Landscape Analysis Report on the Use of

Public Health Analytics in Developing Nigeria's National Health Sector Strategy

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

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Quick Overview of the project and partners involved

This Landscape Analysis is part of the "Strengthening Public Health Analytics in Africa (SPAA)" project, that is funded by the Bill & Melinda Gates Foundation and supported by Harvard T.H. Chan School of Public Health. This project focuses on enhancing the use of public health analytics across a number of African countries. Applied Health Analytics for Delivery and Innovation (AHADI) serve as the Technical Lead while the Centre for Global Health Intelligence & Innovation (CGHII) serves as the university's local implementing partner.

Technical Lead

ahadi

Partner

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

Implementing Partner

CGHII CENTRE FOR GLOBAL HEALTH INTELLIGENCE & INNOVATION

List of Acronyms and Abbreviations

AOPs-	Annual Operational Plans
API –	Application Programming Interface
AWS-	Amazon Web Services
BMGF-	Bill and Melinda Gates Foundation
CDC-	Center for Disease Control
CRVS-	Civil Registration and Vital Statistics
CSOs-	Civil Society Organizations
DHIS 2-	District Health Information Software 2
DHS-	Demographic Health Survey
ETB-	Electronic TB Manager
EU-	European Union
HDGC-	Health Data Governance Council
HMIS-	Health Management Information System
IDSR-	Integrated Disease Surveillance and Response
IHR-	International Health Regulations (IHR).
JEE-	Joint External Evaluations
JICA-	Japan International Cooperation Agency
LINS-	Laboratory Information System
LMICs-	Low- and Middle-Income Countries
MICs-	Multi-Indicator Cluster Survey
MIS-	Malaria Indicator Survey
MOH -	Ministry of Health
MRC-	Medical Research Council
MSDAT-	Multi-Source Data Analytics and Translation Dashboard
NBS-	National Bureau of Statistics
NCDC-	Nigeria Center for Disease Control
NHIA-	National Health Insurance Agency
NHIMS-	Nigerian Health Information Management Systems
NHSSP -	National Health Sector Strategic Plan
NIMR-	Nigerian Institute of Medical Research and
NLIMS-	National Logistics Management Information System
NLSS-	Nigerian Living Standards Survey
NMEP –	National Malaria Elimination Program
NMSP-	National Malaria Strategic Plan
NPC-	National Population commission
NPHCDA-	National Primary Health Care Development Agency
NSHDP II-	National Strategic Health Development Plan
SMC-	Seasonal Malaria Chemoprevention program
SME-	smartphone-based electronic messaging system
SORMAS-	Surveillance Outbreak Response Management and Analysis System
SPAR-	Self-Assessment Annual Report
SWAP –	Sector Wide Approach
USAID-	United States Agency for International Development
WHO-	World Health Organization

Executive Summary

Sub Saharan African countries are dealing with dual challenge of high disease burden and considerable resource constraints in meeting their population's health needs. Public health analytics are critical to their health systems to implement evidence-informed strategies that enhance efficiency, equity, and achieve sustainable population health outcomes.

Public health analytics refers to the systematic collection, analysis, and interpretation of health data to inform policy decisions, resource allocation, and strategic planning within the healthcare sector. It involves leveraging data from various sources such as health surveys, disease surveillance systems, and health information systems to assess population health needs, evaluate service availability, monitor health outcomes, and guide effective decision-making at national and subnational levels. Public health analytics empowers health systems to implement data driven strategies that enhance efficiency, equity and improve population health.

This report details the findings from a landscape analysis aimed at assessing the role and utilization of public health analytics in shaping the National Health Sector Strategic Plan (NHSSP) in Nigeria. The analysis evaluates how data analytics is integrated into the Ministry of Health (MOH) decision-making processes and identifies the capacities, challenges, partnerships, investments, and information needs that influence this integration. Additionally, the report explores how research, innovation, and data-driven insights are leveraged to inform strategic health planning and guide national health policy formulation. Beyond the overarching strategic health planning within the MOH, the analysis also examines how disease-specific programs, such as those targeting malaria, utilize analytics for situational analysis, priority setting, and intervention monitoring in a bid to provide some actionable recommendations to strengthen analytics to improve planning and resource allocation for improved service delivery.

The landscape analysis employed a mixed-methods approach that included a systematic literature review followed by a qualitative field study conducted between June and August 2024 in Abuja Nigeria. This approach aimed to explore and document both the existing evidence and the current use of analytics in strategic health planning within the MOH.

This project was funded by the Gates Foundation.

Literature Review

Both a desktop and academic literature review were conducted as part of this landscape analysis to establish a foundational understanding of public health analytics in within the MOH. The review aimed to evaluate the role and integration of analytics in health strategic planning, identify existing data systems and infrastructure, assess the level of investment in public health analytics over the years, and determine the capacity needs within the MOH and its affiliated agencies. Data sources reviewed include the second National Strategic Health Development Plan (NSHDP II), National Malaria Strategic Plan (NMSP), Nigerian Health Management Information (NHMIS) policy and strategy documents, published reports and peered reviewed publications.

Qualitative Field Research and Data Collection

The qualitative field research aimed to gather valuable insights from key stakeholders within Nigeria's health sector. Participants included officials from the MOH, National Malaria Elimination Program (NMEP), and Nigerian Centers for Disease Control (NCDC). Through six in-depth interviews guided by semi-structured questionnaires, the landscape analysis explored critical themes such as the role of analytics in strategic planning, public health analytics infrastructure, gaps in analytics capacity, key partnerships, and the challenges and future directions in strengthening public health analytics in Nigeria.

Key Findings

The landscape analysis sheds light on the operational use of public health analytics in developing the NSHDP II, and NMSP. With the national health strategic blueprint still in development and unavailable for review, insights were drawn from key informants on how analytics are being applied in shaping the blueprint. Insights from both the literature review and key informant highlighted some of the key areas where the MOH is making progress such as:

Integration of Analytics in Strategic Planning

Analytics played a prominent role in the NSHDP II development, with evidence gathered from document reviews and stakeholder responses, particularly for situational analysis and priority setting. However, as revealed in stakeholder interviews, data used in strategic planning of both the NSHDP II and the blueprint still under development often relied on outdated surveys (conducted two to three years prior), limiting the relevance of situational analysis.

Sector-Wide Approach (SWAP)

SWAP is emerging as an important framework within the MOH, shifting the planning approach to one where government-led priorities guide partner alignment. This approach seeks to enhance accountability and reduce fragmentation in the sector. SWAP also provides technical assistance to states in developing their Annual Operational Plans (AOPs), encouraging a structured alignment with national priorities.

Use of Analytics in National Malaria Strategic Planning

The NMEP is making some progress in data-driven planning and prioritization. Stakeholders noted that public health analytics was leveraged to a great extent in developing the current NMSP, and also used to support disease trend monitoring, resource targeting, and intervention refinement, enabling more effective resource allocation for the NMEP. The data quality issues faced in developing the NHSDP also were important in developing the NMSP. However, the additional use of geospatial stratification and mathematic models helped.

Support from Donor Agencies

Technical support from international organizations and donor agencies has played a crucial role in enhancing analytics capacity within the MOH, NMEP, and agencies like the NCDC, addressing some gaps in training, technology, and infrastructure. However, key informants pointed out that a more coordinated framework for managing external support is needed to ensure that resources are effectively utilized, build sustainable local capacity, and reduce dependency on external aid.

Key challenges and some recommendations highlighted in the landscape analysis includes:

Underdeveloped and Fragmented Analytics Infrastructure

Both the literature review and insights from key informants reveal the data analytics infrastructure ecosystem within the MOH remains underdeveloped and uneven across agencies and programs, including the NCDC and NMEP. Despite some progress in migrating data from physical to cloud-based storage, inconsistencies in data collection, storage, and analysis persist. Limited interoperability among databases contributes to severe fragmentation, compromising data quality and hindering effective integration and usage.

Capacity Gaps

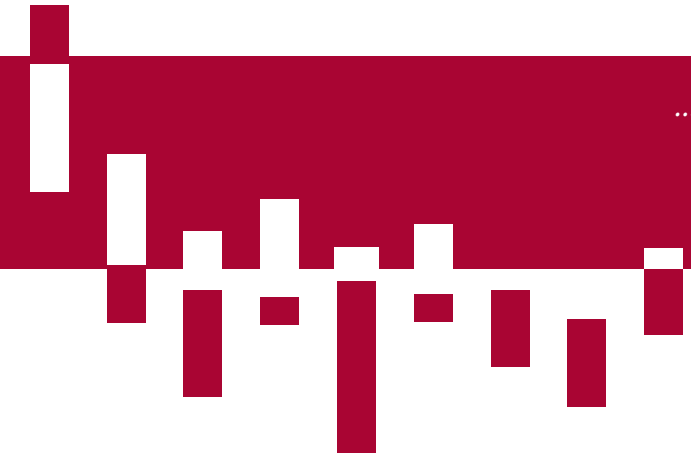
Significant gaps in skilled personnel were highlighted, with both the literature and informants noting a shortage of trained data analytics professionals within the MOH, NCDC, and NMEP. Furthermore, the public sector's inability to retain talent, due to uncompetitive salaries compared to the private sector, has led to continuous attrition of skilled professionals. Without robust capacity-building efforts and retention strategies, these agencies will struggle to leverage analytics effectively for strategic planning and evidence-based policy, ultimately risking setbacks in public health advancements and emergency response capabilities.

Insufficient Investments

Investment in public health analytics infrastructure and human capacity has been insufficient, limiting Nigeria's ability to build and sustain robust data systems. Addressing this challenge requires targeted strategies, including sustained funding for infrastructure, specialized training, and enhanced cross-ministry collaboration. Given the cost-intensive nature of establishing a comprehensive health analytics infrastructure, sustained funding is essential. Without these, efforts to strengthen data analytics will remain limited, constraining Nigeria's ability to make data-driven health policy decisions effectively.

Overall, this landscape analysis provides

insights of both progress and persistent gaps in Nigeria's use of public health analytics for health planning. While data analytics has been increasingly integrated into MOH and disease-specific programs, critical limitations remain in data system interoperability, workforce capacity, and sustained investment. Fragmented infrastructure and outdated data sources compromise data quality, while a shortage of skilled personnel hinders effective policy and planning. These findings underscore the need for targeted investment and capacity-building to strengthen Nigeria's analytics framework, ensuring data-driven decision-making and impactful health outcomes. Fragmented infrastructure and outdated data sources compromise data quality, while a shortage of skilled personnel hinders effective policy and planning. These findings underscore the need for targeted investment and capacity-building to strengthen Nigeria's analytics framework, ensuring data-driven decision-making and impactful health outcomes.



...the data analytics infrastructure ecosystem within the MOH remains underdeveloped and uneven across agencies and programs, including the NCDC and NMEP.

2. Background

The healthcare system in Nigeria, like many others across the globe, has faced mounting challenges. With a rapidly growing population, changing disease patterns, and persistent public health threats, the demand for data-driven strategies in healthcare planning has never been more critical. The COVID-19 pandemic underscored the need for robust health information management systems (HMIS) and timely analytics to guide effective decision-making in crisis management, resource allocation, and health system resilience. As Nigeria continues to battle endemic diseases such as malaria, tuberculosis, and HIV/AIDS, alongside emerging health challenges, the ability to make informed decisions is paramount.

Despite notable progress in Nigerian healthcare policy landscape—such as the establishing the Basic Health Care Provision Fund (BHCPF) policy to boost funding for primary health care access—the effective integration of public health analytics into Nigeria's health planning processes remains inadequate. This integration is crucial for the successful implementation of such policies. This landscape analysis is crucial at this time as Nigeria faces a dual burden of infectious and non-communicable diseases, necessitating accurate, timely, and comprehensive data to guide interventions. In addition, Nigeria is at a pivotal moment in its efforts to reform and strengthen its healthcare system to achieve the health-related targets of the United Nations Sustainable Development Goals (SDGs), particularly SDG 3, which seeks to ensure healthy lives and promote well-being for all. Achieving these goals requires a strong foundation of health data analytics to inform policy and monitor progress. Consequently, as Nigeria transitions from pandemic response to long-term health system strengthening, there is a need to build resilience into the health system through data-driven approaches that can adapt to evolving health challenges and resource limitations

In the rapidly evolving healthcare landscape, data analytics has become a powerful tool in addressing public health challenges. Its growing adoption is transforming how public health decisions are made, enabling a more data-driven approach that integrates diverse sources of information to inform policy and improve health outcomes. With escalating health challenges, the ability to effectively harness and apply health data is vital for national health planning and policy formulation. Data sources such as epidemiological records, disease surveillance systems, and health service usage reports are key inputs for developing strategic health interventions that can address the most pressing health needs.

In Nigeria, the MOH has acknowledged the importance of public health analytics in shaping its NHSSP. The NHSSP serves as a framework guiding national health priorities, resource allocation, and the implementation of health programs aimed at improving healthcare access and outcomes. Despite this recognition, the integration of public health analytics into national planning processes faces several challenges, including sub-optimal data analytics infrastructure, fragmented data

systems, insufficient investments and a shortage of skilled personnel.

The HMIS in Nigeria faces several challenges that hinder its effectiveness. Insufficient funding has limited the development of necessary infrastructure and human resources, while unclear roles and responsibilities among stakeholders have created inefficiencies. Data quality issues persist, with low reporting rates, incompleteness, and inconsistencies hindering analysis. The lack of systematic data analysis limits the use of HMIS data for informed decision-making. Moreover, the HMIS is fragmented due to multiple donor-driven vertical programs, leading to inconsistencies and inefficiencies. Sub-optimal reporting from tertiary health institutions and the minimal reporting from the private sector further exacerbate these challenges. These issues collectively contribute to the ongoing challenges in utilizing HMIS data for effective health planning and decision-making in Nigeria.

The HMIS in Nigeria primarily relies on the District Health Information Software 2 (DHIS2) infrastructure platform for routine data collection from over 38,500 healthcare facilities in the country. While the average reporting rate for DHIS 2 in 2017 was 72%, timeliness and completeness remain significant challenges. Despite the private sector's substantial contribution to healthcare services, reporting from these facilities is minimal. Tertiary health institutions also underreport data to DHIS 2 compared to primary and secondary facilities. These data quality issues, coupled with a lack of systematic analysis and feedback to health institutions, hinder the effective use of HMIS data for health planning and decision-making.

Nigeria has previously implemented two strategic health plans: NSHDP I (2010-2015) and NSHDP II (2018-2022). Following the lapse of NSHDP II, the MOH, under the leadership of Professor Ali Pate, is actively developing a new national healthcare strategic blueprint to define and accelerate the country's healthcare goals and tackle the most pressing health issues confronting the country through 2027.

Although still in draft form, this blueprint based on the description from key informants appears to be an agile document, allowing for early implementation of its goals while remaining adaptable as priorities and resources shift. There is an impression based on the opinion of some key informants that it may eventually evolve into the third NSHDP, providing a more formalized framework for the sector. This period of the blueprint development presents an opportunity to reflect on past successes and challenges of the previous plans, assess the state of data analytics infrastructure, and ensure that future health strategies are grounded in robust, evidence-based approaches.

This landscape analysis is an assessment of the current state of public health analytics in Nigeria, highlighting both progress and gaps. Overall, it seeks to:

1. Examine the role and utilization of public health analytics in supporting the NHSSP and disease specific strategic plans like the NMSP.

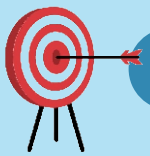
2. Assess the investments, processes, analysis methods, and support systems involved in public health analytics within the MOH and associated agencies like the NCDC.

3. Identify the capacities, challenges, and information needs within the MOH to effectively utilize analytics in designing national health strategies.

4. Explore the types of analysis and partnerships guiding planning processes and implementing public health analytics needs assessments.

5. Provide actionable recommendations for enhancing public health analytics to improve healthcare planning, resource allocation, and service delivery ensuring that they are grounded in robust evidence and supported by a strong data infrastructure.

This report highlights the role of public health analytics in the development of Nigeria's NHSSP and the NMSP. Through a combination of desktop reviews and qualitative research involving interviews with key stakeholders, the report explores how analytics are utilized in health sector planning within the MOH and identify opportunities to enhance data systems, build capacity, and increase investments. These improvements are essential for Nigeria as it strives to develop a health system that is more resilient, efficient, and responsive to the needs of its population.



OBJECTIVES OF THE LANDSCAPE ANALYSIS

EXAMINE

Examine the role and utilization of public health analytics in supporting the NHSSP,NMSP etc.

EXPLORE

Explore the types of analysis and partnerships guiding planning processes and implementing public health analytics.

ACCESS

Assess the investments, processes, analysis methods, and support systems involved in public health analytics.

RECOMMEND

Provide actionable recommendations for enhancing public health analytics to improve healthcare service delivery.

IDENTIFY

Identify the capacities, challenges, and information needs to effectively utilize analytics in designing national health strategies.

2.1 Methodology

The methodology for this landscape analysis was designed to provide a comprehensive understanding of the role and utilization of public health analytics in Nigeria's health sector, with a specific focus on its integration into the NHSSP and disease-specific programs such as the NMSP. The analysis employed a mixed-methods approach, incorporating both qualitative field research and an extensive desktop literature review. This multi-faceted approach allowed for a thorough exploration of the existing data, infrastructure, and capacity while capturing insights from key stakeholders involved in health planning and decision-making.

Preparatory Phase

Before initiating the fieldwork, steps were undertaken to ensure that the landscape analysis would be methodologically sound and aligned with the objectives of the study:

1. **Initial Consultations-**Preliminary consultations were conducted with key personnel within the MOH to understand the current landscape of health analytics in Nigeria and to identify critical areas of focus for the analysis. These consultations helped refine the objectives and thematic areas that the analysis would address.

2. **Stakeholder Mapping-** A stakeholder mapping exercise was carried out to identify relevant individuals and organizations that play a role in public health analytics and strategic planning. This mapping included officials from the MOH, the NMEP, NCDC, donor agencies, and other health partners.

3. **Formal Communication with MOH**- A formal letter was sent to the Minister of Health and Social Welfare to inform the ministry of the proposed landscape analysis and to seek approval for field data collection. Approval was granted by the Minister, allowing the research team to engage with key stakeholders and collect necessary data from government agencies.

Literature Review

The literature review systematically examined existing evidence to provide context and insight into the current state and use of public health analytics within Nigeria's health sector, particularly in informing health policy and strategic planning. The review drew from published government reports, key health policy documents (e.g., NHMIS policy, NSHDP II, NMSP), WHO resources, and peer-reviewed publications sourced from databases like PubMed. Key search terms included "public health data analytics," "health policy decision-making Nigeria," and "data quality health systems." This focused review aimed to capture key data themes, identify capacity and infrastructure gaps, and highlight how analytics has been applied to support planning. This approach helps to frame the findings of the landscape analysis, pinpointing specific areas where data-driven approaches in Nigeria's health sector show potential and where critical improvements are needed.

Part of the review included a diagnostic assessment of Nigeria's health data

systems and infrastructure, focusing on key platforms like the CRVS, health information management systems, and epidemic surveillance systems. This evaluation emphasized digitization levels, data interoperability, and data quality, essential for forming a robust foundation in healthcare analytics.

Additionally, the review explored health surveys conducted over the past decade—such as the malaria indicator survey (MIS), AIDS indicator survey, Demographic Health Survey (DHS), Multi-Indicator Cluster Survey (MICs), TB, Nutrition, and Immunization Surveys—as well as facility assessments like the Service Availability and Readiness Assessment (SARA). These surveys and assessments are critical for identifying trends and gaps in health data that influence decision-making and resource allocation.

In parallel, the review examined past evaluations of Nigeria's health sector readiness, such as the Self-Assessment Annual Report (SPAR), Joint External Evaluations (JEE), and assessments in line with International Health Regulations (IHR). These were included to gauge the resilience of the health system and the readiness of its data infrastructure to support a strategic, forward-looking national health plan.

Qualitative Field Research

After the literature review, qualitative field research was conducted to gather in-depth insights from key stakeholders in Nigeria's health sector. This phase involved direct engagement with officials responsible for strategic health planning, public health analytics, and disease control programs. The field research was carried out between late July and the end of August 2024, following approval from the Minister of Health.

Consent

Oral consent was obtained from all stakeholders prior to their participation, ensuring they were fully informed about the study's purpose and procedures. The key informants were assured that their responses would remain confidential and that their personal information would not be disclosed. The ethical guidelines for conducting interviews were adhered to, prioritizing the privacy and rights of all informants throughout the study.

Key Informant Interviews (KIIs)

In-depth interviews were conducted with a carefully selected group of key informants representing various departments and agencies within the MOH, NCDC and NMEP.

Data Collection

The data collection process employed a semi-structured interview tool, enabling flexibility to explore participants' responses in depth. This approach combined a structured set of core questions with the flexibility to probe deeper, enabling participants to provide rich, narrative-driven insights that add valuable context to the secondary data. Using a semi-structured format was essential for capturing nuanced perspectives on key themes, such as:

1. The role of public health analytics in developing the NHSSP and the NMSP.
2. The existing infrastructure for data collection, storage, and analysis within the MOH and other agencies.
3. Partnerships and collaborations with donor agencies and technical partners

supporting public health analytics.

4. Challenges related to the availability, quality, and timeliness of data for decision-making.
5. Investments in data analytics and capacity gaps.
6. Future directions for strengthening analytics capacity in Nigeria.

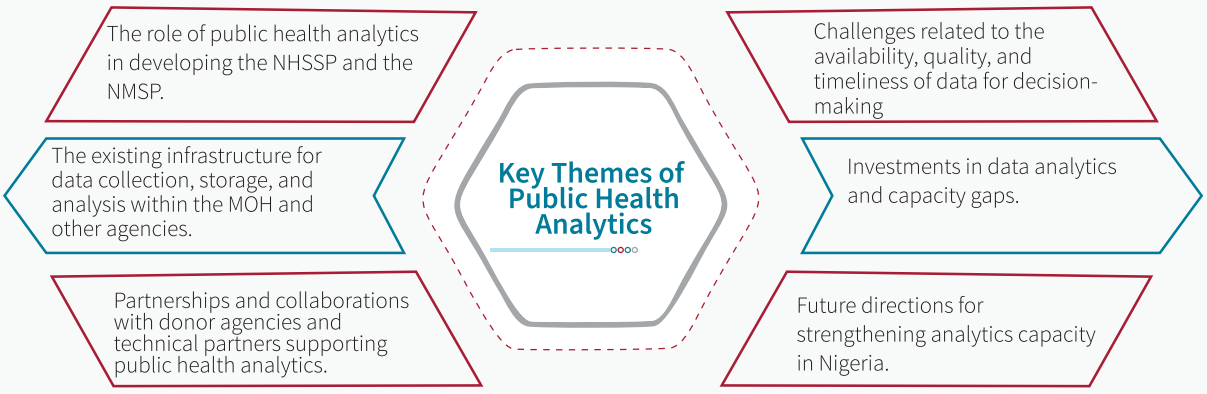
Six interviews were conducted for this study: five in person in Abuja and one virtually. Participants were briefed on the landscape analysis objectives and provided consent prior to each interview. Confidentiality was ensured by anonymizing responses and disconnecting them from individual identities.

2.2 Analysis

The analysis of the interview transcripts was conducted through thematic coding, where responses were categorized based on the predefined thematic areas related to public health analytics. Qualitative data analysis software Nvivo and Dedoose were used to organize the data and extract insights aligned with the objectives of the study. Key themes that emerged included:

1. The degree of integration of analytics into health and disease specific planning processes.
2. The infrastructure gaps and capacity available for effective data use including data security and governance.
3. The role of international partners and donors in supporting analytics development.
4. Investments in analytics infrastructure in the MOH, NDCD and NMEP.
5. Strategies for addressing capacity and resource limitations in public health analytics.

In addition to these core themes, the report also highlights the role of the SWAP framework in facilitating the development of the current health sector strategic blueprint while driving support to states, alongside the MOH prioritization of research and innovation as core components of the health system.



3. Findings

3.1 Role and Utilization of Public Health Analytics in Supporting the NHSSP and Disease-Specific Strategic Plan (NMSP)

Analytics were used primarily for situational analyses and priority setting during the development of the NSHDP II. Data from sources such as the DHIS 2, the DHS, surveys and specific health surveillance systems from agencies like the NCDC were mostly leveraged to inform national-level health planning and resource allocation.

However, the analysis revealed that some of the survey data utilized were often outdated- typically two to three years old at the time of planning thus limiting the effectiveness of these analytics in providing timely insights for strategic health planning. Although analytics plays a role, its application remains fragmented and often reactive rather than proactive. Analytics have also been utilized in developing and implementing the NMSP. The NMEP actively employs data analytics for malaria surveillance, trend monitoring, priority setting and applied insights from program data for effective decision making. These efforts are contributing to better-targeted interventions, improved resource allocation, and more efficient operational strategies.

The NMEP actively employs data analytics for malaria surveillance, trend monitoring, priority setting and applied insights from program data for effective decision making

3.2 Public Health Analytics Infrastructure and Information Needs for Strategic Planning

Analytics Infrastructure is still underdeveloped. Data collection, storage, and analysis processes in the MOH and affiliated agencies, including NMEP and NCDC, are fragmented. While national-level programs have made some progress in transitioning from paper-based to cloud-based data systems, the interoperability of these systems remains limited. Data collected from different agencies and departments are often stored in silos, preventing comprehensive analysis across the health sector. Key data systems, such as DHIS 2 and other health information management systems, are not fully integrated, leading to inefficiencies in data sharing and analysis.
The MOH faces a critical barrier in the lack of reliable, real-time

Analytics Infrastructure

Analytics Infrastructure is still underdeveloped. Data collection, storage, and analysis processes in the MOH and affiliated agencies, including NMEP and NCDC, are fragmented.

data essential for the effective design and implementation of national health strategies. The current data infrastructure does not provide the level of granularity needed for nuanced decision-making, particularly at the subnational level. For example, the inability to access real-time data from rural areas has limited the accuracy of situational analyses, which are critical for setting health priorities and allocating resources effectively. There are also significant challenges in health data quality and timeliness. Outdated surveys, incomplete subnational data, and inconsistent reporting standards hinder the MOH's ability to conduct real-time analysis and gain a comprehensive health overview. Limited digitization and data visualization tools further restrict decision-makers from effectively interpreting complex health data for informed decisions.

Decision making

The current data infrastructure does not provide the level of granularity needed for nuanced decision-making, particularly at the subnational level.

3.3 Investments in Public Health Analytics

The analysis identified that investments in public health analytics infrastructure and human resources are largely supported by international donor agencies and technical partners. While this external support has been essential in building initial capacity, domestic investment from the Nigerian government remains insufficient. There is a heavy reliance on donor funding for data systems, analytical tools, and capacity-building programs, which raises concerns about sustainability. For example, the NMEP and the NCDC rely on donor-backed initiatives for their analytics systems, creating a dependency on external resources. The absence of long-term investment plans from the government has resulted in insufficient development of analytics capabilities, particularly in subnational settings.

Donor funding

There is a heavy reliance on donor funding for data systems, analytical tools, and capacity-building programs, which raises concerns about sustainability

3.4 Capacity Challenges

Capacity gaps are a major hindrance to the effective utilization of public health analytics in Nigeria. The MOH and its agencies face a shortage of skilled personnel with expertise in data analytics, data science, and health informatics thus allowing the burden of analytics to fall on health workers. This capacity gap is further exacerbated by a high turnover of skilled staff, who are often drawn to higher-paying opportunities in the private sector or international organizations. The lack of comprehensive training programs and incentives to retain skilled professionals has severely limited the ability to scale public health analytics across national and subnational levels.

3.5 Partnerships Guiding Planning Processes and Public Health Analytics Needs Assessments

International partners actively participated in the planning process for Nigeria's health sectoral and disease-specific strategic plans such as the NMSP. They also provide critical technical assistance, infrastructure, and funding support. However, the analysis reveals that uncoordinated donor efforts have led to inefficiencies and duplication, highlighting the need for a more unified approach to external support. This trend could also lead to increased dependency on external resources which on the long run is not sustainable.

The analysis highlighted that comprehensive needs assessments are not consistently conducted across Nigeria's health sector. This gap contributes to a poor understanding of the specific analytical tools, data systems, and capacity strengthening programs needed to address the evolving demands of public health analytics, underscoring the importance of regular assessments to pinpoint gaps in data infrastructure, capacity, and resource allocation.

The lack of comprehensive training programs and incentives to retain skilled professionals has severely limited the ability to scale public health analytics across national and subnational levels.

4. Discussion

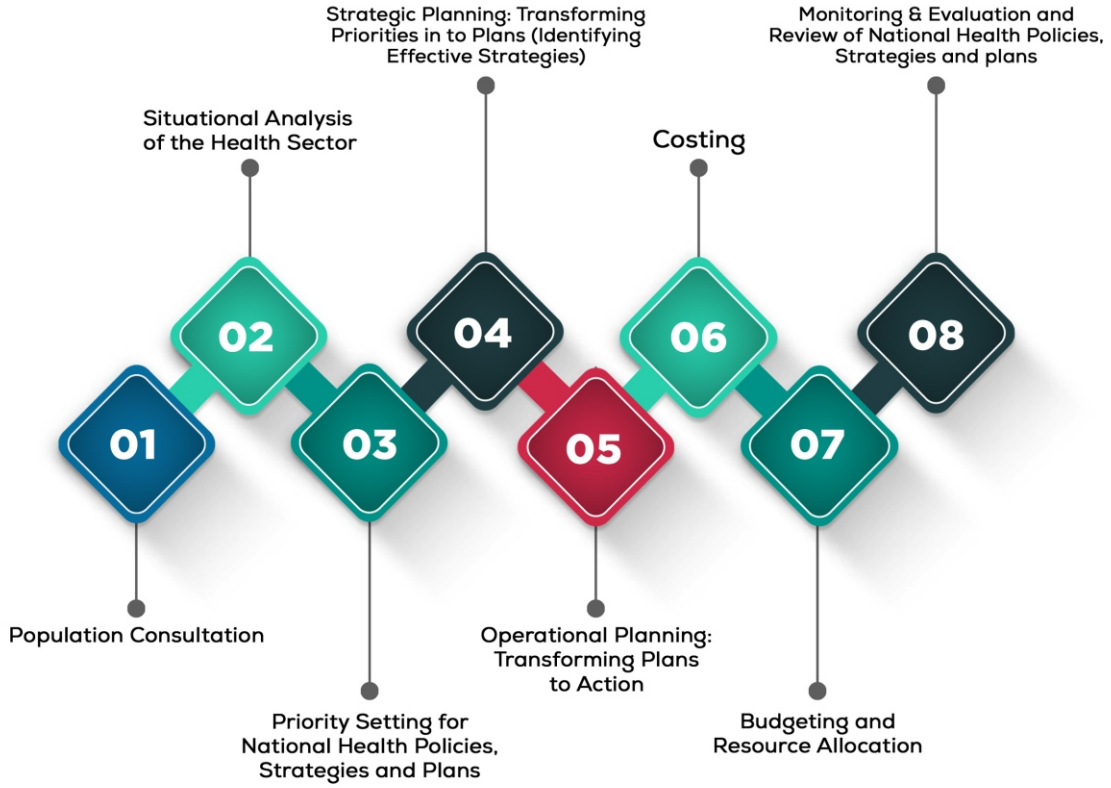
This discussion will primarily focus on the NSHDP II, the emerging national healthcare strategic blueprint, the NMSP and NMEP, exploring the role of data in shaping national health priorities and driving effective healthcare planning. It would also highlight how the SWAP is being leveraged to make planning and resource allocation more effective in the MOH and how research and innovation is being elevated as a priority.

4.1 Leveraging Public Health Analytics in Supporting the NHSSPs and Disease-Specific Strategic Plans

The development of a national health sector strategic plan (NHSSP) typically follows WHO's recommended steps, which guide countries in creating a comprehensive and evidence-based approach. These steps—ranging from population consultation, situational analysis, priority setting to strategic planning, operational planning, costing, budgeting, and monitoring and evaluation—rely on robust public health analytics to inform effective decision-making and allocation of resources. In Nigeria, while the NSHDP II (2018-2022) and the current blueprint broadly adapted this framework, they did not include a formal population consultation process to directly assess population needs. This omission could

Process Map 1

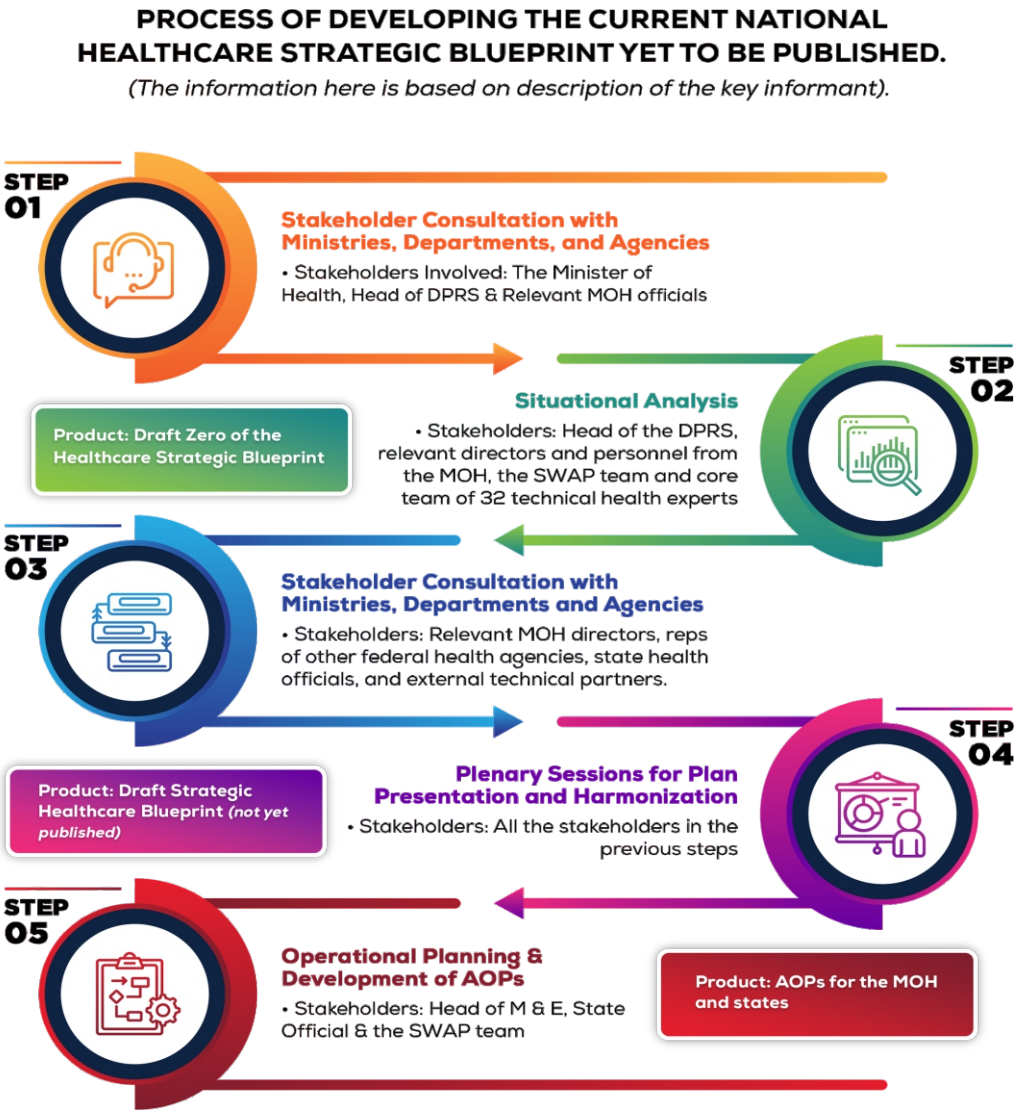
THE WHO RECOMMENDED PROCESS/STEPS FOR DEVELOPING A NATIONAL HEALTH SECTOR STRATEGIC PLAN (NHSSP).



Process Map 2

PROCESS OF DEVELOPING THE SECOND NATIONAL STRATEGIC HEALTH DEVELOPMENT PLAN (NSHDP II) 2018-2022

Process Map 3



have been due to the complex, time consuming and expensive nature of doing a proper population consultation. However, key activities were conducted across the remaining steps, supported by available analytics, enabling the MOH and collaborating agencies to establish priorities, allocate resources, and set strategic goals aligned with Nigeria's healthcare context and objectives at the time.

The NHSDP II and Blueprint were developed through a collaborative, multi-step process led by the MOH with support from key agencies, including the NCDC, National Primary Health Care Development Agency (NPHCDA), National Health Insurance Authority (NHIA), and the National Malaria Elimination Program (NMEP). This process also involves the 36 state health ministries, the Federal Capital Territory (FCT), and their respective ministries of budget and planning. Other stakeholders involved in the process are the ministry of finance, budget & national planning, the senate and house of representatives' committees on health. Each health agency under the MOH and all states develop and costs its own strategic

plan, which is then incorporated into the national plan to form a unified NHSSP.

Key figures, such as the Director of Planning, Research, & Statistics (PRS) in the MOH and those of the associated health agencies and disease specific programs led and coordinated this process in their respective domains, with support from the heads of relevant departments within the MOH and global partners like WHO, UNICEF, USAID, BMGF, EU, JICA, and Civil Society Organizations (CSOs) ensuring that the NHSSP aligns with national and global health objectives and at the same time incorporates insights from stakeholders across the health system. One actor that led a specific step in the process is the Head of M & E who facilitates the development of the M & E section of the plan which involves setting targets and developing indicators.

Key informants noted that one challenge in the stakeholder engagement phase of the planning was ensuring that critical information from high-level discussions is effectively communicated to lower levels of government and health agencies. Often, a gap exists between the strategic priorities set by leadership and the operational understanding required at the state and agency level for effective implementation. Establishing structured communication channels and regular update sessions could help bridge this gap, ensuring alignment and clarity throughout all levels of the health system.

Based on the review of NSHDP II (2018-2022), all the planning process for the NSHDP II was done in collaboration with a national health planning technical working group (TWG) and consultants at the national and state level under the direction of the Director of PRS. The TWG forms multiple thematic working groups for the various health priority areas that comprise a mix of MOH personnel and global partners led by directors from the MOH. Each group in turn articulates the situational analysis and define the goals and priorities for their respective thematic areas.

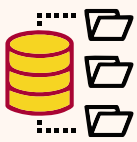
This landscape analysis revealed that the NSHDP II and the current NMSP, reflect the growing emphasis on data-driven health planning in Nigeria. This aligns with literature findings which highlighted that development of NSHDP II relied on several core data themes in an attempt to provide a comprehensive understanding of health needs, service availability, and resource requirements during the situational analysis and priority setting stages of plan. Core data themes include population health needs and epidemiological trends which highlighted the leading cause of mortality in the country including trends in maternal, and child mortality. Other themes were, the essential package of health care services which highlighted health service availability, accessibility and program performance trends for reproductive, maternal, new-born, child and adolescent health, nutrition services, and health workforce capacity and distribution

Data Sources for Sectoral and Malaria Strategic Plans

The situational analysis for the sectoral health plans, including the NSHDP II, the blueprint under development, and the NMSP, draws from multiple data sources, with the DHIS II platform serving as the primary source for the MOH. Additional data is sourced from program reports, annual evaluation documents, and key

surveys, such as the Nigeria Demographic and Health Survey (NDHS), Multi-Indicator Cluster Survey (MICS), National Nutrition and Health Survey (NNHS), and the Global Burden of Disease Report. Specialized surveys, like the National Blindness and Low Vision Survey, also contribute by addressing specific health metrics.

While DHIS II remains central hub for health data for the MOH and its agencies, specialized health agencies like the NCDC and disease-specific programs like the NMEP have tailored data repositories and analytic platforms that support their unique mandates. These agencies also access data from these platforms when developing their plans. For example, the NCDC, responsible for public health emergencies, pandemic preparedness and disease surveillance, leverages the Surveillance Outbreak Response Management and Analysis System (SORMAS), real-time data from the Integrated Disease Surveillance and Response (IDSR) system platform, administrative records, and international research findings to develop its strategic plans which are subsequently incorporated into the broader health sector plan. This was done for both the NSHDP II and the current blueprint.



While DHIS II remains central hub for health data for the MOH and its agencies, specialized health agencies like the NCDC and disease-specific programs like the NMEP have tailored data repositories and analytic platforms that support their unique mandates.

Similarly, the NMEP relies on data from the Malaria Indicator Survey (MIS), Nigerian Living Standards Survey (NLSS), entomological data from the Nigerian Institute of Medical Research (NIMR), and logistics data from the National Logistics Management Information System (NLIMS) to develop its five-year plans and guide program decisions. For example, data analytics from the Seasonal Malaria Chemoprevention (SMC) program helped guide the expansion of SMC into additional states, optimizing resource allocation and impact.

the NMEP relies on data from the Malaria Indicator Survey (MIS), Nigerian Living Standards Survey (NLSS), entomological data from the Nigerian Institute of Medical Research (NIMR), and logistics data from the National Logistics Management Information System (NLIMS) to develop its five-year plans and guide program decisions.

Aligning Disease-Specific Plans with the NHSSP

Disease-specific plans, such as the current malaria plan, should ideally align with the overarching national health sector plan for synergistic resource allocation and streamlined monitoring. This prevents duplicated funding, simplifies outcome tracking, improves accountability and reporting to national and global stakeholders. However, in Nigeria, the separate development timelines and cycles

of these plans could prevent this linkage and create potential challenges for coordinated resource allocation and implementation. Key informants noted that while the NMSP is developed to cover a five-year period, the budgeting cycle is done annually with a specific amount allocated to them from the MOH. Though it may not be feasible to develop both plans at the same time, key stakeholders must find ways to collaborate to ensure proper alignment.

Key Differences in the Development Processes of the NSHDP II and the Strategic Blueprint

The analysis noted key differences between the development processes of the NSHDP II and the evolving blueprint. The NSHDP II utilized a bottom-up approach, empowering state-level stakeholders to create their plans, which were then integrated into the main framework. In contrast, key informants noted that stakeholder engagement for the blueprint followed a somewhat top-down approach, led by the minister at the center who began by engaging the leadership of other health agencies and ministries like finance, and budget while the states were brought in later in the process.

A top-down approach was used in developing the blueprint. With key engagements led by the Minister, stakeholders at the state level and other agencies are likely to take the process more seriously, ensuring alignment with national priorities. This high-level leadership could enhance commitment across all levels, potentially fostering stronger adherence to the plan's goals and coordinated implementation.

Additionally, the blueprint leveraged the Sector-Wide Approach (SWAP), enhancing coordination and resource allocation among development partners and government agencies to prevent duplication and ensure efficient resource use.

Currently, opinions vary among key informants on whether the new blueprint will evolve into third NSHDP or remain in its current format. Some see it as a streamlined extension of NSHDP II, while others suggest extending NSHDP II to 2026 for continuity since it has not been properly implemented. Clear guidance on the blueprint's role and future direction is essential to align stakeholders and ensure unified action across the MOH.

the blueprint leveraged the Sector-Wide Approach (SWAP), enhancing coordination and resource allocation among development partners and government agencies to prevent duplication and ensure efficient resource use.

Challenges in Leveraging Analytics for Sectoral Planning

The MOH primarily relies on the DHIS2 platform for routine data collection and analysis, as well as the National Data Repository (NDR), which is used to collect and track patient-level data across facilities, especially for disease-specific programs such as HIV and malaria. However, essential health data-including immunization campaign data, health

insurance records, and cancer data are scattered across multiple repositories, underscoring the fragmented nature of the MOH's data infrastructure.

A major challenge in the MOH's data infrastructure is the lack of interoperability among these systems. With platforms at varying levels of technological advancement, older systems often fail to integrate smoothly with newer, more advanced ones. For example, attempts to connect the Electronic TB Manager (ETB) with DHIS2 have been problematic, as system updates frequently disrupt application program interphase (API) connections.

Similar integration challenges are evident with platforms like the NDR for malaria and NCDC's Surveillance Outbreak Response Management and Analysis System (SORMAS). system, all of which struggle to harmonize with DHIS2. These challenges highlight the urgent need for a unified data integration strategy within the MOH. These findings support the literature, showing that other African countries, like Tanzania and Mozambique, also face challenges with data integration and interoperability, highlighting how common this issue is across the continent.

4.2 Public Health Analytics Infrastructure

In Nigeria, the DHIS2 platform serves as the main system for transmitting routine health data across the MOH and its associated agencies. However, the data analytics infrastructure, including data repositories and analytical tools, remains fragmented across the broader MOH and its specialized agencies. Each entity, such as the NCDC, and disease-specific programs like the NMEP, HIV programs operate some distinct data systems tailored to their unique mandates, resulting in varied processes and data management practices. This fragmentation complicates efforts to create a cohesive view of the health landscape

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Insights from the review of Nigeria's NHMIS Policy 2014 reveal a clear intent to establish a unified and sustainable health information system to support policy development, program management, and resource allocation, ultimately enhancing healthcare delivery across the nation. The policy outlines the diverse landscape of Nigeria's health information system, involving key players such as the MOH, the National Population Commission (NPC), the National Bureau of Statistics (NBS), the National Agency for the Control of AIDS (NACA), and international development partners. However, both the policy and findings from this landscape analysis indicate that the current analytics infrastructure remains underdeveloped and fragmented. Disease-specific data silos and collection processes, often shaped by donor priorities and international reporting requirements for conditions such as HIV, malaria, and TB, have led to parallel systems, creating a disjointed view of the health sector.

Data Infrastructure in the MOH

While the goal of using data analytics in sectoral planning is to create a data-driven,, responsive approach to healthcare strategy, the landscape analysis revealed several critical challenges in effectively leveraging analytics to develop a truly comprehensive plan. Key informants noted that the lack of timely data from health facilities, reliance on outdated health surveys at the time of planning, and fragmented data systems significantly limits the ability to accurately capture Nigeria's current healthcare landscape. This gap in accurate, timely data impacts the capacity to design interventions that effectively address the population's health needs.

For instance, at the time of NSHDP II development, the most recent survey on non-communicable diseases was from 1992-over two decades old. As a result, significant gaps existed in understanding the current burden and trends of non-communicable diseases, potentially undermining the plan's relevance in addressing emerging health challenges.

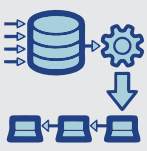
Additionally, the analysis found that the MOH heavily relies on survey data due to the inconsistent quality and reliability of administrative data. This finding aligns with the literature, which highlights similar data quality issues, particularly in immunization programs, where administrative data often significantly overestimate coverage compared to survey estimates.

These insights emphasize the need for reliable, timely data systems and updated surveys to strengthen the evidence base of Nigeria's sectoral plans, making them more reflective of current health trends and enabling more targeted population health interventions.

Fragmented Data Systems

Essential health data (e.g., immunization campaigns, health insurance records, and cancer data) are scattered across multiple repositories, emphasizing the lack of centralized data infrastructure.

Interoperability Issues



Integration of older systems with advanced platforms is problematic.Example: Connecting the Electronic TB Manager (ETB) with DHIS2 faces frequent disruptions due to API compatibility issues.

Public Health Analytics Infrastructure at the NCDC

The NCDC employs a multifaceted analytics infrastructure to enhance its public health response. While it also utilizes data from the DHIS2 platform, a core tool for data management is the SORMAS. This system, in contrast to that of the broader DHIS 2 better facilitates real-time data collection and visualization to an extent, enabling immediate data entry from field locations and providing access to data at local, state, and national levels. SORMAS is instrumental in outbreak management, generating automated reports on confirmed cases, disease distribution, vulnerable populations, and geographic hotspots, thereby supporting early warning systems and case management.

In addition to SORMAS, NCDC implements a smartphone-based electronic messaging system (SME) for local government data collection. This system is in the process of being integrated into SORMAS to enhance data entry and synchronization across devices. Informants noted that efforts are also underway to ensure interoperability between SORMAS and DHIS2, as well as with other ministries, including agriculture, environment, and water resources, in alignment with the One Health Approach.

While this cross-sectoral collaboration aims to facilitate real-time data sharing, particularly during outbreaks linked to environmental or animal health threats, it is not clear how the strategy is being developed and how it's going to be financed since multiple agencies are involved.

To further strengthen its analytics capabilities, the NCDC is developing a Laboratory Information System (LINS) to integrate lab data with SORMAS, enabling real-time access to lab results. The agency also uses a logistics data system for medical supply management, which was critical during COVID-19. However, no framework currently exists to integrate these systems with the broader MOH infrastructure. As the NCDC works on a comprehensive data hub to unify surveillance, lab, research, and logistics data, alongside a strategic data management plan, it will be essential to align these efforts with the MOH to improve coordination and integration across health data systems.

Malaria Program Data Analytics Infrastructure

The NMEP relies on a diverse analytics infrastructure, primarily using DHIS2 to capture real-time data on malaria incidence, case management, and diagnostics. A dedicated malaria data repository stores various datasets, including SMC, rainfall, and supply chain data, with ongoing efforts to integrate systems like the National Logistics Management Information System (NLIMS) to improve interoperability. The reliance on multiple repositories and separate systems, such as NLIMS for supply chain data, highlights fragmentation challenges within Nigeria's health data landscape and reinforces the need for a more cohesive, unified data infrastructure.

The NMEP's use of advanced analytics tools, including Power BI, Tableau, and geospatial software, signals a strong commitment to leveraging data-driven insights for effective program management and performance tracking. This sophisticated approach to data visualization empowers rapid decision-making and allows for strategic adaptations to meet evolving public health needs. However, the program's dependence on cloud storage through platforms like Amazon Web Services (AWS), primarily funded by external donors, raises critical sustainability concerns. Without robust domestic investment, there is a real risk of losing access to essential data infrastructure if donor support diminishes or ceases. This situation underscores the imperative for MOH and NMEP to explore strategies for domestic funding and to integrate with national health data platforms, ensuring the continuity and resilience of malaria data management and analytics in Nigeria.

Strengthening Data Privacy and Security Infrastructure

A pressing concern in the MOH and across other agencies is the need to ensure data privacy, security, and reliable backup systems, yet the specific infrastructure to support these areas remains underdeveloped.

Strengthening data governance is a keyway to enhance data security—a recommendation underscored in the 2014 HMIS policy and strategy. This policy and strategy promote the establishment of a Health Data Governance Council (HDGC), led by the Minister of Health, to oversee data management practices, set standards, and ensure compliance with privacy protocols across all health agencies.

An active governance structure would provide a centralized approach to managing data privacy and security risks, promoting a culture of accountability and safeguarding sensitive health information. Prioritizing these recommendations will be essential for building a secure, resilient, and trustworthy public health data infrastructure.

Advancements in Strengthening Public Health Analytics within the MOH

Some progress is being made to strengthen the public health analytics ecosystem within the MOH, laying the groundwork for a more integrated and efficient system. Key developments include migrating some DHIS data from physical servers to the cloud, enhancing accessibility and storage, and establishing the Multi-Source Data Analytics and

Translation Dashboard (MSDAT). MSDAT consolidates routine and survey data, enabling clearer comparisons of indicators and improved trend visualization across multiple sources. Additionally, the inauguration of the Digital Health Initiative Committee aims to modernize Nigeria's digital healthcare architecture nationwide.

The 2014 HMIS policy highlights the importance of integrating diverse data sources across institutions, providing public health professionals with a more comprehensive view of the health system. Enhanced integration would improve data quality, strengthen interoperability, and support more effective, data-driven decision-making across Nigeria's healthcare landscape. However, given that the HMIS policy was established a decade ago, a comprehensive overhaul is recommended to address current challenges and realities. Updating the policy would ensure it reflects technological advancements and enhances responsiveness to health emergencies. Together, these initiatives and a policy revision would further strengthen the MOH's data infrastructure, positioning Nigeria's public health system to effectively support strategic planning and improve health outcomes.

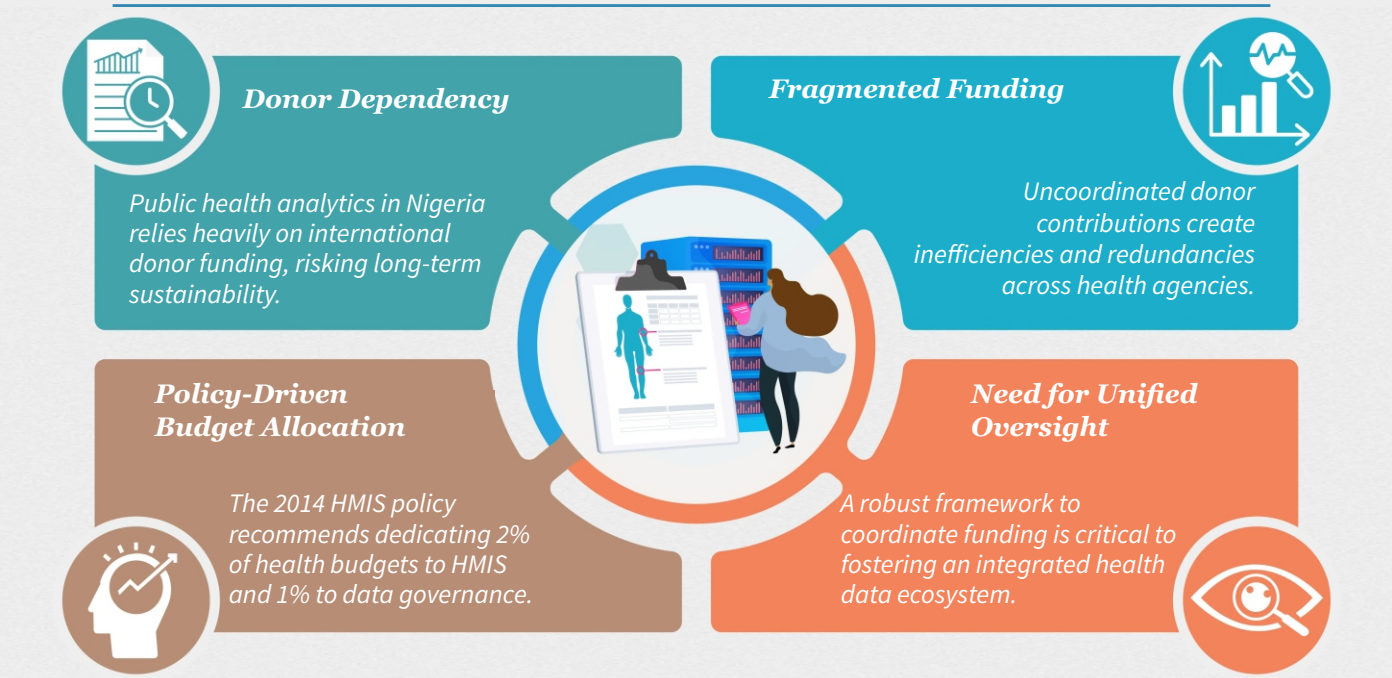
4.3 Investments in Public Health Analytics

The 2014 HMIS policy recommends that at least 2% of the annual budget for health and related institutions at all levels should be dedicated to HMIS, with an additional 1% allocated specifically for data management governance. However, this landscape analysis reveals that investments in public health analytics in Nigeria are overwhelmingly reliant on international donor funding. While this external support is critical, it could lead to dependencies that may compromise the sustainability of data infrastructure over the long term, a common trend among LMICs. This reliance on external funding often results in fragmented data systems and diminished control over critical health data resources.

Lack of coordinated funding, particularly among donor contributions is a key challenge in Nigeria's public health analytics landscape. This finding aligns with broader literature on the challenges of financing health information systems in low- and middle-income countries. Numerous international donors fund overlapping projects within different health agencies without a central oversight mechanism. This lack of coordination has resulted in inefficiencies and redundancies, with agencies like the NCDC, the NPHCDA, and the NHIA often receiving funding for similar initiatives without a collaborative or harmonized approach. Furthermore, many donors sometimes bypass the MOH by providing funds directly to specific agencies, undermining centralized oversight and creating silos within the health sector. This decentralized approach limits the MOH's ability to implement a comprehensive, unified health information

strategy, leading to inefficiencies and missed opportunities for integrated data use.

There is an urgent need for increased political will to secure additional investments, as the MOH and its affiliated agencies face significant funding challenges in financing software, enhancing interoperability, strengthening capacity, and upgrading data infrastructure to meet current needs. Greater government funding is essential to ensure the sustainability of these efforts, reducing reliance on external support and building a resilient public health data infrastructure for the long term. Furthermore, establishing a robust framework to coordinate funding from multiple sources will be critical in fostering a more integrated and effective health data ecosystem in Nigeria.



4.4 Capacity Challenges

A review of key HMIS policy documents and findings from the literature reveals significant capacity gaps in public health analytics within the MOH and related agencies, a common phenomenon in many LMICS. One critical issue contributing to inconsistent data collection and poor data quality is the overwhelming burden placed on healthcare workers, whose primary focus is service delivery. The expectation for these professionals to also handle data collection, processing, and analysis diverts their attention and resources away from patient-centered care. This challenge is particularly acute in an environment already grappling with a

severe shortage of health workers. Such findings align with the observations made in this landscape analysis, underscoring the urgent need for a strategic approach to enhance capacity in public health analytics.

A common issue across both the MOH and its agencies is the shortage of skilled data analysts, medical records officers, health informaticians, biostatisticians and other relevant cadre of personnel focused on analytics. Retention of skilled personnel poses an additional challenge, as the public sector struggles to offer competitive salaries compared to the private sector, where remuneration of such personnel far exceeds what the government can afford. Consequently, the MOH relies heavily on external support from donors and technical partners.

Donor and technical partners such as USAID, CDC, PATH and BMGF currently play a critical role in addressing these capacity gaps by deploying skilled data analysts and supporting the development of digital platforms and technical infrastructure within the MOH, NCDC and across disease specific programs like NMEP. These experts provide essential support in managing advanced analytics tasks and often try to facilitate knowledge transfer to local staff. However, this reliance on external expertise raises questions about long-term sustainability, as these roles are often donor-funded and thus vulnerable to changes in external funding priorities. The dependence on external support underscores the need for a sustainable strategy to build and retain local expertise within the public sector. This pattern of multiple donors' support is a common trend across a number of African countries as evidenced by the literature.

Some progress has been made toward institutionalizing analytics capacity within the MOH, particularly through the establishment of the Health Data Analytics Research Fellowship, supported by the Gates Foundation and implemented by the organization eHealth for Everyone. This fellowship aims to build local analytical capacity by training participants from the MOH, as well as other affiliated health agencies and ministries, in data analytics skills critical for effective health planning and program management. Such initiatives represent a positive step forward; however, they must be scaled up and integrated into broader human resource strategies to ensure lasting impact.

The current efforts, while valuable, remains limited in scale and reach, largely benefiting select individuals within the public sector rather than building comprehensive institutional capacity. To make a lasting impact, there must be a more robust strategy to institutionalize public health analytics capacity across all levels of the MOH and its affiliated agencies. This includes creating clear career paths, offering competitive incentives, and fostering an environment that values and invests in data-driven decision-making. Additionally, prioritizing the recruitment and retention of skilled data analysts will reduce the MOH's dependency on external support, promoting a more resilient and self-sufficient analytics ecosystem within Nigeria's health sector.

4.5 Advancing Research and Innovation through Public Health Analytics

While the core objective of this landscape analysis is to examine the role of public health analytics in developing health sectoral plan, highlighting progress and ongoing initiatives within the MOH—such as the new focus on research and innovation—is equally relevant. Under the current administration, the MOH has prioritized research by creating a dedicated Research and Innovation unit to address long-standing gaps in regulatory frameworks, capacity, and research ethics. Led by an experienced research physician, this unit aims to build a sustainable infrastructure that can attract international collaborations and position Nigeria as a leader in global health research.

A primary goal of the unit is to embed research within the health system, ensuring that evidence-based insights inform strategic planning and policy. However, limited data infrastructure and challenges in data collection have constrained its ability to conduct effective situational analyses. Although the unit emphasizes evidence-based decision-making, inadequate data systems restrict its ability to fully implement this approach, highlighting the need for foundational investment in data management and analytics.

Collaboration with partners like BMGF and the US CDC is underway to improve data management and technical solutions, yet the unit's reliance on donor support underscores a systemic issue: inconsistent government funding. Despite research being recognized as a priority, no funds have been released for 2024, and reliance on external funding often limits the scope and sustainability of research initiatives. The unit is advocating for legislation to establish a government-funded research body, similar to the Medical Research Council (MRC) in South Africa or the UK, to ensure direct and stable funding for research—a move that would reduce dependency on external sources and enable long-term planning.

The unit places strong emphasis on ethical oversight, learning from incidents like the Pfizer clinical trial scandal in Kano, where 11 children died, and dozens were left disabled. This commitment aims to ensure that research conducted in Nigeria benefits both international sponsors and the local population. Strengthening regulatory frameworks and ethical standards is central to the unit's strategy to reshape Nigeria's role from a passive recipient of research to an active, equitable partner in global studies.

Ultimately, while progress has been made, the unit's effectiveness will depend on sustained government commitment, robust funding, and the establishment of a cohesive, ethical research framework. Achieving these goals could empower Nigeria's research sector to not only support domestic health policy but also play a stronger role in global health innovation.

Advocating for Stable Funding

The unit proposes legislation to create a government-funded research body, reducing reliance on donors and enabling sustainable long-term planning.

Strengthening Research Infrastructure

The MOH's Research and Innovation Unit aims to embed evidence-based insights into health planning, but inadequate data systems and limited government funding hinder progress.

4.6 Strengthening Health Sector Coordination through the Sector-Wide Approach (SWAP)

The Sector-Wide Approach (SWAP) unit, introduced by the current administration, is designed to centralize health sector priorities and streamline collaboration within Nigeria's health system. Often times in the past, international partners have driven health initiatives independently, often misaligning with the country's actual needs. SWAP shifts this dynamic by placing the Nigerian government at the forefront of health sector decision-making, aligning donor support with national priorities, reducing resource duplication, and improving coordination. This approach has been instrumental in developing the current healthcare strategic blueprint, ensuring alignment with technical expertise and national health needs.

A core function of SWAP has been to support states in creating their AOPs, aligning them with budget allocations and the broader national strategy. By working closely with state health administrators and providing mentorship on performance management, SWAP is promoting data-driven decision-making across all levels of government, ensuring that health initiatives are tracked, evaluated, and adjusted as needed.

Institutionalizing the SWAP approach could create long-term benefits for Nigeria's health sector, embedding a culture of government-led, collaborative planning. However, the model's sustainability depends on stable, ongoing leadership. If future administrations shift focus or deprioritize the SWAP model, this momentum may be lost. Embedding SWAP principles within the MOH's core functions is essential to ensure the model's effectiveness, along with strengthening capacity at all levels and securing cross-administrative commitment to these collaborative practices.

Centralizing Health Sector Priorities

A

SWAP centralizes health sector decision-making, aligning donor support with national priorities and reducing resource duplication.

Promoting Data-Driven Decision-Making

B

The unit supports states in aligning AOPs with budgets and tracking health initiatives through performance management.

Embedding Collaborative Planning

C

Institutionalizing SWAP principles within the MOH ensures long-term benefits and a culture of government-led planning.

Sustainability Challenges

D

The model's success depends on stable leadership, institutional integration, and cross-administrative commitment to collaborative practices.

5. Conclusion

This report highlights the critical role of public health analytics in shaping Nigeria's health sector strategies, revealing both important progress and areas for improvement. The development of the NSHDP II and the emerging national health strategic blueprint highlights Nigeria's efforts to create a responsive, data-driven health system. Despite recent advances, Nigeria's data analytics infrastructure remains underdeveloped and suboptimal, characterized by data fragmentation, limited interoperability among systems, and significant gaps in real-time data collection. These persistent challenges hinder the health sector's capacity to make informed, timely decisions. The MOH relies heavily on donor support for advanced data analytics, with a shortage of skilled personnel and limited retention of data specialists within the public sector. This dependency raises concerns about long-term sustainability and the need for strategic investment in local talent and infrastructure.

The evolving role of the SWAP unit, has brought a new level of government-led coordination to the health sector, aligning donor priorities with national goals and supporting state-level planning efforts. SWAP's involvement in the Blueprint's development and in guiding states to finalize their AOPs is a great attempt to promote a culture of data-driven, accountable decision-making. However, for SWAP's approach to be truly transformative, it must be institutionalized within the MOH to ensure resilience against potential shifts in political priorities and administrative leadership.

Progress in research and innovation, particularly through the establishment of a dedicated unit under the MOH, is a promising step toward positioning Nigeria as a leader in global health research. Yet, the unit's success is contingent on sustained funding, legislative support, and capacity-building initiatives to foster an environment of ethical and locally relevant research. The reliance on donor funding to support research infrastructure and digital health initiatives emphasizes the need for consistent, government-backed resources to secure Nigeria's autonomy in shaping its health research agenda. Ultimately, addressing these challenges requires a cohesive strategy: a collective commitment to building a robust public health analytics infrastructure, fostering local capacity, improving interoperability, and securing sustainable funding. Embedding these principles within the MOH and across health agencies will ensure that Nigeria's health system can adapt to emerging health challenges and support evidence-based policymaking for years to come

6. Recommendations

Based on the landscape analysis findings, the following recommendations outline immediate-to-short-term and long-term actions to strengthen Nigeria's public health analytics capacity, improve data systems, and foster a more sustainable, data-driven health sector. These recommendations address structural, policy, and operational changes necessary to support the MOH and affiliated agencies in achieving a cohesive, efficient, and impactful healthcare system.

Immediate to Short-Term Recommendations

1 Update the HMIS Policy and Strategy

Given that these were established a decade ago, a thorough revision is urgently needed to address the rapidly evolving landscape of public health data management. The revised policy should prioritize creating a unified data management framework that integrates technological advancements and fosters interoperability across all health agencies while setting clear guidelines for data privacy, security, and governance.

2 Strengthen Data Integration and Visualization

Integrate key disease-specific databases, such as SORMAS and NLIMS, with the DHIS2 platform using standardized protocols and APIs to streamline data exchange and reduce fragmentation. Expand the MSDAT dashboard to incorporate additional data sources, enabling real-time visualization and comprehensive trend analysis and equip staff at all levels with advanced data visualization techniques to drive informed, data-driven decision-making across the health sector.

3 Conduct Regular Needs Assessments

Regular needs assessments are necessary to ensure the MOH and affiliated agencies remains responsive to evolving health data requirements and emerging analytical tools. It would also provide insights into specific analytical tools, data systems, and training needs, informing strategic investments

4 Increase and Sustain Investment in Data Infrastructure

Encourage the MOH to advocate for increased budget allocation to data analytics infrastructure and human resources. Securing a dedicated line item in the budget would support sustained development and reduce dependency on external donors.

5 Enhance Coordination Among Donor Partners

Developing a partnership coordination framework that aligns donor support with Nigeria's health priorities will ensure efficient use of resources and reduce duplication of efforts. The MOH should work closely with international partners to harmonize support, thereby maximizing the impact of donor contributions.

Long-Term Recommendations

1 Develop a Sustainable, Government-Funded Public Health Analytics Workforce

Establish a long-term strategy to attract, train, and retain skilled data analysts and biostatisticians within the public health sector, reducing dependency on external support. This should include competitive compensation packages, continuous training opportunities, and career development pathways to prevent the loss of skilled professionals to other sectors.

2 Establish a National Health Data Hub

Create a centralized, interoperable health data hub that consolidates surveillance, laboratory, research, and logistics data into one unified system. This hub should serve as a "single source of truth" for health data, enabling standardized reporting, monitoring, and evaluation across all levels of the health system.

3 Institutionalize SWAP Across Political Administrations

To protect SWAP's impact from shifts in political priorities, formalize SWAP practices through regulatory or legislative support, ensuring its approach is embedded in Nigeria's health governance structure. Develop a roadmap to train subnational governments and build capacity for sustainable planning and decision-making, aligned with SWAP principles.

4 Expand Research Funding and Create a Medical Research Council (MRC)

Establish an MRC to secure direct government funding for health research and innovation, reducing reliance on donor funding. A dedicated MRC would enable MOH to prioritize and fund ethically sound, high-quality research that aligns with national health needs, building Nigeria's profile in global health research.

5 Enhance Digital Health Infrastructure and Data Security

Invest in secure, scalable cloud infrastructure to support data storage, management, and analysis, ensuring resilience against data loss and unauthorized access. Regularly update systems to ensure compatibility with evolving technologies, allowing for responsive, secure data handling in alignment with international health standards.

6 Develop a Legislative Framework for Health Data Governance

Enact legislation that clearly defines data governance responsibilities, standards, and privacy requirements across the health sector. Such a framework should support transparency, interoperability, and accountability, empowering the MOH to manage and protect health data effectively while fostering a culture of data-driven decision-making.

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