Methods note: quality control

How do you catch bad data while fieldwork is still running?

Nigeria's survey data carry well-documented problems with ages and dates, and where interviewers differ, a few of them often account for most of the problems. The checks that find them in time to fix them.

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In short

- Age heaping in Nigeria's DHS surveys from 2003 to 2013 was among the highest of any DHS survey of 2000–2015, and a DHS review places Nigeria among the countries with the poorest age and date data.
- Training can over-correct. After earlier surveys moved young women out of the eligible age range, the 2003 and 2013 surveys moved them the other way. Checks have to look in both directions.
- Where interviewers differ, the problems can often be traced to a handful of them. In South Africa's national panel study, checks found during fieldwork that about 7% of the sample had been fabricated, and the interviews were redone.

Ages and dates in Nigerian surveys

The DHS Program's methodological reviews document the problem in detail. Myers' Blended Index estimates the percentage of reported ages that would have to move to remove the preference for particular final digits. For Nigeria's household populations it was 14.3 in 2003, 14.2 in 2008 and 13.5 in 2013, and among DHS surveys of 2000–2015 only India's 2005–06 survey scored higher than Nigeria's 2003 and 2008 surveys[1]. Combining incompleteness, heaping and displacement, the review places Nigeria among 13 countries in the poorest fifth for the quality of ages and dates[1].

Ages near an eligibility boundary are also shifted across it. Nigeria's 1990 survey showed the highest level of any DHS survey of 1985–2003 of young women recorded as younger than 15, outside the eligible range[2]. The 2003 and 2013 surveys then showed large shifts the other way, which the DHS review attributes to 'an over-correction' after efforts to prevent the earlier problem[1]. Heaping also shows at the upper boundary: the 2008 household listing records 407 women aged 49 and 914 aged 50, though men show an even sharper jump (286 and 1,157), and the 2017 review did not flag Nigeria for transfers across age 50[3,1].

Birth dates show a similar pattern. In the 2008 survey, births recorded for odd years from 1999 to 2003 far outnumbered those for the even years beside them, with calendar-year ratios for 1999–2004 swinging between 73.5 and 139.5, where 100 means no difference[3]. A DHS review of fertility estimates classes Nigeria's data as 'poor'[4].

Problems often trace to a few interviewers

A DHS study of 25 data-quality indicators in 15 surveys, Nigeria's 2015 malaria indicator survey among them, found that where interviewers differ a lot, 'the bulk of that variation can often be traced to a handful of interviewers'. Older and better-educated interviewers generally produced fewer problems. The study warns that interviewers usually work in one or two regions, so their effects cannot be cleanly separated from those of the places they work[5].

Fabrication is the extreme case. In South Africa's National Income Dynamics Study, fabrication affected about 7% of the sample; it 'was detected while fieldwork was still on-going, and the relevant interviews were reconducted'. The fabricated data would not have changed cross-

sectional estimates much, but would have led to 'substantially different conclusions' in panel analysis, and the authors put the benefit-cost ratio of the checks at 'at least 24' [6].

The checks, and what the numbers mean

National surveys already check data during fieldwork. The DHS produces field check tables on response rates, age distributions and missing values while teams are still in the field, and discusses problems with them [7]. Nigeria's 2018 DHS generated these tables weekly [8], and the 2024 DHS reviewed them in weekly meetings, with tablet software that accepted only valid responses and checked ranges automatically [9]. Nigeria's GHS-Panel monitored its data daily through the World Bank's Survey Solutions software [10].

Back-checks, short re-interviews by someone else, are the standard defence against fabrication. J-PAL recommends back-checking 'at least 10% of respondents, as a best practice', with every interviewer back-checked at least once [11]. The World Bank's DIME guidance says to aim for 10–20%, with 20% of back-checks in the first two weeks, by a team 'independent from the rest of the survey staff' [12]. These are rules of thumb; neither cites evidence for the numbers.

Tablets add evidence of their own: a log of every answer and edit, with its time [13]; optional audio recording of all or part of an interview [14], which we use only with ethics approval and the respondent's consent; and GPS readings. GPS shows where a device was, not that an interview took place. In northern Nigeria in 2010, GPS tracks of polio vaccination teams 'revealed that teams commonly missed swaths of contiguous households' [15].



A field team going through completed questionnaires.
Photographs show fieldwork from our founder’s studies.

Our practice

These are the rules every Probatio Africa study follows. Read them as commitments you can hold us to.

- [x] We run checks on every day's data, by interviewer as well as by team: duplicates, interview lengths, skipped sections, outliers, and ages on both sides of each eligibility boundary.
- [x] We back-check at least 10% of interviews, every interviewer at least once and more in the first two weeks, with back-checkers independent of the team, comparing answers that should not change.
- [x] We do not train on a single indicator. We watch for shifts in both directions across the 14/15 and 49/50 boundaries and in years of birth.
- [x] When checks show a problem, we pause the interviewer or the team, retrain or replace, and re-interview where needed. Every check and its result goes into the study file.
- [x] We record interviews only where the ethics committee approves it and the respondent agrees.
- [x] Every report states the quality-control steps we took, as the AAPOR Code requires [16], and what they found.

What the evidence cannot settle

- Whether age and date reporting improved in Nigeria's 2018 and 2024 DHS. The published reviews stop at 2015, and we have not yet analysed the newer data.
- The right back-check rate. The 10–20% range is professional guidance; neither source we cite gives evidence for it.
- How effective audio checks are in African surveys. The evidence we found is from the United States.

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