

Equation for unit 4

Given the following demographic characteristics for a given country:

- **Annual Live Births:** 300,000
- **Midyear Population:** 15,000,000
- **Annual Deaths:** 80,000
- **Rural Population:** 6,000,000
- **Arable Land Area:** 500,000 sq. km
- **Annual Infant Deaths:** 5,000
- **Women Aged 15-49:** 1,200,000
- **Maternal Deaths:** 800
- **Working-Age Population:** 6,000,000
- **Young and Old Population (Dependents):** 4,000,000
- **Male Population:** 4,900,000
- **Female Population:** 5,100,000
- **Life Expectancy at Birth:** 72 years

Based on this demographic data, please compute the following demographic measures and provide interpretations along with their implications:

1. **Crude Birth Rate (CBR)**
2. **Crude Death Rate (CDR)**
3. **Natural Rate of Increase (NRI)**
4. **Infant Mortality Rate (IMR)**
5. **General Fertility Rate (GFR)**
6. **Maternal Mortality Rate (MMR)**
7. **Life Expectancy at Birth**
8. **Age Dependency Ratio**
9. **Sex Ratio**
10. **Physiological Density**
11. **Agricultural Density (Rural Density)**

Answer

1. Crude Birth Rate (CBR): The crude birth rate is 20 live births per 1,000 people. A moderate birth rate suggests the population is growing, but not at an explosive rate. It is an important indicator for understanding the reproductive trends in a country.
2. Crude Death Rate (CDR): The crude death rate is 5.33 deaths per 1,000 people. This relatively low death rate suggests that public health services may be improving, and the population is living longer, which could be due to advancements in healthcare, nutrition, and disease control.
3. Natural Rate of Increase (NRI): The natural rate of increase is 14.67 per 1,000 people, indicating a positive population growth rate. This means that, without considering migration, the population is growing at a moderate pace.
4. Infant Mortality Rate (IMR): The infant mortality rate is 16.67 deaths per 1,000 live births. This suggests that infant health conditions are improving, but there is still room for significant improvement in maternal and child healthcare services.
5. General Fertility Rate (GFR): The general fertility rate is 250 births per 1,000 women of reproductive age. This suggests a moderately high level of fertility in the population, though it is not exceedingly high, which indicates that fertility levels are somewhat stable.
6. Maternal Mortality Rate (MMR): The maternal mortality rate is 266.67 deaths per 100,000 live births, which is relatively high. This suggests that maternal healthcare services, including prenatal and childbirth care, need significant improvement.
7. Life Expectancy at Birth: Life expectancy at birth is 72 years, indicating a relatively high life expectancy, suggesting good healthcare, nutrition, and overall living conditions. However, disparities may exist within different regions or population groups.

8. Age Dependency Ratio: The age dependency ratio is 66.67%, meaning that for every 100 working-age people, there are approximately 67 dependents. This suggests a moderate burden on the working population, which may affect economic productivity and social welfare systems.
9. Sex Ratio: The sex ratio is 96.08 males per 100 females, which is slightly below 100, indicating a slightly higher female population. This is typical in many countries and may reflect differences in life expectancy between the sexes.
10. Physiological Density: The physiological density is 30 people per square kilometer of arable land, which indicates that the land is relatively well-utilized for agriculture. However, high physiological density can indicate pressure on agricultural resources, particularly in densely populated regions
11. Agricultural Density (Rural Density): The agricultural density is 12 people per square kilometer of arable land in rural areas, indicating a low population density in agricultural areas. This suggests that agricultural land may be underutilized or that the population in rural areas is spread out.