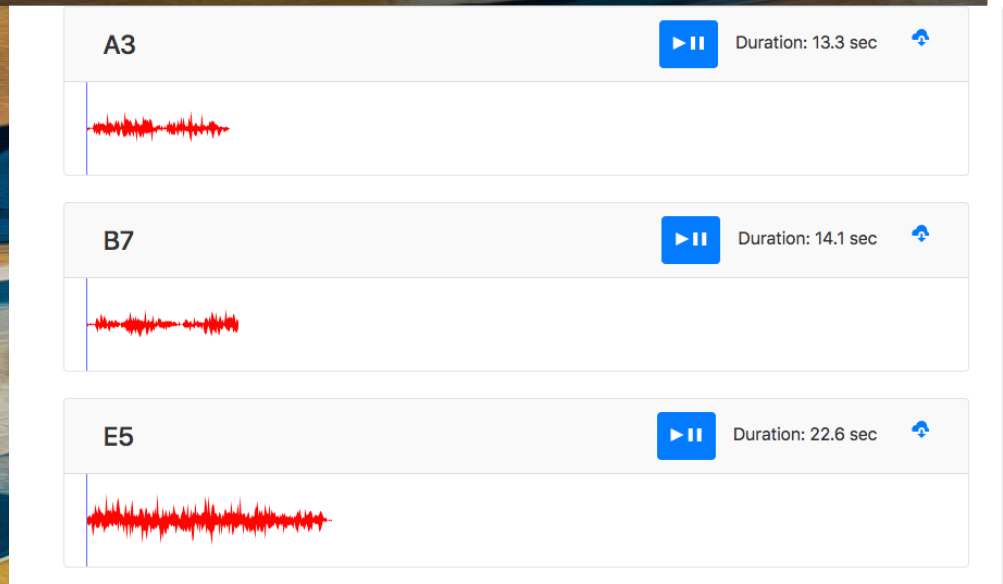
AUDIO CHECK SYSTEM

4 question recorded using Survey to Go software

Data downloaded daily

Trained QC staff listens to audio

Failed cases deleted and immediately refielded



AUDIO CHECK SYSTEM

Bad audio captures (fail):

Snippets of sound from interviewer/respondent

Question mumbled to the point of inaudibility

Radio or TV broadcast, religious service, etc., plays in background

“Dead air,” ambient background noise, wind/rain

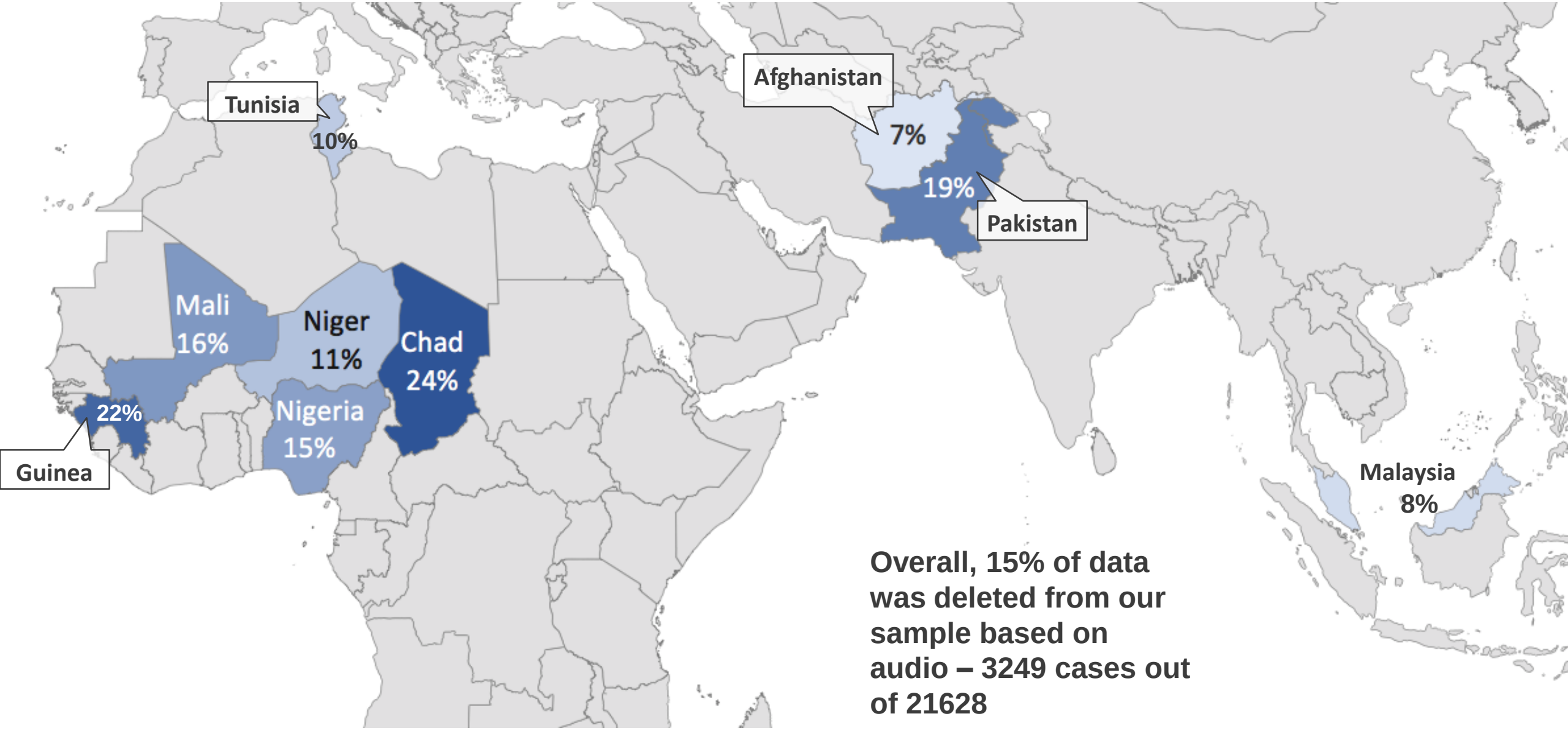
Interactions not belonging to interviewer or respondent

Good audio captures (non-English):

Good audio captures (English):

RESULTS

PERCENT OF FAILED CASES PER COUNTRY

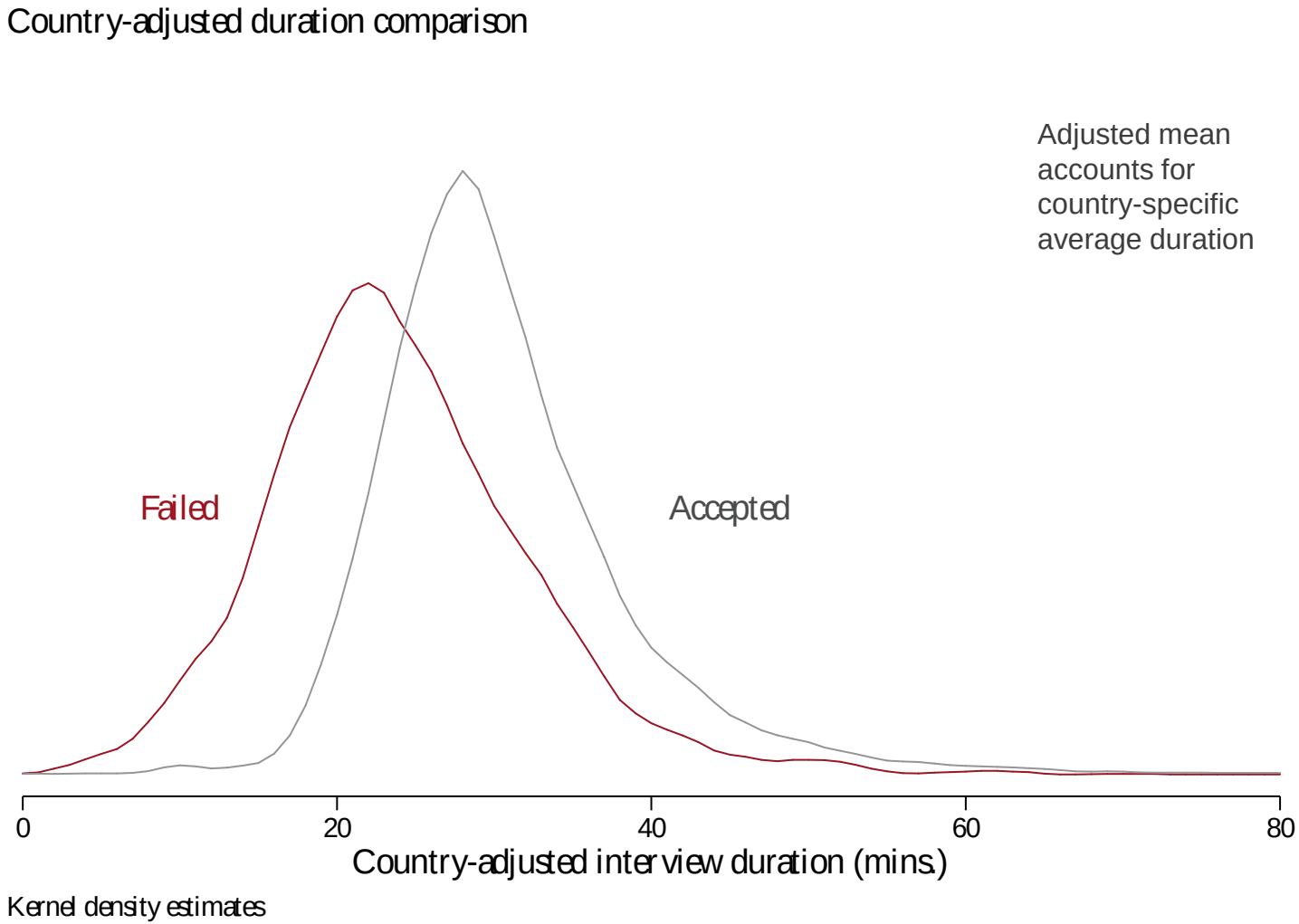


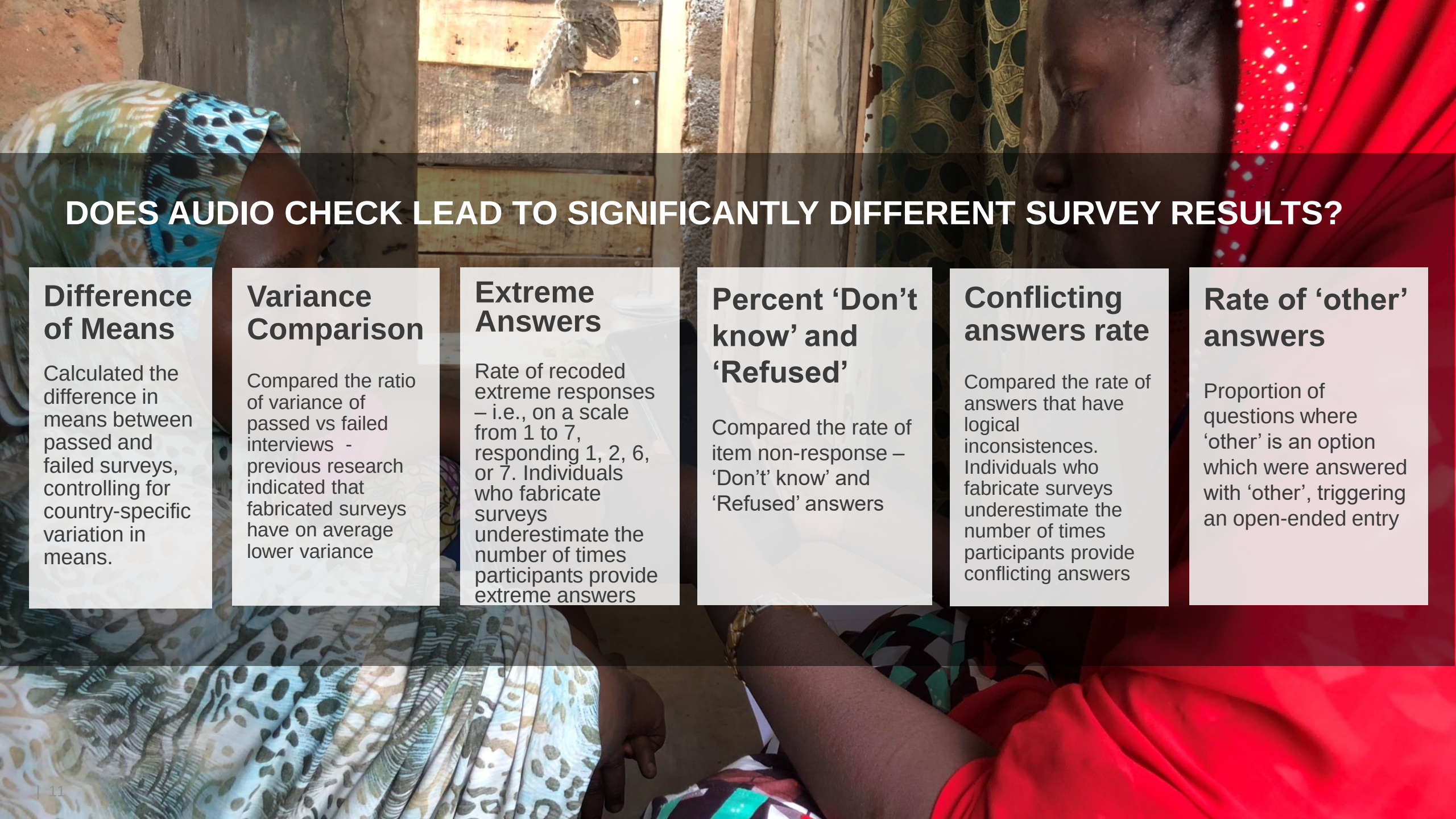
Overall, 15% of data was deleted from our sample based on audio – 3249 cases out of 21628

SURVEY LENGTH

Mean duration:

Accepted: 30:33 min
Failed: 23:46 min





DOES AUDIO CHECK LEAD TO SIGNIFICANTLY DIFFERENT SURVEY RESULTS?

Difference of Means

Calculated the difference in means between passed and failed surveys, controlling for country-specific variation in means.

Variance Comparison

Compared the ratio of variance of passed vs failed interviews - previous research indicated that fabricated surveys have on average lower variance

Extreme Answers

Rate of recoded extreme responses – i.e., on a scale from 1 to 7, responding 1, 2, 6, or 7. Individuals who fabricate surveys underestimate the number of times participants provide extreme answers

Percent ‘Don’t know’ and ‘Refused’

Compared the rate of item non-response – ‘Don’t’ know’ and ‘Refused’ answers

Conflicting answers rate

Compared the rate of answers that have logical inconsistences. Individuals who fabricate surveys underestimate the number of times participants provide conflicting answers

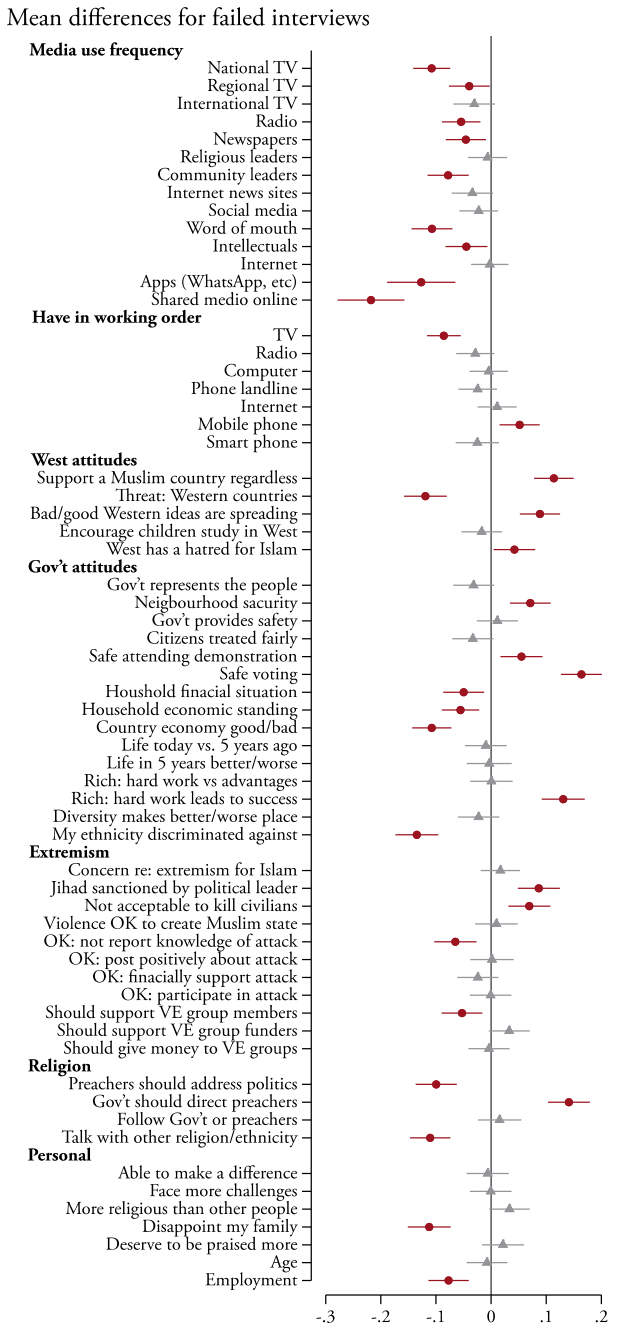
Rate of ‘other’ answers

Proportion of questions where ‘other’ is an option which were answered with ‘other’, triggering an open-ended entry

DIFFERENCE OF MEANS

Method

1. Standardized each variable across the entire sample - the estimated difference is in terms of the (overall) standard deviation for that variable
2. Regression with a set of dummy variables for each country to account for the possibility of different means across countries, plus a dummy variable for "failed"
3. Graphed the difference in the mean for failed interviews compared with non-failed (as an effect size)



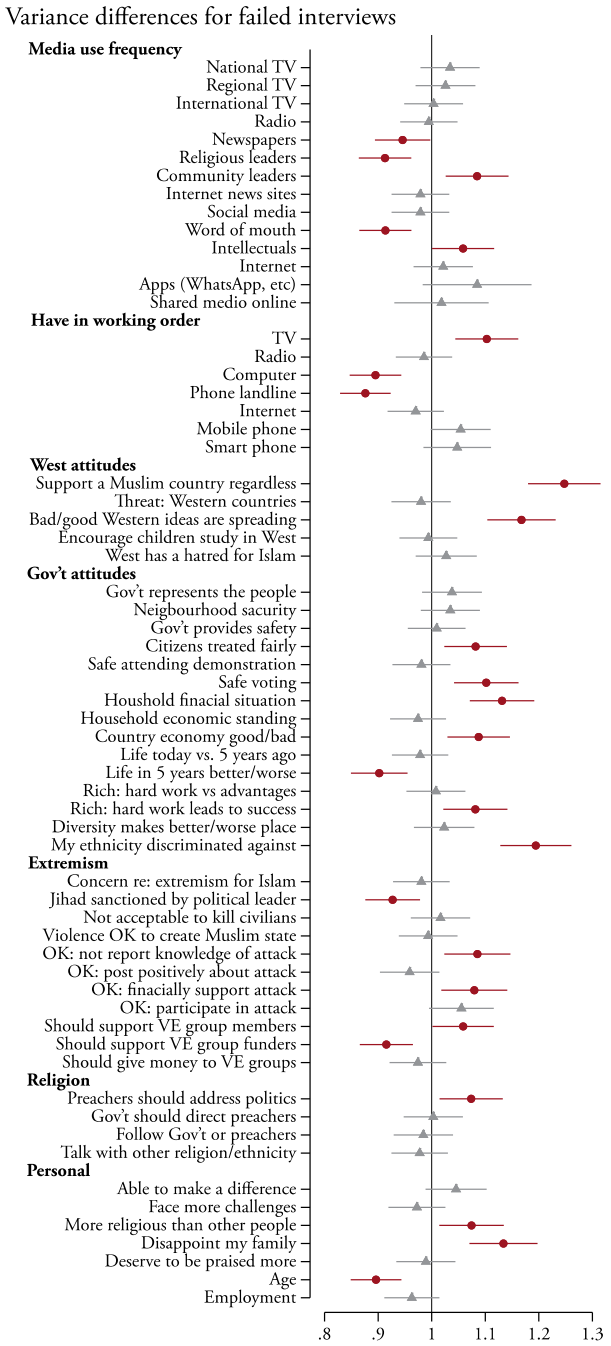
Results

1. Fraudulent interviews have significantly different means in our survey [Statistically significant difference for 32 of 63 variables (51%) at 95% confidence interval]
2. Statistical differences run across different topics of the survey, from media use to attitudes towards the government

VARIANCE COMPARISON

Method

1. Heteroskedastic regression model of each DV on dummy variables per country, estimating the impact of failed-vs-accepted on the residual variance. This has the effect of calculating the variances with respect to the country-specific means
2. Because the test is done on the ratio of the variances, the null hypothesis is one (not zero).



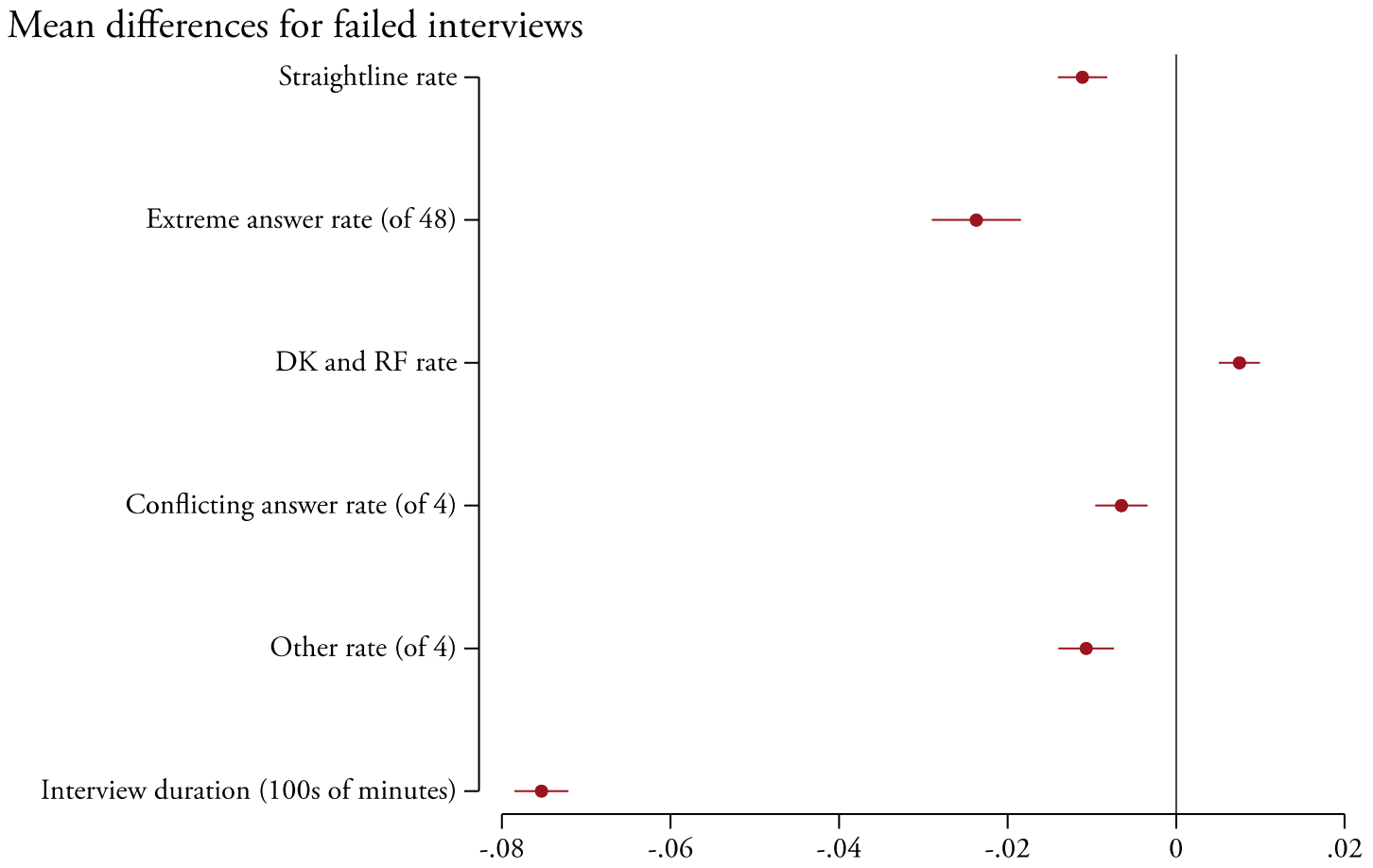
Results

1. Fraudulent interviews have significantly different distribution of answers [Statistically significant variance difference for 26 of 63 variables (41%) at 95% confidence interval]
2. Statistical differences run across different topics of the survey, from media use to attitudes towards the government

TESTS FOR ANSWER PATTERNS

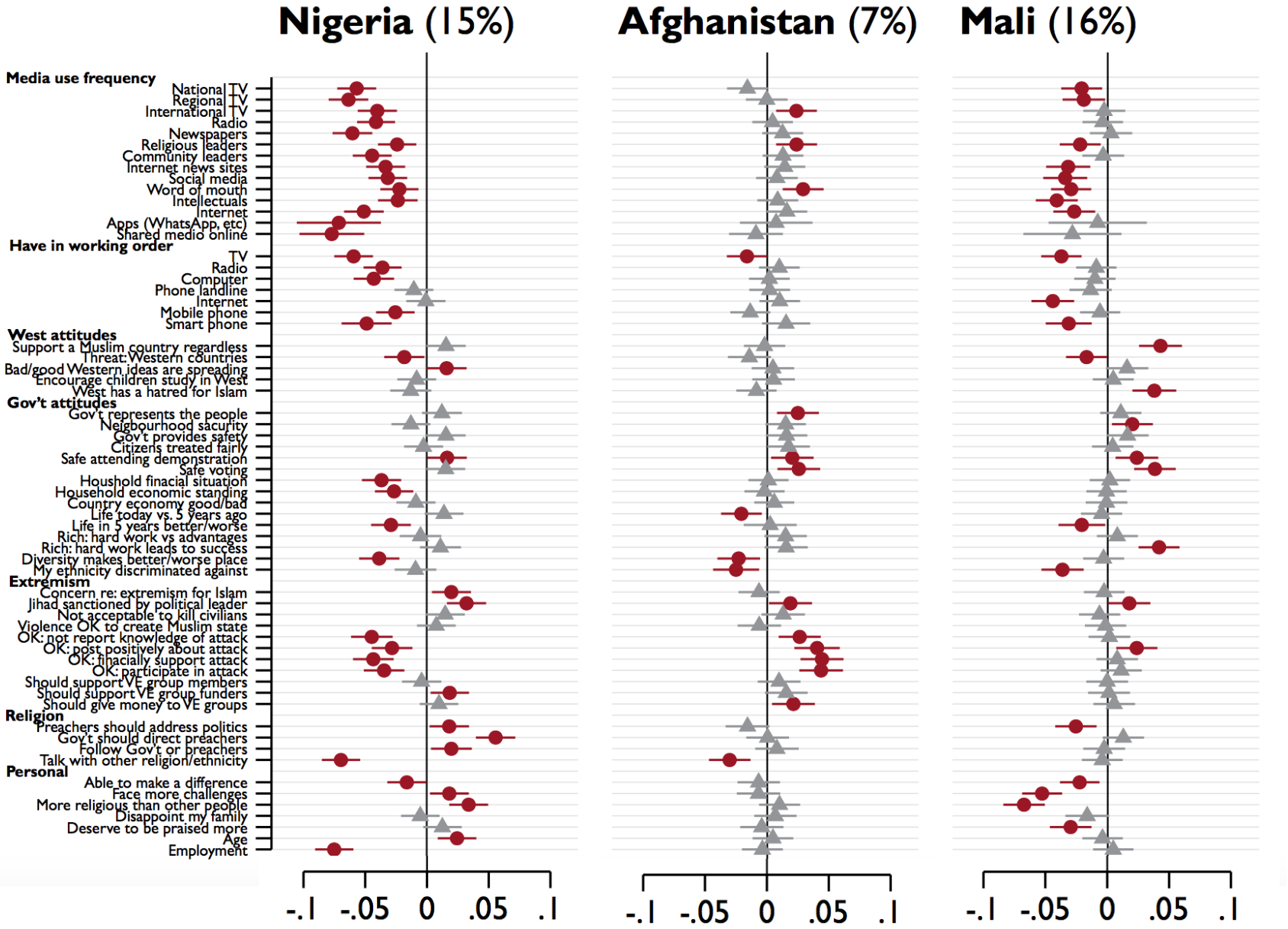
Fraudulent interviews display significantly different answer patterns on all traditional tests

- Interviewers underestimate the number of time people agree with all items in the battery (straightlining), give extreme or conflicting answers, and are less likely to select ‘other’ as an answer option
- Interviewers who fake data are more likely to select ‘Don’t know’ or ‘Refused’



Difference of mean between failed and good interviews.
Using unstandardized variables, with 95 percent confidence intervals.
p<0.05 for 6 of 6 comparisons (100.0%)

IMPACT OF FAILED INTERVIEWS ON ESTIMATED MEANS



Effect size of difference in means between full sample and 'good' sample with 95 percent confidence intervals. $p<0.05$ for 239 of 567 comparisons (42.2%)

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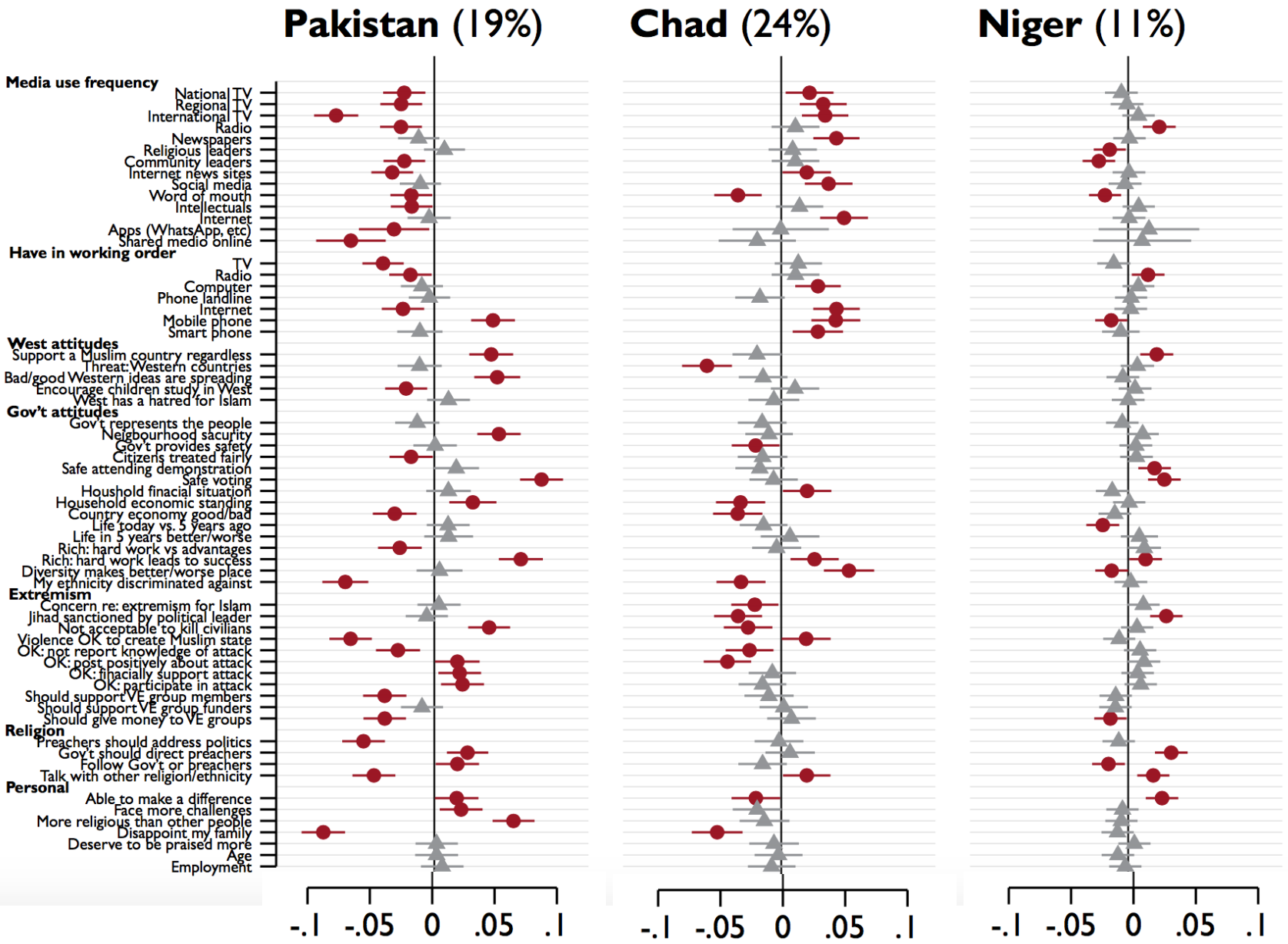

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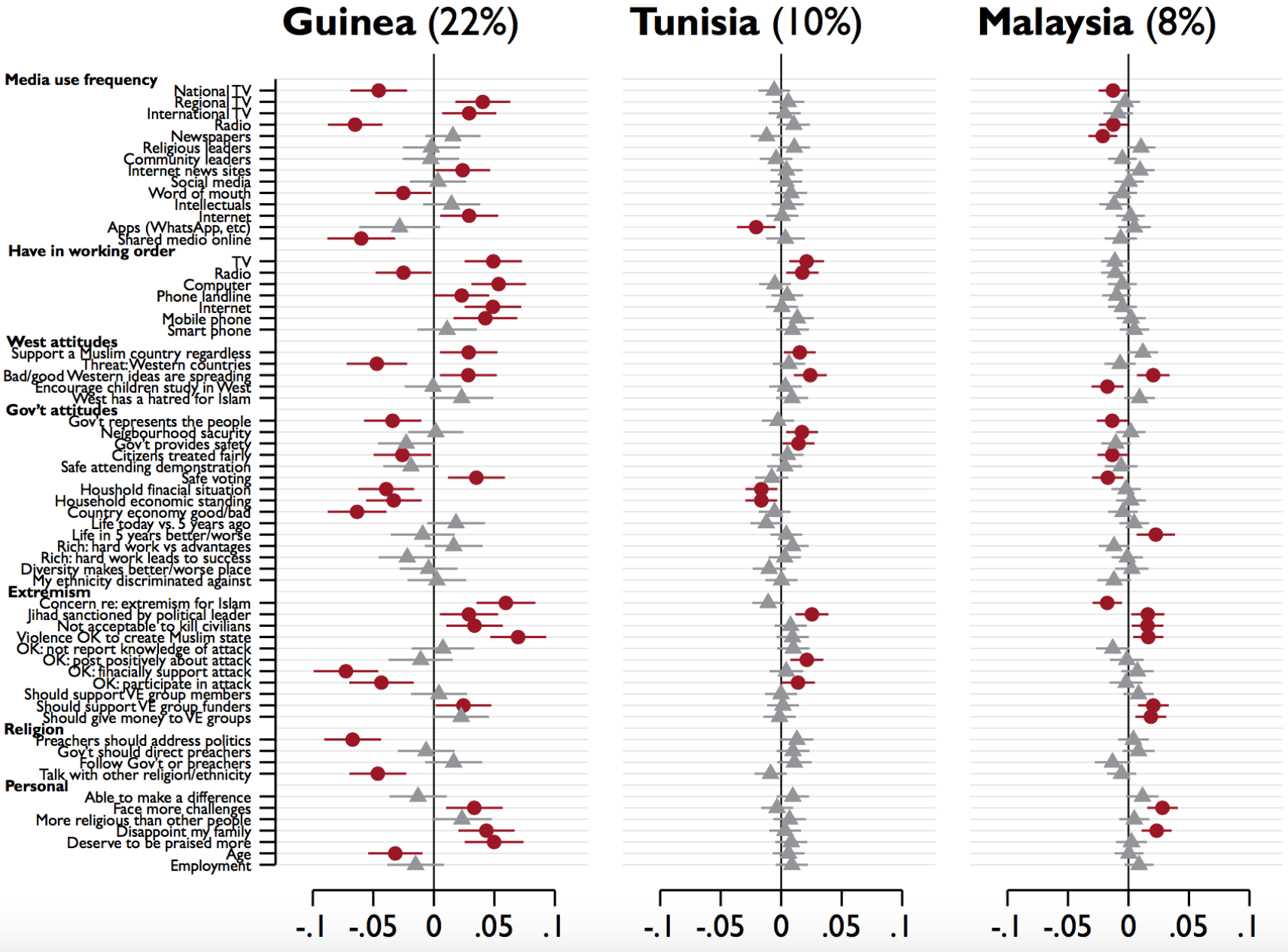

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INTERVIEWER CHARACTERISTICS

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Limited data is available on the effect of interviewer characteristics on failure rates.

This graphs shows average failure rates for each category (e.g., male failure rate is 17.5%, female is 11.4%, etc.) compared to the overall average failure rate.

Average failure rate; model includes country-indicator controls.
Reference line indicates overall average failure rate.

TAKE AWAY

We also delete cases based on other quality checks (i.e. GPS - about 2% overall), but **audio checks are key to high quality data.**

- Backchecks failed to identify any of these cases as fraudulent
- Observed interviews – no difference between failed and passed (i.e. observed interviews have the same likelihood of failing as not observed interviews)

BEST PRACTICES FOR AUDIO CHECKS

Carefully consider which questions to record, in particular:

- The location in the questionnaire;
- Sensitivity;
- Filters used in a survey;
- Applicability to all respondents.

Decide ahead of time on the proportion of audio checks, the standard for good vs bad, and how you going to handle feedback to local

Increase interviewer training