Mapping the characteristics of un- and under-vaccinated children

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BACKGROUND

While there has been great success in increasing the coverage of childhood vaccines globally, certain populations remain un- or under-vaccinated in many low- and middle-income countries. Expanding coverage requires vaccination strategies and interventions that identify and target those most at risk, guided by the most current and detailed evidence regarding their size and spatial distribution.

DATA & METHODS

Through the integration and harmonisation of a range of geospatial data sets, including population, vaccination coverage (**DTP1**, **DTP3**, and **MCV1**), travel-time, settlement type, and conflict locations, we estimate the numbers of un- or under-vaccinated children living within remote-rural, urban, and conflict-affected locations at the second administrative level.

KEY FINDINGS

We find that substantial heterogeneities exist in terms of the characteristics and spatial distributions of children that are un- or under-vaccinated (**Figure 1**). We estimate that over 11% of these are living in remote-rural areas, more than 26% in urban and peri-urban areas, and up to 60% in settings other than these, with nearly 40% living within 1-hour of the nearest town or city (**Table 1**). We estimate between 6 and 18% of un- or under-vaccinated children to be living in conflict affected locations, depending on broad and narrow definitions of conflict.

Geography	% of Total DTP1	% of Total DTP3	% of Total MCV1
Urban	20.3 %	19.8	19.2
Peri-urban	8.1 %	7.4	7.1
Rural (non-remote)	59.8	59.6	60.8
< 1 hr	38.6 %	36.5	37.9
1 to 2 hrs	15.4 %	16.6	16.3
2 to 3 hrs	5.8 %	6.5	6.6
Rural (remote) > 3 hrs	11.8 %	13.1	12.9
Total unvaccinated	**14 030 486**	**23 275 803**	**20 237 173**
Conflict (narrow to broad)	*5.9 - 14.7*	*5.9 - 16.6*	*6.3 - 18.1*

Table 1. Global distribution of unvaccinated children (%) broken down by geographical setting, vaccine dose, and conflict for all countries in the analysis (Note: conflict included as separate category)

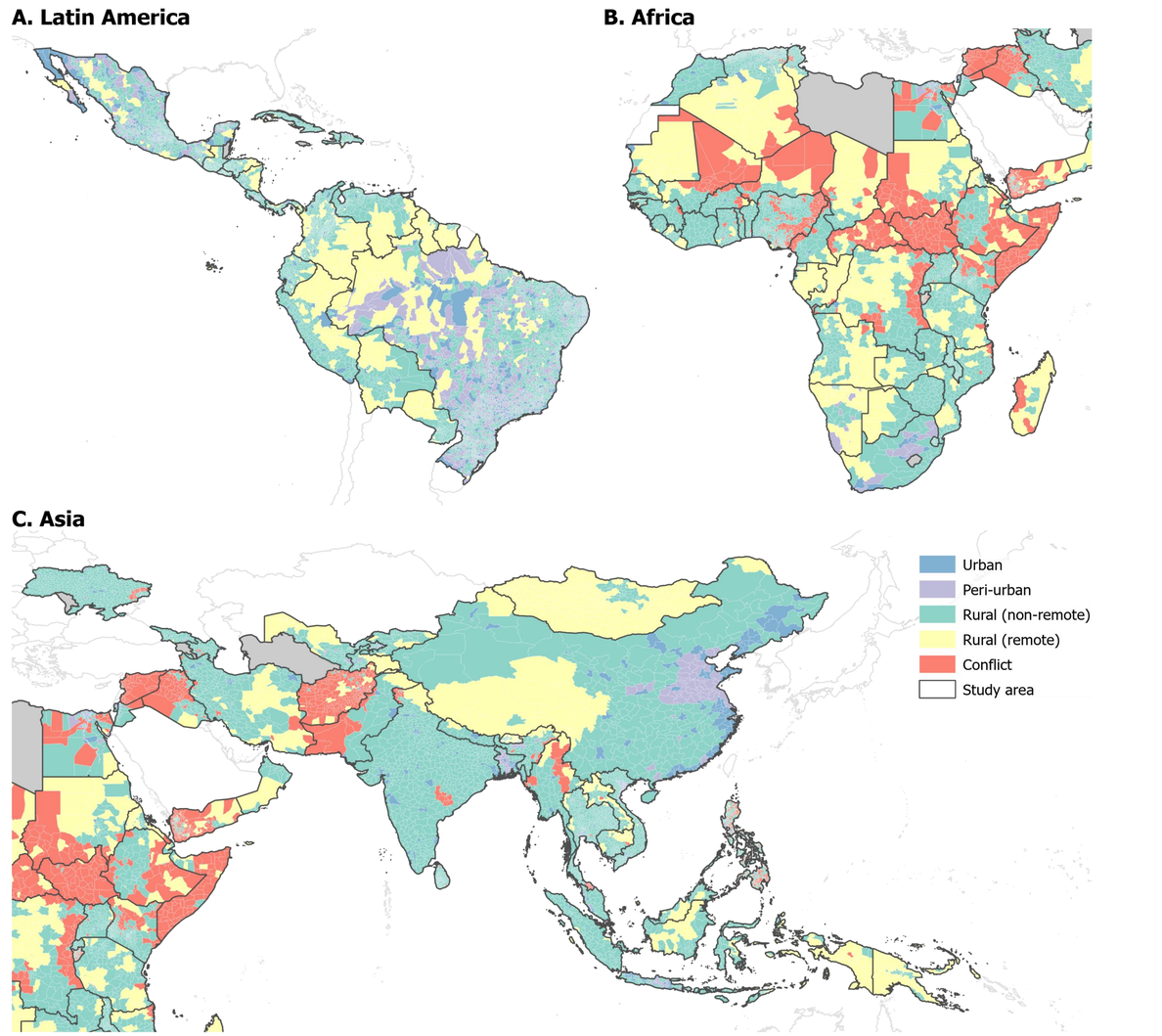

Figure 1. Map highlighting the geographical setting with the greatest number of unvaccinated children not receiving DTP1 at the administrative level 2 for all countries in the study area for Latin America (A), Africa (B), and Asia (C)

CONCLUSION

Assumptions have been made that the vast majority of un- or under-vaccinated children in low- and middle-income countries reside in remote-rural, conflict-affected or urban slum locations. Our estimates suggest that while a large number likely do live in such locations, around 60% live outside of these. Moreover, numbers vary significantly by region, country and district, emphasising the need for both country specific and global approaches to defining such populations and informing strategies and interventions to reach them. **This work has been used to guide major strategic decisions under the GAVI zero dose strategy** (Phase 5 2021-2025, see QR code).

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