DATA.FI NIGERIA INFORMATION PRODUCTS

Mind the Gap: Leveraging the National HIV/AIDS Indicator and Impact Survey (NAIIS) Data to Identify Service Delivery Gaps in Lagos State

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PEPFAR

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Data for Implementation

Background

The Government of Nigeria — through the National Agency for the Control of AIDS (NACA), Ministries of Health (MOHs) at both the state and national levels, and other related Ministries, Departments, and Agencies (MDAs) — has undertaken concerted efforts to reduce the spread of HIV with the support of bi-lateral and multi-lateral donors and partners.

In 2018, as part of these efforts, the country conducted the Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS), a cross-sectional survey that assessed the prevalence of key HIV-related health indicators. This was a two-stage cluster survey of 88,775 randomly selected households sampled from among 3,551 nationally representative sample clusters.

The goals of the NAIIS were to:

- Examine the distribution of HIV disease in Nigeria.
- Assess the coverage and impact of HIV services at the population level.
- Measure HIV-related risk behaviors using a nationally representative sample of persons aged 0-64 years.

The NAIIS's primary objectives were to estimate the following in a household-based, nationally representative sample of adults aged 15-64 years:

- National HIV incidence (the number of recent HIV infections in the survey period).
- National and sub-national (state) prevalence of suppressed HIV viral load (less than 1,000 copies/mL).
- National and sub-national (state) HIV prevalence.

In addition to conducting the NAIIS, the Nigerian government and donors have made significant investments in capturing, digitizing, and managing health data, building platforms such as the National Data Repository (NDR) and the Data for Accountability Transparency and Impact Monitoring (DATIM) platform, which capture HIV/AIDS program data of implementing partners. Such efforts have led to aggregated facility-level data within the continuum of HIV care and treatment.

While great strides have been made on data collection and reporting, challenges remain in utilizing the data to inform targeted interventions in programmatic planning toward epidemic control.

The Data.FI project works with USAID Missions and country governments to overcome these types of challenges by using innovative analytical approaches that provide Missions and their implementing partners with insight into performance against targets for HIV/AIDS indicators — aligned with the Joint United Nations Programme on HIV and AIDS (UNAIDS) 95-95-95 strategy — and identification of gaps in HIV/AIDS service provision.

Introduction

Lagos State is in the southwestern geopolitical zone of Nigeria. Although the smallest in area of Nigeria's 36 states, Lagos State is arguably the most economically important state of the country. It is a major financial center and would be the fifth-largest economy in Africa if it were a country. It has the second-highest population density in Nigeria after Kano state, with an estimate of 9.1 million people. Victoria Island, the financial center of the metropolis, is known for its beach resorts, boutiques, and nightlife.

According to the Country Director of the Joint United Nations Programme on HIV and AIDS (UNAIDS), Dr. Erasmus Morah, during the dissemination of State-level data of the NAIIS report, revealed that out of the 120,000 PLHIV in Lagos, 60,000 are yet to show up for treatment and are still at large. The NAIIS report gave the Lagos State HIV prevalence rate as 1.4 and it is been classified in the red category by the USAID in Nigeria.

Data.FI worked with stakeholders and implementing partners to conduct a study to identify HIV service delivery gaps in Lagos State, in part by leveraging existing data from the NAIIS and DATIM, described above. The sections below detail this study and its results.

Objectives

The study to identify service delivery gaps had three objectives:

- To describe the local government areas (LGAs) with the greatest numbers of unmet treatment need among people living with HIV (PLHIV) in Lagos State.
- To compare the 95-95-95 clinical cascade indicators to the estimated unmet need among PLHIV for the 20 LGAs in Lagos State.
- To describe performance in HIV testing, treatment, and viral load suppression across the 20 LGAs.

Methodology

A geographical analysis to determine unmet treatment need among PLHIV across the 20 LGAs in Lagos State was conducted using secondary data from various database platforms, including DATIM, national estimates (the 2018 NAIIS), estimated projected number of PLHIV by small area (LGA) provided by USAID, and partner-based reporting platforms. The most recent data reported for the program indicators were extracted from DATIM for Quarter 1 of Fiscal Year 2020 (FY20Q1 — October 1 through December 31, 2019). Geographic datasets — including the state-level and LGA-level boundaries and population data — were provided by USAID.

Table 1. Data sources and indicators

Data sources	Recency of data	Indicators
DATIM	FY20Q1	HTS_TST; HTS_TST_POS; TX_CURR; TX_PVLS (N); TX_PVLS (D)
NAIIS	2018	HIV prevalence estimate
USAID	2018 spectrum data	Population estimates, geo-political borders

To estimate the PLHIV cohort in each LGA, the LGA-specific prevalence (from the NAIIS) was multiplied by the LGA population. Then, the unmet treatment need among PLHIV was derived from the difference between the PLHIV estimate and PLHIV receiving antiretroviral therapy (ART) as measured by the reported TX_CURR indicator at the end of FY20Q1. (See box on this page for details of the formulas and calculations used.)

Through an automated process in the programming language Python, data sets were joined using the unique LGA names in DATIM and the national shapefiles (geographical information system (GIS) mapping of national, state, and LGA boundaries). Key PEPFAR indicators reviewed included PLHIV, HTS_TST, HTS_TST_POS, TX_CURR, TX_PVLS(D), and TX_PVLS(N). (See box on this page for the definition of these indicators.)

GIS and statistical techniques were used to categorize LGAs into quartiles based on each relevant indicator and to rank order LGAs across Lagos State. The results were then mapped to illustrate the four LGA quartiles, with color gradients indicating the level of unmet treatment need among PLHIV in Lagos State.

In addition to the four quartiles for unmet need among PLHIV, a fifth group of LGAs was added — those that had more patients on treatment than estimated PLHIVs. Five LGAs fell into this category — Agege, Ajeromi-Ifelodun, Badagry, Lagos Island, and Lagos Mainland (shaded in white on the map in Figure 1).

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Key PEPFAR indicators of interest

HTS_TST: Number of individuals who received HIV testing services (HTS) and received their test results.

HTS_TST_POS: Number of individuals who received HIV testing services (HTS) and received a positive result.

TX_CURR: Number of adults and children currently receiving ART.

TX_PVLS(N): Number of adult and pediatric patients on ART with suppressed viral load results (<1,000 copies/ml) documented in the medical records and /or supporting laboratory results within the past 12 months. (N) means numerator.

TX_PLVS(D): Number of adult and pediatric ART patients with a viral load result documented in the patient medical record and/or laboratory records in the past 12 months. (D) means denominator.

Formulas used

PLHIV = population x HIV prevalence

Number unreached = PLHIV 2018 - TX_CURR.Week current

HTS_ TST = ∑ HTS_TST all weeks

HTS_(TST_POS) = ∑ HTS_TST_POS all weeks

Positivity yield = HTS_TST_POS / HTS_TST

TX_PVLS_D = ∑ TX_PVLS_D all weeks

VL coverage = TX_PVLS_D / TX_CURR.Week current

TX_PVLS_N = ∑ TX_PVLS_N all weeks

VL suppression = TX_PVLS_N / TX_PVLS_D

FINDINGS

The analysis produced five maps illustrating the LGA quartile categorization for each of the priority indicators — unmet treatment need, HIV testing, HIV case finding, and viral load (VL) testing coverage and suppression. Further, the LGA treatment gap (or PLHIV not on treatment) was compared to the indicator performance. The following findings were made:

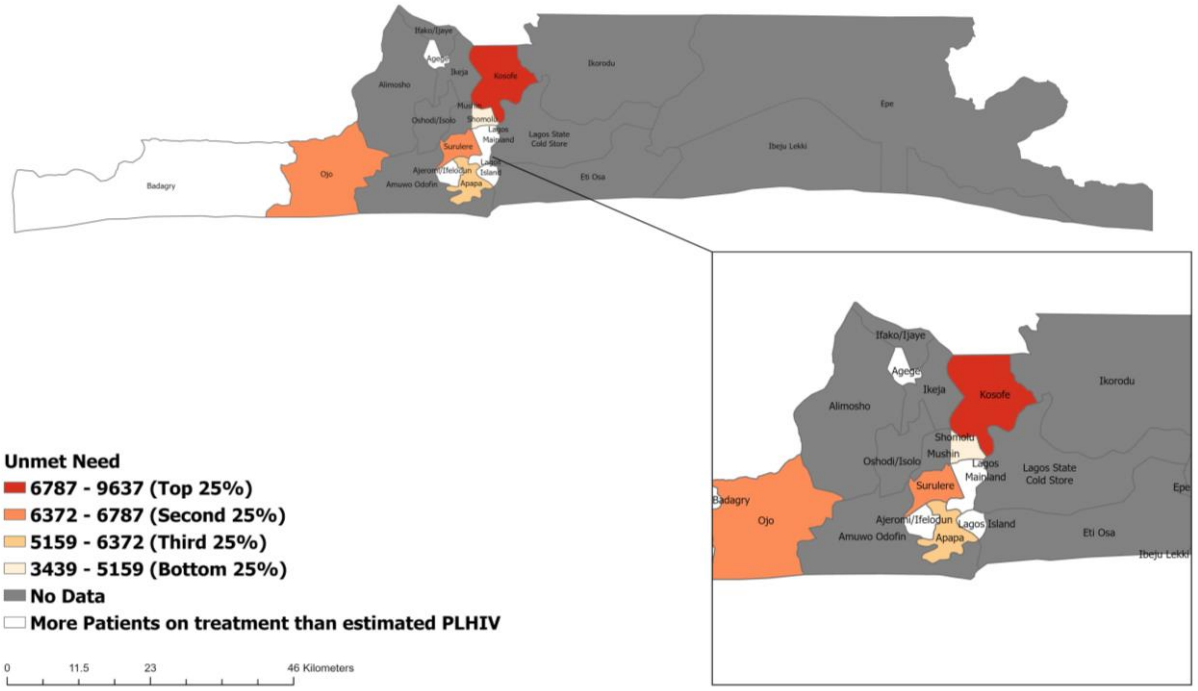
1. Mapping of LGA quartiles highlights the variation in levels of unmet need for treatment of PLHIV throughout the state

Only three LGAs fell within the top 50% of unmet treatment need among PLHIV in Lagos — Kosofe, Ojo and Surulere, all located in the western part of the state. Three LGAs in the center of the state — Lagos Island, Shomolu, and Apapa — fell within the bottom 50% of unmet need.

As mentioned above, five LGAs — Agege, Ajeromi Ifelodun, Badagry, Lagos Island, and Lagos Mainland — had lower PLHIV estimates as compared to patients on treatment. This could be a result of people accessing services in major urban centers outside their LGA of residence.

This study could not gather data on the treatment gap for 10 LGAs, due to lack of data and/or an implementing partner in these LGAs. They are indicated in gray on the map.

Figure 1. Distribution of unmet need among PLHIV in Lagos State, by quartile

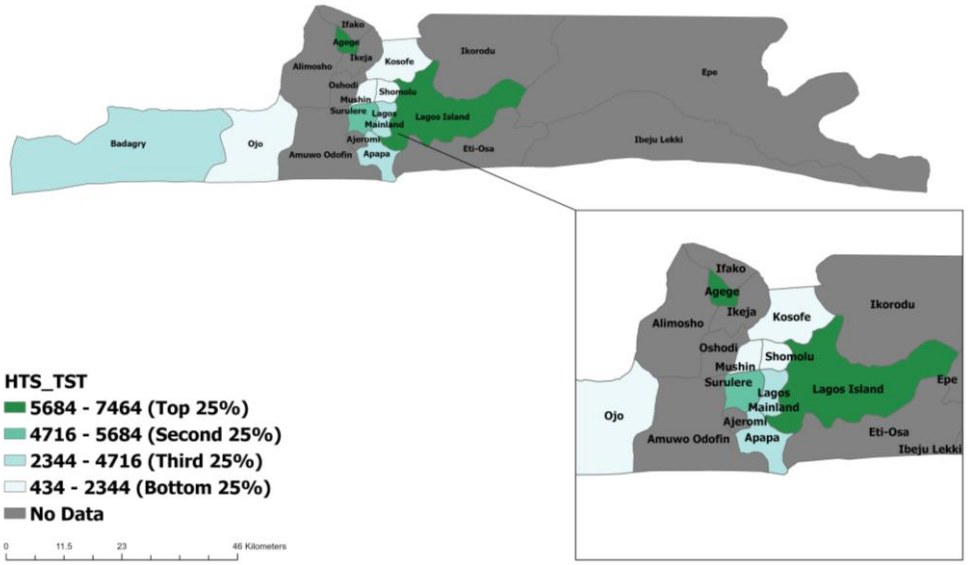


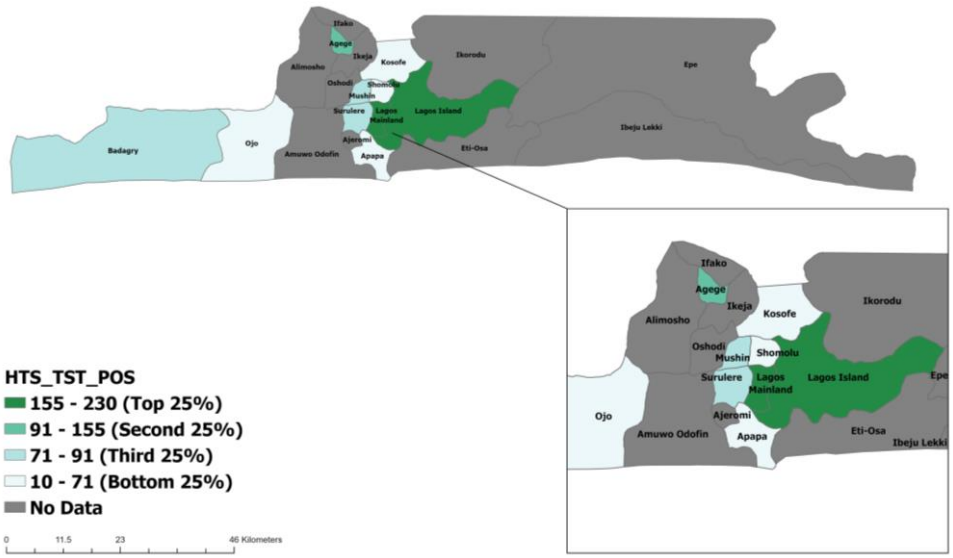
2. Varying yields in numbers of individuals testing positive for HIV (HTS_TST_POS) demonstrates need for increased investments in testing to better assess and address unmet need

From a testing perspective, the LGAs with the highest HIV-positive results were located in the central and southern parts of Lagos-— Agege, Ajeromi Ifelodun, Lagos Island, and Lagos Mainland. Unsurprisingly, four of the five LGAs with the highest positivity rates (top two quartiles) were LGAs with the highest unmet need (top 50%). The fifth LGA, Kosofe, was the only one with the highest unmet need (top 50%) that had a positivity rate in the bottom 25%. Overall, most of the LGAs within the top 50% of unmet treatment need showed low HIV-positivity yields.

Correlating the map in Figure 1 with the two maps below in Figure 2, we can deduce that the LGAs with high unmet need have conducted fewer HIV tests, and likewise have fewer confirmed positive cases. Intensifying testing efforts in the LGAs with high unmet need, such as Kosofe, could help to identify the unmet need, thereby closing the treatment gaps (see section on takeaways and recommendations below for further discussion of recommendations).

Figure 2. Comparing patients tested (HTS_TST) and patients testing positive (HTS_TST_POS) in Lagos State, by quartile, shows need for more testing





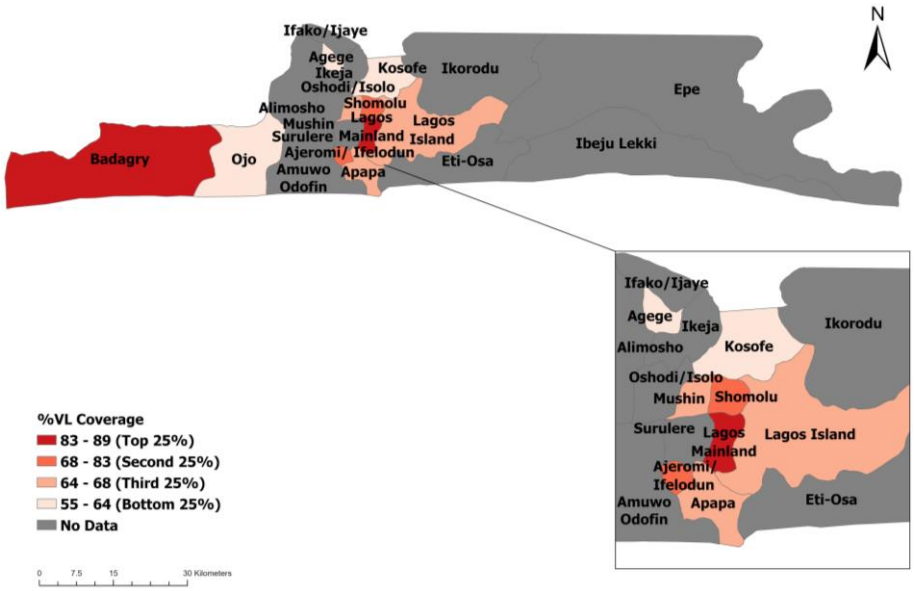
3. Gaps in the number of ART patients with viral load documented (TX_PVLS(N)) and number of ART patients with viral load suppression (TX_PVLS(D)) emphasize the need for more investment in care

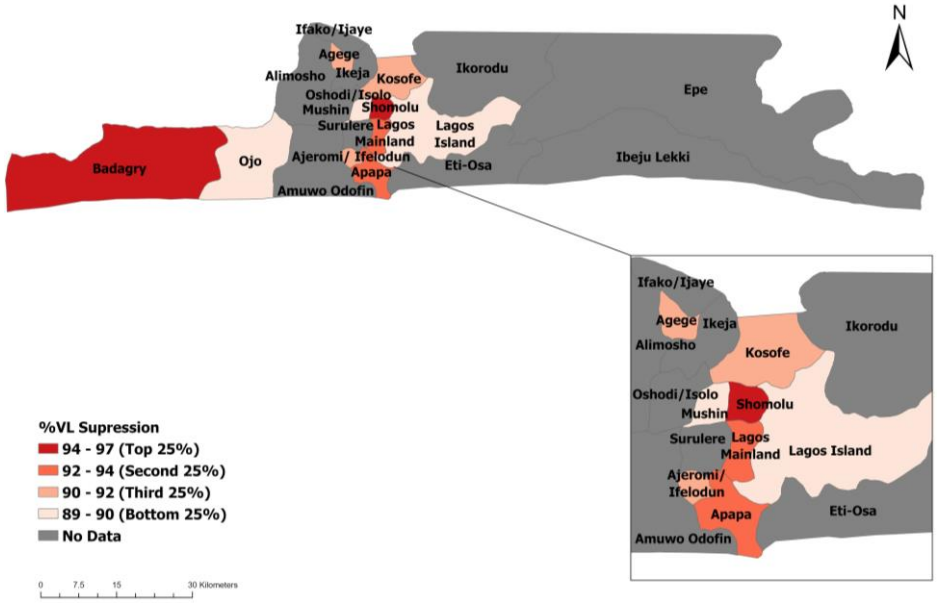
We compared VL testing coverage and VL suppression distribution with unmet treatment need among PLHIV. The LGAs in the top 50% of unmet treatment need showed poor VL coverage and low VL suppression. The LGAs with patients on treatment greater than estimated PLHIV — Agege, Ajeromi-Ifelodun, Badagry, Lagos Island, and Lagos Mainland — had a low treatment gap, with high VL coverage and VL suppression rate.

Generally, by comparing the maps below in Figure 3 showing VL coverage (TX_PVLS (N)) and VL suppression (TX_PVLS (D)) with the unmet need map in Figure 1, it can be inferred that LGAs with high VL coverage had high VL suppression rates and lower treatment gaps. Likewise, LGAs with poor VL coverage had poor VL suppression rates and high treatment gaps. Poor VL suppression rates — by increasing the chances of new infections within LGAs — widen the treatment gap.

With this in mind, a concerted investment should be made to increase VL coverage and VL suppression in these vulnerable LGAs to help curtail new infections and reduce treatment gaps (see section on takeaways and recommendations below for further discussion of recommendations).

Figure 3. Comparing VL coverage and VL suppression in Lagos State shows need for targeted investments





Potential takeaways and recommendations based on this analysis

This analysis aimed to estimate unmet treatment need among PLHIVs within the 20 LGAs in Lagos State. These estimates, in conjunction with the comparison to the 95-95-95 clinical cascade, will aid implementing partners and the relevant state MDAs to re-strategize and improve data-driven efforts for attaining epidemic control.

The majority of the LGAs with high numbers of PLHIV not on treatment (i.e., high unmet treatment need) also had lower levels of testing, leading to fewer people testing HIV positive being identified and put on treatment, driving lower levels of VL suppression. This suggests that the current resources and programming in these LGAs are insufficient to control the epidemic as noted above. The viral transmission will continue with low levels of ART coverage and poor treatment outcomes measured by viral load suppression.

Potential programmatic interventions should be differentiated based on the need for HIV programming. Immediate attention should be given to the LGAs with high levels of unmet need, to increase targeted testing to identify high-yield settings and sub-populations. All identified cases should have their contacts traced and tested for HIV, and be linked to treatment or prevention interventions, as appropriate. Interventions to improve viral load coverage and suppression should also be prioritized in LGAs with high unmet need, to control the epidemic through treatment success.

Stakeholders should leverage regular data review meetings to continuously identify inconsistencies with treatment retention, further refine programmatic interventions, and measure the impact. Further analysis should also be conducted to better estimate ART coverage by comparing the recorded LGA of residence in the clinical data to the LGA PLHIV estimates. This may control for intra-state migration to urban LGAs with more commercial activity.

Data protection and data use agreements

All data used for this analysis was provided by USAID and stored in a secure server with FTP-SSL-enabled protocols. The data did not include any personal identification information.

HIV testing, treatment and viral load monitoring in Lagos State, by LGA

LGA	PLHIV	Prevalence	HTS_TST	HTS_TST_POS	TX_CURR	TX_PVLS_D	TX_PVLS_N	VL_Suppression %	VL_Coverage %	Unmet need
Agege LGA	3134	1.5	7464	127	4319.0	2653.0	2442.0	92.0	61.4	-1185
Ajeromi/Ifelodun LGA	3169	1.5	5684	155	4384.0	3219.0	2901.0	90.1	73.4	-1215
Apapa LGA	6472	1.4	4716	71	1313.0	873.0	813.0	93.1	66.5	5160
Badagry LGA	3286	1.5	3940	91	4507.0	3765.0	3637.0	96.6	83.5	-1221
Kosofe LGA	10995	1.5	1597	64	1358.0	873.0	803.0	92.0	64.3	9637
Lagos Island LGA	1410	1.8	6907	165	6682.0	4519.0	4028.0	89.1	67.6	-5272
Lagos Mainland LGA	5928	1.5	4138	230	10736.0	9521.0	8965.0	94.2	88.7	-4808
Ojo LGA	8323	1.5	2344	83	1536.0	999.0	888.0	88.9	65.0	6787
Shomolu LGA	3708	1.4	434	10	269.0	147.0	132.0	89.8	54.6	3439
Surulere LGA	7820	1.3	5156	80	1448.0	1203.0	1134.0	94.3	83.1	6372

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FOR MORE INFORMATION

Emily Harris, Data.FI AOR
emharris@usaid.gov

Jenifer Chapman, Data.FI Project Director
datafiproject@thepalladiumgroup.com

https://datafi.thepalladiumgroup.com/

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