MEDICAL UNIVERSITY – PLEVEN
FACULTY OF PUBLIC HEALTH
DEPARTMENT OF PUBLIC HEALTH SCIENCES

Lecture № 8

DEMOGRAPHIC APPROACHES TO HEALTH ASSESSMENT.

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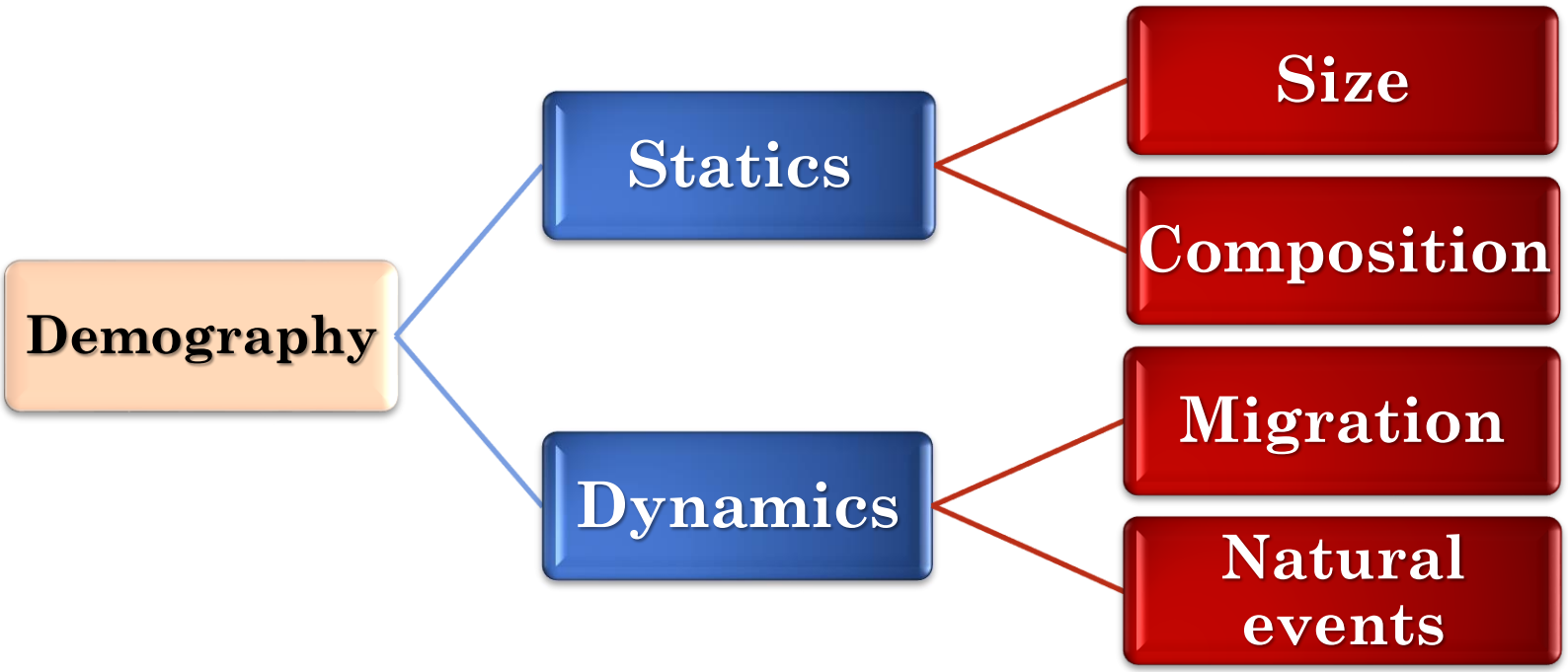
Demography is the statistical study of human population.

It encompasses the study of the size, structure and distribution of these populations, and spatial and/or temporal changes in them in response to birth, migration, aging and death.

Background (1)

Why?

It is impossible to evaluate any aspect of public health and development of health systems without appropriate information on population.



Background (2)

Uses of census-

- Provides social, economic and demographic data of country
- Provides information on composition
- Help to estimate mid year population
- Help to assess the trend of population
- Help to formulate population policies
- Help to plan health and welfare measures
- Help in international comparision
- Help to formulated social security measures- insurance
- Help to assess to evaluate population control programme
- Help to know quality of life

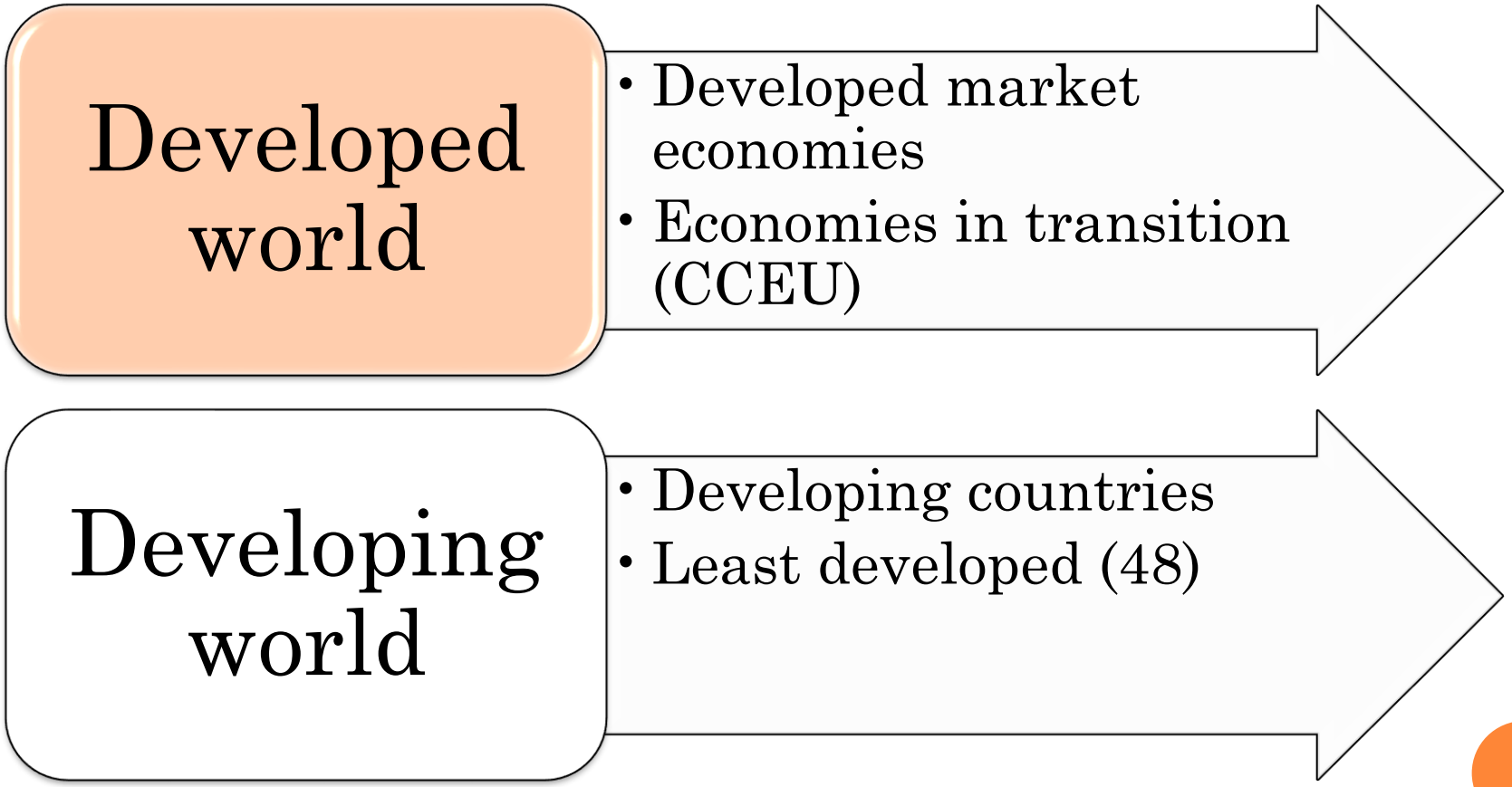
Background (3)

Importance of Demographic data

- Health status of a community depends upon the dynamic relationship between number of people, their composition& distribution
- Planning of health services can be guided by demographic variables, for example: How many health units do we need? How to distribute them in the community in order to be accessible to the target population? What type of manpower is needed?

Background (4)

United Nations classification of countries



Background (5)

Types of

Occurrence of an event in a population during a given time period

$$\text{Rate} = \frac{\text{Numerator and time specification}}{\text{Denominator and time specification}} \times \text{multiplier}$$

1000

Mid-year population

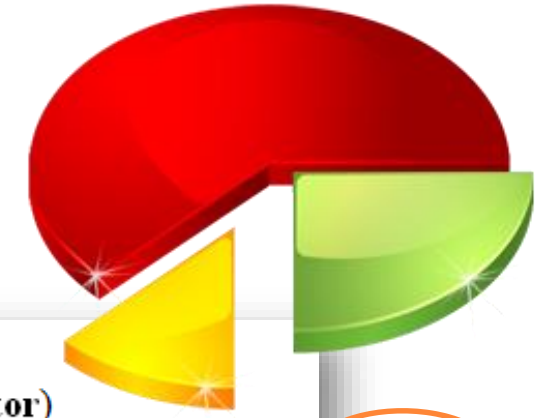
$$\text{Rate} = \frac{\text{Number of cases of the event}}{\text{Population at risk for this event}} \times \text{multiplier}$$

Rates

- Crude (unstandardized)
- Specific
- Standardized

Background (6)

Types of indicators



part of the whole

$$\text{Proportion} = \frac{\text{Numerator (always included in the denominator)}}{\text{Denominator}} \times 100$$

%

whole

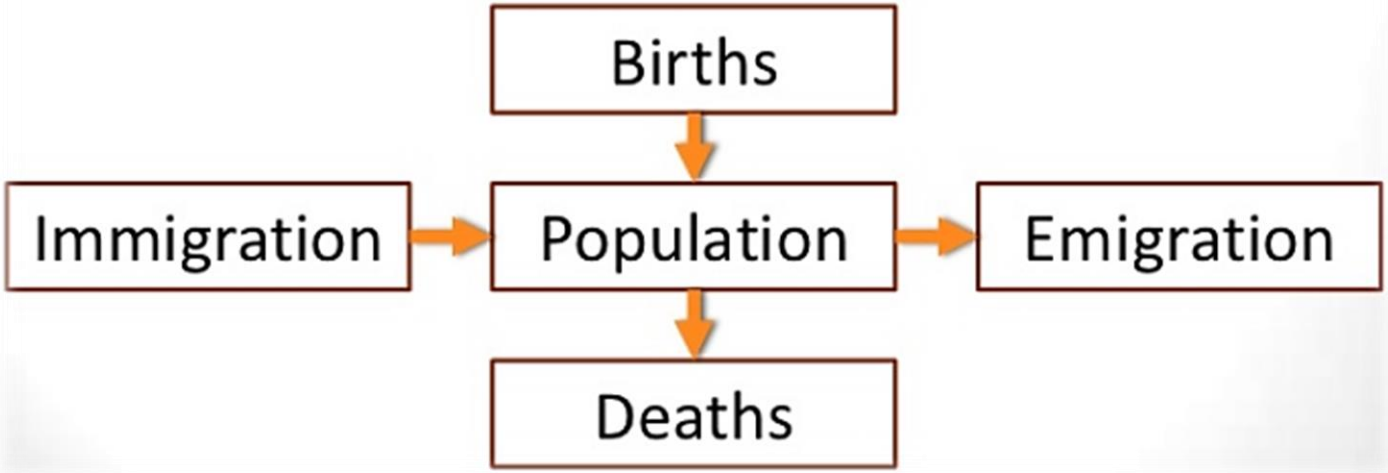
$$\text{Ratio} = \frac{\text{Numerator (not a component of the denominator)}}{\text{Denominator}}$$

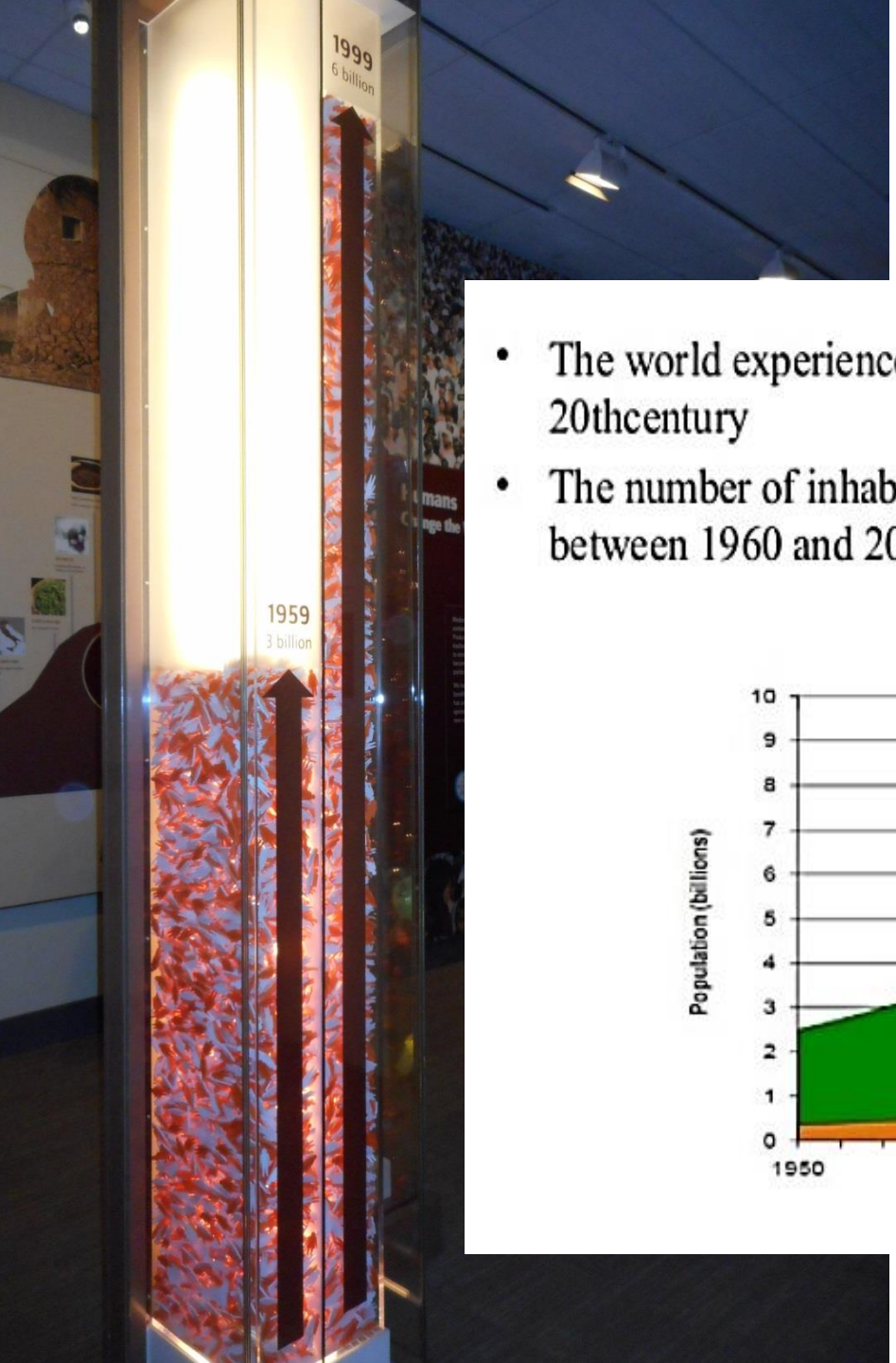
Demography statics

Population size

What determine population size

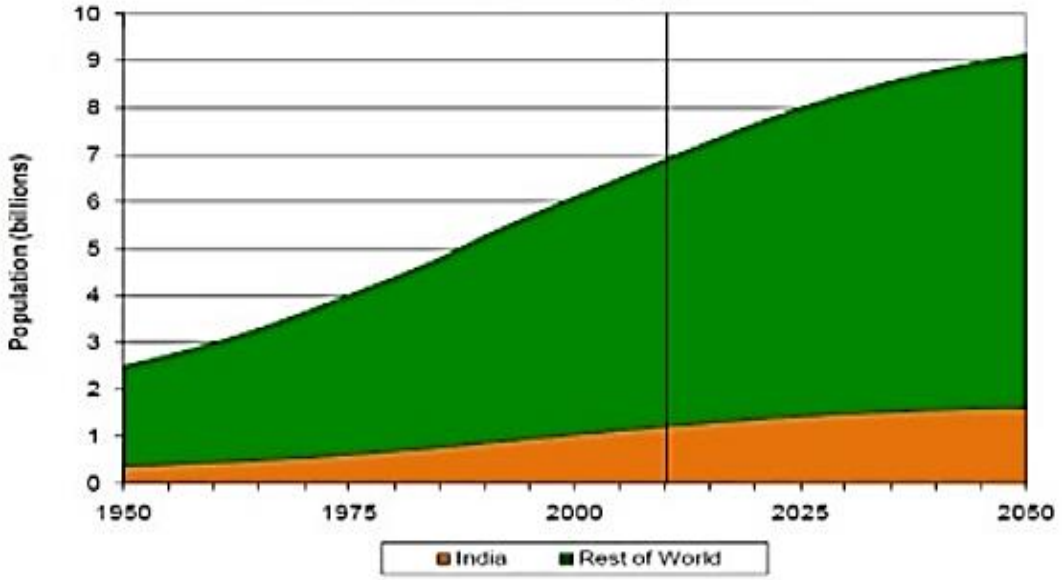
- Three Basic Demographic Processes
  - Births
  - Deaths
  - Migration



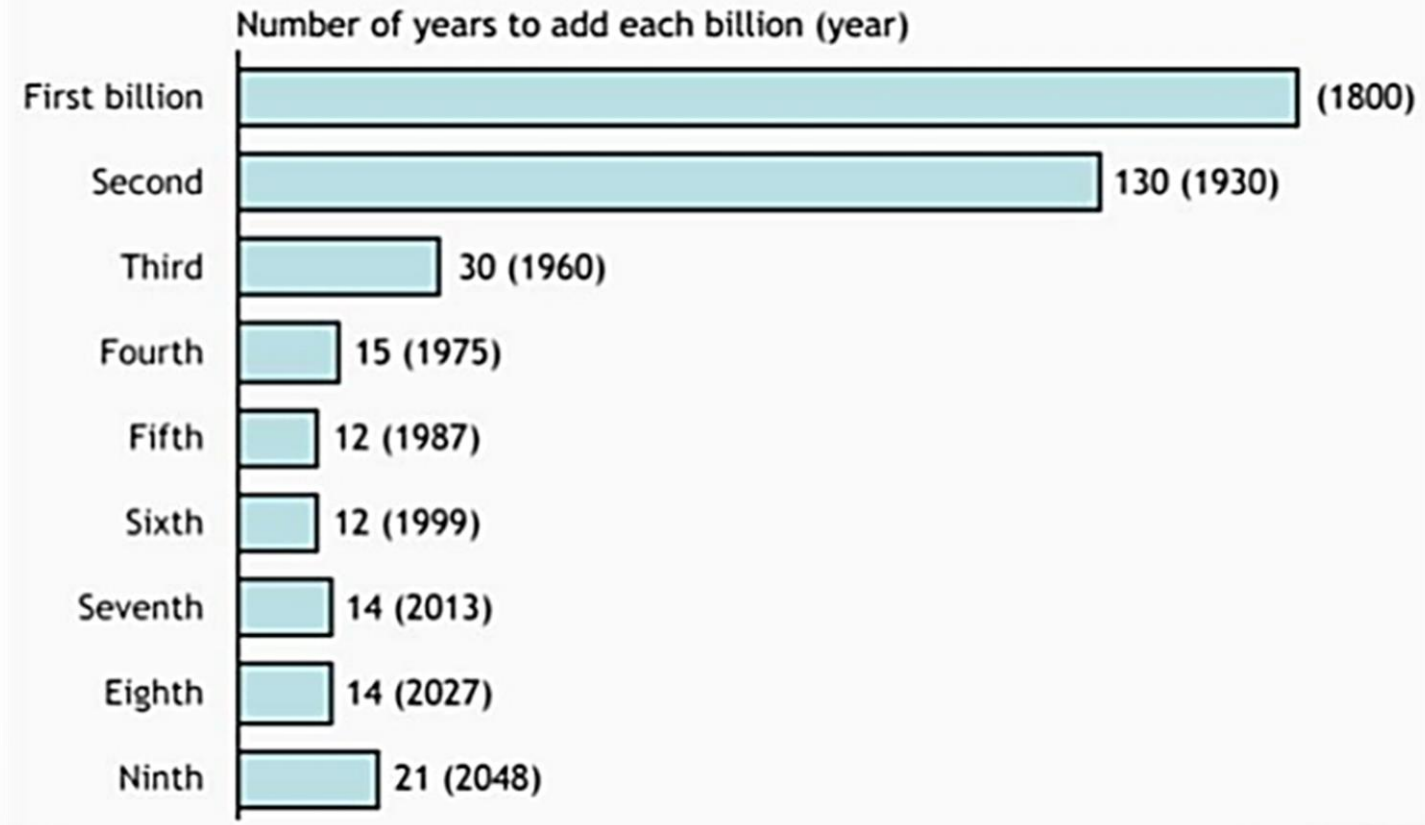


- The world experienced dramatic population growth during the 20thcentury
- The number of inhabitants doubling from 3 to 6 billion (2% per annum) between 1960 and 2000.

Figure 1
India's share of world population



Number of Years to Add Each Billion



Sources: First and second billion: Population Reference Bureau; Third through ninth billion: United Nations. (2005). World population prospects: the 2004 revision (medium scenario).

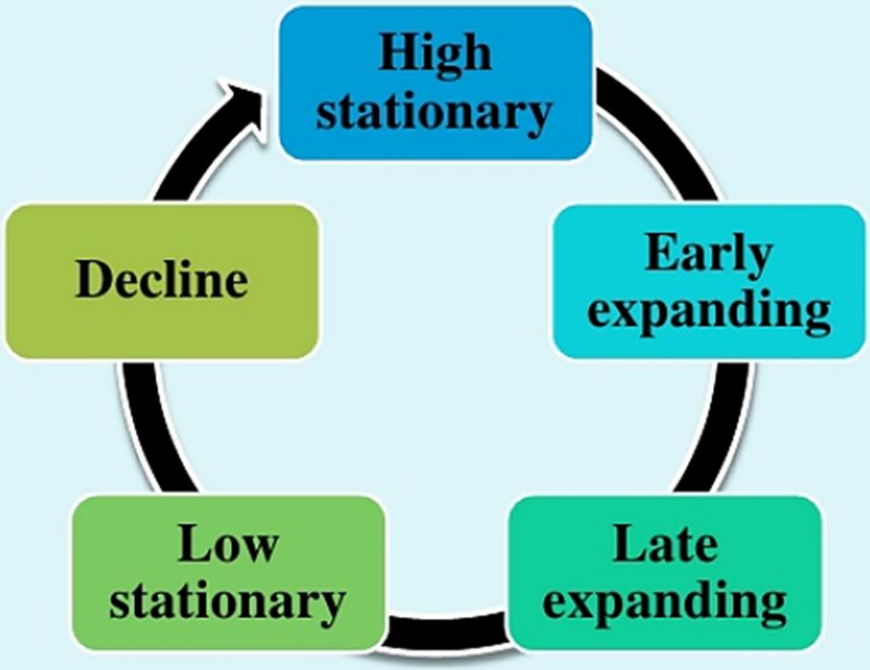
Cause of the rapid population growth

- Changes in Mortality
  - increase of life expectancy from 1950-2025
  - Increase in life expectation is the mirror image of decline in mortality.
- Changes in Fertility
  - a decline in fertility in all countries.
  - higher in the more developed than the developing countries.
- Demography Transition

Demographic Transition

- Concept evolved from the history of population growth in Europe and the United States and has been broadly applied to populations everywhere
- Trend shift from high rate of births and deaths to low rates of births and deaths

DEMOGRAPHIC CYCLE



DEMOGRAPHIC CYCLE(STAGE)

- **High stationary (first stage):** this stage is characterized by a **high birth rate** and **high death rate** ,no any change in size and population .Indian was in this stage till 1920.
- **Early expending (second stage):** the death rate begins to decline (starts decreasing)and birth rate no change . initial increase in population

- **Late expanding (third stage)**: the birth rate begins to decline while the death rate still decreases . continue increase in population

- **Low stationary (fourth stage) :**

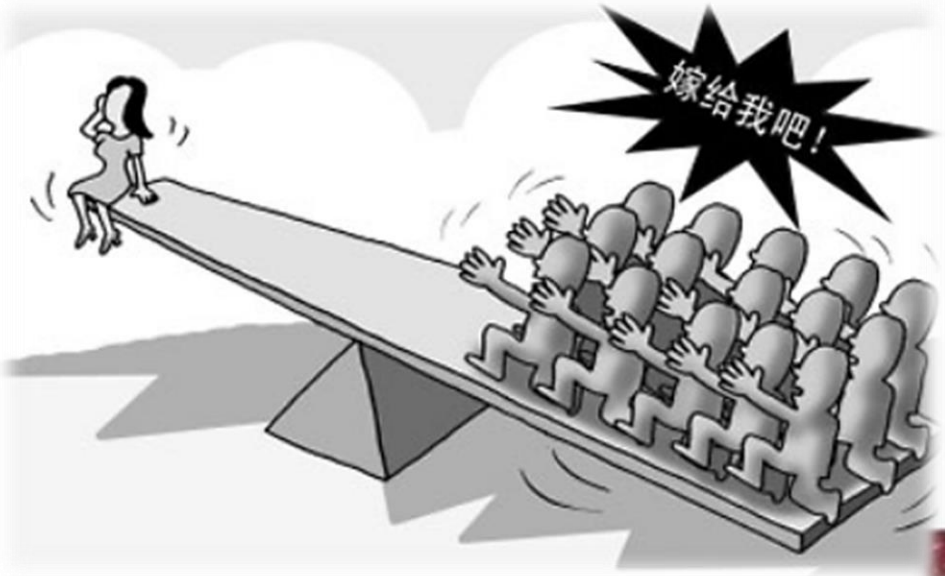
This stage is characterized by a low birth rate & low death rate .stability in population .

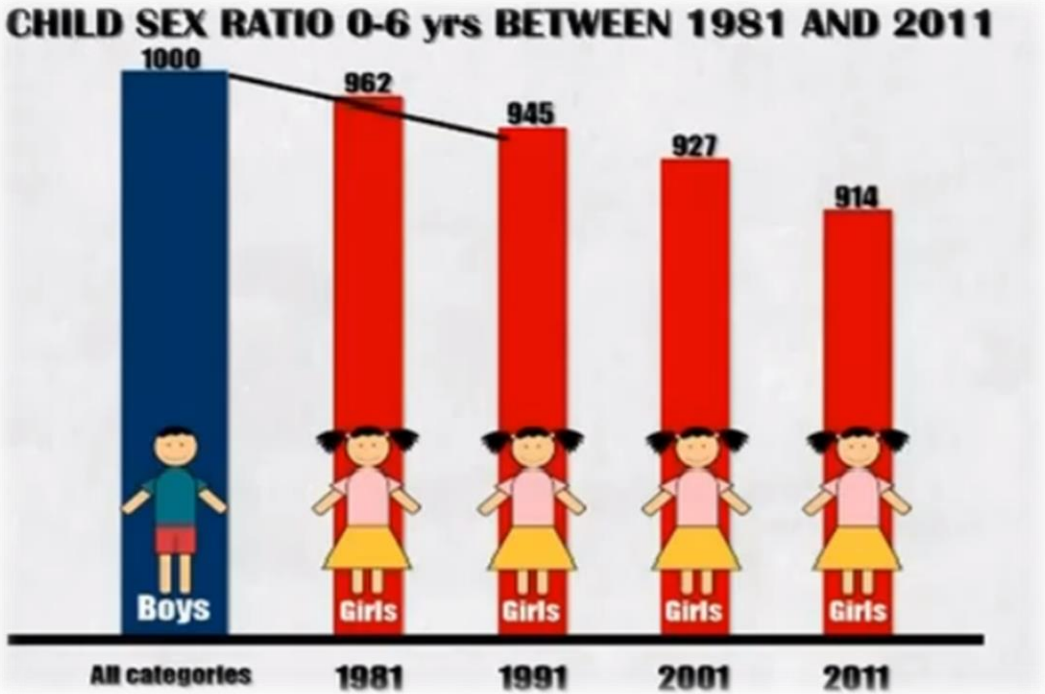
Declining (fifth stage):in the declining stage birth rate is lower then the death rate .fall in population

Demography statics

Population structure

Sex Ratio = the number of females per 1000 males





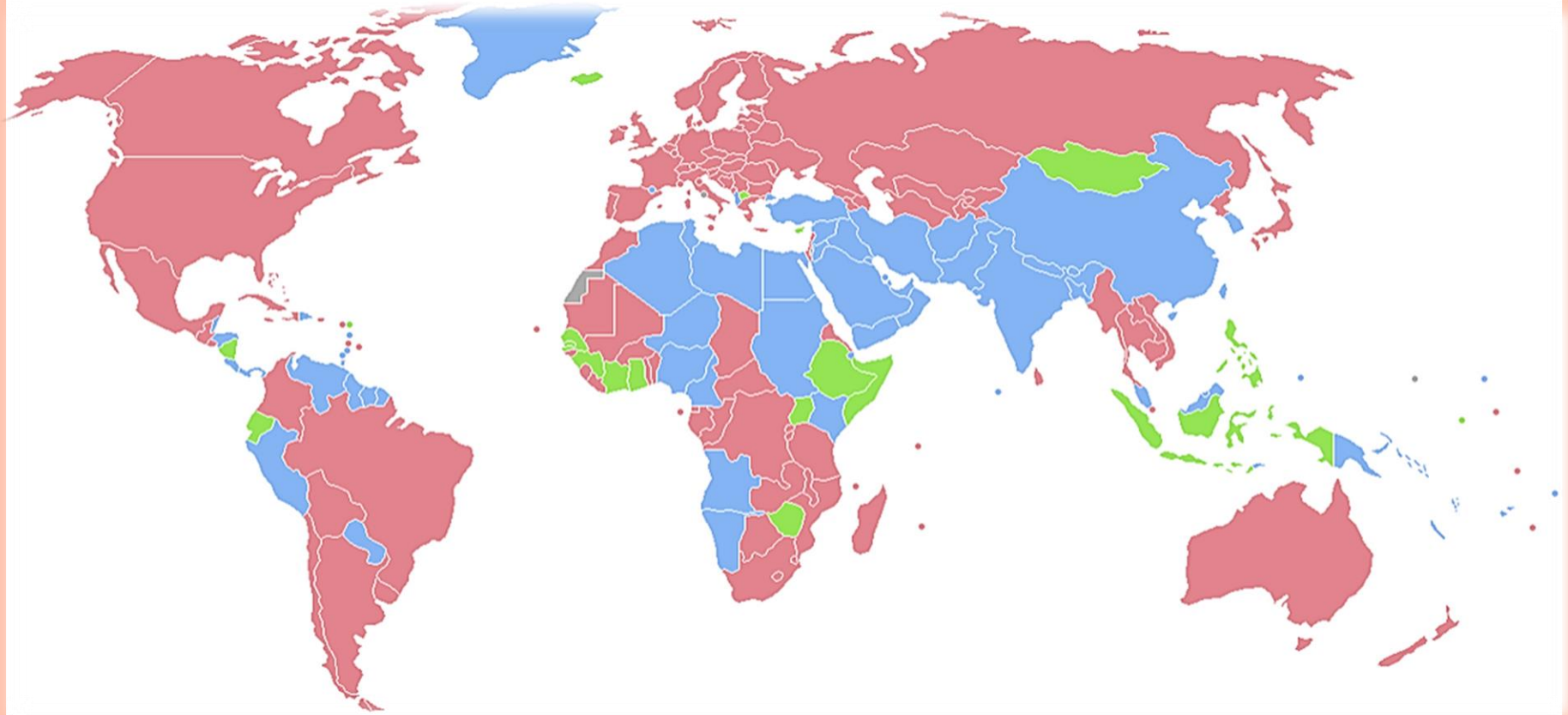


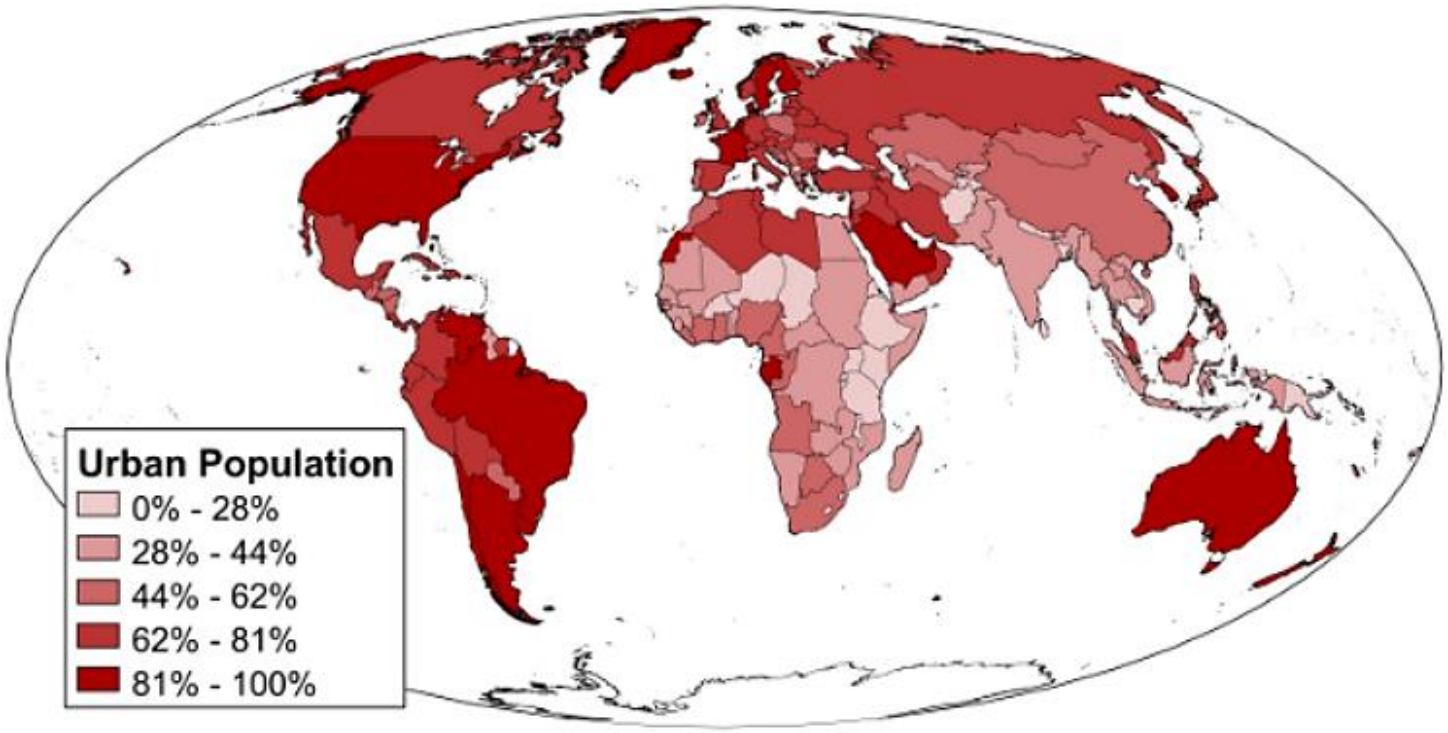
Table 34 – Sex ratio (males per 100 females) by region and selected countries

Region	Sex ratio	Country	Sex ratio
World	102	**India**	108
More developed	95	**China**	106
Less developed	103	**Qatar**	265
Africa	100	**United Arab Emirates**	274
Asia	105	**Bulgaria**	94
Europe	93	**United Kingdom**	97
Northern America	98	**Latvia and Lithuania**	85

Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). *World Population Prospects: The 2015 Revision, Key Findings and Advance Tables*. Working Paper No. ESA/P/WP.241.

URBANIZATION (1)

- Mass migration of rural population into urban centers resulting in increasing the urban population & growth of cities.
- **Cause of urbanization**: "MIGRATION" d/t-
  - Better employment opportunities.
  - Better living standards.
  - Better availability of social services like Education, Health, Transport, Entertainment etc.



Urbanization (2)

Urbanization causes many changes:

- declining average family size
- population aging
- rising per capita income
- residence-related lifestyle changes
- improvement in access to health care services and decrease in some causes of morbidity and mortality
- rising educational ratios
- later age at marriage
- increased use of contraception
- decrease in birth rates

Distribution by age
Approaches to study age structure

1. % 0-14 years/ 14-49 years/ over 50
2. % over 60 years and/or % over 65 years
3. Age pyramid
4. Dependency ratios

Types of age composition	**Types of countries:**		**Dependency ratios:**
	%60+	%65+	
0-14 / 15-49 / 50+			
progressive 30 - 50 - 20	young	to 10%	to 5%	Youth = 0-14 / 15-64
stationary 25 - 50 - 25	at the beginning of aging	10 - 15%	5 - 10%	Elderly = 65+ / 15-64
regressive 20 - 50 - 30	aging	over 15%	over 10%	Total = 0-14 + 65+/ 15-64
				Old to young populations in %

Aging index

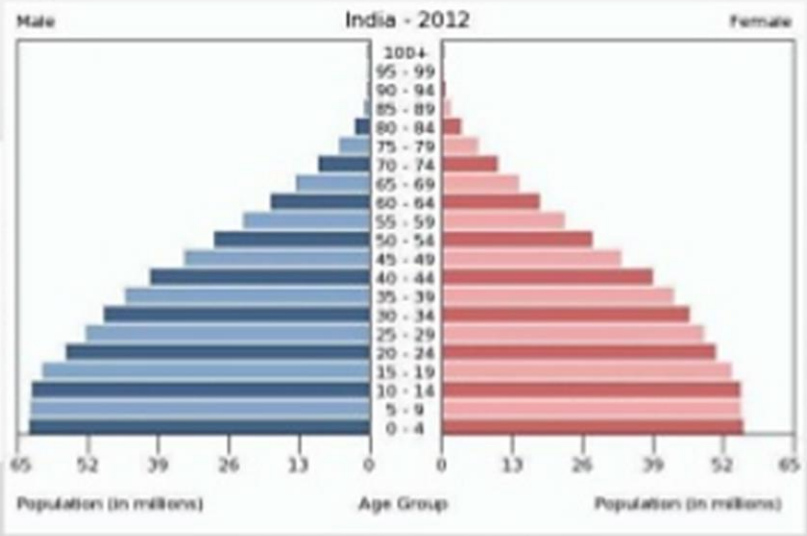
DEPENDENCY RATIO

The proportion of person above 65 years of age and children below 15 years are considered to be dependent on the economically productivity.

Total dependency ratio=children 0-14+ population more than 65 years / Population 15-64 years * 100

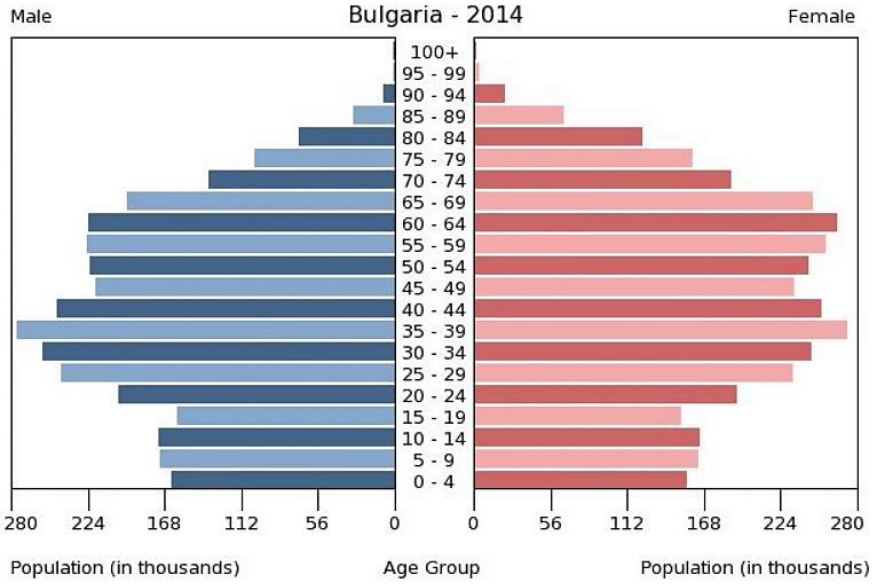
AGE PYRAMID:

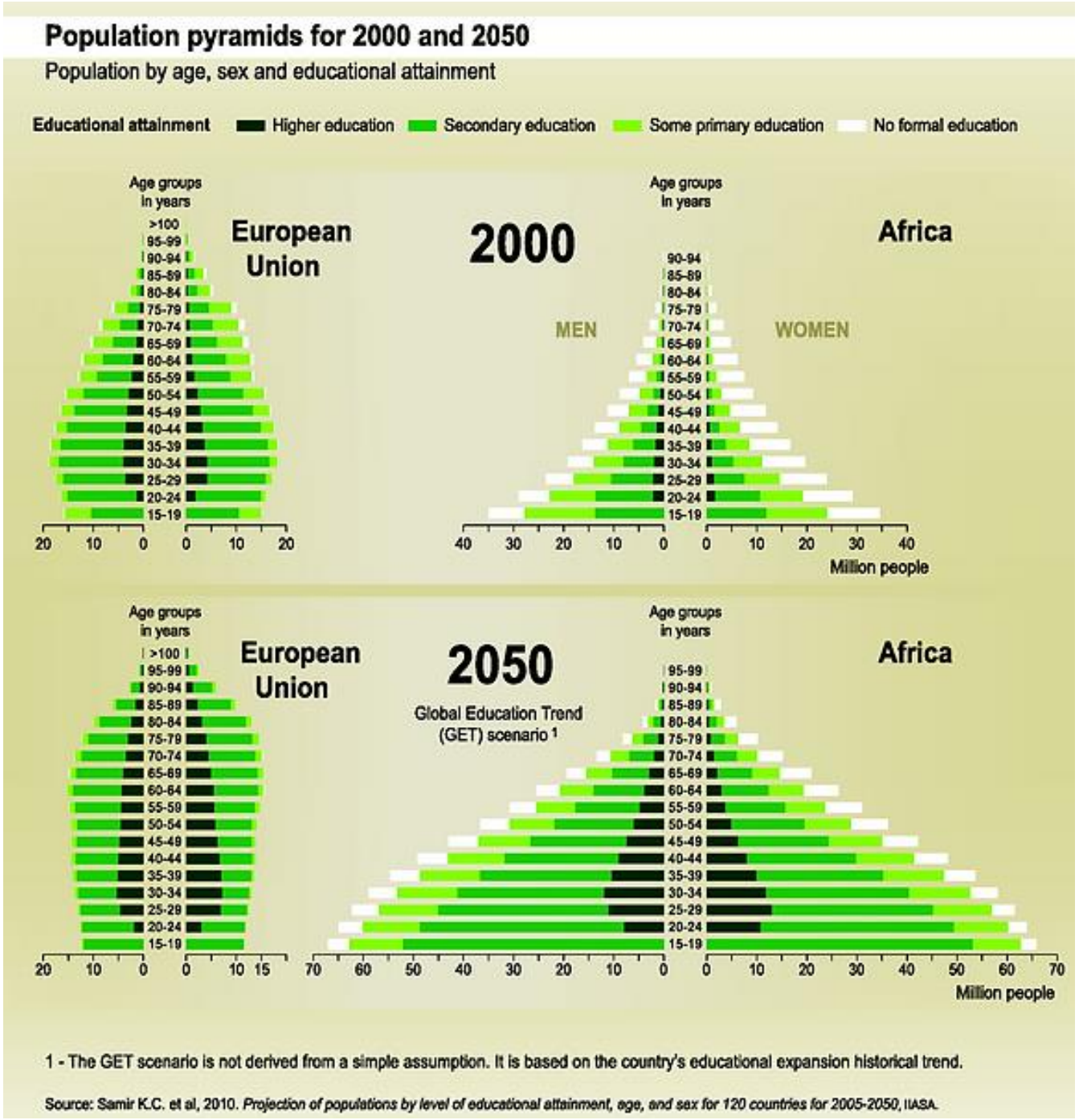
- Represents Age structure of a population.
- The age pyramid of India is typical of developing countries i.e. with a "BROAD BASE" and "TAPERING TOP".

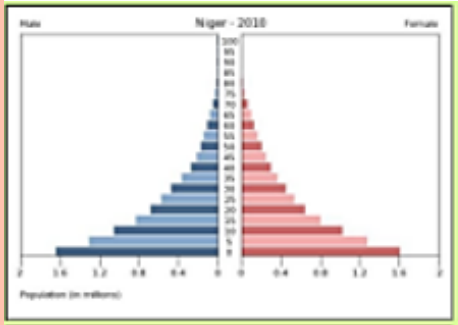
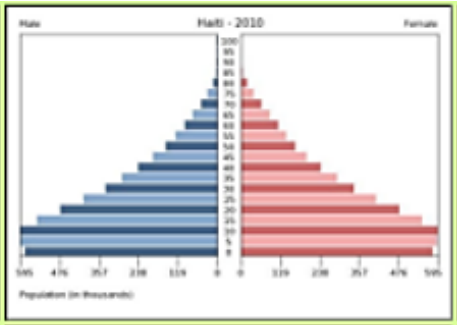
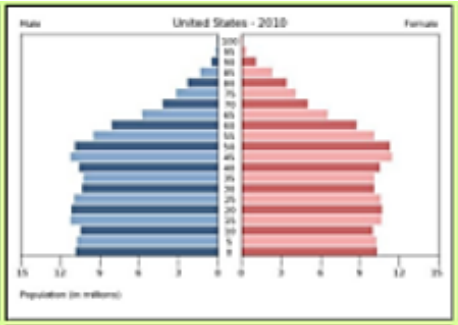
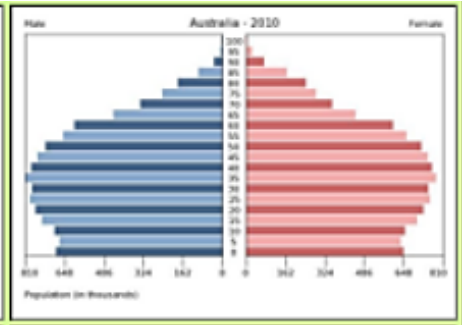


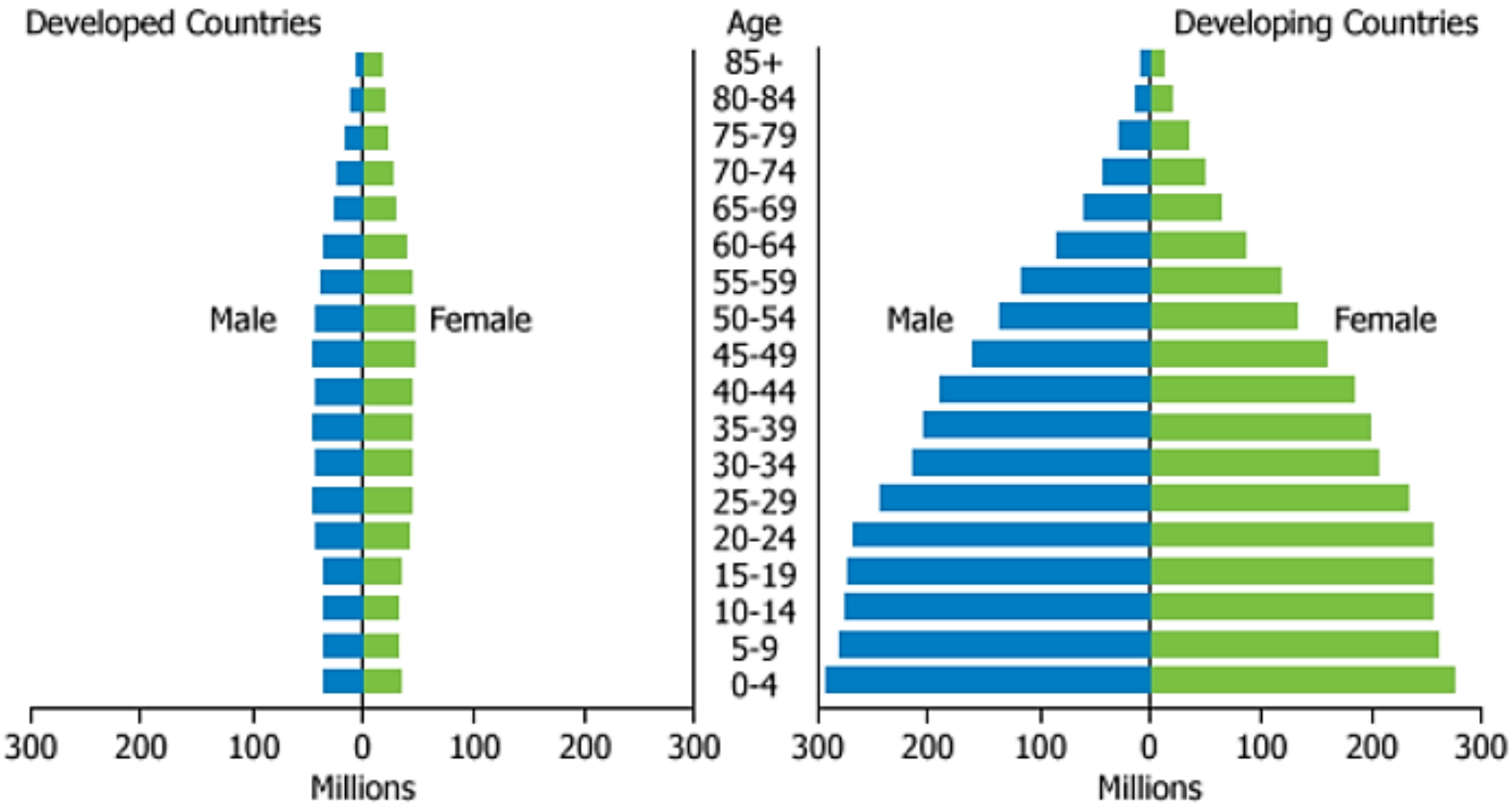
5/11

Source: Census 2011




Population pyramids for 2000 and 2050
Population by age, sex and educational attainment
Educational attainment
Higher education
Secondary education
Some primary education
No formal education
Age groups in years
European Union
2000
Africa
MEN
WOMEN
Million people
2050
Global Education Trend (GET) scenario 1
1 - The GET scenario is not derived from a simple assumption. It is based on the country's educational expansion historical trend.
Source: Samir K.C. et al, 2010. Projection of populations by level of educational attainment, age, and sex for 120 countries for 2005-2050, IIASA.

			
Stage 1	**Stage 2**	**Stage 3**	**Stage 4**
Expansive.	Expansive.	Stationary.	Contractive.
Concave sides.	Straight sides.	Convex sides.	Convex sides.
High birth rate.	Still high birth rate.	Declining birth rate.	Very low birth rate.
High death rate.	Falling death rate.	Low death rate.	Low death rate.
Short life expectancy.	Slightly longer life expectancy.	Long life expectancy.	Longer life expectancy.
Rapid fall in each upward age group due to high DR.	Fall in DR so more people living into middle age.	An increasing proportion of the population is in the 65+ age group.	Higher dependency ratio.
Niger	Haiti	Morocco	Australia
Economic development increases >>>>			


Developed Countries
Age
Developing Countries
85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
Male
Female
Male
Female
300
200
100
0
100
200
300
300
200
100
0
100
200
300
Millions
Millions