Policy Brief Series # 79

IHME Research And Development Solutions

Population Projections for Pakistan:
Why the Differences in Two Key Projections Models Need A Policy Dialogue

Introduction

Accurate population projections are essential for effective policy planning, and guiding decisions on education, healthcare, employment, and infrastructure to ensure sustainable development. However, to inform policy, projections must have some level of alignment. High divergence between models creates confusion and a lack of trust in models, since models that do not project future scenarios accurately can lead to expensive and inefficient policy choices. This brief seeks to explore the very different projections from the Standard Demographic (structured and scenario-based projections extending to 2050) and IHME (dynamic and data-driven forecasts extending to 2100), to better understand the methodological differences that may have led to the divergence.

Methodology

The following table provides a comparative overview of the methodologies used by the Standard Demographic and the Institute for Health Metrics and Evaluation (IHME) for population projections, highlighting differences in modeling approaches, fertility assumptions, mortality estimates, and migration trends. IHME's estimates are based on 2017 data, while the standard demographic projections utilize the 2023 Census and extend until 2050 (Table overleaf).

Results and Findings

For the initial period until 2050, both estimates show a relatively straight line, both estimations present two scenarios. One is the current rate that is called Business as Usual in standard demographic estimations, and Current Rate by IHME. The aspirational scenario for Standard Demographic is called the CCI rate based on policy guidance by the Council of Common Interest of the Government of Pakistan's recommendations (2018) that stipulate measures to improve FP use in Pakistan. For IHME, the aspirational scenario is called SDG pace, aimed at matching SDG goals for Pakistan.

Although all scenarios are relatively straight lines until, 2050 their height and slope are different. IHME figures are lower than Standard Demographic figures at most time points and in all scenarios. The Standard Demographic estimates conclude in 2050, while IHME project until 2100. The IHME current rate scenario shows Pakistan's population plateauing around 2065 and declining thereafter, while the plateau is reached around 2050 in the SDG pace. A plateau is not visible for any Standard Demographic scenario, but they also stop at 2050.

KEY TAKEAWAYS

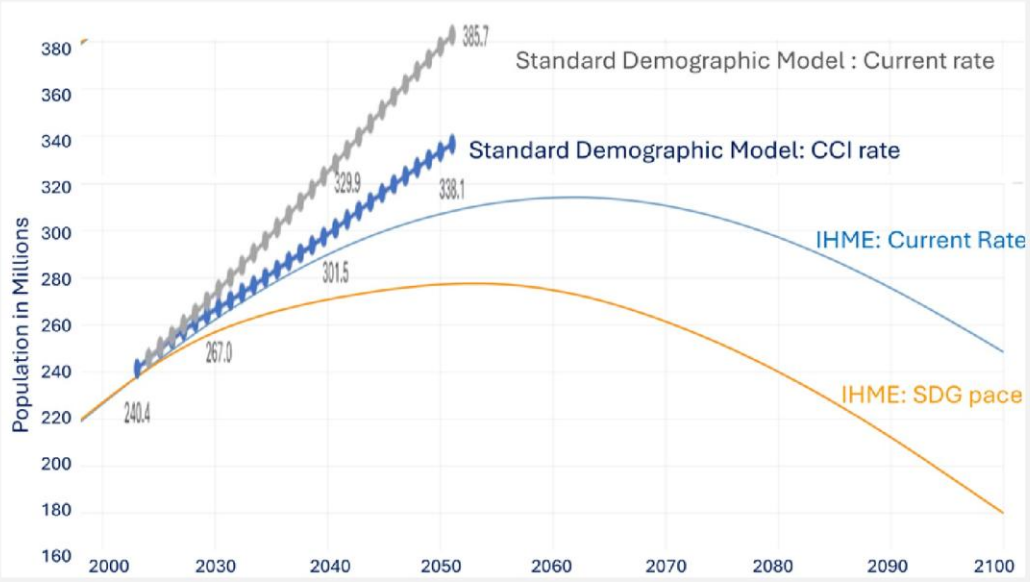
- Standard demographic and IHME estimates vary widely due to differences in methodology

Standard Model	IHME Estimates
BAU: 386 m	Current Pace: 339 m
CCI: 338 m	SDG Pace: 300

Both for 2050

- The differences need to be debated as over or under estimating population and its needs have tremendous consequences for resources and the direction of the country

Standard Demographic and IHME's Projected Population Estimates



Aspect	Standard Model	IHME
Modeling Approach	1. Uses cohort component method with fertity, mobility, and migration trends.	1. Uses advance statistical models incorporating socioeconomic variables (income, education, healthcare, urbanization, fertility).
	2. Relies on TFR - based projections and policy-driven scenarios.	2. Relies on Complete Cohort Fertility at age 50 (CCF50) instead of TFR.
Fertility Assumptions	1. Two scenarios:	1. Models fertility based on education and contraceptive met need (explains 80.5% of CCF50 variance).
	a. Business as Usual (BaU): Slow fertility decline (0.04).	2. Includes alternate scenarios based on education and reproductive health access:
	b. Council of Common Interest (CCI): Faster fertility decline (0.08) via education and family planning.	a. **Slower** (15th percentile).
		b. **Faster** (80th percentile).
		c. **Fastest** (99th percentile).
		d. **SDG scenario**: Universal secondary education & full contraceptive access by 2030.
Mortality Assumptions	1. Relies on historical mortality trends.	1. Uses Socio- Demographic Index (SDI) and cause-specific covariates.
	2. Assumes life expectancy improvements based on healthcare advancements	2. Applies a risk factor scalar and ARIMA modeling for mortality projections.
Migration Assumptions	1. Assumes zero net migration, considering historical labor migration to Gulf states with no permanent settlement.	1. Models migration based on SDI, economic conditions, conflict, birth-death rate differences.
		2. Uses a random walk model for long-term migration uncertainty.

The magnitude and slopes are also different. Standard Demographic model's BaU scenario (current rate) shows 386 million by 2050 compared to 3391million by IHME in the current rate, reflecting a 15% difference. Similarly, the CCI scenario of 338 million is around 10% higher than IHME's SDG pace projection of 300 million. The current rate scenario for the Standard Demographic shows the population growth rate accelerating with an upward tilting slope.

Discussion

The Standard Demographic projections suggest higher population growth than IHME projections, and an increasing population growth rate under the business-as-usual scenario.

A key difference is due to the model used. The Standard Demographic used conventional demographic modeling that includes proximate determinants of demography, migration and mobility. IHME also includes social determinants such cultural trends, economics, education, healthcare urbanization to the fertility and mobility, and also estimates the anticipated changes in these social trends over time.

The key point is that policy makers must understand why two key population estimation methodologies vary and make policy decisions that are neither overly optimistic nor overly pessimistic and account for different needs of the population effectively and with best utilization of resources.

Recommendations

- A policy dialogue on population growth with realistic projections and the methods that lie behind these projections.
- Inclusion of advanced modeling techniques that holistically account for demographic and social trends in the national discourse of population estimates and national development strategies with evidence- based projections for better policy planning.
- Beyond access to family planning, RH and healthcare infrastructure, aspects of education, economic access, urbanization and other social factors must be considered holistically in planning.

References

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- Standard Demographic. 2024. Pakistan@2050: Demographic Change, Future Projections, and Development Opportunities. Islamabad: Standard Demographic.

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