

Technical note: Spotlight on Immunization Declines in Latin America and the Caribbean

Reversals in immunization coverage in Latin America and the Caribbean are putting millions of children's lives at risk

By: Lauren Francis, Padraic Murphy, and Jennifer Requejo

Introduction

In 2015, the ambitious 2030 Agenda for Sustainable Development was launched.¹ The Sustainable Development Goal (SDG) Framework includes a set of 17 interrelated goals with associated targets. One of these goals, SDG3, focuses on good health and well-being and has a specific target (SDG 3.2)² on improving child and newborn survival. Most child and newborn deaths can be prevented by effective interventions delivered through well-functioning primary health care systems – the foundation for achieving universal health coverage (SDG target 3.8.1).³

Immunization services (SDG target 3.b.1⁴) are a core part of primary health care and are one of the most cost-effective public health interventions for reducing child death and disability from vaccine-preventable diseases, including measles, polio, pneumonia, and diarrhoea.⁵ Immunization programmes also help prevent and control infectious disease outbreaks, contribute to the eradication of communicable diseases, and play a key role in battling antimicrobial resistance by reducing the need to use antibiotics for treating infections.

To increase commitment and accelerate action towards achieving equitable coverage of immunization services, the Immunization Agenda 2030 (IA2030)⁶ was officially launched in April 2021. IA2030 provides a bold global vision and strategy for the next decade, with a set of targets that are consistent with the SDG framework.

Global trends in immunization coverage: alarming drops

Huge strides in increasing immunization coverage globally were made prior to the 2000s. Coverage levels then stagnated for a decade before dropping over the first two years of the COVID-19 pandemic. Globally, the percentage of children receiving the third dose of diphtheria-tetanus-pertussis (DTP3) vaccine, for example, dropped from 86 per cent in 2019 to 81 per cent in 2021⁷, leaving millions of children unprotected. Measles vaccination rates similarly dropped five percentage points between 2019 and 2021 (from 86 per cent to 81 per cent), increasing the risk of measles outbreaks in many vulnerable communities.

Global trends mask wide variation in progress across regions in reaching every child with immunization services. Reversals in coverage in Latin America and the Caribbean (LAC) that started prior to and continued during the pandemic are a cause for major concern. This technical note reviews trends in immunization coverage in the LAC region, highlighting key factors underlying recent declines and actions that can be taken to restore immunization programs in LAC countries.

¹ UN General Assembly, *Transforming our world : the 2030 Agenda for Sustainable Development*, 21 October 2015, A/RES/70/1,

² SDG target 3.2: Newborn and child mortality: By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality and under-5 mortality."

<https://www.un.org/sustainabledevelopment/health/>

³ SDG target 3.8.1: Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population).

⁴ SDG target 3.b.1. Proportion of the population with access to affordable medicines and vaccines on a sustainable basis.

⁵ Perin J, Mulick A, Yeung D, Villavicencio F, Lopez G, Strong KL, Prieto-Merino D, Cousens S, Black RE, Liu L. Global, regional, and national causes of under-5 mortality in 2000-19: an updated systematic analysis with implications for the Sustainable Development Goals. *Lancet Child Adolesc Health*. 2022 Feb;6(2):106-115. doi: 10.1016/S2352-4642(21)00311-4. Epub 2021 Nov 17. Erratum in: *Lancet Child Adolesc Health*. 2022 Jan;6(1):e4. PMID: 34800370; PMCID: PMC8786667.

⁶ The Lancet. 2021: The beginning of a new era of immunisations? *Lancet*. 2021 Apr 24;397 (10284):1519. doi:10.1016/S0140-6736(21)00900-4. PMID:33894817; PMCID:PMC8062086.

⁷ WHO-UNICEF immunization estimates, 2022 edition. Launched on July 15, 2022. <https://data.unicef.org/topic/child-health/immunization/>

How do immunization trends in Latin America and the Caribbean compare to global trends?

In the past 10 years, LAC has experienced a persistent downward trend in coverage of DTP3, often used as a marker of health system performance in reaching children with immunization services, with coverage dropping from 93 per cent in 2012 to 75 per cent in 2021. LAC's coverage level for DTP3 has dropped well-below the global average and it now lags far behind all other regions except for West and Central Africa and East and Southern Africa (figure 1).

Coverage of the first dose of DTP1 is used as a proxy measure for zero dose children, which is defined as children not receiving any dose of DTP. LAC maintained coverage of DTP1 above 90 per cent from 2000 to 2017 (figure 2). However, coverage rates of DTP1 in the region then plummeted from 95 per cent in 2017 to 82 per cent in 2021.

Figure 3 shows how these drops in coverage levels have increased the number of children in LAC missing out on vaccinations. The number of children un or under vaccinated more than doubled over the past two decades, increasing from about 1.1 million in 2000 to more than 2.4 million in 2021.

Figure 1: LAC trails behind most regions for DTP3

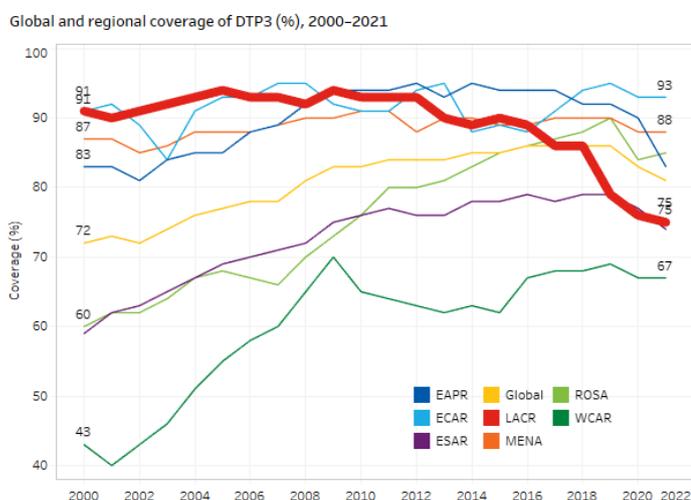
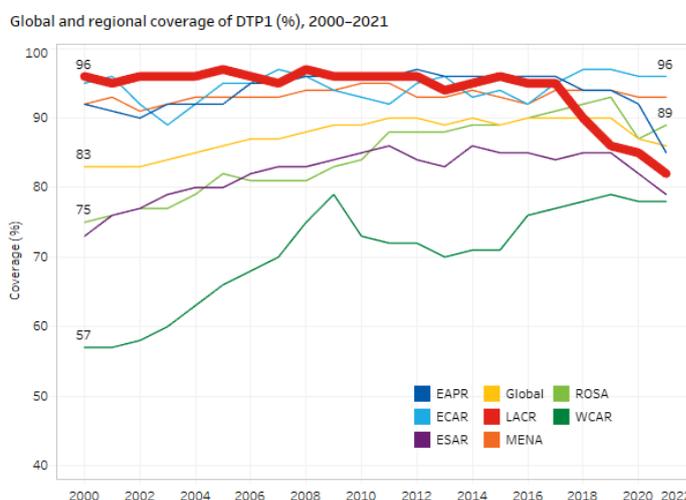


Figure 2: Precipitous drop in DTP1 in LAC



Source: WHO/UNICEF estimates of national immunization coverage, 2021 revision.

Note: UNICEF region acronyms – EAPR = East Asia and the Pacific; ECAR = Europe and Central Asia; ESAR = Eastern and Southern Africa; LACR = Latin America and the Caribbean (in bold); MENA = Middle East and North Africa; ROSA = South Asia; WCAR = West and Central Africa.

Figure 3: The number of children missing out on vaccination services is increasing in Latin America and the Caribbean

Number of unvaccinated (DTP1) and under-vaccinated (DTP3) infants in Latin America and the Caribbean, 2000-2021



Source: WHO/UNICEF estimates of national immunization coverage, 2021 revision.

Note: Zero-dose children are defined as children lacking any dose of DTP.

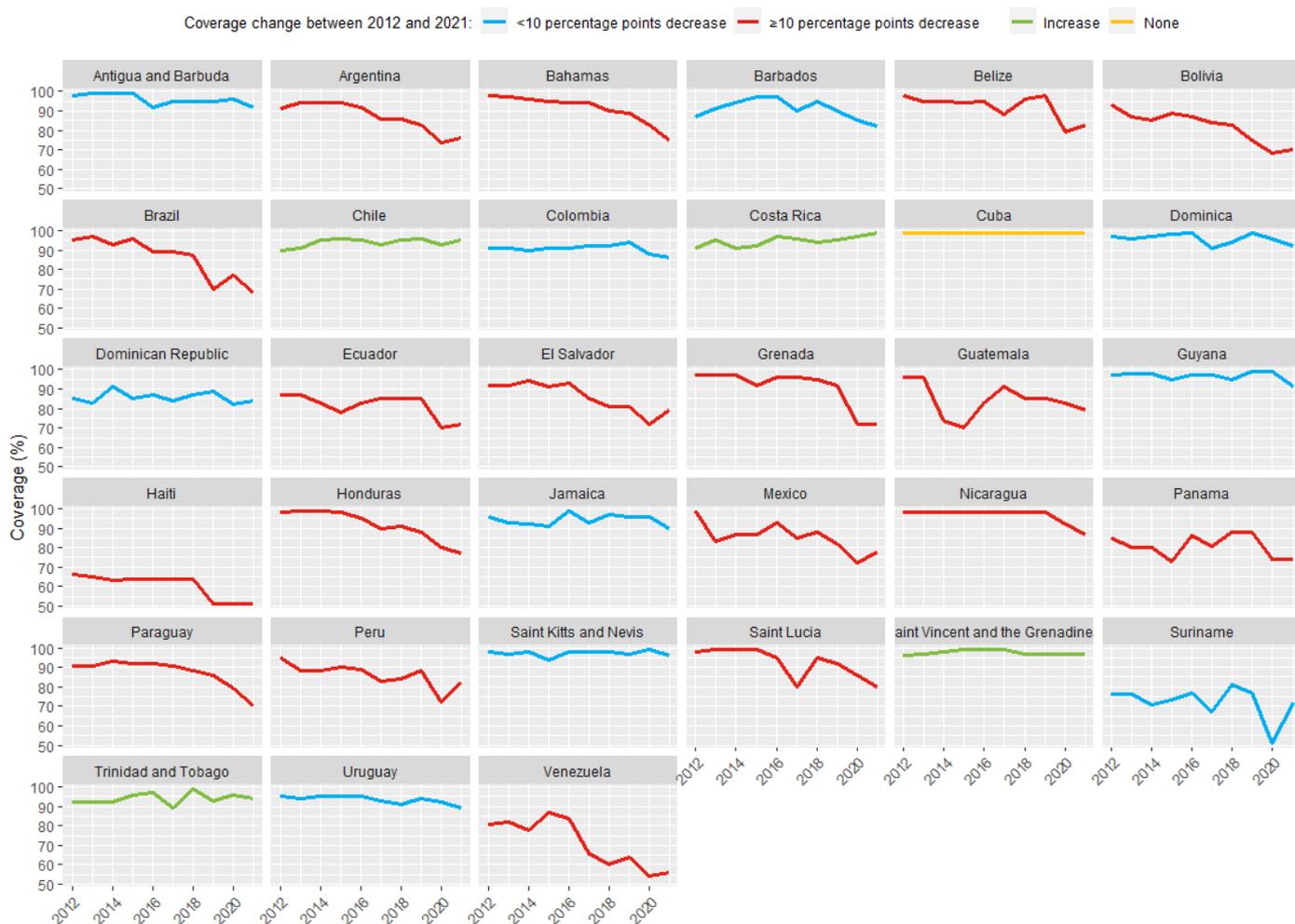
Disparities in immunization coverage across countries in Latin America and the Caribbean

Although on average coverage levels have been declining in LAC, patterns in immunization coverage differ substantially across countries in the region.

Comparisons of coverage levels in 2012 and 2021 show that 18 (55%) of the 33 countries in the region experienced 10 percentage point or larger drops in DTP3 coverage. Brazil experienced the largest decline of 27 percentage points, followed by Grenada and Venezuela (Bolivarian Republic of), both with declines of 25 percentage points. Only four countries (Chile, Costa Rica, Saint Vincent and the Grenadines, and Trinidad and Tobago) experienced an increase in DTP3 coverage during this time frame, while coverage in Cuba remained stable at 99 per cent (figure 4).

Figure 4: Most Latin American and Caribbean countries experienced declines in immunization coverage (DTP3) over the last decade*

Coverage (%) of DTP3 in Latin America and the Caribbean, 2012-2021

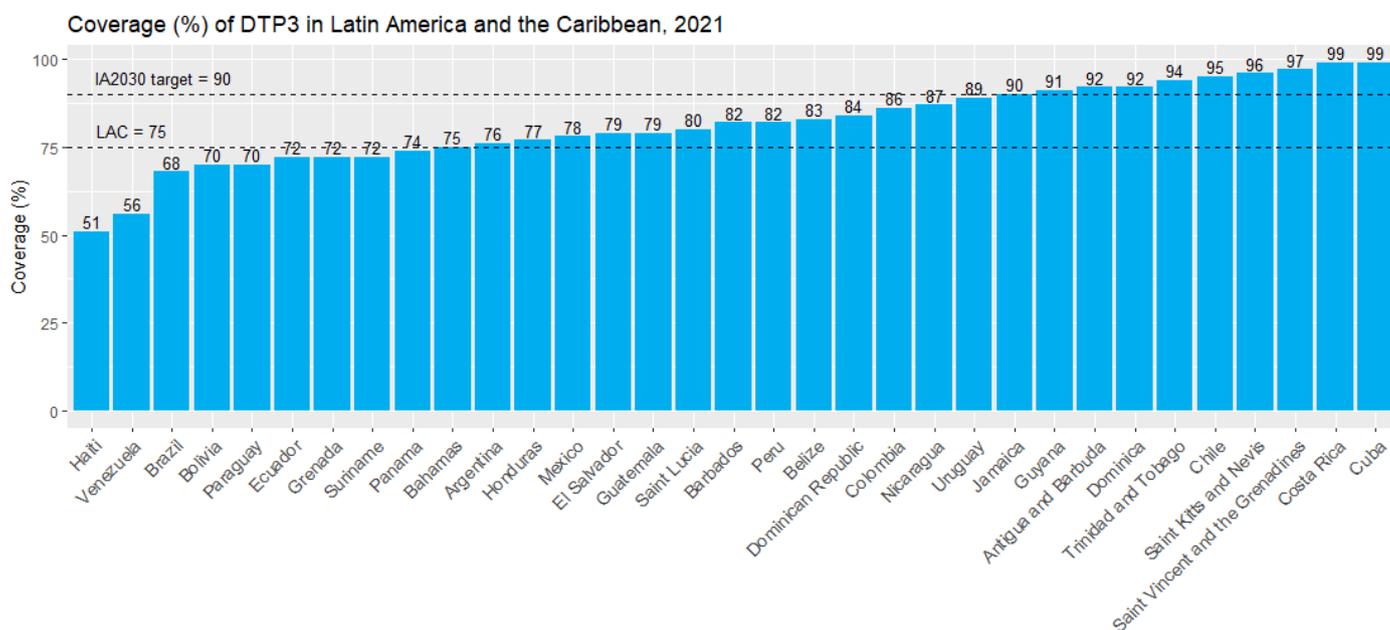


Source: WHO/UNICEF estimates of national immunization coverage, 2021 revision.

* Note: Official country names are Venezuela (Bolivarian Republic of) and Bolivia (Plurinational State of)

In 2021, DTP3 coverage levels ranged from 51 per cent in Haiti to 99 per cent in Costa Rica and Cuba. About one-third (10) countries reached or exceeded the IA2030 target of 90% coverage. The remaining 23 countries in the region are a mix of those that are within reach of the target and those that are lagging far behind (figure 5).

Figure 5: Wide ranges in coverage across countries in Latin America and the Caribbean*



Source: WHO/UNICEF estimates of national immunization coverage, 2021 revision.

Note: IA2030 = Immunization Agenda 2030; LAC = Latin America and the Caribbean

*Note: Official country names are Venezuela (Bolivarian Republic of) and Bolivia (Plurinational State of)

Why is immunization coverage declining in LAC?

Multiple factors have contributed to the observed declines in immunization coverage rates in LAC and each country has faced its own unique set of challenges, including combinations of political instability, economic crises, insufficient funding of health services, barriers to storage and distribution of vaccines, and vaccine hesitancy.

The COVID-19 pandemic further exacerbated already declining immunization coverage rates due to health service and supply chain disruptions, diversion of resources to the pandemic response, lockdown measures that limited access to services, and reluctance of caregivers to visit health facilities out of fear of infection.

Immunization coverage backslid in most LAC countries during the first two years of the pandemic. Only two countries in the region (Costa Rica and Trinidad and Tobago) experienced an increase in DTP3 coverage between 2019 and 2021, and only three countries (Cuba, Haiti and Saint Vincent and the Grenadines) sustained coverage at a constant level over this period. The remaining 28 LAC countries experienced declines in DTP3 coverage, ranging from a drop of 1 to 20 percentage points. The three countries with the largest drops in DTP3 coverage were Grenada (dropping 20 percentage points), Paraguay (dropping 16 percentage points) and Belize (dropping 15 percentage points). Similarly, most countries in the region experienced reversals in DTP1 coverage between 2019 and 2021 (figure 7). Only two countries had an increase in DTP1 coverage and five maintained their coverage levels. The remaining 26 countries experienced declines in DTP1 coverage, resulting in an additional 366,000 zero dose children in the region in 2021 compared to the number of zero dose children in 2019.

Figure 6: DTP3 coverage, 2019-2021*

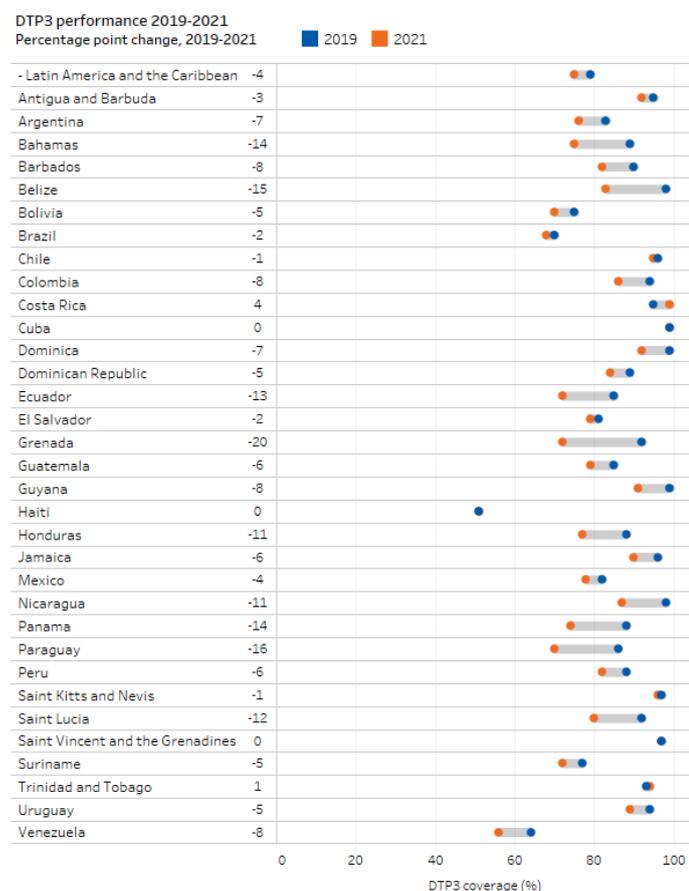
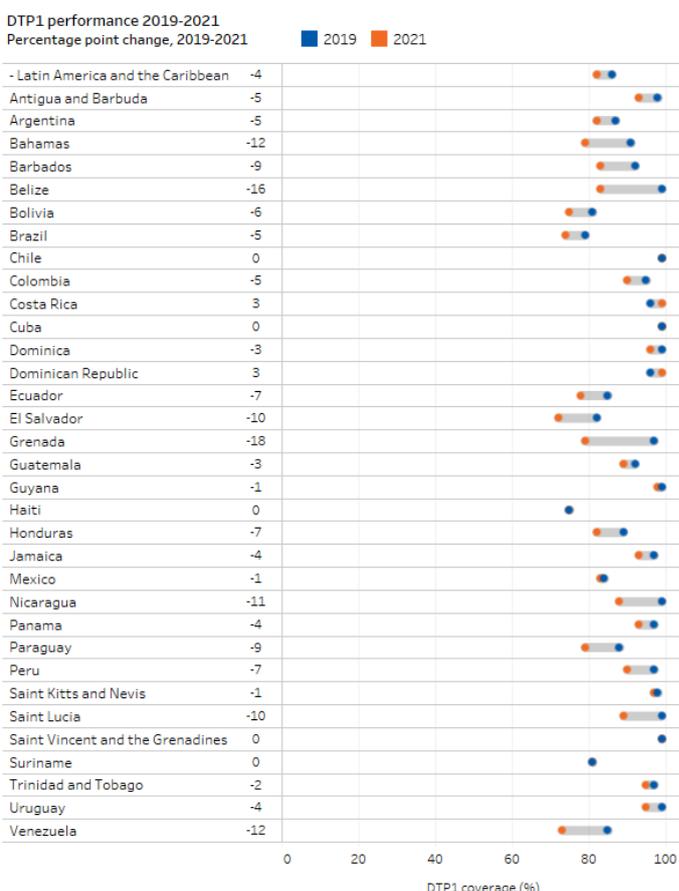


Figure 7: DTP1 coverage, 2019-2021*



Source: WHO/UNICEF estimates of national immunization coverage, 2021 revision.

*Note: Official country names are Venezuela (Bolivarian Republic of) and Bolivia (Plurinational State of)

In addition to COVID-19 specific impacts, barriers to increasing immunization coverage in LAC can be categorised into two main groups: (1) health system factors including infrastructure, supply chain, service availability, and health worker constraints, and (2) vaccine hesitancy.

Health system factors

Health systems have weakened or collapsed in several LAC countries in the past 10 years, compromising immunization activities. Economic downturns and lack of government funds in some countries have hampered the implementation of vaccination programs, negatively impacted supply chains, and hindered adequate training of healthcare workers.⁸ Since 2015, 20 (60%) LAC country programmes reported stock-outs of DTP or measles vaccine for at least one month, with 14 of those countries reporting such stockouts in multiple years.⁹ Furthermore, increasing healthcare costs and out-of-pocket expenditure in some countries has resulted in parents not being able to afford to vaccinate their children.⁶ Challenges with strengthening health information systems in LAC have also contributed to declining vaccination rates. In some countries, attempts at modernising and migrating health data platforms to new digital technologies has resulted in low-quality data, fragmented databases, and the slow transfer of information, impairing the functioning of surveillance systems and regular monitoring of immunization activities.^{7,10}

The number of children on the move fleeing from conflict and political and economic instability is projected to reach 3.5 million in 2022 – a 47 per cent increase compared to 2021.¹¹ These children often slip through the cracks of health care delivery systems and miss out on essential vaccinations or receive incomplete immunization of multi-dose vaccines. Children living in remote areas and from indigenous population groups in LAC also lack access to vaccination services.

Vaccine hesitancy

Declines in vaccination coverage in the region have also been associated with increasing vaccine hesitancy and anti-vaccine movements that have convinced some parents and caregivers to choose not to vaccinate their children. Vaccine hesitancy – defined by the World Health Organization’s (WHO) Strategic Advisory Group of Experts (SAGE) as the delay in acceptance or refusal of vaccination despite availability of vaccines¹² – was listed by WHO as one of the top ten threats to global health in 2019.¹³ The complex behavioural phenomenon is influenced by three interrelated factors, known as the “3 Cs” model.¹⁰

- Confidence – Lack of trust in the effectiveness and safety of vaccines and the health systems that deliver them
- Complacency – The perception that there is low risk of contracting disease, and therefore no value or need for a vaccine
- Convenience – The perceived lack of access to or availability of vaccination services

⁸ Adriana Guzman-Holst, Rodrigo DeAntonio, David Prado-Cohrs, Patricia Juliao, Barriers to vaccination in Latin America: A systematic literature review, *Vaccine*, Volume 38, Issue 3, 2020, Pages 470-481, ISSN 0264-410X, <https://doi.org/10.1016/j.vaccine.2019.10.088>

⁹ UNICEF analysis of WHO/UNICEF electronic Joint Reporting Form (eJRF), 2021 revision.

¹⁰ Tregnaghi P, Ospina-Henao S, Maldonado Oliva C, Bocanegra CL, Toledo C, Aldaz C, Pérez G, Díaz Ortega JL, Castelli JM, Aguilar L, Oliva L, Jiménez Quinteros M, Enriquez Navas M, Arroba R. Innovation and immunization program management: traceability and quality in Latin America and the Caribbean, laying the groundwork for a regional action plan. *Expert Rev Vaccines*. 2022 Aug;21(8):1023-1028. doi: 10.1080/14760584.2022.2077195. Epub 2022 May 18. PMID: 35549597.

¹¹ Latin America and the Caribbean: About 3.5 million children to be affected by migration next year – UNICEF, Press release, 03 December 2021: <https://www.unicef.org/lac/en/press-releases/latin-america-and-caribbean-about-3.5-million-children-to-be-affected-by-migration-next-year>

¹² MacDonald NE; SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. *Vaccine*. 2015 Aug 14;33(34):4161-4. doi: 10.1016/j.vaccine.2015.04.036. Epub 2015 Apr 17. PMID: 25896383.

¹³ World Health Organization (WHO) *Ten health issues WHO will tackle this year.* -01- 2022. <https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019>

Consequences of declining immunization coverage in LAC

Since vaccination rates have fallen, many countries in LAC including Brazil, Colombia, and Venezuela (Bolivarian Republic of) have experienced outbreaks of vaccine-preventable diseases including measles.¹⁴ Low vaccination rates along with high levels of cross-border mobility for work and emigration to escape political and economic crises have spurred wide-spread transmission of vaccine-preventable diseases. Re-emergence of diphtheria cases and outbreaks of yellow fever have also occurred throughout the region.^{12,15} Boosting vaccination rates is critical for stopping the transmission of disease within and between countries and to reduce the negative impacts of vaccine-preventable diseases on children and communities.

Conclusion

Decreasing vaccination rates in LAC are a crisis. Urgent action is needed to restore immunization programs, implement catch up efforts to reach children who missed out on vaccinations during the pandemic, and to develop effective strategies for delivering services to children on the move or living in hard-to-reach communities.

The reasons for the drops in immunization coverage in LAC are complex and vary by country. Research is needed to identify the main barriers to vaccination in each country, and to use the findings from this research to design immunization programs that address these barriers and that are tailored to each country context.

Stakeholders including governments, policy makers and international organizations must work together to:

- Develop and implement national immunization plans that promote equitable access to immunization services and target underserved population groups such as children from indigenous communities, living in remote areas, and urban slums.
- Intensify efforts to identify and vaccinate zero dose children including through campaigns to prevent outbreaks of vaccine preventable diseases and to reach vulnerable communities.
- Increase investments in primary health care and supply chain systems so that immunization services are readily available and accessible to all children and families.
- Disseminate communication programs that inform caretakers about the benefits of vaccination, address parental concerns about the safety and effectiveness of vaccines, and debunk myths about adverse effects of vaccines.

For more information on regional trends and comparisons, visit the [UNICEF immunization regional snapshots](#)

¹⁴ Paniz-Mondolfi A, Tami A, Grillet ME, Márquez M, Hernández-Villena J, Escalona-Rodríguez M, et al. Resurgence of vaccine-preventable diseases in Venezuela as a regional public health threat in the Americas. *Emerg Infect Dis*. 2019 Apr [19/09/2022]. <https://doi.org/10.3201/eid2504.181305>

¹⁵ Cunha, M.d.P., Duarte-Neto, A.N., Pour, S.Z. *et al.* Origin of the São Paulo Yellow Fever epidemic of 2017–2018 revealed through molecular epidemiological analysis of fatal cases. *Sci Rep* 9, 20418 (2019). <https://doi.org/10.1038/s41598-019-56650-1>