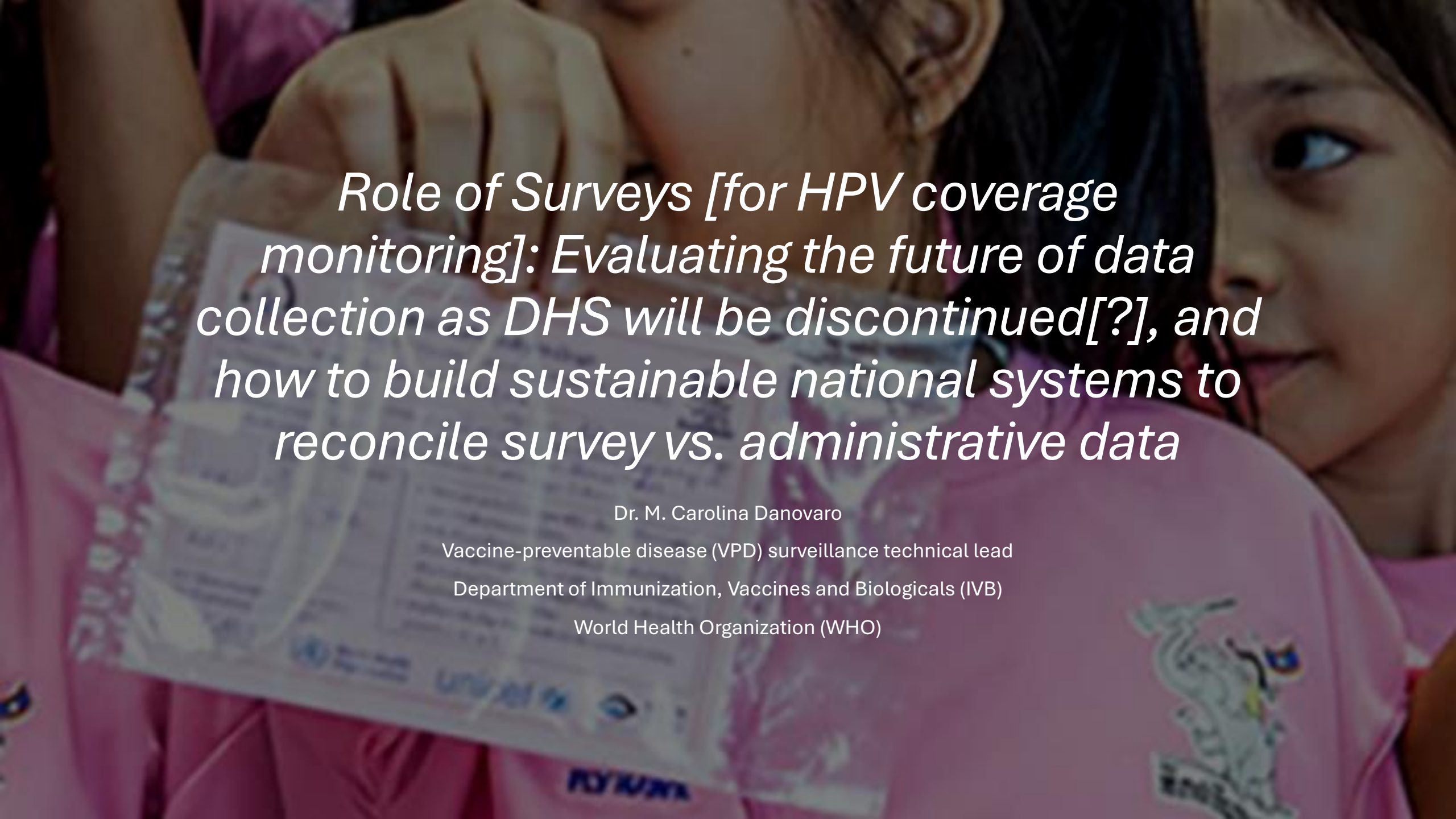

Role of Surveys [for HPV coverage monitoring]: Evaluating the future of data collection as DHS will be discontinued[?], and how to build sustainable national systems to reconcile survey vs. administrative data

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Outline

1. On surveys for vaccination coverage estimation
   - Types of surveys
   - Frequency
2. Main challenges:
   - Sampling and risk of selection bias
   - Disaggregation and sample size
   - Vaccination status ascertainment
3. Where are we now?
4. How to build sustainable national systems to reconcile survey vs. administrative data

Surveys for vaccination coverage estimation

Basic indicators

- Home-based records/Cards (%)
  - Given vs. seen
- Coverage by vaccine dose (% and 95% CI)
  - By card (and sometimes by health facility documentation)
  - By recall
  - By Card + recall
  - By stratifier (geographical/sex/rural vs urban, etc.)

Other possible indicators

- Coverage by:
  - Age group
  - Sector vaccinating (public/private)
  - School/ health facility
- Behavioral and Social Drivers of vaccination (BeSD), Knowledges, attitudes and practices (KAP)
- Reasons for no vaccination
- Geostatistical analyses

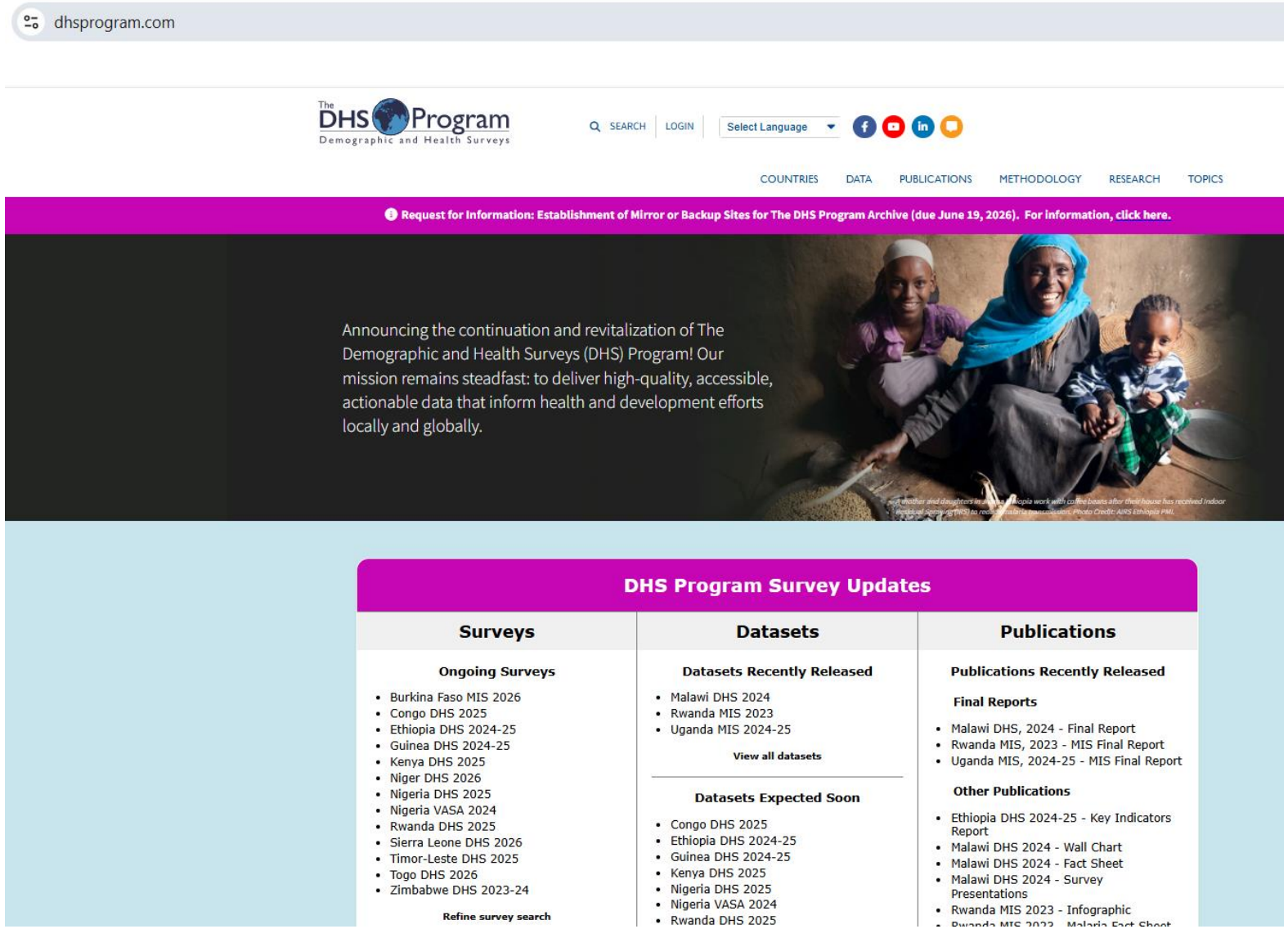
Main types of surveys for HPV vaccination

Survey type	Relevant characteristics
Demographic and Health Survey (DHS)	• National coverage: DHS surveys cover the entire country; • MICS do either national level or sub-national surveys. • The sample sizes in the DHS and MICS depend on funding and the needs of the government • Both provide estimates at the national level, for urban and rural areas, and usually for ~5-10 subnational administrative areas • Two-stage probability sampling: Clusters, Households • Pre-existing sampling frame: The sampling frame is a list of the entire population. • HPV optional module for women 15-17 yrs, card or recall for herself • Very long surveys, sometimes biomarkers are included (not for HPV)
UNICEF Multiple Indicator Cluster Survey (MICS)	
Vaccination Coverage Surveys/EPI Cluster Surveys (WHO 2018)*	• National or sub-national • Estimates at the national level and variable number of strata • Two-stage probability sampling: Clusters, Households • Pre-existing sampling frame or enumeration • Pictures of cards • "Girls aged 15 years (and not yet 16), if evaluating human papilloma virus (HPV) vaccine in a country where HPV vaccine is recommended for girls 9–14 years old. This age range may need to be adapted according to the vaccination schedule in each individual country." • Country adaptations have used interviews of young adolescents, caregivers, both • Usually includes BeSD questions and reasons for no vaccination • Rarely nesting serosurveys • Can oversample selected populations, though rarely done
Global School-based Student Health Survey (GSHR)	• Targets adolescents 13-17 yrs in schools • Sampling is of schools and classes • HPV optional module added in 2021

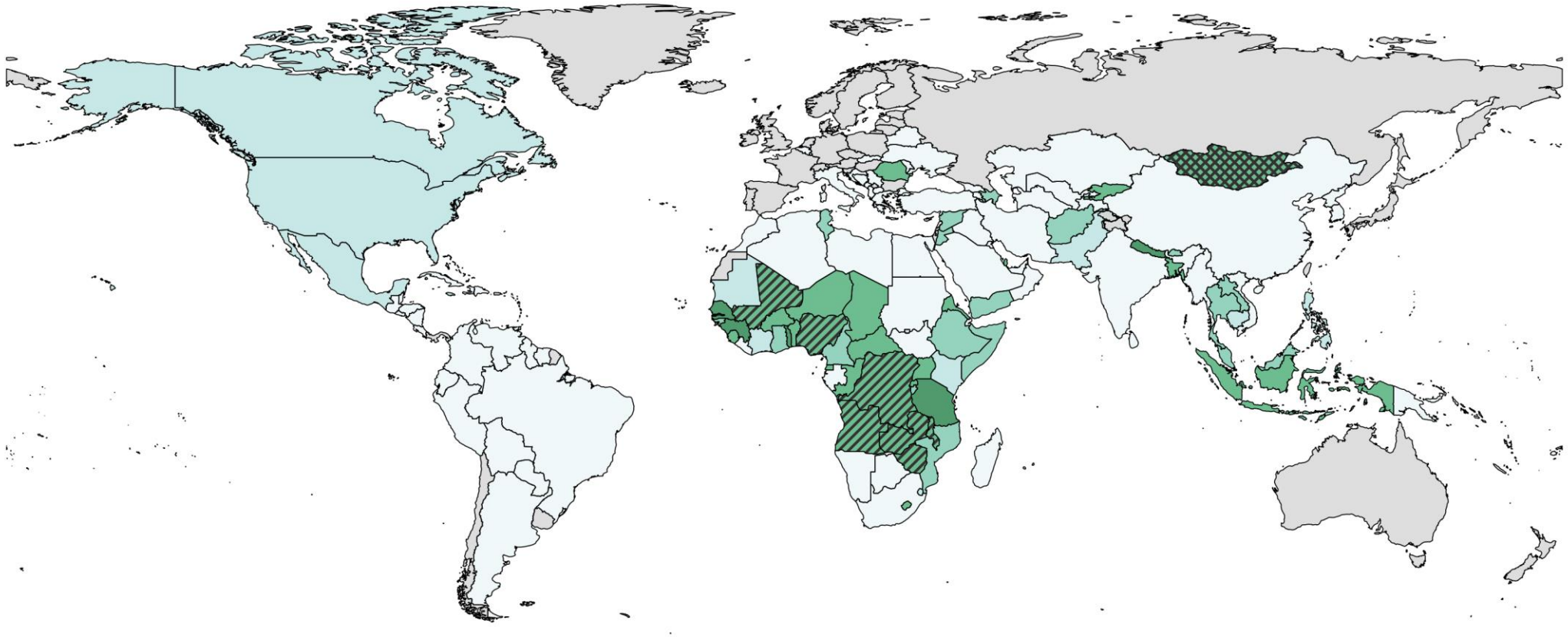
Useful reference: *Human papillomavirus vaccine coverage surveys in low- and middle-income countries: current efforts and future considerations for very young adolescents - https://gh.bmj.com/content/10/6/e018731 . Other surveys include US National Immunization Survey-Teen; Canada childhood National Immunization Coverage Survey (cNICS), etc.*

** Note that several HPV Vaccination demonstration projects used older WHO EPI survey guidance, not what is outlined in this table.*

Will DHS be back?



Years since last survey including childhood immunization data



Source: WHO/UNICEF estimates of national immunization coverage, 2024 revision
Notes: Calculated based on number of years between 12-23m survey cohort year and 2024. Surveys without standard age cohorts not included.
DHS key indicators reports informed WUENIC estimates in the 2024 revision.
Preliminary results do not directly inform the WUENIC estimates, but are noted in the comments.
This map is stylized and based on an approximate scale. It does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers.

…Before discussing challenges, what do we want to measure and why?

- To estimate overall coverage by age 15
- To estimate coverage among targeted cohorts
- To triangulate with other data for long-term coverage monitoring
- To determine % girls reached in school vs. not in school
- To evaluate specific interventions
- To target better
- Other…

Defining the main questions is key to look for the best tool to answer them, acknowledging that it may not be feasible *(e.g., getting coverage by single age cohort by district; measuring small changes in coverage or differences in sub-groups may lead lo unreasonable large sample sizes)*

Sampling and risk of selection bias

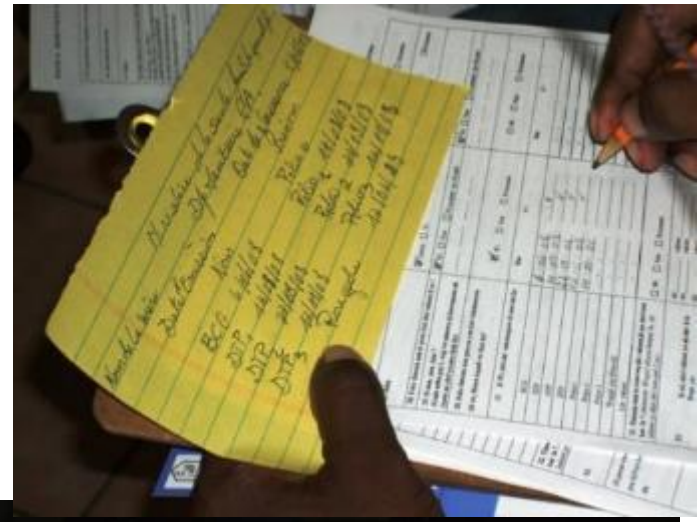
- Sampling frames need to be complete and up-to-date – household listing – updated maps
  - *What to do with special populations (nomads, refugee camps, etc)?*
- Ensuring that work is done inside cluster boundaries
- Ensuring random, and probability-based, selection of HHs and then visiting the HH pre-selected
- If school-based sampling is done, estimates will only be for girls in schools (and may even exclude special schools)
- Extensive training and supervision, reliable data collection tools (tablets and code, GPS capture reliable)
- Appropriate analysis

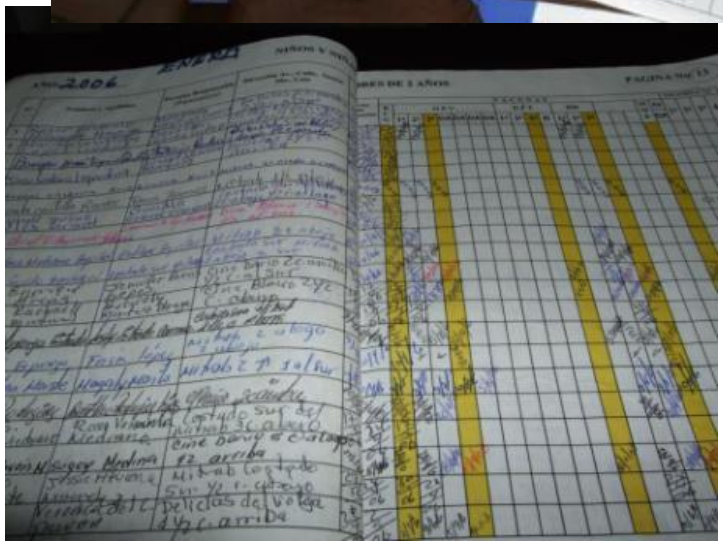
Disaggregation and sample size

- HPV vaccination usually targets more that one cohort, at least at first when multi-age campaigns (MAC) are done
- If data is desired by single age cohort, several HHs need to be visited to find an eligible female in the desired range (~1/2 of expected persons in that age)
- If most girls go to school, large sample size or oversampling may be needed for coverage for females out of school
- The more subgroup analyses are desired the larger the sample size
- Desired precision conflicts with exponential increase in size that more precision represents

Vaccination status ascertainment

- Knowing who received an HPV vaccine is difficult
  - Knowing how many doses and when in even more difficult
- Card availability is a challenge
  - And even when cards are there, reading and transcribing correctly can be problematic
- Asking about self vaccination to persons >15 yrs has the problem of lag time between vaccination and survey
- Few studies that have compared agreement in vaccination status reported by young adolescents vs. caregivers (mothers vs. others) show poor agreement
  - Awaiting comparisons with biomarkers
- Record availability in health facility may be worse than for infants (…*but I have not seen data on this*)
  - Places with good electronic immunization registries, may not need surveys





What is new in the 2026 Revision of the WHO Vaccination Coverage Survey Manual

- More guidance on considerations for sample size calculations *(only ~1/2 a cohort is female*)
- More guidance for school-based sampling
- Vaccination ascertainment
  - Depending on country's practices and regulations
    - Recall from girl in presence of caregiver (ascent in addition to consent from person responding to the survey
    - Potential for phone follow-up
    - Survey of females >15 yrs, as secondary option
    - Card transcription
      - From photo, or in real-time in the field
    - Seek facility records (only where feasible based on pilot for example)
- Formal integration of BeSD – HPV module

Where are we now?

- More surveys with HPV modules are being implemented
- Comparison studies completed
- Some surveys report very low HPV coverage, particularly compared to admin data
  - So far, we have not been able to explain this
  - What to make of those results?

How to build sustainable national systems to reconcile survey vs. administrative data

- We must improve the basics:
  - Availability of quality data collection tools (tally sheets, cards/HBRs)
  - Better data recording practices
  - More emphasis on home-based records (HBRs)
  - More accountability
  - Better population estimates
- Going digital?
  - When ready, probably, but many countries are far from having contexts that are ready for EIRs, digital personal health wallets
    - Governance, unique IDs, tools, people, processes, infrastructure, connectivity, cybersecurity, server space…
- For now, more in-country data triangulation, root-cause analyses to understand large differences, other ideas welcome!