

WHO IS BEING MISSED? ZERO-DOSE CHILDREN AND THE SOCIAL GEOGRAPHY OF ROUTINE IMMUNISATION IN NIGERIA

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Abstract

Nearly one in three Nigerian children aged 12-23 months (30.9%) has received no vaccinations at all, according to the 2024 Nigeria Demographic and Health Survey. This paper asks who these children are and why routine immunisation continues to miss them. It combines secondary analysis of the survey's published tables with qualitative evidence from the author's doctoral fieldwork among community members and World Health Organization staff in Nigeria. The survey shows that zero-dose children are concentrated in the North West (46.6%), in rural areas (40.4%), among children of mothers with no education (51.0%) and in the poorest households (49.1%); almost all children who never had a vaccination card (91.2%) are unvaccinated. The fieldwork shows communities contrasting door-to-door polio campaigns with under-resourced primary health care centres, and reading the contrast as a reason for suspicion. The paper argues that zero-dose children are a predictable outcome of decades of investment in vertical campaigns over the everyday health system, and that closing the gap requires rebuilding trust in primary health care, not further campaigns alone.

Keywords: Routine immunisation; Zero-dose children; Primary health care; Nigeria

Introduction

Immunisation is often described as one of the most cost-effective tools in public health. Yet in Nigeria, a large share of children never receive even a single vaccine.

The 2024 Nigeria Demographic and Health Survey (NDHS) found that 30.9% of children aged 12–23 months had received no vaccinations at all, while only 39.4% were fully vaccinated with all basic antigens and 19.8% were fully vaccinated according to the national schedule (Federal Ministry of Health and Social Welfare of Nigeria (FMoHSW), National Population Commission (NPC), & ICF, 2025). Full basic vaccination has risen slowly, from 13% in 2003, but progress remains far from the goal of reaching every child.

Global health policy now pays special attention to these "zero-dose" children. The Immunization Agenda 2030 places them at the centre of its commitment to leave no one behind, on the grounds that a child who has never been reached by routine immunisation is usually also missing other basic health services (World Health Organization (WHO), 2020). Zero-dose children are therefore not only an immunisation problem. They are a sign of where the health system itself fails to reach families.

This paper asks two questions: who are Nigeria's zero-dose children, and why does routine immunisation keep missing them? It answers the first question with the published tables of the 2024 NDHS, and the second with qualitative evidence from the author's doctoral fieldwork (Mamman, 2018). Its argument is that routine immunisation is a test not of any single campaign, but of whether primary health care (PHC) works and is trusted. Where it does not, decades of investment in high-profile vertical campaigns have left a gap that campaigns themselves cannot fill. The paper focuses on routine immunisation nationally; the specific case of polio eradication in the conflict-affected North-East is examined separately (Mamman, in press).

Section 2 reviews the literature and sets out the framework. Section 3 describes the methodology. Section 4 presents the findings, and Section 5 discusses them. Section 6 concludes with recommendations.

2. Literature Review and Theoretical Framework

2.1 From Comprehensive to Selective Primary Health Care

The 1978 Declaration of Alma-Ata presented primary health care as the foundation of health systems: essential care made universally accessible, built on community participation, and linked to wider social and economic development (WHO, 1978). Immunisation was listed as one part of this broader package, alongside safe water, nutrition, maternal and child health care, and the treatment

of common diseases. Within a year, Walsh and Warren (1979) proposed "selective" primary health care: a narrower, interim strategy focused on a few high-impact interventions. Cueto (2004) shows how this approach, promoted through UNICEF's GOBI package of growth monitoring, oral rehydration, breastfeeding and immunisation, spread quickly because its results were easy to count and report.

This shift matters for the present study because it changed how immunisation was delivered. Instead of being one service within a strong, continuous primary health care system, immunisation increasingly became the target of separate programmes with their own funding, staff and campaign cycles. Earlier work by the author traced how these competing paradigms of public health shaped health care policy (Mamman, Umaru Baba, & Bakare-Aremu, 2021), and how the sidelining of social knowledge within global health institutions became structurally embedded in their programme architecture (Mamman, in press).

Vertical Campaigns and Horizontal Systems

The literature distinguishes between vertical programmes, which target a specific disease through dedicated structures, and horizontal approaches, which strengthen the general health system that delivers many services at once. Vertical campaigns can achieve rapid, measurable results, and the eradication of smallpox remains their best-known success. Their critics argue, however, that they can draw staff, attention and funding away from routine services, and that they leave little behind once the campaign ends (Mamman, 2018). Routine immunisation sits at the meeting point of the two approaches: it involves specific vaccines, but it can only be delivered reliably through a functioning, continuously available primary health care system.

Social Determinants and Trust

The Commission on Social Determinants of Health (2008) argued that health outcomes follow social position: education, income, place of residence and gender shape who is reached by health services and who is not. For immunisation, this means that coverage gaps are rarely random; they tend to follow existing patterns of disadvantage. A second strand of literature emphasises trust. People's willingness to use a service depends on their experience of the institutions that provide it, and on whether those institutions appear to care about what the

community itself considers important (Mamman, 2021). This paper brings these strands together. It treats zero-dose children as the point where social disadvantage, weak primary health care and low trust meet.

Primary Health Care and Social Analysis in Nigeria

In Nigeria, the gap between policy language and institutional practice has been noted for some time. The WHO's Country Cooperation Strategy for Nigeria (2014-2019) linked disease patterns in the country explicitly to the social determinants of health, including socioeconomic status, education, gender, and access to water and sanitation. Yet the doctoral fieldwork on which this paper draws found that the country office had no programme category dedicated to these determinants, and that the post of Health Promotion officer, responsible for many of the social aspects of the organisation's work, had been vacant for nearly five years because it was not funded (Mamman, 2018). Social concerns were acknowledged in strategy documents but were thinly resourced in practice.

The same fieldwork found that programme staff relied heavily on situation analyses, baseline surveys and sensitisation meetings for social information, while warning that these sources said little about social organisation and relationships within communities (Mamman, 2018). For routine immunisation, this matters greatly. Whether a mother brings her child to a clinic depends on whether the clinic is open, staffed and stocked, but also on whether she trusts it, whether she can afford the time and travel, and whether her household and community support the decision. These are precisely the factors that survey coverage figures record as outcomes but cannot explain.

Methodology

The study uses a mixed approach, combining descriptive secondary analysis of national survey data with qualitative evidence. The quantitative evidence comes from the published tables of the 2024 NDHS, a nationally representative household survey implemented by the National Population Commission and the Federal Ministry of Health and Social Welfare with technical assistance from ICF (FMoHSW, NPC, & ICF, 2025). The analysis draws mainly on the survey's tables of vaccination coverage by background characteristics. The key indicator is the percentage of children aged 12–23 months who had received no vaccinations, according to a vaccination card or the mother's report. This differs slightly from

the definition used in global monitoring, which counts children who have not received the first dose of a diphtheria-tetanus-pertussis-containing vaccine (WHO, 2020); the NDHS measure is used here because it is reported consistently across all background characteristics.

The qualitative evidence comes from semi-structured interviews conducted during the author's doctoral fieldwork in Nigeria between 2015 and 2016 (Mamman, 2018). The wider study drew on 40 key informant interviews with WHO staff, government officials, development partners and community members. This paper uses interviews with community members, including a farmer and leader of a farmers' association, an Islamic cleric and alternative medicine practitioner, a primary school teacher living as a displaced person in Abuja, and a beneficiary of a maternal health programme, together with a social mobilisation officer of the WHO Nigeria country office. Interviews were transcribed and analysed thematically. Ethical approval was obtained from the Federal Ministry of Health ethics committee, and informants are identified only by role.

The two kinds of evidence answer different questions. The survey data show *who* is missed and *where*; the interviews help explain *why*. The survey figures describe associations, not causes, and the interviews reflect views held at the time of the fieldwork. The paper therefore uses the interviews to interpret the survey patterns, not to measure them.

Findings

The Social Geography of Zero-Dose Children

Table 1 presents the percentage of children aged 12-23 months with no vaccinations, by selected background characteristics. The pattern is clear and consistent: zero-dose children are concentrated where social disadvantage is greatest.

Table 1: Children Age 12-23 Months with No Vaccinations, by Background Characteristics (%)

Characteristic	Category	No vaccinations (%)
Residence	Urban	16.6
	Rural	40.4

Zone	North West	46.6
	North Central	34.9
	North East	26.0
	South West	12.1
	South South	10.2
	South East	5.1
Mother's education	No education	51.0
	Primary	29.9
	Secondary	13.4
	More than secondary	4.5
Wealth quintile	Lowest	49.1
	Second	44.7
	Middle	28.0
	Fourth	17.5
	Highest	4.9
Vaccination card	Seen	0.1
	Not seen or no longer has	5.1
	Never had	91.2
Sex	Male	31.3
	Female	30.6
Total		30.9

Source: FMoHSW, NPC and ICF (2025), Table 10.4.

Three features stand out. First, the gap between the North and the South is very wide. Nearly half of children in the North West (46.6%) have received no vaccines, compared with 5.1% in the South East (Figure 1). At state level, full basic vaccination ranges from 69% in Cross River to just 8% in Sokoto (FMoHSW, NPC, & ICF, 2025). Second, the gradients by mother's education and household wealth are steep: a child of a mother with no education is more than ten times as likely to be zero-dose as a child of a mother with more than secondary education (51.0% against 4.5%), and a child in the poorest households ten times as likely as one in the richest (49.1% against 4.9%). Third, there is almost no

difference between boys and girls (31.3% and 30.6%). The disadvantage follows households and places, not the sex of the child.

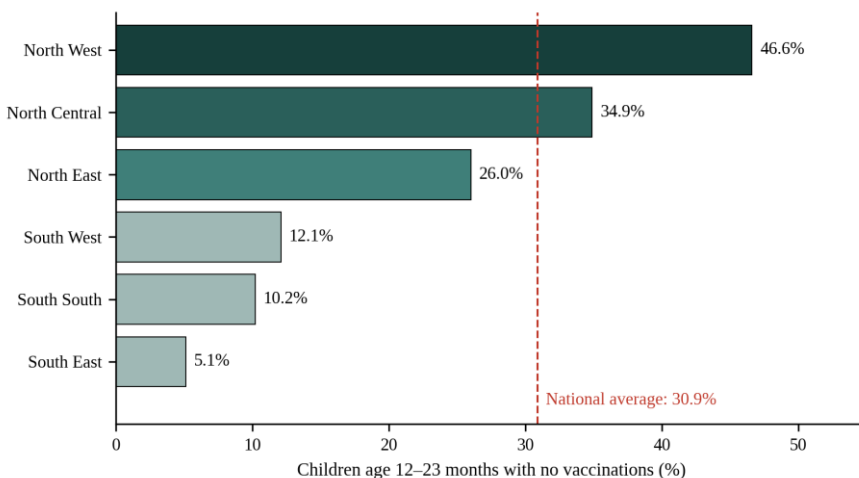


Figure 1: Children Age 12–23 Months with No Vaccinations, by Zone (%)

Source: Author's construction from FMoHSW, NPC and ICF (2025), Table 10.4.

The same pattern appears when the stricter national schedule is used. Full vaccination according to the national schedule is highest in the South South (36%) and lowest in the North West (12%); across states, it ranges from 55% in Bayelsa to 3% in Sokoto (FMoHSW, NPC, & ICF, 2025). In other words, even in the best-performing zone, most children do not complete the national schedule, and in the weakest, nearly nine in ten do not.

One result deserves particular attention. The North East, despite more than a decade of insurgency and displacement, has a lower zero-dose rate (26.0%) than both the North West (46.6%) and the North Central zone (34.9%). The survey tables cannot explain this difference, and it should not be over-interpreted. It does, however, suggest that conflict alone does not account for the geography of zero-dose children, and that the North West's very high rate reflects longer-standing weaknesses in routine services and in the relationship between communities and the health system. This is a question that future research should examine directly.

The Vaccination Card as a Marker of Contact with the Health System

The most striking figure in Table 1 concerns the vaccination card. Among children who never had a card, 91.2% had received no vaccinations. A card is issued when a child first comes into contact with routine immunisation services, so its absence is, in effect, a record that the routine system never met the child. The survey also shows that 36% of children whose card was seen were fully vaccinated according to the national schedule, compared with 9% of those whose card was not seen and less than 1% of those who never had a card (FMoHSW, NPC, & ICF, 2025). Contact with the routine system, once made, tends to lead to further vaccination. The core problem is the first contact.

"Babu Likitoci, Babu Magani": Empty Clinics and Door-to-Door Campaigns

The fieldwork helps explain why first contact fails. Community informants repeatedly contrasted the poor state of their local primary health care facilities with the sudden arrival of polio campaign teams at their doors. A farmer and leader of a farmers' association described the situation in his community:

"Our health facility is not resourced. The health workers are not paid for several months, we have no means of access to health services including the routine vaccination we use to get. 'Babu Likitoci, Babu Magani' (No Doctors, No Medicines). Of course, we are suspicious when suddenly, Likitoci (doctors) were making house to house visit with gifts and polio vaccines... Why are they coming to our homes only to vaccinate polio drops? They do not care for what is vital to us?"

This account captures a dissonance at the heart of the paper. The routine vaccines that families could once obtain had become unavailable, while a single vaccine was brought to their homes with unusual energy. Rather than reassuring the community, the contrast raised the question of why this one vaccine mattered so much to outsiders. A primary school teacher displaced to Abuja put the same question in terms of priorities: "Why should technical and financial resources be devoted and not for routine immunization or malaria?" and added a proposal of her own: "Why not train our women to vaccinate?" (Mamman, 2018).

From Dissonance to Distrust

In some accounts, this dissonance hardened into deeper suspicion. An Islamic cleric and alternative medicine practitioner questioned why social mobilisers explained that polio spreads through contaminated water while nothing was done about the water itself and went on to describe vaccination as part of a foreign plan to sterilise children (Mamman, 2018). Fear of excessive dosing was also reported, particularly among women who refused vaccination for their children. A beneficiary of a maternal health programme summarised the broader mood: "People are simply wary of engaging with professional representations from International Development organisations."

Programme staff recognised the depth of this problem. A social mobilisation and planning officer in the WHO Nigeria country office reflected:

"We got to understand the local politics eventually and learn that even when a community leader is won over there are still people and groups that will remain unconvinced. In fact, some will readily sabotage it simply because their concerns are not met or the issues were not respected."

The common thread is that resistance was not simply a matter of misinformation about vaccines. It was rooted in communities' experience of a health system that had stopped delivering what they valued, and in campaigns that did not consult them about their own priorities.

Discussion

Read together, the survey data and the fieldwork point to a single explanation. Zero-dose children are concentrated among the poorest, least educated and most rural households, and above all among children who have never had contact with routine services. These are the same communities that, in the fieldwork, described clinics without doctors, medicines or routine vaccines. The survey shows the shape of the gap; the interviews show how it is experienced.

This pattern is what the history of selective primary health care would lead us to expect. When immunisation is delivered mainly through campaigns, it can achieve high coverage for a particular vaccine during a particular period, but it does not necessarily build the continuous, trusted local services on which routine immunisation depends (Mamman, 2018). The polio programme in Nigeria is a clear example of a campaign that reached children door to door; the persistence of 30.9% zero-dose children suggests that this reach did not translate into lasting

contact with the routine system. Indeed, as the fieldwork shows, the very visibility of the campaign could undermine trust in vaccination more broadly, by highlighting what the routine system was failing to provide.

The vaccination card finding sharpens this point. If campaigns and routine services were well connected, a child reached by a campaign would also be drawn into the routine system and given a card. The fact that 91.2% of children without a card have never been vaccinated suggests that, for many families, no such link exists. A campaign can deliver a dose; only a functioning primary health care system can deliver a schedule. The difference between the two is the difference between a child who is reached once and a child who is protected.

The findings also show why social analysis matters for immunisation planning. The questions community members raised were reasonable ones: why one vaccine and not others, why house visits for polio but empty clinics for everything else, and why not train local women to deliver vaccines. Each question contains information that planners could use. Earlier work has argued that social science knowledge is essential to the effectiveness of public health interventions (Mamman, 2021), and that health institutions tend to treat such knowledge as secondary (Mamman, 2026). The zero-dose data suggest that the cost of this neglect is now visible in national statistics.

Two cautions are important. First, the survey figures describe associations. Education and wealth overlap heavily with zone and residence, and this paper does not separate their individual effects; that would require analysis of the survey's individual-level data. Second, not every concern raised in the interviews can be taken at face value. Claims that vaccines are designed to sterilise children are rumours with serious consequences, and they must be answered with evidence. But answering them well requires first understanding the experience of neglect from which they grow. Treating communities' questions as information, rather than as obstacles, is the starting point for rebuilding trust.

Conclusion and Recommendations

Nearly one in three Nigerian children aged 12-23 months has never received a vaccine. The 2024 NDHS shows that these children are concentrated in the North West, in rural areas, among mothers with no education and in the poorest households, and that almost all of them have never had contact with the routine system. Fieldwork evidence suggests why: communities experienced primary

health care facilities without staff, medicines or routine vaccines, while door-to-door polio campaigns arrived with unusual energy. The resulting dissonance fed suspicion rather than trust. Zero-dose children are therefore best understood not as a failure of any single campaign, but as a predictable outcome of decades of investment in vertical campaigns over the everyday health system.

Five recommendations follow. First, routine immunisation should be treated as a measure of primary health care performance, with funding directed to keeping local facilities staffed, stocked and open, not only to periodic campaigns. Second, campaign teams should carry and offer the full range of routine vaccines, and issue vaccination cards, so that every campaign contact becomes a link to the routine system. Third, the North West and other zones with the highest zero-dose rates should be prioritised for sustained primary health care investment. Fourth, communities, and women in particular, should be involved in delivering and explaining immunisation, as informants themselves proposed. Fifth, social analysis should be built into immunisation planning, so that communities' own questions and priorities shape how services are offered. Future research using the survey's individual-level data could test how far education, wealth and place each explain the patterns described here.

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