

Small Area Estimates of Stunting for Ghana

Reproducibility README

Overview

This reproducibility package contains do files, and raw datasets to reproduce the results of the paper Small Area Estimates of Stunting for Ghana.

Data Sources and Availability

Short Name	Citation	Filename	Availability	Access/download instructions	Last accessed date
Ghana 2022 DHS	Ghana Statistical Service (GSS) and ICF. 2024. Ghana Demographic and Health Survey 2022 [Dataset]. Accra, Ghana, and Rockville, Maryland, USA: GSS [Producers] and ICF [Distributor] 2024.	Various within \${path}\00.data\DHS\2022	Some data cannot be made publicly available	DHS data is publicly available through DHS website upon registration and request. Register an account with the DHS Program at https://dhsprogram.com/data/ . Login and submit a request for Ghana 2022 Standard DHS (DHS-8) (https://dhsprogram.com/data/dataset/Ghana-Standard-DHS_2022.cfm?flag=0) . Wait for approval, following which data can be downloaded.	April 2025
		\$data/dhs_2022_districtcodes.xlsx		Publicly available DHS data does not contain district identifiers, which were confidentially sourced from Ghana Statistical Service (GSS) for this project. The Excel file columns Cluster_number and region_code can be merged into the publicly available DHS data and the column EACODE is the district identifier. To request, send email to: datarequest@statsghana.gov.gh requesting district (EA code) identifiers to merge with 2022 DHS	August 2025
Ghana 2021 Population and Housing Census	Ghana Statistical Service, 2021 Population and Housing Census (2021 PHC). [Dataset]. GSS [Producers]	"\$census/defactopn_10%_20221011d"	No data can be made publicly available	Data was sourced from GSS and is confidential. To request, send email to: datarequest@statsghana.gov.gh requesting 2021 Population and Housing Census 10% sample representative at the district level.	April 2025
Ghana Poverty Maps	Ghana Statistical Service (2023). Ghana Poverty Mapping Brief - 2016/17. Mimeo	\$data/povertyTable.xlsx	No data can be made publicly available	This data is not publicly available and was sourced from GSS. To request, send email to: datarequest@statsghana.gov.gh requesting 2023 poverty small-area estimates, Table of poverty estimates	March 2025
Ghana district MPI	Ghana Statistical Service. (2023). <i>Multidimensional Poverty Metrics by Locality, District, and Region</i> [Data set]. https://statsbank.statsghana.gov.gh/pxweb/en/Search%20Bar/Search%20Bar/MPI by Locality.px/	\$data/2021 MPI at region and District estimates_20230828.xlsx	Some data can be made publicly available	The source file was for this study obtained from GSS and is confidential and cannot be made publicly available. Some data is available through the GSS statsbank. https://statsbank.statsghana.gov.gh/pxweb/en/Search%20Bar/Search%20Bar/MPI by Locality.px/ (Select all fields in 'Poverty_Measure', and	January 2026

	earch%20Bar/-/MPI_by_locality.px/			select all fields in 'Geographic Areas', then click "Show table") This publicly available dataset does not contain the district code to merge with the DHS data, nor the variables hcount_4, m0_4, a_4, share_4 Send email to: datarequest@statsghana.gov.gh requesting variables hcount_4, m0_4, a_4, share_4 and district codes.	
Shapefiles	Ghana Statistical Service. (2021). <i>Ghana Administrative Level 0-2 Boundaries - District Shapefile</i> [Data set].	\$data\Districts_261\District_261 \$dhs\Ghana 2022 DHS - sdr_subnational_boundaries_2025-09-05\shps\sdr_subnational_boundaries	No data can be made publicly available	District shapefile is not publicly available and was sourced from GSS. Send email to: datarequest@statsghana.gov.gh requesting district shapefiles	November 2025
Other auxiliary data	World Bank. Ghana Project Targeting Index [Data set]. https://datanalytics-int.worldbank.org/ghaPTI/ . World Bank Group [Producers]	\$data\PTI_data_Ghana.xlsx	No data can be made publicly available	Data comes from the World Bank PTI project (https://datanalytics-int.worldbank.org/ghaPTI/) (Without selecting anything, click on <i>Download PTI data</i>). This data can be accessed and downloaded by World Bank staff with access to the intranet. However, this data is not publicly available beyond the WB.	August 2026

I certify that the author(s) of the manuscript have legitimate access to and permission to use the data used in this manuscript.

Instructions for Replicators

New users should follow these steps to run the package successfully:

- All data is included in the reproducibility package.
- Update the following files with your directory paths
 - 0.master.do
- Run in this order:
 - 0.master.do;
 - 1_dataclean.do
 - 2_sea analysis_transf.do
 - 3_tables and maps.do

List of Exhibits

Exhibit name	Output filename	Script
Table 1	"\$path/02.results/02.tables and figures/DHS_regional.xlsx"	1_dataclean.do (line 129-155)
Table 3	"\$path/02.results/02.tables and figures/stunt_regs.xls"	2_sea analysis_transf.do (line 381 and 604)
Table 4	"\$path/02.results/02.tables and figures/h4a_regs.xls"	2_sea analysis_transf.do (line 836, 1012)
Table 5	"\$path/02.results/02.tables and figures/means_ci_by_region.xlsx"	3_tables and maps.do (line 414)
Table 6	"\$path/02.results/02.tables and figures/means_ci_by_region.xlsx"	3_tables and maps.do (line 414)
Table 7	"\$path/02.results/02.tables and figures/pw_correlations.xlsx",	3_tables and maps.do (line 485, 594)
Appendix B	"\$path/02.results/02.tables and figures/AppendixD.csv"	3_tables and maps.do (line 674)
Figure 1 a	"\$path/02.results/02.tables and figures/disthhpop_mm.gph" "\$path/02.results/02.tables and figures/disthhpop_od.gph"	2_sea analysis_transf.do (line 46 and 57)
Figure 1 b	"\$path/02.results/02.tables and figures/h4a_child.gph" "\$path/02.results/02.tables and figures/h4a_child_mm.gph"	2_sea analysis_transf.do (line 81 and 93)
Figure 2 a c	graph save "\$path/02.results/02.tables and figures/mean_stunted.gph" "\$path/02.results/02.tables and figures/mean_h4a.gph"	2_sea analysis_transf.do (line 140, 143)
Figure 2 b	"\$path/02.results/02.tables and figures/lmean_stunted.gph"	2_sea analysis_transf.do (line 165)
Figure 3 a	"\$path/02.results/02.tables and figures/A_stunt_u_qq.gph" "\$path/02.results/02.tables and figures/A_stunt_e_qq.gph"	2_sea analysis_transf.do (line 416, 420)
Figure 3 b	"\$path/02.results/02.tables and figures/S_stunt_u_qq.gph" "\$path/02.results/02.tables and figures/S_stunt_e_qq.gph"	2_sea analysis_transf.do (line 639, 643)
Figure 4a	"\$path/02.results/02.tables and figures/A_stunt_dir.gph" "\$path/02.results/02.tables and figures/A_stunt_se.gph"	2_sea analysis_transf.do (line 424, 429)
Figure 4b	"\$path/02.results/02.tables and figures/S_stunt_dir.gph" "\$path/02.results/02.tables and figures/S_stunt_se.gph"	2_sea analysis_transf.do (line 648, 653)
Figure 5a	"\$path/02.results/02.tables and figures/A_h4a_u_qq.gph" "\$path/02.results/02.tables and figures/A_h4a_e_qq.gph"	2_sea analysis_transf.do (line 862, 864)
Figure 5b	"\$path/02.results/02.tables and figures/S_h4a_u_qq.gph" "\$path/02.results/02.tables and figures/S_h4a_e_qq.gph"	2_sea analysis_transf.do (line 1039, 1042)
Figure 6a	"\$path/02.results/02.tables and figures/A_h4a_dir.gph" "\$path/02.results/02.tables and figures/A_h4a_se.gph"	2_sea analysis_transf.do (line 871, 876)
Figure 6b	"\$path/02.results/02.tables and figures/S_h4a_dir.gph" "\$path/02.results/02.tables and figures/S_h4a_se.gph"	2_sea analysis_transf.do (line 1047, 1052)
Figure 7	"\$path/02.results/02.tables and figures/S_h4a_stunted.gph"	3_tables and maps.do (line 370)
Figure 8a	"\$path/02.results/02.tables and figures/stunted_A_S.gph" "\$path/02.results/02.tables and figures/stunted_A_S_rank.gph"	3_tables and maps.do (line 338, 349)
Figure 8b	"\$path/02.results/02.tables and figures/h4a_A_S.gph" "\$path/02.results/02.tables and figures/h4a_A_S_rank.gph"	3_tables and maps.do (line 320, 330)
Figure 9	"\$path/02.results/02.tables and figures/h4a_map_S.pdf" "\$path/02.results/02.tables and figures/stunted_map_S.pdf" "\$path/02.results/02.tables and figures/nstunted_map_S.pdf"	3_tables and maps.do (line 252, 281, 309)
Figure 10a	"\$path/02.results/02.tables and figures/box_fh_S_stunted.gph",	3_tables and maps.do (line 445)
Figure 10b	"\$path/02.results/02.tables and figures/box_fh_S_h4a.gph",	3_tables and maps.do (line 469)
Figure 11	"\$path/02.results/02.tables and figures/pov_stunted_S.gph" "\$path/02.results/02.tables and figures/pov_h4a_S.gph"	3_tables and maps.do (line 522, 533)

Figure 12	"\$path/02.results/02.tables and figures/mpi4_h4a_S.gph" "\$path/02.results/02.tables and figures/mpi4_stunted_S.gph",	3_tables and maps.do (line566, 576)
Figure 13a	"\$path/02.results/02.tables and figures/water_unimproved_stunted_S.gph" "\$path/02.results/02.tables and figures/toilet_unimproved_stunted_S.gph"	3_tables and maps.do (line666)
Figure 13b	"\$path/02.results/02.tables and figures/water_unimproved_h4a_S.gph" "\$path/02.results/02.tables and figures/toilet_unimproved_h4a_S.gph"	3_tables and maps.do (line666)
Appendix C	"\$path/02.results/02.tables and figures/h4a_map_A.pdf" "\$path/02.results/02.tables and figures/stunted_map_A.pdf" "\$path/02.results/02.tables and figures/nstunted_map_A.pdf"	3_tables and maps.do (line 239,267, 296)

Software Requirements

Programs were run in Stata version 18. Specific packages required are listed and downloaded in 0.master.do