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Achieving Breakthroughs in Public Health through Data Interoperability

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2018 Global Health Supply Chain Summit
Lusaka, Zambia

Overview

- Zenysis is a big data and artificial intelligence company based in Silicon Valley. We build software that can integrate data from fragmented information systems into a single workspace for analysis. Our engineering team was founded by engineers from Google, Amazon, Microsoft and NASA.

- Our solution gives decision makers a global view of their data for the first time and helps them uncover insights they can use to catalyze major breakthroughs in program delivery and health outcomes.

- **Zenysis does not replace any existing systems or require changes to integrated subsystems**. It acts as a unifying layer and makes the data within these systems interoperable for analysis.

What is data integration?

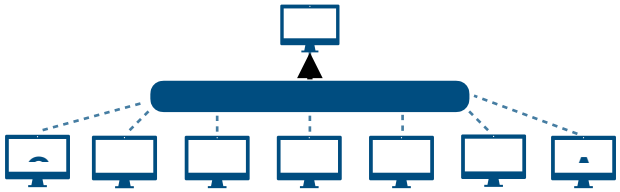
Data Warehouse

HMIS
LMIS
IDSR
PBF

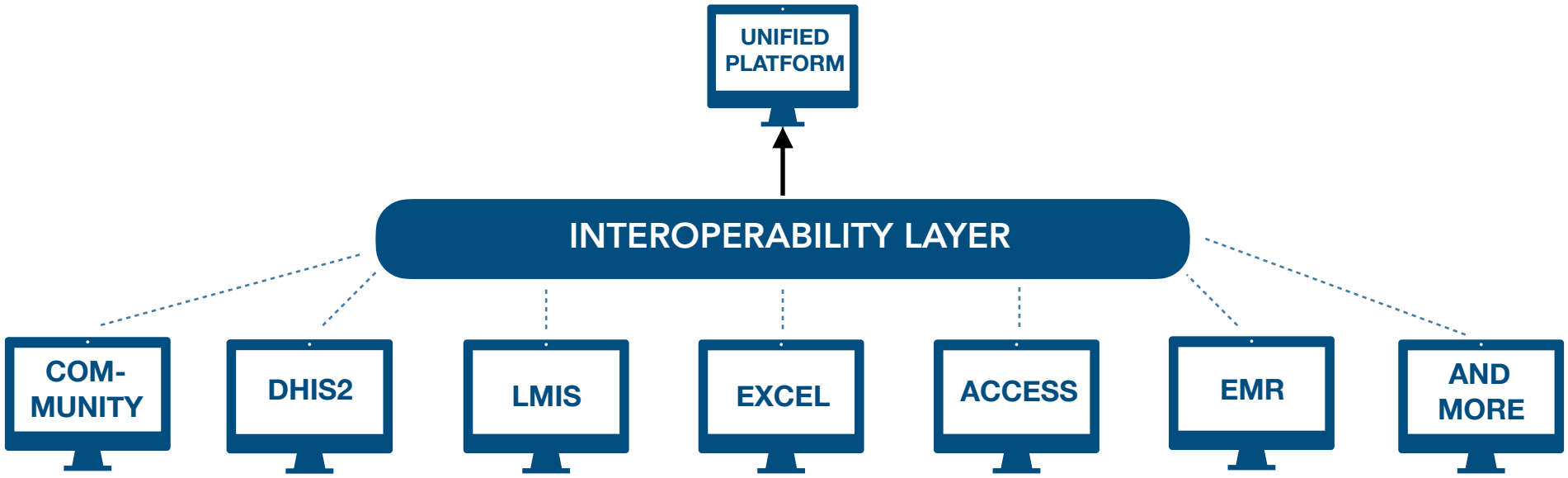
One-to-one Integration

HMIS ⇔ LMIS

One-to-many Integration



Interoperability Layer



Interoperability Layer

System A

- Monthly data collection
- Health district-level reports
- Build according to MFR, ~860 districts in-country
- Cloud-based system
- Purpose: Report aggregate numbers
- Reports raw numbers
- St Mary's Health Clinic
- 15-December-2010
- Treated with Artemether

System B

- Daily data collection
- Patient-level reports
- Reporting for 300 referral hospitals not mapped to MFR
- Mix of EMR or Excel-based systems
- Purpose: Track patient data
- Reports raw numbers and percents
- Saint Marys Hospital
- 15/12/20101535AM
- Art + Lumefanthrine // 20mg

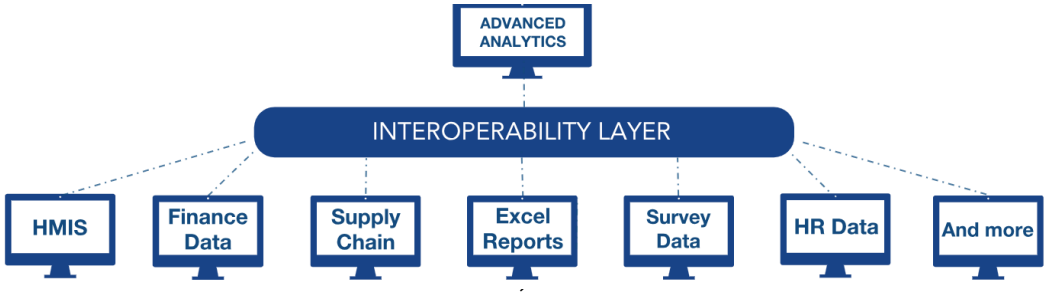
System C

- Daily data collection
- Health facility-level reports
- Reporting for 500 depots
- Cloud-based system
- Purpose: Transactional supply chain system
- Reports raw numbers
- St. Marrie Hlth_Facility
- 15Dec10
- Artemether + Lumefanthrine - 20mg+120mg (6X4) - Tablet Unit: 30

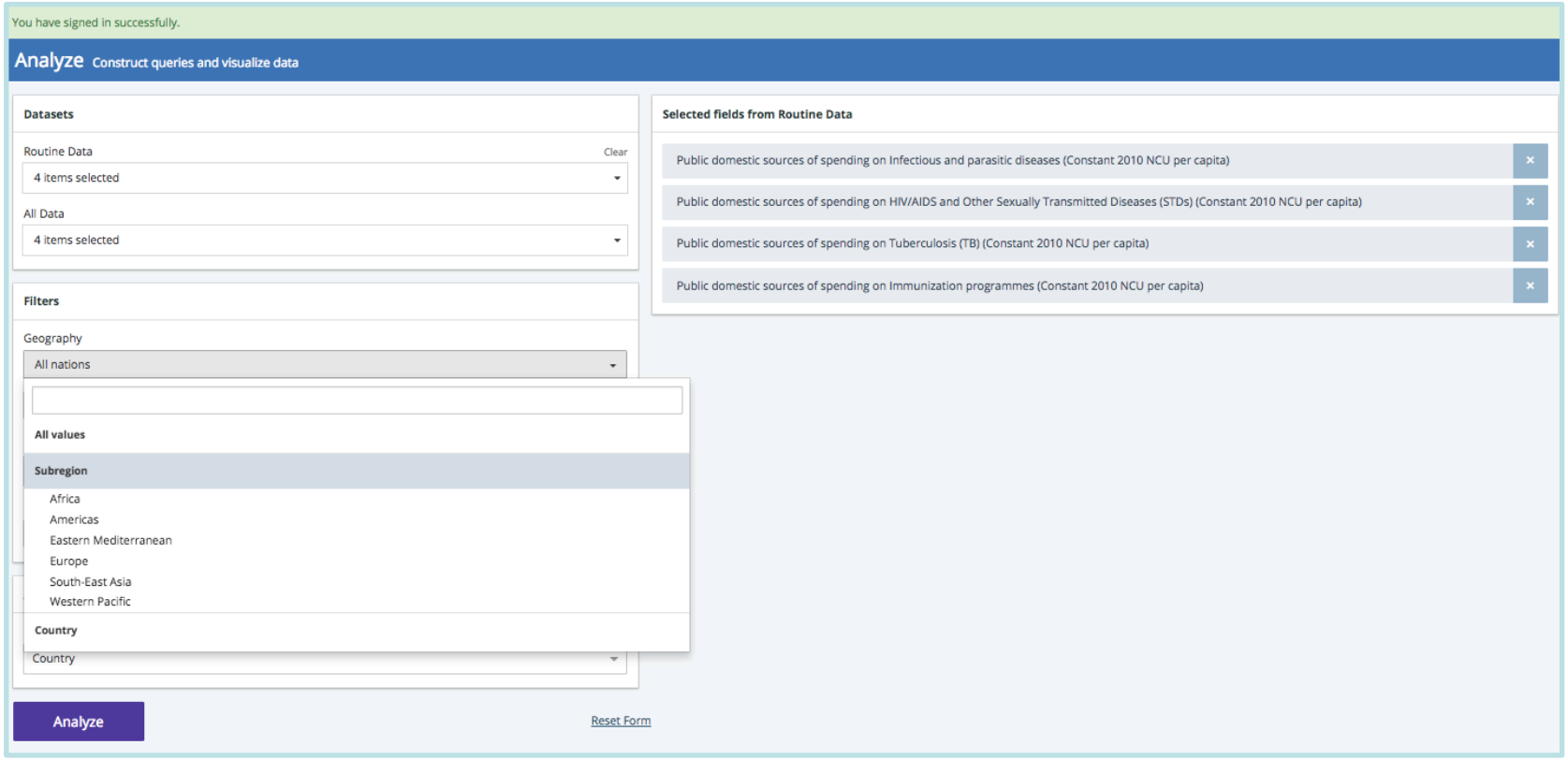
Interoperability Layer

How does it work?

- **Generate** - The platform extracts data from existing information systems (e.g Excel, SQL, DHIS 2, OpenLMIS, proprietary systems, etc).
- **Process** - Raw data is cleaned, processed and standardized into a single format. Entity resolution is automatically performed, and the multiple data sources are matched to a single canonical data set.
- **Index** - A new Druid database is built from the processed data sets. This highly performant database is purpose built to enable analytics queries across hundreds of millions of data points in seconds.
- **Validate** - The newly indexed data is automatically processed by a validation framework to ensure no errors were introduced.
- **Query** - Users runs queries against new database and generates visualizations to support decision making.

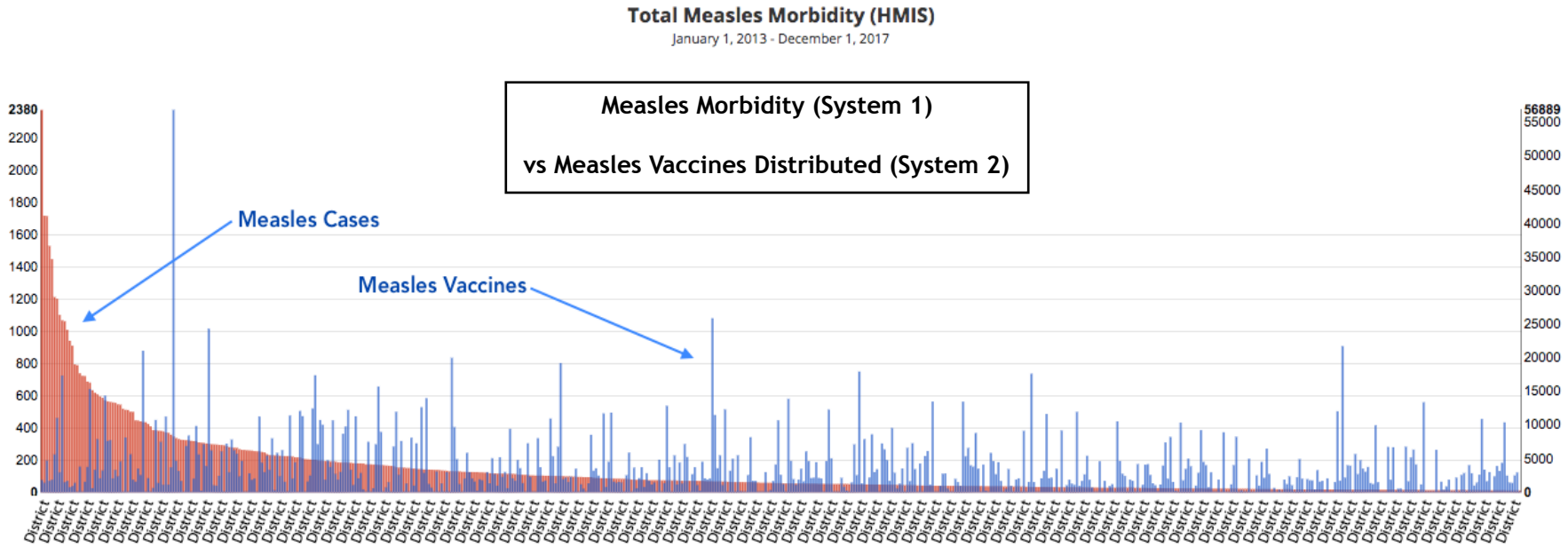


Single Analytical Dashboard



Data Integration Benefits

Advanced analytics and triangulated side-by-side analyses

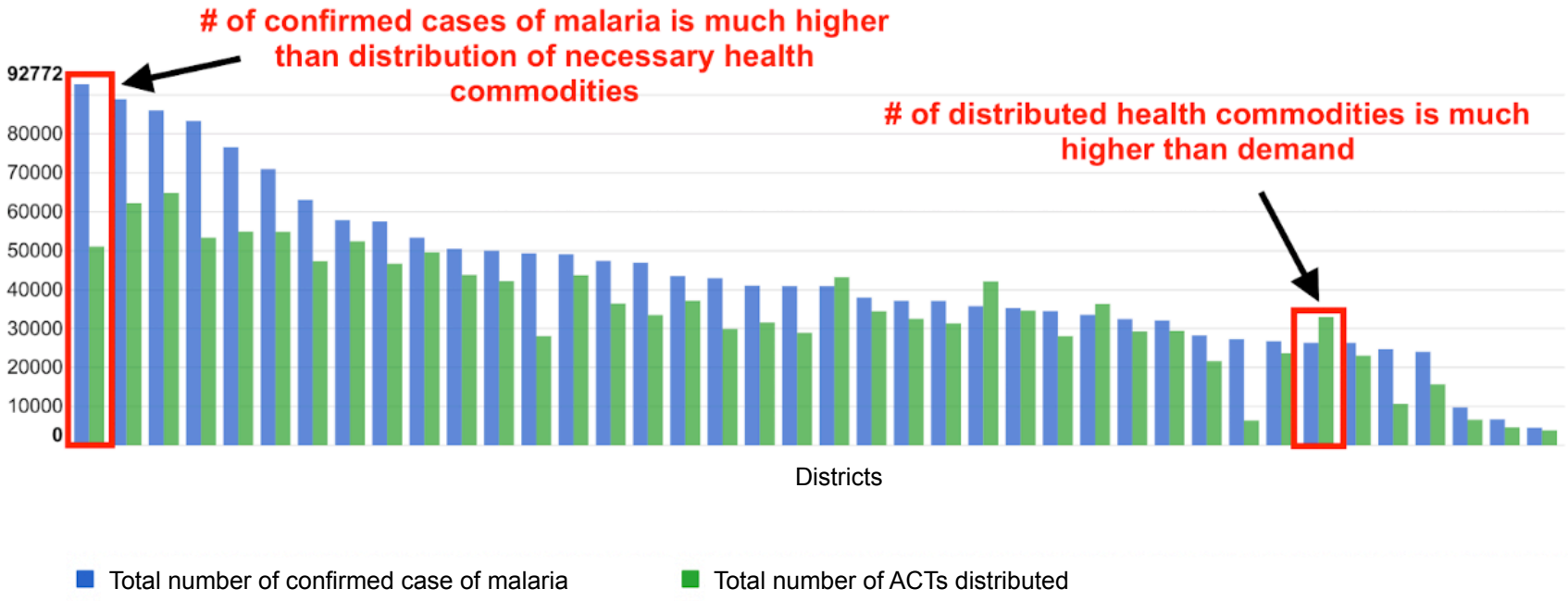


Users can easily combine data from multiple systems to generate triangulated analysis at the district, site or beneficiary level.

Data Integration Benefits

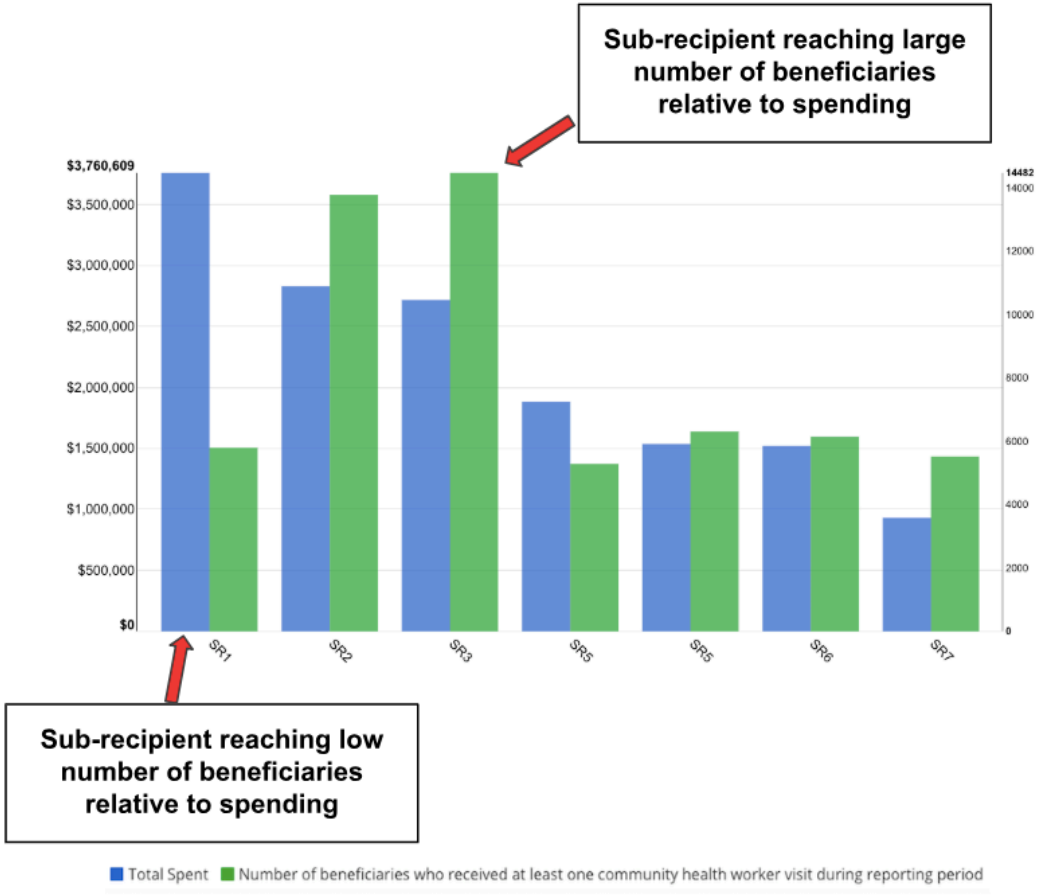
Advanced analytics and triangulated side-by-side analyses

Total number of confirmed cases of malaria vs Total number of ACTs Distributed



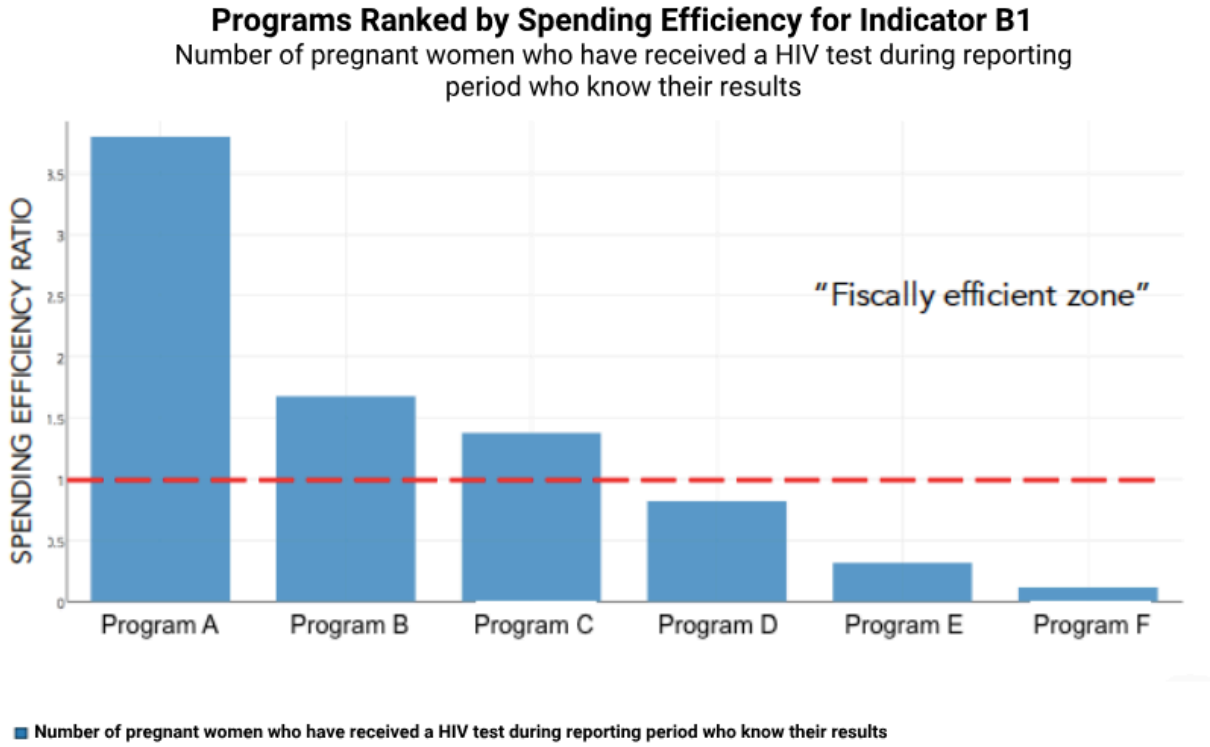
Data Integration Benefits

Monitoring and Program Effectiveness Analyses (Programmatic and Financial Data side-bv-side)



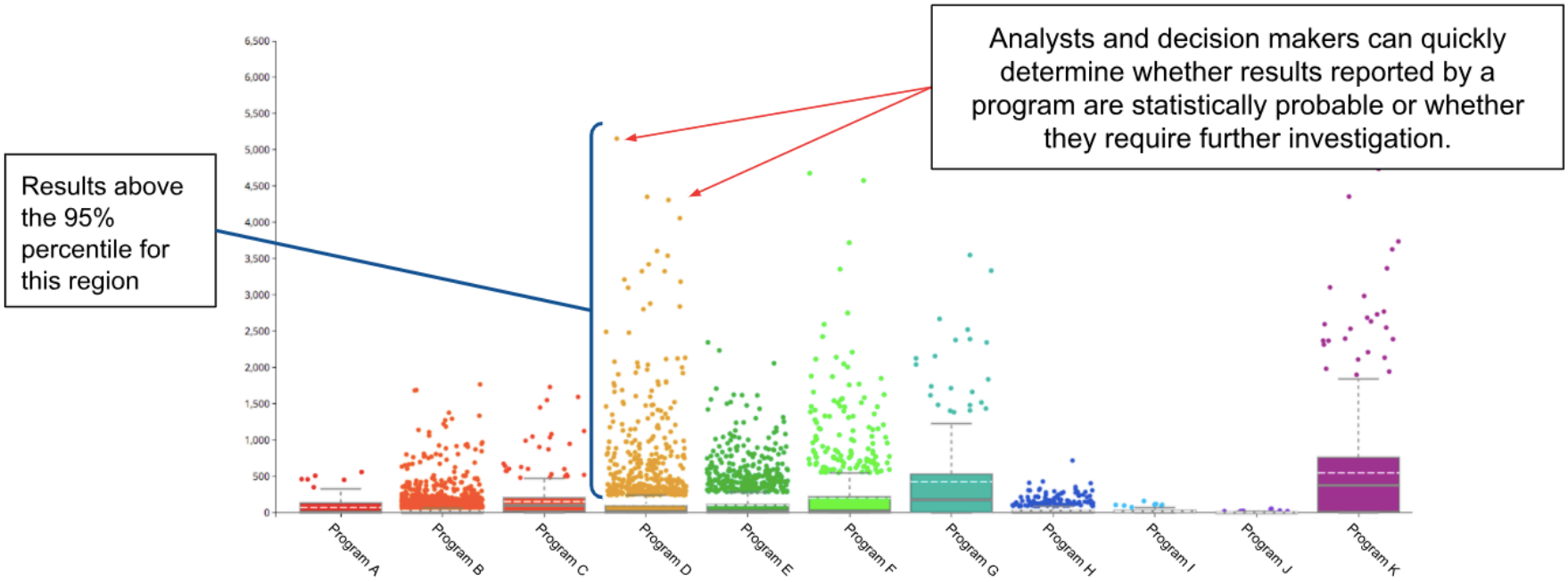
Data Integration Benefits

Monitoring and Program Effectiveness Analyses (Synthetic Indicator - Spending Efficiency)

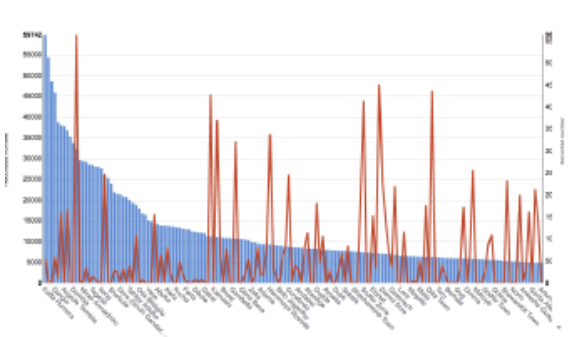


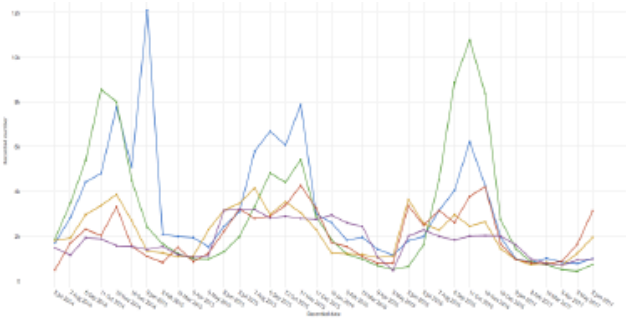
Data Quality

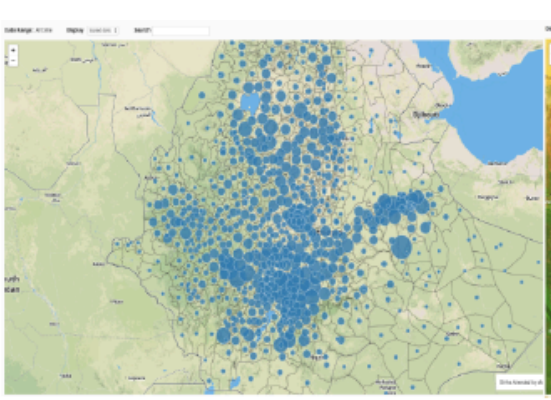
Data Quality Assurance Tools

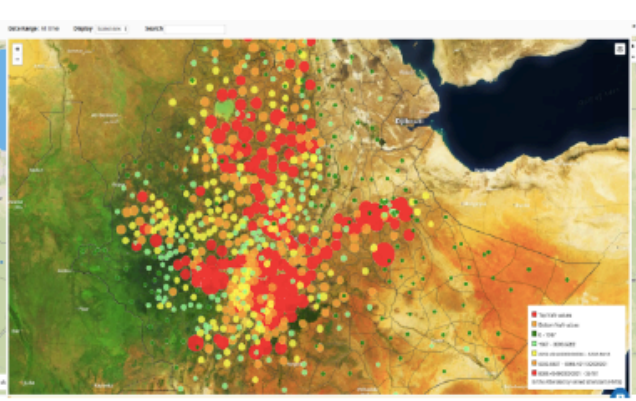


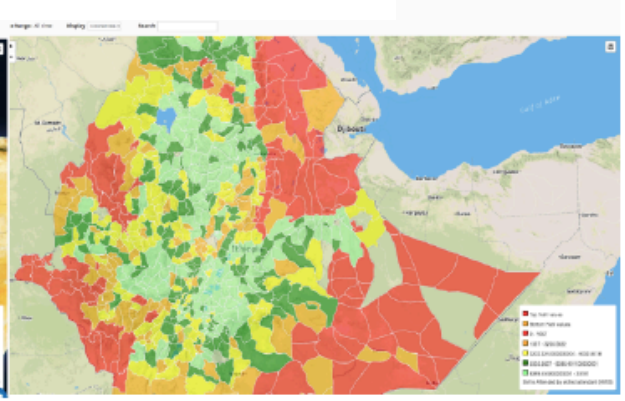
Data Integration Benefits











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Ethiopia

FMOH used the Zenysis platform to successfully integrate data from more than **15 fragmented systems** for the first time.

Partner
- Federal Ministry of Health

Project Start Date
- January 2016

Sample of Key Data Sources
- 3 National Health Informations Systems
- Public Health Emergency Management System
- DHS + EmONC survey data

Togo

Togo's MOH/CAMEG used the Zenysis platform to integrate **seven fragmented data sources** in fewer than eight weeks.

Partner
- Ministry of Health and Social Protection

Project Start Date
- March 2018

Sample of Key Data Sources
- Malaria program data
- Supply chain data
- Program campaign data

Liberia

Within eight weeks, NPHIL and MOH used the Zenysis platform to integrate **more than five fragmented data sources** for the first time

Partner
- Ministry of Health
- National Public Health Institute

Project Start Date
- January 2018

Sample of Key Data Sources
- Integrated Disease Surveillance and Response System
- DHIS2
- National Public Health Laboratory SystemDHS
- EmONC survey data

Closing Thoughts

- Capacity Building
- Scalability
- Extensibility (APIs and new systems)
- Long-term sustainability
- Artificial Intelligence

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