

Chapter

2 Population and Health

KEY ISSUE 1

Where Is the World's Population Distributed?

This chapter describes **population distribution**, the spatial distribution of people on Earth's surface, and where population is growing. The chapter then explains why population is growing at different rates in different places. It discusses the extent to which certain regions of the world may be facing an overpopulation problem.

Learning Outcome 2.1.1: Describe regions where population is clustered and where it is sparse.

Two-thirds of the world's people live in four clusters—East Asia, South Asia, Europe, and Southeast Asia.

Learning Outcome 2.1.2: Define three types of density used in population geography.

Arithmetic density is used to describe where people live in the world. Physiological density compares population to resources. Agricultural density measures economic efficiency of food production.

The study of population geography or **demography** is very important because there are more than seven billion people alive today, the growth of the world's population has been most rapid in the last century, and the fastest growth today is in the developing world. Population related issues are key to other chapters especially development, agriculture, and urbanization.

Where are all of these people? Two-thirds of the world's population is clustered in four regions—East Asia, South Asia, Europe, and Southeast Asia. The clustering of the world's population can be shown on a **cartogram**, which depicts the size of countries according to population rather than land

area (Figure 2.2 in your textbook). Approximately two-thirds of the world's population lives within 500 kilometers of an ocean. China and India each have over a billion people and together hold over one-third of the world's population. The largest percentages of people in Asia live in rural areas, whereas three-quarters of all Europeans live in towns and cities.

The above overview of world population is at a global level and thus necessarily generalized. The analysis of population patterns at different scales, including continental, national, state, or provincial, and local will reveal different trends and patterns.

The harsh physical environments of Earth's surface, including deserts, tropical rainforests, mountain, and polar regions, are understandably sparsely populated. The portion of the Earth's surface occupied by permanent human settlement is called the **ecumene**.

Arithmetic density (also called **population density**) is a misleading measure of the distribution of people because it is the total number of people divided by the total land area. For example to say that the arithmetic population density of Egypt is 80 people per square kilometer hides the fact that the vast majority of that country's population live in the delta and valley of the Nile River, and much of the country is virtually uninhabited.

Physiological density is a more useful measure of population because it is the number of people supported by a unit area of arable land. The physiological population density of Egypt is 2,296 people per square kilometer, which is a very good measure of the pressure on agricultural land in that country.

Agricultural density is the ratio of the number of farmers to the amount of agricultural land. Countries like Canada and the United States have much lower agricultural densities than less developed countries like India and Bangladesh. In more developed countries technology related to agriculture allow a few farmers to work huge area of land and feed many people. Thus agricultural density and physiological density are good measures of the relationship between population and resources together with the level of development in a country.

Key Issues Revisited

2.1. Where is the world's population distributed?

- The world's population is concentrated in a few places
- People tend to avoid places that they consider to be too wet, too dry, too cold, or too mountainous

Review Questions

2.1.1. The study of populations is

- A. physiography.
- B. democracy.
- C. demography.
- D. ethnography.
- E. biology.

2.1.2. Most of the world's population is clustered into these four areas:

- A. East Asia, South Asia, Europe, and Southeast Asia.
- B. Europe, East Asia, South Asia, and Africa.
- C. East Asia, South Asia, Southeast Asia, and Africa.
- D. South Asia, Southeast Asia, Europe, and Africa.
- E. South Asia, Southeast Asia, East Asia, and Europe.

KEY ISSUE 2

Why Is Global Population Increasing?

Learning Outcome 2.2.1: Understand how to measure population growth through the natural increase rate.

The natural increase rate is the percentage by which a population grows in a year.

Learning Outcome 2.2.2: Understand how to measure births and deaths through CBR and CDR.

The CBR is the total number of live births in a year for every 1,000 people alive. The CDR is the total number of deaths per 1,000 people.

Learning Outcome 2.2.3: Understand how to read a population pyramid.

A population pyramid displays the percentage of population by age and gender. A pyramid with a broad base means a country has a relatively high percentage of young children.

The crude birth rate, crude death rate, and natural increase rate are used to measure population change in a country. The **crude birth rate (CBR)** or **natality rate** and **crude death rate (CDR)** are statistical terms that refer to the total number of live births and deaths respectively per thousand people in a country. Where the CBR is higher than the CDR, **natural increase (NIR)** occurs. This does not account for migration. If the CDR is about the same as the CBR a country has **zero population growth (ZPG)**. If the CDR is higher than the CBR, there is a **negative NIR**. The **demographic equation** is the global difference between births and deaths.

During the first decade of the twenty-first century the world rate of natural increase was 1.2%, which meant that the world's population was growing each year by 1.2%. It would take the world 54 years to double its population given this rate of growth; this is called **doubling time**. During the 1960s and 1970s the world's doubling time was about 35 years because the NIR was 2.2%.

It is important to understand there are major regional differences in rates of population growth. The NIR exceeds 2% in many countries in sub-Saharan Africa. Indeed most of the world's population growth is now in developing countries. At the other extreme some Western European countries are now

experiencing negative population growth, such as Germany, which has a NIR of -0.2% . China, the most populous country in the world, has done much in terms of government mandates to lower its population growth rates. India will soon surpass China as the most populous country in the world.

The highest crude birth rates are in Africa and the lowest are in Europe and North America. The **total fertility rate (TFR)** is used by demographers to measure the number of births in a country. The TFR is the average number of children a woman will have during her childbearing years (ages 15 through 49). In some cases, like in Nigeria, Uganda, and Angola, the TFR exceeds six.

The **infant mortality rate (IMR)** is the annual number of deaths of infants under one year of age, compared with total live births, and is usually expressed as number of deaths per 1,000 births. IMR is a measure of a country's level of health care, and the highest rates are in less developed countries. The other useful measure of mortality is **life expectancy**. This is the number of years a newborn infant can expect to live at current mortality levels. Life expectancy rates are sometimes twice as high in developed countries than in developing countries, for instance the life expectancy in Lesotho is only 48 years, whereas it is 82 years in France.

The **age-sex distribution (ratio)** of a country's population can be shown on a **population pyramid**. It will show the distribution of a country's population between males and females of various ages. The country's **sex ratio** is the number of males per 100 females. A population pyramid will normally show the percentage of the total population in five-year age groups, with the youngest group at the base of the pyramid and the oldest group at the top. Males are usually shown on the left and females on the right. Each age-sex group is called a population **cohort**. Population pyramids can tell us much about the population history of a country. A pyramid with a wide base shows a rapidly growing country with a large proportion of young people, and is typical of a less developed country. A pyramid that is more rectangular depicts a country with a relatively even number of young, middle-aged, and older people, and is typical of a more developed country. Population pyramids are also useful tools to analyze and predict future population growth. Such a usage is referred to as **population projection**.

The **dependency ratio** is the percentage of people in a population who are either too old (over

65) or young (0–14) to work and thus must be supported by others.

Key Issues Revisited

2.2. Why is global population increasing?

- Most of the world's natural increase is in the LDCs of Africa, Asia, and Latin America
- Most European and North American countries now have low population growth rates, and some are experiencing population decline
- The difference in rates of natural increase between MDCs and LDCs is mainly due to differences in CBRs rather than CDRs

Review Questions

2.2.1. With a NIR of 1.2% the world's population would double in approximately _____ years.

- A. 35 years
- B. 87 years
- C. 54 years
- D. 7 years
- E. 110 years

2.2.2. The region with the highest TFR is

- A. Europe.
- B. North Africa.
- C. Sub-Saharan Africa.
- D. India.
- E. China.

1. Define **population distribution**
2. Define **demography**
3. When and where has been the most rapid population growth?
When?
Where?
4. 2/3 of the world's population is clustered in what four regions?
5. What is a cartogram?
6. What two countries have the largest population?
7. Which four regions are sparsely populated?
 - 1.
 - 2.
 - 3.
 - 4.
8. What is **arithmetic density** and how is it computed?
9. What is **physiological density**?
10. What is **agricultural density**? Why do countries like Canada and the US have much lower agricultural densities than less developed countries like India and Bangladesh?
11. What are agricultural density and physiological density good measures of?

12. Review Question 2.1.1. The study of populations is
 - A. physiography
 - B. democracy
 - C. demography
 - D. ethnography
 - E. biology

13. Review Question 2.1.2. Most of the world's population is clustered into these four areas:
 - A. E. Asia, S. Asia, Europe, and SE Asia
 - B. Europe, E. Asia, S. Asia, and Africa
 - C. E. Asia, S. Asia, SE Asia, and Africa
 - D. S. Asia, SE Asia, Europe, and Africa
 - E. S. Asia, SE Asia, E. Asia, and Europe

14. What **THREE** things are used to measure population growth?

15. Define:
 - a. Crude **birth rate (CBR)**:
 - b. Crude **death rate (CDR)**:

16. When does NIR occur?

17. When does **zero population growth** happen?

18. When does a **negative NIR** happen?

19. What is a **demographic equation**?

20. What is **doubling time**? At the current rate, how long would it take for the population to double?

21. Most of the world's population growth is now where?

22. Where are some countries experiencing negative population growth?

23. Where are the highest and lowest **crude birth rates (CBR's)**?

Highest:

Lowest:

24. What is **total fertility rate** and what is it used for?
25. What is **infant mortality rate (IMR)** and what is it a measure of?
26. What is **life expectancy**? Where is it high? Where it is low?
27. What does a **population pyramid** show?
28. What is a **sex ratio**?
29. Define: **Cohort**
30. What does a pyramid with a side base show? What does a pyramid that is more rectangular show?
31. What is a **population projection**?
32. What is a **dependency ratio**?
33. List **THREE** reasons why global population is rising:
- 1.
 - 2.
 - 3.
34. Review Question 2.2.1 With a NIR of 1.2% the world's population would double in approximately ____ years.
- A. 35
 - B. 87
 - C. 54
 - D. 7
 - E. 110
35. Review Question 2.2.2. The region with the highest TFR is
- A. Europe
 - B. North Africa
 - C. Sub-Saharan Africa
 - D. India
 - E. China

