Release Statement

Population, vaccination coverage, and zero-dose children estimates for Cameroon version 1.0

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These data were produced by the WorldPop Research Group at the University of Southampton. This work was part of the **Reach the Unreached – Digital technologies to map zero-dose and unreached children in West and Central Africa** project, funded by UNICEF — The United Nations Children's Fund (contract No. 43387656). The project is led by UNICEF West Africa Regional Office focusing on five West African countries: Cameroon, Chad, Côte D'Ivoire, Guinea and Mali. The partners include the UNICEF Country Offices, WorldPop at the University of Southampton, MapAction and CartONG.

This data release provides gridded population, vaccination coverage and zero dose children estimates for Cameroon. The reference year of this data package is 2021.

All GIS files in this data release have the geographic coordinate system of WGS84 (World Geodetic System 1984).

The **population modelling** builds upon earlier GRID3 Bayesian population model developed for Cameroon by Nnanatu et al. (2022), extending its spatial coverage to national boundaries as defined by Le Programme Elargi de Vaccination of Cameroon (PEV). This earlier application combined multiple nationally representative household listing datasets received from the Cameroon National Statistical Office (NIS) with satellite-based settlement data and geospatial covariates (Woods et al. 2024) to train geospatial statistical model parameters which were used to estimate population numbers and number of households at high-resolution grid cells using advanced Bayesian hierarchical statistical modelling frameworks. These population estimates have a spatial resolution of approximately 100-metre (0.0008333 decimal degrees grid) and also contain age and sex disaggregated results with the same spatial resolution.

Geo-statistical estimates of under-vaccinated (DPT3 antigen coverage) and zero-dose (DPT1 coverage) children under one-year-old utilised a Bayesian spatial regression model (Utazi et al. 2021; 2022; 2023), implemented by Chaudhuri et al (2025). This application utilised the ECVRC 2023 national vaccination survey for the modelling. The vaccination coverage estimates have a spatial resolution of approximately 1-

kilometre resolution (0.008333 decimal degrees grid), but the results are also aggregated up to various administrative levels in GIS shapefile and table formats.

The **number of zero dose and under-vaccinated children for DTP1 and DTP3** was estimated by integrating the estimated number of children under the age of 1 and the vaccination coverage estimates in a GIS workflow (https://github.com/wpgp/RtU_vaccination_modelling/tree/main/Zero-dose). The zero dose children estimates have a spatial resolution of approximately 1-kilometre resolution (0.008333 decimal degrees grid), but the results are also aggregated up to various administrative levels in GIS shapefile and table formats.

Details of the inputs, methodologies and outputs are found in the specific subfolders (Population Estimates, Vaccination Estimates, Zero dose results).

The authors followed rigorous procedures designed to ensure that the used data, the applied method and thus the results are appropriate and of reasonable quality. If users encounter apparent errors or misstatements, they should contact WorldPop at release@worldpop.org.

WorldPop, University of Southampton, and their sponsors offer these data on a "where is, as is" basis; do not offer an express or implied warranty of any kind; do not guarantee the quality, applicability, accuracy, reliability or completeness of any data provided; and shall not be liable for incidental, consequential, or special damages arising out of the use of any data that they offer. These data are operational population estimates and are not official government statistics.

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SUGGESTED CITATIONS

Chaudhuri S., Gadiaga A. N., Olowe I., Tejedor-Garavito N., Utazi C. E., Lazar A. N. 2025 Population, vaccination coverage, and zero-dose children estimates for Cameroon (2022) version 1.0. WorldPop, University of Southampton. DOI: https://dx.doi.org/10.5258/SOTON/WP00821

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CODE DOWNLOAD:

- WorldPop's Reach the Unreached GitHub page: https://github.com/wpgp/RtU_vaccination_modelling/tree/main
- UNCEF's Reach the Unreached GitHub page: https://github.com/unicef-drp/reach-the-unreached?tab=readme-ov-file

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