

# UNRAVELLING INDIA'S DEMOGRAPHIC FUTURE

Population Projections for States and Union Territories  
2021-2051

## EXECUTIVE SUMMARY



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The entire world has been closely observing India's demographic trajectory, as we have become the most populous nation on the planet, surpassing China. This gives India an instrumental role in shaping global demographic trends, owing to its large youth population. Over the coming decade, it has the potential to effectively leverage its demographic and gender dividends for sustained economic development through both internal and international migration. This encompasses an important demographic benchmark, wherein India's population growth is sustained by significant population momentum arising from its large base.

Currently, there is a lack of reliable population projections, not only for the national level but also for the states and Union Territories [UTs]. Most of the existing projections are based primarily on the data from the old censuses. At present, policymakers largely rely on the population projections published in 2019 by the Registrar General of India, based on the 2011 Census, which provide estimates only up to 2036. Over time, population projections have become obsolete, rendering the input data used in their formulation potentially extraneous. Secondly, a sustained flow of migrants from the labour-surplus to labour-deficit states may have reshaped the demographic profiles of both the sending and receiving destinations. Thirdly, the demographics of most nations, including India, have changed due to the pandemic, which disrupted age structures and smooth trajectories of life expectancies. Finally, most projections are made at the national level and do not cover all states, especially the smaller ones and UTs. This might have aggravated data voids in accurate population estimates, and these estimates are often serving multiple and divergent purposes. Against this backdrop, a new set of population projections has been prepared extending to the middle of this century, with the objective of providing the most reliable and updated population estimates for India under the changed circumstances.

This exercise draws on a range of demographic datasets, including the Census, the Sample Registration System [SRS], the National Family Health Survey [NFHS], the Civil Registration System [CRS], and the National Sample Survey [NSS]. The Cohort Component Method has been applied to 22 states with a population in excess of six million, as enumerated in the 2011 Census. The smoothed age-sex distribution from the 2011 Census was carried forward to 2021 with fertility, mortality inputs from the SRS and migration data from the NSSs. These data sources were then used to project the demographic inputs, which were subsequently used as the basis for population projections till 2051. Appropriate adjustments have been made for Andhra Pradesh, Telangana, Jammu and Kashmir [UT], Ladakh [UT], and Dadra and Nagar Haveli and Daman and Diu [UT] to account for boundary changes since the 2011 Census. Mathematical models—specifically the curve estimation regression model—were employed to project the populations of the rest of the smaller states and UTs.

This study posits the Gompertz Curve [GC] for projecting future fertility patterns at both national and state level. These were classified and assumed different set of lower asymptotes to project the future population. Life expectancies at birth were projected using the Logistic Curve [LC] method. Gender-specific life tables were created to encompass the bearing of pandemic on life expectancy at birth using the Age-Specific Death Rates obtained from SRS data for 2020 and 2021. These rates were subsequently transformed into  $nM_x$  values for constructing life tables at the state level. Migration patterns and sex ratio at birth [SRB] were projected using logarithmic convergence models.

The findings highlight that the demographic transition over the next three decades will be characterised by a steady decline in fertility and constant improvements in life expectancy at birth.

The Total Fertility Rate [TFR] is projected to decline from the current level of two children per woman in 2021 to 1.67 by 2051 under medium-variant assumptions. Fertility is anticipated to decline in all parts of the country, though at varying pace. Northern states are now expected to play a leading role in shaping India's demographic trajectory, as southern states—having largely completed their fertility transition phase—exhibit fertility rates at or below replacement level, leaving limited scope for further decline. The Crude Birth Rate [CBR] is expected to decline appreciably from 17 per 1000 population in 2021 to 10.8 by 2051. Consequently, the annual number of births will fall from the current level of 23 million to 17.1 million during the same period. The primary driver of such demographic changes is the expected reduction in fertility rates over the next three decades. Crude Death Rate [CDR] on the other hand, will show a modest increase from 7.7 to 8.6 over the same period—reflecting an increase in the ageing population and its consequences. As a result, life expectancy at birth is projected to increase moderately, with male life expectancy rising from 66.6 years in 2021 to 75.4 years in 2051, and female life expectancy from 70.9 to 81.4 years. Thus, the rate of natural increase in the population would fall to 0.22 percent from the current level of 0.8 percent.

India's total population is expected to reach 1590.1 million by 2051 from the 2021 base population of 1355.8 million, indicating an increase of 17.3 percent or a 0.5 percent annual increase. Our projected figures are much lower than the medium-variant assumptions adopted in other recent projections, including those by the United Nations [2025] and by Kulkarni [2021]. This can be attributed mainly to two reasons—the use of updated fertility trends and the inclusion of latest data in the core assumptions behind the population projections. The proportion of the child population [0–4] dwindles from 9.3 percent to 5.4 percent in a span of the next three

decades. The population in ages 15–59 years, comprising workers, peaks at 65.8 percent in 2031 before declining to 62.7 percent by 2051. The proportion of the elderly population [aged 60 and above] rises substantially from one in ten persons in 2021 [9.6%] to two in ten persons [20.4%] by the end of the projected horizon. This demographic shift is further reflected in an increase in the median age of the population from 29 to 40 years, reinforcing the ongoing demographic transition reflected in terms of an ageing population. Urban–rural population projections using the revised UN [2018] method suggest that, by the mid-21<sup>st</sup> century, one out of every two persons in the country will be residing in urban agglomerations.

The study classifies India into six geographical regions for analytical purposes<sup>1</sup>. Population projections suggest that regional demographic patterns across the country are expected to become more varied in the years to come. As these states in various regions are at different stages of demographic transition, they require tailored policy and programme interventions for their socio-economic development. While large-scale demographic shifts are underway, our population projections suggest that the country will fall short of achieving population stabilisation even by the middle of the 21<sup>st</sup> century. Given the current demographic trajectories, it may take another half a decade to achieve this target. On the other hand, most of the southern states are projected to see population decline beginning around 2036, with the region as a whole expected to reach this stage by 2041. The projected results also suggest that India's demographic dividend window might close by 2031, underscoring the importance of harnessing its benefits before its influence on economic growth begins to wane. The education and skill development systems in our country must be fine-tuned to ensure that they can effectively respond to and absorb the available opportunities before they disappear.

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<sup>1</sup> 1: Northern region [Jammu and Kashmir [UT], Ladakh [UT], Himachal Pradesh, Punjab, Uttarakhand, Haryana, National Capital Territory [NCT] of Delhi, Rajasthan and Chandigarh]

2: Central region [Uttar Pradesh, Bihar, Madhya Pradesh and Chhattisgarh]

3: Eastern region [Odisha, West Bengal and Jharkhand].

4: Western region [Gujarat, Maharashtra, Dadra and Nagar Haveli and Daman and Diu]

5: Southern region [Andhra Pradesh, Telangana, Tamil Nadu, Karnataka, Kerala, Goa, Puducherry, Andaman Nicobar Islands and Lakshadweep]

6: North-eastern region [Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya and Assam].

## About Population Foundation of India

Founded in 1970 by the late J.R.D. Tata, Population Foundation of India is a leading non-governmental organisation (NGO) working in the field of population dynamics, gender equity, and sexual and reproductive health (SRH). It addresses population issues within the context of empowering women, men, and youth, enabling them to make informed decisions about their fertility, health, and well-being.

The organisation's approaches include strategic engagement with policymakers, media, and other key stakeholders; knowledge generation and dissemination; leveraging technology; scaling up pilot projects; and social and behaviour change communication. Population Foundation of India collaborates closely with and provides technical support to national and state governments, as well as other NGOs.

## About The International Institute of Migration and Development (IIMAD)

The IIMAD is a non-profit research think tank based in Kerala, India and primarily works on the intersection of migration and development. IIMAD was established in 2019 by Professor K C Zachariah, President and Professor S Irudaya Rajan, Chair. IIMAD collaborates with government and NGOs that deal with refugees, diasporic migrants, and migrant workers in the region.

The IIMAD tries to serve as a node in the domain of migration with excellence in cutting edge academic scholarship that fosters practice-oriented research and policy formulation pertaining to international migration. The IIMAD, with its distinguished scholar community, works to develop a new thematic pathway and facilitate the future scholars to disseminate knowledge through academic publications, data banks and conferencing.

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