

Extended Abstract - Updating population projections for Africa: short term implications for the long term by Anne Goujon and Samir KC

Introduction

In 2024, KC et al. published the last round of the population and human capital projection component of the Shared Socioeconomic Pathways (SSPs). The updated projections, referred to as WIC2023 (Wittgenstein Center population projections version 3.0), encompass 200 countries, reflecting the most recent 2020 baseline information published by the United Nations (UN) as of July 2022 (WPP2022) (United Nations 2022). The updated data are available in the Wittgenstein Centre Data Explorer at this link <https://dataexplorer.wittgensteincentre.org/wcde-v3/> (beta version) and in Zenodo (v.13). The earlier version of this work, referred to as WIC2013 was published in 2014 (Lutz et al. 2014)¹.

WIC2023 implemented several changes compared to WIC2013, and they are mainly of three sorts:

- Changing the base-year from 2010 to 2020.
- Updating the short-term assumptions (up to 2030) reflecting recent trends.
- Modifying the modeling methodology for fertility, migration, and education: Education-specific fertility levels have been updated with new estimates; education differentials in mortality are now country- and region-specific rather than being normalized to a single level by gender; education-specific migration rates are implemented in the projection model for the first time.

It is interesting to see what the differences for the age, sex and education composition are in 2020 comparing the observed with the estimated data by WIC2023, and secondly what are the implications for the future, according to the five different scenarios (SSP1-5). Africa is the continent where most differences occur.

Main Results

One main result is that the population in Africa in 2100 would be 3.6 billion compared to 2.6 billion as originally estimated in WIC2013 (Table 1). Such a discrepancy (35%) merits an explanation, especially since no other regions exhibit that high a difference – for instance the difference in Asia between the two projection rounds is 3%.

Table 1: Projection of total population for the world and regions, 2020, 2050 and 2100 (under the medium scenario), according to WIC2013 and WIC2023

Population (in Millions)	2020 WIC2023	2020 WIC2013	2050 WIC2023	2050 WIC2013	2100 WIC2023	2100 WIC2013
World	7805	7639	9594	9174	9885	8991
Africa	1344	1268	2429	2019	3550	2622
Asia	4648	4557	5219	5135	4483	4368
Europe	747	748	725	755	671	703
Latin America	650	651	744	758	669	684
Northern America	373	372	419	447	450	521
Oceania	44	42	56	57	62	67

There are **two** main reasons behind the increasing projected population for Africa in the WIC projections. **Firstly**, the larger starting population, which can be seen by comparing the estimated population in 2020, compared to the projected according to WIC2013 -- 1.344 billion compared to

¹ The first update of the SSPs was produced in 2018 (Lutz et al. 2018). However, it was not incorporated into the SSP database in the absence of a general SSP update plan.

1.268 billion, a difference of 76 million (6%). There are mostly a mortality and a fertility component to that change. Overall, life expectancy at birth (LEO) increased more during 2015-2019 than was projected in WIC2013 as the mortality situation has improved in many countries with high prevalence of HIV/AIDS and child mortality declined in higher mortality countries due to improvements in women's educations, the standard of living, and public health interventions such as antenatal and postnatal care, immunization, skilled birth attendance (Kipp et al. 2016) (see Figure 1).

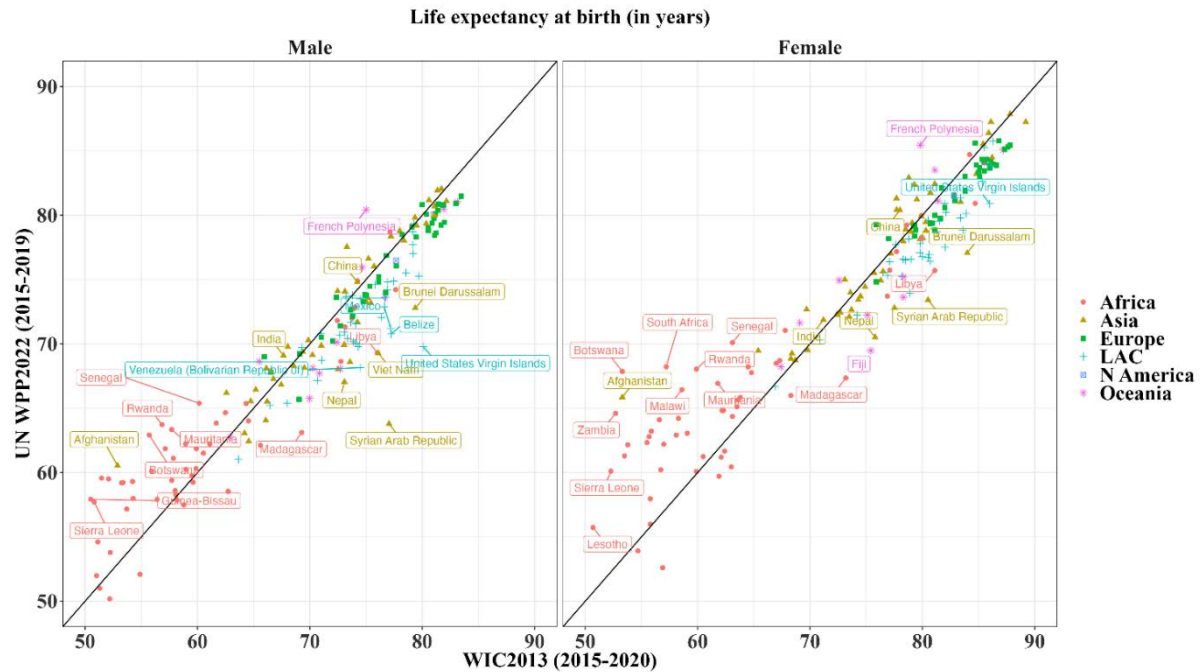


Figure 1: Difference in LEO between WIC2013 assumptions & WPP2022 estimates for 2015-2020, all countries

Moreover, fertility did not decline as projected in WIC2013 (see data points above the diagonal line in Figure 2), especially in medium- and high-fertility countries, such as in sub-Saharan Africa. The stalls in fertility decline or less rapid fertility decrease than expected happened for multiple reasons that have mainly to do with stalled or slow socioeconomic development (Bongaarts 2020).

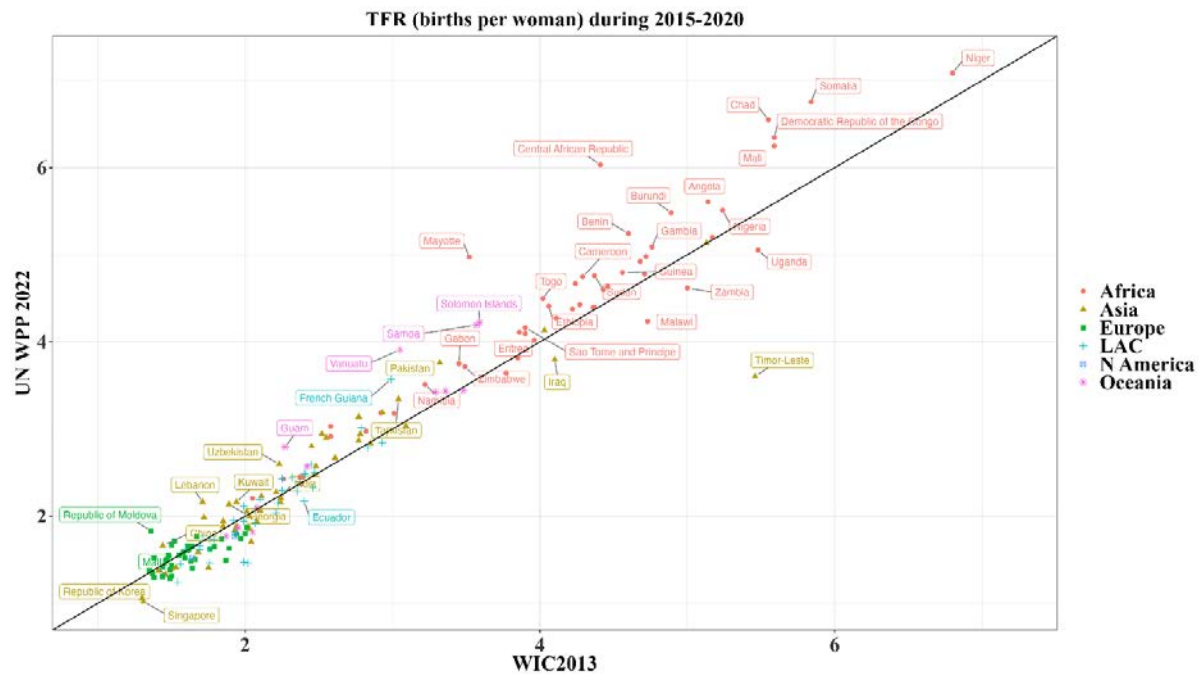


Figure 2: Difference in TFR for 2015-2020, projected in WIC2013 and estimated in WPP2022, all countries

Secondly, and related to the change in the base-year, there are certain changes in the pathways leading to the projected population until 2100. The fastest growing region would be Africa, whose population would not peak in this century, and would continue growing until 2100, reaching considerably higher level than projected in WIC2013 (3.55 compared to 2.62 billion in 2100, hence a 35% difference).

The share of population aged 25+ by level of education would not vary much in WIC2023 compared to WIC2013. Africa would still be the least educated world region, with 30% of the 25+ population having not completed a primary education (13% at the world level) but diminishing from 48% in 2020 (21% at the world level). According to the global education trend scenario would lead to the diffusion of education by the end of the century with more than 70% of the 25+ population having an upper-secondary education or more in Africa. While the gender gap is declining in the global trend scenario as more women attain higher levels of education, which leads to a reversal of the gender gap in certain regions at the post-secondary level, i.e. in Europe and Oceania, in 2050, and in most regions except Africa by 2100. The stark contrast existing between the younger (25-29) and the older (60-64) age groups in terms of education is declining over the century. The decline is also strong in Africa where the difference in mean years of schooling (MYS) is of 3.3 years in 2020 and reduces to 1.3 years in 2100 (Table 2).

Table 2: Share of population aged 25 years and over by levels of educational attainment (in %) and mean years of schooling (MYS) (in years), 2020, 2050 and 2100, Africa, by age, sex and education according to the Global Education Trend scenario

	Time	E1	E2	E3	E4	E5	E6	E4+ 20-39	MYS 25+	MYS 25-29	MYS 60-64
Both Sexes	2020	34	14	15	12	17	9	47	6.1	7.6	4.3
	2050	16	14	13	12	29	17	69	8.8	10.3	7.2
	2100	4	7	6	10	42	31	90	11.8	12.7	11.4
Men	2020	27	14	16	13	20	11	51	6.9	8.1	5.4
	2050	13	14	12	12	31	19	72	9.2	10.6	7.8
	2100	3	7	5	9	42	34	92	12.2	13	11.7
Women	2020	40	13	14	10	15	8	43	5.4	7.1	3.4
	2050	18	14	13	12	28	15	67	8.3	9.9	6.6
	2100	4	8	7	11	43	28	89	11.5	12.5	11.1

Note: E1 = no education, E2 = some primary, E3 = primary, E4 = lower secondary, and E5 = upper secondary; MYS = Mean Years of Schooling.

The different SSPs entail different outcomes in terms of educational composition of the population (see Figure 3). According to SSP1 and SSP5, the world in 2100 is less populated and composed in a large majority of post-secondary educated individuals, across all ages and sexes. Conversely, SSP3 and to a lesser extent SSP4 lead to a larger populated Africa with lower levels of education. However, according to these scenarios, the progress of the past that have increased the share of population with an upper-secondary and post-secondary education stalls but does not reverse and still under this scenario, more than half of the population would have at least an upper-secondary education or more. There would be more women than men among the 'no education' and 'some primary' categories. SSP2 as the middle of the road scenario leads to a highly educated society by 2100, with large segments of the population having either acquired an upper-secondary or post-secondary education.

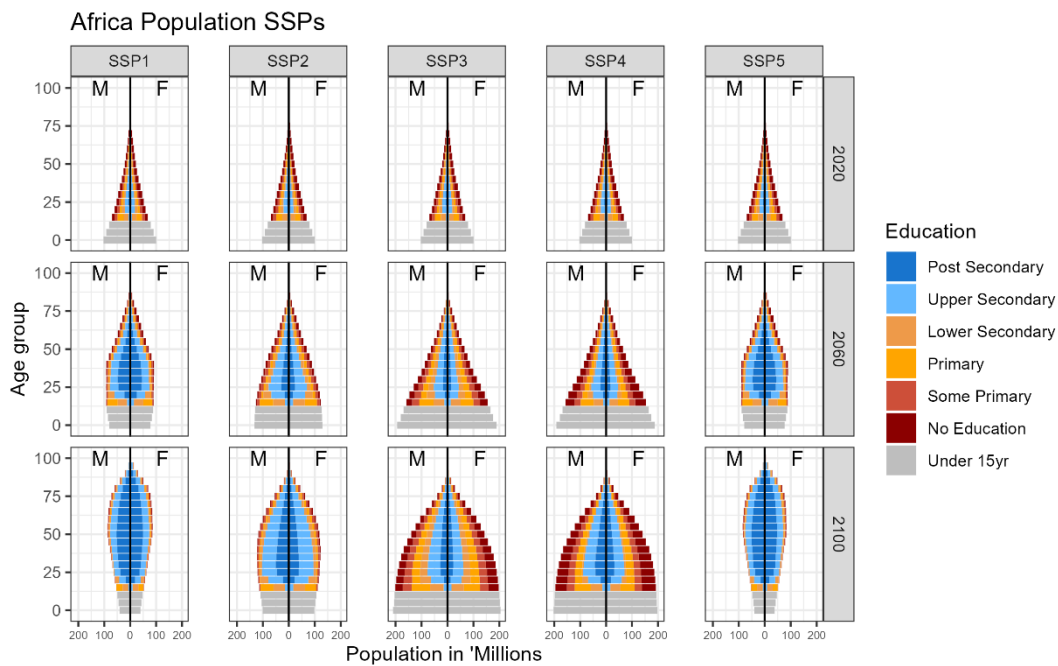


Figure 1: Population pyramids by education, Africa SSP1-5, 2020, 2050 and 2100

Conclusion

The accelerated decrease in child mortality, surpassing initial expectations, and the gradual demographic transition in many low-income countries, particularly in sub-Saharan Africa, are anticipated to result in a greater population growth and a larger absolute population in the year 2100 than previously projected in earlier versions. Population projections, whether in the short or long term, are subject to a spectrum of uncertainties influenced by various factors arising from complex interactions between demographic, social, and economic variables. Changing fertility rates, evolving cultural norms, and advancements in healthcare can contribute to unforeseen shifts in population dynamics over an extended period, with consequence for projection results as has been shown for Africa within this projection exercise. Regular reassessment and adjustments based on evolving data and trends are essential for maintaining the reliability of both short and long-term population projections.

References:

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