Demand and Supply Perspectives on Birth Registration in Nigeria: Evidence from the Federal Capital Territory

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ABSTRACT

Birth registration underpins legal identity, reliable vital statistics, and evidence-based population policy. Despite Nigeria's compulsory registration law and accelerated digitalization, national coverage for children under five reached only 57 percent in 2024 with 14 million births registered between 2022 and 2024 through health-facility integration and eCRVS. Using a demand–supply framework, this study examines birth registration in the Federal Capital Territory (FCT) using mixed-methods data collected in 2021. Demand-side analysis draws on a multistage KAP survey of 1,266 residents; supply-side data derived from structured questionnaires and key-informant interviews with the FCT Head of Vital Registration and all six Area Council Comptrollers. Demand-side results show 72.8 percent overall vital-event registration practice (births dominant), with strong gradients by education, income, marital status, religion, and urban residence. Probit models confirm awareness (coef. 1.37, $p<0.001$) and process knowledge as the dominant predictors. Supply-side findings document a functional NPC structure with 219 registration centres, PDA-to-RapidSMS digitization, free certificates, and 50 percent of registrants originating from co-located health facilities. However, average travel distance (5.89 km) exceeds most respondents' willingness, especially in peripheral councils. The FCT outperforms national averages because supply advantages in AMAC and Bwari translate directly into higher demand uptake, while peripheral gaps mirror broader Nigerian bottlenecks. Comparative analysis with other African capitals (Kigali, Accra, Nairobi, Dakar, Gaborone) shows that full health decentralization and interoperability—as in Rwanda and Botswana—achieve near-universal urban coverage. This study contributes to CRVS scholarship by systematically quantifying the respective impacts of behavioural and infrastructural factors in a rapidly urbanizing capital territory. It also provides scalable insights applicable to Nigeria's demographic transition.

Keywords: birth registration, CRVS, demand–supply framework, legal identity, demographic transition, Nigeria, FCT

INTRODUCTION

Civil registration and vital statistics (CRVS) systems are key requirements for population governance, enabling accurate measurement of fertility, mortality, nuptiality, and migration. In areas characterised by high fertility and rapid urbanisation, such as Nigeria, comprehensive birth registration is critical for demographic analysis, effective social protection, and tracking advancements toward the Sustainable Development Goals (SDGs).

Nigeria's CRVS system has historically been incomplete, compelling reliance on model schedules (estimates) and periodic surveys that introduce uncertainty into demographic estimates. Recent progress includes UNICEF (2024) reports that 14 million births were registered between 2022 and 2024. This implies an increase in under-five registration to 57 percent (urban 79 percent, rural 45 percent). The NDHS 2024 confirms a fertility decline to 4.8 children per woman, underscoring the need for reliable vital statistics to assess whether Nigeria is entering a demographic transition from high to low fertility rates.

The Federal Capital Territory (FCT), characterized by its cosmopolitan and comparatively affluent population, presents a strategic context for analysis. Despite the presence of advanced supply infrastructure, behavioral obstacles remain. This study delivers the first comprehensive demand–supply assessment of birth registration in

the FCT, connecting household attitudes and behaviors with institutional procedures, spatial accessibility, and digital systems.

Theoretical Framework and Literature Review

CRVS and the Demographic Transition

Classical demographic transition theory (Notestein 1945; Caldwell 1976) and its extensions (Bongaarts & Watkins 1996) rest on accurate measurement of fertility, mortality, and nuptiality—data that only complete CRVS systems can supply continuously. In sub-Saharan Africa, persistent under-registration biases estimate of fertility decline (Silva et al. 2022). Nigeria's TFR decline from 5.3 to 4.8 (NDHS 2024) signals possible transition onset, yet without universal registration the contribution of urbanization, education, and policy remains imprecisely quantified.

Demand-Side Determinants

Studies across LMICs identify education, wealth, urban residence, and health-service contact as strong predictors of birth registration (Målqvist et al. 2018). In Nigeria, Anaduaka et al. (2022) multilevel analysis of NDHS 2008–2018 data (n=66,630) found children of tertiary-educated mothers had 55.9% higher odds of certification and those in the richest quintile 77.6% higher odds. Cultural norms—preference for traditional naming ceremonies before official registration, perceived irrelevance when no immediate service is needed—further depress demand, especially for deaths (Makinde et al. 2020).

Recent FCT-specific work (Aidenagbon et al. 2025) shows higher practice (72.8 percent) but persistent socio-economic and religious gradients.

Supply-Side Determinants

Global reviews (WHO/UNICEF 2020; Castle et al. 2020) highlight proximity, staffing, and technology as critical. Travel beyond 5 km significantly reduces registration probability. UNICEF's Nigeria pilots show that health-facility integration and RapidSMS dashboards increased coverage by 100–250 percent (UNICEF 2019). Abbas (2014) in Gombe mapped centres and showed distance effects.

Integrated Demand–Supply Frameworks

Recent work explicitly models interactions (Anaduaka et al. 2022; Suthar et al. 2019). The FCT case is particularly instructive because supply infrastructure is relatively advanced (219 centres, full digitization) while demand remains heterogeneous. This study fills three gaps: (1) contemporaneous primary supply metrics, (2) direct linkage of travel distance to respondent preferences, and (3) qualitative institutional insights in Nigeria's capital, benchmarked against other African capitals.

METHODOLOGY

A mixed-methods cross-sectional design was used. Both quantitative and qualitative data were generated and analysed for this research. The quantitative data relates to the information on respondent's demographic and socio-economic characteristics, levels of awareness, knowledge and practice of vital registration. The qualitative data relates to personal descriptions and accounts of processes, methods and procedures of vital registration by the registrars and other key personnel of the vital registration department of the National Population Commission (NPC)

Demand-Side Data.

Demand side data was obtained through:

- Multistage probability sample across all six Area Councils

- n = 1,266 households
- KoboCollect questionnaire covering socio-demographics, awareness, perceptions, attitudes, and practice of vital registration in the FCT

Supply-Side Data

Supply side data was obtained through:

- Structured questionnaires targeted at registrars of vital events
- Key-informant interviews with the FCT Head of Vital Registration and all six Area Council Comptrollers

Spatial Analysis

Spatial analysis was done using:

- ArcGIS mapping of 219 centres
- Euclidean distance calculations

Statistical Analysis

Data analysis was done with:

- Probit regression for demand predictors
- Thematic analysis for KIIs

RESULTS

Demand-Side Findings

Overall vital-event registration practice stood at 72.8% (births dominant). There were significant gradients: tertiary education 86.2% vs. none 47.2%; high-income brackets >90%; Christians > Muslims; AMAC/Bwari ~84% vs. Kuje 39%. Probit regression confirms awareness (coef. 1.37, p=0.000) and process knowledge (0.77, p=0.000) as strongest predictors. Willingness-to-travel: 56.7% <1 km; 33.7% 1–2 km; only 6.1% 3–5 km.

Supply-Side Findings

The performance on the demand side as shown above indicates that overall vital-event registration practice stood at 72.8% (births dominant) with significant gradients along level of education, income, religion and urbanization. Probit regression further confirms awareness (coef. 1.37, p=0.000) and process knowledge (0.77, p=0.000) as strongest predictors. Willingness-to-travel: 56.7% <1 km; 33.7% 1–2 km; only 6.1% 3–5 km. This performance can be linked to a number of supply side attributes

Institutional Structure

Digitisation scalability: "The digital process has greatly improved accuracy and speed, allowing real-time transmission to the national level." Birth process: Parents report within three months with evidence (hospital record or attestation). Data captured on handheld PDA into electronic server. Comptroller verifies, prints free certificate, and maintains manual register. Late registration is tolerated without penalty: "In the FCT late registration is not penalized but only written in red on the register."

Health co-location: "Births mostly occur at health facilities… Establishing registration centres within health facilities is the most effective way because parents can supply information immediately." Death registration:

"Deaths are hardly reported. Death reports are mainly done to facilitate the issuance of death certificates to pursue other legal requirements for inheritance… There are still challenges with voluntary report of deaths in the FCT and this is a setback for the availability of data on deaths for planning purposes."

Hierarchical oversight: "The dual technical/administrative reporting line ensures data flow from centres to FCT to national level… This structure can be replicated nationally with proper funding." (Mirrors Rwanda's centralised model.)

Voluntary death reporting: Retrospective registration is possible with evidence.

Data Management and Digitisation

The weekly registrar–comptroller reviews and monthly FCT meetings ensure quality. Some of the comptrollers interviewed listed checks including "double checks of information… moving around wards… checking the information more than twice… allow registrant to check information before issuing certificate." All data registration data flows to the public UNICEF RapidSMS dashboard (2011–present).

The inherent practice of the layered verification has further enhanced the quality of reporting as tested to by the fact that "Only verified data enters the central database."

Distribution, Access, and Registrant Sources

There are 219 centres in the FCT (at least one per ward; two communities served by 1 centre on the average).

Table 1: Distribution of vital registration centres in the FCT

Sn	Council Areas	Npc Office Location	No Of Centres On Dashboard	Subsidiary Centres	Total	Percentage
1	ABAJI	NPC ABAJI	15	0	15	6.8%
2	AMAC	NPC AMAC (LEA PRY SCHL WUSE ZONE 3, ABUJA	47	33	80	36%
3	BWARI	NPC OFFICE BWARI (LGA SECRETARIAT)	26	31	57	26%
4	GWAGWA.	NPC OFFICE (GWAGWALADA SPECIALIST HOSPITAL)	19	8	27	12.3%
5	KUJE	NPC OFFICE KUJE	14	10	24	10.9%
6	KWALI	NPC OFFICE (KWALI TOWN HALL)	10	6	16	7.3%
	TOTAL		**131**	**88**	**219**	**100%**

Source: Field Survey 2023

Mean travel distance to a registration centre was 5.89 km ranging between 4.0 – 4.25 for AMAC/Bwari which are close to the metropolis to 7.9–8.86 km in the peripheral LGAs.

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Table 2 Access to vital registration centres in the FCT

Area Council	Population (2016)	Area (km²)	Density (per km²)	Reg. Centres	People/ per Centre	Avg. Travel (km)	Coverage per Centre (%)
Abaji	146,600	948	157	15	9,773	7.9	63.21
AMAC	1,967,500	1,476	1,333	80	24,594	4.0	18.00
Bwari	581,100	1,031	564	57	10,195	4.3	18.09
Gwagwalada	402,000	1,036	388	27	14,889	6.2	38.37
Kuje	246,400	1,888	131	24	10,267	8.9	78.67
Kwali	218,400	1,241	176	16	13,650	8.8	77.56
Total	3,562,000	7,620	467	216	16,265	5.9	34.79

Source: Field Survey, 2023.

Overall, 50% of registrants originated from immediate health-facility community, confirming optimal placement. 100% of centres register births; 86% deaths; 13.5% stillbirths. Monthly volume: 45.9% centres register <100 births; all <100 deaths.

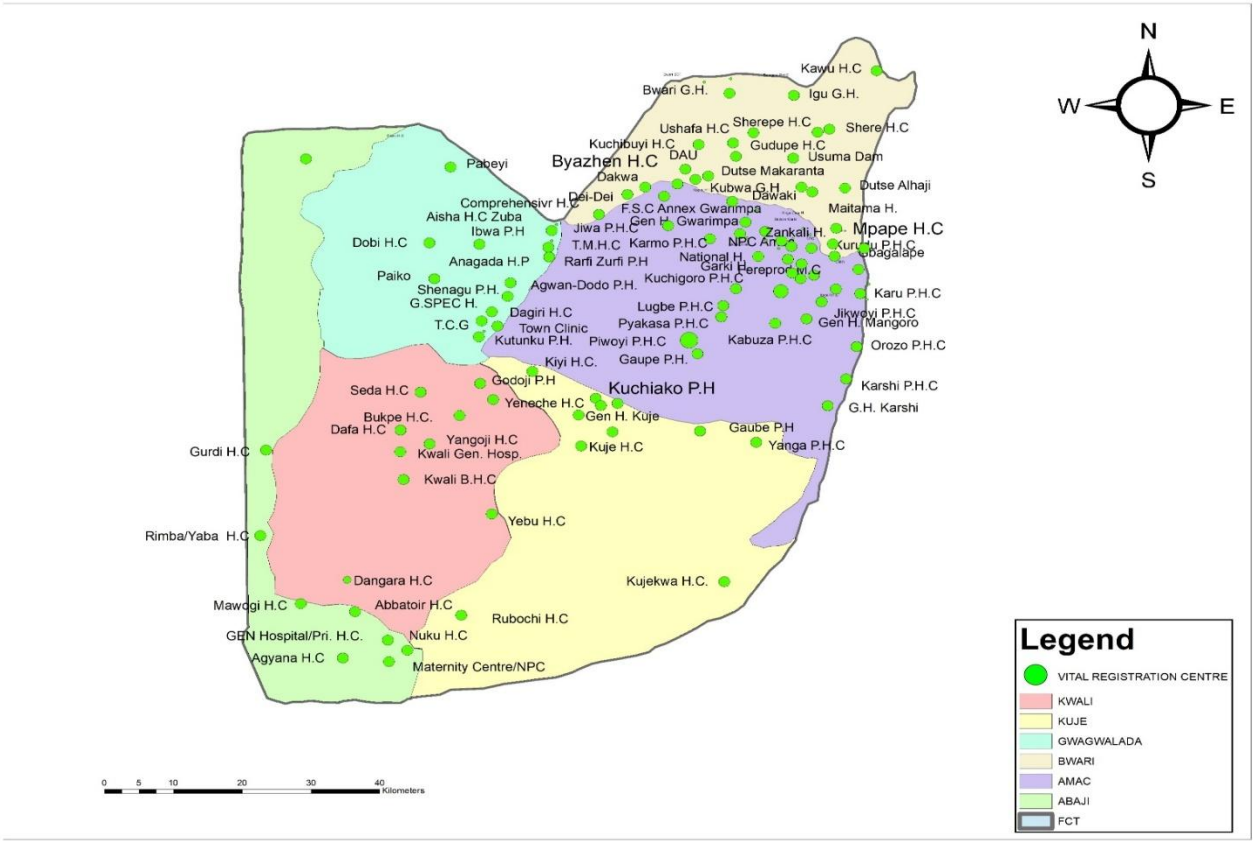

Figure 1: Vital registration centres in the FCT

Source: Field Survey, 2023

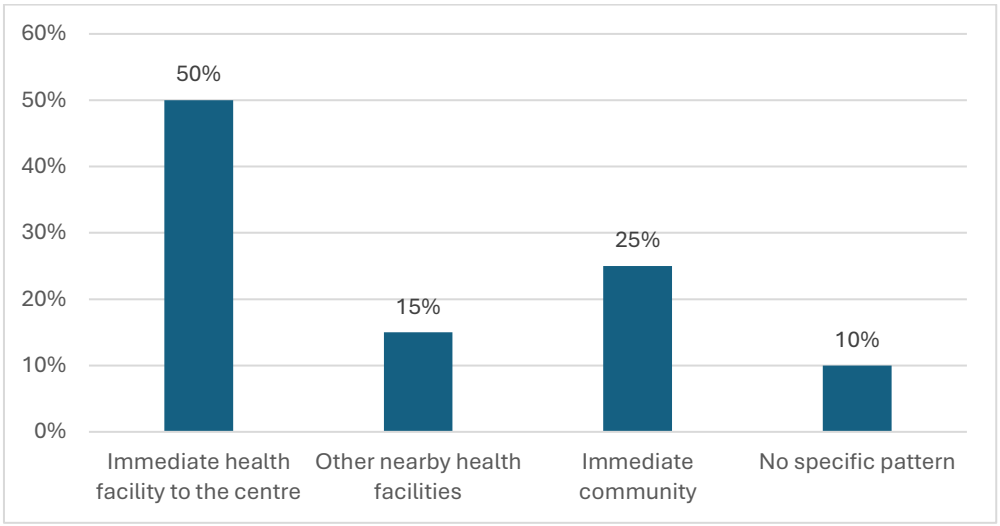

Figure 2: Source of vital events registrants at VR centres.

Source: Field Survey 2023

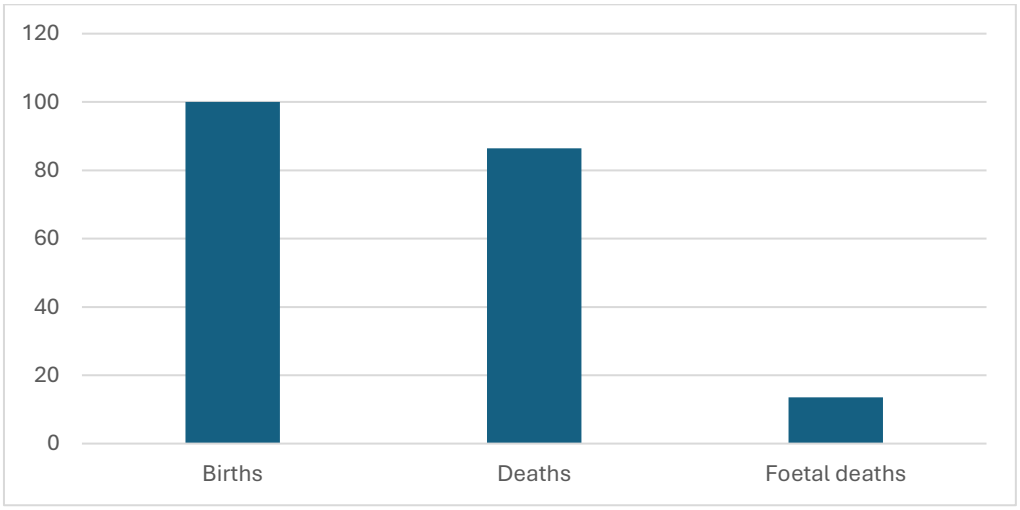

Figure 3: Events registered at VR centres in the FCT.

Source: Field Survey 203

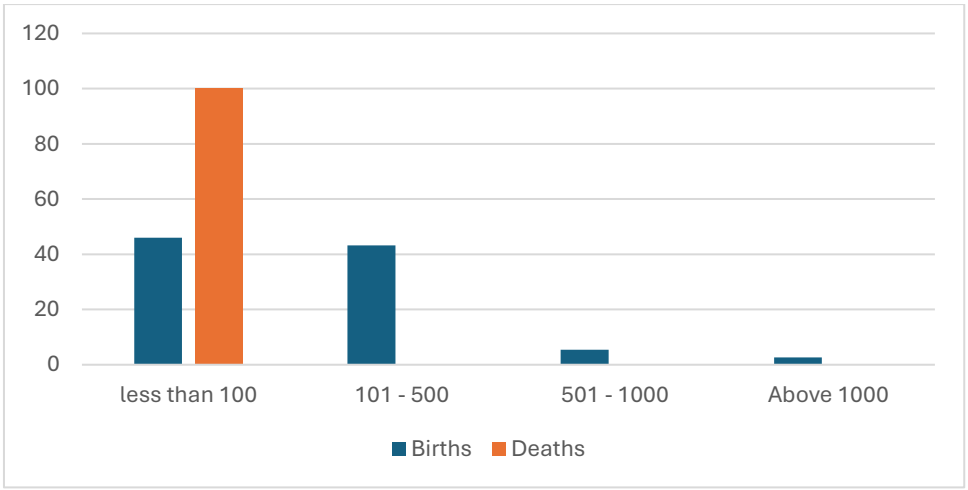

Figure 4: Frequency of registration of vital events in the FCT.

Source: Field Survey, 2023

DISCUSSION

Demand–Supply Interplay in the FCT

The findings from this study reveal a clear and mutually reinforcing relationship between demand-side behavioural factors and supply-side infrastructural conditions in shaping birth registration outcomes in the Federal Capital Territory. The FCT presents a unique context where supply infrastructure is comparatively advanced—219 registration centres, widespread digitization, and strong administrative oversight—yet registration practice remains uneven across socio-economic and geographic groups. This underscores the central argument of the study: supply alone does not guarantee uptake unless it aligns with behavioural realities and accessibility constraints.

The higher registration practice observed in AMAC and Bwari is a direct reflection of this alignment. These councils benefit from dense health-facility networks, shorter travel distances (4.0–4.3 km), and a more urbanized population with higher awareness and process knowledge. These structural advantages activate behavioural willingness, resulting in practice rates of approximately 84 percent. In contrast, peripheral councils such as Kuje, Kwali, and Abaji exhibit significantly lower practice rates, despite having functional centres. The average travel distances in these areas (7.9–8.9 km) exceed the willingness-to-travel threshold for 90 percent of respondents, demonstrating that geographic accessibility remains a critical bottleneck.

Behavioural constraints further compound these spatial barriers. Low awareness, limited understanding of registration procedures, and cultural norms—such as prioritizing traditional naming ceremonies before official registration—continue to depress demand. The probit regression results reinforce this: awareness (coef. 1.37) and process knowledge (0.77) are the strongest predictors of registration practice. This confirms that behavioural readiness is not automatic; it must be cultivated through targeted communication and community engagement.

The supply-side interviews also highlight persistent challenges with death registration. Registrars consistently noted that deaths are “hardly reported” unless required for legal or administrative purposes. This reflects a broader national pattern where death registration remains below 20 percent, undermining mortality surveillance and population health planning. The FCT’s experience shows that even with digitization and free services, voluntary death reporting requires stronger incentives and clearer perceived benefits.

Overall, the interplay between demand and supply in the FCT demonstrates that registration outcomes improve most where structural access, digital efficiency, and behavioural readiness converge. Where any of these elements is weak, registration practice declines sharply.

Implications for Population Science and Nigeria’s Demographic Transition

The FCT’s 72.8 percent registration practice—substantially higher than the national average of 57 percent—provides important insights for Nigeria’s demographic transition. As the NDHS 2024 indicates a fertility decline to 4.8 children per woman, the need for accurate, continuous vital statistics becomes even more urgent. Without complete CRVS data, demographic estimates rely heavily on modelled projections and periodic surveys, which introduce uncertainty into fertility, mortality, and population growth assessments.

The FCT’s experience demonstrates that improvements in CRVS completeness are achievable when supply systems are strengthened and aligned with population behaviour. The integration of health facilities into registration workflows, the use of digital tools such as RapidSMS, and the presence of a hierarchical oversight structure all contribute to higher completeness. These features mirror successful models in countries like Rwanda and Botswana, where CRVS systems are tightly integrated with health services and national ID systems.

For Nigeria, the implication is clear: scaling the FCT model—while addressing its behavioural and spatial gaps—could significantly accelerate national progress toward universal registration, thereby improving the accuracy of demographic indicators and supporting evidence-based planning.

Comparative Insights from Other African Capitals

The comparative analysis situates the FCT within a broader continental context. Cities such as Kigali and Gaborone achieve near-universal birth registration (95–100 percent) due to full digital integration, mandatory reporting, and strong interoperability between CRVS, health, and ID systems. Accra and Dakar also demonstrate high urban completeness through mobile units, school-based catch-up registration, and digital SRBD systems.

In contrast, FCT Abuja's 72.8 percent practice rate—while higher than the national average, still lags behind these leading capitals. The key differentiators include:

- Weaker enforcement mechanisms (e.g., no penalties for late registration)
- Limited integration with national ID systems
- Lower death registration completeness (<20 percent)
- Greater spatial inequality between urban and peripheral councils

These comparisons highlight that digital tools alone are insufficient. The most successful African capitals combine digitalization with strong governance, mandatory reporting, and seamless integration with health and identity systems. Abuja's progress is notable, but the gaps identified in this study must be addressed for the FCT to reach continental best-practice levels.

Table 3: Birth Registration Completeness in Selected African Capitals (2023–2024)

Capital	National Under-5 Reg. (%)	Urban/Capital (%)	Death Reg. (%)	Key Supply Features
Kigali	90.3	95–99	~46	Full digital + health integration
Accra	76.7	~92	30–40	Digital SRBD + mobile units
Nairobi	70.3	>100	~45	Digital + health notification
Dakar	81.4	~93	Low	NEKKAL digitisation + school catch-up
Gaborone	~100	100	80–90	ID-linked CRVS + enforcement
Abuja	57	72.8	<20	219 centres + RapidSMS

Limitations and Strengths

The study acknowledges limitations such as self-reported data, which may introduce recall or social desirability bias, and the timing of data collection (2021), which may not fully reflect post-2021 digitalization gains. Temporal dimensions were also not emphasized in this study. However, the strengths of the study are substantial. It is one of the few Nigerian CRVS studies to:

- Combine demand-side household data with supply-side institutional data
- Use spatial analysis to quantify accessibility
- Apply probit regression to isolate behavioural predictors
- Benchmark findings against other African capitals

These strengths enhance the validity of the findings and provide a robust foundation for policy recommendations.

CONCLUSION AND POLICY RECOMMENDATIONS

The study demonstrates that birth registration outcomes in the Federal Capital Territory (FCT) are shaped by a dynamic interplay between **demand-side behavioural factors** and **supply-side infrastructural capacity**. Although the FCT benefits from one of the most advanced CRVS infrastructures in Nigeria—featuring 219 registration centres, digitized PDA–RapidSMS workflows, and strong institutional oversight—coverage remains uneven across socio-economic groups and geographic areas.

Two key insights emerge clearly from the findings:

1. Supply Strength Alone Is Not Enough

Even with a dense network of centres and the offer of free certificates, registration uptake is constrained by:

- Limited willingness to travel beyond **1–2 km**, despite mean distances of **5.89 km**.
- Persistent behavioural barriers such as low awareness, weak process knowledge, and cultural norms around naming and death reporting.
- Peripheral councils (Kuje, Kwali, Abaji) experiencing lower practice rates because supply does not match residents' mobility patterns or socio-economic realities.

This is reflected in respondents' own words, such as:

"Births mostly occur at health facilities… Establishing registration centres within health facilities is the most effective way."

2. Demand Improves Dramatically When Supply Is Convenient

AMAC and Bwari—where centres are closer, health facilities are denser, and urban residents have higher awareness—show significantly higher practice rates (~84%). This confirms that **behavioural willingness is activated when structural access is optimized**.

The FCT's **72.8% practice rate**—well above the national **57%**—demonstrates the potential of combining:

- Digital systems
- Health-facility integration
- Strong administrative oversight
- Community-level awareness

This aligns with global evidence from Kigali, Gaborone, and Dakar, where **interoperable, health-linked CRVS systems** achieve near-universal urban coverage.

Ultimately, the study shows that Nigeria's demographic transition cannot be accurately monitored without universal CRVS, and the FCT provides a scalable model for bridging behavioural and infrastructural gaps.

Specific Recommendations

1. Decentralize to Community and Mobile Registration Points (<2 km)

The study shows that **90% of residents are unwilling to travel more than 2 km** for registration. Yet the average distance in peripheral councils is **7.9–8.9 km**.

Policy action

- Establish **micro-centres** in schools, markets, religious institutions, and community halls.
- Deploy mobile registration units during immunization days, market days, and community festivals.
- Use GIS mapping to identify underserved clusters and optimize centre placement.

This directly responds to the supply-side insight that:

"Travel beyond 5 km significantly reduces registration probability."

2. Institutionalize Registration at Every PHC with Real-Time eCRVS–NIMC Linkage

Half of all registrations already originate from health facilities, confirming this as the most efficient channel.

Policy actions

- Make birth notification **automatic** at all PHCs, maternity homes, and private clinics.
- Integrate NPC systems with **NIMC**, enabling instant issuance of NINs at birth.
- Train health workers as **auxiliary registrars** to reduce bottlenecks.

This builds on the registrar's testimony:

"The digital process has greatly improved accuracy and speed… Only verified data enters the central database."

3. Adopt School-Based Catch-Up Registration

Children who missed early registration can be reached efficiently through schools.

Policy actions

- Require proof of birth registration at school entry, with **on-site registration desks** for those without certificates.
- Partner with UBEC and SUBEB to integrate CRVS into school health programmes.
- Use school records to identify unregistered children aged 5–14.

This mirrors successful models in Dakar and Accra.

4. Strengthen Behaviour Change Communication (BCC)

Awareness (coef. **1.37**) and process knowledge (coef. **0.77**) were the strongest predictors of registration practice.

Policy actions

- Launch targeted campaigns through radio, social media, religious institutions, and community leaders.

- Address cultural barriers such as delayed naming ceremonies.
- Promote the benefits of registration for education, inheritance, and social protection.

This responds to the demand-side insight that behavioural constraints—not cost—are the main barriers.

5. Introduce Incentives for Death Registration + Annual FCT CRVS Scorecard

Death registration remains extremely low (<20%), largely because it is only pursued when legally required.

Policy actions

- Link death certificates to access to pensions, land transfers, and insurance claims.
- Provide small community-level incentives for timely reporting.
- Publish an **annual CRVS performance scorecard** for each Area Council to promote accountability.

This aligns with the supply-side observation:

"Deaths are hardly reported… This is a setback for availability of data on deaths for planning purposes."

The study shows that CRVS improvement requires simultaneous behavioural and infrastructural interventions. The FCT is uniquely positioned to lead Nigeria toward universal registration by:

- Bringing services closer to communities
- Embedding CRVS into health and education systems
- Strengthening digital interoperability
- Incentivizing complete reporting
- Institutionalizing accountability

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