BRIEF REPORT

India's Demographic and Health Transition: A Multi-Source Analysis of Maternal and Child Mortality Trends (1971-2024)

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ABSTRACT

Background: India has achieved considerable progress in reducing maternal and child mortality over the past five decades; however, marked inter-state and rural-urban disparities continue to persist. This brief report synthesises national vital statistics from three authoritative sources - the Sample Registration System (SRS) Bulletin 2023, the UN Inter-agency Group for Child Mortality Estimation (IGME) Report 2025, and the UN Maternal Mortality Estimation Inter-Agency Group (UN-MMEIG) Report 2023 - to provide a data-rich, integrated analysis of India's ongoing demographic transition.

Key Findings: India's Birth Rate declined from 36.9 per 1,000 population in 1971 to 18.4 in 2023; the Infant Mortality Rate (IMR) fell from 129 to 25 per 1,000 live births over the same period. The Under-5 Mortality Rate declined by 79% since 1990, and the Maternal Mortality Ratio fell by 86% over the same period. High-burden states - including Uttar Pradesh, Chhattisgarh, and Madhya Pradesh - continue to report IMR values of 37 per 1,000 live births, compared to 3 in Manipur and 5 in Kerala.

Conclusion: Although India's demographic transition is well advanced at the national level, subnational inequities remain substantial, and targeted public health investment in high-burden states will be essential to achieving SDG 3 targets by 2030.

Keywords: Birth rate, Death rate, Infant mortality, Maternal mortality, India, Sample Registration System, Demographic transition, SDG 3

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INTRODUCTION

India, with a population exceeding 1.44 billion, occupies a central position in global demographic discourse. Over the past five decades, the country has undergone a progressive demographic transition, characterised by sustained reductions in fertility and mortality - a shift widely attributed to improvements in healthcare infrastructure, nutritional programmes, female literacy, and broad-based socioeconomic development.[1,2]

Vital statistics - encompassing the Birth Rate (BR), Death Rate (DR), Infant Mortality Rate (IMR), Under-5 Mortality Rate (U5MR), and Maternal Mortality Ratio (MMR) - constitute the foundational benchmarks for assessing national health system performance and informing evidence-based policy. These indicators are also integral to Sustainable Development Goal 3 (SDG 3), which seeks to eliminate preventable neonatal and child deaths and to substantially reduce maternal mortality globally by 2030.[3]

This brief report draws on three complementary authoritative sources: (i) the Sample Registration System (SRS) Bulletin 2023, published by the Office of the Registrar General of India (ORGI), which provides the most granular annual estimates of vital statistics at the national and state level; (ii) the UN IGME Levels and Trends in Child Mortality Report 2025, which furnishes internationally standardised and comparable child mortality estimates; and (iii) the UN-MMEIG Trends in Maternal Mortality 2000-2023 report, which presents modelled MMR estimates for 185 countries, including India.[1,4,5]

The triangulation of these sources enables a robust and multi-dimensional assessment of India's health transition - spanning longitudinal trend analysis, rural-urban and sex-disaggregated comparisons, and subnational variation across states and union territories. Special attention is directed toward high-burden states that continue to underperform relative to national benchmarks.

DATA SOURCES AND METHODS

Sample Registration System (SRS) Bulletin 2023: The SRS is India's principal large-scale continuous demographic surveillance system, administered annually by the ORGI across all States and Union Territories. The 2023 Bulletin (Volume 58, No. 1; Reference Year 2023) encompasses 8,839 sample units, covering a surveyed population of approximately 8.81 million persons.[1] Indicators extracted for this analysis include the BR, DR, Natural Growth Rate (NGR), and IMR, disaggregated by rural/urban residence and sex at both national and state levels.

UN IGME Report 2025: The United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME) - comprising UNICEF, WHO, the World Bank, and the UN Population Division - produces annual harmonised estimates of child mortality. The 2025 edition provides national-level estimates for India of the NMR, IMR, and U5MR, spanning the period 1990 to 2024.[4]

UN-MMEIG Report 2000-2023: The UN Maternal Mortality Estimation Inter-Agency Group (UN-MMEIG) - comprising WHO, UNICEF, UNFPA, the World Bank, and the UN Population Division - generates internationally comparable, modelled estimates of the MMR. The 2025 release presents country-level trend data from 2000 to 2023 for 185 countries, including India.[5]

Analytical Approach: All analyses are descriptive and are based exclusively on published, aggregate data from the three source documents. Percentage changes, rural-urban differentials, sex-disaggregated comparisons, and inter-state rankings were computed directly from published tables. No primary data collection or statistical modelling was undertaken. Estimates are subject to the sampling uncertainties and methodological caveats documented in the respective source reports.

RESULTS

National Vital Statistics at a Glance (2023): Table 1 presents a consolidated overview of India's key vital statistics for the most recent reference year, drawing on all three source documents. At the national level, the BR was 18.4 per 1,000 population, the DR was 6.4, and the IMR was 25 per 1,000 live births in 2023.[1] According to the UN IGME (2025), the U5MR stood at 26.6 per 1,000 live births and the NMR at 16.7 per 1,000 live births in 2024.[4] India's MMR was estimated at 80 per 100,000 live births in 2023, as reported by UN-MMEIG.[5]

Table 1: Key Vital Statistics for India - Multi-Source Summary

Indicator	India Total	Rural	Urban	Reference Year
Birth Rate (per 1,000 population)	18.4	20.3	14.9	2023
Death Rate (per 1,000 population)	6.4	6.8	5.7	2023
Natural Growth Rate	12.0	13.4	9.2	2023
Infant Mortality Rate (per 1,000 live births)	25	28	18	2023
Under-5 Mortality Rate (per 1,000 live births)	26.6	-	-	2024
Neonatal Mortality Rate (per 1,000 live births)	16.7	-	-	2024
Maternal Mortality Ratio (per 100,000 live births)	80	-	-	2023

Sources: SRS Bulletin 2023[1]; UN IGME 2025[4]; UN-MMEIG 2023[5]. (-) = not available at this disaggregation level.

Long-term Trend Analysis (1971-2023): The trajectory of India's demographic transition is most clearly evidenced through longitudinal data (Table 2). The national BR has declined by more than 50% over five decades, from 36.9 per 1,000 population in 1971 to 18.4 in 2023.[1] Over the same period, the DR fell from 14.9 to 6.4 per 1,000 population, and the IMR declined dramatically from 129 to 25 per 1,000 live births - a cumulative reduction exceeding 80%.[1]

Within the most recent decade (2013-2023), the BR declined by approximately 14% nationally (from 21.4 to 18.4), with rural areas recording an 11% reduction (22.9 to 20.3) and urban areas a 14% decline (17.3 to 14.9).[1] The IMR declined by 37.5% over the same period - from 40 to 25 per 1,000 live births nationally, from 44 to 28 in rural areas, and from 27 to 18 in urban areas - indicating an acceleration in the pace of child survival improvement.[1]

From a global and historical perspective, the UN IGME (2025) reports that India's U5MR declined by 79% between 1990 and 2024 - from 127 to 26.6 per 1,000 live births - while the NMR fell by approximately 70%, from 57 to 16.7, over the same interval.[4] Complementarily, India's MMR declined by 86% between 1990 and 2023 - substantially exceeding the global average reduction of 48% over the same period - a testament to the cumulative impact of sustained maternal health investment.[5]

Table 2: Longitudinal Trends in Key Vital Statistics, India (1971-2023)

Year	Birth Rate	Death Rate	IMR (Total)	IMR (Rural)	IMR (Urban)
1971	36.9	14.9	129	-	-
2013	21.4	7.0	40	44	27
2018	20.0	6.2	32	35	23
2022	19.3	7.4	27	30	19
2023	18.4	6.4	25	28	18
Decadal change (2013-2023)	−14.0%	−8.6%	−37.5%	−36.4%	−33.3%

Sources: SRS Bulletin 2023[1]; UN IGME 2025[4]. (-) = not applicable or not reported.

Table 3: State-wise Vital Statistics - Selected States and Union Territories, India 2023

State / UT	Birth Rate	Death Rate	IMR (Total)	IMR (Rural)
Bihar	25.8	6.1	23	23
Uttar Pradesh	23.6	6.5	37	39
Madhya Pradesh	22.5	6.8	37	39
Chhattisgarh	22.3	8.3	37	39
Rajasthan	22.9	5.9	29	31
Tamil Nadu	12.0	6.9	12	13
Kerala	12.3	7.2	5	5
Manipur*	13.0	4.5	3	4
India (National Average)	18.4	6.4	25	28

Source: SRS Bulletin 2023, Table 1[1]. *IMR for Manipur based on 130 SRS units; IMR for smaller States based on three-year avg 2021-23.

Rural-Urban and Sex-Disaggregated Differentials: Pronounced rural-urban disparities persist across all vital statistics in 2023. The rural BR (20.3) exceeded the urban rate (14.9) by 36%, while the rural IMR (28) was 56% higher than its urban counterpart (18).[1] These differentials reflect longstanding structural inequities in access to institutional delivery services, skilled birth attendants, and postnatal care facilities between rural and urban populations.

Sex-disaggregated mortality data reveal that the male DR (7.2 per 1,000 population nationally) consistently exceeded the female DR (5.7) across both rural and urban areas and across all major states - a pattern consistent with higher male exposure to occupational and behavioural risk factors.[1] At the national level, the IMR was marginally higher among male infants (26) compared to female infants (25) per 1,000 live births. Notably, however, certain states - including Chhattisgarh (male IMR: 36; female IMR: 39) and Rajasthan (male: 27; female: 32) - recorded higher female infant mortality, a pattern that may reflect gender-based inequities in care-seeking behaviour and health service utilisation.[1]

Inter-State Variations: Table 3 presents state-level vital statistics for selected major and smaller states, illustrating the extent of intra-national heterogeneity. Bihar recorded the highest BR (25.8 per 1,000 population) among all states, while Andaman and Nicobar Islands had the lowest (10.1).[1] Chhattisgarh reported the highest DR at 8.3, compared with the lowest of 4.0 recorded in Chandigarh.[1]

The burden of infant mortality was most pronounced in Chhattisgarh, Madhya Pradesh, and Uttar Pradesh - all recording an IMR of 37 per 1,000 live births - in stark contrast to Manipur (3) and Kerala (5), which reported the lowest values nationally.[1] This 12-fold differential between the highest and lowest performing states represents one of the most striking dimensions of India's health inequity landscape, and strongly argues for geographically targeted and differentiated public health interventions.

Discussion

Evidence from the SRS Bulletin 2023, UN IGME 2025, and UN-MMEIG 2023 collectively affirms that India has achieved considerable progress across maternal and child health indicators over five decades, though this progress has been uneven and subnational disparities demand sustained policy attention.

India's IMR decline — from 129 in 1971 to 25 in 2023 — represents one of the most significant achievements in the country's public health history.[1,4] This trajectory reflects expanded immunisation coverage, nutritional interventions, improved skilled birth attendance, and strengthened primary healthcare through programmes including the NRHM, Pradhan Mantri Matru Vandana Yojana, and Ayushman Bharat.[3]

Despite this, IMR values of 37 per 1,000 live births in states such as Uttar Pradesh, Madhya Pradesh, and Chhattisgarh — against a national average of 25 and values as low as 3 in Manipur and 5 in Kerala — reveal that aggregate indicators substantially obscure critical subnational inequities.[1] High-burden states share structural disadvantages: larger rural and marginalised populations, lower female educational attainment, constrained health workforce density, and suboptimal rates of institutional delivery and antenatal care utilisation.

India's 86% reduction in MMR since 1990, relative to a global average of 48% over the same period, reflects the effectiveness of targeted maternal health strategies at scale.[5] However, with an MMR of 80 per 100,000 live births in 2023, India remains above the SDG 3.1 target of fewer than 70 per 100,000 by 2030. Achieving this benchmark will require accelerated progress, particularly across northern and central states where maternal mortality remains disproportionately concentrated.[3,5]

The persistent rural-urban differential in IMR (28 versus 18 per 1,000 live births) and birth rate (20.3 versus 14.9 per 1,000 population) underscores that geographic location continues to function as a determinant of health outcomes in India.[1] Closing this gap will require sustained investment in rural health infrastructure, expanded community health worker deployment, and targeted demand-side interventions to improve care-seeking behaviour in underserved populations.

Conclusion

This report integrates evidence from three internationally recognised data sources to assess India's demographic and health transition. India's Birth Rate has declined by over 50% over five decades — from 36.9 in 1971 to 18.4 per 1,000 population in 2023 — with rural-urban differentials narrowing but remaining programmatically significant. IMR has declined by more than 80% since 1971, with a 37.5% reduction in the last decade alone. U5MR declined by 79% and NMR by approximately 70% between 1990 and 2024, positioning India among South Asia's strongest performers in child mortality reduction. India's MMR declined by 86% between 1990 and 2023 — substantially exceeding the global average reduction of 48% — yet the current MMR of 80 per 100,000 live births remains above the SDG 3.1 target, underscoring the need for continued maternal health investment. A 12-fold inter-state IMR differential — ranging from 3 in Manipur to 37 in Uttar Pradesh, Chhattisgarh, and Madhya Pradesh — represents India's most pressing health equity challenge, demanding geographically differentiated public health strategies.

Future research should leverage NFHS-6 (2023–24) data to examine subnational determinants and quantify SDG 3 progress. Longitudinal analyses combining SRS and NFHS data would further illuminate the structural drivers of India's demographic trajectory.

Declaration of Non-use of Generative AI Tools: This article was prepared without the use of generative AI tools for content creation, analysis, or data generation. All findings and interpretations are based solely on the authors' independent work and expertise.

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