Improving Population Estimation for Malaria Programs

Wednesday, September 27, 2023
14:00 CAT / 13:00 WAT / 8:00 EDT

Moderator

- Dr. Marcy Erskine, Malaria Advisor, International Federation for the Red Cross & Chair, Alliance for Malaria Prevention (AMP)

THE GLOBAL FUND | RBM Partnership To End Malaria | Surveillance, Monitoring, and Evaluation Working Group | amp The Alliance for Malaria Prevention | PATH

Agenda

Topic	Presenter
Global Fund Population Estimation Background	**Molly Robertson** The Global Fund
Defining the denominator for RTSS evaluation	**Steve Kubenga Banza** WHO AFRO
Improving Population Estimation in Malawi, Nigeria, and DRC	**Gracious Hamuza** CMED, Malawi
	Cyril Ademu NMEP, Nigeria
	Joris Losimba Likwela Sanru Assembly, DRC
Progress in Population Estimates	**Marc Levy** GRID3
Discussion / Q&A	**Marcy Erskine** AMP

Photo credit: Brookings Institute

Global Fund Population Estimation: Background

Molly Robertson, Global Fund

27 September 2023

PATH

THE GLOBAL FUND

Background

- **Population denominators are crucial** for malaria prevention, control, and elimination efforts.
- Increasingly, we need population data at a **more granular level** for subnational stratification and targeting of interventions.
- **Multiple sources of population counts exist** including census bureau projections, health facility estimations, household enumerations (often from intervention implementation), and remote sensing data, including modeled estimates.
- **Population estimates can differ by large margins**, with no clear 'gold standard' for estimation.
- **Different use cases may use different estimation methods**, but there is little guidance on which method to use for which purpose.
- Population estimates may have **limited disaggregation** required for targeting - such as subgroups by age, sex, migration, displacement status, or other characteristics and vulnerabilities.
- Other health programs require reliable population estimates and there are likely **missed opportunities for harmonizing efforts** in improving and using consistent population estimates.


Photo credit: Brookings Institute

Population Estimation Use Cases

1. **Disease incidence estimation**
   - Stratification & prioritization of intervention packages
   - Tracking case incidence trends over time
   - Evaluating interventions
2. **Intervention planning**
   - Target intervention; calculate commodities, staffing, & supplies; estimate planned coverage
3. **Intervention implementation & coverage**
   - Monitor implementation & assess coverage post-implementation
4. **Supply chain and stock management**
   - Support the procurement and distribution of CHW & Facility stocks: ACT, RDT, IPTp, and severe malaria treatments (RAS, injectable artesunate)
5. **Human resources for health**
   - Facility and CHW expansion & staffing
6. **Periodic surveys (DHS, MIS, Malaria Mortality Surveys)**
   - Sampling calculations

Example:
District A and B have "**true**" populations of **150,000** people

National Estimates: 5% of population are pregnant women, 15% of the population under are children under 5, national average household size is 6 people/household, target 1 ITN for 1.8 people

District A:
Census population + microplanning adjustments calculates the population at **200,000**

Intervention	Target	Actual	Result w/ true pop	Result w/ estimate
IPTp3	3,000	2,000	88% (2,250 –100%)	67% (3,000 – 100%)
ITN	111,111	100,000	120% (83,333 – 100%)	90% (111,111 – 100%)
SMC4	120,000	100,000	110% (90,000 – 100%)	83% (120,000 – 100%)
# of cases		5000	30.33 (per 1,000)	25 (per 1,000)

District B:
Census population + immunization household registration counts the population at **100,000**

Intervention	Target	Actual	Result w/ true pop	Result w/ estimate
IPTp3	1,500	1,000	44% (2,250 –100%)	67% (1,500 – 100%)
ITN	55,555	50,000	60% (83,333 – 100%)	90% (55,555 – 100%)
SMC4	60,000	50,000	55% (90,000 – 100%)	83% (60,000 – 100%)
# of cases		5000	33.33 (per 1,000)	50 (per 1,000)

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Objectives

- Describe use cases and current practices for population estimation for malaria control.
  - Review strengths, weaknesses, and best practices for each approach.
  - Review work-to-date on evaluating and validating existing techniques.
- Identify key challenges in population estimation and draft recommendations for improvement.
- Co-develop key steps in a developing a country roadmap for improving population estimation.

Methods

Interviews:

- 8 National Malaria Program representatives
- 15 partners and 3 donors with experience in advanced population methods, and malaria implementation

Desk review:

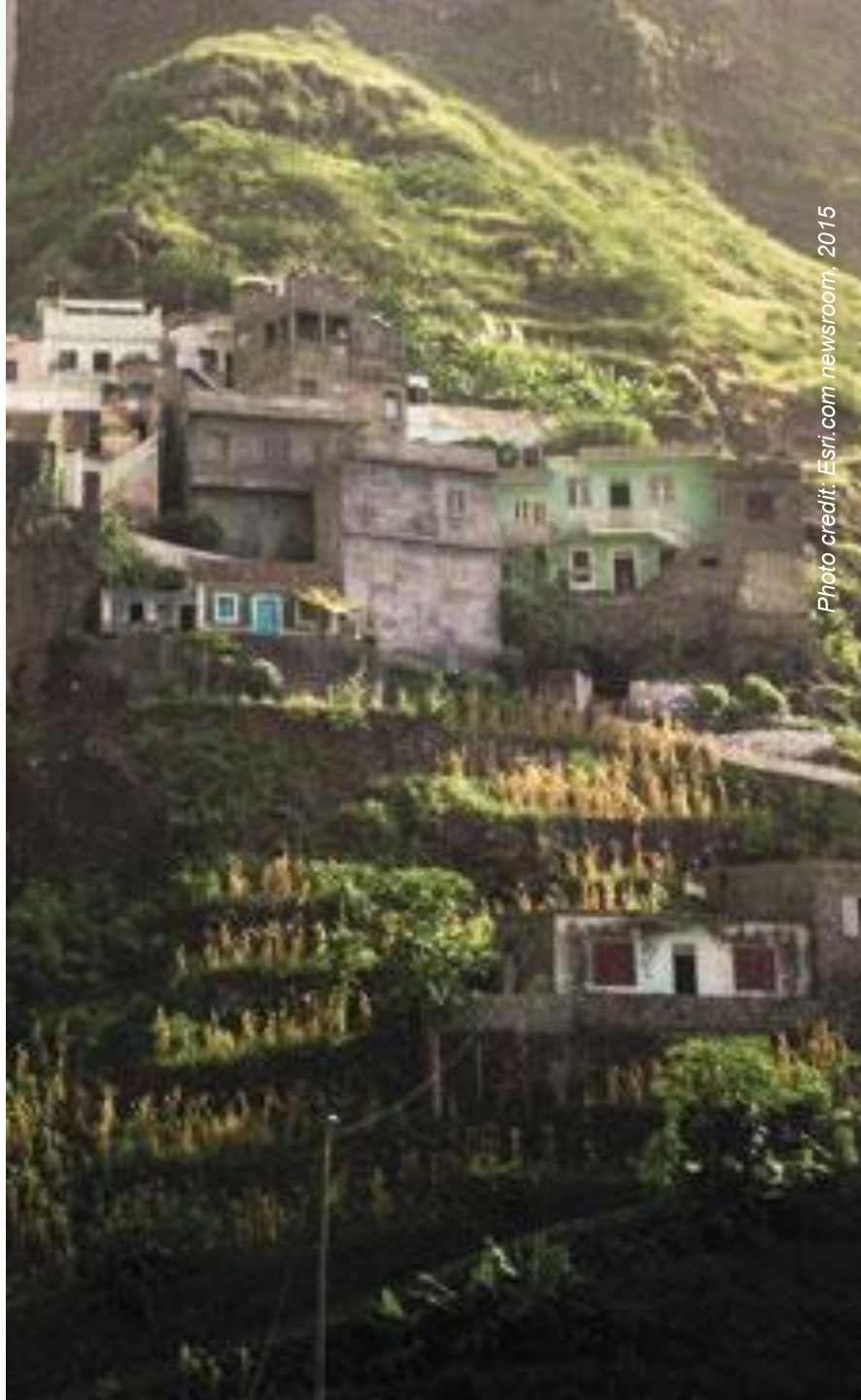
- National documents: Malaria Strategic Plans, census and population estimation guides
- Grey and published literature describing:
  - How population is estimated for malaria, immunization, and other health areas
  - Validation of population estimation methods

Workshop (May 12-13, 2023)

- 9 National Malaria Program representatives
- 28 partners and 5 donors with experience in advanced population methods, and malaria implementation

Limitations

- Short timeline (April – May 2023) but logical to coordinate with AMP & Campaign Digitalization meetings.
- Limited interview and workshop participation from officials in immunization programs, supply chain management and national census personnel



Current Practices in Population Estimation

1. Census & census-based projections

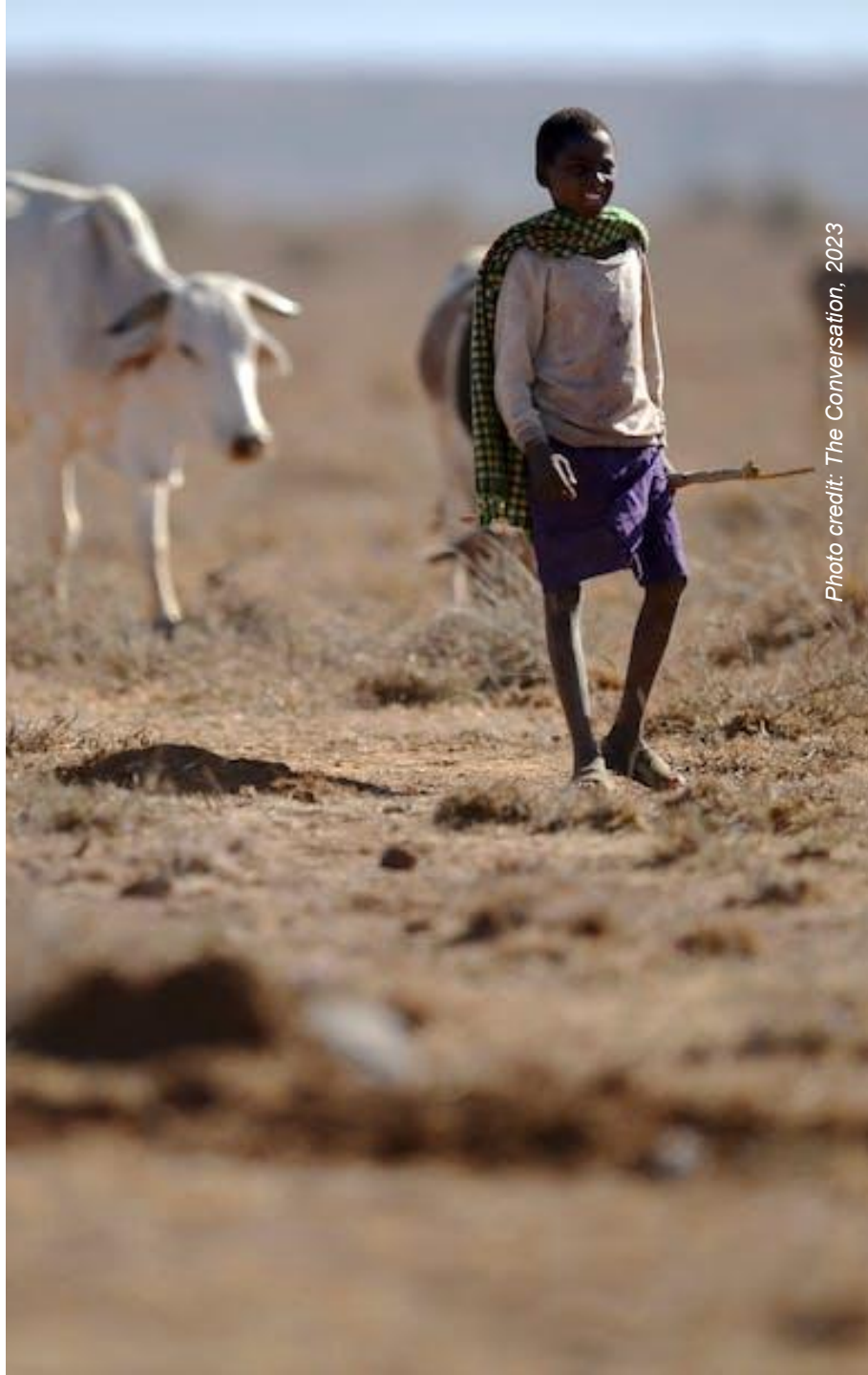
Complete population count, conducted by National Statistics Office approximately every 10 years

- Official population data source
- Often out of date (i.e. >10 yrs. since last census)
- The older the census, the less reliable the estimates are
- Multiple sources and extrapolation methods used
- Often not aligned with health facilities or intervention operational units

2. On-the-ground enumeration

Enumerated count of intervention area, for specific intervention

- May miss households in remote areas
- Often not shared beyond specific program
- Counts may be biased based on intervention type (i.e. higher values for ITN campaign, lower values for polio campaign)



Current Practices in Population Estimation

3. Headcount

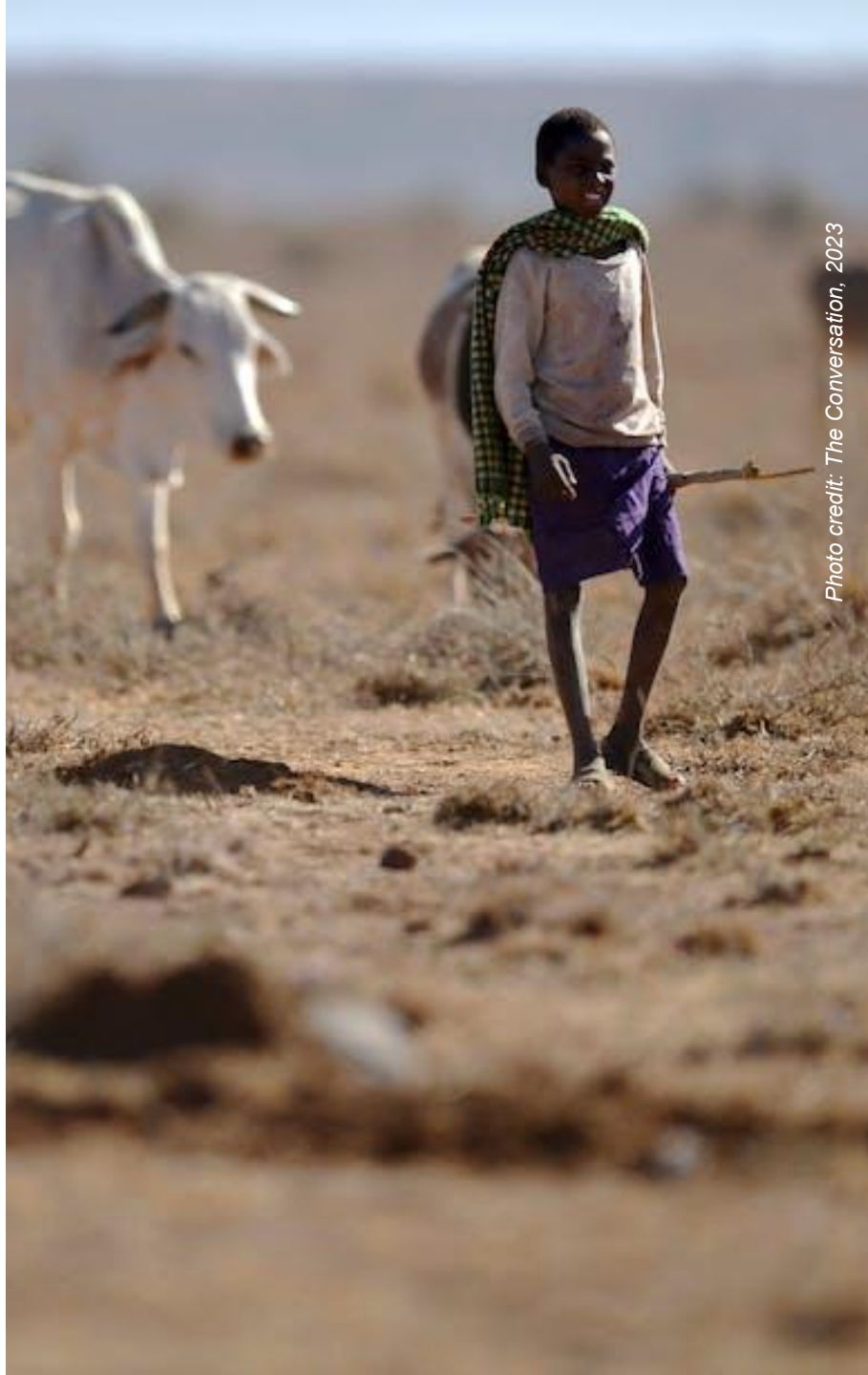
Count of population provided by local government

- Inconsistent process and frequency for updating and storing data, difficult to compare across areas and time scales
- Often lacks clear documentation
- Politics can influence estimation

4. Geospatial modeling & remote sensing

Uses satellite imagery and statistical methods to estimate population in gridded cells on a map

- Can generate estimates despite changing boundaries
- Implemented by geospatial partners, national programs less familiar with how it is developed, and how it can be applied
- Publicly available layers; tools and tutorials available online but most require some familiarity with open-source software (e.g., R, QGIS)
- Few products have estimates by age and sex; these estimates



Current Practices in Population Estimation

5. Global statistically modelled estimates

Uses statistical models to adjust census data according to fertility, mortality and migration and projected census counts.

- Used in official global projections, such as UNPop, US Census Bureau, and World Bank; used in official global reports
- High agreement between geospatial and statistical estimates at the national level as the same input data is used
- At lower levels and smaller demographic groups results diverge, for example, census counts often systematically undercount under 5s but more consistently count 15+ populations.

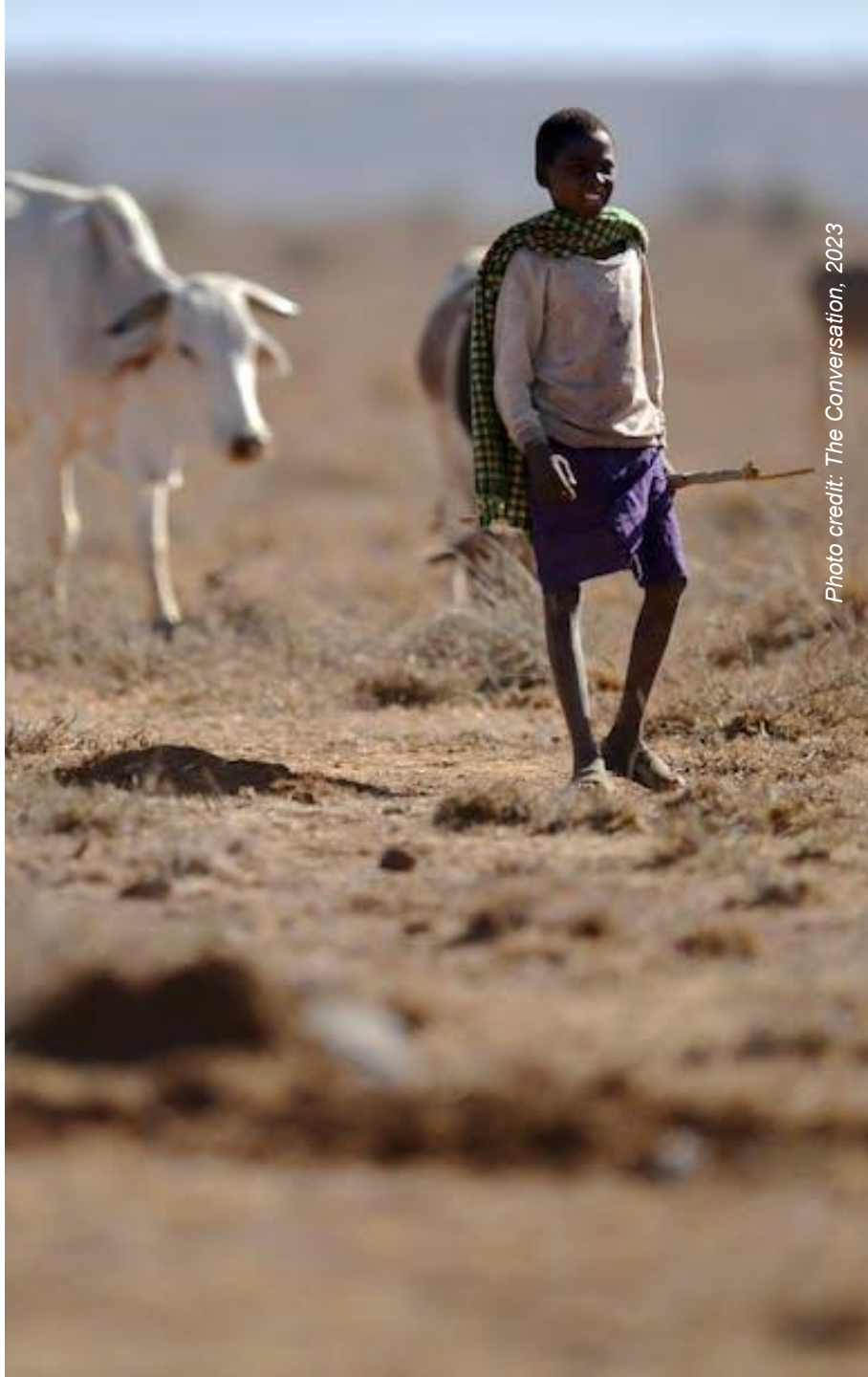


Photo credit: The Conversation, 2023

Roadmap Recommendations

Data availability

- Continue to leverage new data sources for mapping.
- Map boundaries: district, facility, operational units
- Develop/strengthen systems for ongoing routine updating and validation of health facility lists and geolocations.
- Recommend that census authorities collect and release more detailed data

Storage & accessibility

- Make detailed official population estimates available in easy-to-use formats accessible from an official central location, preferably open source/online.

Storage & accessibility (cont.)

- Create data repository where multiple programs can store, share and reuse population data.
- Continue to develop online platforms and documentation that enable easy comparison and use of geospatial resources (i.e. loading up shape files to download population counts).

Calculation methods

- Document population data source used and calculation methods; clearly describe the biases of each method and effect of using different population products.
- Include documentation on population data sources in national documents, such as M&E plans.
- Continue to improve methods for lower-level population estimates and estimates for mobile/hard-to-reach populations.
- Develop a guide: which population estimation methods should be used for each malaria use case.

Roadmap Recommendations

Triangulation

- Triangulate multiple population sources & historical data (from previous campaigns).
- Develop and test guidelines / best practices for standardizing triangulation processes.
- Validate existing prioritized population estimates and processes.
- Explore and test analyses that compare coverage indicators across health programs (i.e. HIV, ANC & vaccines).

Harmonization

- Convene donors at the global level to fund and support efforts to coordinate and collect better population estimates.
- Support cross-campaign initiatives and collaborations; identify and prioritize key areas for easy cross-program collaborations.
- Identify opportunities for coordination with other programs to share population data including immunization, emergency operations centers and others
- Establish ‘accepted’ estimation procedures as determined by national statistics offices or other authoritative body.
- Share population estimates from program implementation with national statistics offices so they can be shared across programs.

Roadmap Recommendations

Capacity strengthening

- Support the development of country specific roadmaps.
- Develop a population estimation assessment tool (checklist) to determine what is needed to support the development and implementation of country specific roadmaps for improved population estimations
- Facilitate successful ownership & transition of mapping processes.
- Need to ‘demystify’ geospatial methods
- Build staff capacity– including district and local staff– in using geospatial tools and maps for planning and monitoring implementation.

Policy & Governance

- Determine the key stakeholders who need to be involved in determining population estimation processes
- Have a neutral group, such as national statistics office produce estimates for all programs, with pooled funding from programs.
- Demonstrate to finance ministries & donors how better population denominators result in better targeting of resources and cost-savings.

Next Steps for Population Estimation and **Updates**

Draft Global Roadmap

Coordination

- Convene donors at the global level to fund and support efforts to coordinate and collect better population estimates.
- Develop a list of technical resources for population estimation (i.e. partners that have experience supporting this work).

Tools & Guidance

- Develop a guide on which population estimation methods should be used for each malaria use case.
- Develop a population estimation assessment tool to determine what is needed to support the development and implementation of country specific roadmaps for improved population estimations.
- Develop and test guidelines and best practices for standardizing triangulation processes.

Methods

- Continue to test and improve estimation methods, particularly for lower-level population estimates and estimates for mobile, hard-to-reach, cross-border and demographic sub-populations (i.e. under 5s).
- Document population data source used and calculation methods; clearly describe the biases of each method and effect of using different population products.

Next Steps

1. **Review additional work done in other areas:**
    - Integrated for Geospatial Information Framework, World Bank
    - Health Geolab
    - Geo-enabled Microplanning Handbook
    - Health Data Collaborative, health metrics task team
2. **Hold convening with donors to agree on:**
    - Financing and sharing population estimation
    - Prioritization of countries for roadmap support, based on investment, malaria burden, and different starting points along roadmap continuum.
3. **Develop a high-level plan with countries to:**
    - Identify stakeholders
    - Identify where population data will be held/managed and stored
    - Put out a description of use cases and process for estimating population for each use case
    - Set up a review of population estimates to update and review
4. **Develop case studies and lessons learned based on early implementation**
5. **Develop global guidelines and framework at the global level for:**
    - Triangulating data sources
    - Best practices in estimating population
    - Examples of how to document/justify selected population

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Defining the denominator for RTSS evaluation

Dr Victor Alegana & Steve Kubenga Banza

World Health Organization

Problem statement

What population denominators to use for RTS,S vaccine coverage estimation?

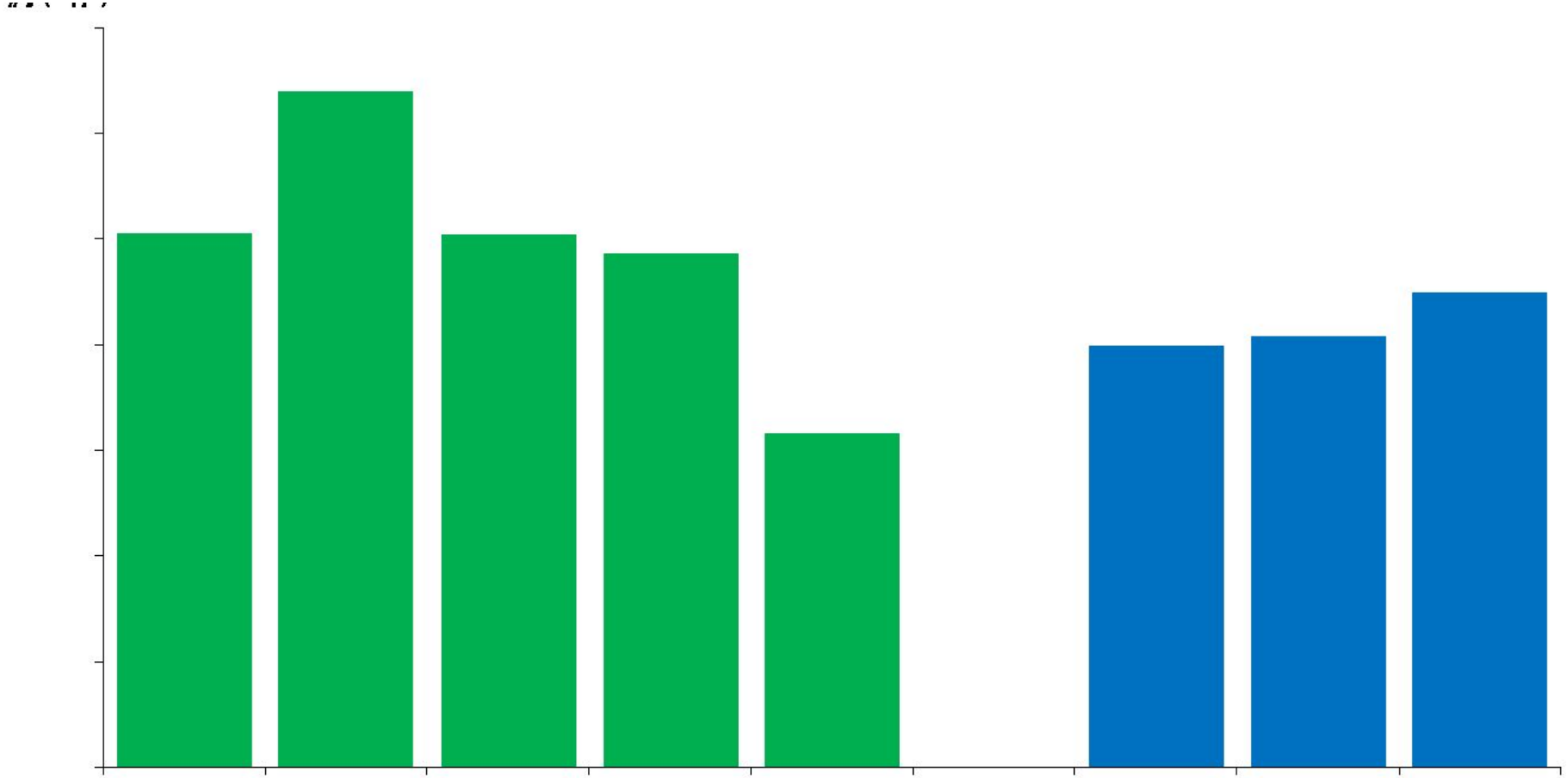
World Health Organization

Potential Sources

- ✔ 2019 National Census data of resident population aged < 1 year per each of 46 MVIPE sub-counties (SC) (available by sex)
- ✔ 2009 National Census data of resident population aged < 1 year per each of re-reconciled 46 MVIPE sub-counties (available by sex) projected to 2019 using sub-county intercensal growth rates 1999-2009
- ✔ 2019 WorldPop projections per each of 46 MVIPE sub-counties (available by sex); will not have used 2019 census and advantage of standard across Ghana, Malawi & Kenya; disadvantage is overfitted model for fine resolution population mapping
- ✔ 2019 DHIS2 BCG or ANC first attendee estimates, interpolated for missingness, but do not reflect eligible populations per sub-county but by facility within sub-county (note cross-boundary use; not available by sex)

World Health Organization

Kenya Census 2009 (U1 recorded in 2009), Kenya Census 2009 U1 projected to 2019 using intercensal growth rate (1999-2009); NEPI estimates provided at start of MVIPE (source and estimation not known); Modelled Pop 2019(U1 projected to 2019 using IGR (1999-2009), WorldPop estimates 2019 of U1; Kenya Census 2019 (U1 recorded in 2019); Raw counts of BCG, Penta 1 and ANC first attendees. All data configured to 46 MVIPE Sub Counties of Western Kenya (Intervention and Control)



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- ✔ Actual census counts 2019 would be preferred data, **however**
- ✔ 2019 census counts – 37% lower than 2009 census counts; and between 40% and 50% lower than projected estimates
- ✔ Using 2019 census data would result in many SCs having > 100% BCG coverage or ANC attendance (next slide)
- ✔ **Cannot use the 2019 sub-county, age-structured census?**

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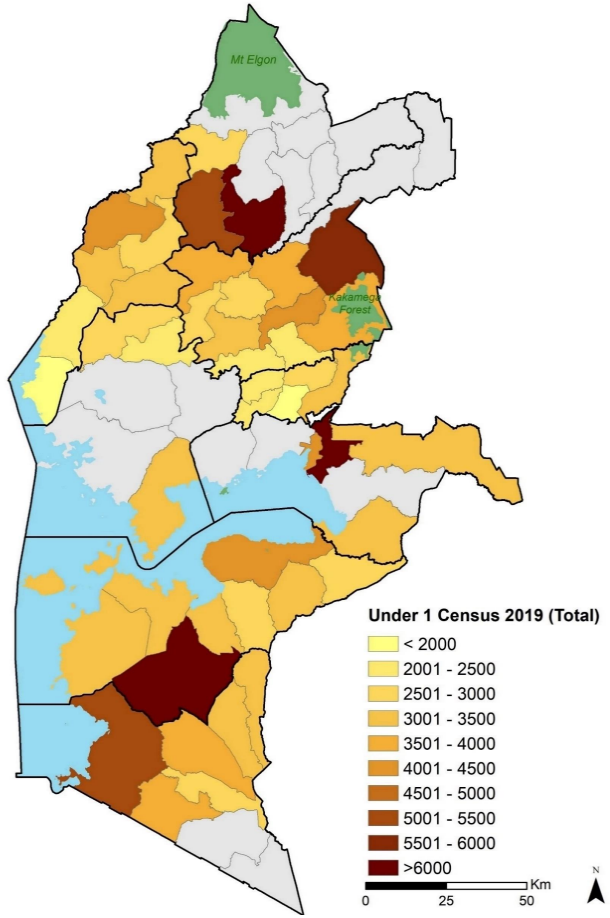
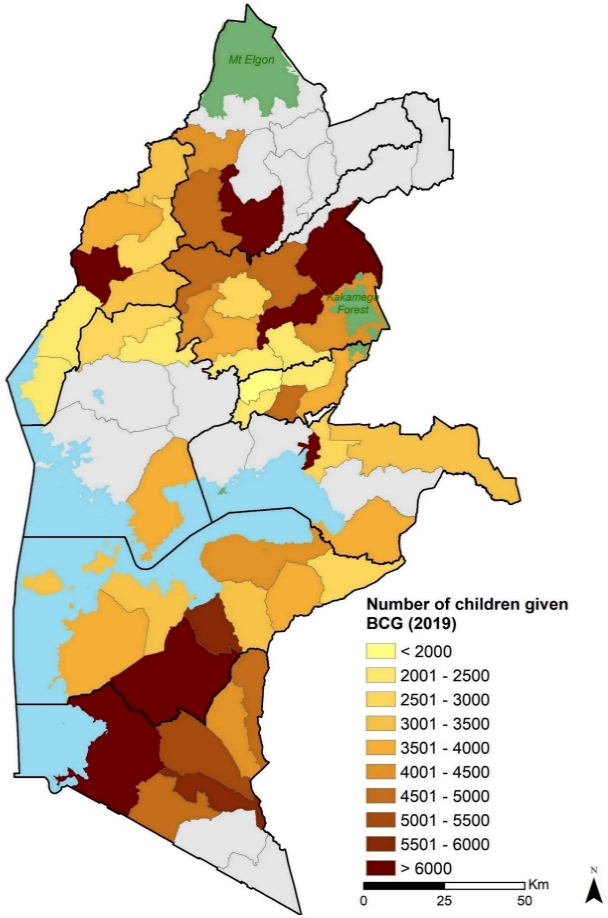
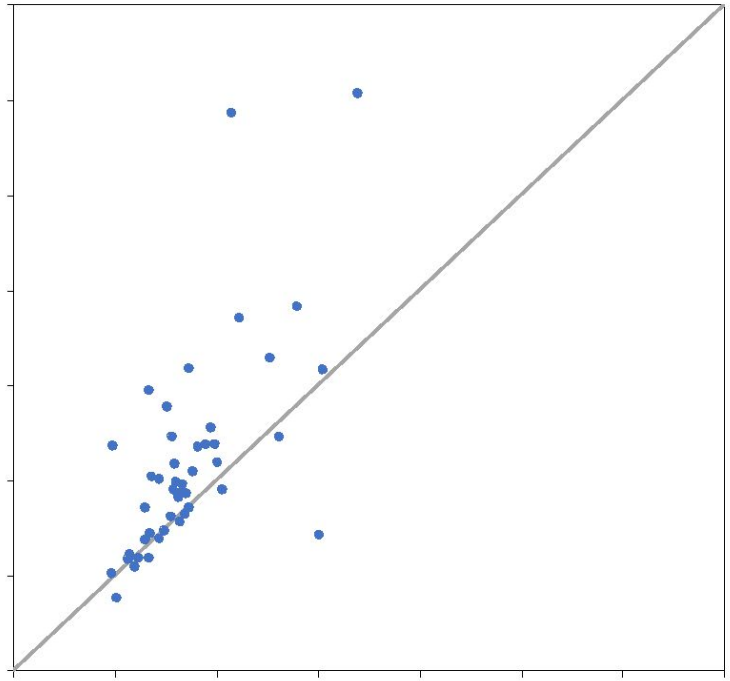
Census 2019 U 1 vs BCG DHIS2 2019 raw data in 46 MVIPE sub-counties







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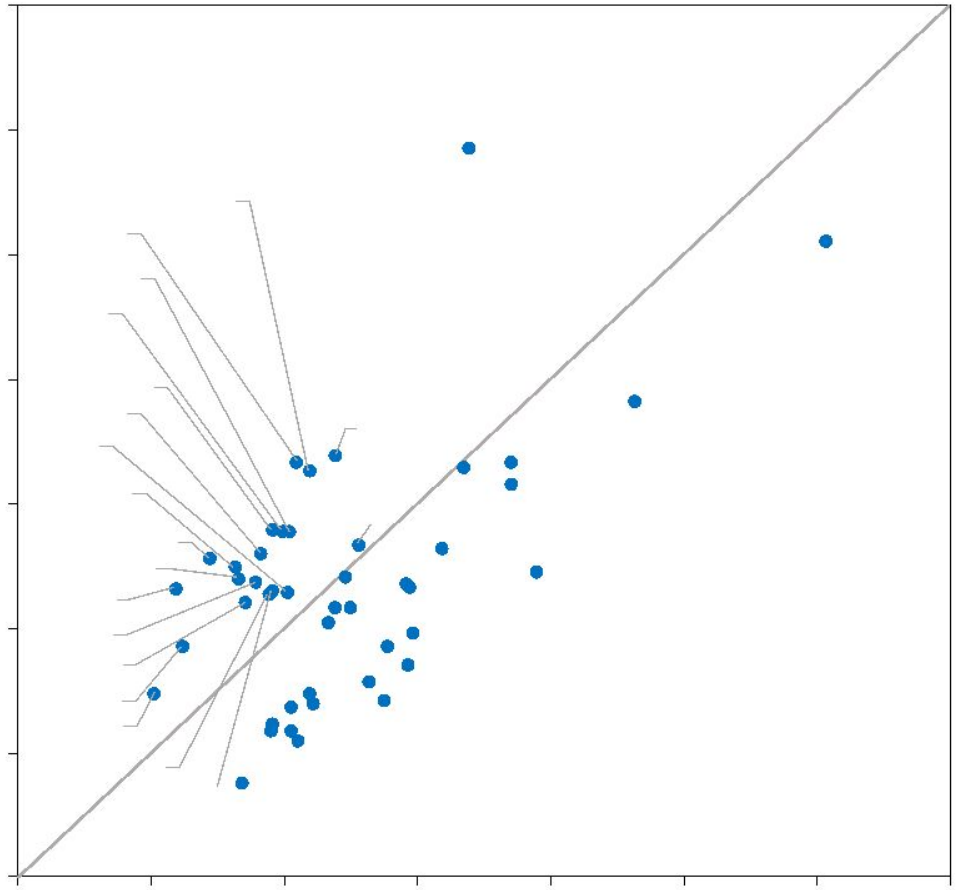
Scatter plots of BCG vaccinations in 2019 from DHIS2 Vs WorldPop Estimates 2019 for Under 1 in 46 MVIPE sub Counties

- ✔ 20 sub-counties appear, using WorldPop, to have > 100% BCG coverage (above the 45o Line in figure)
- ✔ Also possible because of contamination – children coming from a different SC to get vaccinated in the neighbouring facility at borders or due to availability
- ✔ Or the model form re-distributes populations inaccurately at lower admin units



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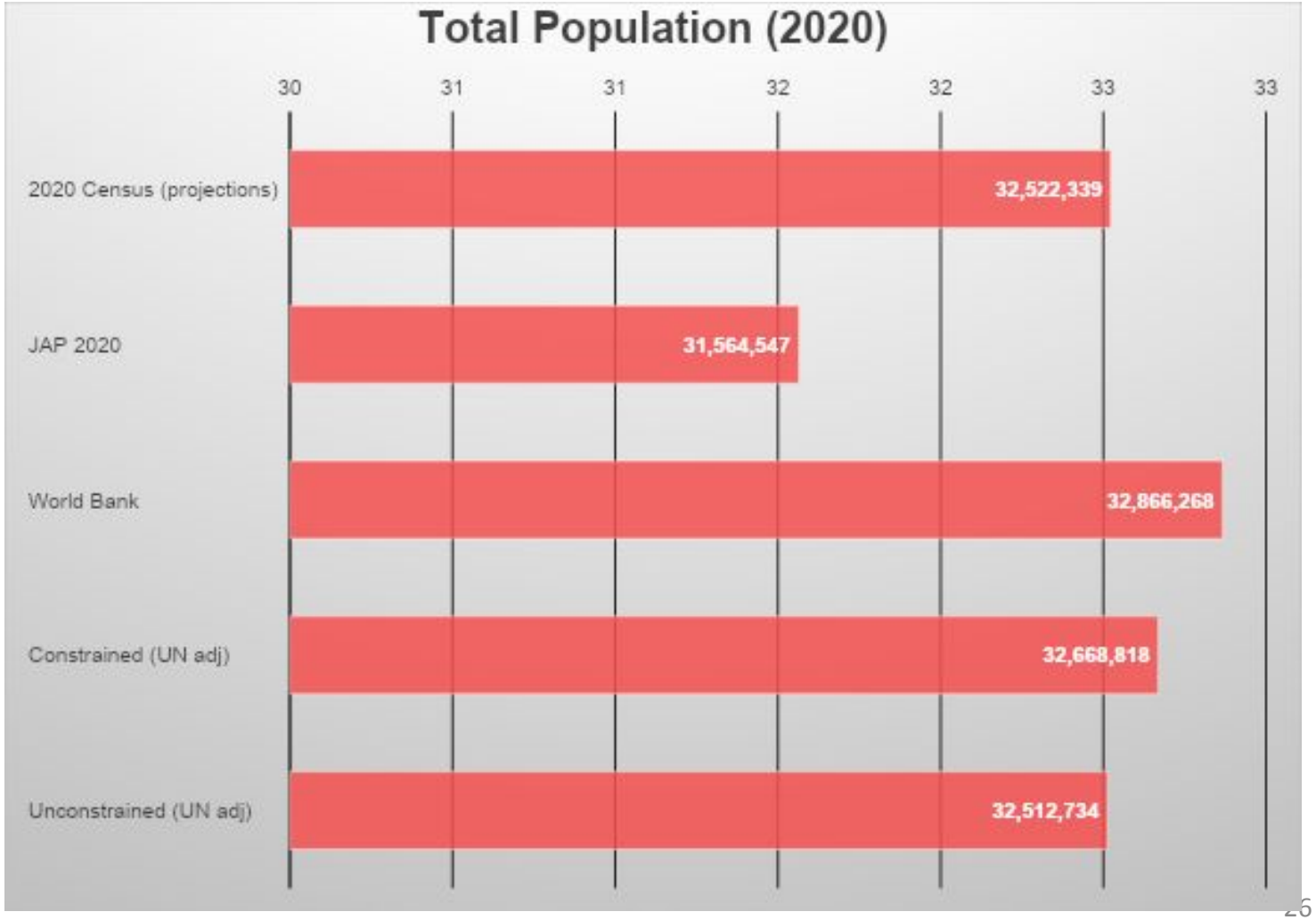
Other alternatives

WorldPop vs JAP population vs 2020 Census – in Angola

Source	Total Population
2020 Census (projections)	32,522,339
JAP 2020	31,564,547
World Bank	32,866,268
Constrained (UN adj)	32,668,818
Unconstrained (UN adj)	32,512,734



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Summary

- ✔ Even official census estimates is problematic from one census to next. Over or under estimation especially at sub-national levels.
- ✔ Projections on census data are generated on the assumption that population grows at the same rate everywhere and do not capture critical demographic events such as human movement, internal and external migration, spatial variation in fertility rates, mortality, etc.
- ✔ The longer the period a country relies on projections of census data the less reliable and accurate demographics will become at sub-national administrative division.
- ✔ Routine or administrative data also will have uncertainties e.g., missingness, neonatal mortality rate, aborting rate, twinning rates etc. Computation techniques may be used to adjust some of the data
- ✔ Highlight the need for standardization and guidelines on how to estimate malaria indicators.

World Health Organization

Improving Population Estimation in Malawi: Situation & Proposed Approach

Gracious Hamuza, National Malaria Control Programme, Malawi

Global Fund Population Estimation Webinar

27 September 2023

Population Estimation Challenges

Background:

- 2018 National census has population projections that are only available at the national level and by age group
- Enumeration areas within the census covers ~200 – 300 households & ~2,500 people
- Health facility catchment areas (HFCAs) for the 800+ facilities have not been defined and are not aligned with the enumeration areas

Potential Solution: Well-defined and demarcated HFCAs matched to census enumeration areas could provide detailed population estimates for use during health program planning

Resources:

- 2018 raw population data, shape files and base maps for all EAs
- Base maps for previously abandoned HFCAs
- Technical knowhow in form of personnel to carry out the task (i.e. GIS specialists, Demographers, Statisticians, Health Opinion Experts)

Method 1: Cohort Component Method (CCM)

Steps:

1. Define and demarcate HFCAs, through field work
2. Digitize maps & produce HFCA shape files
3. Use CCM to project EA populations (by year & age-group) for 2019 to 2028
4. Attach all EAs to their respective HFCAs (physically/manually then digitally)
5. Compilation of the projection report and printing
6. Dissemination of project report & population estimates to stakeholders

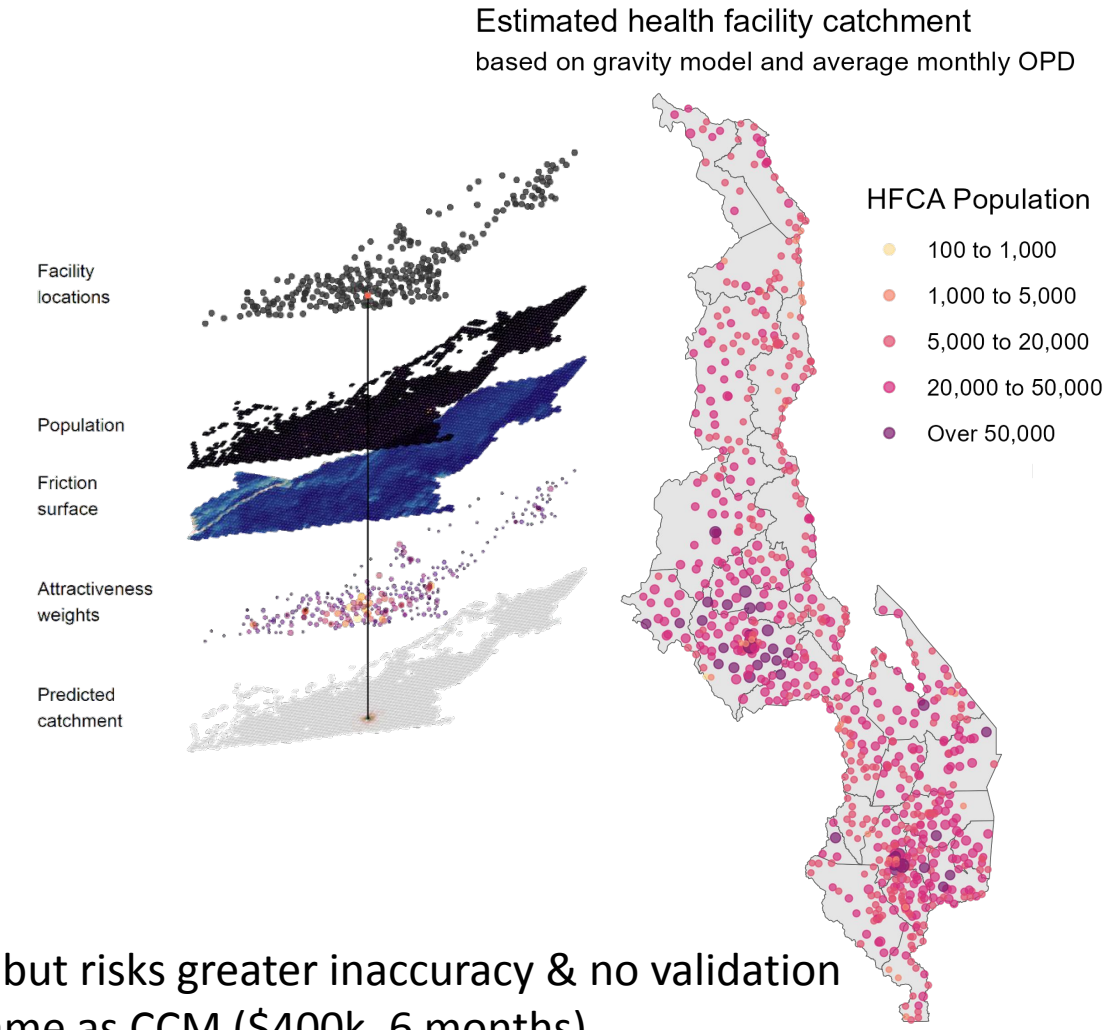
Budget & Timeline: $400,000; 6 months

Budget includes equipment (computers, software, & printers) and field work

Method 2: Geospatial Modelling Approach

Steps:

1. Collect available geospatial data
   - Administrative shapefile
   - Population raster
   - Health facility geolocations
   - Friction surface
2. Additional data processing
   - Population adjustment (using projected growth rates or updated Admin table)
   - Weighting criteria for facility (e.g., average monthly OPD, facility type, etc.)
3. Fit gravity-style catchment model
   1. Process outputs for determining "probabilistic" catchments
   2. Develop maps, calculate rate-based metrics based on reporting facilities, compare to cartographic estimates, and adjust weights if necessary



Budget & Timeline:

Option 1: Use HF geolocations & WorldPop population, $0, ~2 months, but risks greater inaccuracy & no validation

Option 2: Use HFCA shape files & EA populations from CCM method, same as CCM ($400k, 6 months)

NATIONAL MALARIA ELIMINATION PROGRAMME

Federal Ministry of Health, Abuja

Global Fund Population Estimation Webinar

Nigeria Progress

Nigeria: Introduction

- Malaria remains a significant public health problem
- Estimated 65.4 million cases in 2021with an incidence rate of 298.6 cases per 1000 population), resulting in 193,512 deaths approximately 30% of the worldwide deaths from malaria.
- The malaria incidence rate has increased since 2015 and The country is off track to meeting the Global Technical Strategy target (2023 WHO World Malaria Report)
- Obtaining accurate population estimates to tackle critical program gaps has proven to be difficult.

Our Vision - a malaria free Nigeria; Our goal - To reduce morbidity to less than 10% parasite prevalence and mortality attributable to malaria to less than 50 deaths per 1,000 livebirths by 2025.

Nigeria: Population Challenges

- Low capacity to analyze and use high-resolution population data, especially at the sub-national level
- Poor coordination of population data across multiple actors generating population information resulting in non-standardization of population information
- The absence of a national repository for Population information

Our Vision - a malaria free Nigeria; Our goal - To reduce morbidity to less than 10% parasite prevalence and mortality attributable to malaria to less than 50 deaths per 1,000 livebirths by 2025.

Nigeria: Challenges encountered

- Acceptance by different stakeholders on integration
- Scaling up the use of 100% ICT4D using Bring Your Own Device (BYOD) was challenging due to reasons like;
  - Personnel Know How
  - Network Challenges
  - Compatibility of devices

However, mobile teams were able to reach coverage levels > 97% in most states relying only on devices to capture children serviced and cover all areas.

Nigeria: Current Initiatives

Identifying technical partners to develop joint work plans to support NMEP in the following areas:

- Document population data sources used and calculation methods; clearly describe the biases of each method and the effect of using different population products.
- Strengthen capacity in using high-resolution population data for sub-national operational population estimation. Roll out cascade capacity-building at the sub-national level
- Creation of a data repository where multiple programs can store, share and reuse population data
- Develop/strengthen systems for ongoing routine updating and validation of health facility lists.

Triangulation

- Triangulate multiple population sources & historical data (from previous campaigns).
- Develop guidelines / best practices for standardizing triangulation processes.

Harmonization

- Identify opportunities for coordination with other programs to share population data.
- Share population estimates from program implementation with national statistics offices so they can be shared across programs.

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Nigeria: Progress to Date

- Scale-up of ICT4D in Seasonal Malaria Chemoprevention (SMC) has improved accountability (Population of children who received SPAQ) with the improved coverage forming a new population baseline for logistics & commodity allocation. This also has enabled the program to detect missed settlements using geo-enabled microplanning.
- Coordination with NPC, regarding access to demarcated enumeration areas (EA). The digital frame produced becomes a major tool for the planning of human and material resources for development programs including health as regards boundaries and effective assignment of population to the right locations. (NPC).
- Introduction of geo-enabled microplanning during ITN campaigns, using GIS maps for visualizing sub-national population distribution in relation to operational boundaries and health infrastructure, for improved microplanning process.
- The country is also integrating the process of micro plans for the implementation of ITN/SMC campaigns in 10 states which will improve the process of population estimation since these activities will be implemented together

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ITN Map Examples

Maps developed by GRID3 to support NMEP with microplanning and implementation of ITN campaigns in Kwara, Osun, Adamawa, Kano

DUPPEN PRIMARY SCHOOL DH, BINYERI WARD, MAYO-BELWA LGA

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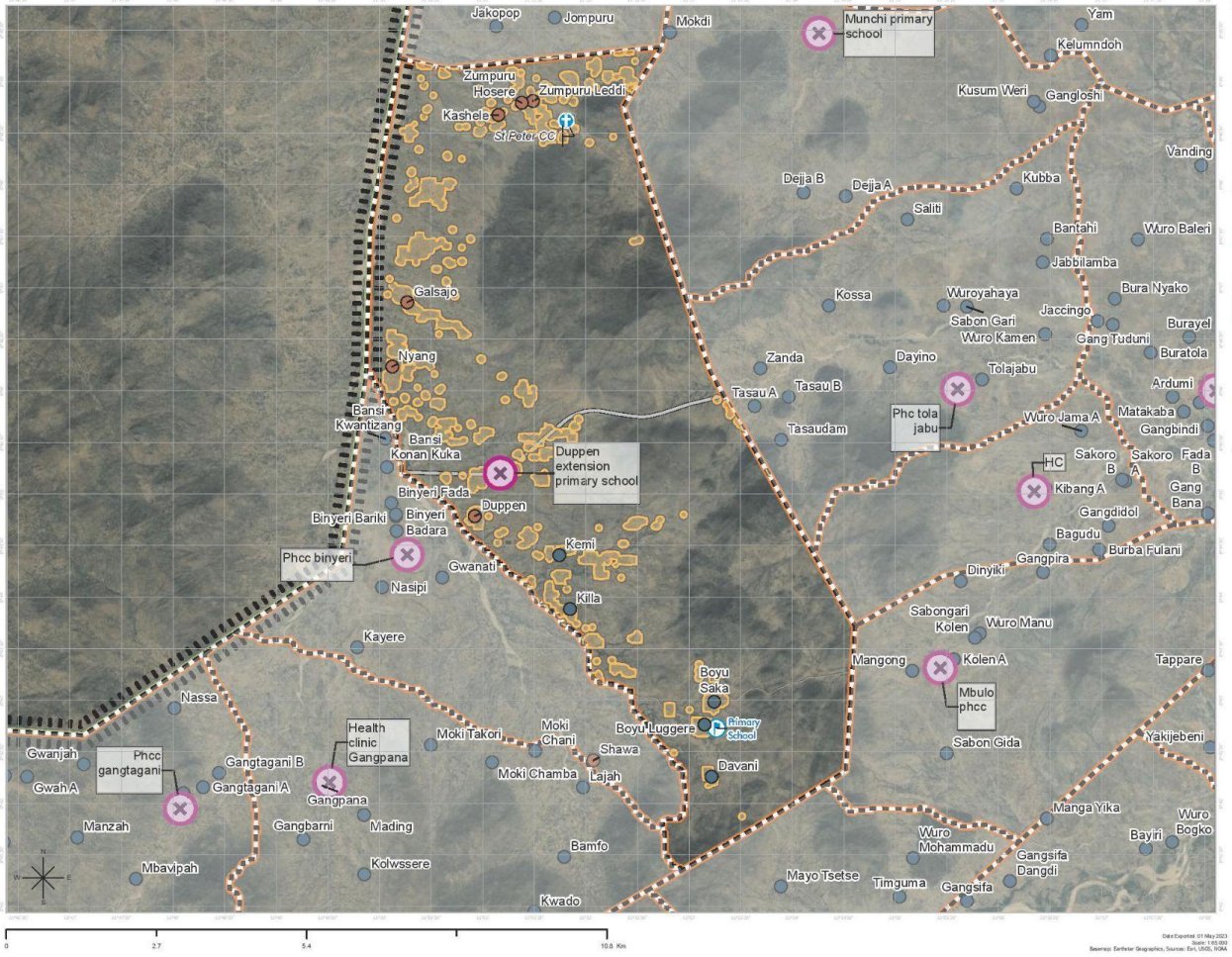
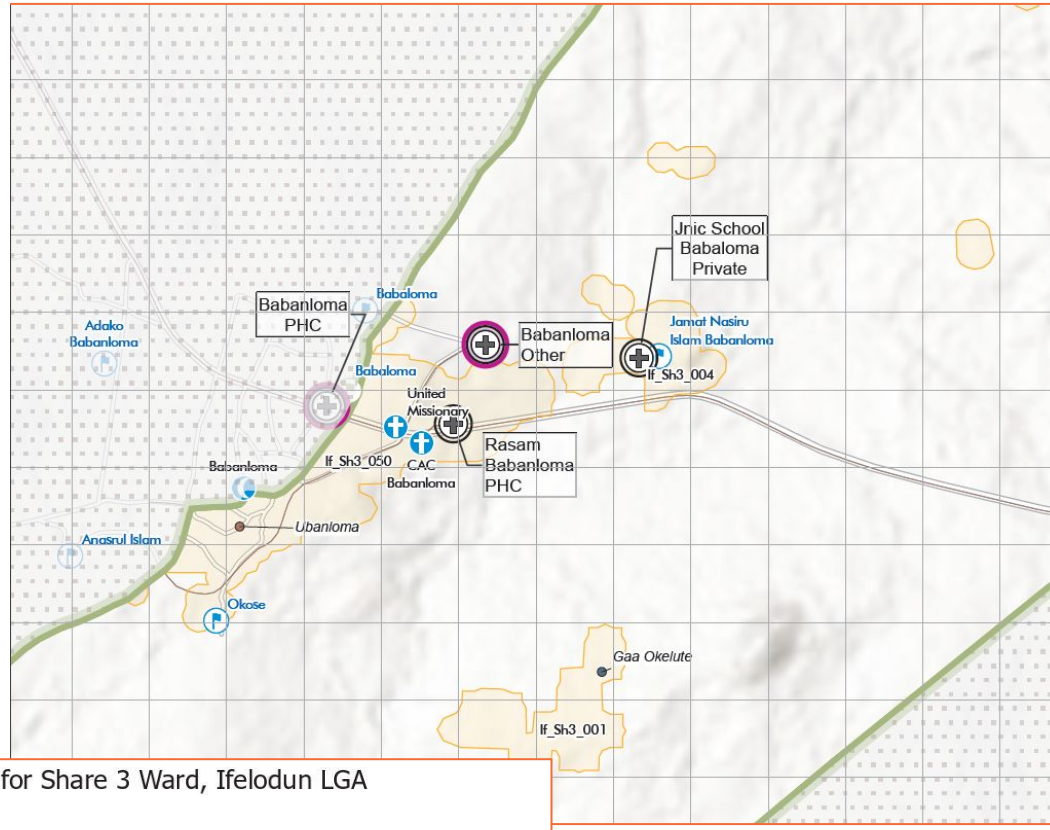


- Distribution hub (1 in ward)
- Church (1)
- Primary school (1)
- Settlement extent
- Sett match to DH of interest (7)
- Sett do not match to DH of interest
- Health facility catchment area boundary
- State boundary
- Ward boundary
- Primary road
- Secondary road
- Tertiary road/track/path/other

- Distribution hub (1)
- Health facility (3)
- Church
- Mosque
- Primary school
- Secondary school
- Settlement extent
- Sett (no match P3B)
- Sett (match P3B)
- Primary road
- Tertiary road/track/ path/other



Summary statistics for Share 3 Ward, Ifelodun LGA

Ward	Est Tot Pop	Est # HHs	Est #ITNs	Est #DHs
Share 3	9,015	1,803	5,009	3

Data source: Population (2020) total based on NMEP's P3B template

Ward	Est Tot Pop	Est # HHs	Est # ITNs	Est # DHs
Share 3	4,581	917	2,545	2

Data source: GRID3 Population Estimates v 2.0, 2021

Next Steps

Through the support of technical partners and in coordination with other government programs enhance national-level capacity to:

- Begin building knowledge around the concepts of geospatial modelling approaches for the development of high-resolution (gridded) population data
  - Using georeferenced census data or pre-census cartography data
  - Incorporating information from operational/routinely collected data
  - Using multi-temporal survey data to improve small area population projections
  - Enhance understanding around limitations and underlying assumption of modelled population estimates
- Facilitate transfer of GIS skills for working with gridded population data. Strengthen capacity at the national level in using geospatial tools and maps for planning and monitoring implementation
- Training of Trainers approach to cascade capacity-building at sub-national level

Our Vision - a malaria free Nigeria; Our goal - To reduce morbidity to less than 10% parasite prevalence and mortality attributable to malaria to less than 50 deaths per 1,000 livebirths by 2025.

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HYGIÈNE ET PRÉVENTION

Webinaire du Fonds mondial sur l'estimation de la population

Progrès par pays

Cas de la RDC

Défis démographiques et solutions proposées

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Défi actuel

- Multiples sources d'estimations des populations avec approches et résultats différents
- Opportuinités de digitalization, mais initiatives cloisonnées

Solution proposée

- Gourvernances renforcées autour du MSPHP à travers l'ANICNS
- Leadership de l'INS pour une appropriation de l'autorité régalienne et appui technique
- Synergie local (ressources et capacités) au niveau des Programmes (PEV, PNLP, PRONANUT, etc)
- Blue Square, HISP, GRID3: Assisatance Technique

Défis anticipés

- ANICNS: structure jeune, besoin de renforcement des capacités
- Durabilité et pérénisation
- Pésenteurs et Difficulté de consensus sur les indicateurs minimums entre différents Programmes
- Peu/Retard de coordination entre bailleur pour accompagner le processus

[DRC]: Progress to Date

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Progrès à ce jour

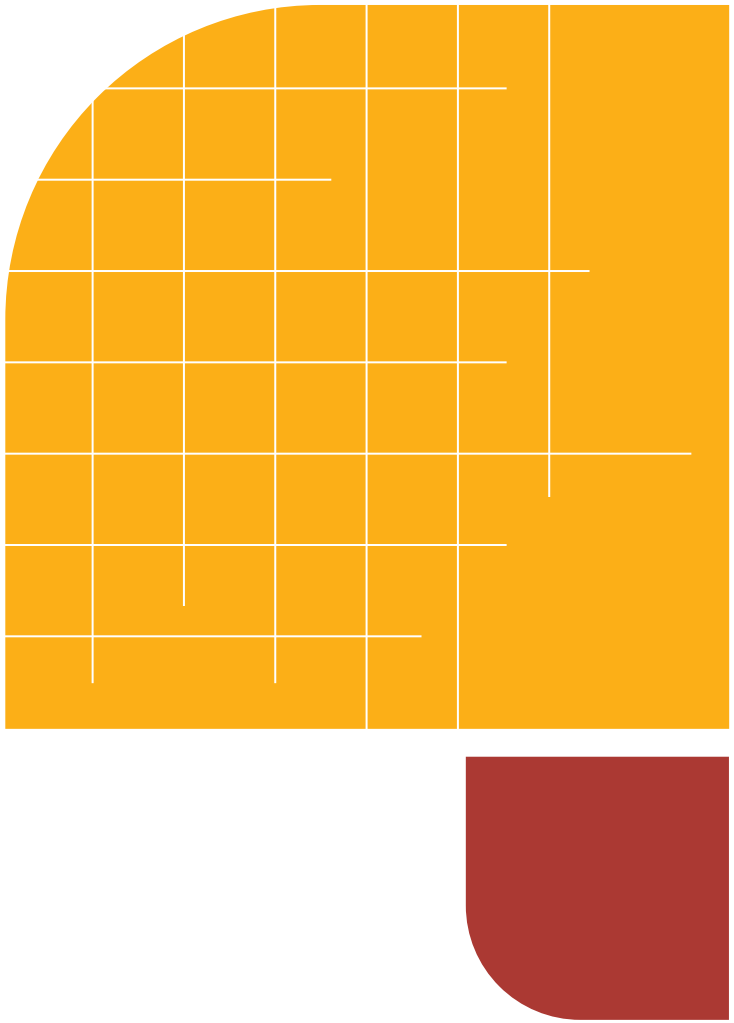
- ANICNS: TDR partagé
- INS : Proposition d'un protocole de recensement plus léger orienté vers les attentes du secteur de la santé
- GRID3 : Assistance technique dans l'utilisation de géoréférencement
- AT/CHAI: Processus d'identification des ressources et opportunités disposnibles
- HISP: Préparation de la plateforme DHIS2 pour l'hébergement des données consensuelles
- Blue Square: développement et l'implémentation d'un outil appelé "IASO" qui permet essentiellement la collecte des données des populations et génération des microplans
- IMA: Retenue pour la mise en oeuvre sur terrain

Défis rencontrés

- Lenteur dans la collecte des informations sur
- Disponibilités des parties prenantes aux réunions

Prochaines étapes

- Réunion de validation des TDR (ANICNS) et des modalités techniques du dénombrement des populations (INS) et du plan de travail (AT CHAI) : d'ici fin septembre 2023
- Test sur terrain à Kinshasa par IMA: debut octobre 2023
- Recensement de la population dans le Haut Lomami: mi-octobre 2023



GRID3

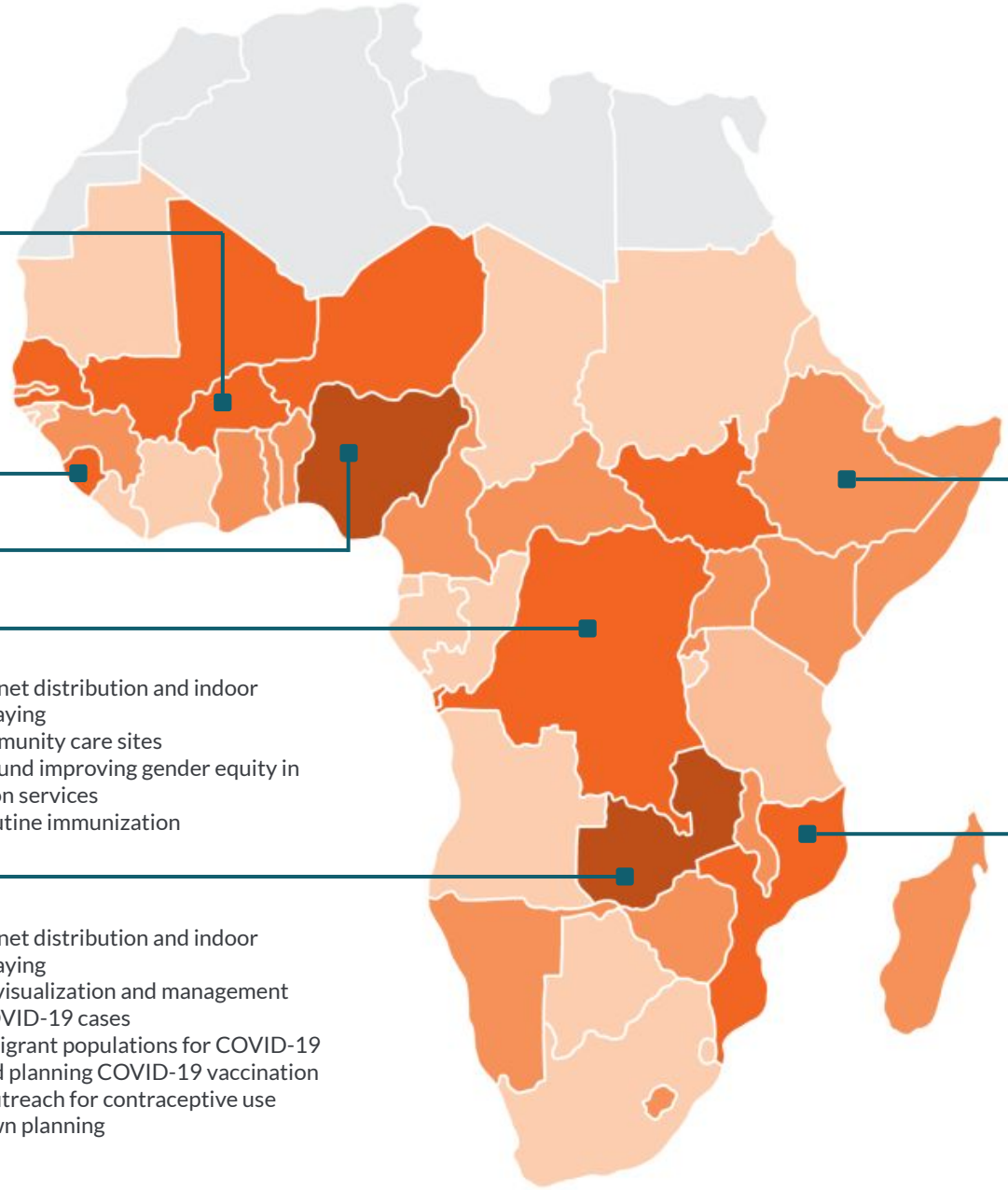
Progress in Population Estimates

Marc Levy, CEO

September 27, 2023

Presentation for RBM & SME WG Webinar
"Improving Population Estimation for Malaria Programs"

GRID3 has supported governments since 2017 to use spatial data innovations to improve service planning and delivery



Burkina Faso
- Planning COVID-19 vaccination campaign

Sierra Leone
- HPV/ COVID-19 integrated campaign planning
- Radio tower placement for broadcasting school lessons during lockdown
- Educational coverage review

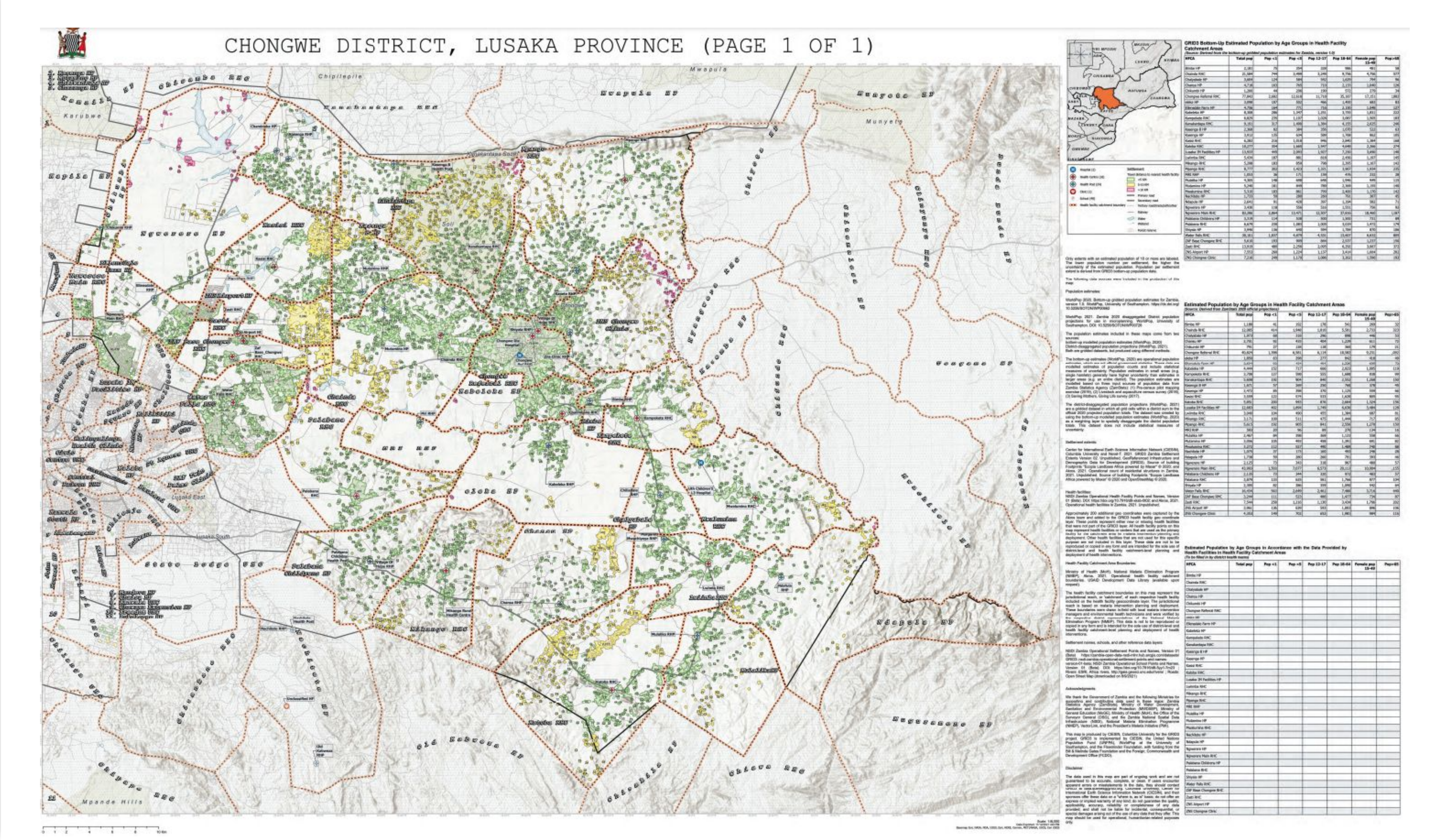
Nigeria
- Planning COVID-19 vaccination campaign
- Strategizing COVID-19 response
- Malaria bednet distribution and indoor residual spraying
- Polio and immunization planning
- Planning non-polio supplementary immunization activities and planning measles reponse
- Analyzing state of school coverage and optimizing new school location

DRC
- Malaria bednet distribution and indoor residual spraying
- Placing community care sites
- Training around improving gender equity in immunization services
- Planning routine immunization

Zambia
- Malaria bednet distribution and indoor residual spraying
- Supporting visualization and management of active COVID-19 cases
- Preparing migrant populations for COVID-19
- Tracking and planning COVID-19 vaccination
- Targeting outreach for contraceptive use
- City and town planning

Ethiopia
- Mobile health service delivery planning

Mozambique
- Planning COVID-19 vaccination campaign


CHONGWE DISTRICT, LUSAKA PROVINCE (PAGE 1 OF 1)

Core data layers enable digital microplans

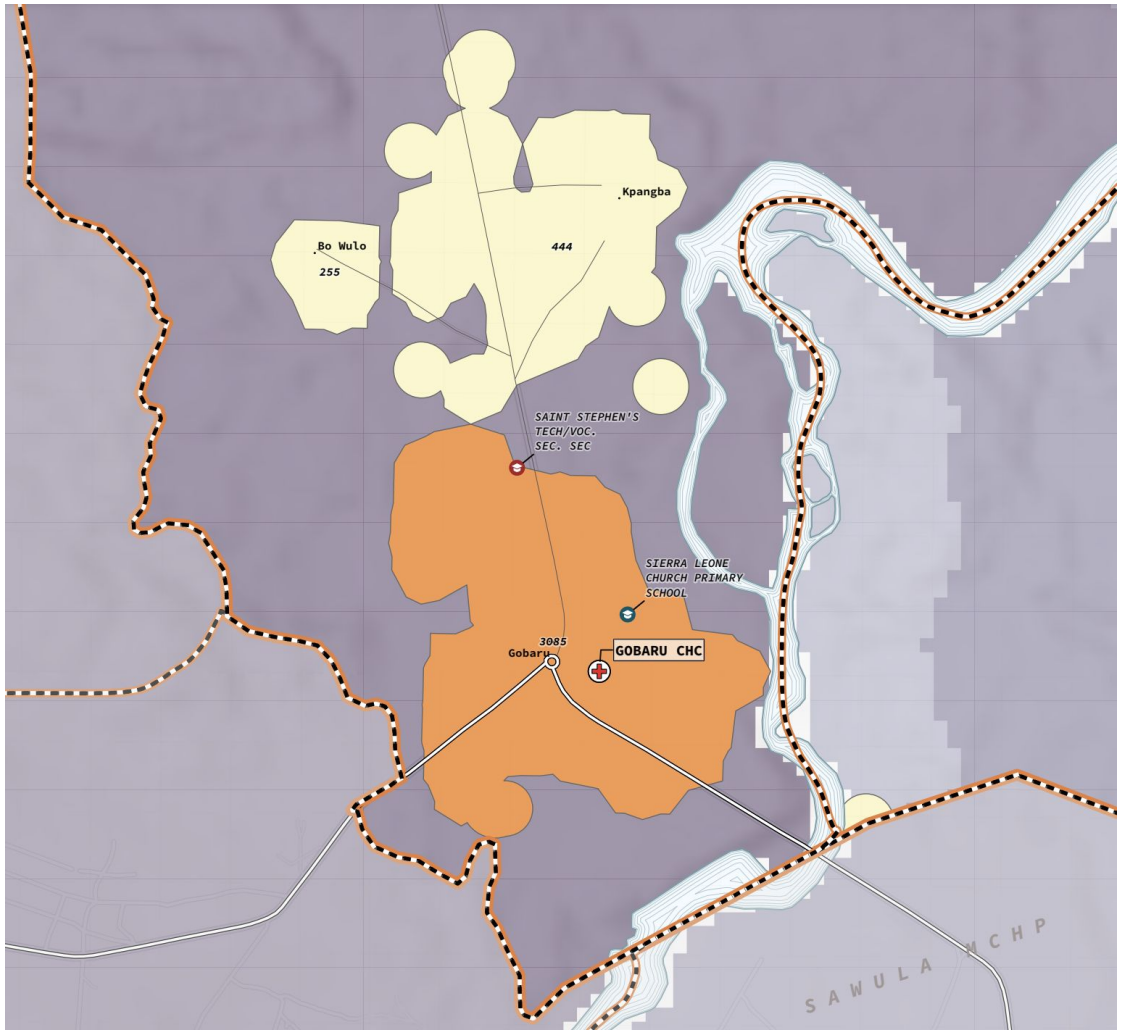
Health Facility
- Hospital (0)
- Community Health Center (2)
- Community Health Post (8)
- Maternal and Child Health Post (6)
- Clinic (1)

School
- Pre-primary (1)
- Primary (58)
- Junior secondary (10)

- Misc. POI (16)
- Health facility catchment area (walk and drive)
- District boundary
- Primary road
- Secondary road
- Other / unclassified road
- Water
- River
- Stream/canal/other

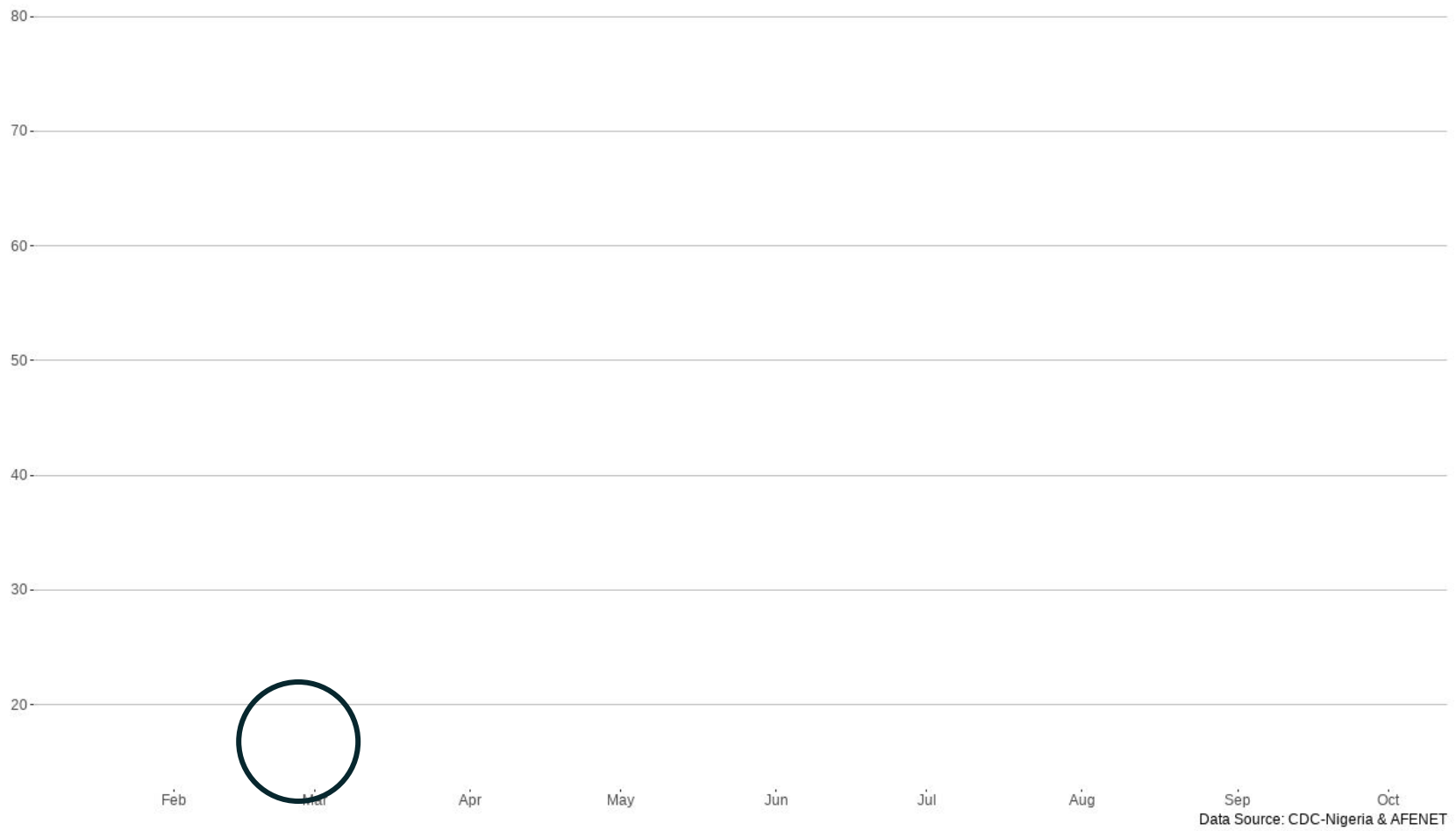
Settlement extent by population
- 1 - 1,250
- 1,251 - 2,500
- 2,501 - 5,000
- 5,001 - 10,000
- 10,001 - 25,000
- 25,001 - 65,000

Travel time to the nearest health facility
- 0-30 minutes
- 30-60 minutes
- 60-90 minutes
- 90-120 minutes
- > 120 minutes



Daily COVID-19 vaccinations administered per team

Adamawa State, Nigeria
January – September 2022



New 4-year initiative builds on lessons learned

Production of core spatial datasets

- Producing core spatial data, blending innovations and established best practices
- Tailoring to country context and priorities

Analytics and decisions-support

- Providing **technical assistance on use** of core spatial data for planning, delivery, and monitoring
- Supporting integration of data into **decision-making tools and processes**

Maximum impact comes from coordinated integration

Capacity strengthening and training

- To produce **high-value spatial data**
- To generate **high-impact use**

Mainstreaming and sustainability

- Building **effective bridges** between mandated data authorities and broader community of practice
- Ensuring **alignment** of key national planning, budgeting, and strategy processes

New opportunities

Contextualizing population data needs

Extracting more value from census data

Improving population estimates
through cross-campaign coordination

New opportunities

Contextualizing population data needs

Extracting more value from census data

Improving population estimates through cross-campaign coordination

- Increase coverage
- Include entire target population
- Identify potential fraud and waste
- Identify logistical bottlenecks
- Identify hotspots of community resistance

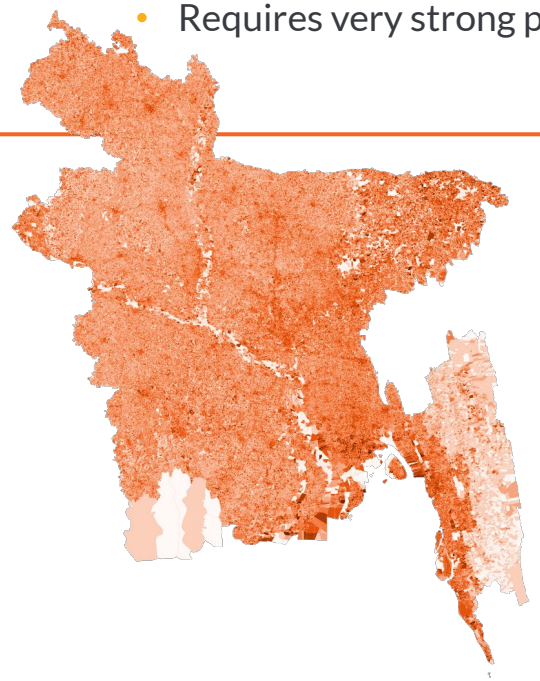
New opportunities

Contextualizing population data needs

Extracting more value from census data

Improving population estimates through cross-campaign coordination

- Census data can be shared at much higher resolution than is typically done
- Pre-census preparation often generates highly valuable data
  - Conventional practice is not to use
  - Growing willingness to explore use options
  - Requires very strong partnerships between NSO and MoH



Bangladesh 2022 census released at Enumeration-Area level (384,349 units)

New opportunities

Contextualizing population data needs

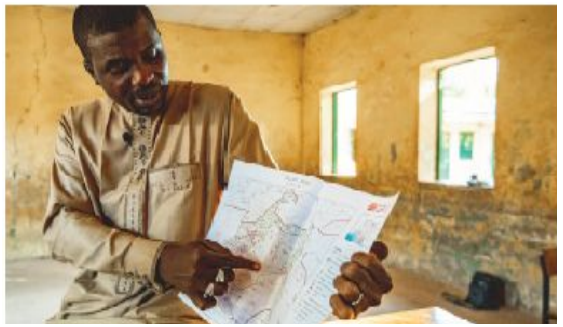
Extracting more value from census data

Improving population estimates through cross-campaign coordination

- Compare operational population estimates
- Share data collected during implementation
- Pool investments in data improvement

Future of GRID3:

Advance availability of core spatial data



Support governments and donors with data use

Invest in systemic solutions

Build regional geospatial capacity

…to further the sustainable use of geospatial data for improved health outcomes.

Learn more in our 2017-2022 Impact Report
https://grid3.org/publications/impact-report-2017-2022

Discussion
Q&A

Photo credit: Brookings Institute


PATH