

# Policy Brief

## *Closing the Immunization Gap:*

### *Reducing Zero-dose and Under-immunized Children in Amhara Region*

#### Executive summary



Childhood immunization is one of the most effective interventions for preventing vaccine-preventable diseases (VPDs) and reducing child mortality in the Amhara region and across Ethiopia. Despite significant progress over the past two decades in reducing zero-dose and under-immunized children in the Amhara region, disparities persist, particularly among children from rural areas, lower socioeconomic backgrounds, and households with less educated mothers. Addressing these gaps is crucial to achieving equitable health outcomes and reducing the burden of VPDs in the region. This policy brief outlines the strategic actions needed to close these gaps and strengthen the immunization system in the Amhara region, with the ultimate goal of reaching every child and preventing unnecessary deaths.

Despite the challenges, there is significant potential for progress. In 2019, Ethiopia was one of the five countries where two-thirds of the world's zero-dose children were raised, underscoring the critical need for robust immunization systems. Strengthening this system is essential for controlling disease outbreaks and improving the effectiveness of immunization programs in the Amhara region and nationwide.

In 2019, 1 in 6 infants in the Amhara region had not received any vaccines (zero-dose), compared to 1 in 4 infants nationally. Additionally, 1 in 5 infants in Amhara were under-immunized, compared to 2 in 5 infants across Ethiopia. Between 2019 and 2022, the Amhara region recorded nearly 655,691 zero-dose and 1,128,246 under-vaccinated children. More importantly, significant disparities in immunization coverage persist in the Amhara region, with rural areas, lower-income families, and children of less-educated mothers facing higher rates of zero-dose and under-immunization. Recent trends have plateaued despite earlier progress, and the region is experiencing increased measles outbreaks. However, with the right strategies and concerted efforts, we can turn the tide and make significant strides in immunization coverage.

These challenges highlight the urgent need for targeted interventions to address the gaps and reverse the stagnation in vaccination efforts. To sustain progress in reducing zero-dose and under-immunized children in the Amhara region, it is essential to address existing gaps through enhanced surveillance, socioeconomic support and strengthened health system infrastructure. Your role as health policymakers, public health officials, and stakeholders is crucial. Your expertise and commitment are needed to implement the recommended strategies, which include strengthening routine immunization programs, addressing access barriers, improving surveillance system and data quality and use, fostering community engagement and education,

and enhancing the integration of services between EPI and VPD surveillance. With a prioritized approach for community health workers and strengthened community engagement and socioeconomic support, these targeted strategies are essential for achieving comprehensive vaccination coverage and ensuring no child is left behind in the region.

## Background

Robust immunization systems are vital for ensuring timely childhood immunization, one of the most effective public health interventions for preventing vaccine-preventable diseases (VPD) outbreaks and reducing child mortality. Ethiopia's Expanded Program on Immunization (EPI), established in 1980, plays a critical role in this effort by providing 13 antigens that protect against various diseases, including tuberculosis, meningitis, polio, and, more recently, COVID-19. The success of these programs is essential for safeguarding public health and achieving long-term health goals in the region and nationwide.

"Zero-dose" children are those who have not received the first diphtheria-tetanus-pertussis-containing vaccine (DTP1), while "under-immunized" children have not received the third dose. Zero-dose children often indicate marginalized groups lacking access to primary health and social services. In 2019, Ethiopia was one of the five countries where two-thirds of the world's zero-dose children lived, underscoring the critical need for robust immunization systems.

Immunization systems involve service delivery, surveillance, vaccine supply, logistics, communication, and program management. Civil conflicts and other issues can disrupt these systems, necessitating tailored strategies for affected populations. Effective disease surveillance and immunization are crucial for controlling outbreaks and assessing program effectiveness. This policy brief assesses the progress and performance of vaccination coverage in the Amhara region and provides policy insights to strengthen ongoing immunization efforts further.

Key challenges currently affecting the system in the region include weak coordination, disruptions from conflicts and natural disasters (such as drought), data discrepancies due to denominator issues causing inconsistencies between administrative and survey data, and barriers to vaccination access such as geographic, economic, and social obstacles.

## Approaches

The evidence presented in this policy brief has been appraised from multiple sources to comprehensively analyze immunization coverage in the Amhara region and nationwide for comparison. Key data sources include five rounds of Ethiopian Demographic and Health Surveys conducted between 2000 and 2019, as well as WHO/UNICEF Estimates of National Immunization Coverage (WUENIC), routinely reported data by health facilities (available in the DHIS2 database) and surveillance reports from the Amhara region. We conducted a thorough analysis using descriptive statistics, which allowed us to present the findings in a clear and accessible manner. The data is illustrated through narratives, graphs, and tables to highlight trends, disparities, and critical challenges in vaccination coverage. This multi-source approach ensures that the policy insights are grounded in robust evidence, reflecting regional and national immunization perspectives. Regional program managers, policymakers, and experts were consulted throughout the process, from conception to analysis and development of this policy brief, to determine and contextualize priority issues and interpretation of findings. The final version was reviewed, validated, and approved by experts working in the region.

# Key findings

## Zero-dose children

In the 2019 survey, 1 in 6 infants in the Amhara region had not received any vaccination (zero-dose), compared to 1 in 4 infants nationwide. Between 2000 and 2019, the zero-dose percentage significantly dropped from 57% to 16% in the Amhara region, while the national rate decreased from 56% to 24% (Figure 1). However, despite this progress, recent data from DHIS2 suggest that the reduction in zero-dose children in Amhara may have plateaued. The percentage appears to have stagnated at around 16%, highlighting the need for renewed efforts to address remaining barriers and sustain momentum toward universal immunization.

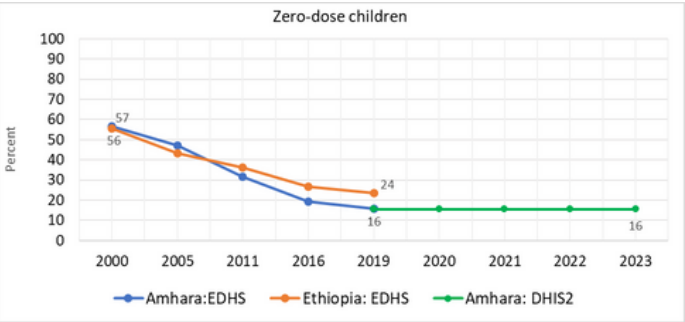


Figure 1. Trends of zero-dose children in Amhara region and Ethiopia, 2000 -2023

## Disparities in zero-dose children

Socioeconomic factors, such as place of residence, maternal education, and wealth status, significantly influence vaccination rates, leading to disparities across these categories. In the Amhara region, one in five mothers with no education had zero-dose children in 2019, while mothers with secondary and higher education had no zero-dose children at all. This stark contrast underscores the critical impact of maternal education on immunization uptake. The percentage of zero-dose children in rural areas decreased from 58% in 2000 to 19% in 2019, while in urban areas, it dropped from 32% to 7% over the same period, indicating better access and coverage in urban settings.

Among mothers with no regular education, the zero-dose children decreased from 59% to 22%, while for mothers with primary education, it decreased from 45% to 12% over the same period. Notably, among mothers with secondary education, the rate dropped from 19% to 0%, indicating the crucial role of maternal education in vaccination uptake. Similarly, the percentage of zero-dose children decreased from 58% to 18% in the poorest households, from 65% to 24% in middle-income households, and from 47% to 8% in the poorest families, indicating better vaccination access for wealthier families (Figure 2).

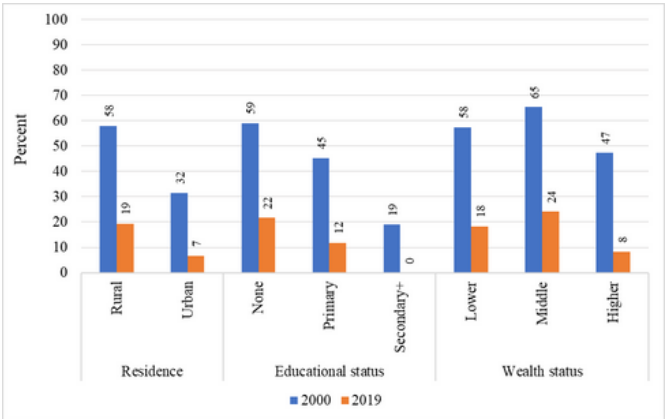
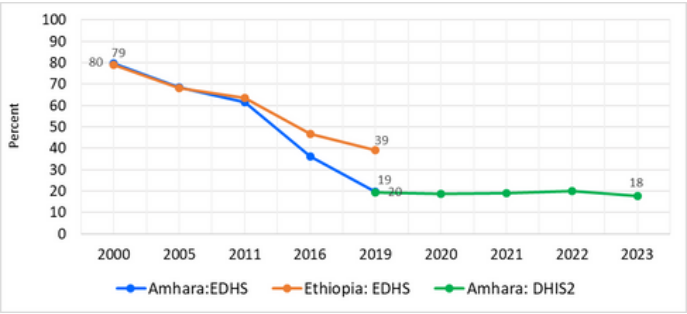


Figure 2: Zero-dose children in Amhara region, 2000 and 2019

## Under-immunized children

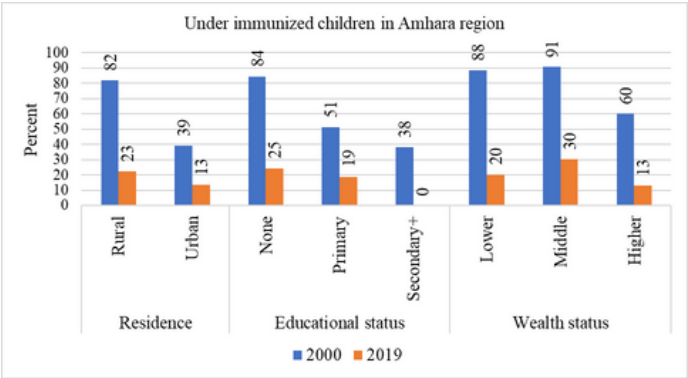
In the 2029 survey, 1 out of 5 infants in the Amhara region were unimmunized, compared to 2 out of 5 infants in Ethiopia (Figure 3). Like the trends observed in zero-dose children, the percentage of under-immunized children in the Amhara region significantly dropped from 80% in 2000 to 19% in 2019, while the national rate decreased from 79% to 39% over the same period. This significant drop was more pronounced in 2010. However, despite this progress, recent DHIS2 data reveal a concerning trend: the reduction in under-immunized children in Amhara has stalled, with the percentage stagnating between 18-19%. This plateau underscores the urgent need for renewed efforts to overcome the remaining barriers and reinvigorate the push toward universal immunization



**Figure 3.** Trends of under-immunized children in Amhara region and Ethiopia, 2000-2024

Disparities in under-immunized children in Amhara region

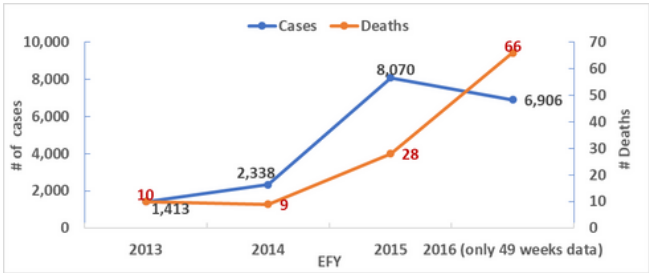
From 2000 to 2019, the Amhara region experienced a significant reduction in under-immunized children across both rural and urban areas, dropping from 82% to 23% in rural areas and from 39% to 13% in urban areas. Among mothers with no education, the percentage fell from 84% to 25%, decreased from 51% to 19% among those with primary education, and from 38% to 0% among mothers with secondary education or higher. Similarly, the under-immunized percentage declined from 88% to 20% in the poorest families, 91% to 30% in middle-income families, and 60% to 13% in the wealthiest families (Figure 4).



**Figure 4.** Under-immunized children in Amhara region, 2000 and 2019

The burden of lack of vaccination

From 2019-2022, the Amhara region recorded an estimated 655,691 zero-dose and 1,128,246 under-vaccinated children, with 104,911 (9.3%) zero-dose children (Figure 5). A troubling rise in measles outbreaks, cases, and deaths compounds this alarming situation. In the 2016 Ethiopian fiscal year (EFY), despite a relatively low report completeness rate of 80%, 6,906 reported measles cases and 66 deaths were reported within the first 49 weeks, with actual numbers likely higher due to reporting challenges affected by network disruptions. Surveillance data further shows a concerning increase in the percentage of unvaccinated measles cases in the amhara region, rising from 28% in 2014 to 38% in 2015 and 44% in 2016 EFY. Laboratory surveillance data also reflects this upward trend, with measles test positivity rates rising from 26% in 2014 to 39% in 2015 and reaching 50% in 2016 EFY. These figures underscore the growing challenges that require an urgent need for targeted interventions to improve vaccination coverage and highlight the weak integration between EPI and VPD surveillance activities. Strengthening this integration is crucial for the timely implementation of preventive and corrective measures and ensuring adequate immunization coverage across the region.



**Figure 5:** Measles cases and deaths trend in Amhara region using the surveillance report, 2013-2016 EFY



## Conclusion

Despite significant improvements over the past two decades, disparities persist, particularly children from poor households, born from mothers with no education, and living in rural areas bear the brunt of zero-dose and under-immunization. The rural-urban divide remains pronounced, with rural regions still facing higher zero-dose and under-immunization rates than urban areas. Maternal education and household wealth status are crucial determinants of vaccination uptake, given that higher education levels and wealth correlate with lower rates of zero-dose and under-immunized children. Furthermore, the recent plateau in zero-dose and under-immunization rates, coupled with a rising trend in measles outbreaks, highlights significant and ongoing challenges in reaching the most marginalized populations in the Amhara region. These trends indicate that while progress has been made, certain vulnerable groups remain difficult to reach with routine immunization efforts. These challenges are further exacerbated by conflict and natural disasters, which disrupt health service delivery, displace communities, and create additional barriers to accessing immunization services. Additionally, geographic isolation, socio-economic disparities, and destabilizing factors contribute to the difficulty in fully vaccinating all children.

To reverse the plateau in immunization rates and ensure continued progress, addressing socioeconomic disparities, enhancing education, and strengthening health system infrastructure, particularly in rural and underserved areas, is essential. The situation in the Amhara region calls for targeted strategies, including focused outreach to remote and conflict-affected areas, enhanced community engagement through a prioritized approach to community health workers, and tailored interventions that improve surveillance and integrate immunization programs. These efforts are critical to reducing zero-dose and under-immunized children and preventing VPD, ensuring that no vulnerable populations are left at continued risk.

## Policy recommendations

The following recommendations are outlined to help stakeholders address and close gaps in immunization coverage. They focus on the recent plateau in vaccination rates, the urgent need for data-driven interventions to combat rising outbreaks, and making context-driven decisions for targeted strategies in conflict-affected and remote regional areas.

***Strengthening routine immunization programs*** by enhancing regular immunization services to ensure consistent coverage and improving outreach efforts by conducting regular community visits and health education sessions to raise awareness about the importance of vaccinations; considering task-shifting policies, such as leveraging community health workers with well-defined roles and responsibilities; and ensuring reliable vaccine supply chains to avoid stockouts and maintain a consistent supply of vaccines, cold chain maintenance, and timely distribution of vaccines to all health facilities.

***Addressing access barriers*** by setting up vaccination points in communities, especially in rural areas, and at times convenient for parents.

***Targeting hard-to-reach populations*** by developing special plans for children in remote areas, conflict zones, or who belong to specific rural and poorer communities.

***Enhancing surveillance and data quality and use*** by improving disease surveillance systems to effectively monitor VPDs (such as measles) and data quality and use for decision-making through regular triangulation from multiple sources to ensure accuracy and reliability; integrating immunization data across platforms combined with robust monitoring and evaluation frameworks to track progress to identify areas for improvement, swiftly detect outbreaks, and efficiently allocate resources.

*Community engagement and education* by raising awareness about the importance of vaccination: Conduct community outreach programs to educate parents and caregivers about the benefits of immunization. Develop targeted communication strategies to overcome misinformation and build vaccine trust—partner with local leaders to promote vaccination and address community concerns.

*Strengthening service integration between EPI and VPD surveillance* to promptly implement preventive and corrective measures is necessary.

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*Immunize Every Child,  
Strengthen Every Future!*