

# POPULATION DYNAMICS

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# POPULATION DYNAMICS

- It is the branch of life sciences that studies the size and age composition of population as dynamical systems, and the biological and environmental processes driving them.
- It studies both the short-term and long-term changes in the composition of the population.

# FACTORS AFFECTING POPULATION DYNAMICS

- There are basic 4 factors that affect population dynamics:
  - i. Birth rate
  - ii. Death rate
  - iii. Immigration
  - iv. Emigration

**i. BIRTH RATE:** The crude birth rate in a year or period is the total number of live births per 1000 population .

**ii. DEATH RATE:** Number of deaths per 1000 population per year .

**iii. IMMIGRATION:** The act or instance of moving to the place of which they are not natives or where they do not possess citizenship in order to settle or reside there.

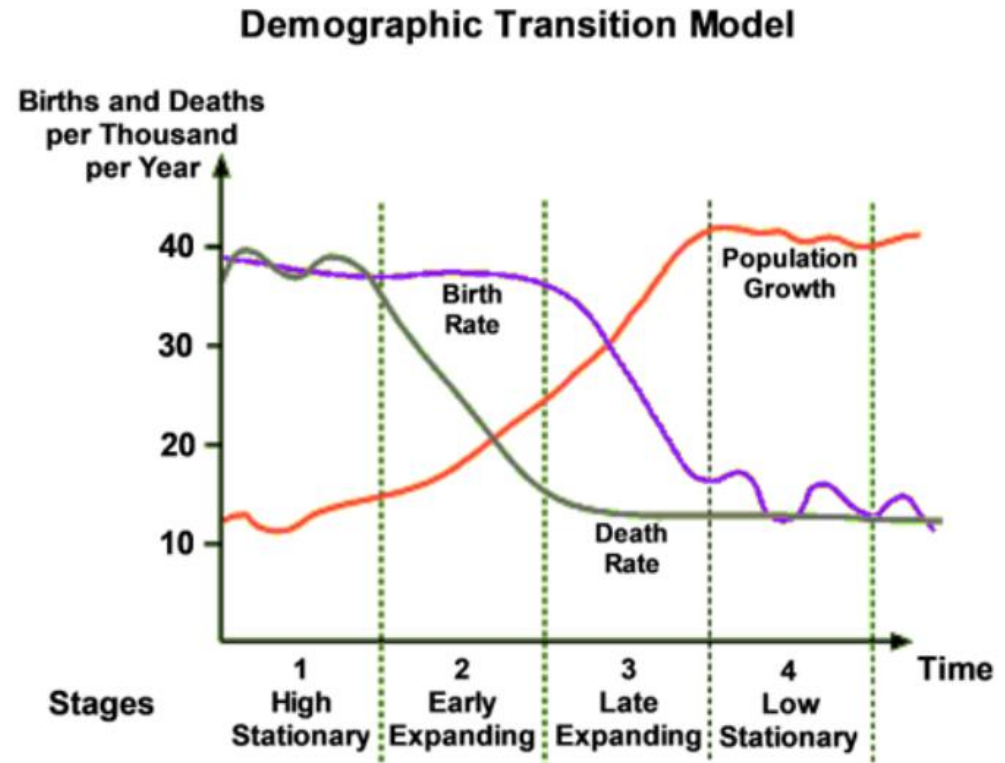
**iv. EMIGRATION:** The act of leaving a resident country or place with the intent to settle elsewhere.

# DEMOGRAPHIC TRANSITION

- It is the long-term trend of declining birth rates and death rates, resulting in substantive change in age, distribution of a population.
- *The demographic transition theory* is a generalized description of the changing pattern of mortality, fertility and growth rates as societies move from one demographic regime to another.
- The term was first coined by the *American demographer Frank W. Notestein*.

# DEMOGRAPHIC TRANSITION MODEL

- There are **four stages** to the classical demographic transition model:
  - 1) **Stage 1:** Pre-transition
  - 2) **Stage 2:** Early transition
  - 3) **Stage 3:** Late transition
  - 4) **Stage 4:** Post-transition



# STAGE 1: Characterized by High Birth Rate And High Death Rate

## HIGH BIRTH RATE

- Reasons for high birth rate are:
- Lack of family planning
- Religious beliefs
- Children as economic assets

## HIGH DEATH RATE

- Reasons for high death rate:
- High level of diseases
- Lack of education
- Lack of clean drinking water and sanitation facilities
- Lack of health care facilities
- War and famine

# STAGE 2: EARLY TRANSITION

- **Birth rate remains high and death rate is falling**
- Reasons for decline in death rate are as follows:
  - 1) Improved health care ( Vaccination was introduced)
  - 2) Improved hygienic facilities (availability of clean drinking water)
  - 3) Improved sanitation
  - 4) Better food production and storage
  - 5) Improved food transportation( food availability increased and thus the death cases due to hunger reduced)
  - 6) Decreased infant mortality rates



# STAGE 3: LATE TRANSITION

- **Birth rate begins to fall and death rate continues to fall**
  - 1) Family planning available
  - 2) Lower infant mortality rate
  - 3) Increased living standards
  - 4) Changing status of women

# STAGE 4: POST- TRANSITION

- **Both birth rate and death rate are lower**
- Hence, the population is in steady state.

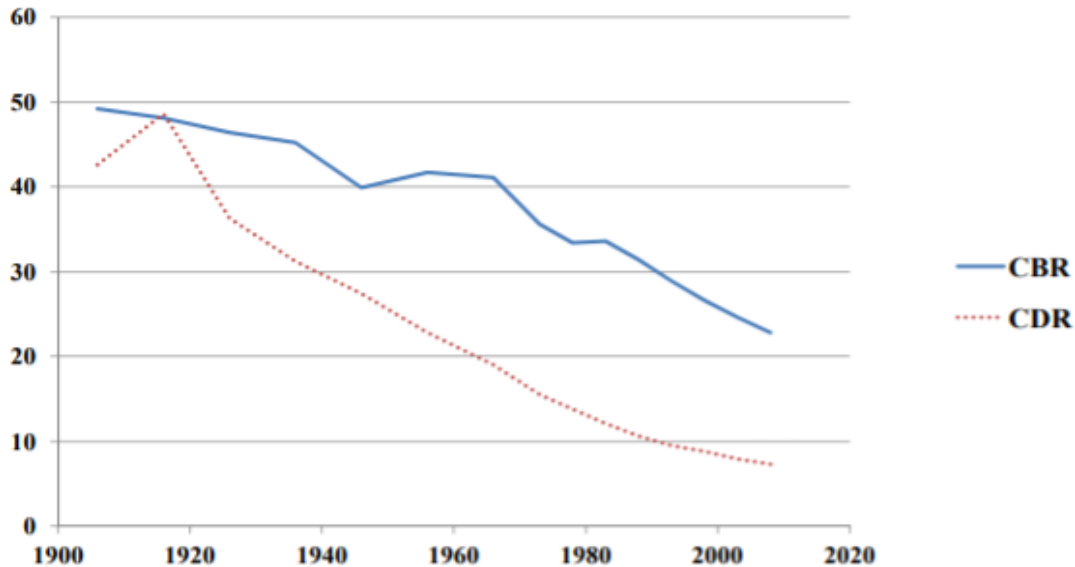
# WHAT ABOUT INDIA??

- Recent evidence shows that India too is following the pattern but with a late beginning and slower pace.
- **The death rate** began to fall after 1920 but the birth rate remained high up to the 1960s opening up a gap and consequent population growth.
- **The birth rate** began to fall much later, after 1960s but the death rate continued to decline continuing population growth.
- The gap seems to have narrowed in the last decade with a small decline in the population growth rate.
- Clearly, India is passing through the demographic transition and is moving from the early transitional stage to the late transitional stage

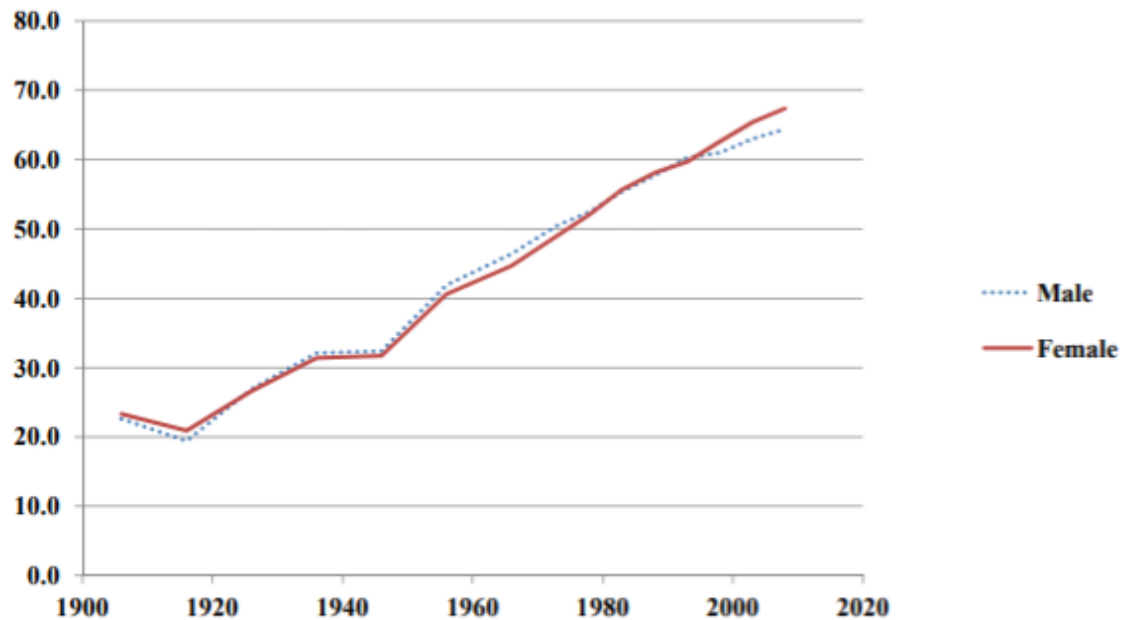
# 1. Trends and Differentials in Mortality and Life Expectancy

- **The CDR** was very high, over 40 per thousand, during early years of the twentieth century but fell steadily to below 40 in the 1920s, below 30 in the 1940s and further below 20 after 1960. It has been less than 10 since the 1990s.
- **The life expectancy in India** has increased from a low of 20 years during 1911-20 to over 30 during 1931-40, crossed 40 years during 1951-60, 50 years in the mid-1970s, and 60 in the early 1990s.
- Broadly, there has been a **rise of about 10 years in the expectancy every two decades.**

# Trends in Crude Birth Rate and Crude Death Rate, 1901-2011



# Trends in life expectancy, 1901-2010



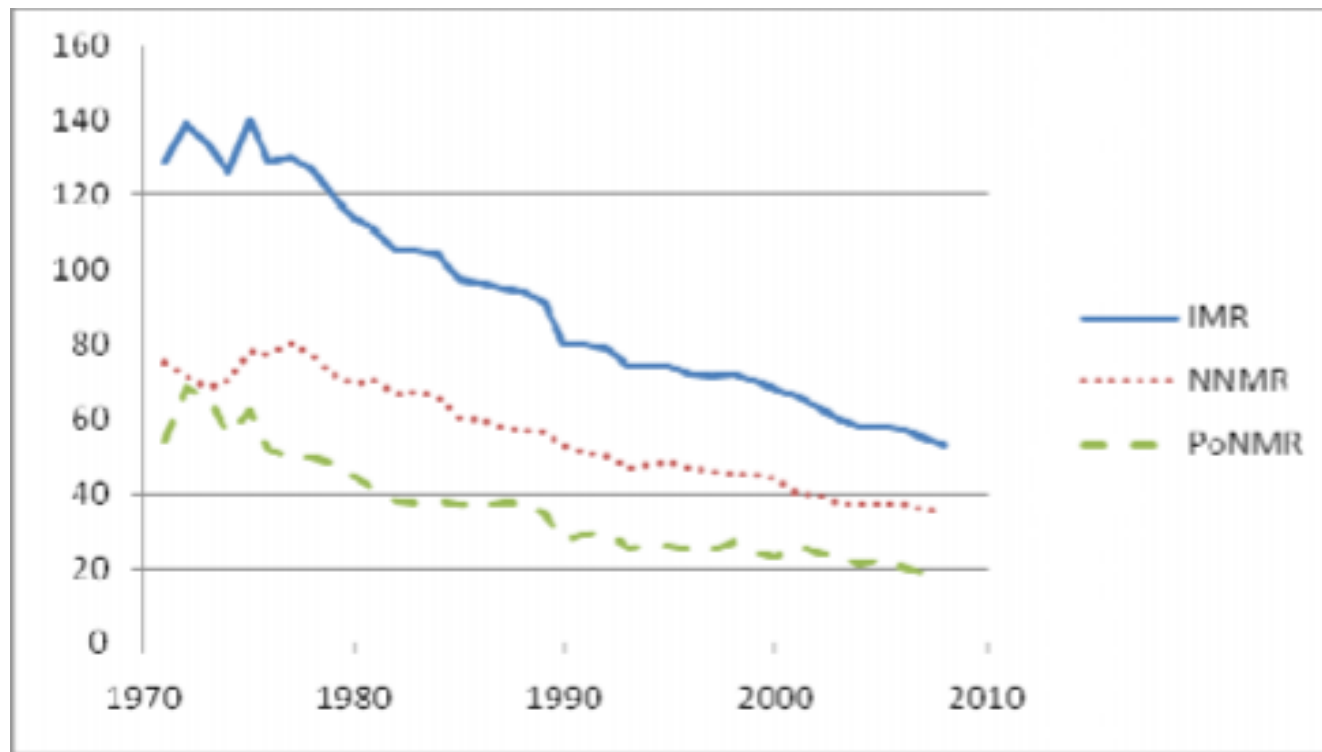
## 2.EARLY CHILDHOOD MORTALITY

- **The Infant Mortality Rate(IMR)** was well over 100 per thousand through the 1970s but the latest figure, for 2011, is 44.
- Similarly, **the Under-five Mortality Rate(U5MR)** has declined from over 200 per thousand (one fifth of new born not surviving to the sixth year) to 55 in 2011.
- Though early childhood mortality has fallen, the level is still quite high, well above that in the developed world, but higher than that in many developing countries.

- Moreover, after 1991, fall in the IMR has not been as steep as during the 1970s and 80s.
- The **fall in post-neonatal mortality** has been greater than in neonatal mortality.
- While hardly any sex differential is seen in the IMR, the U5MR has consistently been higher for girls than for boys . **Female neglect seems to operate especially at young ages.**



# TRENDS IN INFANT MORTALITY, 1971-2010



# BIBLIOGRAPHY

- [censusindia.gov.in](http://censusindia.gov.in)