



Photo: IMA World Health / Adrienne Surprenant

## REACHING ZERO-DOSE CHILDREN

### Insights from MOMENTUM

**MOMENTUM** is a five-year, \$800 million USAID-funded suite of six interrelated projects working collectively to improve maternal, newborn, child health, family planning, and reproductive health (MNCH/FP/RH) services (see Figure 1). An important area of attention for the projects is immunization, which saves lives and is a critical part of improving child health. Alongside Gavi, the Vaccine Alliance, and other global agencies, MOMENTUM is increasingly focused on identifying and reaching zero-dose children, meaning those who have not received a single dose of the vaccines that prevent debilitating and life-threatening diseases.

This brief provides insights and lessons from four MOMENTUM projects — [Country and Global Leadership](#), [Private Healthcare Delivery](#), [Integrated Health Resilience](#), and [Routine Immunization Transformation and Equity](#) — on identifying and reaching zero-dose children. It is organized around three key themes: 1) generating learning to inform action, 2) engaging new partners, and 3) addressing needs in fragile settings. Those funding, overseeing, or carrying out immunization or child health programs globally may find this information useful to guide their own implementation or adaptation.

**FIGURE 1: MOMENTUM SUITE**



Photos (left-right): IMA World Health, Kate Holt/MCSP, Karen Kasmauski/MCSP, Kate Holt/MCSP, Kate Holt/MCSP, Karen Kasmauski/MCSP

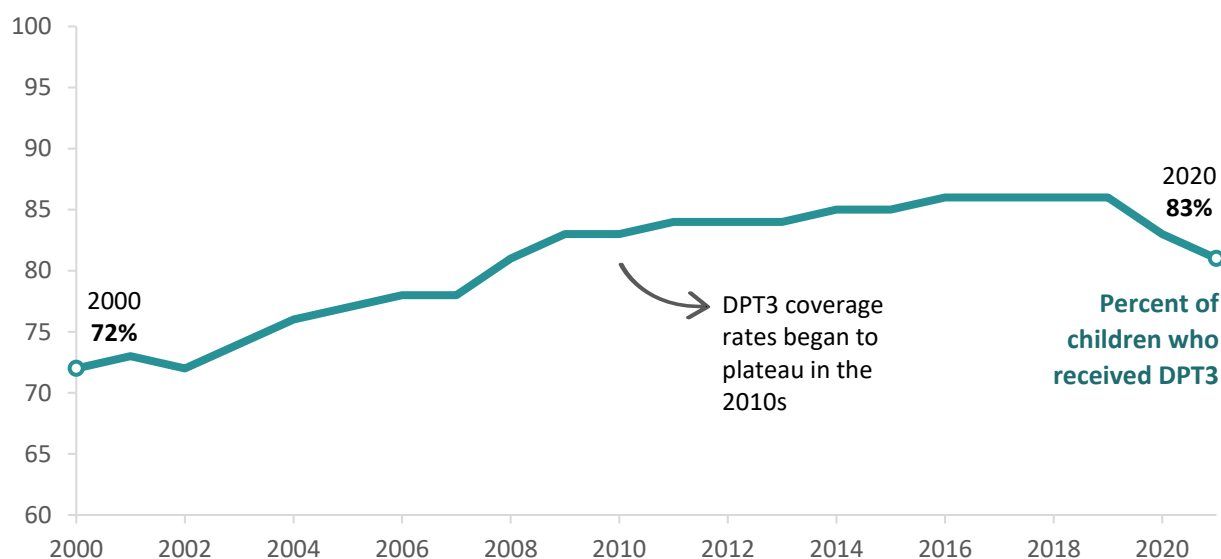
## SETTING THE SCENE

A key marker of immunization coverage – within and across countries – is the proportion of children who receive the third dose of the diphtheria, tetanus, and pertussis (DTP3)-containing vaccines.<sup>1</sup> Strong public health efforts in the 1980s led to a sharp increase in immunization rates. Though progress stagnated during the 1990s, DTP3 and other childhood immunization rates improved from 2000 to 2010 but then plateaued in the subsequent decade, reaching a peak of 86 percent in 2019 (Figure 2).<sup>2</sup> Unfortunately, these gains have been severely undone by the COVID-19 pandemic, which has strained funding and exacerbated longstanding challenges, such as supply chain disruptions and access to services.<sup>3,4,5</sup> UNICEF estimates that in 2021 alone, 25 million children — nearly 20 percent of all eligible children — missed at least one dose of the DTP vaccine.<sup>6</sup> This is two million more children than those who missed out in 2020 and six million more than in 2019.<sup>7</sup>

In 2021, **18 million** infants did not receive even the first dose of DTP-containing vaccines.



**FIGURE 2: GLOBAL COVERAGE RATES OF DTP3 (%), 2000-2021**



Source: [Immunization coverage estimates dashboard](#)

Research under USAID’s flagship Maternal and Child Health Integrated Program found that approximately half of the reasons to explain why children do not get immunized relate to program and systems-level challenges.<sup>8</sup> These include supply and service delivery obstacles like vaccine stockouts or services not being available at the correct time.<sup>9,10</sup> Poverty-related factors, such as high transportation costs to distant facilities, can also be prohibitive. Emerging evidence also suggests other barriers — some related to gender norms, such as household decision-making, caregiver time constraints, and maternal access to health services and education, can affect vaccination.<sup>11,12</sup>

## Narrowing in on Zero-Dose Children

The term “zero-dose” is now used to describe the subset of under-immunized children who have not received even a first dose of DTP-containing vaccines. Among the 25 million children who missed at least one dose in 2021, more than 70 percent were considered zero-dose.<sup>13</sup> More than two-thirds of these children live below the poverty line and nearly half live in one of three settings: urban areas (including urban slums), remote communities, and conflict settings.<sup>14</sup> Prior to the COVID-19 pandemic, Papua New Guinea, South Sudan, and Somalia recorded the highest zero-dose rates per capita; this trend persists.<sup>15</sup> Countries with the highest absolute numbers of zero-dose children in 2021 include Ethiopia, India, Nigeria, and the Philippines. Nearly half of all vaccine-preventable deaths occur among zero-dose children.<sup>16</sup>

The shift in the last few years to bring a laser focus onto zero-dose children has shed light on the importance of prioritizing specific geographies with high concentrations of zero-dose children, better understanding the unique challenges and dynamics their families face, and providing tailored communication and immunization services. It is also increasingly recognized that zero-dose children are less likely to receive other primary health care services — so reaching them with immunization can be of further benefit by serving as an entry point to other health, nutrition, and social services.<sup>17</sup> Gaps, however, remain in understanding the complexities of why so many children continue to be missed and how best to reach them.

# MOMENTUM'S COMMITMENT TO ZERO-DOSE CHILDREN

Formalized in 2021, MOMENTUM's [commitment](#) to immunizing zero-dose children aligns with and builds on [Gavi's strategy](#) for reducing the number of children who have never been immunized, as well as the agency's [IRMMA \(Identify – Reach – Monitor – Measure – Advocate\) framework](#).<sup>18,19</sup> Over the course of the project, MOMENTUM seeks to understand why zero-dose children and communities are being missed and what families that live in under-served communities think, feel, and do about vaccination, and then use this understanding to inform the development of feasible and cost-effective strategies to reach them. The approaches MOMENTUM is exploring include: strengthening capacity to manage increasingly complex programs; using digital tools for improved decision making and precision; performing equity analyses; understanding behavioral and social drivers; distilling and sharing effective approaches from different countries; tailoring approaches to specific contexts; and co-creating locally led solutions.

On World Immunization Day in 2022, as part of a live social media event, experts from MOMENTUM shared key learning to date. This brief describes and elaborates on some of those important lessons and insights (see Table 1 for a full set of MOMENTUM's zero-dose and related resources).

## Generating Learning to Inform Action

Evidence suggests there are important differences in the reasons for missing vaccination among families with zero-dose children compared to families whose children are vaccinated incompletely. MOMENTUM is contributing to building a better understanding of the unique challenges faced by zero-dose children and their communities, and the interventions that can effectively reach them. The MOMENTUM suite is doing this in many ways, such as conducting new analyses of population data, forging unique partnerships, and actively engaging communities through facilitated workshops. MOMENTUM is also fostering innovation by using currently available geographic information system data to improve microplanning and map private health care providers in some African countries and examine the intersections between provider footprints and the likely locations of zero-dose children. Collectively, these efforts seek to support advocacy and drive strategic decision-making on zero-dose policies and programs by global, regional, and country-level immunization stakeholders.

### All Things Zero-Dose 2.0: A Conversation on How Far We've Come

On April 29, 2022, immunization experts from MOMENTUM [Country and Global Leadership](#), [Routine Immunization Transformation and Equity](#), [Integrated Health Resilience](#), and [Private Healthcare Delivery](#) and USAID participated in a "fireside chat" held simultaneously on Facebook, LinkedIn, and YouTube LIVE to discuss how to identify and reach zero-dose children.



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[MOMENTUM Country and Global Leadership's](#) forthcoming analysis of Demographic Health Survey/Multiple Indicator Cluster Survey data from 82 lower- and middle-income countries examines household-level sociodemographic and health care access factors that could paint a clearer picture about the “who” and “why” of zero-dose children.<sup>20</sup> Preliminary findings show that more than half of the zero-dose children were concentrated in African countries. Three-quarters lived in rural areas, and more than half came from the poorest households. Children were three times more likely to be zero-dose if their mothers had not received any tetanus injection during antenatal care (ANC) and nearly two and half times more likely to be zero-dose if their mothers had not received any ANC visits, compared to children of mothers who received at least two tetanus injections and those who received at least four ANC visits, respectively. Furthermore, children had nearly double the likelihood of being zero-dose if they were born at home compared to those who were delivered in a facility. Children of mothers with no education were 32 percent more likely to be zero-dose than children of mothers who had completed primary education. These and other findings from this analysis have important implications for maternal and child health programming and will be discussed further in a forthcoming publication.<sup>21</sup>



Through their work on a multi-country evidence review in India, Kenya, and South Africa and a global evidence review, [MOMENTUM Private Healthcare Delivery](#) is learning that often, zero-dose families live in contexts where non-government or private health providers play an active role in providing essential primary health care services, including immunization. This includes for-profit providers in urban settings, and non-government and faith-based organizations in settings that are remote, rural, or affected by conflict. The project's work building the evidence base for engaging private providers in immunization shows that there are some untapped partners in the private sector, including local civil society, who could be better supported to identify currently “hidden” children, make services more accessible to them, and advocate with high-level decision-makers for the benefits of investing in vaccination.<sup>22</sup>



### Spurring investment through evidence-based advocacy

MOMENTUM Country and Global Leadership's *Zero-Dose Country Profiles* are vivid snapshots of the zero-dose burden, time trends, spatial distribution and socio-demographic characteristics in select countries. These quick data points provide compelling, country-specific evidence and can be used by advocates, program managers, and media practitioners to mobilize domestic resources.

[MOMENTUM Routine Immunization Transformation and Equity](#) is building the evidence in countries like the Democratic Republic of the Congo and Mozambique by asking caregivers during community-based workshops what barriers they face to getting children vaccinated. The project carefully facilitates community-level dialogues so that caregivers' challenges and barriers can be shared with other community leaders and health systems personnel. This approach to building empathy leads to quicker identification of barriers and ultimately, quicker solution-finding. Through this exercise, groups in Mozambique began to understand that mothers need help getting their children vaccinated and identified simple solutions such as husbands' helping to arrange transport.<sup>23</sup>



Photo: Frank Kimaro / Jhpiego

## Engaging New Partners

MOMENTUM is learning that fostering diverse partnerships is critical to addressing the challenge of reaching zero-dose children. At the global level, MOMENTUM is working to improve information sharing and coordination. For example, MOMENTUM Private Healthcare Delivery is contributing technical resources on the role of the private sector in immunization to the World Health Organization's [central clearing house](#). At the national level, governments cannot work alone to achieve their immunization goals; it is imperative to bring in civil society organizations, partner with the private sector, and engage religious leaders and faith-based organizations. Success often depends on just how private sector partners are engaged, which is where MOMENTUM Private Healthcare Delivery is focusing its attention. Other areas of public health, such as malaria control, HIV/AIDS prevention, or COVID-19 vaccine outreach, offer helpful models for adaptation where non-traditional, cross-sector partnerships were quickly formed to help provide solutions to critical problems.

Civil society organizations (CSOs) and groups can serve as crucial community partners to support governments in understanding how to meet the needs of local populations and identify barriers to access. For example, given their unique positions as longstanding, trusted entities, CSOs can help identify zero-dose children and conduct follow-up to ensure they receive all necessary vaccinations. Importantly, it is essential for program implementers to engage CSOs in all aspects of project planning and resource allocation from the outset, rather than primarily relying on them to fill gaps in service delivery.

At the facility level, it is important for non-government health providers (whether for-profit or non-profit) to have the resources they need for service delivery and mobilization of populations. MOMENTUM Private Healthcare Delivery's forthcoming technical brief on the past 20 years of evidence on private sector engagement presents some promising practices on how private health providers can be engaged, and the roles that they can play. Practical support from government, inclusion in micro-planning and information and monitoring systems, and in some cases formal accreditation and regulation of providers are among some of the approaches that have proven successful.<sup>24</sup>

Civil society partners and groups can also have an impact in other capacities. Traditional birth attendants in Nigeria, for example, share information with mothers at the time of delivery on which vaccines their children should be receiving, provide vaccination cards with reminders about where and when to go for services, and act as liaisons between facilities and the community.<sup>25</sup> To support others in fostering meaningful partnerships, MOMENTUM Country and Global Leadership supported Gavi's development of a [civil society engagement framework](#), which outlines the best ways for governments and other partners to bring CSOs on board.<sup>26</sup> The project also collated [promising practices](#) that illustrate important ways faith-based organizations and program implementers can partner to increase vaccination rates.<sup>27</sup>

Faith-based leaders and organizations are also important partners to reach people with immunization services, in part because of the strong trusted relationships they have with communities and the speed with which they can react compared to less nimble government-run approaches.<sup>28</sup> In many countries with high numbers of zero-dose children, families attend at least one religious gathering per week. These religious gatherings could be an important potential access point for immunization providers. Churches or mosques, for example, can be prime sites for health care providers and faith leaders to provide information about immunization to their communities and for providers to deliver services.<sup>29</sup>

A recent evidence review shows that various types of private providers play an important role in reaching zero-dose children and communities with immunization-related services. These include mobilizing communities, identifying and tracking children, and communicating vaccine-related information. In countries such as Kenya, Nigeria, and Bangladesh, existing public-private partnerships offer good examples of collaboration mechanisms, best practices, and practical tools.<sup>30</sup> Whether they are non-governmental, faith-based, or another type, to effectively help reach zero-dose children, private providers must have access to vaccines, best practices, and policies.



## Addressing Needs in Fragile Settings

It can be particularly hard to reach zero-dose children in fragile settings — those that are vulnerable to acute shocks like disease outbreaks — as well as recurrent and chronic stresses, such as food insecurity and persistent conflict. Fragility may be caused by emergencies or be endemic, particularly for mobile populations or populations living in urban areas with high rates of violence and insecurity. It can also be episodic, affecting otherwise stable contexts. Lack of health infrastructure or political instability affect availability and access to essential services, including immunization.

Through its work in fragile contexts like Gao and Timbuktu (Mali), North Kivu (the Democratic Republic of the Congo), and Kajo Keji (South Sudan), [MOMENTUM Integrated Health Resilience](#) is finding that reaching people with primary and preventive services — including but not limited to immunizations — requires key elements<sup>31</sup>:

- Coordination and integration across different agencies, sectors, and types of partners, and within the MOMENTUM suite.
- Community-centered approaches where community members are actively engaged in surveillance and participate in coordination committees since they know the needs and have the trust of the population.
- An integrated health system that inspires a sense of trust and confidence in the community that they will get what they need from the health system.
- Planning and developing local capacity to introduce context-specific approaches like Reach Every District/Reach Every Community that ensure people can access services in ways that best suit them.
- A health system with adequate capacity, including reliable medical supplies and staffing.
- Strengthening the health system's resilience capacities on preparedness and response plans for immunization by including cost-effective strategies that allow for deviation from a typical vaccine schedule and use periodic intensification when necessary.

In Kajo Keji, South Sudan, for example, MOMENTUM Integrated Health Resilience implements the Boma Health Initiative approach through the Boma Health Workers (BHWs). As part of a broader effort to ensure that children under five receive essential health services like screening for malnutrition and referral for pneumonia, BHWs help trace, identify, and refer children in hard-to-reach communities, who have not received any immunizations since birth. Given the fragile infrastructure in this area — including unreliable cold chains in health facilities, ongoing security challenges, and the COVID-19 pandemic — coordinating a reliable Immunization campaign in South Sudan requires detailed planning and intensive collaboration among partners and the government.

Building on efforts by health providers, community members and leaders can serve as mobilizers, playing important roles in communicating with populations in fragile settings to ensure they are aware of when and where children can get vaccinated and are motivated to seek services. It is important for community mobilizers to be actively involved in these efforts on a regular basis, not just brought in for one-off campaigns. As we know from previous efforts with reaching un-/under-immunized populations (and as COVID-19 vaccination and prevention efforts have shown), trust and confidence in vaccination is paramount for ensuring uptake. Community mobilizers and leaders play a critical role in building trust and linking clients with services.

Lastly, evidence mapping by MOMENTUM Private Healthcare Delivery shows critical roles being played by the private sector in conflict-affected settings where zero-dose families live. Key examples from [Afghanistan](#) and [Sudan](#) show that the means by which governments engage with for-profit and non-profit providers can be critical in ensuring their reach with immunization services, for example by regulating and licensing private facilities and including them in all aspects of national immunization program



## Tailoring programs in collaboration with mobile populations

To reach mobile populations in Gao and Timbuktu, Mali — fragile settings with high levels of insecurity — MOMENTUM Integrated Health Resilience works closely *with* communities during the planning stages to ensure the programming works for them. One such population is nomadic herders who are constantly moving with their animals. Because of their lifestyles, they typically do not visit the same health facilities consistently and the timing of their visits at a particular location is also uncertain. On the service side, episodic political insecurity in the region can disrupt or even shut down health service operations, making it even more difficult to ensure access for mobile populations on specific days. Context-specific community planning can help ensure that features of programming match the needs of unique populations. This includes monitoring routine vaccinations and the implementation of the Reach Every District and Community (RED/REC) microplanning strategy, coaching vaccinators on tracing children missing doses, creating micro-plans that consider displaced populations and nomads, and supervising data capture to ensure quality and reviewing to correct and make evidence-informed decisions.

## CONCLUSION

The COVID-19 pandemic has caused a backslide in progress made towards an already difficult goal: identifying and reaching all zero-dose children with the immunizations they need to prevent illness and death. To improve vaccination rates among all zero-dose children, it will be important to advocate for well-resourced programming to reach children who were missed during the pandemic as well as those who will be newly identified or eligible. On the upside, the pandemic has also generated new initiatives that can be leveraged to advance the field, for example, additional funding for immunization, mass vaccination campaigns, the development of new tools, and new or expanded partnerships with non-traditional actors like faith-based organizations and private providers.

To help fill important gaps and improve programming, MOMENTUM will continue to conduct analyses to sharply define the reasons and root causes for zero-dose and under-vaccination in the contexts where it works, expand and nurture new partnerships, work with communities to co-create context-specific programming, contribute to global efforts by Gavi, and share learning and insights with the broader immunization community. Implementers working toward reducing the number of zero-dose children can share in these efforts and focus on other critical

approaches, such as addressing gender barriers, effectively engaging the private sector, fostering innovation, strengthening primary health care, and building resilient health systems that can respond to shocks and stressors such as COVID-19 or conflict. Those engaged in these important initiatives to prevent illness and death from vaccine-preventable diseases should center programming around the needs and preferences of individuals and communities, as well as strengthen the health systems needed to reach them.



**TABLE 1: MOMENTUM’S ZERO-DOSE AND RELATED RESOURCES**

 <b>FACTSHEETS</b>	
<b>MOMENTUM</b>	
<a href="#"><u>Commitment to Immunizing Zero-Dose</u></a>	Describes MOMENTUM’s expertise in providing technical assistance and capacity strengthening to support national institutions and local partners to reduce the number of zero-dose and under-immunized children.
<b>MOMENTUM COUNTRY AND GLOBAL LEADERSHIP</b>	
<b>Madagascar Zero-Dose Country Profile (Forthcoming)</b>	Quantifies and describes the zero-dose population in Madagascar, identifies the sociodemographic and maternal health access factors that are risk factors for zero-dose status. It also provides an analysis of the strengths and weaknesses of the National Immunization Strategy in terms of reaching zero-dose children and solutions in line with the IRMMA framework.
<b>MOMENTUM ROUTINE IMMUNIZATION TRANSFORMATION AND EQUITY</b>	
<a href="#"><u>Nigeria Country Immunization Profile</u></a>	Outlines the state of routine immunization in Nigeria and the complex reasons why so many children there are not vaccinated.
 <b>RESEARCH AND EVIDENCE ON ZERO-DOSE AND IMMUNIZATION</b>	
<b>MOMENTUM COUNTRY AND GLOBAL LEADERSHIP</b>	
<a href="#"><u>Engaging Faith Actors to Boost Vaccine Uptake and Combat Vaccine Hesitancy</u></a>	Highlights evidence-based approaches for engaging local faith actors in immunization as well as identifying current evidence gaps.
<b>Multi-country DHS/MICS analysis of zero dose status (Forthcoming)</b>	Quantifies and qualitatively describes the sociodemographic profile of zero-dose children in 82 low- and middle-income countries and proposes a conceptual framework to describe the multilevel barriers specific to zero-dose children.
<b>MOMENTUM INTEGRATED HEALTH RESILIENCE</b>	
<a href="#"><u>Reaching Zero-Dose Children: Immunization in fragile/ conflict affected settings</u></a>	Builds understanding of how to reach key populations missed by immunization services, including those living in poor urban or remote-rural areas, and those affected by conflict and displacement.
<b>Reaching Zero-Dose Children in Fragile Settings (Forthcoming)</b>	Outlines the steps MOMENTUM Integrated Health Resilience is taking to leverage and adapt the RED/REC approach in fragile settings to build health resilience at the humanitarian-development nexus.

## MOMENTUM KNOWLEDGE ACCELERATOR

### [Reaching Zero-Dose Children: Evidence for Engaging the Private Sector](#)

Summarizes the key findings and recommendations of a longer literature review synthesizing information on the private sector's role in delivering immunization services to zero-dose children.

## MOMENTUM PRIVATE HEALTHCARE DELIVERY

### **Technical Brief on Private Sector Engagement for Immunization Programs in Low-and Middle-Income Countries (*Forthcoming*)**

Comprehensive brief outlining best practices and evidence around private sector engagement in immunization programming.

### [Private Sector Engagement to Boost Reach of Immunization Programs](#)

Introduces key issues on private sector engagement for immunization service delivery in the context of COVID-19 vaccine rollout.

## MOMENTUM ROUTINE IMMUNIZATION TRANSFORMATION AND EQUITY

### [Addressing Insufficient Operational Funding to Reach Zero-Dose Children and Missed Communities](#)

Explores entrenched obstacles to reaching zero-dose children and missed communities with routine immunization services, and strategies to reach specific hard-to-reach and vulnerable populations.

### [Landscape Analysis of Health Information Systems and Data Tools for Identifying, Reaching, and Monitoring Zero-Dose and Under-Immunized Children](#)

Describes information systems and tools that can help identify, reach, and monitor zero-dose and under-immunized children in the Democratic Republic of the Congo, Kenya, Mozambique, and Nigeria.

### [Seeing Old Problems Through a New Lens: Recognizing and Addressing Gender Barriers to Equitable Immunization](#)

Shares key learnings about gender barriers and how they obstruct equitable access to immunization services throughout a person's life.

### [Cold Hard Truth: Revolutionizing Cold Chain Maintenance](#)

Outlines challenges and innovative approaches to strengthen cold chain maintenance, a key factor in ensuring vaccine viability.



## GLOBAL STRATEGIES WITH MOMENTUM CONTRIBUTIONS

### [Gavi Framework for Engaging Civil Society Organizations](#)

Outlines the best ways for governments and other partners to bring civil society organizations on board during the planning and implementation of immunization activities.

### [Gavi, the Vaccine Alliance strategy 2021-2025](#)

Details Gavi's 5.0 vision of leaving no one behind with immunization by 2030.

### [Immunization Agenda 2030 Scorecard](#)

Showcases the Immunization Agenda 2030's Framework for Action goals, including seven measurement indicators meant to mobilize commitment and resources, guide operational planning, and ensure accountability.

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