Beyond 8 Billion:

Eight Things You Need to Know About Population Projections

Every two or three years, the world receives a welcome gift from the United Nations Population Division: an updated collection of data called the World Population Prospects (WPP). Released in July of 2022, the latest WPP designates November 15, 2022 as the day the world's population will surpass 8 billion people.[1] And it outlines national, regional, and global projections on how the world's population may continue to change through the 21st century. At the Population Institute, we've pored over the WPP, and identified eight important take-aways.

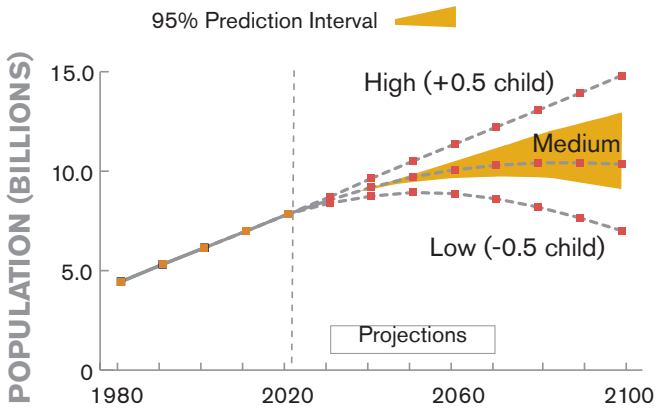
1 Projections are not predictions

Like previous WPP revisions, the 2022 WPP presents a single set of *estimates* of the demographic past and multiple *projections* of the demographic future—that is, conditional scenarios based on assumptions of future fertility, mortality, and migration—rather than actual *predictions* of what will occur. The WPP offers a multitude of projections, or scenarios, for future population change (Fig 1). The "medium scenario" (see below), which UN demographers consider "the most likely future trend" among its various projections, can be a useful shorthand when referring to potential population change over time. But it is important to remember that the WPP proposes a wide range of future possibilities, all of them plausible. The medium scenario tells us where each country, region, and the world are heading, but not precisely where they will go.

2 According to the medium scenario, world population is projected to continue growing through mid-century, but at a slowing pace

Human population—surpassing 8 billion in the closing weeks of 2022—continues to increase at about 70 million people per year (about 0.9 percent annually). The WPP 2022's global medium scenario nears 8.6 billion by 2030, and 9.7 billion in 2050 (Fig. 1), when it is projected to increase by about 40 million per year (less than 0.5 percent annually). Among countries that continue to experience population growth, a complex mix of fertility, age structure, migration, and declines in mortality will contribute to conditions through which births outpace deaths.

FIGURE 1. ESTIMATED AND PROJECTED TRENDS IN WORLD POPULATION



Data: UNDESA/Population Division, 2022.

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3 Covid-19 is not projected to have a major long-term effect on world population trends

Contrary to some expectations, the ravages and behavior changes of the global covid-19 pandemic are not seen as likely to have major impacts on the future of population. While more than 6.5 million people worldwide have already died earlier than they would have otherwise, it's currently not clear that covid-19 will significantly alter the long-term trend in global mortality or life expectancy. Similarly, UN demographers find the impact on fertility to be mixed and highly uncertain, leading them—for the present—to discount the likelihood of future changes in fertility trends based on covid-19.

4 Our world is becoming demographically polarized

How a nation's population is distributed across age groups has significant implications for the functioning of governments, economies, and the social systems that support that population's needs. Research indicates that entering the *demographic window*—a period in which the median population age is between 26 to 40 years—has been critical for achieving the World Bank's upper-middle income category, along with comparably high levels of child survival and educational attainment.[2] According to WPP 2022's medium scenario, by 2040, more than 30 countries in Europe and East and Southeast Asia (including China) are

FIGURE 2: PHASES OF THE AGE-STRUCTURAL TRANSITION[3]

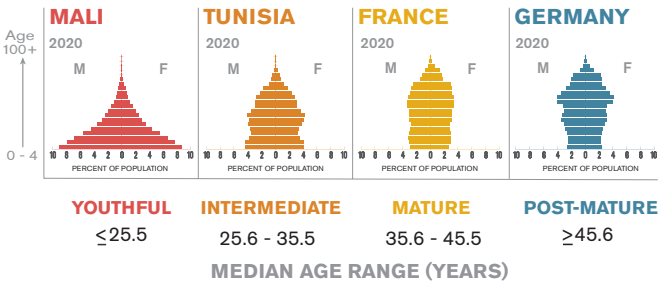
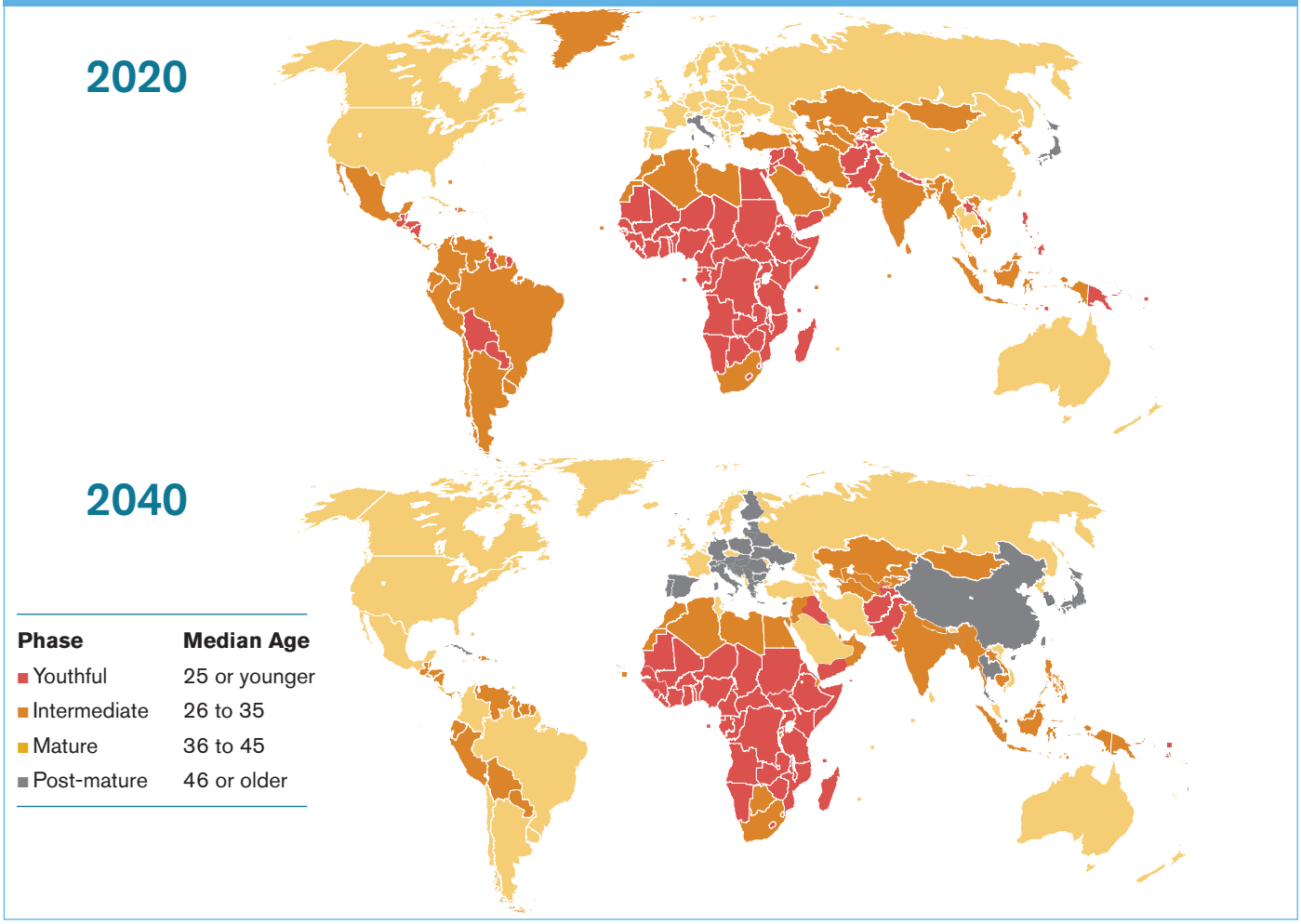


FIGURE 3: PHASES OF THE AGE-STRUCTURAL TRANSITION BY COUNTRY, 2020 AND 2040 (UN MEDIUM SCENARIO)



projected to shift into the "post-mature" phase (median age 46 or older) of the age-structure transition. Many countries, meanwhile, in sub-Saharan Africa and parts of Asia are projected to retain youthful age structures (Fig. 2 and 3).

5 Sustained high fertility remains a powerful driver of population growth and youthful age structures

Average family size has become smaller in most countries around the world in recent decades. Yet lifetime fertility rates across the tropical belt of sub-Saharan Africa and in parts of the Middle East and southern Asia have declined very slowly or stalled. This is a trend likely to be a key driver of population growth and youthful age structures through this century. In the Sahel, Central Africa, and Coastal West Africa, lifetime fertility remains near or above five children per woman. This is due, in part, to child-bearing that begins early in life for women and girls. In these regions, more than one out of every 10 adolescent females (ages 15 to 19) bear a child annually, a rate twice as high as in Latin American, and seven times that of the United States (Fig. 4).

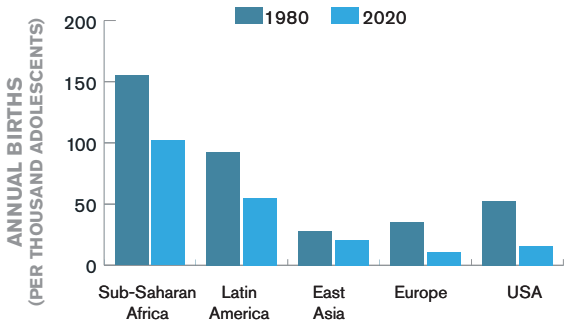
6 Momentum matters, too

The youthful age structure of many countries today all but guarantees that the number of people of reproductive age will continue to increase through 2050, even with continued declines in lifetime fertility rates. UN demographers calculate that *momentum* (the product of a youthful bulge in the age structure) will account for about two-thirds of global population growth over the next two decades. As countries pass into the mature (median age between 36 and 45) and post-mature (median age 46 or older) age structure categories, the momentum effect typically wanes, and population growth depends increasingly on the future course of mortality and, in particular, fertility.

7 The medium scenario is an opinion-free demographic calculation

To generate the medium scenario, UN demographers use a numerically intensive statistical technique that matches a country's age-specific fertility and mortality trends to thousands of similar segments of historic trends from other countries. Among those thousands of time segments,

FIGURE 4: ADOLESCENT CHILDBEARING (AGES 15 TO 19), 1980 AND 2020



Data: UNDESA/Population Division, 2022

a computer algorithm locates the median trend—the trajectory at precisely the middle of the pack. The medium scenario is completed using the component cohort method, which simulates changes in a population through assumed rates of birth, death, and migration for each age level based these past trends. Notably, the medium scenario does not account for hypothesized effects of social, economic, or environmental factors such as wealth, education, urbanization, food production, climate change, or warfare, regardless of the degree to which any of these relationships have been documented to affect demographic change.

8 The medium scenario is only one of many possible population futures

It's important to remember that nothing is certain about the UN medium scenario, particularly in the long run. The medium scenario's long view represents only one of thousands of plausible trajectories that were projected by UN methods. The upper and lower ranges of these plausible trajectories are wide, as suggested by the 95-percent prediction interval (Fig. 1). The ultimate population pathway taken in the latter part of this century will depend on many variables, including the level of investments made by governments and development donors in the current decade and thereafter. Policies and programs that lengthen girls' educational attainment, ensure greater access to family planning services, and work to augment women's autonomy and rights—all important development objectives on their own—are likely to encourage lower fertility and other population outcomes that enhance human well-being and contribute to sustainable development.

Endnotes

1 United Nations Population Division. 2022. *World Population Prospects 2022*. https://www.un.org/development/desa/pd/content/World-Population-Prospects-2022

2 Cincotta, R. 2017. "The Age-structural Theory of State Behavior." Pp. 1-34 in *Oxford Research Encyclopedia, Politics*, edited by W. Thompson. Oxford: Oxford Univ. Press.

3 National Intelligence Council. 2012. *Global Trends 2030: Alternative Worlds*. Washington, DC: Office of the Director of National Intelligence.

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