

Catalyzing positive health outcomes through data & digital health solutions

COP22 Solutions

November 2021



Data.FI brings together leaders across the digital health and analytics landscape to harness the power of data to save lives

We scale global goods and local solutions for HIV and COVID-19 programming

WHO WE ARE

Data.FI is a global health field-support mechanism implemented by:

- Palladium (prime)
- JSI Research and Training Institute
- Right to Care
- Macro-Eyes
- IMC Worldwide
- Johns Hopkins University
- Cooper/Smith
- Jembi Health Systems

Data.FI is supported by a community of resources partners including BAO Systems, Fraym, IBM, Premise, Regenstrief, and others.

The project accepts **PEPFAR** and **COVID-19** funding and has a \$180M ceiling.

WHAT WE DO



Digital health system enhancement and scale-up to transform health care



Data analytics that pinpoint health system inefficiencies and solutions



Decision-support interventions to maximize the use of data in real time



Data standards and governance structures that optimize investments and ensure data quality

We work in partnership with local stakeholders to drive sustainable, country-led solutions, strengthening local data ecosystems

Learn more: <https://datafi.thepalladiumgroup.com/>

Data.FI is accelerating program impact through digital, analytical, and data use solutions



- Optimized, scaled case management systems (EMRs, OVC/DREAMS systems)
- Human Resources for Health (HRH) systems
- Integrating data systems and data warehouses
- Unique client IDs



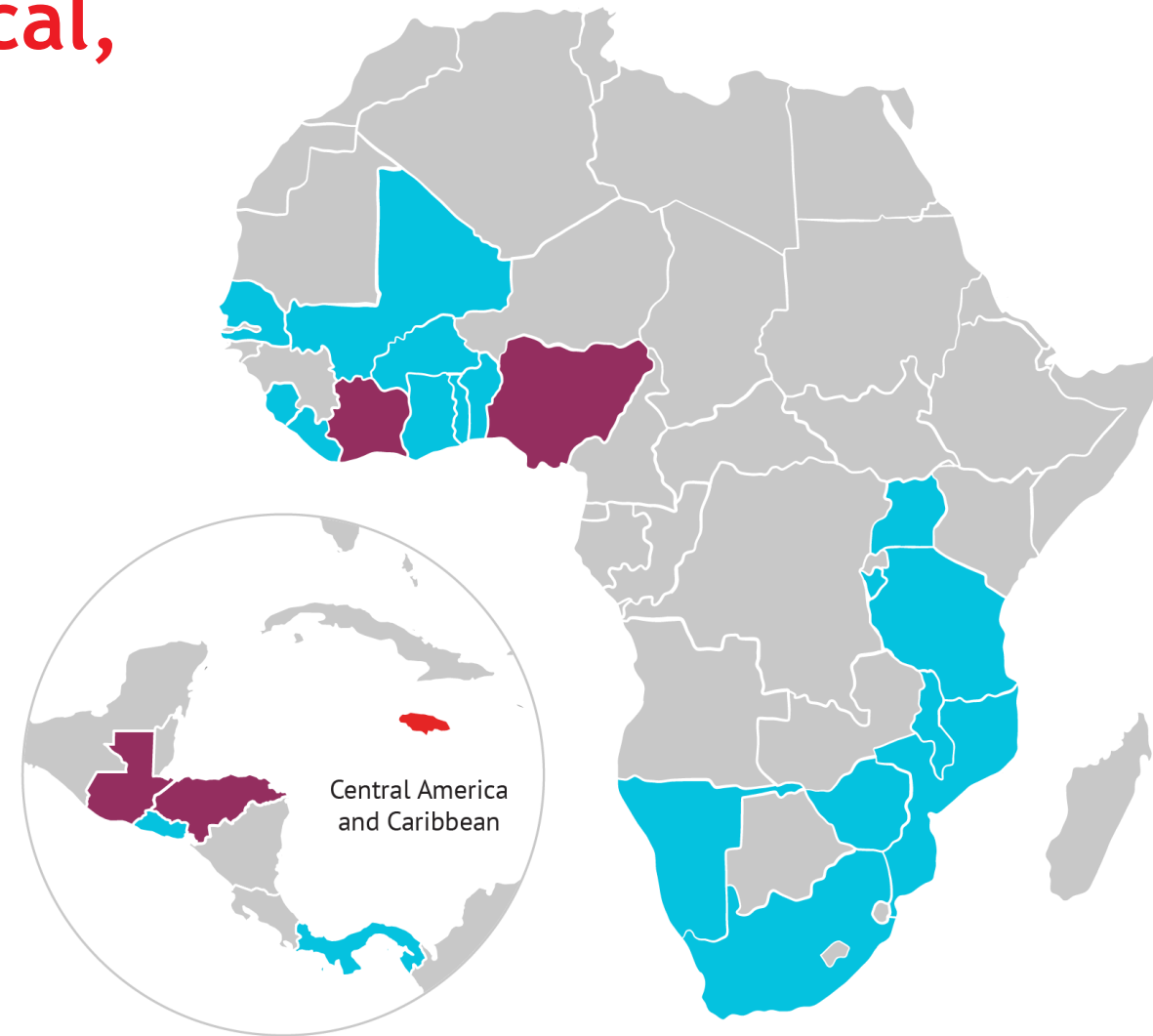
- Granular analytics on HIV clients
- Predictive analytics using machine learning
- Financial systems and cost-effectiveness analysis



- Epidemic control rooms & quality improvement initiatives
- Dashboards and analytical platforms
- Community-led monitoring
- Resource optimization



- Data quality improvement
- Strengthening local partners and governments to collect and use strategic information (SI)
- Digital health governance and coordination



HIV

HIV + COVID

COVID



Optimized and Scaled EMRs

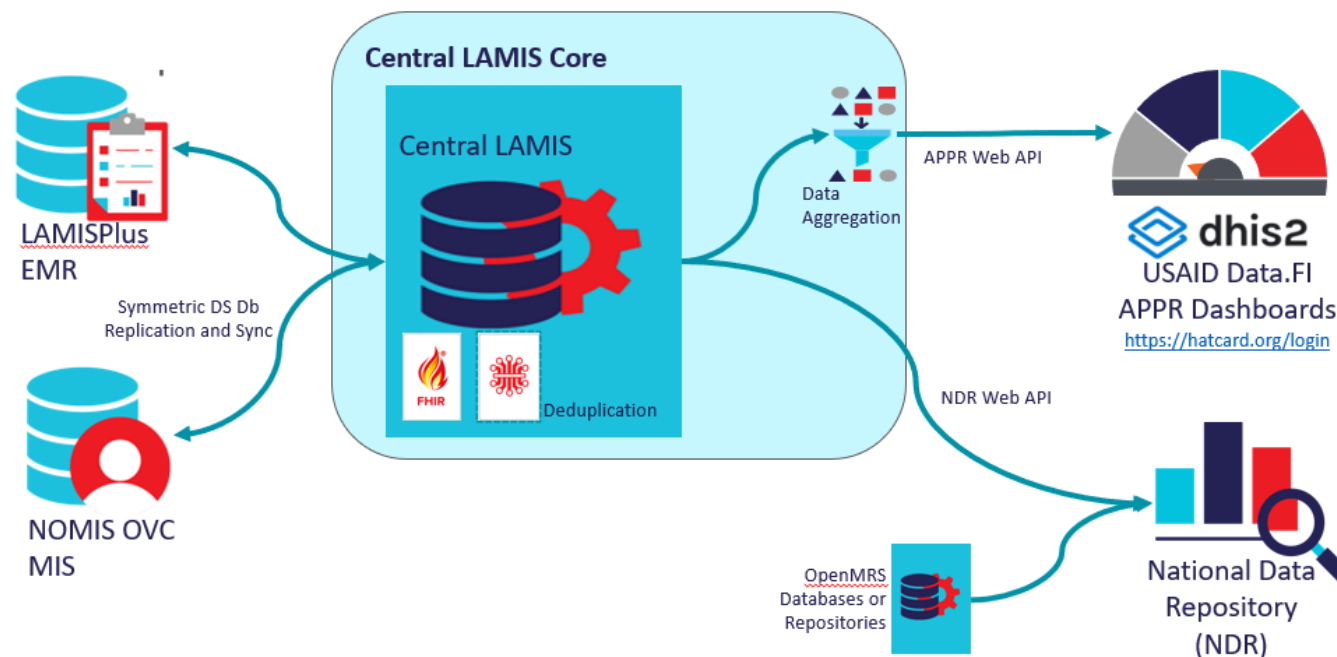
Approach

- Assess existing EMRs for optimization and scalability
- Align EMRs to treatment guidelines and reporting requirements from PEPFAR and countries
- Architect, network, and interoperate systems for exchange of information across community, testing, facility, dispensing, and lab systems
- Build in decision support for point of care EMR systems to facilitate differentiated care models
- Provide implementation and user support
- Facilitate linkages between community and facility systems through client scheduling and outreach for early missed appointments

Partners: Palladium, JSI

Current scale: Nigeria, Burundi

*In **Nigeria**, through the Health Informatics System Community of Practice (HI-COP), Data.FI has built LAMISPlus – a unified system architecture that promotes data exchange, is scalable and modular to meet changing demands, and is aligned to international information exchange standards. Version 1.2 has been deployed to 600 sites.*





Electronic OVC Case Management Systems

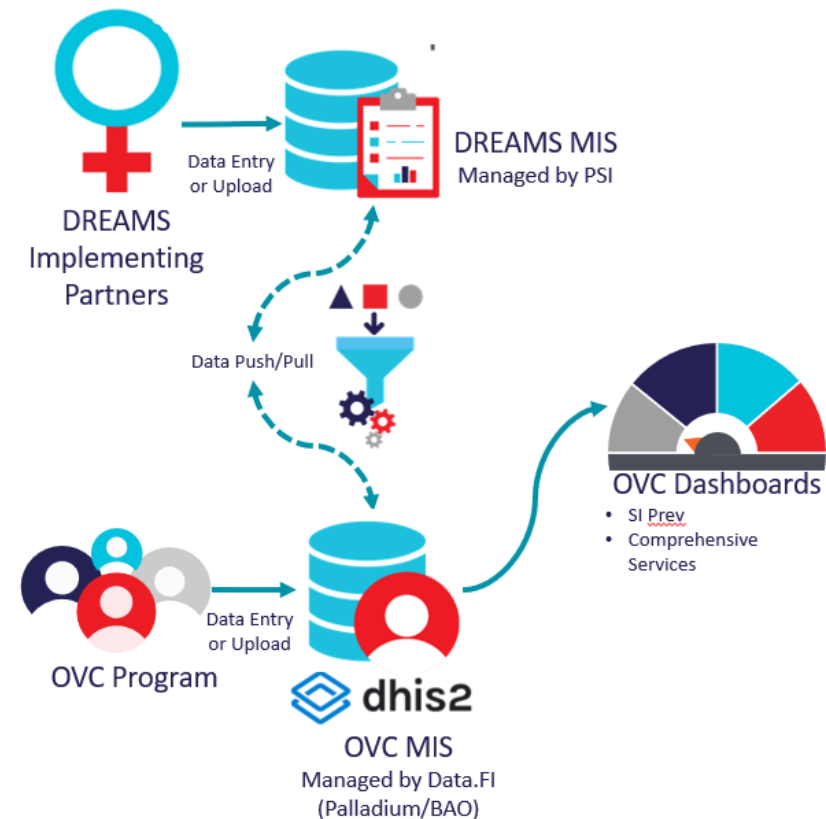
Approach

- Data.FI gathers **system requirements with government** and/or USAID and IPs, balancing reporting needs with data collection burden.
- Data.FI guides stakeholders to select the **best-fit software and technology**.
- Data.FI ensures **standardization of data collection and indicator calculation** between IPs and facilitates performance monitoring before the end of the reporting period.
- Once developed and rolled out to IPs, Data.FI builds the **capacity of government** or local IPs to maintain the system.

Partners: Palladium, JSI, BAO Systems

Current scale: Nigeria (LAMISPlus), Côte d'Ivoire (OpenMRS), and Zimbabwe (DHIS2). Data.FI also released global electronic case management system guidance for OVC programs.

*In **Zimbabwe**, Data.FI (Palladium & BAO Systems) have built an OVC MIS via DHIS2 Tracker Capture module to capture individual-level client data and calculate program indicators for longitudinal data analysis.*





Systems for Human Resources for Health

Do you need to:

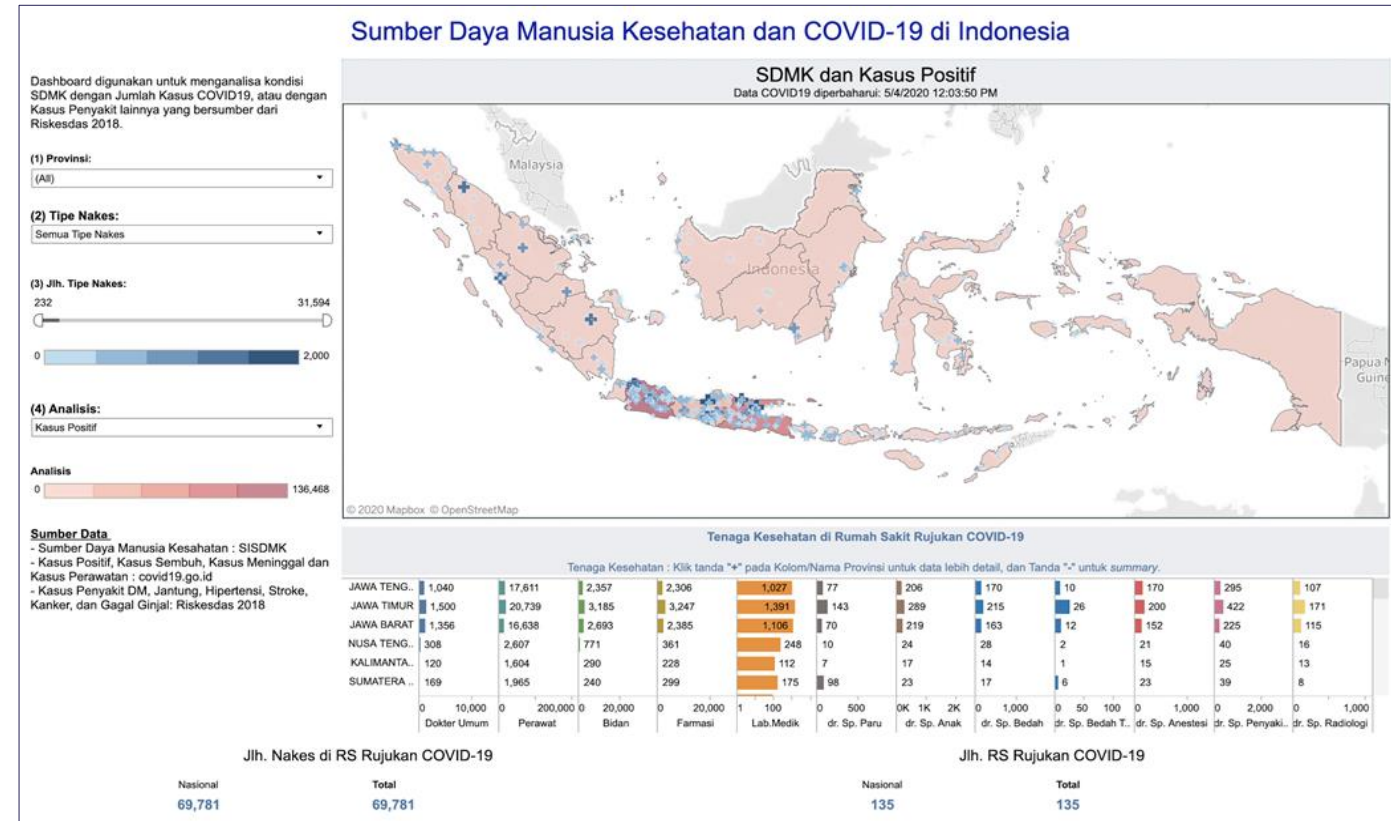
- Improve the availability of high-quality HRH data?
- Integrate multiple HRH source systems across the health worker life cycle, from pre-service training to health workforce management and retirement?

Approaches:

- HRH information systems assessment and software enhancement and deployment, including iHRIS
- Integration of HR systems with a focus on governance, interoperability and data sharing

Partners: Palladium

Current scale: Through HRH2030, Palladium supported the integration of multiple HRH systems in Indonesia, including the development of COVID-19 and Health Workforce dashboards, deployment of iHRIS Train in Timor-Leste, and developed iHRIS Manage in Namibia.



*Palladium, through HRH2030, was part of a team that won a **USAID Digital Development Award in 2020** for strengthening Indonesia's HRH information system to provide real-time, high-quality data for strategic use, while also supporting policy development to address challenges in the health workforce.*



HRH Training Platforms & Feedback Loops

Do you need to:

- Provide virtual, centralized training resources or track trainings across the workforce?
- Solicit health worker feedback on capacity and wellbeing?

Approaches:

- Repositories of training content for health workers
- Data feedback loops with health care workers

Partners: Palladium, Premise

Current scale: South Africa



A nurse in South Africa dons personal protective equipment to prevent infection with COVID-19. Photo by James Oatway, IMF

The Knowledge Hub is an e-learning platform that offers online courses and webinars for public and private-sector health providers in South Africa. Data.FI provided technical support to the Knowledge Hub system, increased demand for and use of hub resources, and transitioned ownership of the system to the National Department of Health.



Integrating Data Systems

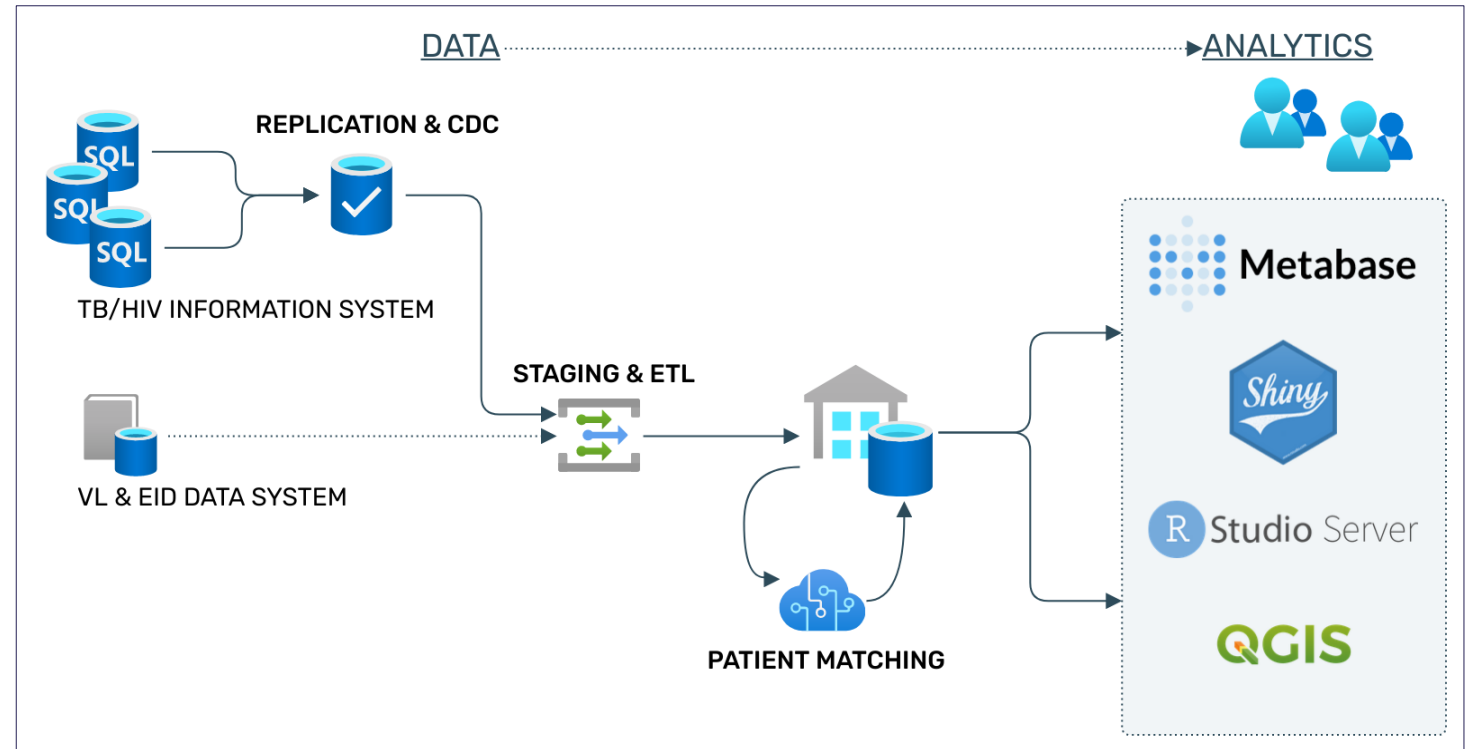
Do you need to:

- Streamline reporting?
- Reduce stakeholders' frustration with multiple competing reports from different systems and the effort to align them?
- Conduct longitudinal client-line analysis, including survival analysis?
- Build a unified client record?
- Automate program analytics and reports?

Approach:

- Integrating data sources (OVC, DREAMS, EMR, lab, pharmacy, HTS, supply chain, HRH, financial systems, private sector data systems)
- Completing client matching and data deduplication
- Implementing data security protocols aligned with country regulations
- Integrating an analytics platform for BI, GIS, and statistical analyses

Consolidated Health Informatics – South Africa (CHI-SA) architecture



Partners: Palladium, JSI, RTC

Current scale: Nigeria, Burundi, South Africa, Côte d'Ivoire



Unique Client IDs

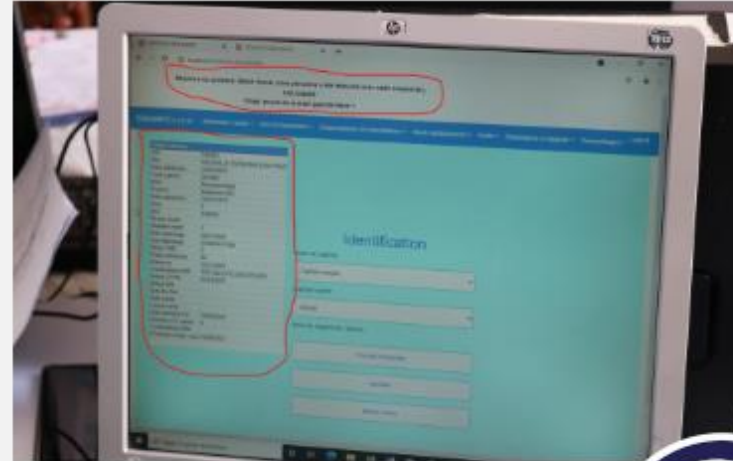
Approach

Data.FI develops and deploys both **biometric** and **algorithmic** unique ID (UID) depending on the objective and context. Our approach is to:

- Implement a benefit-risk assessment to inform selection of a UID solution
- Develop and test the solution
- Support UID rollout, providing wraparound data privacy and security training

Partners: Palladium, JSI, IMC Worldwide

Current scale: Nigeria, Burundi, Uganda



In Burundi, Data.FI, RAFG, and USAID are testing the effectiveness of the biometric unique ID system to detect duplicate registrations of clients at different facilities. Here, a client already registered in one site provided her fingerprint at the Kabezi Hospital site. The system recognized the client and displayed all the information for her identification. Photo by Data.FI/Burundi, JSI.



*In **Burundi**, Data.FI, in collaboration with a government-led technical working group, is scaling a biometric unique ID approach. The biometric system will ensure more accurate counting of clients currently in treatment and clients experiencing an interruption in treatment. With this information, government and partners can maximize available client tracing resources. Prior to deploying this digital solution, Data.FI undertook a risk assessment and actioned a series of risk mitigation strategies to ensure that the solution was ethically sound and would not compromise the information of people living with HIV in Burundi.*

Granular Analytics on HIV Clients

To inform differentiated service delivery and demand creation models

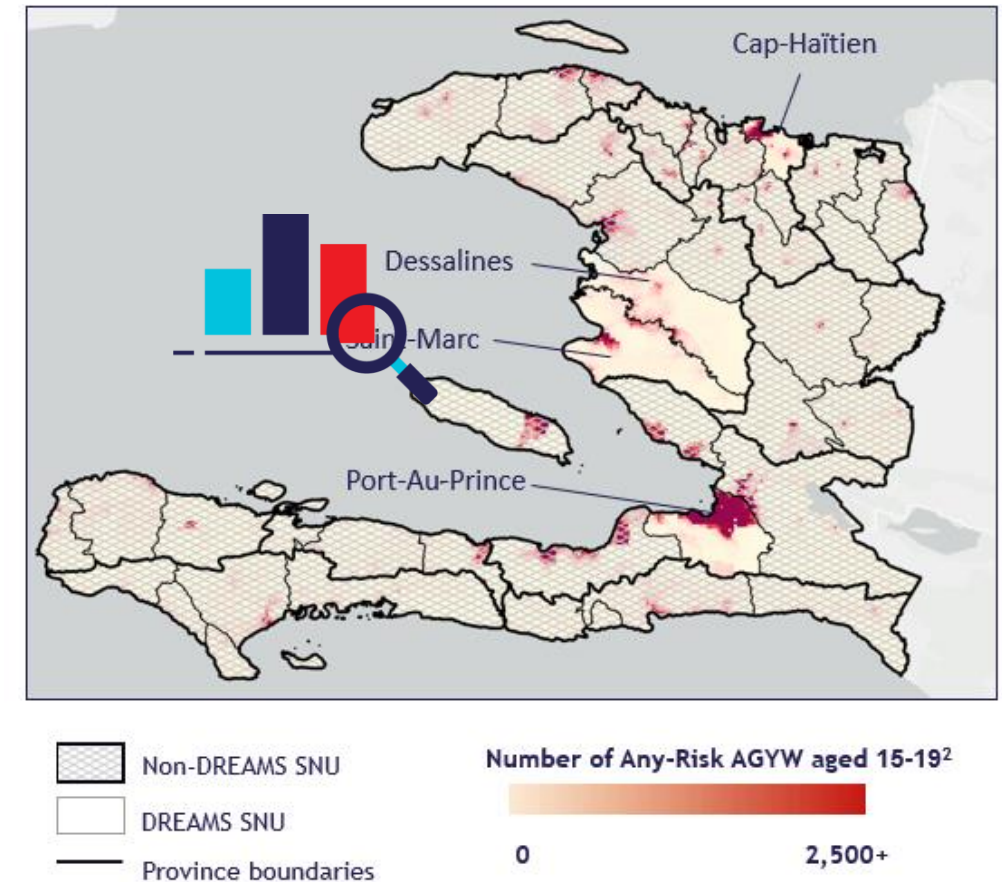
Do you need to:

- Identify and find **population segments** to target for prevention and treatment services (e.g., at-risk clients for PrEP, HTS, VMMC, and DREAMS; stable clients for MMD)?
- Characterize **client profiles** based on sociodemographic, media consumption, and knowledge, attitude, and behavior data to inform tailored service delivery and demand creation approaches?
- **Understand gaps in access** and demand to identify optimal locations for outreach services and drug distribution points?
- Pinpoint current and **predict future health system disruptions** due to COVID-19 and other threats to inform mitigation efforts?

Approach: Data.FI applies machine learning and spatial interpolation techniques using satellite imagery and existing survey data to generate localized population insights and risk maps for beneficiary target populations.

Partners: Palladium, Fraym

Current scale: Data.FI has been mapped the location and number of at-risk AGYW in Uganda, Tanzania, Haiti, eSwatini, and Mozambique.



Note: Map shows the number of at-risk AGYW ages 20–24 per square kilometer, based on any-risk models. Non-DREAM PSNUs are masked with cross-hatch. Population data comes from WorldPop 2020 population roster.

Predictive Analytics

ML/AI models that identify patterns in data to predict client outcomes and client demand

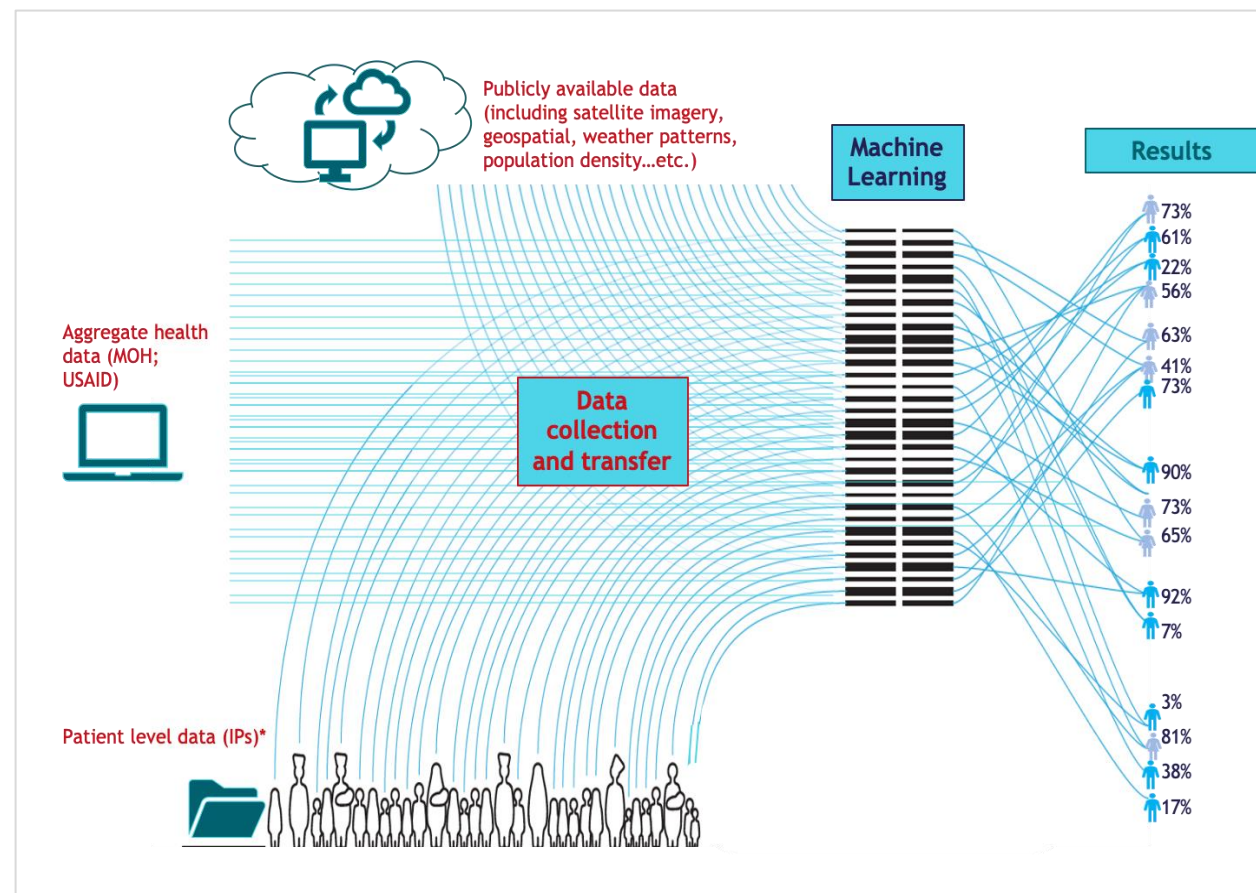
Do you need to:

- Prevent interruption in treatment by identifying those most likely to fall out of care?
- Optimize commodities and supplies (e.g., HTS kits, large ART vials for MMD, syringes and PPE)?
- Forecast demand for products and new technologies?
- Predict health facility readiness for managing the delivery of a new care model or service, in a pandemic context?

Approach: Data.FI delivers customized analytical solutions to specific program challenges. These can be one-off solutions (such as our anomaly detection code that can be run again and again) or ML models that are deployed within systems (such as our interruption in treatment model deployed in OpenMRS in Mozambique).

Partners: Palladium, Macro-Eyes

Current scale: Nigeria, South Africa, Mozambique





Epidemic Control Rooms and Quality Improvement Initiatives

Approaches

- **Epidemic Control Rooms (ECR):** Technology-enabled ECRs allow decision makers to analyze data in real time for continuous program improvement supported by change management practices. ECRs follow a standardized methodology, including **root cause analysis**, to empower users to ask the right questions, monitor actions, elicit feedback from all levels, and capture lessons learned.
- **Quality Improvement:** Data.FI weaves traditional data use methods together with the Plan-Do-Study-Act cycle and the Model for Improvement's three fundamental questions: (1) What are we trying to accomplish? (2) How will we know if a change is an improvement? (3) What changes can we make that will result in improvement?
- **Training in data analysis and GIS**

Partners: Palladium

Current scale: Nigeria, Tanzania, West Africa Region, Guatemala



In **Nigeria** we launched and have supported Nigeria's national ECR, and state-level ECR in Akwa Ibom for two years. Results include:

Prevention: PrEP initiation increased from 13% to 112% of the annual target.

Continuity of care: 84% (9,703) of clients with interruption in treatment (IIT) were tracked back to care.

Viral load testing (VLT): Clients with documented VLT results increased from 44% to 70%.



Dashboards and Analytical Platforms

Do you need to:

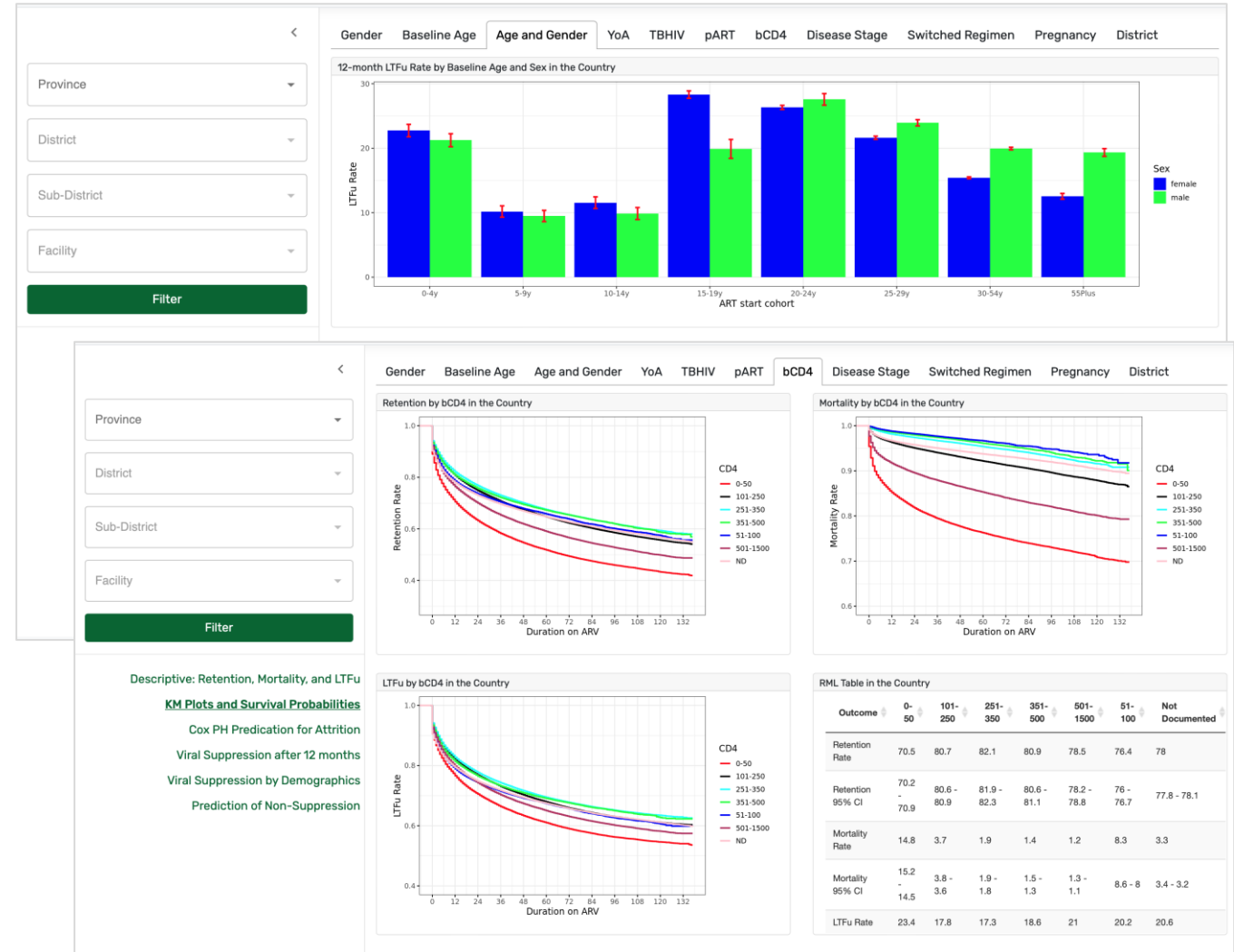
- Visualize data and automate analytics to support decision making

Approach:

- Customized and interactive dashboards with pre-programmed PEPFAR and MOH reports
- Automated predictive analytics

Partners: Palladium, JSI, Cooper/Smith, Jembi, RTC, BAO Systems

Current scale: Nigeria, Burundi, South Africa, Mozambique, Tanzania, Guatemala





Community-led Monitoring Approaches

Do you need to:

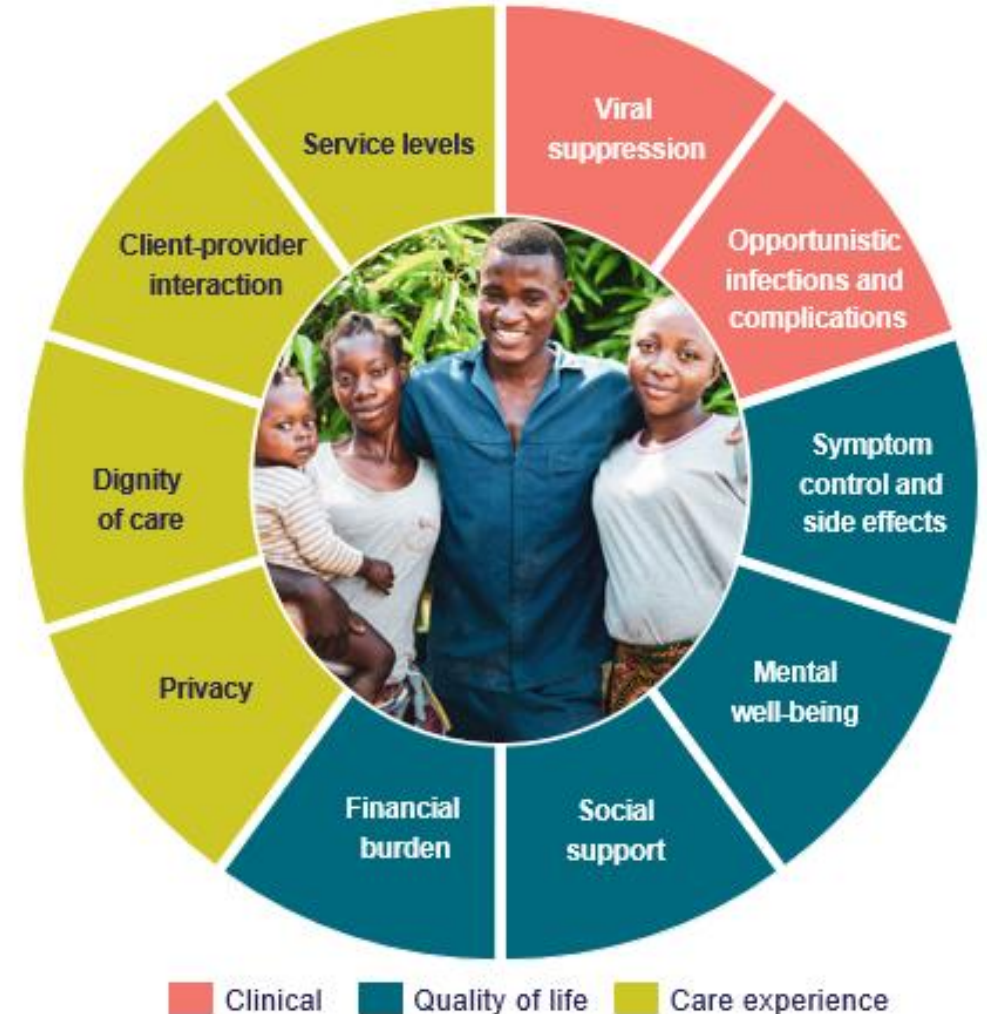
- Capture and integrate data on clients' health care experience and well-being in your programs to improve **person-centered care**?
- Monitor quality of care?

Approaches:

- **People-centered care metrics:** Data.FI can support local community-based organizations to collect and use human-centered care metrics.
- **Service quality monitoring:** Data.FI can leverage local networks of mobile data collectors to act as “secret shoppers” to monitor HIV service provision.
- **Integrating community monitoring data into data review and quality improvement (QI) processes:** Data.FI can integrate CLM data into routine program review processes to rapidly respond to community experiences and support partners to implement tailored QI interventions.

Partners: Palladium, JSI, Premise

Current scale: Data.FI has developed a set of person-centered metrics to measure HIV clients' care experience and quality of life.





Resource Optimization

Providing real-time data to maximize effectiveness and efficiencies

Do you need to:

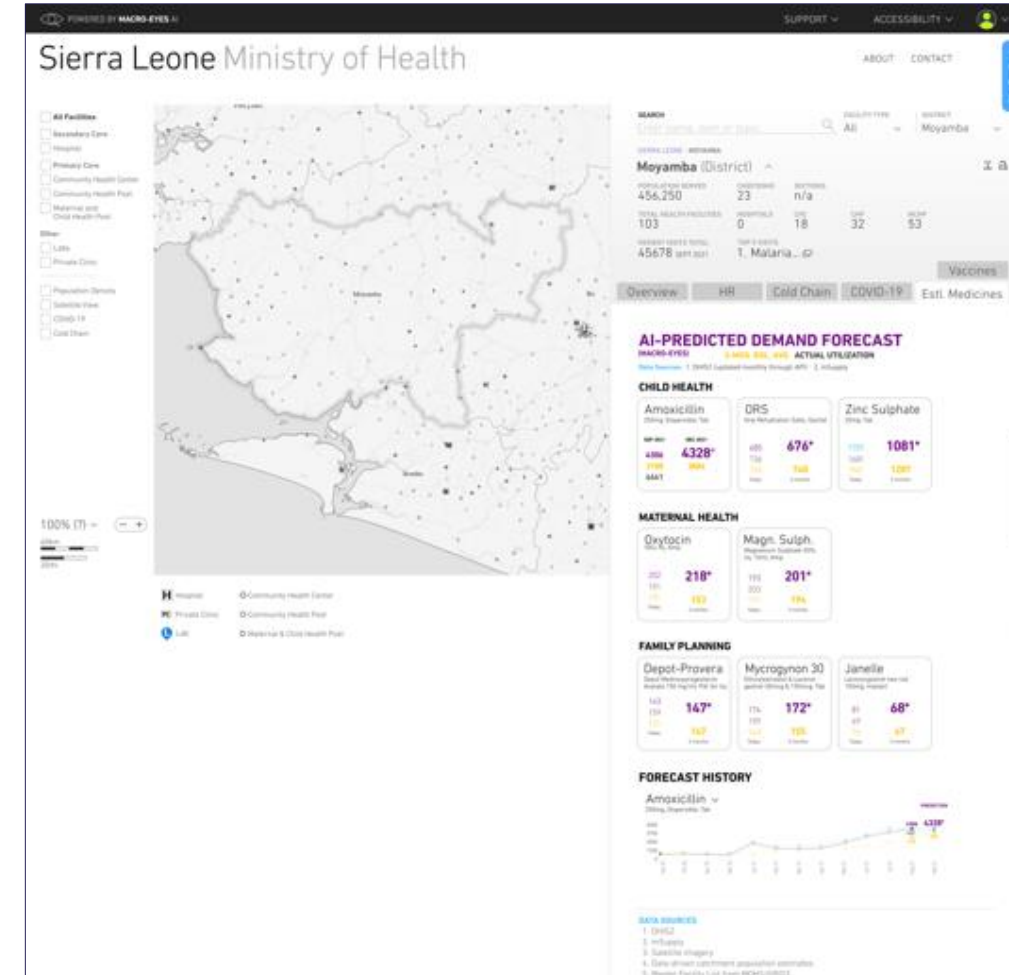
- Assess health facility readiness to deliver new services?
- Optimize HRH allocation and compensation, balancing HCW well-being, costs, and absenteeism?
- Allocate financial resources across interventions while ensuring cost-effectiveness and equity?
- Optimize commodities and supplies to demand to eliminate wastage and stock-outs?

Approaches:

- Scenario planning tools powered by ML-driven analytics with user interface

Partners: Palladium, Macro-Eyes

Current scale: Data.FI developed the *HRH Needs and Optimization Planning Solution*, which was used by 10 Missions in COP21. We are optimizing the distribution of HTS kits based on predictions of test positivity in SA. Data.FI partner Macro-Eyes is applying their STRIATA model in Côte d'Ivoire, Nigeria, Ghana, Tanzania, DRC, Sierra Leone, USA.



Source: Macro-Eyes



Financial Systems & Cost-Effectiveness Analysis

Advancing the use of financial data in decision making

Do you need to:

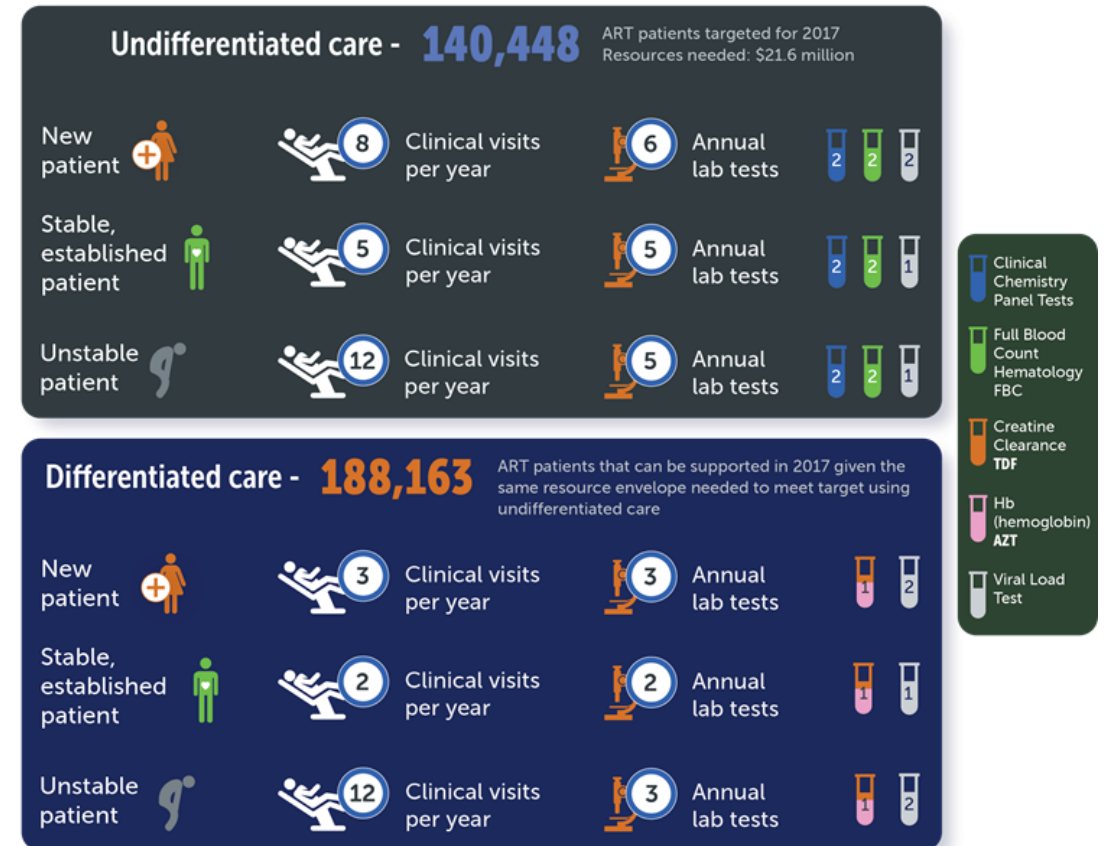
- Link financial data with service delivery data, and site-level financial data with central-level financial data?
- Understand the cost and value for money of different partnership models and service delivery approaches?
- Cost investments or support the government to cost their HIV or e-health strategies?

Approaches:

- Cost-effectiveness analysis and costing
- Scenario planning models
- HIS architecture including financial management systems

Partners: Palladium, Cooper/Smith

Current scale: Tanzania, Nigeria



HP+/Palladium, 2017



Data Quality Improvement

Do you need to:

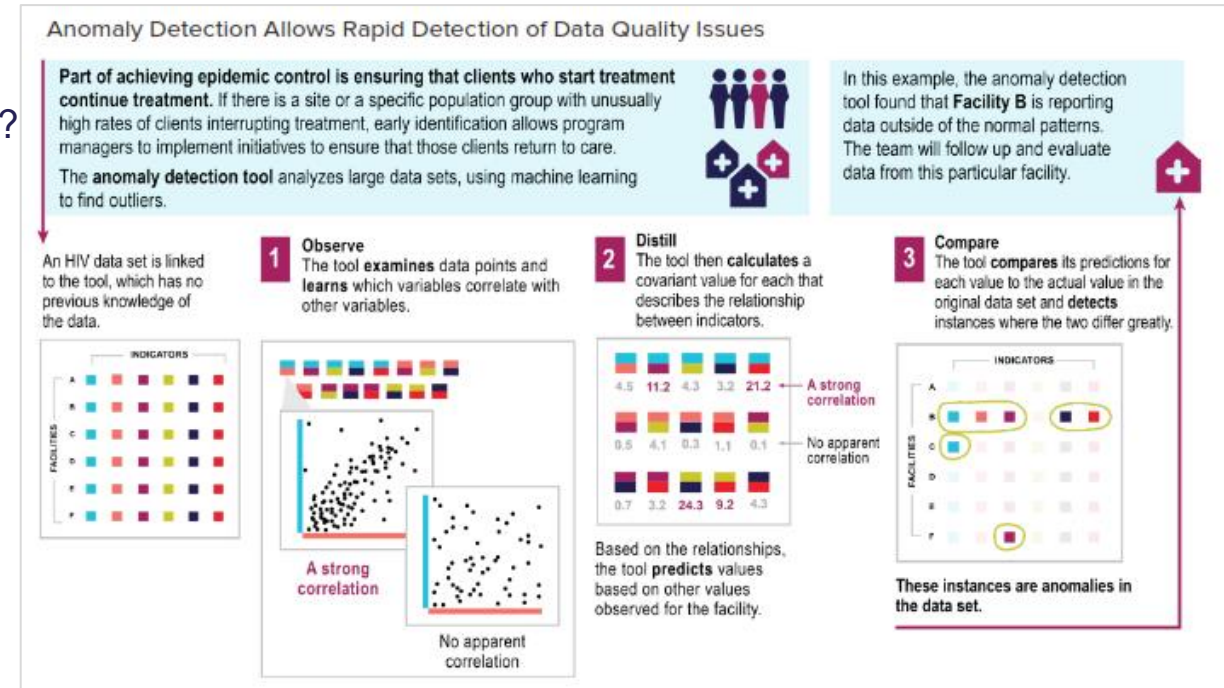
- Assess and improve data quality?
- Rapidly identify sites with anomalous data for root cause analysis?
- Build partner capacity in data quality improvement?

Approaches:

- **Anomaly detection (AD):** Data.FI developed and validated a country-agnostic R-script code to identify anomalous data points across indicators and facilities, for **root cause analysis**.
- **Data quality score (DQS):** Data.FI developed a tool for use by above-site level staff that supports assessment in three dimensions: Completeness, coherence, and consistency.
- **Virtual DQAs & standard DQAs**
- **Local partner capacity strengthening in DQAs:** Data.FI developed and runs an online training course for LPs in HIV treatment cascade quality assurance.

Partners: Palladium, JSI

Current scale: Nigeria (DQS, DQA, AD), Côte d'Ivoire (DQA), West Africa Region (DQS), Papua New Guinea (AD), global (virtual DQA on COVID-19 global indicators)



Mission staff with little to no programming experience can install and run the anomaly detection code on a Monitoring, Evaluation, and Reporting (MER) dataset and get an immediate snapshot of any problematic data points to investigate further.



Strengthening Local Partners and Governments to Collect and Use Strategic Information

Do you need to:

- Assess and improve the capacity of local partners to meet PEPFAR reporting requirements?
- Advance the capacity of USAID, IP, or government staff to analyze and use data?

Approaches:

- PEPFAR Strategic Information Capacity Assessment (PSICA) tool
- Online training course for Local Partners in HIV Treatment Cascade Data Quality Assurance (DQA) Tools (English & French)
- Bespoke trainings, e.g., in GIS, advanced analytics, data visualization

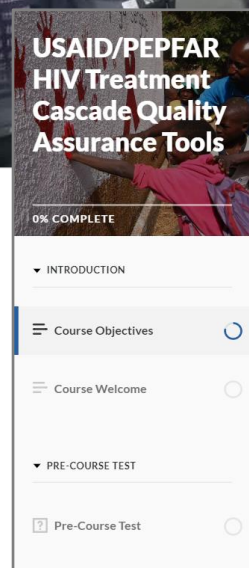
Partners: Palladium, JSI

Current scale: Data.FI has trained more than 1,500 people to collect, analyze, and use SI. This includes 145 local partner staff from 55 LP organizations in 22 countries that have completed the DQA tools course.



Left: Participants from the State Ministry of Health in Akwa Ibom, Nigeria, learned to create data visualizations during a training on GIS in the situation room. Photo by Data.FI/Nigeria.

Below: A screenshot of the DQA Tools online course.



Welcome to the **USAID/PEPFAR Data Quality Assessment Tools** Online Course! This training focuses on the use of USAID/PEPFAR's Data Quality Assessment (DQA) tools and aims to provide learners with guidance and tips on the implementations and applications of DQA to improve HIV reporting. In this course, participants will be introduced to 3 new DQA tools that will ensure the optimization of data quality and use.





Strengthening HIS Coordination & Governance

Do you need to:

- Accelerate government stewardship of the HIS?
- Advance alignment between HIS sub-systems (patient record systems, pharmacy, dispensing, lab, supply chain, financial data) to allow for data triangulation?
- Routinize data sharing within and across partners, government units, and different geographic levels?
- Ensure patient line and other data are protected?

Approaches:

- Establishing an overarching HIS architecture, data standards, and protocols for data management and sharing.
- Building consensus among stakeholders on common standards for system alignment and integration
- Co-developing system enhancements across government and partners with robust communities of practice and based on user requirements
- Integrating data security and cybersecurity practices into the HIS

Partners: Palladium, JSI

Current scale: Nigeria, Burundi, South Africa, Tanzania, Guatemala, Côte d'Ivoire



Photo by Data.FI/Burundi

Mechanism Information

PAD Number	936-8000
DUNS (Palladium)	186295239
Mechanism Name (FactsInfo)	Data for Implementation (Data.FI)
Mechanism ID (FactsInfo)	82099
Award Number (Cooperative Agreement)	7200AA19CA00004
Prime Partner	Palladium International, LLC
Sub Partners	JSI, JHU, Right to Care, Cooper/Smith, IMC Worldwide, Jembi Health Systems, Macro-Eyes
Start Date	April 15, 2019
End Date	April 14, 2024
Total Estimated Cost (+90% ceiling available)	\$179,895,772.99
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