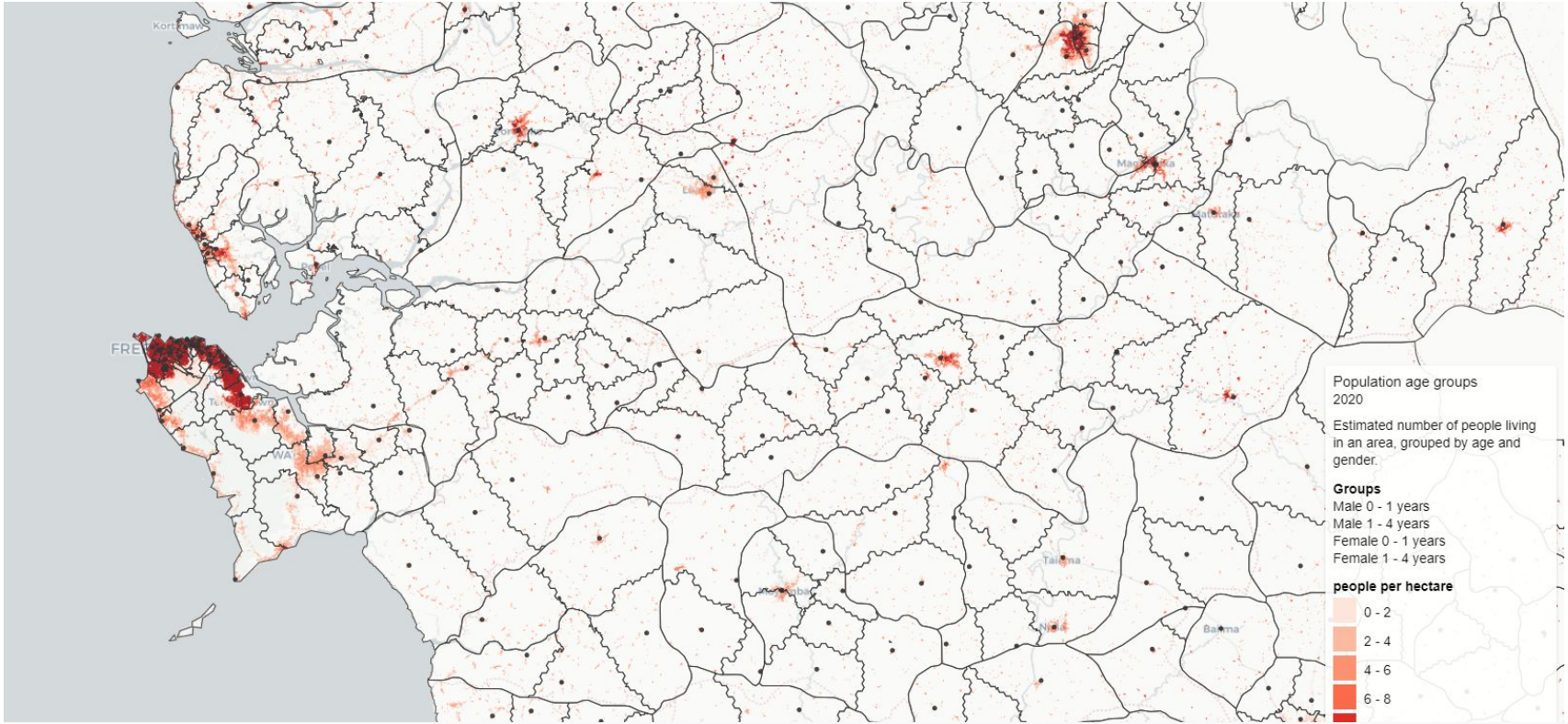
UiO : University of Oslo

dhis2



Advanced Population Mapping Webinar

Scott Russpatrick - Scott@dhis2.org

Table of contents

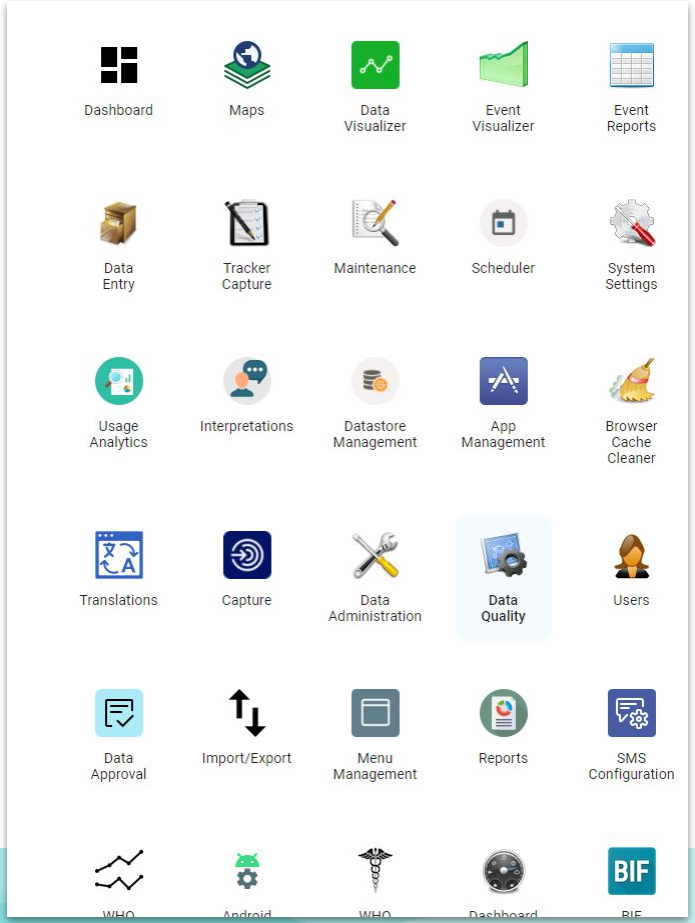
- Intro for DHIS2
- Problem statement
- Use of clinical/service based denominators
- Use of alternative population denominators and catchments areas
- New DHIS2 features to visualize populations
- Crosscut demo of catchment area application - Coite Manuel
- Q&A

Link to session in Community of Practice

https://community.dhis2.org/t/webinar-on-advanced-population-mapping-in-dhis2-march-23/46231

DHIS 2 Platform

- Capture, management and analysis of information
- Flexible, generic data platform, wide range of use-cases
- Open source software
- Extensible through Web APIs and app framework
    - Application based ≈ 90. Available on gethub



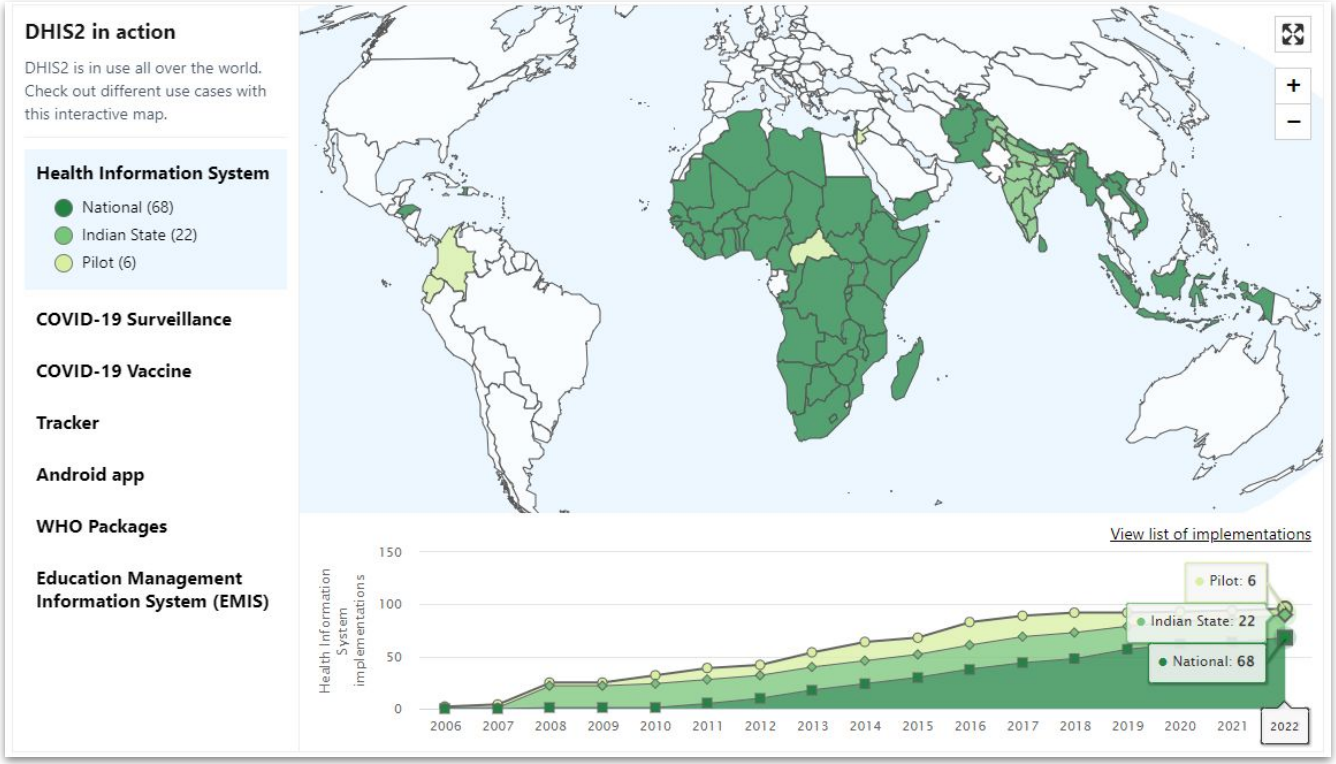
DHIS2 as HMIS

World's largest health management information system (HMIS) platform

4.2 Billion People

Core development at University of Oslo

Thousands of DHIS2 developers and experts around the world.



UNICEF video on how DHIS2 scaled to national level in Bangladesh: https://www.youtube.com/watch?v=bUWkvKPcabA

43 countries use DHIS2 for COVID-19 surveillance

DHIS2 in action

DHIS2 is in use all over the world. Check out different use cases with this interactive map.

COVID-19 Surveillance

- Operational (43)
- In development (12)

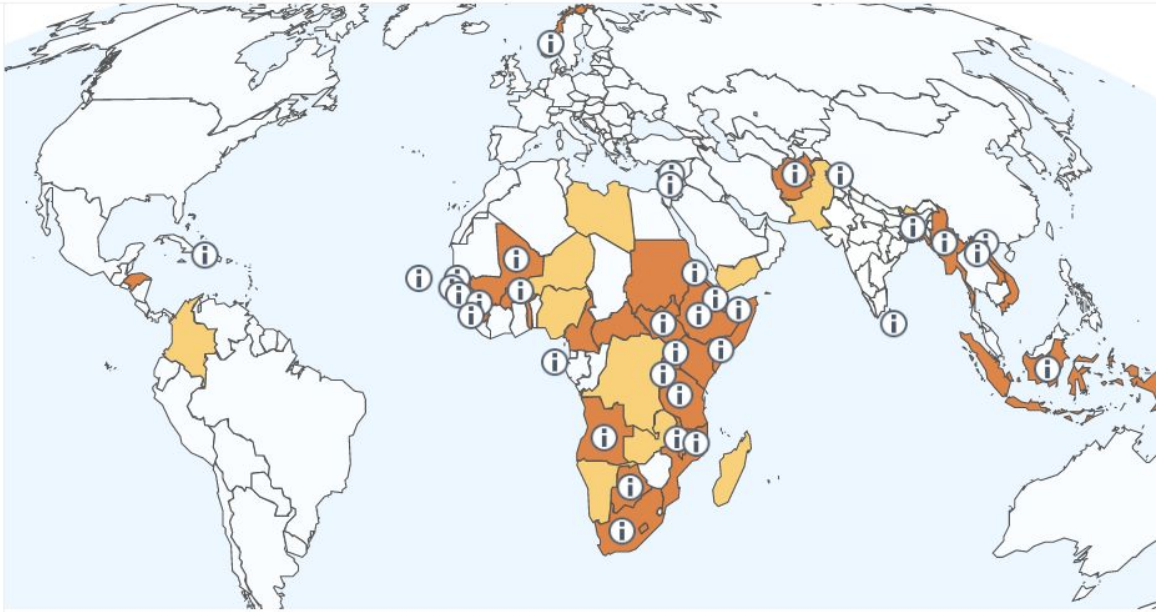
Packages / Tools:

Case-based surveillance

Contract registration

Port of Entry screening

Event & Aggregate surveillance



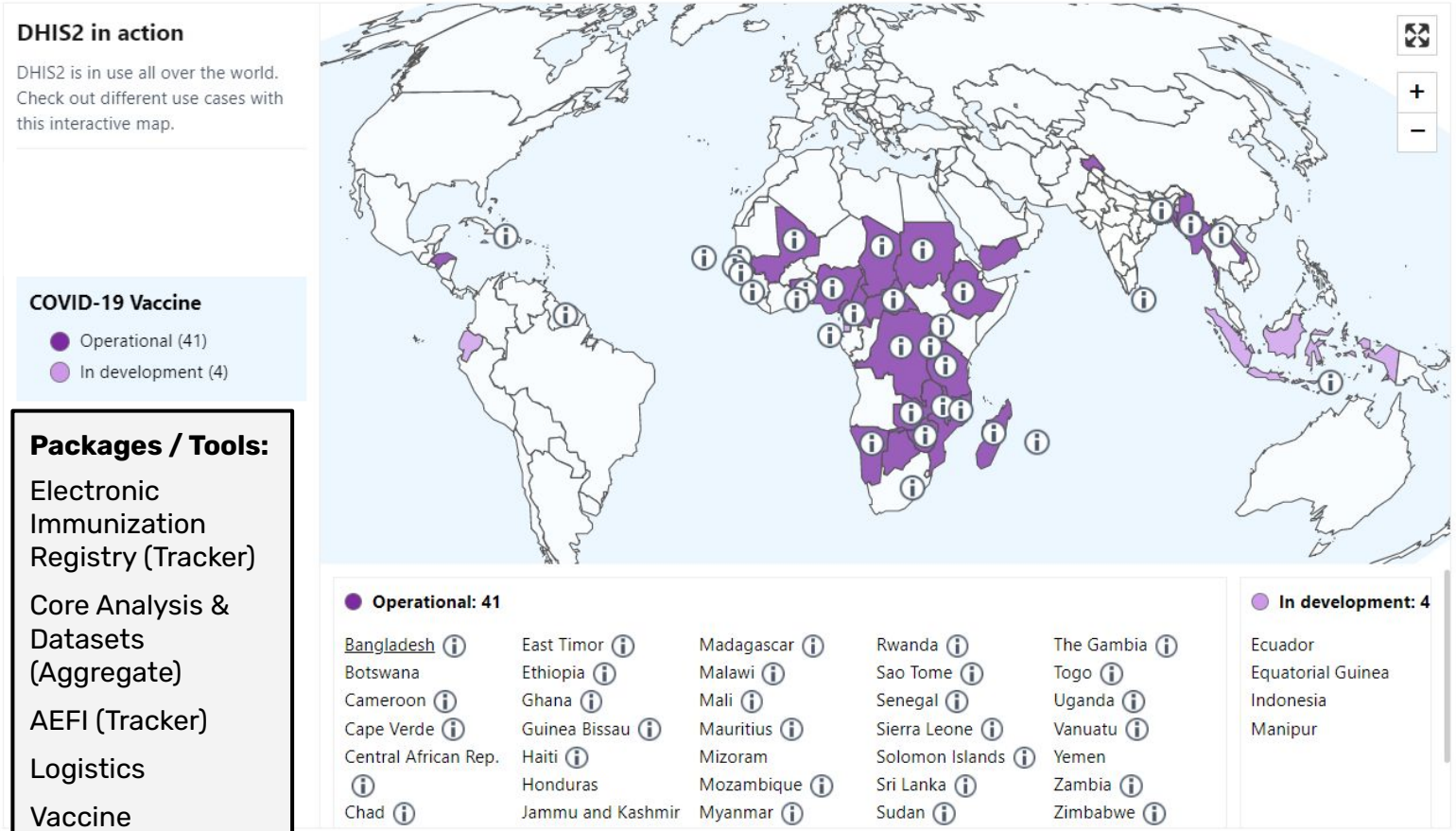
Operational: 43

Afghanistan, Angola, Bangladesh, Botswana, Burkina Faso, Cameroon, Cape Verde, Guinea, Guinea Bissau, Haiti, Honduras, Indonesia, Jammu and Kashmir, Malawi, Mali, Mozambique, Myanmar, Norway, Palestine, Rwanda, Somaliland, South Africa, South Sudan, Sri Lanka, Sudan, Tanzania, The Gambia

In development: 12

Bhutan, Colombia, Dem. Rep. Congo, Libya, Madagascar, Namibia, Niger, Zanzibar

41 countries use DHIS2 for COVID vaccine delivery



Packages / Tools:

Electronic Immunization Registry (Tracker)

Core Analysis & Datasets (Aggregate)

AEFI (Tracker)

Logistics

Vaccine Certificates

Covid Surveillance and Vaccine Systems at Scale

People Enrolled:

- **Sri Lanka**: 19,147,151
- **Rwanda:** 10,000,000+
- **Nigeria:** 7,913,042
- **Uganda:** 6,530,933
- **Ghana:** 3,633,623
- **Laos:** 2,456,865
- **Togo:** 1,751,575
- **Tanzania:** 1,107,619

Users

- **Nigeria**: 20,715
- **Tanzania:** 15,478
- **Rwanda:** 8000+
- **Togo:** 5,780
- **Sri Lanka:** 3,400
- **Uganda**: 2,810

Sites

- **Uganda:** 2,605
- **Rwanda:** 1,800
- **Togo:** 1,004
- **Sri Lanka:** 837

Covid-19 Related Events

- **Sri Lanka:** 25,863,786
- **Uganda:** 7,819,206
- **Laos:** 6,743,808
- **Ghana:** 4,525,188
- **Tanzania:** 2,110,405
- **Togo:** 1,410,691

As of 14 Dec 2021

DHIS 2 Data Models

Aggregate data

Immunization doses given

People trained in FP

Refugees supported

Events

Facility assessments

Clinical visits

Educational events

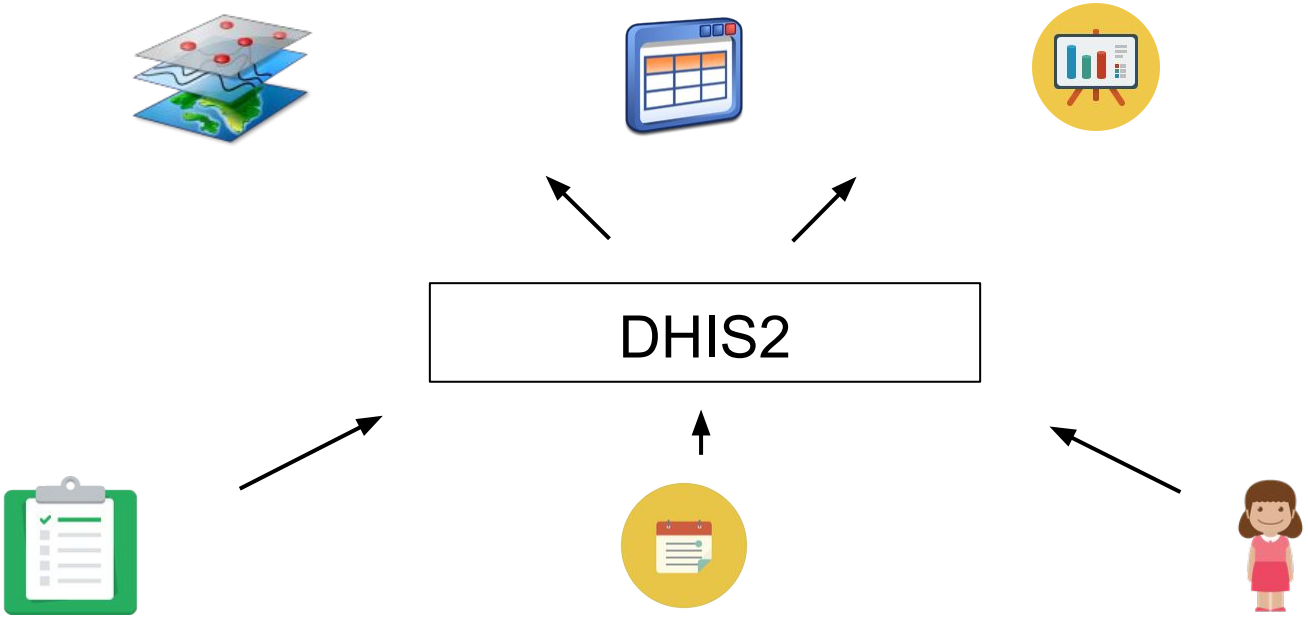
Tracking

Maternal health

Immunization

Equipment, drugs

Integrated Analysis of Data & Events

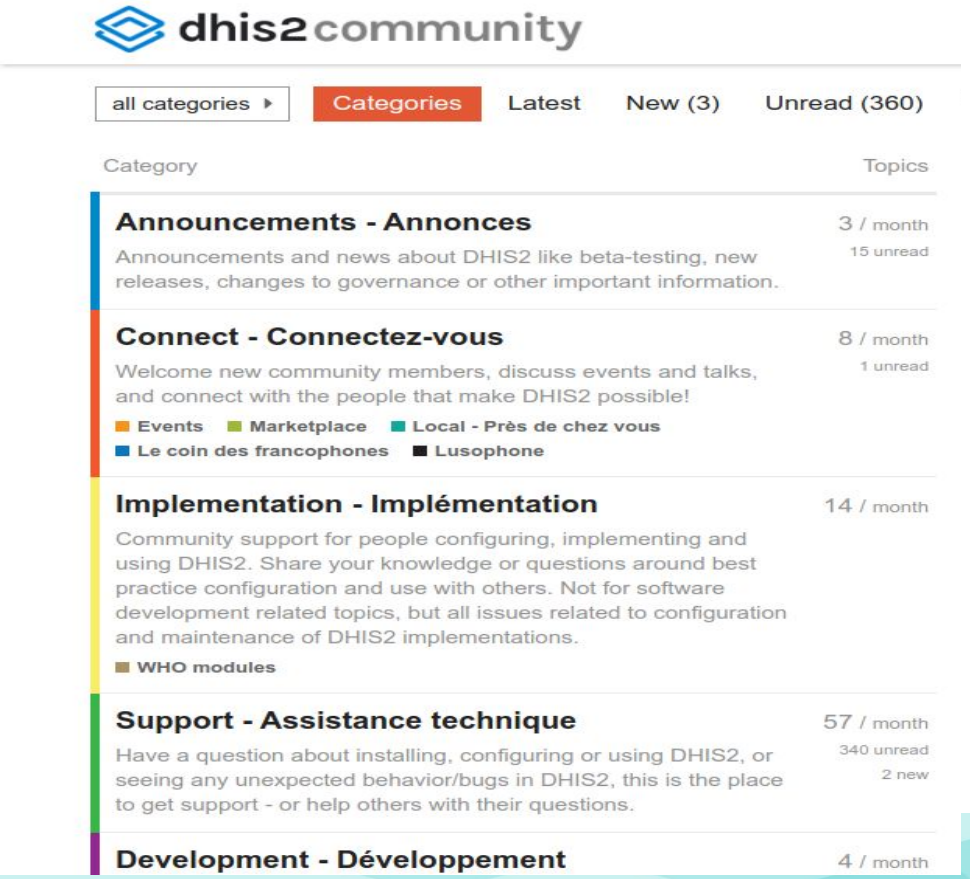


Aggregate data Events Tracking

DHIS 2 Community

- HISP groups (Tanzania, Uganda, South Africa, Nigeria, Vietnam…)
- Ministries of Health (80+)
- Donors (8)
- NGOs (150+)
- Organizations / companies
- Research groups (PhDs, masters)
- Consultants
- Software developers

community.dhis2.org



Almost 10 years of knowledge made available

4000+ members

36 000+ topics

60 000+ posts

The Problem With Population Figures

The Problem: Census populations are unreliable

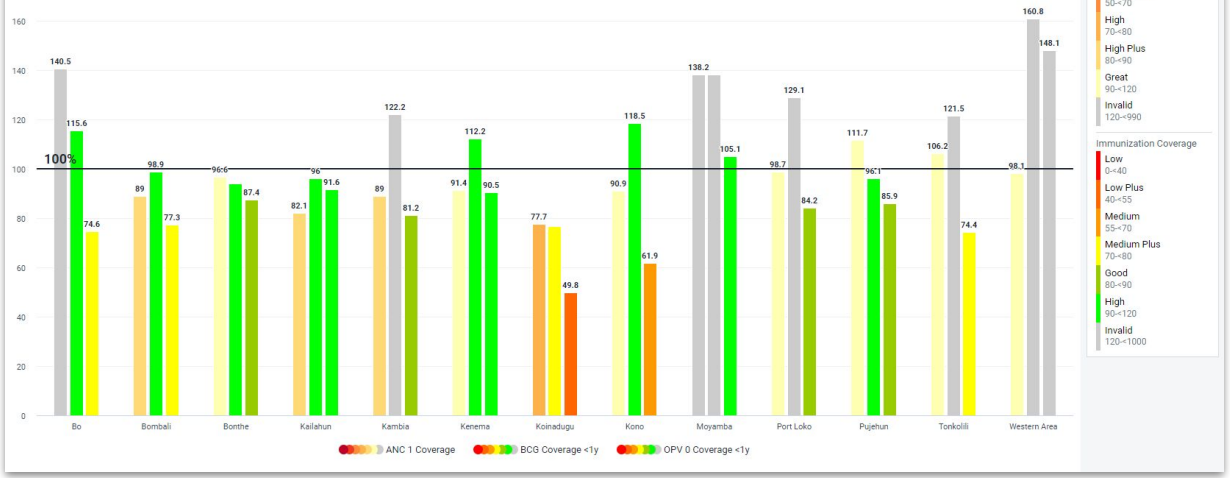
Census based population denominators are inaccurate:

- Old/outdated
- Does not factor in population mobility or changes in population density
- Does not accurately represent vulnerable populations - those living far from clinics
- Does not provide actionable analytics
  - Resolution is too high - not enough detail in population
  - No facility catchments - Impossible to do coverage rates below districts
  - No settlement or structures mapping

Hiérarchie	Unité d'organisation	Janvier	Février	Mars	Avril	Mai	Juin	Juillet	Août	Septembre	Octobre	Novembre	Décembre
kn Kinshasa Province - kn Kingasani Zone de Santé	kn 17 Mai Aire de Santé	B 133.7% 13.3%	A 133.2% 2.5%	A 102.8% 6.4%	A 133.2% 7%	A 143.4% 8.7%	A 149.5% 9.5%	A 135.7% 9.7%	B 139.7% 10.1%	B 128.4% 10.4%	A 120.4% 10%	A 112% 9.8%	
kn Kinshasa Province - kn Kingasani Zone de Santé	kn Atandele Aire de Santé	A 165.7% 2.7%	A 167.2% 3.6%	A 183.8% 8.2%	A 183.8% 6.1%	A 186.5% 5.8%	A 187.8% 4.5%	A 190% 3.3%	A 195.8% 4.3%	A 200.8% 4.5%	A 204.4% 4.4%	A 185.8% 4.4%	
kn Kinshasa Province - kn Kingasani Zone de Santé	kn Kingasani Aire de Santé	D 58.6% 25%	D 85.8% 31.6%	B 96.8% 20.7%	B 126.5% 11.9%	A 144.3% 9.1%	B 146.4% 10.5%	B 141.8% 10.9%	B 141.5% 10.5%	B 138.8% 10.1%	A 134.4% 9.4%	A 128% 9%	
kn Kinshasa Province - kn Kingasani Zone de Santé	kn Lisanga Aire de Santé	D 81.4% 39.3%	D 75% 28%	B 97.5% 30.9%	B 116.8% 25.2%	B 127.1% 22%	B 124% 20%	B 108.1% 20.3%	B 110.4% 23.4%	B 112.6% 26.4%	B 113.5% 24.6%	B 106.8% 23.7%	
kn Kinshasa Province - kn Kingasani Zone de Santé	kn Molende Aire de Santé	A 161.2% 8.4%	A 111.5% 6.4%	A 119.7% 7.9%	A 130.9% 8.4%	A 143.4% 9.7%	B 151.8% 10.8%	B 143.3% 10.9%	B 139.4% 11.2%	B 133.7% 12%	B 129.9% 12.3%	B 118.1% 12.3%	
kn Kinshasa Province - kn Kingasani Zone de Santé	kn Mulie Aire de Santé	A 117.3% 0.8%	C 76.4% -5.7%	A 93.9% 2.4%	A 113.9% 1.9%	A 122.3% 1.6%	A 125% 2.4%	A 127.3% 2.3%	A 128.1% 2.3%	A 121% 3.3%	A 113.5% 3.4%	A 103.2% 3.4%	
kn Kinshasa Province - kn Kingasani Zone de Santé	kn Nsanga Aire de Santé			C 57.3% 5.6%	C 46.8% 5.1%	C 59.9% 6.6%	C 74.2% 5.5%	C 76.2% 5.8%	C 81.2% 7.1%	C 75.2% 8.6%	C 75.5% 8%	C 68.6% 8%	
kn Kinshasa Province - kn Kingasani Zone de Santé	kn St Paul Aire de Santé	A 125% 8.2%	A 127.1% 5.7%	A 131.2% 4.1%	A 135.4% 4.1%	A 138.3% 4.1%	A 117.3% 4.5%	A 100.9% 4.2%	A 105% 4.1%	A 103.7% 4.1%	A 103.1% 4%	A 93.7% 4%	

Catégorie A Couverture ≥ 90% Taux d'abandon ≤ 10%
Catégorie B Couverture ≥ 90% Taux d'abandon > 10%
Category C Couverture < 90% Taux d'abandon < 10%
Catégorie D Couverture < 90% Taux d'abandon ≥ 10%

Categories based on Penta 3 coverage and Penta 1-3 drop out rate



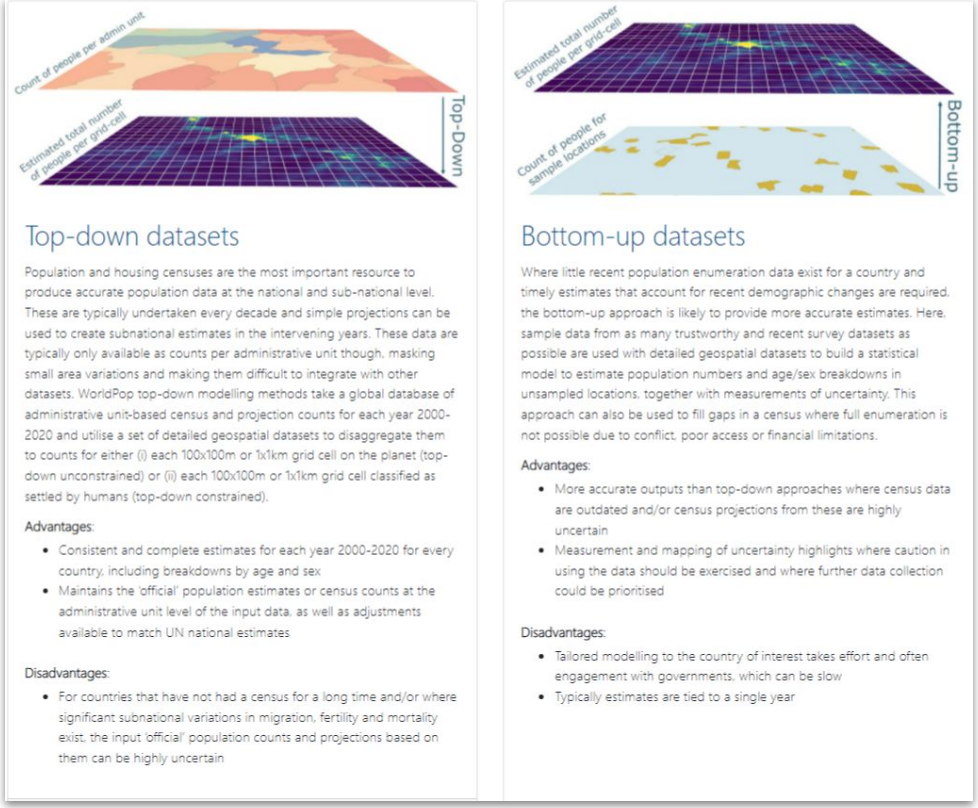
Advanced Population Estimates

Sources:

- World Pop.
- Grid3
- Google Earth Engine
- Facebook - Data For Good

Micro-planning webinar:
https://www.youtube.com/watch?v=EjnxRxG5iHs

World Pop approaches



Chinsali District, Zambia Population figures

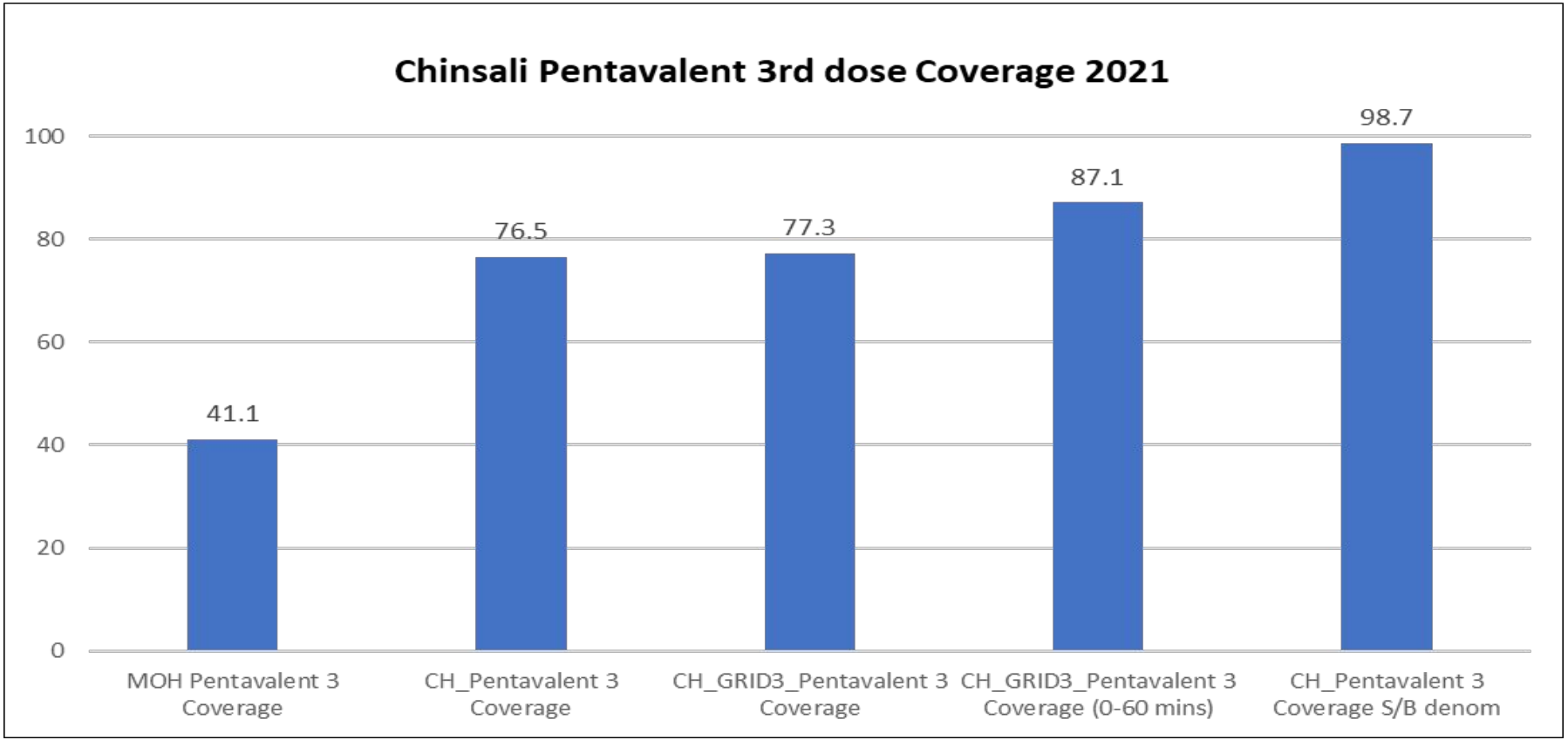
Facility name	MOH pop total	MOH pop 0-11 months	% of pop total	Pop revised 0-11 months	% of pop total
Cheswa HP	6,800	375	5.5	283	4.2
Chilunda HP	4,026	241	6.0	167	4.1
Chinsali Hospital Affiliated HC	31,552	3,630	11.5	1,311	4.2
Chunga Rural HC	12,511	980	7.8	520	4.2
Kalela HP	10,930	454	4.2	454	4.2
Kalisha HP	2,732	188	6.9	113	4.1
Kalwala HP	11,839	1,118	9.4	492	4.2
Lubwa Rural HC	10,487	435	4.1	435	4.1
Mulilansolo Rural HC	22,596	2,170	9.6	939	4.2
Mundu Rural HC	13,507	929	6.9	561	4.2
Munsanya HP	7,811	324	4.1	324	4.1
Nambuluma Police Rural HC	7,666	318	4.1	318	4.1
Nkula HP	4,528	212	4.7	188	4.2
Nkweto HP	3,254	236	7.3	135	4.1
Total	**150,239**	**11,610**	**7.7**	**6,240**	**4.2**
Zambia	**18,420,651**	**768,688**			**4.2**

- MOH population figures NOT correct
- Percent total population under 11 months changed to approximately 4.15%

Population figures GRID3 2021, Chinsali District Zambia

	Population revised 0-11 months	GRID3 Population 0-11 months	GRID3 Population 0-11 months 0-30 mins (Walking time)	GRID3 Population 0-11 months 0-60 mins (Walking time)
Cheswa HP	283	400	240	266
Chilunda HP	167	150	78	133
Chinsali Hospital Affiliated HC	1,311	2,015	1,683	1,941
Chunga Rural HC	520	248	96	200
Kalela HP	454	324	242	299
Kalisha HP	113	115	101	112
Kalwala H	492	440	254	368
Lubwa Rural HC	435	450	321	346
Mulilansolo Rural HC	939	550	429	529
Mundu Rural HC	561	276	214	263
Munsanya HP	324	299	191	273
Mwalule HP		201	156	179
Nambuluma Police Rural HC	318	324	228	283
Nkula HP	188	264	146	177
Nkweto HP	135	115	93	114
Chinsali	**6,240**	**6,171**	**4,472**	**5,483**

Pentavalent 3rd dose coverage 2021 Chinsali District Zambia



New features to support population mapping

- Facility profiles
- World Pop data via Google Earth Engine
- Structures maps via Google Earth Engine
- Facility Catchments via Crosscut
- Offline Mobile Dashboards

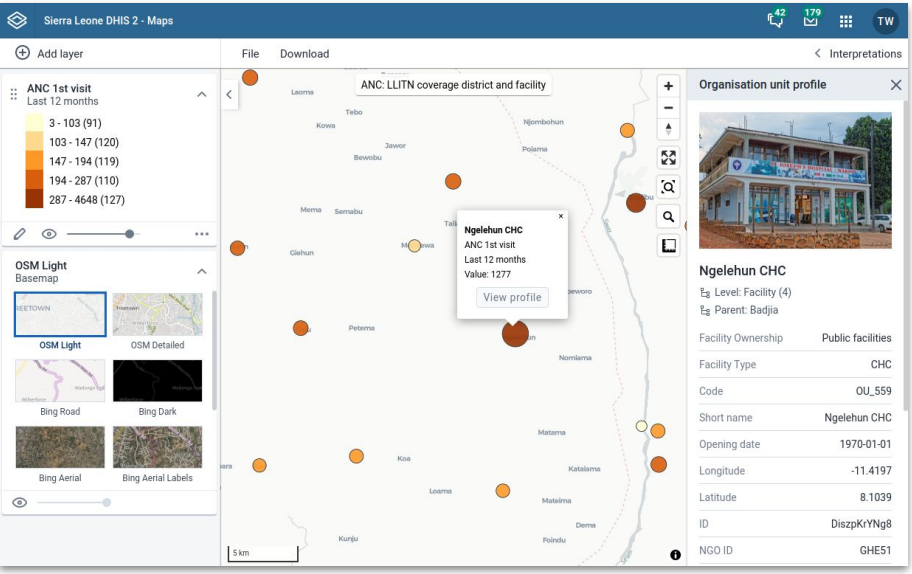
Mapping for population

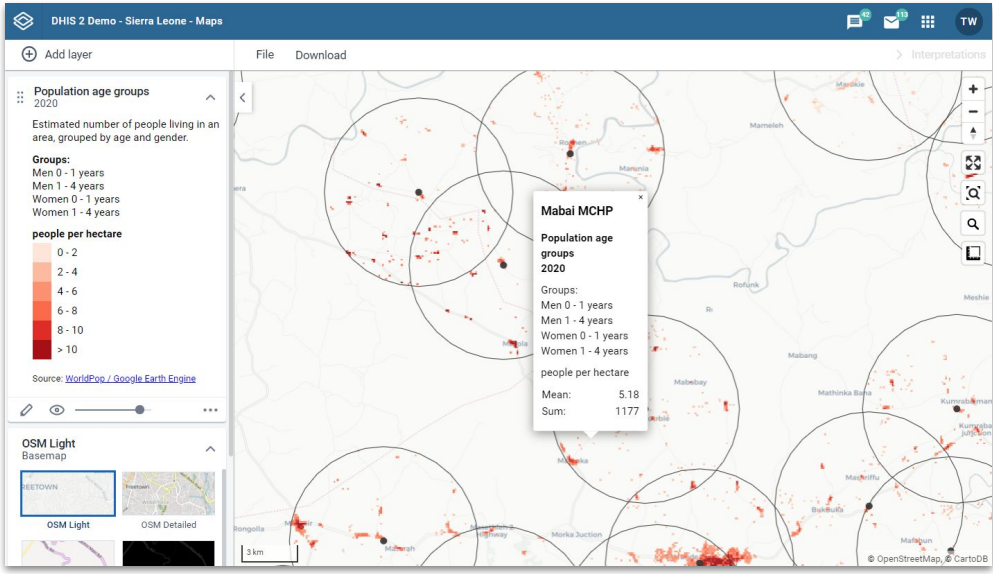
Organization Unit Profile (DHIS2.37)

- Visualize key information for health facilities

Detailed population estimates by age and gender (DHIS2.37)

- Grid3, WorldPop

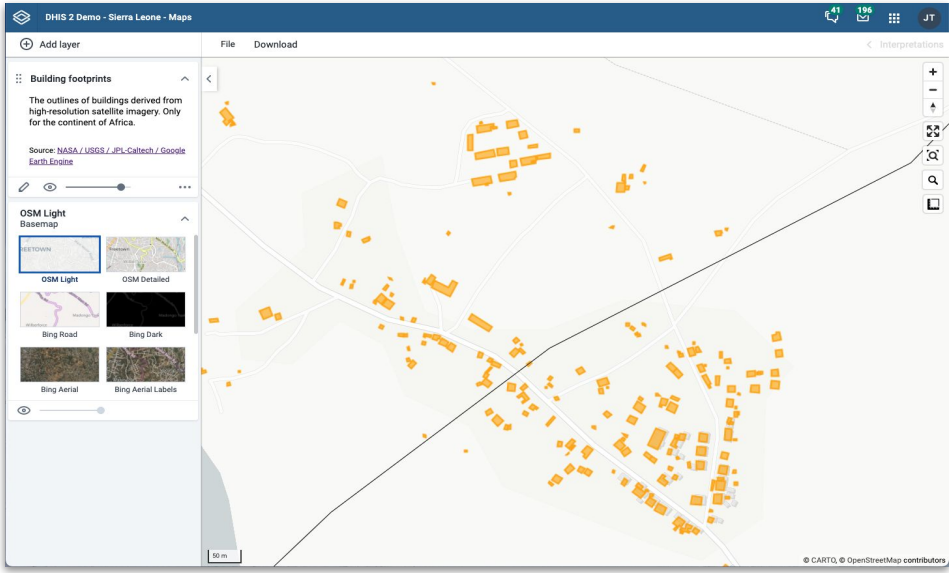




Structures Maps (DHIS2.38)

Via google earth engine

The dataset contains 516M building detections, across an area of 19.4M km2 (64% of the African continent).



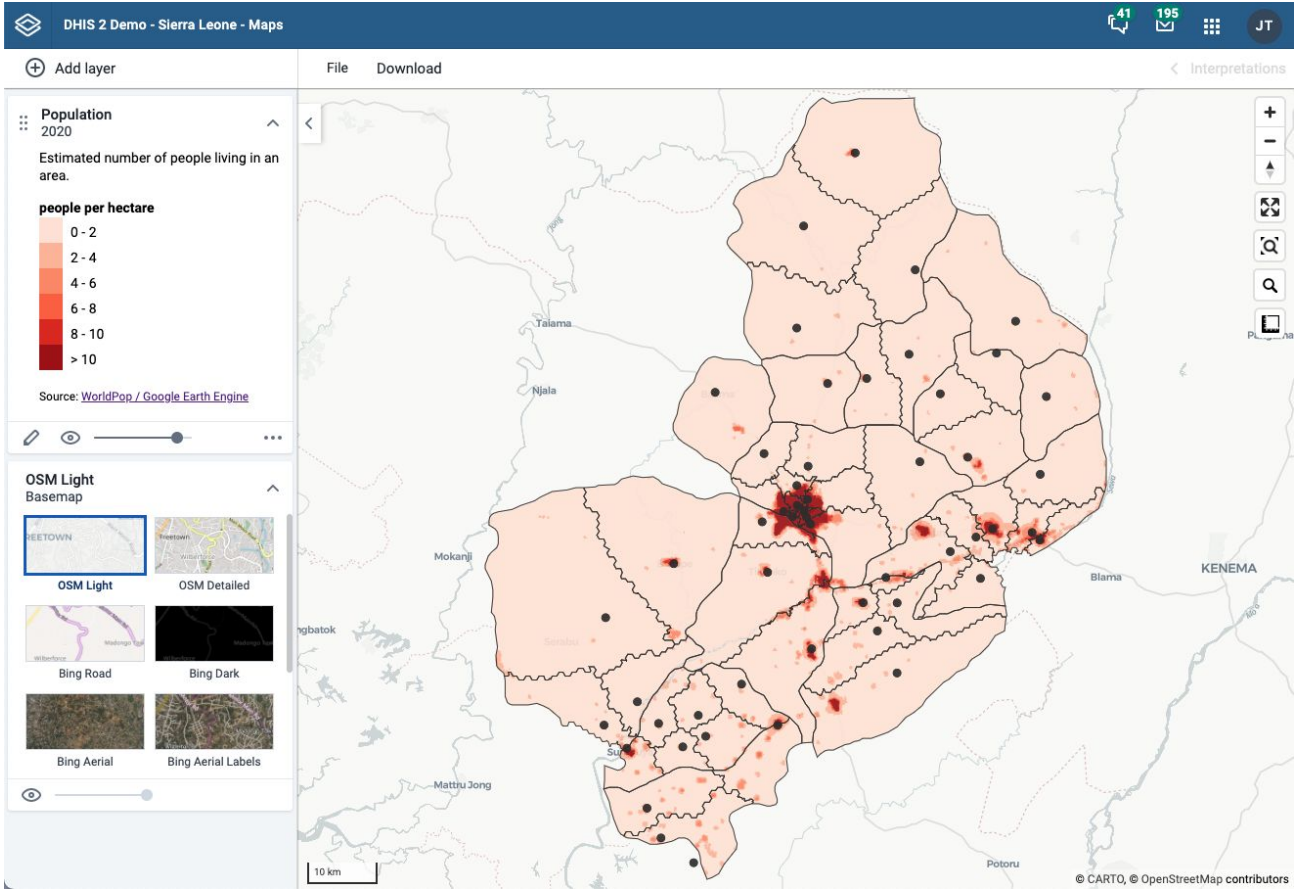
Facility catchment layer (DHIS2.38)

Facility catchment layer

- From Grid3 and Crosscut
- Crosscut application to generate and draw facility catchments.

  (Factors in road conditions, driving time, walking time,terrain, river crossings, and land cover)
- Population by catchment

Do you know of any countries that want facility catchments?



Offline Mobile Dashboards (DHIS2.36)

- IOS and Android via mobile web browser
- Optimized for mobile screens
- Dashboard can be saved to be viewed while offline

DHIS2 dashboards in your pocket anywhere and any time.

Google Earth Engine Data Importer

Coming to core in DHIS2.39

Will allow all google earth engine data to be imported to be able to be used able to be visualized in other analytics and used in indicators.

From DHIS2.31 - DHIS2.37 the GEE Data Importer App can be used. →
Available on the DHIS2 app hub:
https://apps.dhis2.org/app/f0cd4b99-db98-460d-9d5a-8e526fdf8b50