COD-PS Malawi
Update Year 2023 / Reference Year 2023

Objective of This Explanatory Technical Note

This explanatory technical note provides supplementary notes on the strengths and limitations of each Common Operational Dataset on Population Statistics (COD-PS) against the projections by the WPP 2022 Revision of the UN to enable informed humanitarian decision-making.

Structure of Supplementary Note

This supplementary note is organized into the following sections:
1. Metadata
2. Methodological Documentation
3. Intrinsic Population Growth Rates (ADM-0 & 1)
4. Population counts by age and sex (ADM-0)
5. Relative population size by age and sex (ADM-1)

1. Metadata

Item	Metadata
Country	Malawi
Source(s)	Malawi National Statistical Office
Source(s) Link(s)	http://www.nsomalawi.mw/index.php?option=com_content&view=article&id=134%3Apopulation-projections-for-malawi&catid=8&Itemid=3
Population Data Type (Census enumeration, Direct estimate, or Population projection)	Population projection
Year of the Baseline Population	2018
Reference year of this COD-PS	2023
Publication year of this COD-PS	2023
ADM-1 Name	Region
ADM-1 Number of Units	3

Item	Metadata
ADM-1 Sex and Age Disaggregation	Sex and age disaggregated by 5-year age groups
ADM-1 Open-ended Age Group	95+
ADM-2 Name	District/City
ADM-2 Number of Units	32
ADM-2 Sex and Age Disaggregation	Sex and age disaggregated by 5-year age groups
ADM-2 Open-ended Age Group	95+
General Notes	This COD-PS uses 32 ADM-2 subdivisions where certain districts are broken into 'city' and 'rural' *(e.g. Blantyre City' and 'Blantyre Rural'). For further reference, see the Common Operational Data on Administrative Boundaries (COD-AB) for Malawi on Humanitarian Data Exchange (HDX).
Data Limitations	No post-enumeration survey (PES) was conducted after the 2018 census, therefore the baseline data may suffer from coverage errors despite alternative means of checking for undercoverage, e.g. GIS.
COD-PS Demographic Data Quality Assessment	The COD-PS was assessed against ADM-0 estimates and projections published in the World Population Prospects (2022 Revision) by the United Nations Department of Economic and Social Affairs (UN-DESA) and the Namibia NSO 2011-2041 projection report.

2. Methodological Documentation

Item	Methodological Documentation
Methodology Used	Cohort component method was applied to the 2018 census population to build the projections on which this COD-PS is based. The sub-national projections entailed a 'two-stage proportional adjustment' wherein specialised mathematical techniques were applied to ensure consistency between the national and regional level demographic indicators. At the first stage, for each region a cohort component projection was conducted independently, starting with the preparation of the base population using 2018 census population as described above for the national projections. The second stage involved reconciliation the districts to the regional population for each projected year.
Baseline Population	2014 census
Post-enumeration survey (PES)	While the post-enumeration survey (PES) report cannot be located online, the projection report states that NSO used geographic information system

Item	Methodological Documentation
	(GIS) and satellite imagery to ensure complete coverage thus avoiding omissions or double counting during the enumeration exercise.
Assessment and Adjustment of the Baseline Population	An initial examination of the population showed that there was an initial undercount of the 0-9 population; the undercount was adjusted using the information on fertility and mortality dynamics between the 2008 and 2018 censues and the 2004 and 2015 Malawi Demographic and Health Surveys (MDHS).
Fertility (births)	Fertility rates from 1977 to 2018, captured through the past censues and DHS, were applied to build the projections on which this COD-PS is based. Specifically, it was decided that a logistic function fits best the trend of sustained declining fertility during 1977-2018 and projects continuing decline into the future. The projected TFR at the beginning of the projection period is 4.2 children per woman in 2018 and is expected to decline to 2.8 children per woman in 2050. A general and common trend is that a growing proportion of women will shift having births from early ages (under 19 years) to births to their between 20-24 and 25 -29 age groups.
Mortality (deaths)	Mortality assumptions were based on the population dynamics between the 2008 and 2018 censues. Specifically, life expectancies across all ages were assumed to continue increasing into the future given the enduring success of health and nutrition interventions in the country, particularly the interventions against the HIV/AIDS epidemic. Life expectancy at birth for Malawi is expected to increase from 65.09 years in 2018 to 74.69 years in 2050 for both sexes. Life expectancy at birth for males is expected to increase from 62.37 years in 2018 to 71.61 years in 2050, while life expectancy at birth for females will increase from 67.88 years to 77.86 years in the reference years.
International migration (net migration)	In this projection, it was assumed that international migration will not play a major role during the projection period. The small size of the estimated net international migration (-43,000/year), as well as the complexity of migration especially regarding its instability and the difficulties in addressing new forms of population mobility, supported the decision to include only a null migration scenario.
Internal migration (migration within country)	It was assumed that the number of net internal migrants by age groups and sex will double, following the projected population growth rate during the projection period. In the 2018 census, internal migration was measured using the questions on previous residence and duration of stay in the present place of residence. The number of in-migrants and out-migrants during the five years before the census by age groups and sex was tabulated for each district. Net migration was calculated and the input used for the initial projection year was the average net migration during the five years previous to the census.

3. Intrinsic Population Growth Rates (ADM-0 & 1)

At ADM-0, the postcensal population growth rate of this COD-PS is 2.41% per year (females 2.43%, males 2.38%). This is relatively lower than the growth rates projected by WPP 2022 (2019: 2.69%, 2021: 2.58%, 2023: 2.56%).

At ADM-1, the projected postcensal population growth rates vary across the three regions. The NSO projects growth rates of 2.51% for the Central Region and 2.42% for the Southern Region (Central and Southern Regions house the four biggest cities of Malawi), followed by 2.04% for the Northern Region.

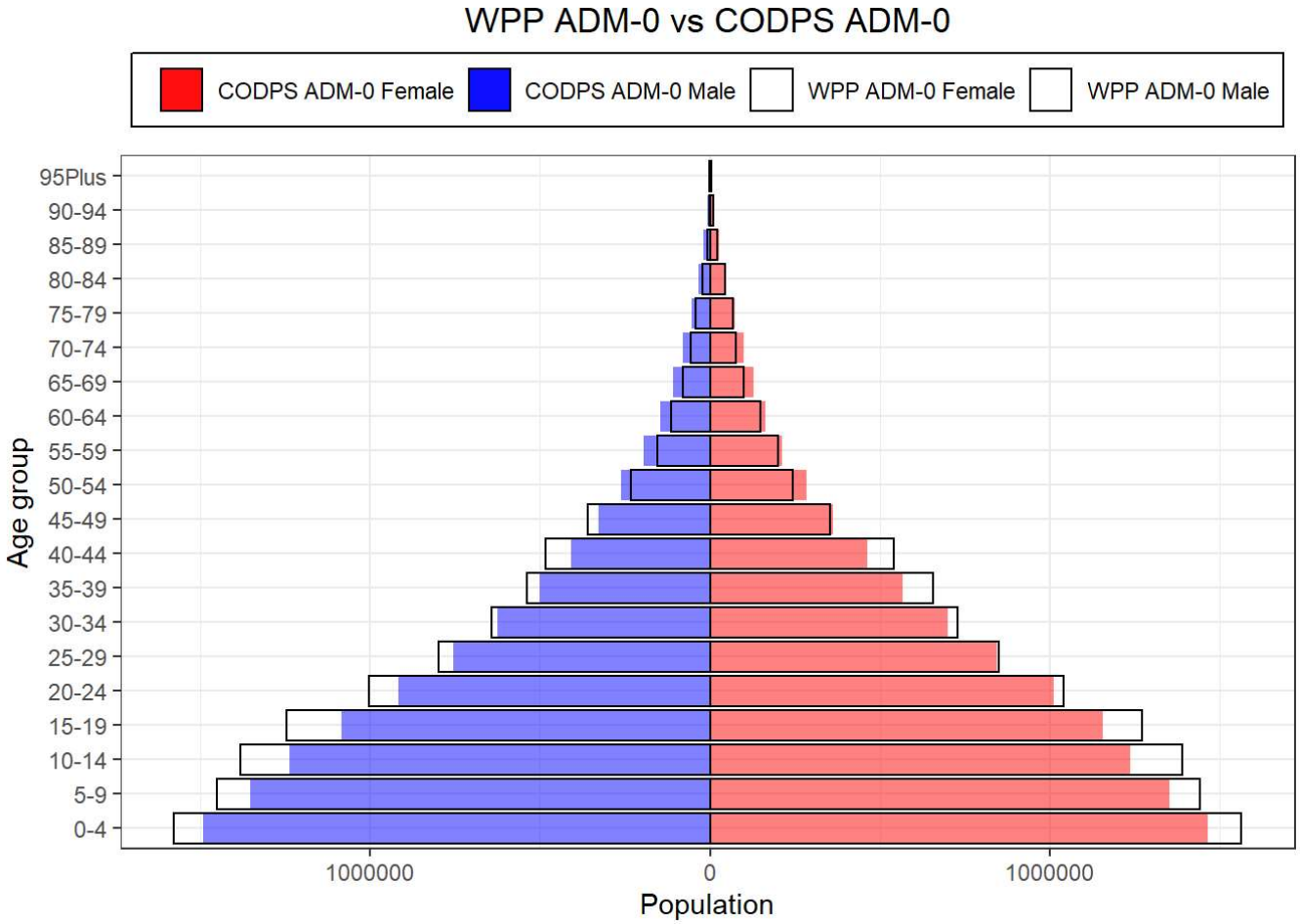
ADM-1	Last Census, Female	Last Census, Male	CODPS, Female	CODPS, Male	PGR(%), Female	PGR(%), Male	PGR(%), Both
Central	3,842,817	3,684,530	4,362,901	4,170,978	2.54	2.48	2.51
Northern	1,180,034	1,107,070	1,308,429	1,223,841	2.07	2.01	2.04
Southern	4,019,438	3,729,860	4,538,916	4,204,446	2.43	2.40	2.42
Total	9,042,289	8,521,460	10,210,246	9,599,265	2.43	2.38	2.41

4. Population Counts by age and sex (ADM-0)

Below, we compare the population structure across sex and age groups between the USCB and WPP projections at the national level. The NSO projections are generally lower than the WPP estimates, especially among the 0-19 years, up to by 13%. It is consistent with the NSO predicting relatively lower rates of postcensal population growth rate than WPP at the ADM-0 level.

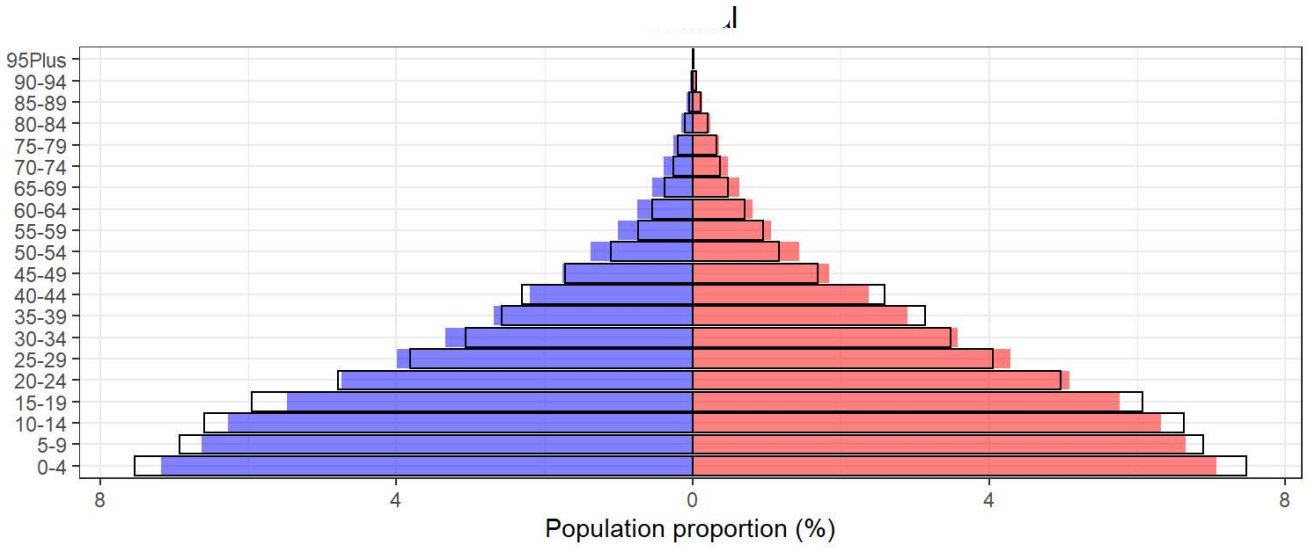
	CODPS-WPP, Female	Difference(%)	CODPS-WPP, Male	Difference(%)
0-4	-98,736	-6.31	-86,748	-5.50
5-9	-90,493	-6.27	-96,139	-6.63
10-14	-152,038	-10.95	-142,386	-10.32
15-19	-115,054	-9.06	-163,190	-13.10
20-24	-29,401	-2.83	-86,276	-8.61
25-29	-6,006	-0.71	-43,346	-5.44
30-34	-28,893	-3.96	-16,868	-2.62
35-39	-88,894	-13.55	-40,020	-7.42
40-44	-78,618	-14.50	-75,766	-15.69
45-49	9,454	2.68	-30,588	-8.51
50-54	40,658	16.66	30,492	13.17
55-59	12,004	6.03	39,514	25.58

	CODPS-WPP, Female	Difference(%)	CODPS-WPP, Male	Difference(%)
60-64	16,411	11.10	33,704	29.71
65-69	30,291	30.58	29,029	36.49
70-74	21,406	27.79	23,343	42.07
75-79	6,574	9.80	13,208	31.98
80-84	5,572	12.86	11,762	53.72
85-89	4,652	20.49	8,833	102.29
90-94	2,996	32.40	4,575	178.08
95Plus	1,111	33.71	1,631	260.13



5. Relative population size by age and sex (ADM-1)

Below compares relative population proportions by sex and age between USCB ADM-1 and WPP ADM-0 projections. While the NSO ADM-1 age-/sex-specific population proportions are generally consistent with the WPP ADM-0 estimates, it projects higher fertility in the Southern Region compared to the WPP ADM-0 estimates and also to the other two regions.


95Plus
90-94
85-89
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
8
4
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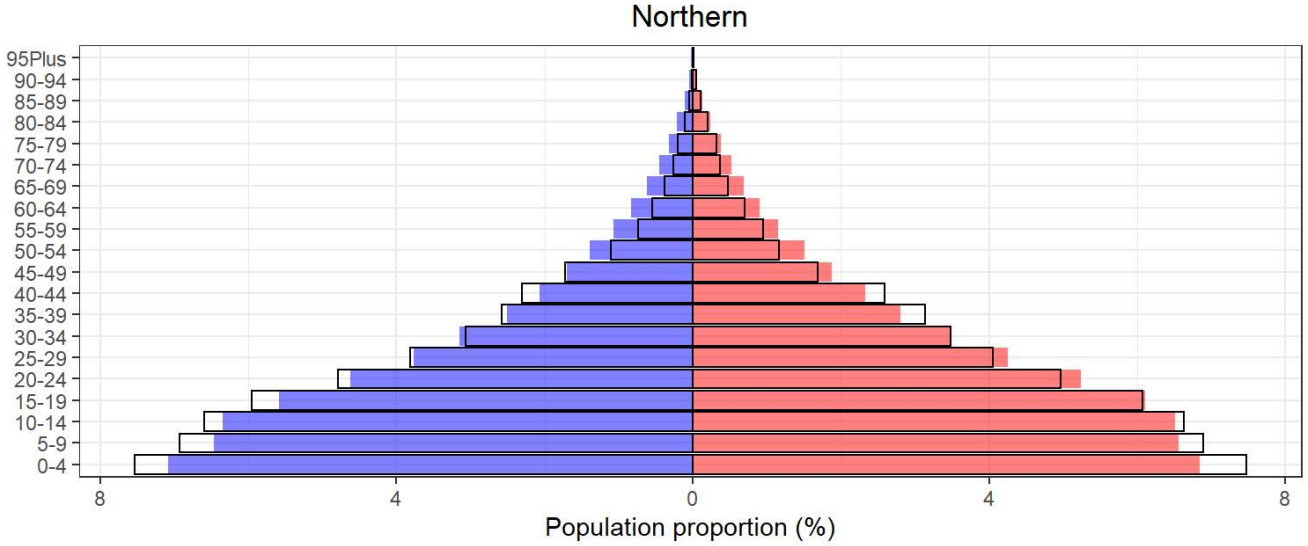
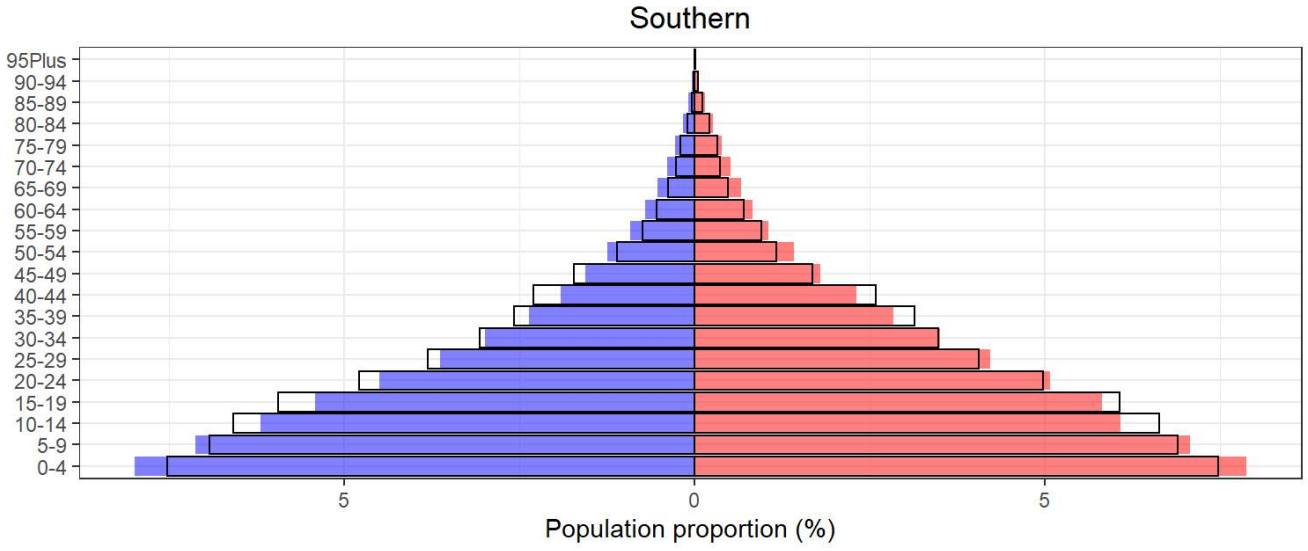
4
8
Population proportion (%)


Northern
95Plus
90-94
85-89
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
8
4
0
4
8
Population proportion (%)


Southern
95Plus
90-94
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40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
5
0
5
Population proportion (%)