

DEMOGRAPHY -1

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DEMOGRAPHY

Demography is the scientific study of human population.

- It focuses its attention on three readily observable human phenomenon.
- 1. **Changes** in population size (growth or decline)
- 2. **Composition** of the population
- 3. **Distribution** of population in space

DEMOGRAPHY

Demography is the study of human populations concerning their size, distribution, structure and changes within them.

- **Size:** the number of persons in the population at a given time.
- **Distribution:** the arrangement of the population in space at a given time
- **Structure:** the distribution of the population among its sex and age groupings
- **Changes:** occur due to the growth or decline of the total population, resulting from births, deaths and in or out migration.

POPULATION STUDIES

Population studies are concerned not only with demographic variables (births, deaths, migration) but also with **relationship between population changes and other variables-**

- Social
- Economic
- Political
- Biological
- Genetic
- Geographical
- Environmental
- Health

POPULATION STUDIES

- **In general Population Studies:** take into account the effects of social, economic and health factors on population growth and vice versa.
- **In broader sense population studies:** is concerned with other characteristics of human beings such as :
 - Ethnicity (race, mother tongue)
 - Social characteristics (marital status, literacy, educational attainment, women's status)
 - Economic characteristics (employment status, occupation, income).

DEMOGRAPHIC PROCESSES

It deals with five demographic processes:

1. Fertility
 2. Mortality
 3. Marriage
 4. Migration
 5. Social mobility
- These five processes are at work within a population determining size, composition and distribution

DEMOGRAPHIC CYCLE

- The history of world population since 1960 suggests that there is a demographic cycle of 5 stages through which a nation passes:
 - a) First stage (High stationary)
 - b) Second Stage (Early expanding)
 - c) Third stage (Late expanding)
 - d) Fourth stage (Low stationary)
 - e) Fifth stage (Declining)

STAGES OF DEMOGRAPHIC CYCLE

- **First stage: (High stationary)** This stage is characterized by a high birth rate and a high death rate, which cancel each other and the population remains stationary.
- **Secondary Stage: (Early expanding)** The death rate begins to decline while the birth rate remains unchanged.
- **Third stage: (Late expanding)** The death rate declines still further and the birth rate tends to fall. The population continues to grow because births exceed deaths.

STAGES OF DEMOGRAPHIC CYCLE

- **Fourth Stage: (Low stationary)** There is low birth and low death rate with the result that the population becomes stationary.
- **Fifth Stage: (Declining)** The population begins to decline because birth rate is lower than death rate.

■ DEMOGRAPHIC TREND

Age-Sex Composition

Refers to the proportion of males and females in different age groups.

- This composition has a direct bearing on social, economic and health needs of communities or countries.
- In “**old**” population the society has to arrange for the care of elderly, and the health system of the country should be organized accordingly.
- In a “**young**” population the country has to provide more schools, immunization, and economic support of young.

Population Pyramid

Population Pyramid: A pictorial presentation of age sex composition of a population.

■ **Several factors can be ascertained by a glance at the chart :**

- The population is old or young
- What is the dependency ratio
- At what rate the population is increasing
- Was there a recent change in fertility or mortality of this population.

Population Pyramid

- The age pyramid of Pakistan is typical of **developing countries**, with a broad base and a tapering top.
- In the **developed countries** like Switzerland the pyramid generally shows the bulge in the middle and has a narrow base.

POPULATION PYRAMID

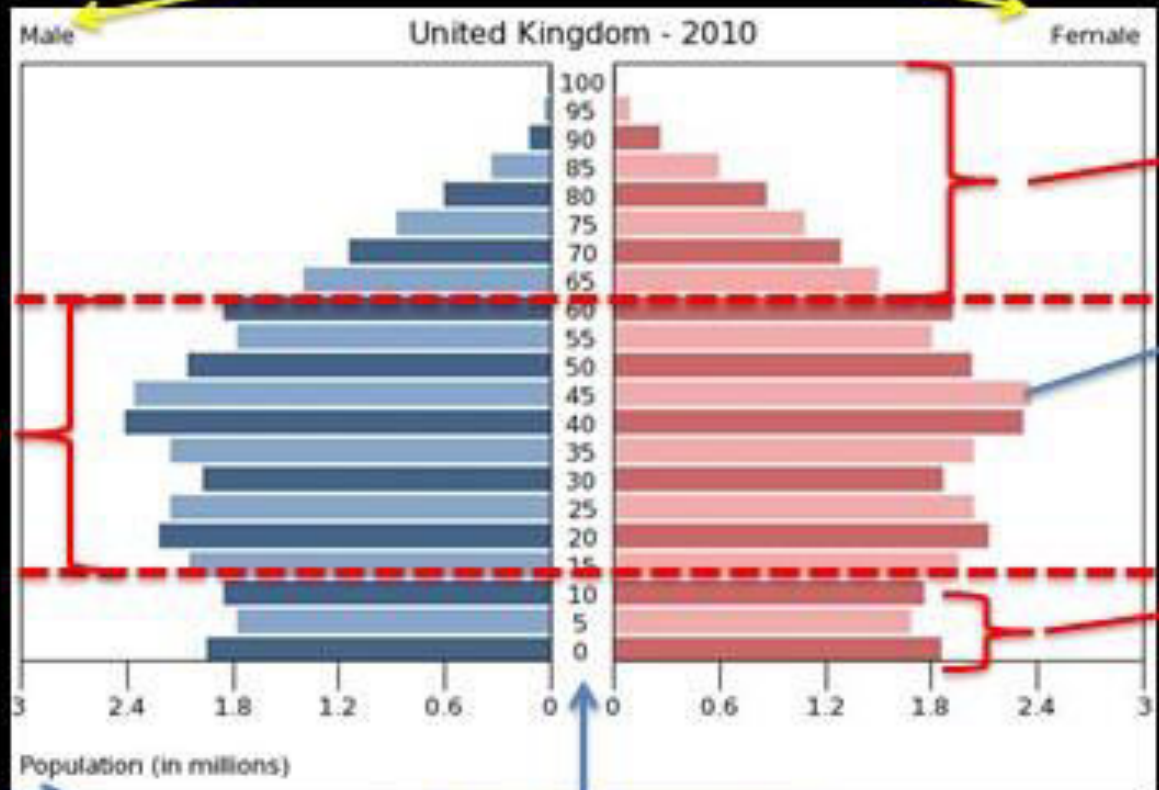
INTERPRETING POPULATION PYRAMIDS

The gender split of a country is indicated, look for differences!

Larger numbers indicate HIGH

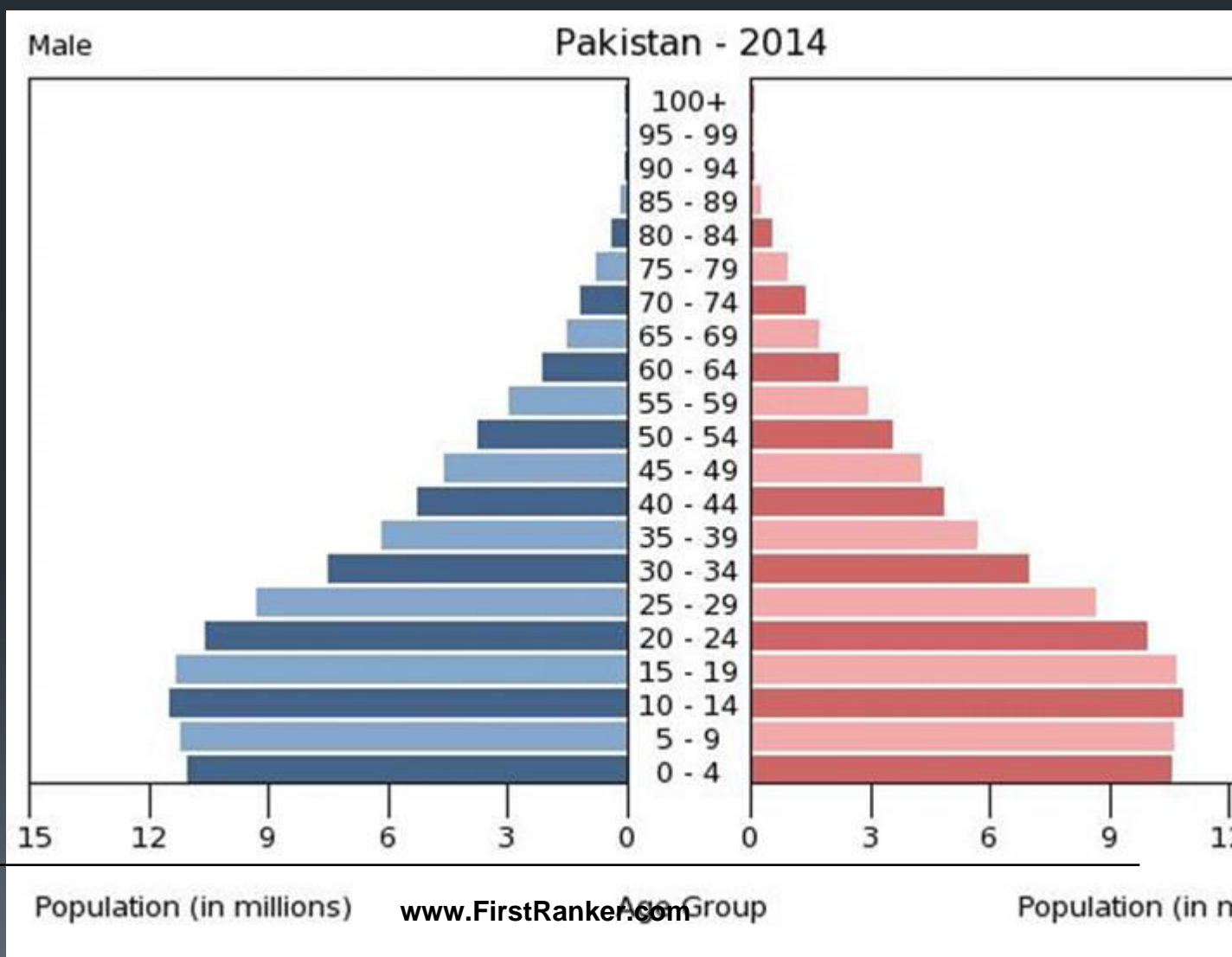
Working Age – how many people within the population are capable of working to sustain the 2 dependent groups

The population is expressed in Millions or %

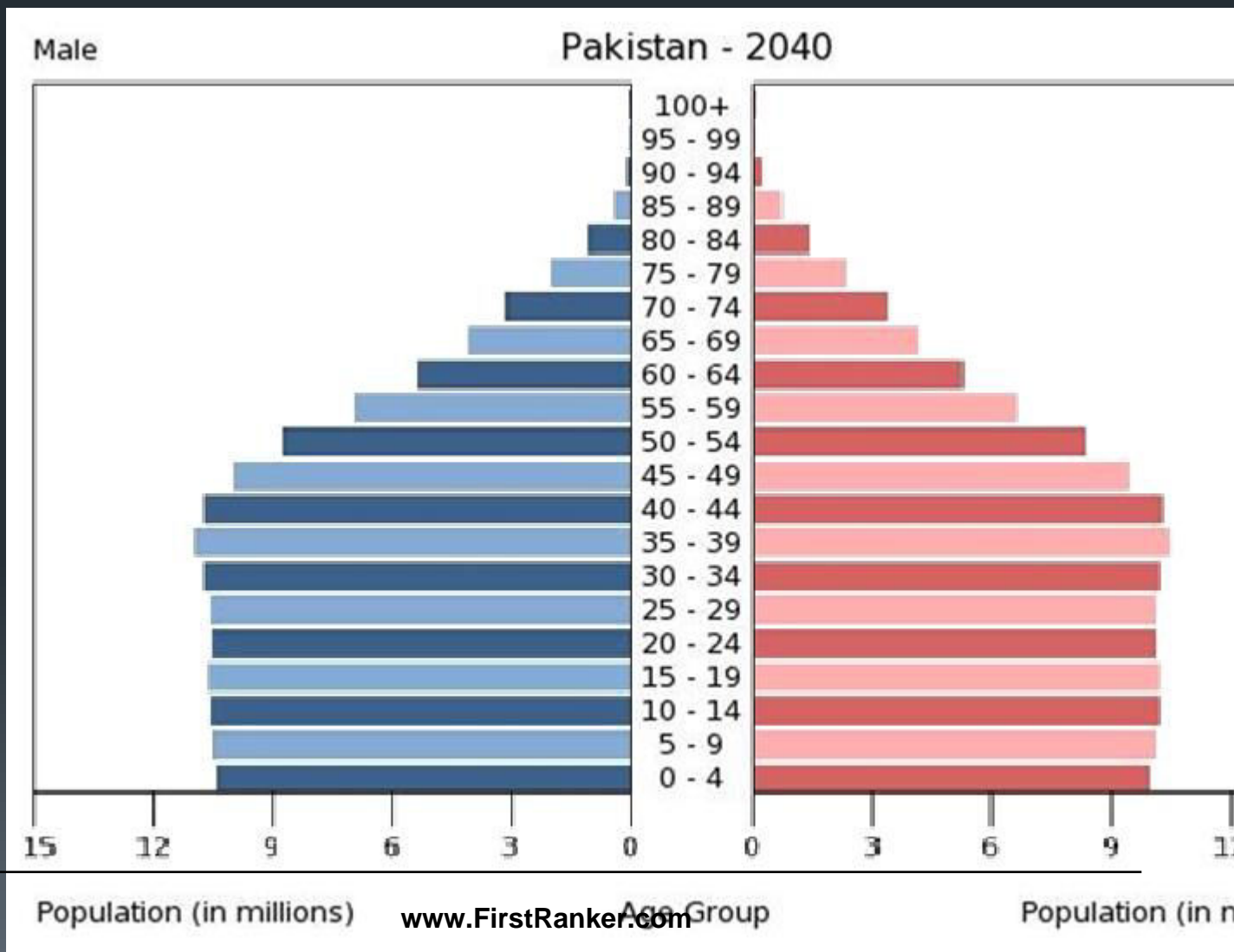


The age categories divide the population further

POPULATION PYRAMID PAKISTAN

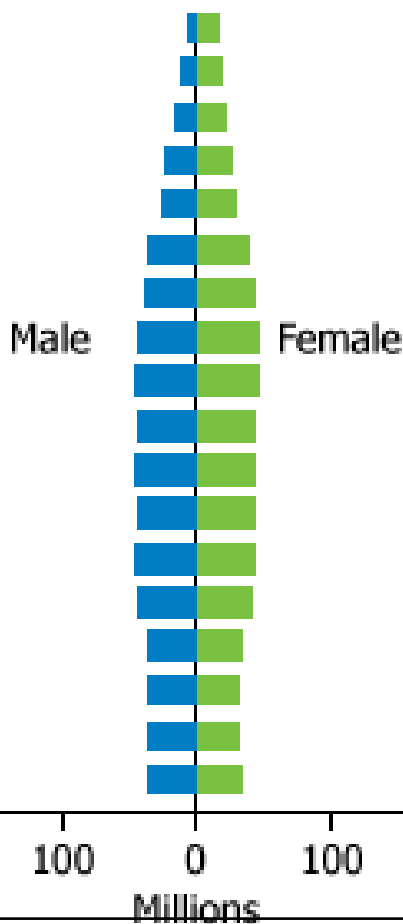


POPULATION PYRAMID PAKISTAN



POPULATION PYRAMID DEVELOPED VS DEVELOPING

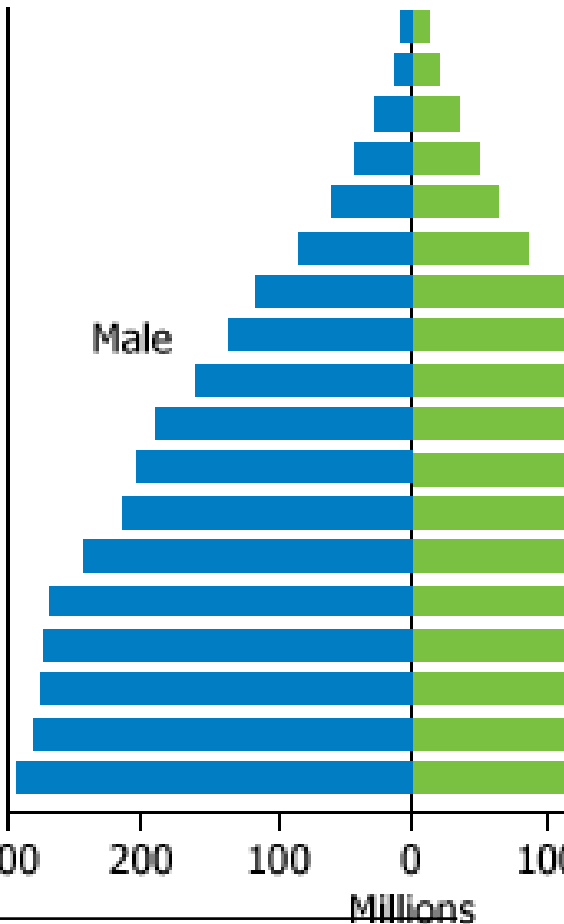
Developed Countries



Age

- 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

Developing Countries

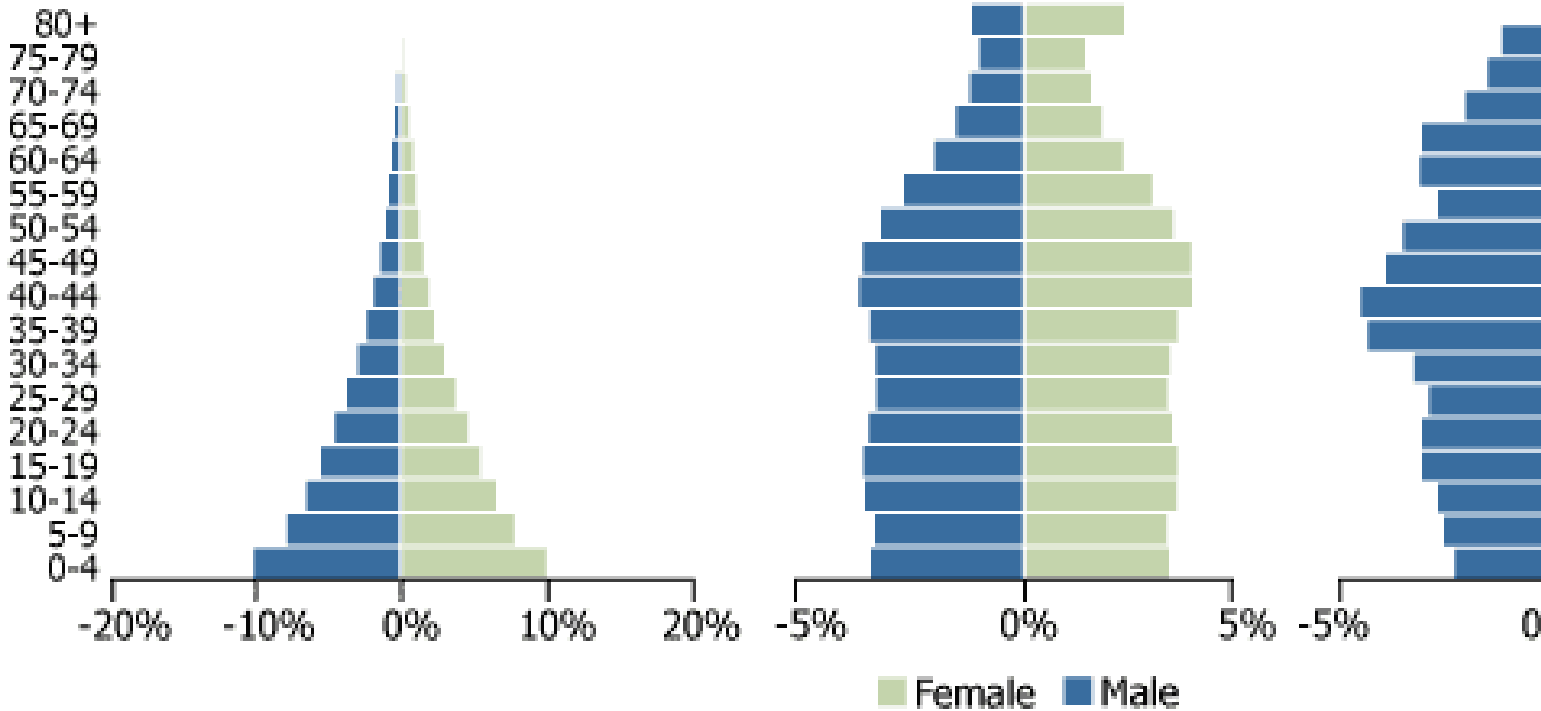


POPULATION PYRAMID DEVELOPED VS DEVELOPING

Rapid Growth
 Democratic Republic of Congo

Slow Growth
 United States

Negative Growth
 Germany



Sex Ratio

Sex Ratio: The number of females per thousand males.

- In any study of population, analysis of sex composition plays a vital role.
- **It is affected by:**
 - the differentials in mortality conditions of males and females
 - sex selective migration and
 - sex ratio at birth.

Dependency Ratio

The proportion of persons above 65 years of age and children below 15 years of age are considered to be dependent on the economically productive age group (15-64 years)

- **Total dependency Ratio:** The ratio of combined age group 0-14 years plus 65 years and above to the 15-64 years age group is referred to as the total dependency ratio. It is also referred to as,
- **Societal dependency ratio:** and reflects the need for a society to provide for their younger and old population groups. This can be sub divided into:
 - **Young age dependency ratio:** (0-14 years)
 - **Old age dependency ratio:** (65 years and more)

Density of Population

- It is one of the important indices of population concentration.
- **It is defined** as “the number of persons, living square kilometers”.

Family Size

- **Commonly family size means:** the total number of persons in a family.
- **In demography family size means :** the total number of children a women has borne at a point in time.
- **The completed family size indicates:** the total number of children borne by a women during her child bearing age group which is generally assumed to be between 15 and 45 years.

Family Size

- **Total fertility rates:** The approximate magnitude of the completed family size.
- **Dependent factors:** Duration of marriage, education of the couple, number of births and living children, preference of male children, desired family size.
- **Family planning:** Involves both decision regarding “desired family size” and the “effective limitation of fertility once that size has been reached”.

Urbanization

- Growing Urbanization is a recent phenomenon in the developing countries.
- The increase in urban population has been attributed both to natural growth (through births and migration through villages
- **Because of:**
 - Employment opportunities
 - Attraction for better living conditions
 - Availability of social services such as education, health, transport, entertainment

- **Net- Migration:** The total number of persons added or subtracted from a population as a result of the combined effect of immigration and emigration (In-migration- out-migration)
- **Population Growth Rate:** The rate at which a given population is expected to increase in a given period of time. It is shown in percentage per year

- **Population Doubling time:** The time that would take for a population to double.
- **Formula:** Population increase is on the compound interest formula, 1 % per year increase would cause the population to double in about 70 years.
- If the population is increasing at 3 % per year the doubling time will be $70 \div 3 = 23.3$ years.

Literacy and education

- The benefits of having a literate population are multidimensional.
- Spread of literacy is associated with modernization, urbanization, industrialization, communication and commerce.
- **A person is deemed as literate:** If he or she can read and write with understanding in any language. A person who can merely read but cannot write is not considered as literate.

Literacy and education

- **Crude Literacy Rate:** The Literacy rate taking account the total population in the denominator

Life Expectancy

- **Life expectancy or expectation of life:** at a given age is the average number of years which a person of that age may expect to live, according to the mortality pattern prevalent to that country.
- This is considered as one of the best indicators of a country's level of the overall health status of population.

FERTILITY

Fertility / Natality: The actual bearing of children

- **Woman's reproductive age:** 15-45 years of age (period of 30 years).
- A women married at 15 and living till 45 years with her husband is exposed to the risk of pregnancy for 30 years, and may give birth to 15 children, the maximum is rarely achieved.
- **The higher fertility is attributed to several factors:** Universality of marriage, lower age of marriage, low level of literacy, poor level of living, limited use of contraceptives and traditional way of life.

FACTORS AFFECTING FERTILITY

1. Age at marriage: The females who get married before the age of 18 years of age give rise to a greater number of children as compared to those who get married after 20 years. The national average for effective marriage is **20.5 years**.
2. Duration of married life: 10-25 percent of all births occur within 1-5 years of married life, 55 percent of all births within 5-15 years of married life. Birth after 25 years of life are very rare.

FACTORS AFFECTING FERTILITY

3. Spacing of children: When all the births are postponed by one year in each group there is a decline in total fertility.

It follows that spacing in children has a significant impact in the fertility rates.

FACTORS AFFECTING FERTILITY

4. **Education:** There is an inverse relationship between educational level and fertility. Survey show that the total fertility level is 1.7 children higher for illiterate women than for women with at least a high school education.
5. **Economic Status:** Economic Status bears an inverse relation with fertility. The total number of children born declines with an increase in per capita expenditure of the household. It is a known fact that economic development is the best contraceptive.

FACTORS AFFECTING FERTILITY

- 6. Caste and Religion:** Muslims have a higher fertility rate as compared to Hindus. A fertility rate of 3.9 among Muslims, 2.65 among Hindus and 2.35 in Christians.
- 7. Nutrition:** The effect of nutrition on fertility is largely indirect. Virtually all well-fed societies have low fertility and poorly fed societies high fertility.

FACTORS AFFECTING FERTILITY

8. **Family planning**: Family planning is another important factor in fertility reduction. In a number of developing countries, family planning has been a key factor in declining fertility.
9. **Other Factors**: Fertility is affected by a number of physical, biological, social and cultural factors such as place of women in society, value of children in society, widow remarriage, breast feeding, customs and beliefs, industrialization and urbanization.

FERTILITY- RELATED STATISTICS

Fertility may be measured by a number of indicators given below:

1. Birth Rate
2. General Fertility Rate
3. General Marital Fertility Rate
4. Age Specific Fertility Rate
5. Age Specific Marital Fertility Rate
6. Total Fertility Rate
7. Total Marital Fertility Rate

FERTILITY- RELATED STATISTICS

9. Gross Reproduction Rate
10. Net Reproduction Rate
11. Child-Woman Ratio
12. Pregnancy Rate
13. Abortion Rate
14. Abortion Ratio
15. Marriage Rate

1. Birth Rate

- It is “the number of live births per 1000 estimated mid-year population, in a given year”.

$$\text{Birth Rate} = \frac{\text{Number of live births during the year}}{\text{Estimated mid-year population}} \times 1000$$

- This is an unsatisfactory measure of fertility because the population is not exposed to child bearing. Therefore it does not give a true idea of the fertility of a population

2. General Fertility Rate (GFR)

- It is “the number of live births per 1000 women in the reproductive age-group (15-44 or 49 years) in a given year”

$$\text{GFR} = \frac{\text{Number of live births in an area during the year}}{\text{Mid-year female population age 15-44 (or 49) in the same area in same year}}$$

- This is a better than the crude birth rate because the denominator is restricted to the number of women in the child-bearing age rather than the whole population.
- The major weakness of this rate is that not all women in the denominator are exposed to the risk of childbirth

3. General Marital Fertility Rate (GMFR)

- It is the “number of live births per 1000 married women in reproductive age group (15-44 or 49) in a given year”

$$\text{GMFR} = \frac{\text{Number of live births in a year}}{\text{Mid-year married female population in age-group 15 - 49}}$$

4. Age-specific Fertility Rate (ASFR)

- It is the “number of live births in a year to 1000 women in a specified age-group”.

$$\text{ASFR} = \frac{\text{Number of live births in a particular age group}}{\text{Mid-year female population of the same age-group}}$$

- It is a more precise measure of fertility pattern. They are sensitive indicators of family planning achievement.

5. Age-specific Marital Fertility Rate (ASMFR)

- It is “the number of live births in a year to 1000 married women in any specified age group”.

$$\text{ASMFR} = \frac{\text{Number of live births in a particular age group}}{\text{Mid-year married female population of the same age-group}}$$

6. Total Fertility Rate (TFR)

- It is the average number of children a woman would have if she were to pass through her reproductive years bearing children at the same rate as the women now in each age group.
- It is computed by summing the age-specific fertility rates for all reproductive ages; if 5-year age groups are used, the sum of the rates is multiplied by 5. This measure gives the approximate magnitude of the **“completed family size”**.

$$\text{TFR} = \frac{5 \times \sum_{15-19}^{40-49} \text{ASFR}}{1000}$$

7. Total Marital Fertility Rate (TMFR)

- Average number of children that would be born to a woman if she experiences the current fertility pattern throughout her reproductive span.

$$\text{TMFR} = \frac{5 \times \sum_{15-19}^{40-49} \text{ASMFR}}{1000}$$

8. Gross Reproduction Rate (GRR)

- Average number of girls that would be born to a woman experiences the current fertility pattern through reproductive span (15-44 or 49 years), assuming no mortality

$$\text{TMFR} = \frac{5 \times \sum_{15-19}^{40-49} \text{ASFR for female live births}}{1000}$$

9. Net Reproduction Rate (NRR)

- It is “the number of daughters a newborn girl will bear d lifetime assuming fixed age-specific fertility and mortality”
- It is a demographic indicator.
- NRR of 1 is equivalent to attaining approximately the replacement level norm. If the NRR is less than 1, then the reproductive performance of the population is said to be below replacement level.

10. Child-woman Ratio

- It is the number of children 0-4 years of age per 1000 women in the child-bearing age, usually defined as 15-44 or 49 years of age.
- It is used where birth registration statistics either do not exist or are inadequate and is estimated through data derived from population censuses.

11. Pregnancy Rate

- It is the ratio of number of pregnancies in a year to the number of women in the age 15-44 (or 49) years.
- The “**number of pregnancies**” includes all pregnancies, whether these had terminated as live births, stillbirths, abortions or had not yet terminated.

12. Abortion Rate

- The annual number of all types of abortions, usually women of child-bearing age (usually defined as age 15-4

13. Abortion Ratio

- This is calculated by dividing the number of abortions per during a particular time period by the number of live bi the same period

14. Marriage Rate

It is the number of marriages in the year per 1000 population

$$\text{Crude Marriage Rate} = \frac{\text{Number of marriages in the year}}{\text{Mid-year population}}$$

This a very unsatisfactory rate, because the denominator comprised primarily of population that is not eligible to marry

A more sensitive rate is the general marriage rate:

$$\text{General Marriage Rate} = \frac{\text{Number of marriages within one year}}{\frac{\text{Number of unmarried persons age 15-49}}{\text{years}}}$$

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THANKS