Interactive Voice Response Survey During the Pandemic for Adolescents Sexual and Reproductive Health and Rights in Mali

Consultations on Mobile Health Surveys - January 14, 2025

Outline

- Overview of the Project
- Overview of MPS
- Methodology
- Operational aspects, data collection and innovations
- Lessons

Overview of the project

- Main Objectives:

  - Reduced practices of early marriage and early pregnancy among adolescent girls

  - Improved maternal, newborn and child health and nutrition (MNCH&N) practices particularly among adolescent parents

- Target groups: Adolescent girls and boys 10-19 years, women of reproductive age, and adults

- 317 villages in 3 districts in Koulikoro region of 575,000 people (in 2020)

Overview of the mobile phone survey

- The original project design included a coverage survey to measure 26 indicators using 3,000 sampled HHs

- An alternative method was needed due to the pandemic

- Identified interactive voice response (IVR) as a method of data collection using mobile phones

- Survey participants are adolescent girls and boys aged 15-19 and women and men aged 20-49

- We estimated that our survey would take one hour

- Cellphones in Mali are registered by Regions and not by their Districts; Koulikoro Region has 10 districts

- Data collection was during October 2022

What is Interactive Voice Response

- It is a system where users can communicate with a computer-operated telephone system (a platform) using telephone keypad or vocally without speaking to a person

- The platform may generate calls to specific or random numbers, or people may call the platform

- Requires a technology company with access to the database of a phone service provider

- Used for short calls/surveys (15 min max) since there is no human interaction

- Typically, does not include knowledge testing questions

- In our survey:
  - We opted for people to call the platform and answer using the keypad
  - It was a toll-free platform operating 24/7 for the duration of the survey

Methodology

Characteristics of indicators

- Prevalence of early marriage and early pregnancy

- Attitude towards early marriage and SGBV

- Maternal health practices (ANC, delivery and PNC)

- Family planning and sexual health

- Menstrual hygiene management

- Knowledge level on different topics (eg: risks of early marriage, danger signs during pregnancy)

- Different disaggregation by sex, age group, marital status, type of care provider

Sampling

Population figures were used for the sample size factoring confidence level, confidence interval and margin of error

Group	Sample size	Actual participants
Adolescent girls 15-19	1,200	1,211
Adolescent boys 15-19	600	661
Adult women 20-49	1,200	1,224
Adult men 20-49	600	881
Total	**3,600**	**3,977**

Questionnaire

- Had 6 questionnaire modules
    - Adolescent girls, unmarried and married
    - Adolescent boys, unmarried and married
    - Adults, women and men

- Questionnaire were translated to the local language and tested
- Used colloquial language to translate health jargon
- The voice recordings were done both by a woman and a man

Operational aspects, data collection and innovations

Key challenges

- Limited cellphone ownership

- Long questionnaire affecting completion rate

- Obtaining consent for adolescents' participation

- Low interest in participation

Limited cellphone ownership

- Cell ownership by women is at 50% in rural areas and by girls is at 52% nation-wide (DHS 2018)

- All CHWs (182) have their own cellphones and agreed to offer them to members in their communities to participate in the survey in a private setting for a compensation; all agreed

- CHWs received US$ 4.80 for letting their phones be used for an average of three days for unlimited number of participants

- 761 calls were made from CHWs' phones (19% of the total calls), all by girls and women

- Allowed having up to 4 calls from one cellphone number: one adolescent girl, one adolescent boy, one woman, and one man

Long questionnaire affecting completion rate

- Reduced the number of indicators from 26 to 17, still, the longest questionnaire for adolescent girls needed around 45 minutes to complete.

- Allowed completing the survey in more than one call by dividing the questionnaire into segments:

  - Adolescent girls could complete the survey in 3 calls

  - All others could complete the survey in 2 calls

- Provided incentives to participants

  - Airtime to callers from private phones

  - A package of reusable sanitary pads for girls and women and a package of tea bags for boys and men calling from a CHW's phone, equal to the value of the respective airtime

Rate of completing the survey in one call	
Adolescent girls	90%
Adolescent boys	84%
Adult women	72%
Adult men	100%

14% of participants used the option of completing the survey in more than one call

Obtaining informed consent

- Adult women and men and adolescents aged 18-19 consented directly using the keypad after listening to a recorded message

- Married adolescent girls and boys 15-17 years of age also consented directly since they are already making decisions related to their sexual and reproductive health

- CHWs were trained to obtain physical consent from parents/guardians of unmarried adolescents aged 15-17 by randomly sampling HHs

- Consented families were asked to provide their phone number (or the adolescent's) to share it with the telecommunication company to allow such a call, or use the CHW's phone if they were not willing to share the number, or had no phone

Low interest in participation

- Awareness-raising activities by CHWs for four days, aimed at village chiefs, religious leaders, heads of households, women, and adolescents

- **213,000** Short Message Services (SMS) were sent to the numbers of all subscribers living in Koulikoro Region (not only the 3 districts)

- **21,850** voice messages were sent to female subscribers in Koulikoro Region

- **360** radio spots broadcasted in Bambara; one spot twice a day for 30 days with six local radio stations

- CHWs were asked to follow up with families that have consented that their unmarried adolescents participate but did not initiate calls

Platform configuration to enable:

- Multiple calls from a CHWs' phone by participants who have no phones

- Complete the survey from a CHW's phone in one call

- Unmarried adolescents aged 15-17 to participate using own/family phone

- Complete the survey in more than one call from a private phone

- Make up to 4 calls from a private phone, one per each sample group, with the option of completing the survey in more than one call (most complicated challenge)

Lessons from the interactive voice response (IVR)

- Possible to have a phone survey for up to 45 minutes on sensitive issues

- Possible to participate in a MPS without having own's phone

- Possible to measure knowledge level but with limitations

- Challenging to obtain informed consent for adolescents

- The more the project's specifics, the more complicated the technological requirements (location and demography of participants, number of indicators and disaggregation, questionnaire length, etc.)

- Limited technological capacity in IVR surveys (only one company in Mali)

- Such mobile phone surveys make evaluations possible when it is not possible to have an in-person coverage survey (due to a pandemic, insecurity or logistical constrains), though they are not representative

For more information, pls see:

[Interactive Voice Response Technology as a Data Collection Tool Compared to a Household Survey: What We Learned | Canadian Journal of Program Evaluation](#)

Thank you

Q&A

Additional Slides

Other challenges

- Language and not having human interaction

- Monopolized telecommunication system

- Measuring the level of knowledge

- Limited possibility for adjustments after launching the survey

- Intervention areas are in certain parts of each district (5 km from nearest primary health clinic, per MoH's community health strategy, further affecting the sampling)

Language barriers and communication

Challenge	Mitigation
• People in the area where the project is implemented speak mostly Bambara. • In a household survey, interviewers are recruited based on different skills, including language proficiency and their capacity to explain questions to all language skill levels. • Since there is no human interaction in an IVR survey, the questionnaires needed to be translated in a way that makes them understandable to all language skill levels.	• The questionnaires were translated into Bambara and then tested and recorded by the Malian National Center for Information, Education and Communication for Health, a ministry of health affiliated research institute in Mali • The voice recordings were done both by a man and a woman to create a reassuring communication considering the sensitive aspect of the questions • Used colloquial or accessible language to translate complex health jargon • All the questionnaires were pretested by CHWs who work closely with the population

Monopolized telecommunication system

- There are three cellphone service providers in Mali, but the project's area is covered by only one of them (Orange).

- IVR requires the availability of a tech company that has an agreement with a cellphone service provider (i.e. Orange) to establish a toll-free platform to call or receive calls from in the project's area.

- Only one company met this criterion out of six responding to the tender that had an agreement only with Orange.

- The tech company having access to only one service provider means that only Orange's Subscriber Identity Module (SIM) cards can access their IVR platform. To mitigate this challenge, the project provided the CHWs with an Orange SIM if they didn't have one to ensure their access to the platform.

Measuring the level of knowledge

- Household surveys measure knowledge by asking questions such as "what are the danger signs during pregnancy?"

  - The data collector listens to the respondent and ticks the answers that correspond to the list of correct answers allowing several correct answers.

- An alternative method was needed since the survey did not use voice recognition and did not involve in-person data collection.

  - Equal number of correct and incorrect statements were developed, and the respondent was asked to press 1 for "correct" and 2 for "incorrect".

  - A correct answer received a positive point and an incorrect received a negative point.

  - The methods limited the number of topics that could be tested in order not to prolong the calls.

Limited possibility for adjustments after launching the survey

- The IVR's biggest advantage is its speed at which it collects data. Over 1000 responses were received in just a week, though most were from adult males.

- Data collection at such a rapid pace leaves no room for errors to be corrected at an early stage

- Despite CHWs testing the survey, we couldn't test it on the actual platform because the tests couldn't be deleted

- a simple and unnoticeable bug in the platform filtering system went undetected which allowed callers to access the survey from districts in Koulikoro Region other than those participating in the project

- Once the bug was detected, all collected data from "other" districts were deleted and the platform was adjusted

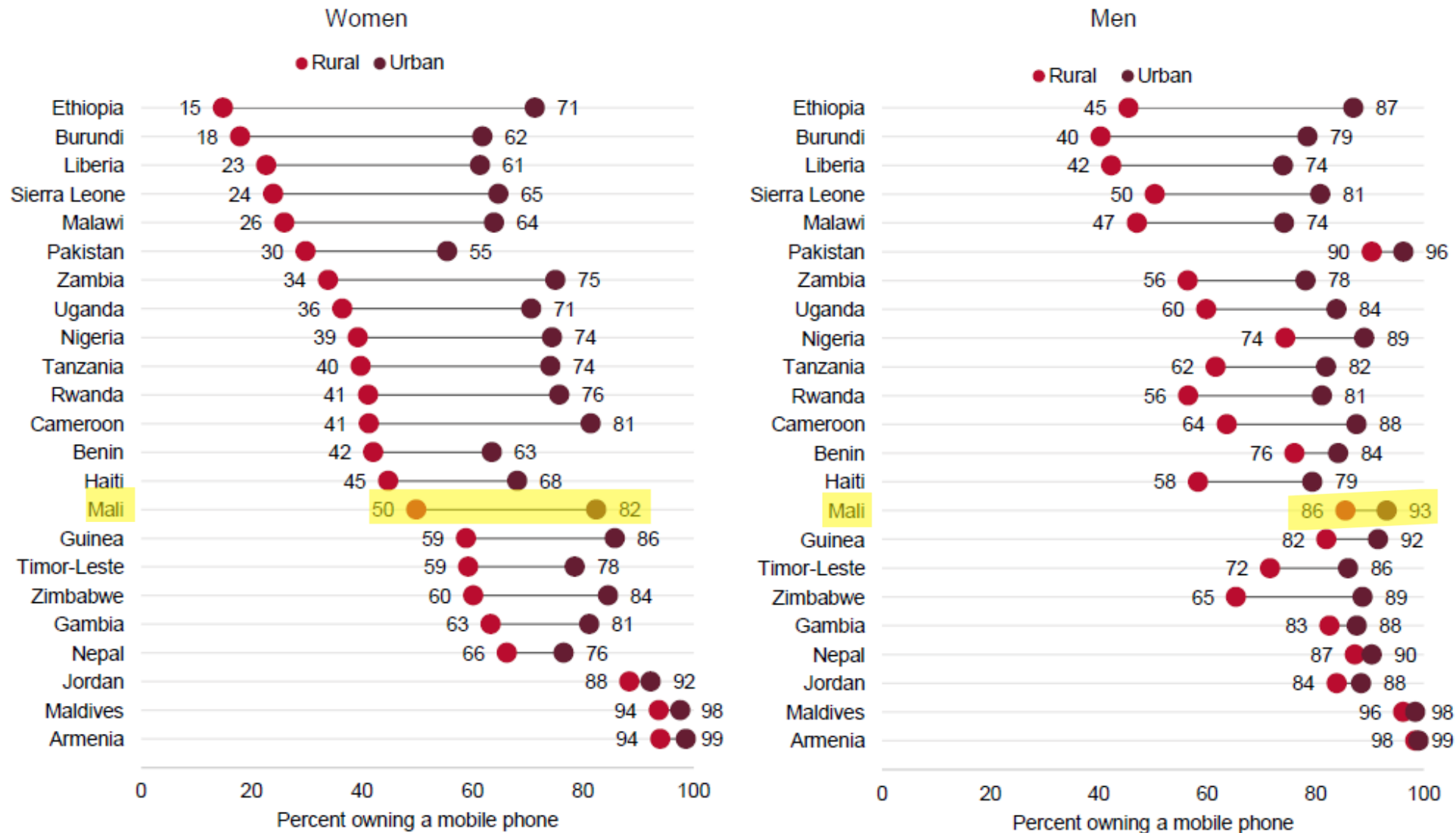# Advantages and disadvantages of IVR from the literature

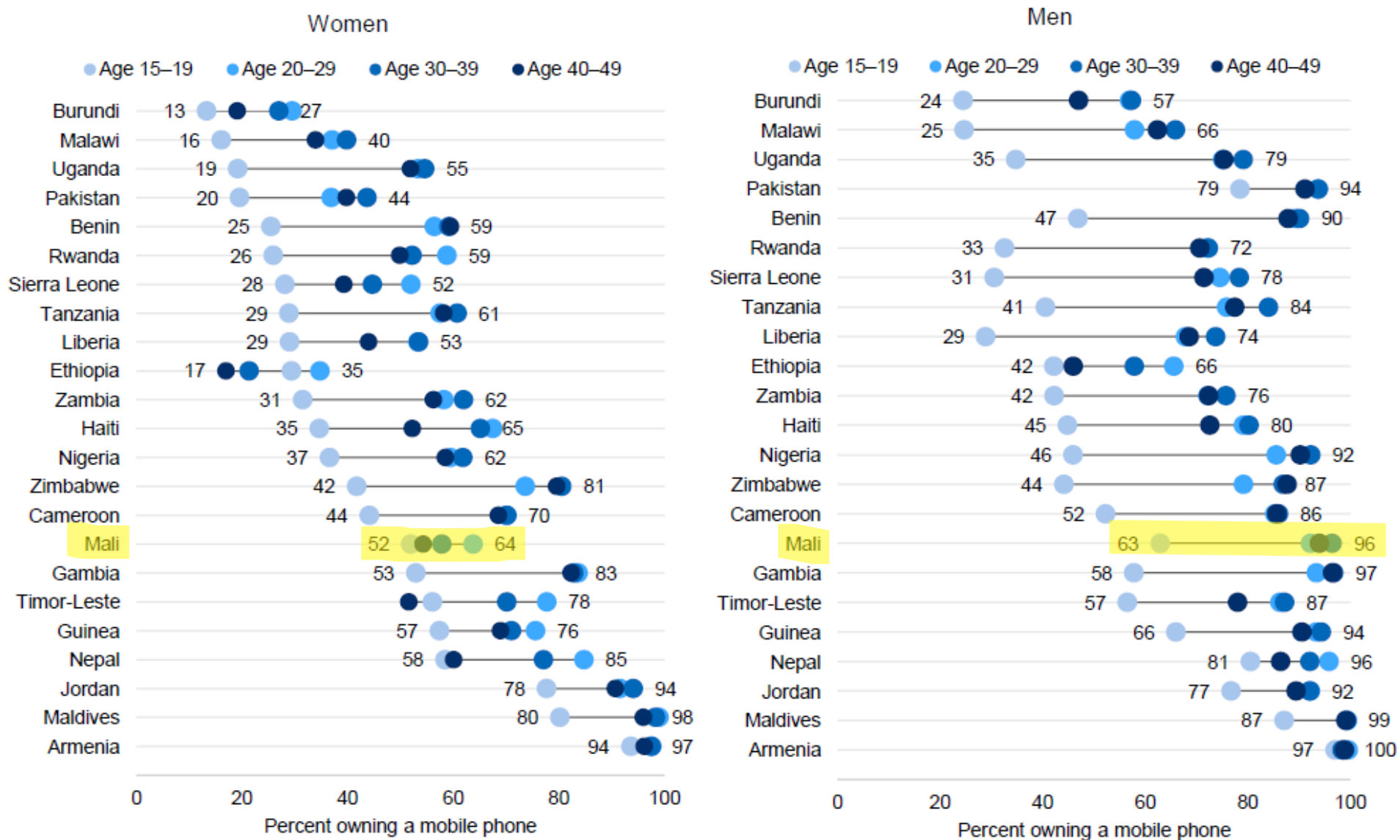| Advantages	Disadvantages
• More privacy for sensitive questions • More cost efficient in terms of human resources, logistics and data collection time • Can achieve a larger sample size, particularly for populations that are difficult to reach • Convenient in terms of timing • Increases the dignity and safety of participants • Additionally, the IVR ensures consistency in the way questions are asked to all participants	• Many still do not own a cellphone or have access to one • Various socio-economic factors influence who owns or has access to a cell phone • The likelihood of dropouts is higher with surveys longer than 15 minutes • We encountered more challenges once we embarked on the planning phase due to the nature of our survey

Figure 6   **Mobile phone ownership among women and men, by residence**

Women — Men (dot plots showing percent owning a mobile phone by Rural and Urban residence)

Country	Women Rural	Women Urban	Men Rural	Men Urban
Ethiopia	15	71	45	87
Burundi	18	62	40	79
Liberia	23	61	42	74
Sierra Leone	24	65	50	81
Malawi	26	64	47	74
Pakistan	30	55	90	96
Zambia	34	75	56	78
Uganda	36	71	60	84
Nigeria	39	74	74	89
Tanzania	40	74	62	82
Rwanda	41	76	56	81
Cameroon	41	81	64	88
Benin	42	63	76	84
Haiti	45	68	58	79
Mali	50	82	86	93
Guinea	59	86	82	92
Timor-Leste	59	78	72	86
Zimbabwe	60	84	65	89
Gambia	63	81	83	88
Nepal	66	76	87	90
Jordan	88	92	84	88
Maldives	94	98	96	98
Armenia	94	99	98	99

Percent owning a mobile phone

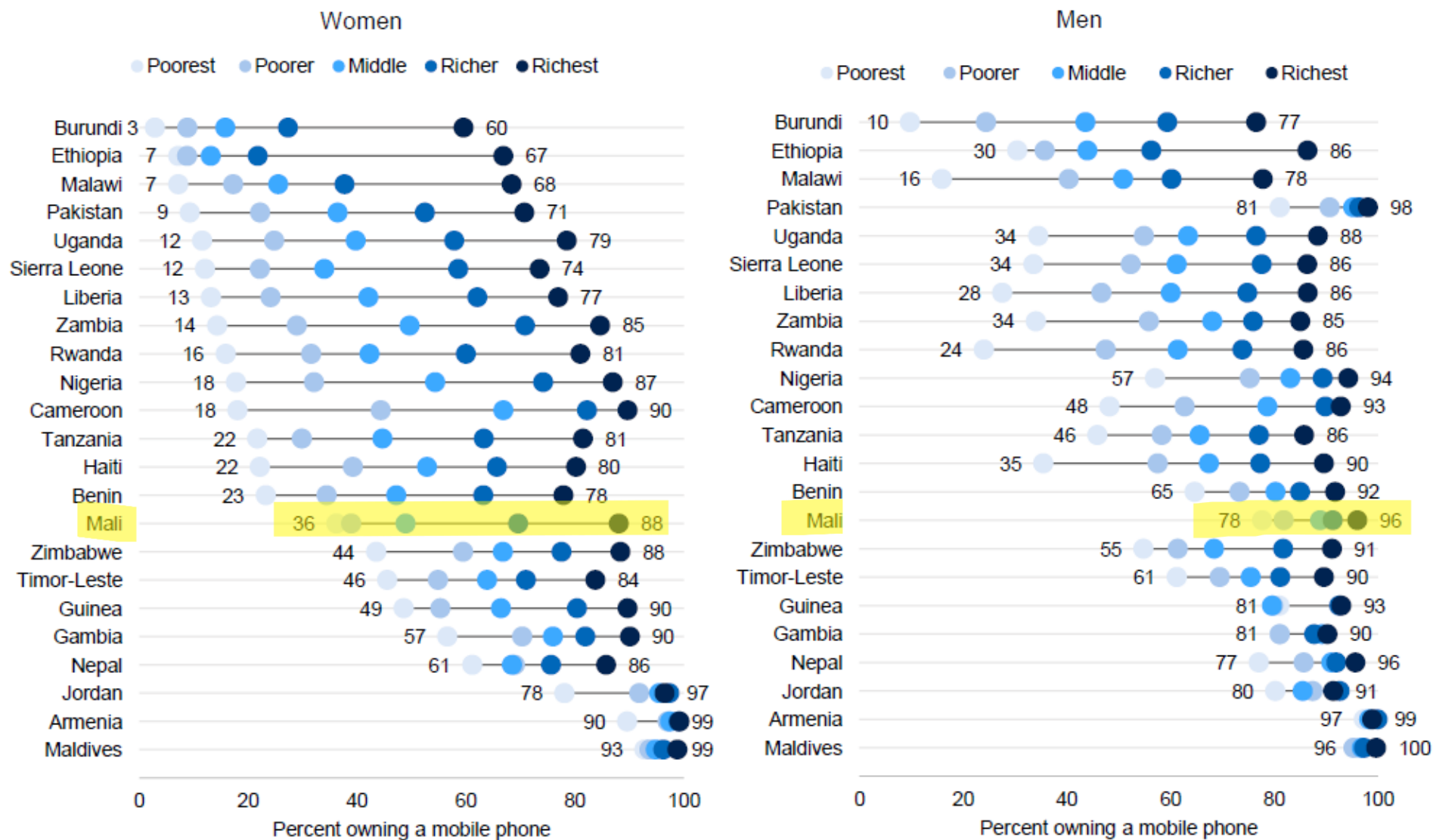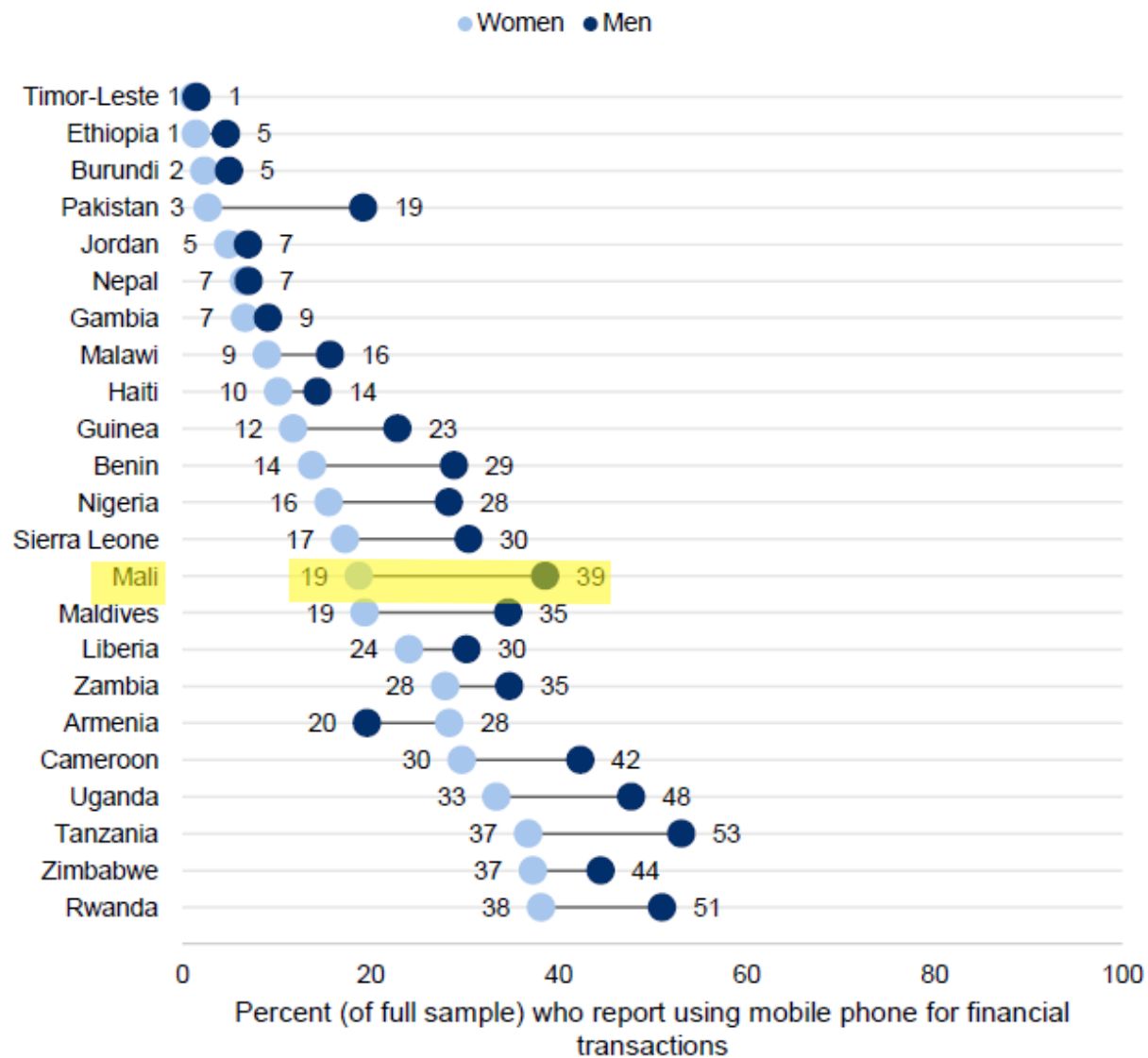The DHS Program - The Gender Digital Divide: Evidence from Demographic and Health Surveys (English)
Data from DHS between 2015-2020 – Mali's DHS was in 2018

Figure 7   Mobile phone ownership among women and men, by age

Women

Men

Age 15–19   Age 20–29   Age 30–39   Age 40–49

Country	Women range	Men range
Burundi	13 – 27	24 – 57
Malawi	16 – 40	25 – 66
Uganda	19 – 55	35 – 79
Pakistan	20 – 44	79 – 94
Benin	25 – 59	47 – 90
Rwanda	26 – 59	33 – 72
Sierra Leone	28 – 52	31 – 78
Tanzania	29 – 61	41 – 84
Liberia	29 – 53	29 – 74
Ethiopia	17 – 35	42 – 66
Zambia	31 – 62	42 – 76
Haiti	35 – 65	45 – 80
Nigeria	37 – 62	46 – 92
Zimbabwe	42 – 81	44 – 87
Cameroon	44 – 70	52 – 86
Mali	52 – 64	63 – 96
Gambia	53 – 83	58 – 97
Timor-Leste	52 – 78	57 – 87
Guinea	57 – 76	66 – 94
Nepal	58 – 85	81 – 96
Jordan	78 – 94	77 – 92
Maldives	80 – 98	87 – 99
Armenia	94 – 97	97 – 100

Percent owning a mobile phone

The DHS Program - The Gender Digital Divide: Evidence from Demographic and Health Surveys (English)
Data from DHS between 2015-2020 – Mali's DHS was in 2018

Figure 8   Mobile phone ownership among women and men, by household wealth quintile

The DHS Program - The Gender Digital Divide: Evidence from Demographic and Health Surveys (English)
Data from DHS between 2015-2020 – Mali's DHS was in 2018

Figure 9   Use of mobile phone for financial transactions, by sex

Percent (of full sample) who report using mobile phone for financial transactions

Incentives

- For callers from their own cellphone:
  - Girls and women received US$2.4 of mobile credit for a completed questionnaire
  - Boys and men received US$1.6 of mobile credit for a completed questionnaire

- Callers from a CHW's cellphone:
  - Girls and women received a package of reusable sanitary pads of US$2.4 value for a completed questionnaire
  - Boys and men received a package of tea bags of US$1.6 value for a completed questionnaire

Additional information on sampling

- Adolescent age group of 15-19 is inline with the DHS and MICS

- Most of the project activities are conducted in communities at least 5 km distance from the nearest primary health clinic (per MoH's strategy for community-based health), but radio programs and interventions in primary health care clinics cover all 3 districts and beyond.

- It was impossible to restrict phone calls to those communities only and had to include all communities in the 3 districts in the sample frame

- We opted for people to call the toll-free platform versus the platform generating random calls because:

  - The range of the age groups in the database of the mobile phone service provider did not match the age groups of our sample

  - Each phone number is registered by a Region in Mali (there are 10 regions) and not by the districts of that region; the project is implemented in 3 districts in Koulikoro Region that has another 7 districts.

List of indicators

1. % of adolescent girls who are currently married or in union.

2. % of adolescent girls who have started their reproductive life. The criteria are girls who gave birth or currently pregnant for the first time.

3. % of unmarried girls who are confident in their ability to seek alternatives to early marriage. The survey tested two alternatives: attending school and helping the family financially.

4. % of adult women and men who support girls and boys in delaying early marriage.

5. % of adult women and men who can identify health-related benefits in keeping adolescents in school

6. % of schoolgirls who report having sufficient means to manage menstruation at school. The survey measured the access to water, soap, and latrines at school.

7.% of adolescent girls who had four or more antenatal care visits at the time of last birth, disaggregated by type of health care provider and the location of visit

8.% of adolescent girls who gave birth at home at the last delivery in the past 5 years and whose newborn was visited by a health professional within 2 days of delivery disaggregated by type of health care provider and the location of visit

9.% of women aged 15 to 19 who health status was assessed for danger signs at their last delivery, disaggregated by the type of health care provider

10.% of participants who can identify at least 5 danger signs during pregnancies, disaggregated by biological sex, age group, and marital status of adolescents.

11.% of participants who can identify at least 5 risks for girls to become pregnant at age 19 or younger, disaggregated by biological sex, age group, and marital status of adolescents.

12.% of participants who can identify at least 5 danger signs in newborns, disaggregated by biological sex, age group, and marital status of adolescents.

13.% of participants who can identify at least 5 good practices for newborn care, disaggregated by biological sex, age group, and marital status of adolescents

14.% of participants using contraceptives who were informed by community health workers and/or matrons of possible side effects of contraceptive or of other family planning methods, disaggregated by biological sex, age group and marital status of adolescents.

15.% of married women aged 15-49 who make their own informed decisions about sex and contraceptive use.

16.Extent to which participants report that sexual and gender-based violence is not acceptable under any circumstances, disaggregated by gender, disaggregated by biological sex and age group. The indicator measurement used seven practices from UNICEF's MICS.

17.% of participants who believe that the practice of female genital mutilation should be abandoned, disaggregated by biological sex and age group.