DEMOGRAPHY
(STUDY OF POPULATION)

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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 15-65 years age group is referred to as the total dependency ratio. It can be sub divided into:

o **Young age dependency ratio:** (0-14 years)

o **Old age dependency ratio:** (65 years and more)

DEPENDENCY RATIO

Total Dependency Ratio

=   Children 0-14 Years of age +population 65 Years And Above * 100

population of 15 To 64 Years

Dependency ratio for Pakistan is approx 84%

FERTILITY

- By fertility is meant the actual bearing of children by woman.

- A women reproductive period is roughly from 15 to 45 years- a period of 30 years.

- A women married at the age of 15 and living with her husband is exposed to the risk of pregnancy for 30 years and may give birth to 15 children.

FERTILITY

- Age at marriage
- Duration of married life
- Spacing of children
- Education
- Economic status
- Religion
- Nutrition
- Family planning
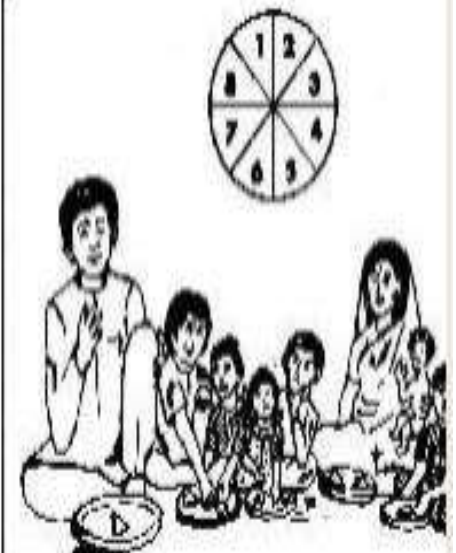
FACTORS AFFECTING FERTILITY

1. **Age at marriage:** The females who get married before the age of 18 years of age give rise to 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 the births occur within 1-5 years of married life, 50-55 percent of all births within 5-15 years of married life. Birth after 25 years of life are very rare.

FACTORS AFFECTING FERTILITY

3. <u>Spacing of children</u>: 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. Surveys 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 house hold. 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 facts, 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".

$$\frac{\text{No of Live births during the year}}{\text{Estimated mid year population}} \times 1000$$

- This is an unsatisfactory measure of fertility because the total 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"

$$\frac{\text{No of live births in area during the year}}{\text{Mid yr female population age 15-44 in same yr \& area}} \quad \mathbf{X} \quad 1000$$

- 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 the reproductive age group (15-44 or 49) in a given year"

$$GMFR = \frac{\text{Number of live births in a year}}{\text{Mid-year married female population in age-group 15 - 49}} \times 1000$$

4. Age-specific Fertility Rate (ASFR)

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

$$\frac{\text{No of live births in particular age group}}{\text{Mid yr female population of same age group}} \quad \text{X} \quad 1000$$

- It is a more precise measure of fertility pattern. They are also 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".

$$ASMFR = \frac{\text{Number of live births in a particular age group}}{\text{Mid-year married female population of the same age-group}} \times 1000$$

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 fatality rates for all ages; if 5-year age groups are used, the sum of the rates is multiplied by 5. This measure gives the approximate magnitude of **"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 married woman if she experiences the current fertility pattern throughout her reproductive span.

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

8. Gross Reproduction Rate (GRR)

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

9. Net Reproduction Rate (NRR)

- It is "the number of daughters a newborn girl will bear during her lifetime assuming fixed age-specific fertility and mortality rates" .

- It is a demographic indicator.

- NRR of 1 is equivalent to attaining approximately the 2-child 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 of 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 censuses

11. Pregnancy Rate

- It is the ratio of number of pregnancies in a year to married women in the age 15-44 (or 49) years.

- The **"number of pregnancies"** includes all pregnancies, whether these had terminated as live births, stillbirths or abortions or had not yet terminated.

12. Abortion Rate

- The annual number of all types of abortions, usually per 1000 women of child-bearing age (usually defined as age 15-44)

13. Abortion Ratio

- This is calculated by dividing the number of abortions performed during a particular time period by the number of live births over the same period

14. Marriage Rate

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

$$\text{Crude Marriage Rate} = \frac{\text{Number of marriages in the year}}{\text{Mid-year population}} \times 1000$$

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

A more sensitive rate is the general marriage rate:

$$\text{General Marriage Rate} = \frac{\text{Number of marriages within one year}}{\text{Number of unmarried persons age 15-49 years}} \times 1000$$

MIGRATION

- Migration affects population patterns
- **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)

➤**IMMIGRATION** Happens when one enters the country of destination but not permanently.

➤**EMIGRATION** Happens when one leaves ones's country in order to move into another permanently.

emigration

immigration

Population I
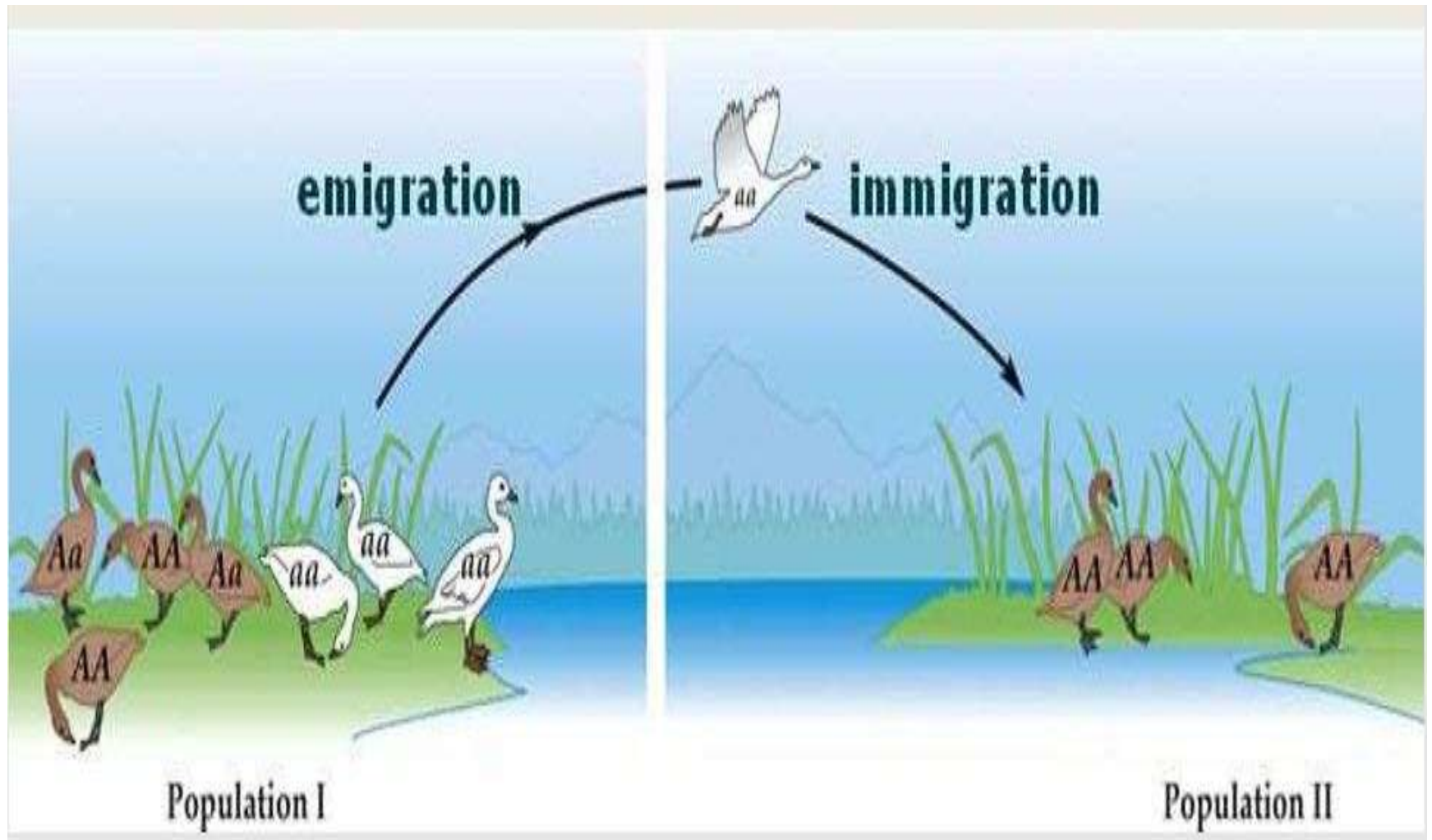
Population II

URBANIZATION

- The increase in urban population has been attributed both to natural growth (through births) and migration through villages

- RURAL ➡ URBAN

- CAUSES OF URBANIZATION:
  ➤ Better employment opportunities
  ➤ Better living standards
  ➤ Better availability of social services like Education, Health, Transport, Entertainment etc
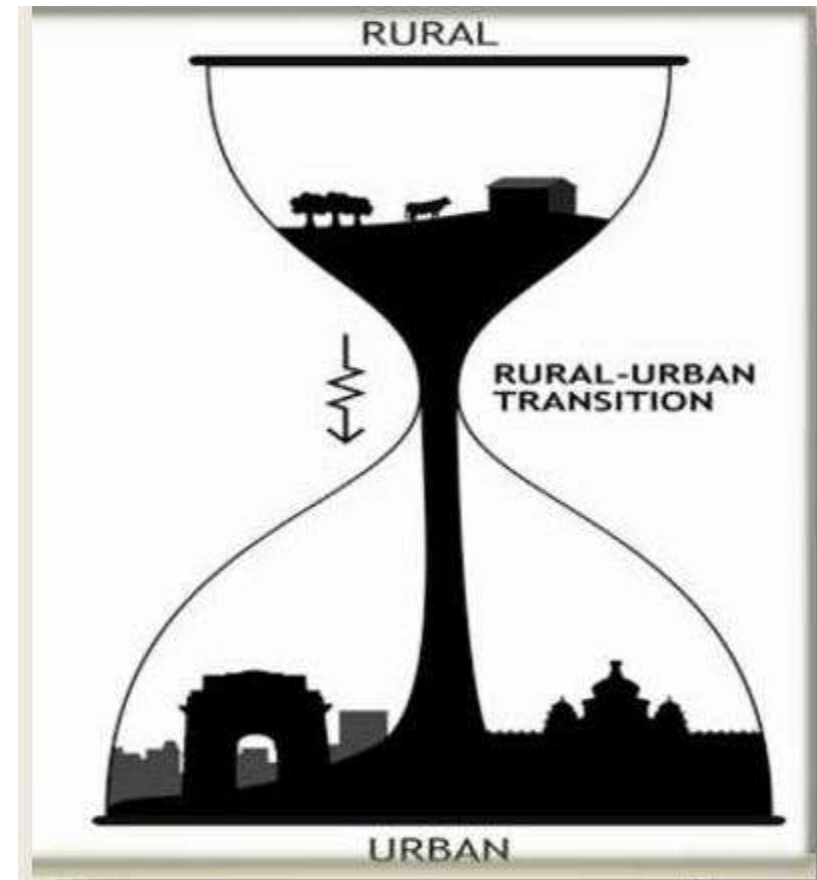
Problems Due to Urbanization

1.   Water and sanitation

2.   Transportation

3.   Health

4.   Education

5.   Land Management

6.   Housing quality

- **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.

Growth Rate

Crude birth rate – Crude death rate

Population Doubling time:

The time that would take for a population to double.

Population Doubling time = $\dfrac{70}{\text{Growth rate of the area}}$.

If the population is increasing at 3 % per year then doubling time will be 70 divided by 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.

- **Crude Literacy Rate:** The Literacy rate taking into 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 its population.

MORTALITY

- Mortality data serve as an important indicators of socio economic and health progress made in one of the of most universal concern :

  ❖   the lengthening of life

  ❖   avoidance of pre mature death.

- Besides they help to identify target groups needing special attention and are useful in evaluating the existing health programs.

Reasons for High Mortality in the Past

1. **Acute and chronic food shortages causing famine and malnutrition:** According to United Nations in Western Europe alone 450 famines were recorded between year 1000-1855

2. **Epidemic diseases:** Epidemics of plague, cholera, small pox, typhus and other contagious diseases were until recently quite common through out the world.

3. **Poor public health conditions:** Sanitary conditions have been poor throughout most of the recorded human history. Many cities until recently lacked proper water supply and sewage system which caused many epidemics

Causes of Rapid Mortality Decline

1. Increase Agriculture Production
2. Industrialization
3. Improved transportation
4. Special reforms
5. Control of temperature and humidity
6. Public sanitation
7. Improved personal hygiene
8. Immunology

Mortality Measures

Basic measures:

1. Crude Death rate
2. Life expectancy at birth

Other measures:

1. Infant Mortality Rate
2. Neonatal Mortality Rate
3. Perinatal mortality Rate
4. Maternal Mortality Ratio

Mortality differentials

- Mortality varies quite substantially with various characteristics of the population. Two such major characteristics are

- **Age:**

  A person has the highest risk of dying during the first year of life, declines gradually and again increases during the older ages. Thus the age- specific mortality follows a **U shaped curve.**

- **Gender :**

  Male and female show similar age-specific curves, however females show lower mortality rates than males.

- **These differences** are generally attributed to inherent biological superiorities of females and occupational hazards faced by men.

PAKISTAN DEMOGRAPHIC DATA

- Population : 218842547
- Growth Rate : 2.10
- Death Rate : 7.5/1000
- Birth Rate: 29.8/1000
- Fertility Rate: 2.68/woman
- Infant mortality rate: 53.86/1000 live birth

CONCLUSION

- Health status of a community depends upon the dynamic relationship between the number of people, their composition and distribution.

- Planning of health services can be guided by demographic variables

THANK YOU