TECHNICAL DOCUMENTATION

State Health Labour Market Analyses: Method and Build

Prepared by Temidayo Sunday Alade, Public Health Data Scientist

Python · Node.js · Excel · Word · HTML

6	20 to 34	100+	16
States, one in each zone	policy questions per State	charts per interactive report	sheets in each Excel workbook

> These are government reports for State Ministries of Health. This document explains how the analyses were produced. It does not reproduce their findings or figures. Full reports are available on request where the States allow it.

WHAT IS INSIDE

1 The story behind the analyses
2 My role
3 Words used in this document
4 The shape of every analysis
5 Where the data comes from
6 The report pipeline
7 How the key numbers are worked out
8 Method standards after review
9 Problems found in the records and what I did
10 Where the work stands
11 Limitations

01 THE STORY BEHIND THE ANALYSES

> *A commissioner of health is asked three questions in the same week by the Governor, by a donor and by the Federal Ministry. Does the State have enough health workers? Can it pay for more? Is it training enough?*
>
> *A Health Labour Market Analysis is how a State answers all three from its own records, in one document, with every number traced to the office that supplied it.*

A Health Labour Market Analysis (HLMA) follows the World Health Organization's health labour market framework, which traces workers from training into the labour market and out of it. This programme covers one State in each geopolitical zone: Ondo, Abia, Delta, Sokoto, Gombe and Nasarawa. Rivers State followed with its own analysis. The work is prepared by the Innovative Hub for Research in Africa (IHfRA) for each State Ministry of Health, under the stewardship of the Federal Ministry of Health and Social Welfare's Department of Health Planning, Research and Statistics, with technical and financial support from UNICEF Nigeria.

02 MY ROLE

- Lead consultant. I own the methodology, the data collection tools, the analysis and the reports for every State.
- Wrote the consolidated six-state report that draws them together.
- Built the report pipeline described below, so each State's report is produced the same way.

03 WORDS USED IN THIS DOCUMENT

Word	What it means
Need	The workers a population requires, from its size and disease burden.
Demand	The posts employers can fund at prevailing pay.
Supply	Qualified workers willing to work at prevailing pay.
Pillar	One of the four parts of the WHO framework: supply, economic demand, population health need and financial space.
Thematic area	A group of chapters. Five are used: need, demand, education and production, supply and distribution, and financing.
Policy question	A question the State itself asks the analysis to answer.
Clinical workforce	Doctors, nurses and midwives, community health, pharmacy, laboratory, radiography and dental cadres. Densities count these only.
CONMESS and CONHESS	The salary structures for medical and other health workers, used to cost scenarios.
DHIS2	The national platform for routine health service statistics.

04 THE SHAPE OF EVERY ANALYSIS

1 · FRAME
Policymakers, a working group, and prioritised questions

▸

2 · COLLECT
Registers, returns, budgets and where needed, field surveys

▸

3 · CLEAN
Reconcile counts, log every data problem

▸

4 · ANALYSE
Descriptive statistics, ratios, projections

▸

5 · WRITE
A report, an interactive HTML report and a workbook

Each State prioritised its own policy questions at a methodology stage, from 20 to 34 of them. I adapted the question matrix and data collection modules to each State. Each question is answered through five lenses: need, demand, education and production, supply, and finance.

Structure repeats across States. Findings and framing do not: every narrative is written from that State's own data.

05 WHERE THE DATA COMES FROM

Source	What it supplies
Nominal rolls and registers	Who is employed, in which cadre, in which facility or Area.
Training institution returns	Admissions, graduation, licensing, accreditation, faculty.
Budgets and appropriation acts	Approved budgets, releases and spending.
DHIS2 service data	Outpatient visits, antenatal care, deliveries and disease counts by Area.
Population projections	The denominator for every density.
Field surveys (Ondo, Sokoto)	Views of health workers, managers, students and patients.

06 THE REPORT PIPELINE

PYTHON
Loads and cleans the data, runs the statistics, draws the charts

▸

JSON
Results and figures pass on with missing values sanitised

▸

NODE.JS
Combines results, narrative and a chart manifest

▸

OUTPUTS
Word report, HTML report, Excel workbook

Each State receives a self-contained interactive HTML report with more than 100 charts, a 16-sheet Excel workbook and a formal report of about 70 to 110 pages.

Splitting the work this way means a number is computed once, in Python, and appears the same in the chart, the table, the sentence and the workbook.

07 HOW THE KEY NUMBERS ARE WORKED OUT

The full set of calculations, with worked examples, is in each State's own documentation. The five that recur are listed here.

THE FIVE CALCULATIONS

```
density            =  clinical workers ÷ population × 10,000
requirement        =  population ÷ 10,000 × 44.5
ratio              =  workers available ÷ requirement
release rate       =  amount released ÷ amount approved
workforce(year+1)  =  workforce(year) × (1 + pace)
```

> **An everyday example.** A State of 1,000,000 people needs 4,450 clinical workers at the WHO threshold. With 1,200 it has a ratio of 0.27 and a shortfall of 3,250.

08 METHOD STANDARDS AFTER REVIEW

The Gombe report was reworked after methodological review, and the changes became the standard for the other States. They are listed here because they show how the method tightened.

Change	Why
With around 11 Areas, inferential statistics became descriptive associations, and the methods section says so	A test on 11 points proves little
Budget figures are presented as allocations, not audited spending	Approval is not release, and release is not spending
Cost projections use cadre-specific marginal costs grounded in CONMESS and CONHESS bands, with explicit cadre-mix scenarios and sensitivity ranges	One average cost hides the difference between a doctor and a health assistant
Population sensitivity bands show whether findings hold under any population estimate	No State has a settled growth rate
Benchmarking leads with Nigeria's national position and the north-south gradient before international comparisons	A State is better compared with its neighbours first
Every synthesis includes implementation constraints and a gender equity section	A finding without a way to act on it is incomplete

09 PROBLEMS FOUND IN THE RECORDS AND WHAT I DID

Issue	What I did	Why
Several registers for one workforce that disagree	Showed all of them and said which one each analysis uses	Nobody can trace a single figure from budget to named staff
Empty returns	Recorded each void as a finding and named the document that would fill it	A blank is information

Issue	What I did	Why
Attrition rarely recorded	Used stated assumptions and said so	A guess that looks like data is worse than a gap
Private-sector staffing thinly recorded	Scoped the analysis to the public sector and said so	No return recorded the private sector
Summary panels that disagree with their tables	Computed from the table and recorded the disagreement	The table is the record

10 WHERE THE WORK STANDS

All six States have a written report: Ondo, Abia, Delta, Sokoto, Gombe and Nasarawa. Gombe also has a three-page executive brief for policymakers. The six are drawn together in a consolidated report, Health Labour Market Analysis in Six Nigerian States 2026, whose recommendations are built from the findings the States share rather than from any single State.

Field surveys of health workers, facility managers and students were added in Ondo and Sokoto. In every State, where the records could not answer a policy question the report says so and names the document that would.

11 LIMITATIONS

State administrative records rarely record resignations or migration, so attrition is incomplete. Private-sector staffing is thinly recorded in most States, and several States hold more than one register that disagrees with the others. Each report shows the disagreement, says which figure it uses, and states its own gaps in its methods section.

Temidayo Sunday Alade · aladetemidayo7@gmail.com · dayo@startechone.com.ng · linkedin.com/in/aladetemidayo-sunday