Tracking Population decline in India between 1950-2023 And Total deaths cases by cause – a Case Study

Sumayya Rehaman Research Scientist
Department(s) and institution(s): R&D division,Sristi Bio-sciences Pvt, Ltd, Coimbatore,Tamil Nadu,
sinarehaman@gmail.com

CASE REPORT

Tracking Population Decline in India Between 1950 and 2023 and Total Deaths Cases by Cause − A Case Study

Sumayya Rehaman*

R&D Division, Sristi Biosciences Pvt, Ltd, Coimbatore, Tamil Nadu, India

Abstract

The Case study digs the facets of the India's population decline from 1950 to 2023. Focusing Total fertility rate recorded 2.0 per woman in 2023 as similar as Birth Rate since 1950−2023 and found to be 16.9 births per 1000 people in 2023. Contradictorily, may surpass China's population in Future. It focuses Population pyramid with annual Percent growth rate divulges Main cities population and exemplifies death occurrence. The median age - 28.7 years, life expectancy - 70.4 years, Infant Mortality Rate - 26.6 deaths per 1000 live births, with 3.89 % in 2023. This study reveals comparative illustrative graphs of Indian Population 1950−2023.

Keywords: Total fertility rate, Birth rate, Percent growth rate annually

1. Introduction

The most up-to-date United Nation report data on July 8, 2023 the current India's population is 1.486 billion which contributes 17.7 % of world population and 29.72 % of Asia population with second rank in the population and we are behind 0.48 crores to surpass China's population which holds the leading highest Population with 0.81 % increase from 2022 between 1950 and 2023 as depicted in the Fig. 1 (United Nations, Department of Economic and Social Affairs, Population Division). It contributes population density of 464 per km^2 occupying 2,973,190 Km^2 of Total land area. The daily increase in Indian population as one individual per sec, correspondingly 2403 individuals per hour, leading to 16,613,486 individuals per year while one death in every 3 s in that order 25,649 deaths every day. In case of one emigrant every 1.08 min raises1,331 emigrants per day, cumulatively net increase of 1 person every 2 s [1,2]. Fig. 2 illustrates, The population of India between the year 1955 and 1965 which has grown at 2.17% growth rate annually, which constantly increased till the year 1985 with 2.8 %, after which there was a comparative decline in it, which had 1.90 %, 1.41 %, 0.53 % in the year of 1995, 2005 and 2015 respectively.

1.1. Case history: population distribution (age cohort)

The population distribution on assessing its Population pyramid which is found to be profound in bottom has a larger proportion of children, teenagers and young adults. The India's population is distributed for the age cohorts of 0−4, 5−9, 10−14 and 15−19 and notified to be roughly equal, whereas the statistics for adult aged groups became gradually smaller highlighting the younger age groups had stopped growing in numbers at present and are likely to shrink slightly soon. Except for the oldest groups from 60 to 64, 65−69, 70−74, 75−79, ≥ 80, India's population seems to have more males than females for every cohort [3]. The recent
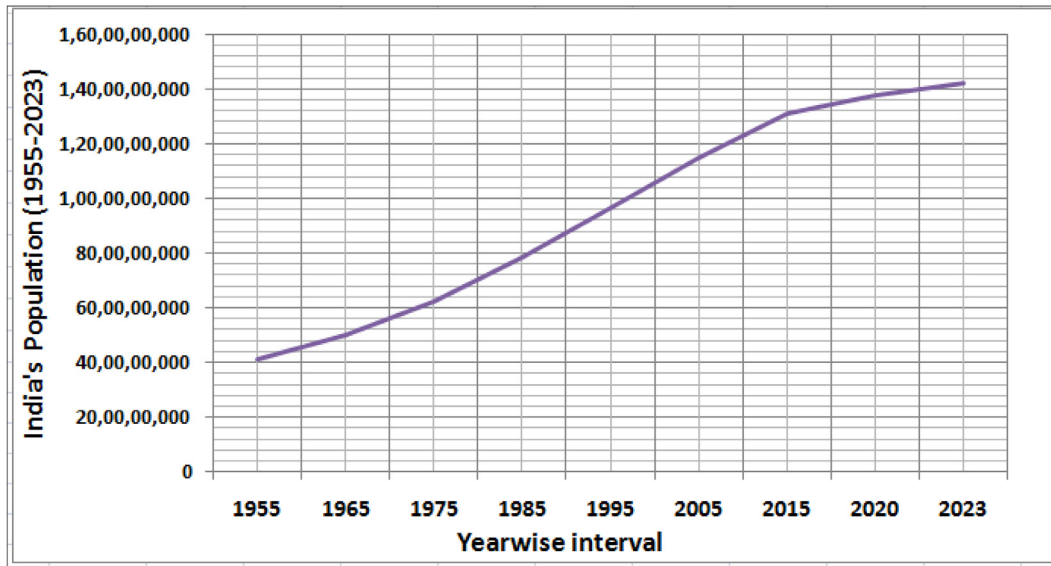
Fig. 1. India's Population (1950—2023). Data has been retrieved from United Nations, Department of Economic and Social Affairs, Population Division. [1] (Created in Online Graphs and Charts).

Indian birth rate in the year 2023 is 16.949 births per 1000 people, with a decline of 1.25 % from the year 2022. On assessing it, gradually decreases was observed from 1950 to 2023 [4] as per depicted in the Fig. 3.

1.2. Population in Indian cities

The main cities like Mumbai and Delhi have 1,26,91,836 and 1,09,27,986 population contributing 11 % and 9 % respectively. The cities like Bangalore, Kolkata, Chennai contributes 4 %, Ahmedabad, Hyderabad has 3 % population, whereas Pune, Surat, Kanpur, Jaipur, Navi Mumbai, Lucknow, Nagpur and Indore have 2 % population. The other 31 cities like Patna, Bhopal, Ludhiana, Tirunelveli, Agra, Vadodara, Gorakhpur, Nasik, Pimpri, Kalyan, Thane, Meerut, Nowrangapur, Faridabad, Ghaziabad, Dombivli, Rajkot, Varanasi, Amritsar, Allahabad, Visakhapatnam, Theni, Jabalpur, Haora, Aurangabad, Shivaji Nagar, Solapur, Srinagar, Chandigarh, Coimbatore, Jodhpur contributes 1 % of Total population in India as per United Nations, Department of Economic and Social Affairs, Population Division [1,2] as diagrammatically shown in the Fig. 4.
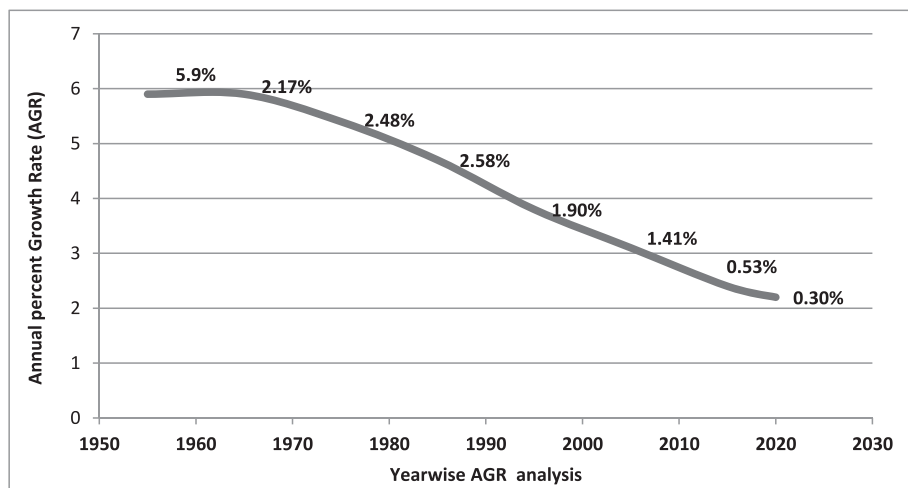

Fig. 2. As per the Indian population (1950—2023), Annual Percent Growth Rates was calculated as it denotes, the percent change from one period to another is calculated from the formula: Note: $PR = \{(V_{Present} - V_{Past})/V_{Past} * 100\}/10$ where PR = Percent Rate, $V_{Present}$ = Present or Future Value, V_{Past} = Past or Present Value (Created in Online Graphs and Charts).
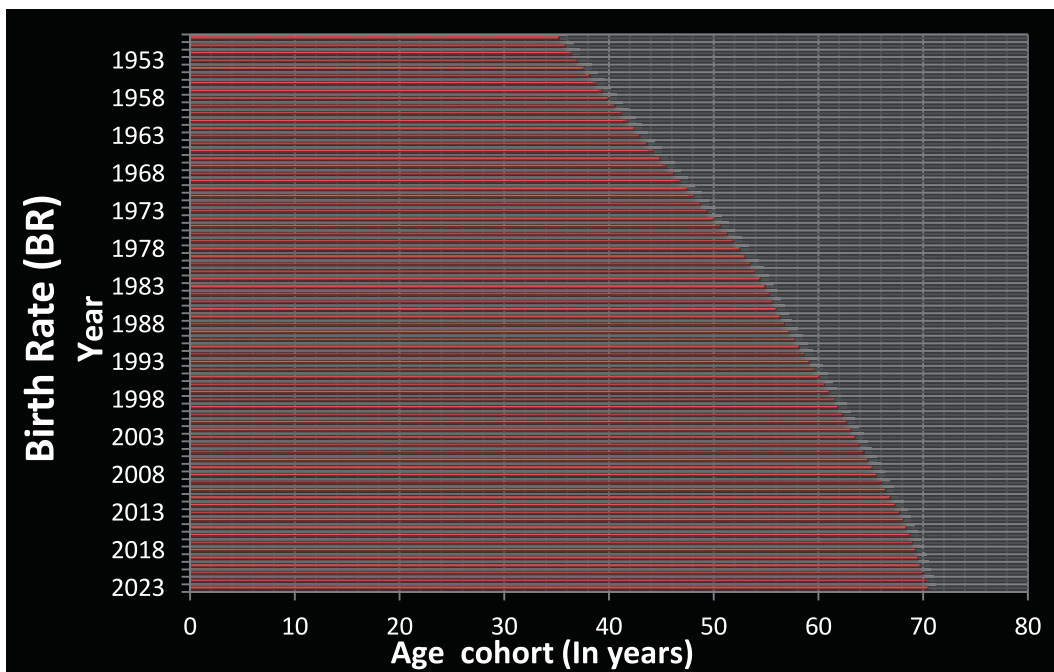
Fig. 3. Birth Rate Data per 1000 people in India from 1950 to 2023 (Created in Online Graphs and Charts).
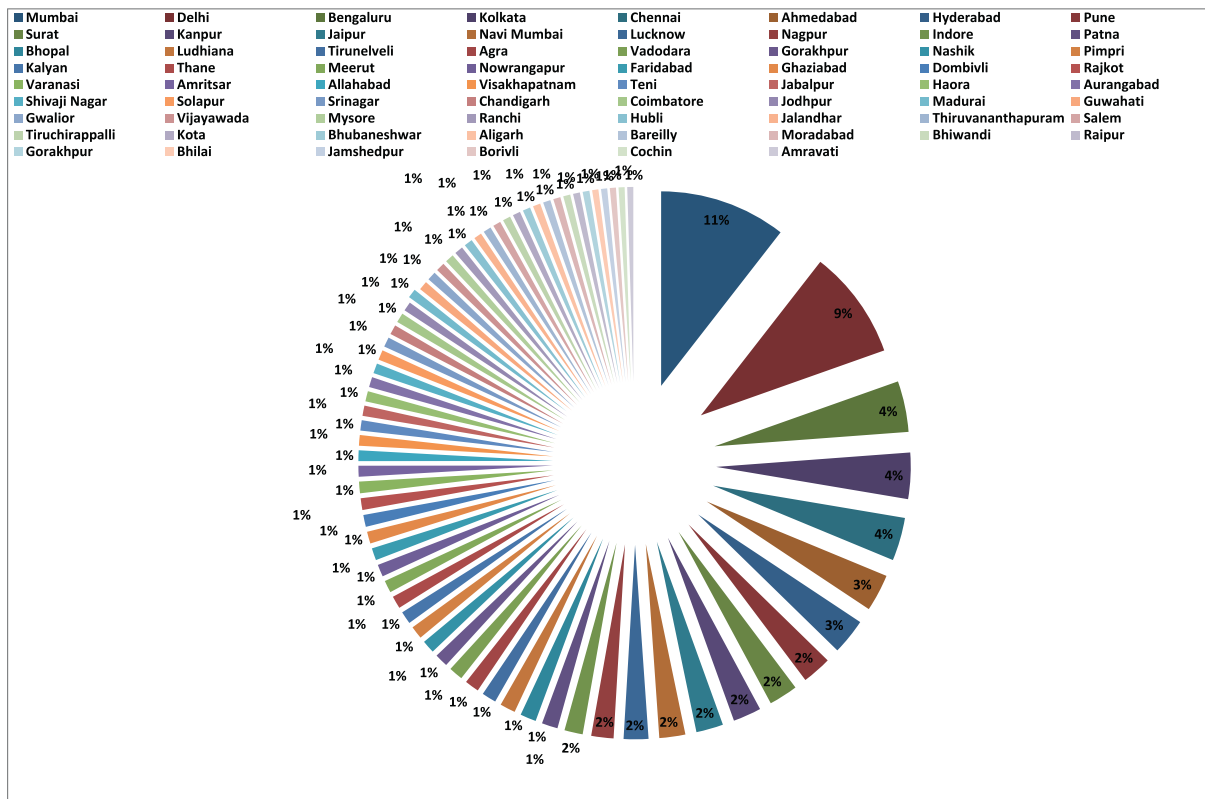

Fig. 4. Main Cities by Population in India (includes boroughs, districts, urban agglomerations, etc.) Data retrieved from United Nations, Department of Economic and Social Affairs, Population Division [1] (Created in Online Graphs and Charts).

1.3. Discussion: causes of decline in Indian Population since 1950s

On analyzing the major cause for comparative Indian population decline since 1950, has focussed on the aspect of diseases hitting Indian people [5], as per the WHO updated on July, 2023, the COVID 19 active cases of 44,994,619 individuals, in which the total death cases were 531,913 (1 %) individuals in India plays a huge role in the mass decline in the Annual growth Rate (AGR) ever since 1950 especially from the year 2019, December of Pandemic outbreak, the COVID death cases started continued to hit India from May, 2020, which had reached to 0.30 Annual Percent Growth Rate (AGR).

The second cause for comparative Indian population decline may be Total fertility rate (TFR), which had declined from 5.9 births per woman in 1955s to 2 births per woman in the year 2021 as per National Family Health Survey (NFHS)−V had represented the Replacement-Level Fertility that the average number of children per woman needed for each generation to exactly replace itself without heading international immigration. In the case of TFR values had gone below to 2.1 births per woman had caused the native population to decline whereby in contradictory we are ahead of China which had low fertility rate (1.2 births per woman) as mentioned in the Fig. 5. As per the Population Division of the United Nations articulate a shrinkage in population and India's fertility rate is likely to fall from 1.76 births per woman to 1.39 in 2032, 1.28 births per woman in 2052, 1.2 in 2082, and 1.19 in 2100 [6,7].

1.4. Top 10 causes of death in Indian Population (2019) (recent record)

The prime killer of Top 10 causes of death pointed out in the Fig. 6 was Ischemic Heart disease with 110.95 deaths in 100,000 population with 29 % deaths rate claimed 25,70,000 death cases reported in India in the year 2019 as mentioned in the Fig. 7. The next death cause of hierarchical list continued as Chronic Pulmonary Disease, Stroke, Diarrhoeal Disease, Tuberculosis, Neonatal condition, Lower respiratory Disease, Diabetes mellitus, Cirrhosis of the Liver and Falls with 64.2, 50.88, 48.93, 31.82, 31.69, 28.64, 19.82, 19.6 and 16.48 deaths per 100,000 Population respectively. The 2nd and 3rd leading causes of death are Stroke and Chronic obstructive pulmonary disease contributes 12 % and 13 % respectively. The diseases like Tuberculosis, Neonatal condition and Lower respiratory Disease takes up 7 % of total death cases, Diabetes mellitus and Cirrhosis affects 5 % population death and 4 % Falls in India's population 2019 [8].The Fig. 7 illustrates the rise of 88, 09,956 cases of number of deaths by cause as per the latest data (2019).

Reports from European Centre for Disease Prevention and Control, 2019−2023, Cholera has recorded 241 new cases in March 2023. Between January 1st 2023 and as of March 31st 2023, 241 cases had been reported comparatively 100 cases as on 9 March 2022, were also reported. Geographical distribution of cholera cases reported in India from March to May, 2023 was notified between 1.0 and 9.99 rates per 100,000 persons [9].

In case of World Malaria Reports, 2019, 3 % of the global Malaria burden is upon India and Records
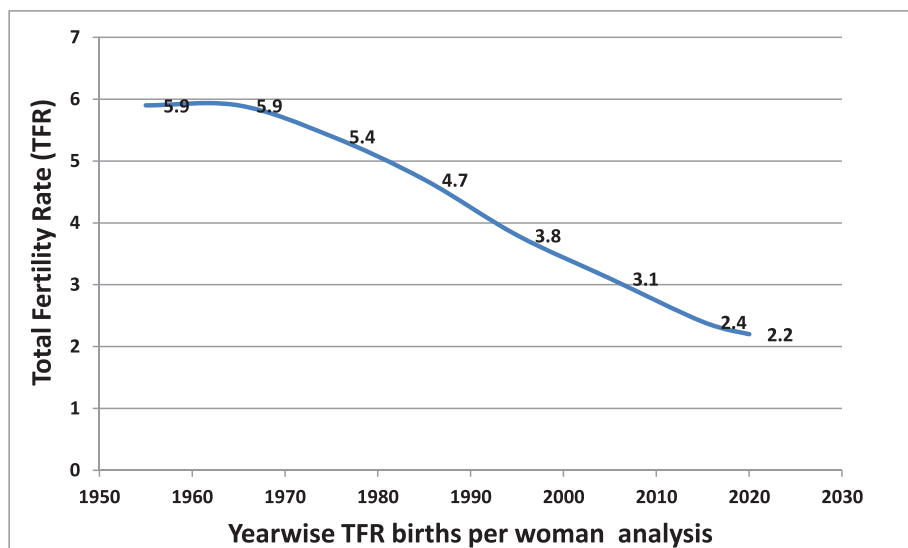

Fig. 5. Total Fertility Rate (TFR) births per woman in India from 1950- 2023. (Created in Online Graphs and Charts).
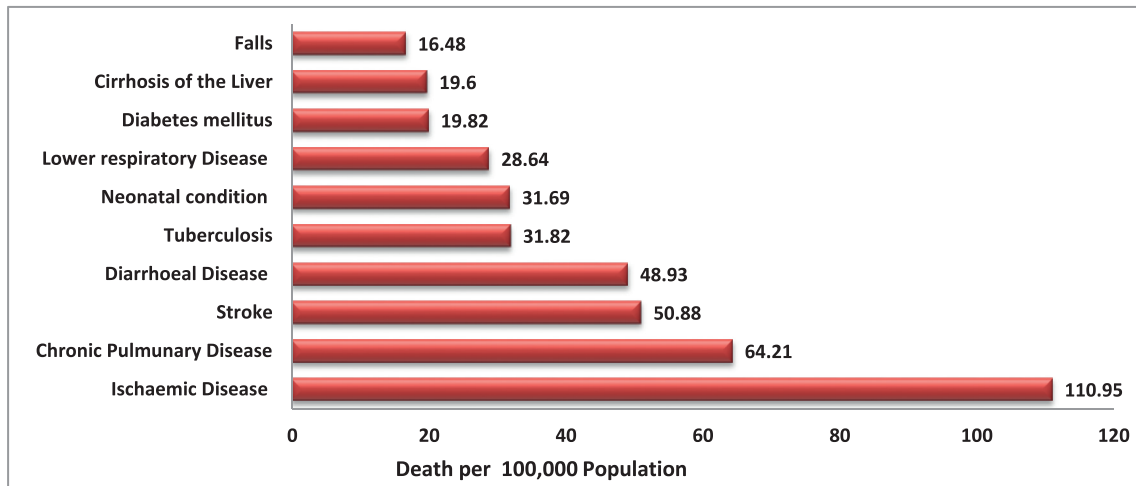
Fig. 6. India's Top death cases Death per 100,000 Population in 2019 (Last updated) as per WHO reports, 2023 [9] (Created in Online Graphs and Charts).

about 33,372 cases in the year 2019, and as good sign towards wellbeing, Report says India has declined in Malarial cases from 2016 to 2022 to 85.1 % cases [10-11].

Meanwhile the Cancer disease had ranked as a burden in India at the third position with 9, 32,587 cases in the year 2019 (as highlighted in the Fig. 6) and studies revealed by FICCI that in the end of

2023, it may reach 19−20 lakhs of Cancer cases with 1.5 to three times higher according to a estimated to be 29.8 million in 2025 increasing from 26.7 million in 2021 with 10.5 % (Breast cancer), 10.6 % (Lung Cancer), 4.3% (Cervical Cancer), 4.6 % (Liver Cancer), 5.7 % (Mouth cancer) [12].

Focusing on the leading killer Diarrhoeal disease was with 9−10 % of deaths caused in children under
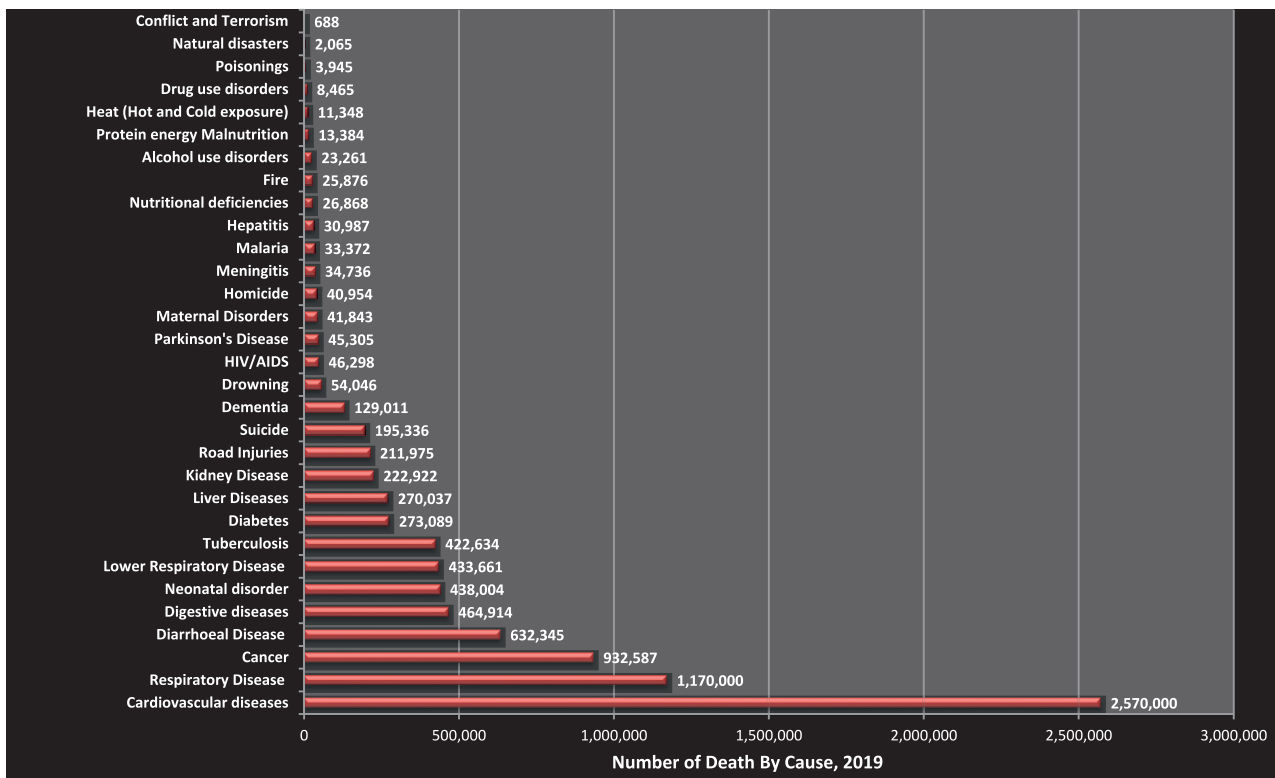

Fig. 7. Number of Death by cause (2019), Data derived from IHME, Global Burden of Disease (2019) (Created in Online Graphs and Charts).
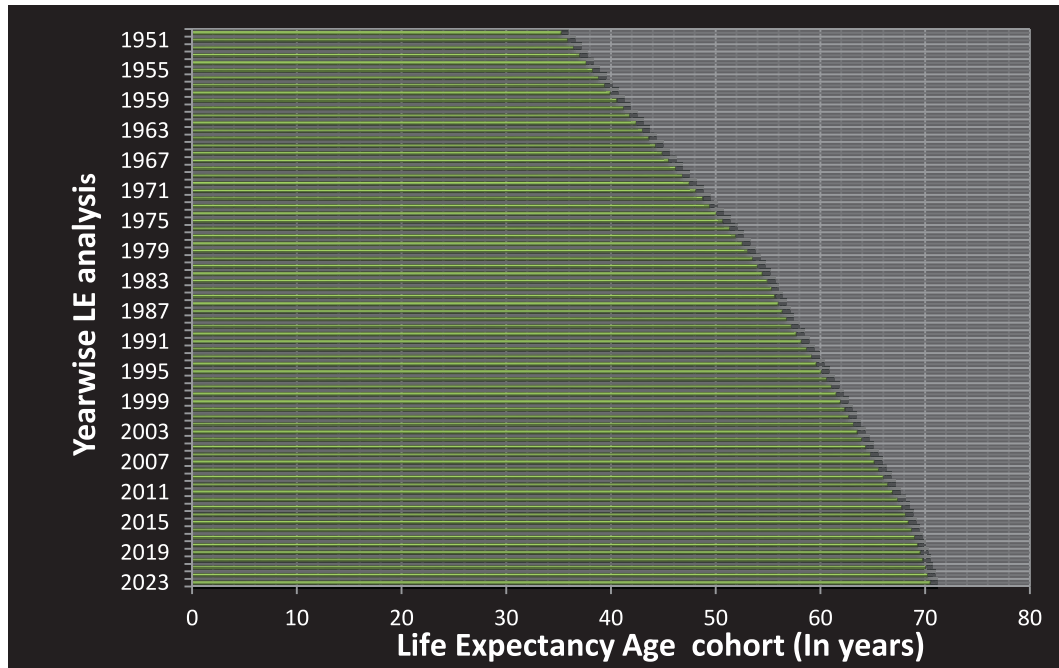
Fig. 8. Life Expectancy Data 1950-2023.Data source: United Nations - World Population Prospects, (Created in Online Graphs and Charts).

5 years of age may over 1300 young children dying each day, consequently with 484,000 children a year, (reported in the year 2019) amid with the availability of simple ORS treatment [13].

1.5. Median age and life expectancy (1950−2023)

According to the UNFPA (United Nations Population Fund) and 2011 year census, the Median age in India was 24.9. In the year 2023, according to World Population Projections, India's median age is 28.7 years (Male: 28; Female: 29.5), priding as a young country to have children to increase the population and 982,667,696 people are over age 18 in India in the year 2023. As per Population Foundation of India had forecasted that India's population will reach its peak in 2050 as a most populous country with a population of 1.6 billion populations [14].
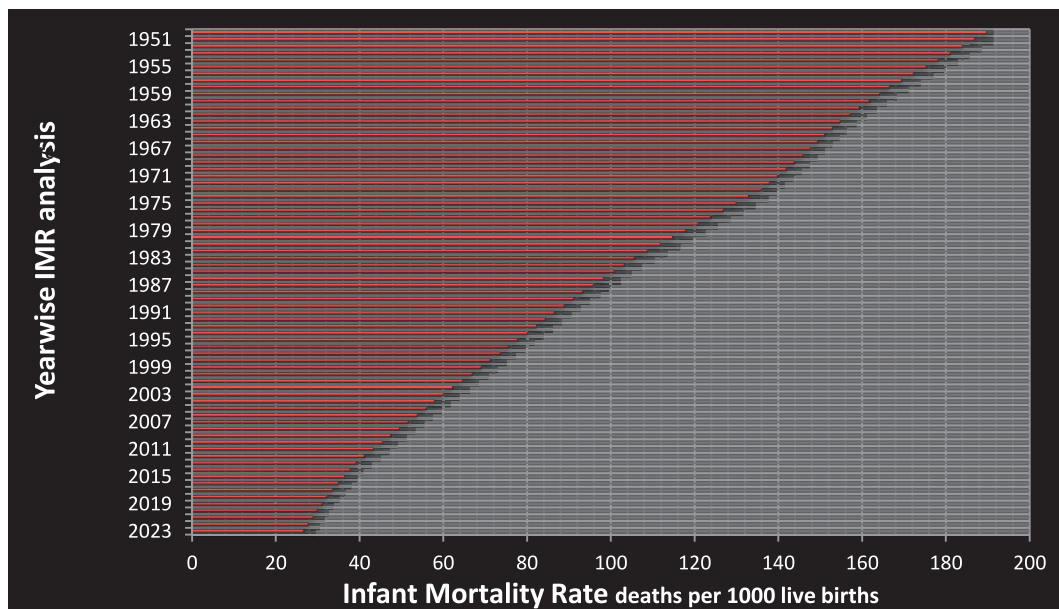

Fig. 9. Infant Mortality Rate deaths per 1000 live births Data 1950-2023.Data source: United Nations - World Population Prospects, (Created in Online Graphs and Charts).

The uninterrupted rise in the Life expectancy will be expected to vary across countries by the year 2100 from 66 to 97 years, and by the year 2300 from 87 to 106 years ranging from 0.03 to 0.07 per cent annually and was forecasted that India will have 491 persons per sq. Km^2. The key metric of assessing the population health as Life expectancy, which notifies the average age of death in a population. The life expectancy at birth in India for both sexes is 70.4 years with females (71.8 years) and males (69.2 years) in the year 2020 found to be increased from 1955 to 2020. The up to date life expectancy for India in 2023 is 70.42 years, a 0.33 % increase from 2022 that has drastically increased from 35.21 years of Life expectancy in 1950 as illustrated in Fig. 8. So this is no where related to the decline in the Indian Population [15].

1.6. Infant Mortality Rate and Deaths of Children under the age 5 Years old in India (1950—2023)

On analysis of Infant Mortality Rate and Deaths of Children under the age 5 Years Old in India From 1955 to 2020 had decreased as a good alarm towards the safer well being. About 26.6 infant deaths per 1000 live births and 32.9 Deaths of Children under 5 Years Old per 1000 live births were recorded in 2020. The worst infant deaths and Deaths of Children under 5 Years Old was recorded in 1950, which was 189.62 and 271.25 deaths respectively, so even this is nowhere connected to the decline in population. The recent infant mortality rate for India in 2023 is 26.619 deaths per 1000 live births, which had 3.89 % decline from 2022 as elaborated in the Fig. 9 showed good sign of well being from 189.6 deaths per 1000 live births (1950) to 26.619 deaths per 1000 live births (2023) [16].

2. Conclusion

India with a proud oldest civilization and kaleidoscopic variety of culture with being the 7th largest country and 2nd most populous country has been the overarching in its growth with demographic story for decades and will remain a predominant tendency for many years to come. Underneath this trend, however this case study discusses about the India's population, Annual Percent Growth Rates, Birth Rate Data per 1000 people, Total fertility rate births per woman, and Infant Mortality Rate. It spotlights the graphical significance of number of Death by cause and divulge the hidden facts of Median age, Life Expectancy Data during the period from 1950 to 2023 and heading India towards sustainability in population growth.

References

[1] United Nations, Department of Economic, Affairs Social, Division Population. World Population Prospects: The 2019 Revision. https://www.worldometers.info/world-population/india-population/. [Accessed 17 July 2023].

[2] Coleman DV. World population in 2300: a century too far? World Population to 2300. New York: United Nations Publication; 2004. [Accessed 15 July 2023].

[3] Gupta Harsh. Investing better in Citizens is the key to India's growth. Mint; 26.9.2019. https://www.livemint.com/news/india/investing-better-in-citizens-is-key-to-india-s-growth-1569518299462.html. [Accessed 17 July 2023].

[4] United Nations - World Population Prospects. India Birth Rate 1950-2023. https://www.macrotrends.net/countries/IND/india/birthrate#:~:text=The%20current%20birth%20rate%20for,a%201.22%25%20decline%20from%202020. [Accessed 15 July 2023].

[5] Roy Esha. India's population growth rate on a steady decline since '90s. The Indian Express 2023. https://indianexpress.com/article/india/india-population-growth-rate-8567426/. 20 May.

[6] Annual publication World Health Statistics. https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghe-leading-causes-of-death. [Accessed 15 July 2023].

[7] India's fertility rate is expected to fall from 1.76 births per woman to 1.39 in 2032, 1.28 in 2052, 1.2 in 2082, and 1.19 in 2100. Livemint 24 July 2022. https://www.livemint.com/news/india/indias-population-likely-to-shrink-by-41-crores-by-2100-report-11658656963070.html. [Accessed 15 July 2023].

[8] Institute of Health Metrics and Evaluation (IHME). Global burden of disease (GBD). 2019. https://ourworldindata.org/causes-of-death. [Accessed 15 July 2023].

[9] European Centre for Disease Prevention and Control. https://www.ecdc.europa.eu/en/all-topics-z/cholera/surveillance-and-disease-data/cholera-monthly. [Accessed 15 July 2023].

[10] World malaria report. https://www.who.int/publications-detail/world-malaria-report-2019. [Accessed 11 July 2023].

[11] PTI. World Malaria day 2023: India witnesses 85.1% decline in malaria cases from 2015 to 2022, zee business. https://www.zeebiz.com/trending/news-world-malaria-day-2023-theme-poster-india-decline-in-malaria-cases-mansukh-mandaviya-232045. [Accessed 10 July 2023].

[12] IANS, World Cancer Day. Real cancer cases estimated to be 3 times higher than reported in India. https://www.mid-day.

com/lifestyle/health-and-fitness/article/real-cancer-cases-estimated-to-be-3-times-higher-than-reported-in-india-report-23250019. [Accessed 10 July 2023].

[13] WHO and the Maternal and Child Epidemiology Estimation Group (MCEE) estimates. December 2022, https://data.unicef.org/topic/child-health/diarrhoeal-disease/. [Accessed 15 July 2023].

[14] United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2019 Revision. https://www.worldometers.info/demographics/india-demographics/#median-age. [Accessed 10 July 2023].

[15] United Nations - World Population Prospects. Life Expectancy 1950-2023. https://www.macrotrends.net/countries/IND/india/lifeexpectancy#:~:text=The%20current%20life%20expectancy%20for,a%200.33%25%20increase%20from%202020. [Accessed 15 July 2023].

[16] United Nations - World Population Prospects. India Infant Mortality Rate 1950-2023. https://www.macrotrends.net/countries/IND/india/infant-mortality-rate#:~:text=The%20current%20infant%20mortality%20rate,a%203.89%25%20decline%20from%202022. [Accessed 18 July 2023].