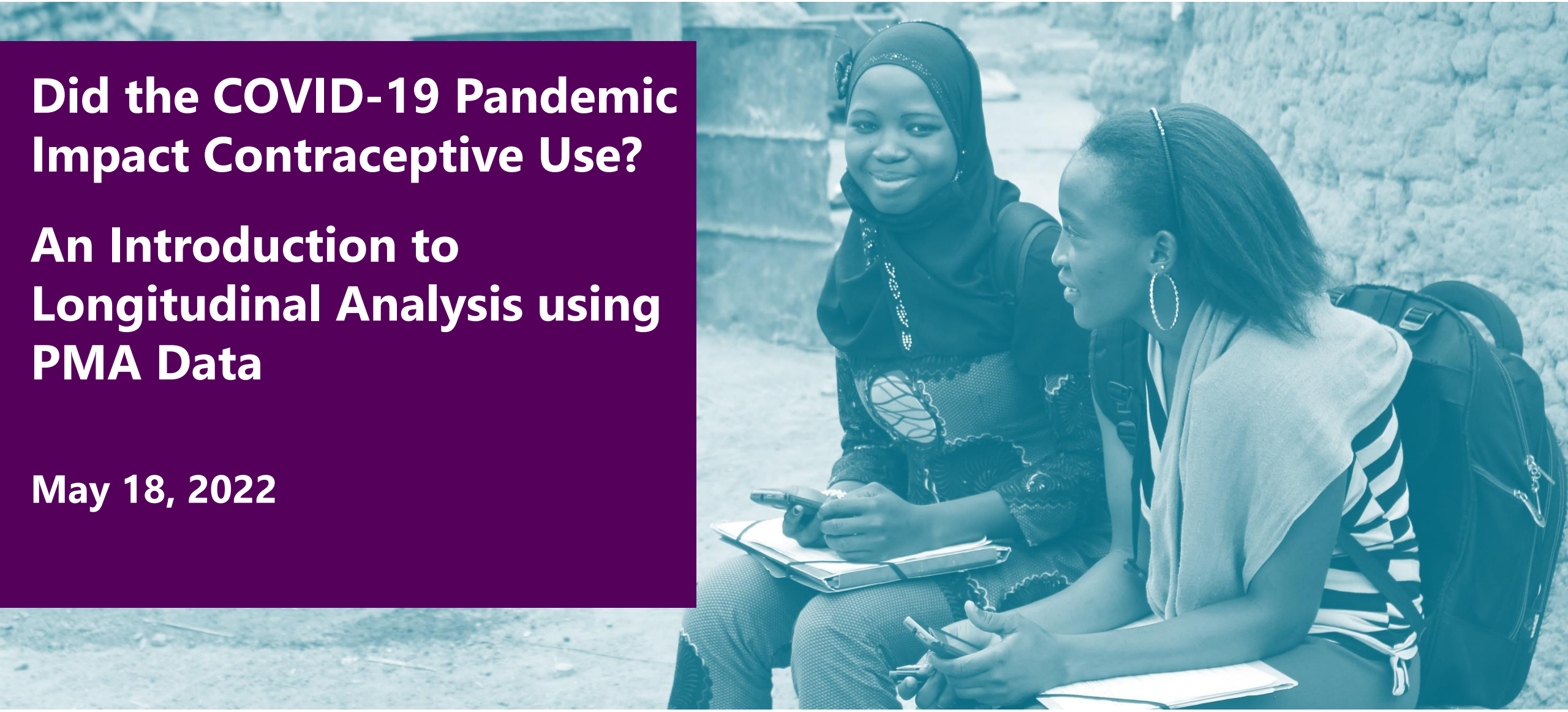
# Did the COVID-19 Pandemic Impact Contraceptive Use?

## An Introduction to Longitudinal Analysis using PMA Data

May 18, 2022



PMA
PERFORMANCE MONITORING FOR ACTION

JOHNS HOPKINS
BLOOMBERG SCHOOL
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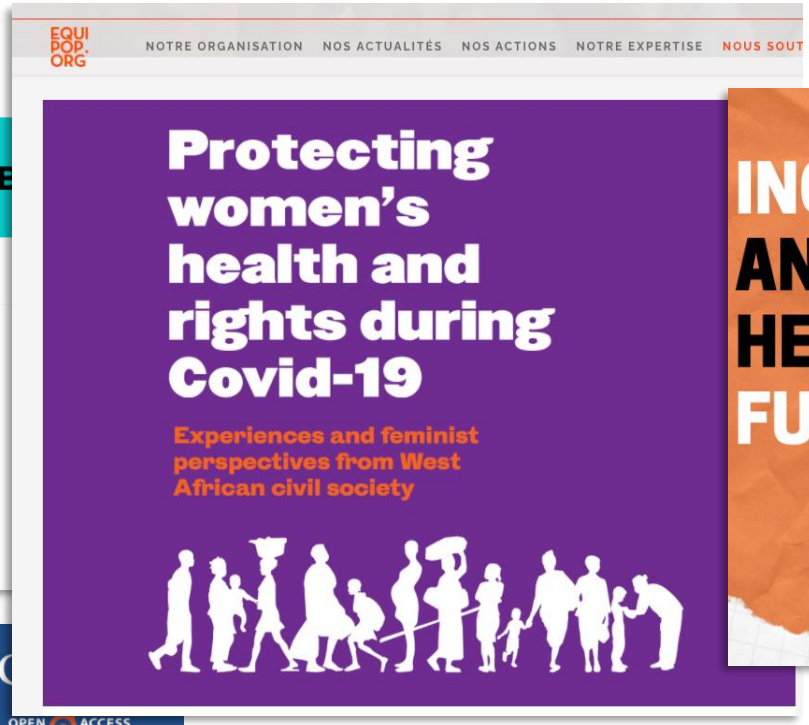
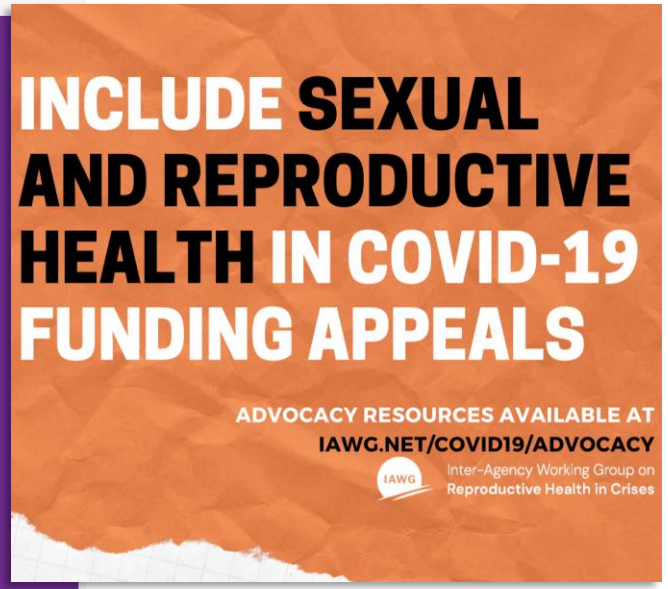
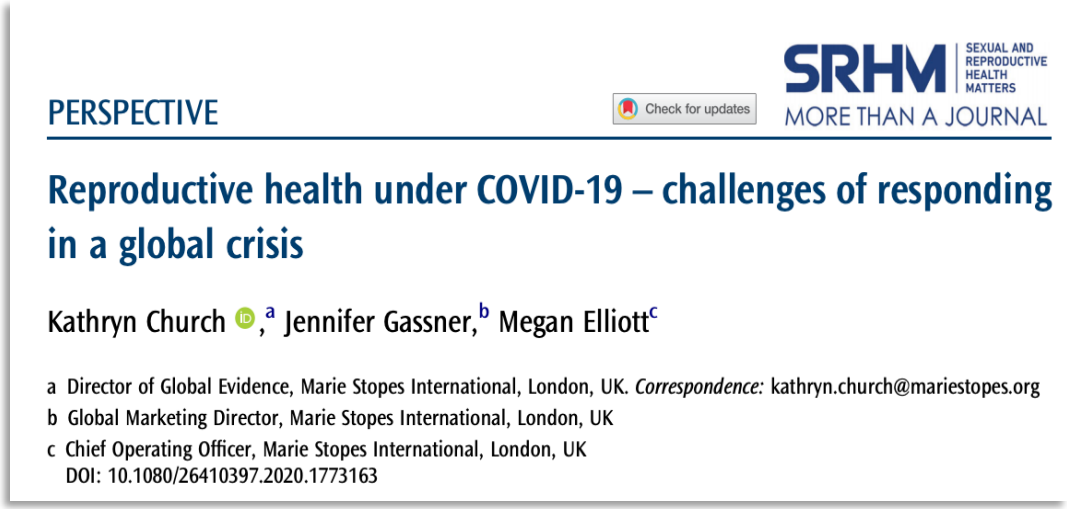
IPUMS
PMA








IPUMS PMA

PMA PERFORMANCE MONITORING FOR ACTION

# Agenda

- Overview of PMA
- PMA panel membership
- IPUMS's role
- Creating an extract
- Breakout sessions – longitudinal analysis
  - Two breakout rooms: one for R, one for Stata
  - Self-select your breakout room
- Conclusion

# Performance Monitoring for Action (PMA) Overview

# KEY ACHIEVEMENTS UNDER PMA AND PMA2020

**2013**

PLATFORM LAUNCHED

**85+**

ROUNDS OF DATA COLLECTION COMPLETED

SURVEYS IN **11** COUNTRIES IN AFRICA AND ASIA

**10+**

NEW SURVEY MODULES

**2019**

REVISED DESIGN LAUNCHED

**9,000+**

LOCAL DATA COLLECTORS TRAINED

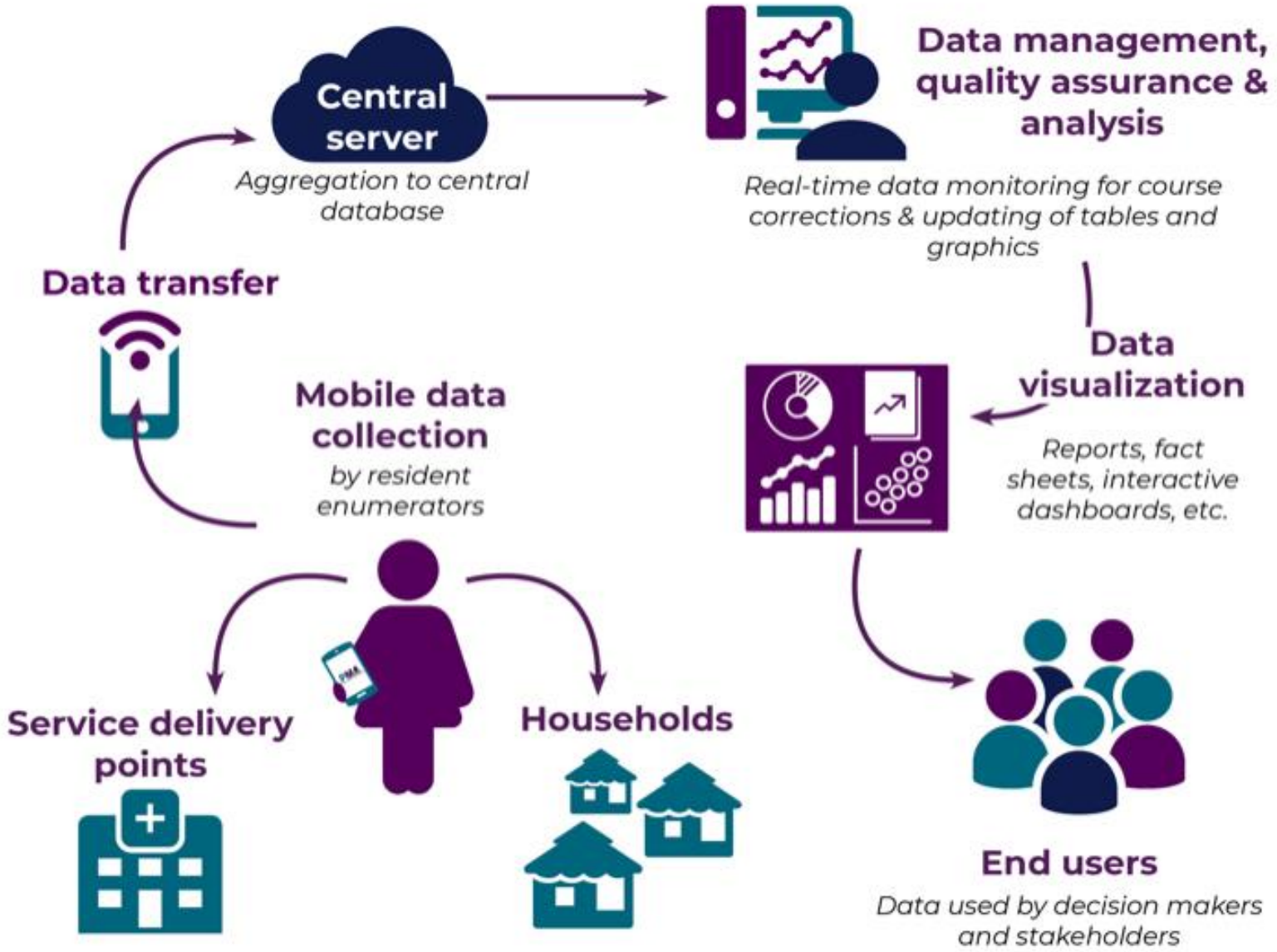
**820,000+**

INTERVIEWS CONDUCTED

**23,000+**

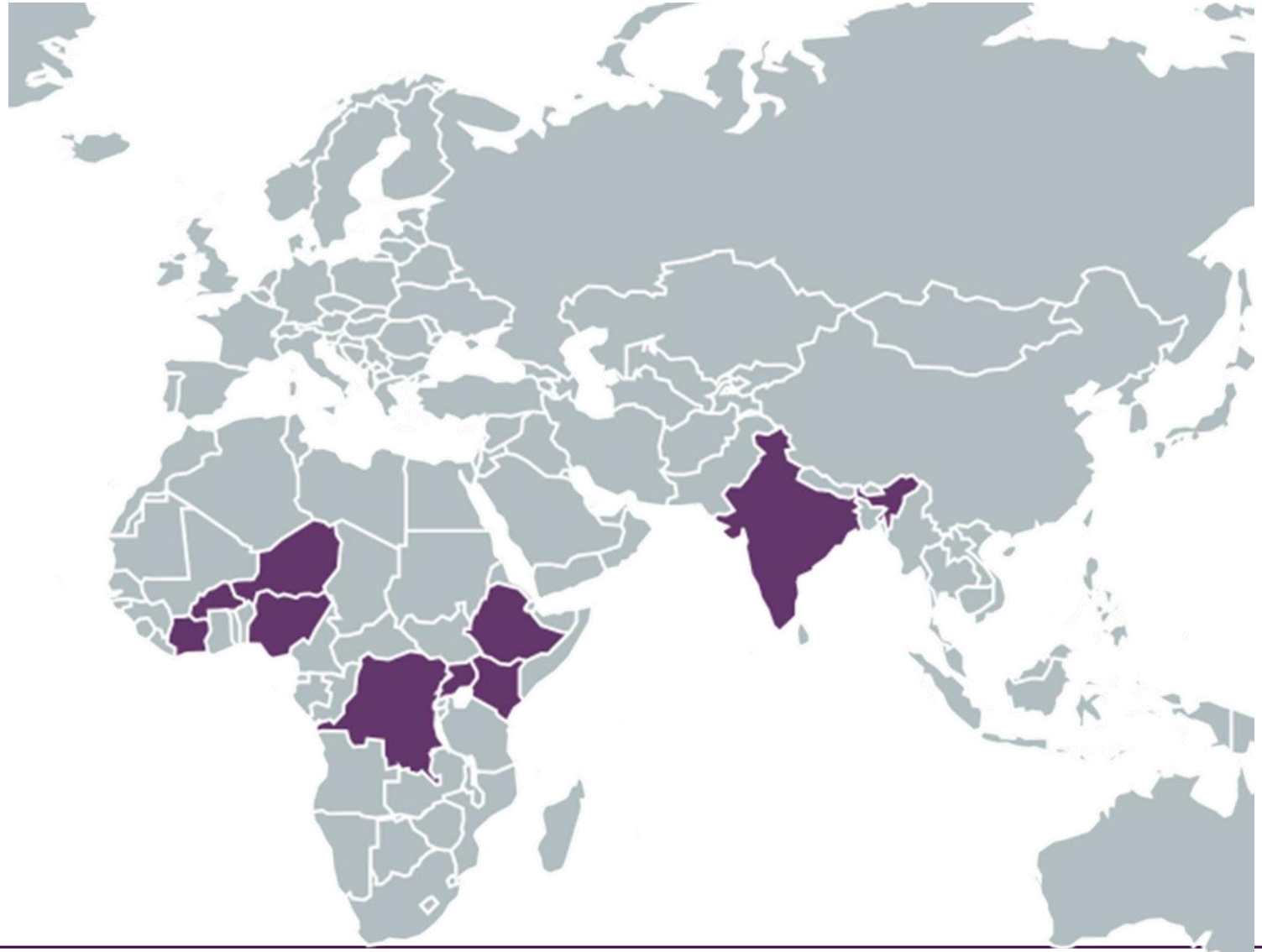
DATASETS DOWNLOADED

# How PMA Works



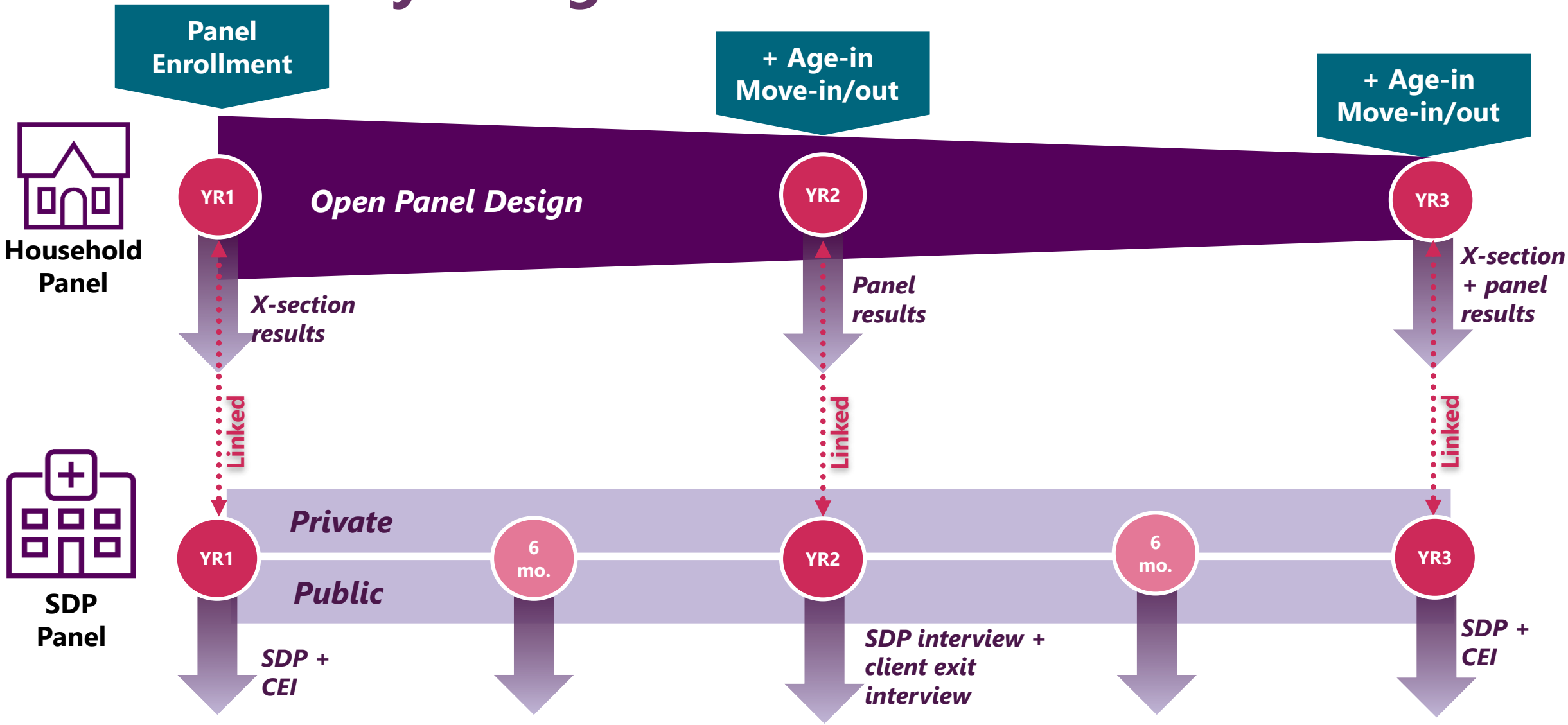
# Where We Work

| Countries/Partners | |
|---|---|
| DR Congo | University of Kinshasa |
| Uganda | Makerere University |
| Kenya | International Centre for Reproductive Health |
| Nigeria | CRERD |
| Burkina Faso | ISSP/University of Ouagadougou |
| Niger | National Statistical Institute (INS) |
| India | Indian Institute of Health Management Research |
| Côte d'Ivoire | ENSEA |
| Ethiopia* | Addis Ababa University School of Public Health |



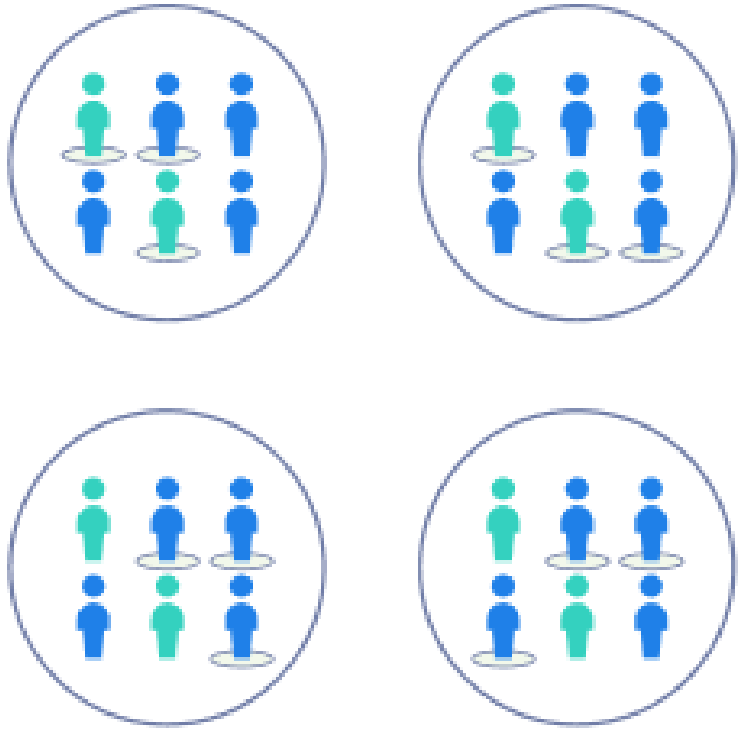
** Separate grant*

# PMA Study Design



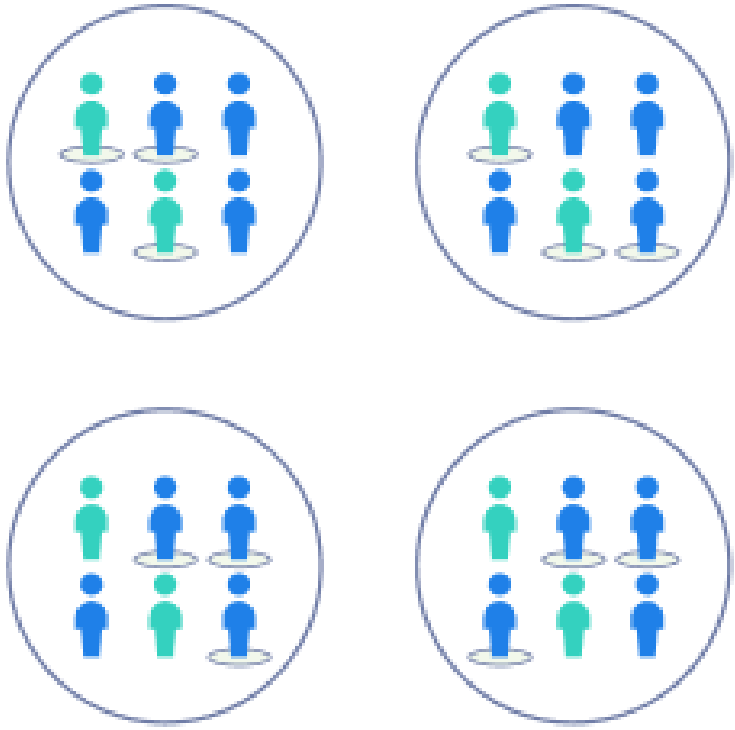
# PMA Sampling (1)

- PMA's sampling approach is guided by the goal to estimate the modern contraceptive prevalence rate (mCPR) with a margin of error of ±3 percentage points.
- To achieve this, PMA uses a multi-stage cluster design with urban-rural and major regions as strata.
- A representative sample of enumeration areas (EAs) is drawn from a master sampling frame, usually provided by the national statistical agency in each country.



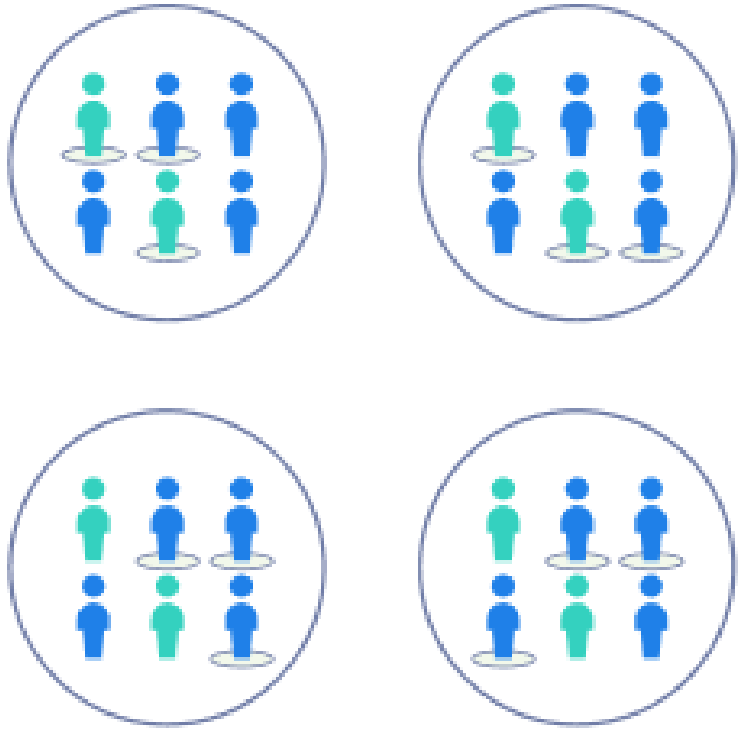
# PMA Sampling (2)

- At the beginning of data collection, PMA's Resident Enumerators map households and key landmarks in each EA.
- At baseline, a random sample of households is selected within each EA- usually 35 households from an EA size of around 200.
- All women aged 15-49 at baseline are drawn into the PMA sample.



# PMA Sampling (3)

- At Phase 2, REs returned to the same dwelling units interviewed at Phase 1 and administered the female survey to all consenting women ages 15-49 in the household, regardless of their resident status at Phase 1.
- Women interviewed in the household in Phase 1 are re-interviewed, and new women can be enrolled in the panel survey.
- Women who left their Phase 1 household are eligible for follow-up, based on the location of their Phase 2 household.



# PMA Weighting Procedures

- *Cross-sectional weights*: Design-survey weights are created as the inverse of the HH selection probability. The weights are further adjusted for non-response at the household level within the EA.
- *Longitudinal weights*: Panel weights are calculated as the baseline female weights, adjusted for loss to follow-up. To adjust, PMA uses the inverse of predicted probability of having a completed the baseline survey- an inverse probability weighting (IPW) approach.
- Finally, the household and female weights are normalized at the national or subnational level.

# PMA Panel Membership

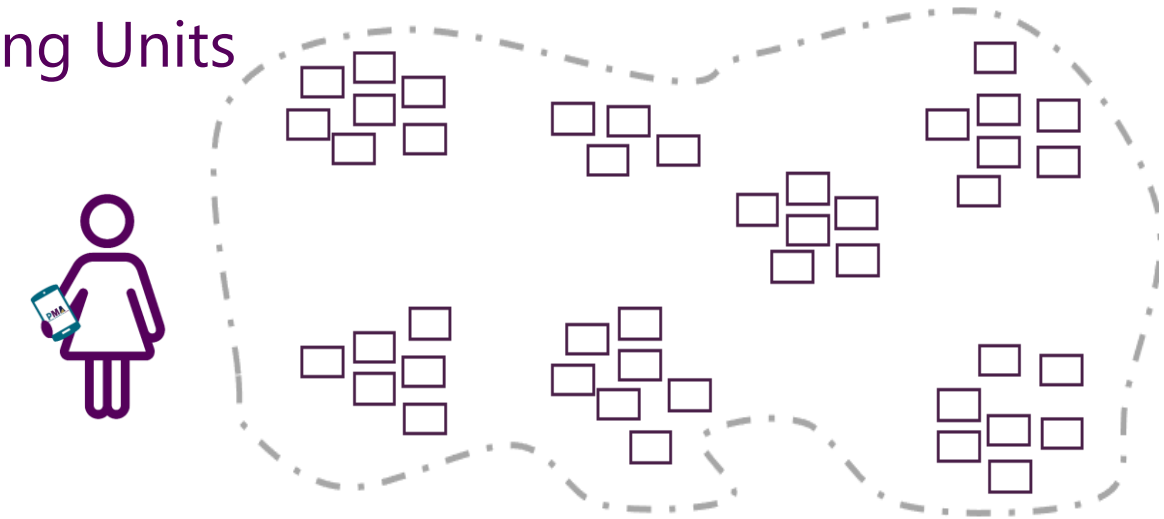
# Panel Sample

- Dwelling unit-based sampling approach

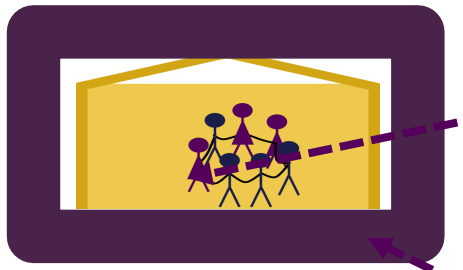
**Dwelling Unit** Room or group of rooms occupied by one or more households

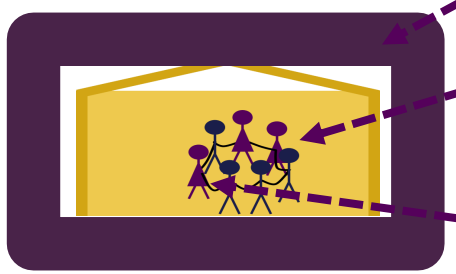
- At Phase 2 – RE re-identified the P1 Dwelling Units

**Phase 1 Dwelling Units**

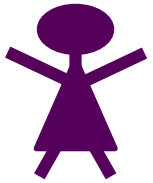


# Panel Sample





**Household Questionnaire**



## Female Survey Eligibility

- Age 15-49 yrs
- Live in selected HHs
- Slept in selected HHs the day before

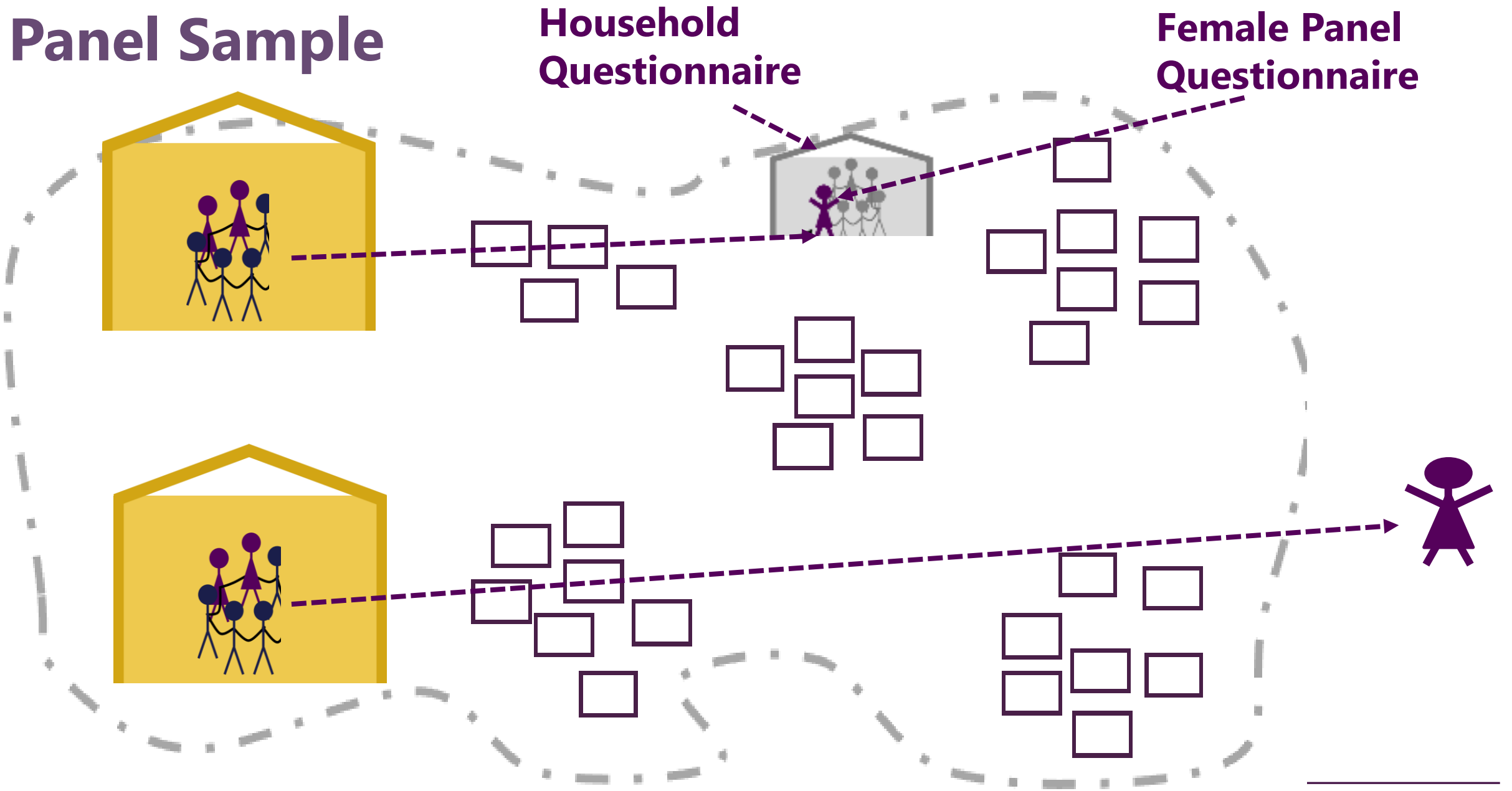
## Female Panel Questionnaire

- Women who received baseline survey at Phase 1
- Consented to follow-up

## Female Baseline Questionnaire

- Age in (Turns 15 after Phase 1)
- New eligible women found

# Panel Sample

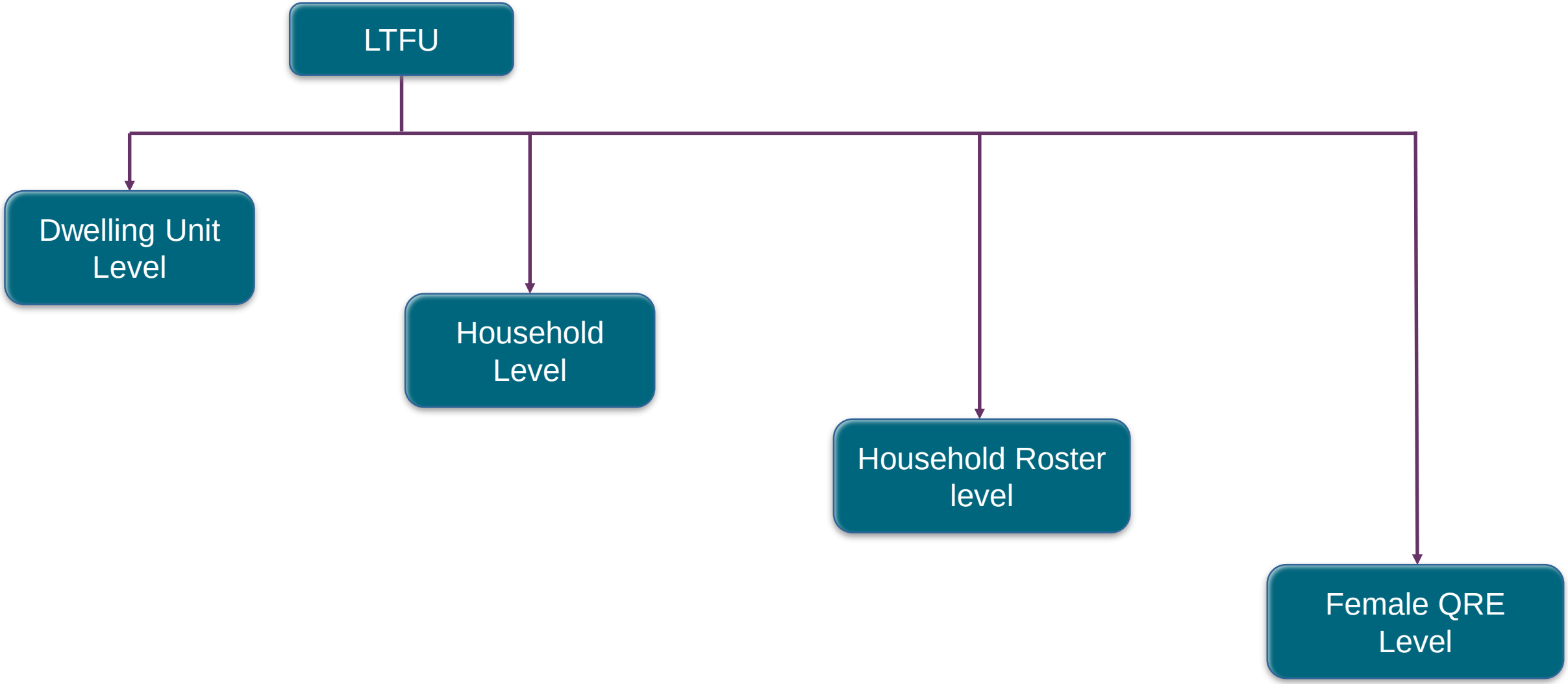


# Panel Membership

**Panel Women**

- Age 15-49 yrs
- Received Female Baseline Questionnaire
- Consented to follow-up

# Lost to Follow-up



# Lost to Follow-up

LTFU

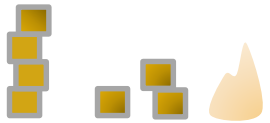
Dwelling Unit Level

Household Level

Household Roster Level

Female QRE Level

Destroyed



Not found

Replaced

?

# Lost to Follow-up

LTFU

Dwelling Unit Level

Household Level

Household Roster Level

Female QRE Level

**Incomplete Household survey**

- HH absent
- Refused participation
- Incomplete HH QRE

# Lost to Follow-up

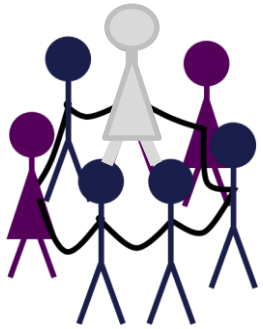
LTFU

Dwelling Unit Level

Household Level

Household Roster Level

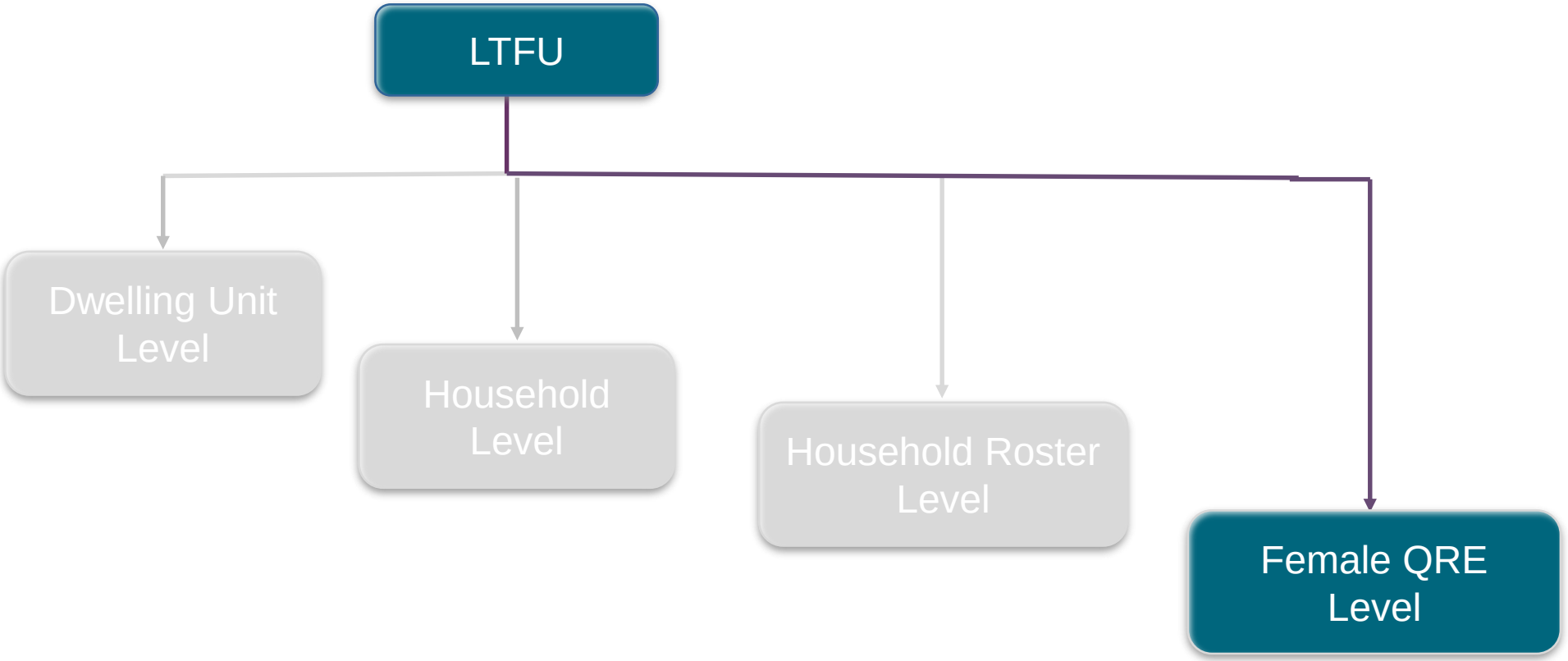
Female QRE Level



**Woman no longer a resident**

- Deceased
- Moved out of study area
- Unknown status

# Lost to Follow-up



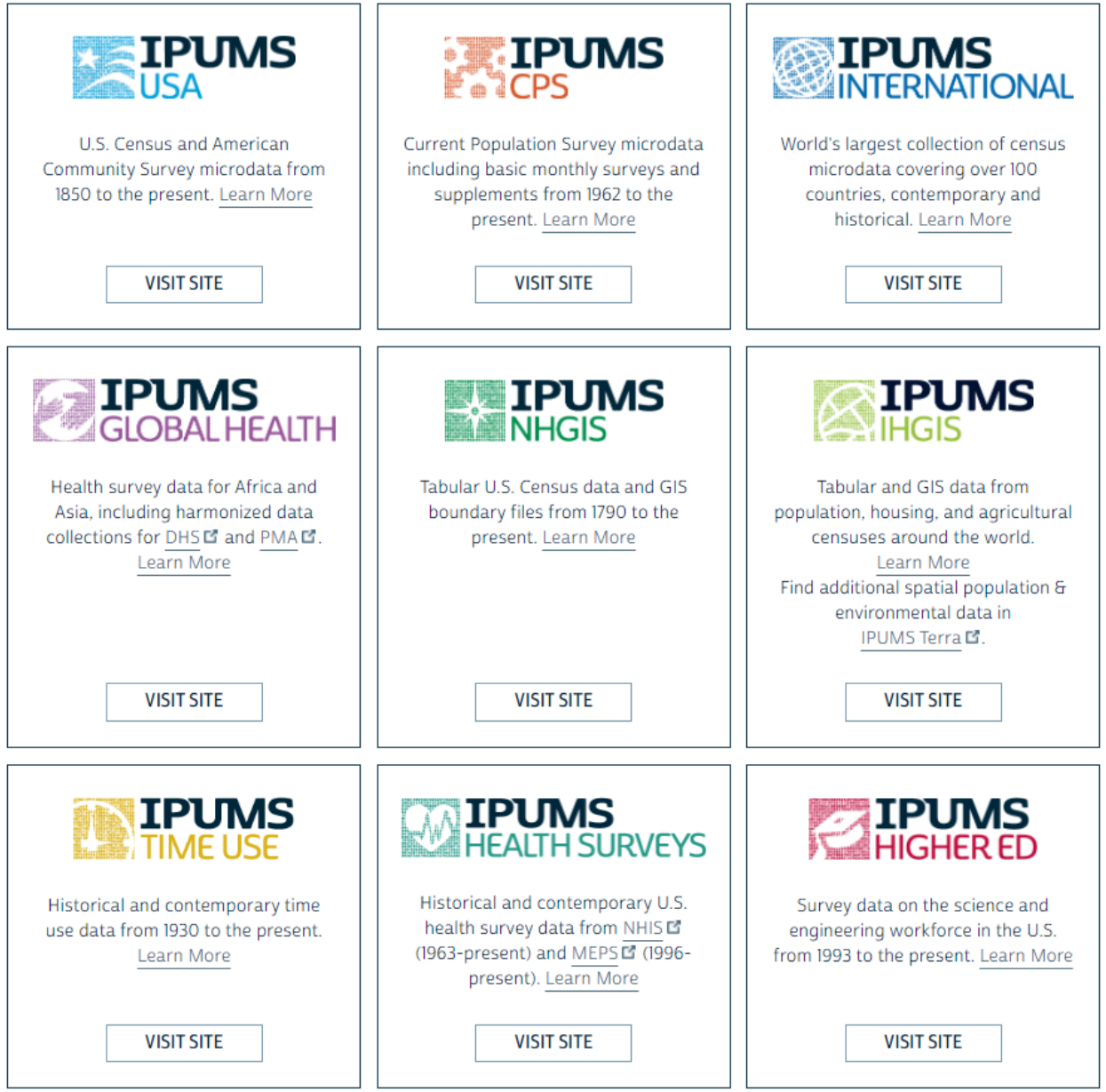

**Incomplete Female Survey**

- Not at home
- Refused
- Incapacitated
- Incomplete

# IPUMS: What We Do

# What is IPUMS?

IPUMS provides census and survey data from around the world integrated across time and space. IPUMS integration and documentation makes it easy to study change, conduct comparative research, merge information across data types, and analyze individuals within family and community context. Data and services available free of charge.


IPUMS USA
U.S. Census and American Community Survey microdata from 1850 to the present. Learn More
VISIT SITE
IPUMS CPS
Current Population Survey microdata including basic monthly surveys and supplements from 1962 to the present. Learn More
VISIT SITE
IPUMS INTERNATIONAL
World's largest collection of census microdata covering over 100 countries, contemporary and historical. Learn More
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Historical and contemporary time use data from 1930 to the present. Learn More
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IPUMS HEALTH SURVEYS
Historical and contemporary U.S. health survey data from NHIS (1963-present) and MEPS (1996-present). Learn More
VISIT SITE
IPUMS HIGHER ED
Survey data on the science and engineering workforce in the U.S. from 1993 to the present. Learn More
VISIT SITE

# IPUMS PMA

- Harmonize codes and variable names
- Document variables
- Disseminate custom data files in multiple formats
- Add calculated fields
- Link longitudinal records

# DATA ANALYSIS HUB

April 15, 2021
Matt Gunther

## FORMATTING MIGRATION RECALL DATA FOR LONGITUDINAL ANALYSIS

MIGRATION DATA DISCOVERY DATA MANIPULATION PIVOT_LONGER REGEX

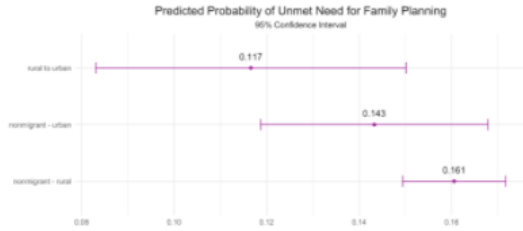
Use tidyr::pivot_longer to reshape wide data into a long format.

April 2, 2021
Matt Gunther

## UNMET NEED FOR FAMILY PLANNING AFTER INTERNAL MIGRATION

MIGRATION PMA PUBLICATIONS SVYGLM BOOTSTRAPS

Summary and source code from a recent article using




### CATEGORIES

- Articles (11)
- across (1)
- bootstraps (1)
- Data Analysis (1)
- Data Discovery (3)
- Data Manipulation (5)
- dotwhisker (1)
- Importing Data (1)
- Individuals in Context (6)
- ipumsr (1)
- join (2)
- Mapping (1)
- Migration (2)
- New Data (1)
- pivot_longer (2)
- PMA Publications (1)

# Research Question

- Did COVID-19 impact contraceptive use? Did restrictions affect fertility-related behaviors in Nigeria?
  - Data visualization
  - Analysis
    - Income loss
    - Concern over infection

# Creating an Extract

IPUMS PMA

# Long Form

| | fqinstid | phase | age |
|---|---|---|---|
| 16142 | KX2AH65VN497BF96RRRUJPM1S | baseline | 28 |
| 16143 | KX2AH65VN497BF96RRRUJPM1S | first follow up | 29 |
| 16144 | KX711SEPOBKY3MMTQFGFNACW9 | baseline | 36 |
| 16145 | KX711SEPOBKY3MMTQFGFNACW9 | first follow up | 37 |
| 16146 | KX8SOU802UUY4QU18P7YILLL7 | baseline | 18 |
| 16147 | KX8SOU802UUY4QU18P7YILLL7 | first follow up | 19 |
| 16148 | KXO6AIZBXKYAI46XW6P1S8312 | baseline | 37 |
| 16149 | KXO6AIZBXKYAI46XW6P1S8312 | first follow up | 38 |
| 16150 | KXPDCZXACMZEL58QTHJW5D4K0 | baseline | 18 |
| 16151 | KXPDCZXACMZEL58QTHJW5D4K0 | first follow up | 19 |
| 16152 | KXSHBJC3BX60MWZFV7VKX86NR | baseline | 46 |
| 16153 | KXSHBJC3BX60MWZFV7VKX86NR | first follow up | 47 |
| 16154 | KXU7WCQ6VANDBO5XFZU7GXQ1W | baseline | 34 |
| 16155 | KXU7WCQ6VANDBO5XFZU7GXQ1W | first follow up | 35 |
| 16156 | KY26NJAKWGIMU7YVWJRNEM5CE | baseline | 16 |

Variables

Filter variables here

| Name | Label |
|---|---|
| age | age in female res |
| casetype | case selection typ |
| sample | pma sample num |
| country | pma country |
| year | year |
| hhid | unique household |
| respondent | respondent to th |

Variables | Snapshots

Properties

**Variables**

| | |
|---|---|
| Name | fqinstid |
| Label | unique id for fem |
| Type | str41 |
| Format | %41s |
| Value label | |
| Notes | |

**Data**

| | |
|---|---|
| Frame | default |
| Filename | pma_00256.dta |
| Label | |
| Notes | |

Ready

Length: 41 Vars: 3 of 397 Order: Dataset Obs: 48,371 Filter: Off Mode: Browse CAP NUM

IPUMS PMA

# Wide Form

| | age_1 | age_2 | marstat_1 | marstat_2 |
|---|---|---|---|---|
| 20594 | 24 | 25 | never married | never married |
| 20595 | 34 | 35 | currently married | currently married |
| 20596 | 46 | 47 | divorced or separated | divorced or separated |
| 20597 | 18 | 18 | never married | never married |
| 20598 | 41 | 42 | currently married | currently married |
| 20599 | 21 | 22 | never married | currently married |
| 20600 | 22 | 23 | currently married | currently married |
| 20601 | 36 | 37 | currently married | currently married |
| 20602 | 42 | 43 | currently married | currently married |
| 20603 | 29 | 30 | currently living with partner | currently living with partner |
| 20604 | 35 | niu (not in universe) | currently married | niu (not in universe) |
| 20605 | 39 | 40 | never married | divorced or separated |
| 20606 | 16 | 17 | never married | never married |
| 20607 | 24 | 25 | currently married | currently married |
| 20608 | 32 | 33 | currently married | currently married |

Variables
Filter va
Name
marstat_2
casetype
sample_1
sample_2
country
year_1
year_2
Variables
Properties
Value lab
Notes
Data
Frame
Filename
Label
Notes
Variables
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Size
Memory
Sorted b

Ready
Vars: 4 of 179 Order: Dataset Obs: 35,680 Filter: Off Mode: Browse

# Relevant Variables

- **CP**
  - Using a contraceptive method
- **CVINCOMELOSS**
  - If household lost income, was due to COVID
- **COVIDCONCERN**
  - Concerned about becoming infected with COVID

# Framework for Today's Breakout Sessions

- Karp, C., Wood, S. N., Guiella, G., Gichangi, P., Bell, S. O., Anglewicz, P., ... & Moreau, C. (2021). **Contraceptive dynamics during COVID-19 in sub-Saharan Africa: longitudinal evidence from Burkina Faso and Kenya**. *BMJ Sexual & Reproductive Health*, 47(4), 252-260.

Breakout sessions

# LONGITUDINAL ANALYSIS

# PMA Data

- **PMA data:** in addition to information on COVID-19, PMA collects data on
  - Women's economic empowerment
  - Women's sexual and reproductive empowerment
  - Reproductive histories through a two-three year contraceptive calendar
  - Gender-based violence
  - Fertility and contraceptive preferences and intentions
  - Family planning service quality
  - GPS coordinates
- PMA survey instruments are available at: https://www.pmadata.org/data/survey-methodology

# Looking Forward

- **PMA datasets:**
  - Baseline panel data are available for all PMA countries.  PMA data can be accessed through https://pma.ipums.org/pma/ or https://www.pmadata.org/data/request-access-datasets
  - Two phases of longitudinal panel data are available for Kenya, Nigeria, DRC, and Burkina Faso.
    - Forthcoming for India (Rajasthan) and Uganda in July 2022, Cote d'Ivoire in August 2022, and Niger in November 2022.
  - Phase three data will be available in the coming months
    - Kenya and Nigeria in August 2022, Burkina Faso in September 2022, DRC in October 2022
- **PMA research:**
  - A complete list of PMA publications (including several on FP and COVID) is available on the PMA Google Scholar Website.

# Questions?

info@pmadata.org

ipums@umn.edu

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# Thank you!

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