CHAPTER 2

Population

Field Note Where Are the Children?

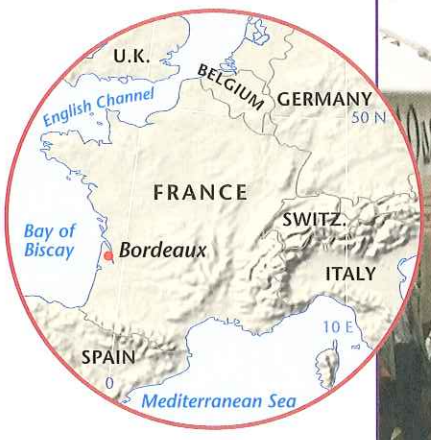

Figure 2.1
Bordeaux, France. People stroll through the historic streets of Bordeaux, France. © H. J. de Blij.

My mind was on wine. I was in Bordeaux, France, walking down the street to the Bordeaux Wines Museum (Musée des Vins de Bordeaux) with a friend from the city. Having just flown from Dakar, Senegal, after spending several weeks in Subsaharan Africa, I found my current surroundings strikingly different. Observing the buildings and the people around me, I noticed that after having been among so many young children in Subsaharan Africa, the majority of the inhabitants I encountered in Bordeaux were of an aging population.

I turned to my friend and asked, "Where are all the children?" He looked around, pointed, and replied, "There goes one now!"

In Bordeaux, in Paris, in all of France and the rest of Europe, there are fewer children and populations are aging (Fig. 2.1). To reach replacement levels—to keep

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a population stable over time without immigration—the women of childbearing age in a country need a total fertility rate (TFR) of 2.1. The TFR reports the average number of children born to a woman of childbearing age. At the beginning of this century, more than 60 countries, containing 45 percent of the world's population, had fallen below this replacement level (Fig. 2.2).

In the 1980s, in the midst of a population explosion, Kenya recorded one of the highest TFRs ever, 8.1. Today, parts of Italy are recording the lowest TFRs ever, as low as 0.8 in Bologna. Not a single country in Europe is above replacement levels at present. By 2030, people in Germany over 65 may well account for nearly half the adult population, as compared with one-fifth now. Many other European countries are on a similar trajectory, and even countries with large populations, such as Brazil and China will likely experience substantial aging of the population as their growth rates decline.

Why are women having fewer children? In wealthier countries, more women are choosing to stay in school, work on careers, and marry later, delaying childbirth. Couples worry about the higher cost of raising children and delay starting a family in order to be better prepared financially. In some countries, such as China, governments are administrating lower birth rates. In other countries, such as India, the cultural costs associated with having children, such as providing dowries for girls, are resulting in higher abortion rates, particularly if the woman is pregnant with a girl.

An aging population requires substantial social adjustments. Older people retire and eventually suffer health problems, so they need pensions and medical care. The younger workers in the population must work in order to provide the tax revenues to enable the state to pay for these services. As the proportion of older people in a country increases, the proportion of younger people decreases. Thus, fewer young workers are providing tax revenues to support programs providing services for more retired people. To change the age distribution of an aging country and provide more taxpayers, the only answer is immigration: influxes of younger workers to do the work locals are unable (or unwilling) to do. In recent decades immigrants have come to play a critical role in the United States' economy. Yet immigration can create its own set of social issues, as has already happened in Germany with its large Turkish and Kurdish immigration, in France with its Algerian-Muslim influx, and in the United States with the arrival of immigrants from Latin America.

What will happen when a country resists immigration despite an aging population? Over the next half-century, Japan will be an interesting case study. Japan's population is no longer growing, and projections indicate the Japanese population will decline as it ages, falling from just over 128 million in 2008 to around 100 million in 2050 (some predictions are lower). Japan was a closed society for hundreds of years, and even today, the Japanese government discourages immigration and encourages homogeneity of the population. More than 98 percent of the country's population is Japanese, according to government statistics. The British newspaper *The Guardian* reported that the Japanese government's efforts to maintain the homogeneity of the population are often "lauded domestically as a reason for the country's low crime rate" and strong industrial economy.

Today, TFRs are falling almost everywhere on Earth, in large part because of family planning. In some countries fertility rates are declining dramatically. Kenya's TFR is now down to 4.8; China's fell from 6.1 to 1.75 in just 35 years. Once the government of Iran began to allow family planning, the TFR fell from 6.8 in 1980 to 1.7 in 2008.

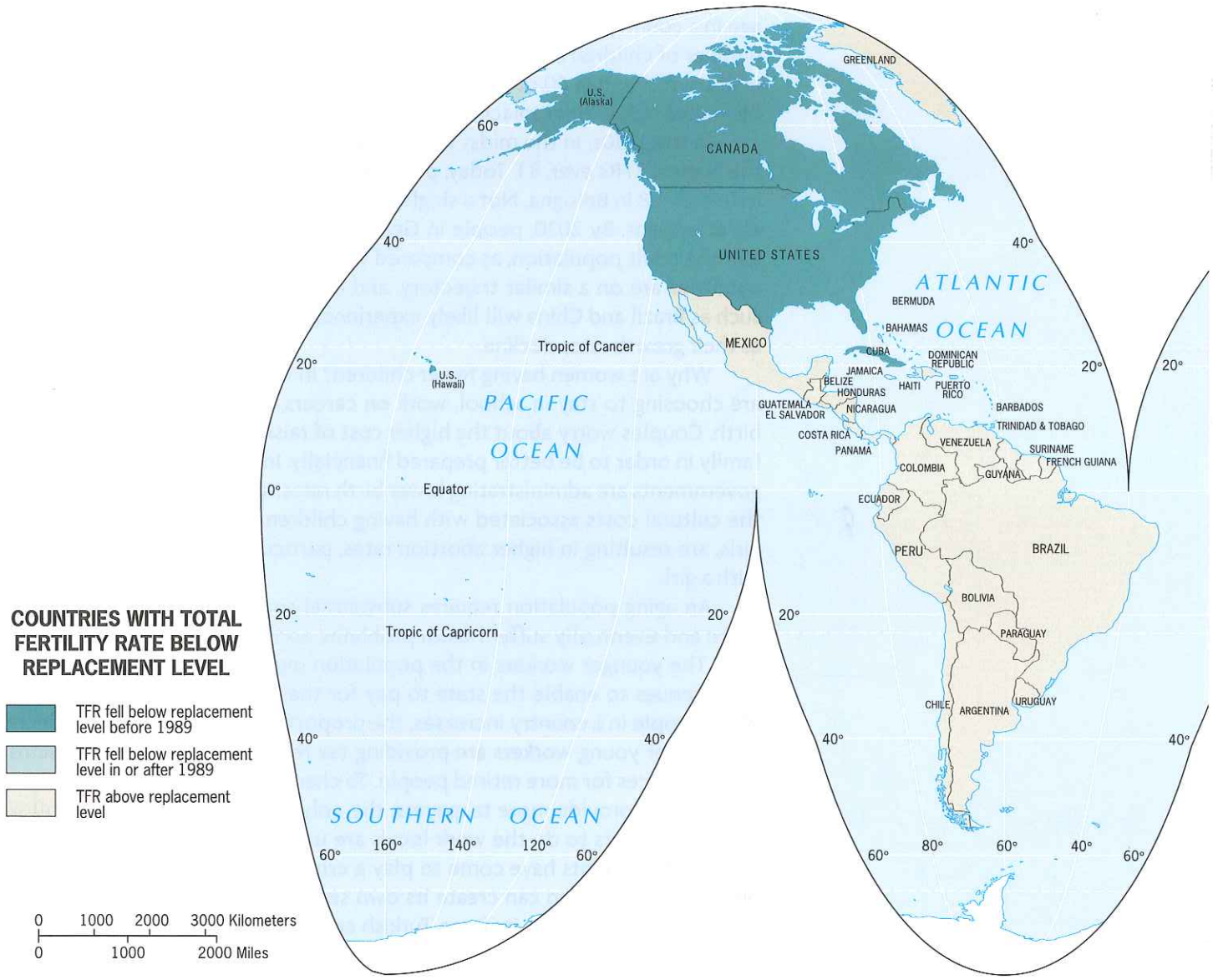
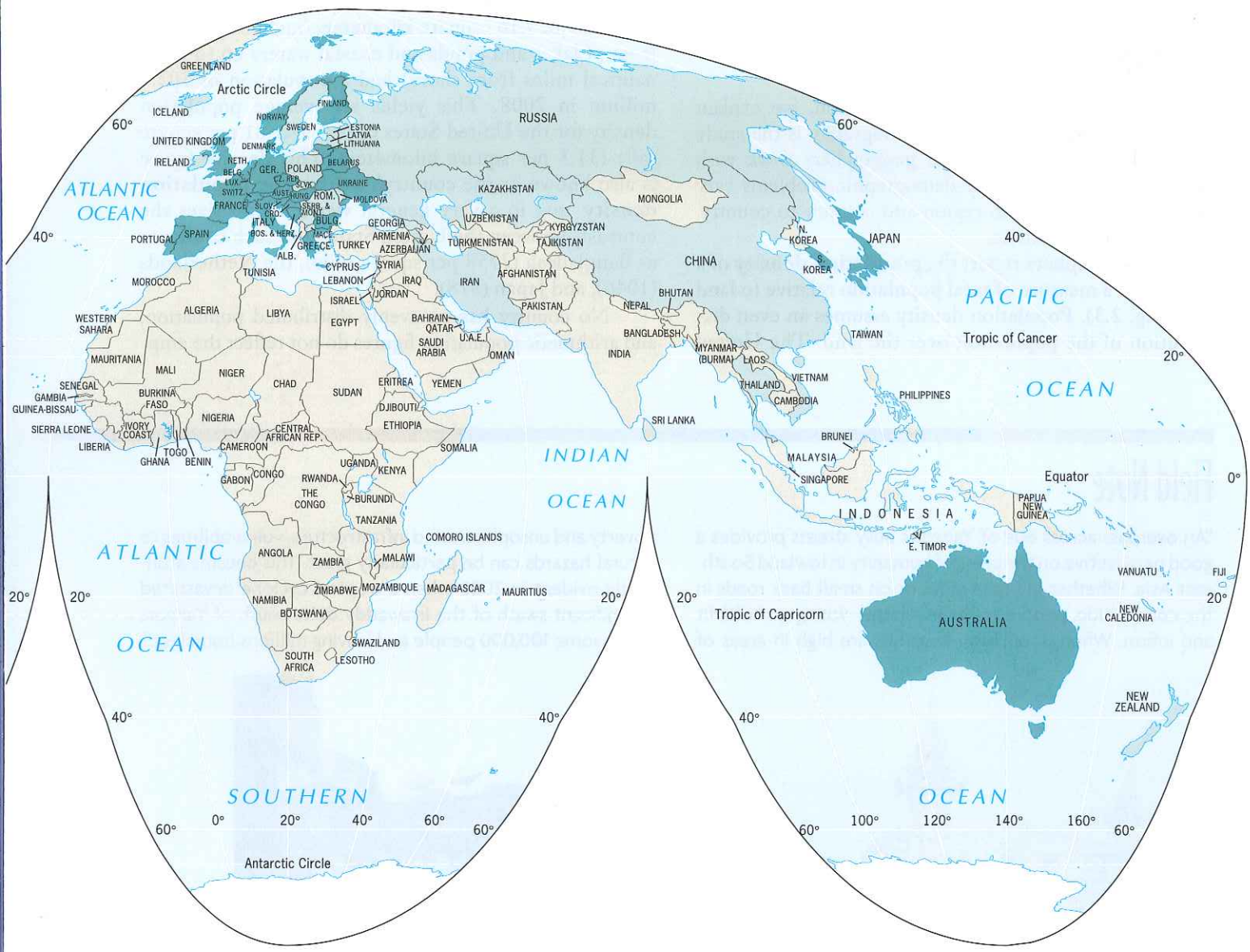


Figure 2.2
Year that Total Fertility Rate among Women Fell below Replacement Levels.
Data from: World Bank, World Development Indicators, 2004.

Having a low TFR was once a status symbol—a goal few governments were able to reach. Realizing now that a young, working population is a necessity for providing tax revenues to support the aging population, governments are getting creative. Countries that desire a larger, younger population, such as Sweden, are providing major financial incentives, like year-long, paid maternity leaves and state-funded daycare, to encourage women to have children.

These programs have had limited success in encouraging sustained population growth. When you walk down the streets of Stockholm, Sweden or Bordeaux, France today, you may ask yourself, "Where are all the children?"

In this chapter, we discuss where people live and why they live where they do. We also examine the rising world population and contrast it with the aging population within particular regions and countries. We look at the ramifications



of population change and of diseases, and we question how governments affect population change.

Key Questions For Chapter 2

1. Where in the world do people live and why?
2. Why do populations rise or fall in particular places?
3. Why does population composition matter?
4. How does the geography of health influence population dynamics?
5. How do governments affect population change?

WHERE IN THE WORLD DO PEOPLE LIVE AND WHY?

When geographers study population, we explain population traits across space. Demography is the study of population, and population geographers work with demographers, asking why demographic problems vary not only from region to region and country to country, but also within countries.

Demographers report the **population density** of a country as a measure of total population relative to land size (Fig. 2.3). Population density assumes an even distribution of the population over the land. The United States, for example, with a territory of 3,717,425 square miles or 9,629,167 square kilometers (including the surfaces of lakes and ponds and coastal waters up to three nautical miles from shore) had a population of 302.7 million in 2008. This yields an average population density for the United States of just over 81 per square mile (31.5 per square kilometer). This density figure is also known as the country's **arithmetic population density**, and in a very general way it emphasizes the contrasts between the United States and such countries as Bangladesh (2738 per square mile), the Netherlands (1046), and Japan (878).

No country has an evenly distributed population, and arithmetic population figures do not reflect the emp-

Field Note

"An overpass across one of Yangon's busy streets provides a good perspective on the press of humanity in lowland Southeast Asia. Whether in urban areas or on small back roads in the countryside, people are everywhere—young and old, fit and infirm. When population densities are high in areas of poverty and unsophisticated infrastructure, vulnerabilities to natural hazards can be particularly great. This became stunningly evident in 2008 when a tropical cyclone devastated a significant swath of the Irrawaddy delta south of Yangon, killing some 100,000 people and leaving millions homeless."

Figure 2.3
Yangon, Mayanmar (Burma). © Alexander B. Murphy.

tiness of most of Alaska and the sparseness of population in much of the West. In other cases, it is actually quite misleading. Egypt, with a population of 78.6 million in 2008, has a seemingly moderate arithmetic population density of 203 per square mile. Egypt's territory of 386,660 square miles, however, is mostly desert, and the vast majority of the population is crowded into the valley and delta of the Nile River. An estimated 98 percent of all Egyptians live on just 3 percent of the country's land, so, the arithmetic population density figure is meaningless in this case (Fig. 2.4 top, bottom).

Physiologic Population Density

A superior index of population density relates the total population of a country or region to the area of *arable* (farmable) land it contains. This is called the **physiological population density**, defined as the number of people per unit area of agriculturally productive land. Take again the case of Egypt. Although millions of people live in its great cities (Cairo and Alexandria) and smaller urban centers, the irrigated farmland is densely peopled as well. When we measure the entire population of Egypt relative to the arable land in the country, the resulting physiologic density figure for Egypt in the year 2008 is 6776 per square mile. This number is far more reflective of Egypt's population pressure, and it continues to rise rapidly despite Egypt's efforts to expand its irrigated farmlands.

Appendix B (at the end of this book) provides complete data on both arithmetic and physiologic population densities, and some of the data stand out markedly. Mountainous Switzerland's high physiologic density should be expected: it is 10 times as high as its arithmetic density. But note Ukraine, with its vast farmlands: its physiologic density is only 1.7 times as high as its arithmetic density. Also compare the high physiologic densities in Middle America (see Puerto Rico) to the moderate data for South America, where Argentina has one of the lowest indices in the world. Furthermore, note that India's physiologic density is the lowest in South Asia despite its huge population (and is less than twice as high as its arithmetic density), whereas China's physiologic density in 2008 was some 40 percent higher. Both China and India have populations well over 1 billion, but according to the physiologic density, India has much more arable land per person than China.

Population Distribution

People are not distributed evenly across the world or within a country. One-third of the world's population lives in China and India. Yet, each country has large expanses of land (the Himalayas in India and a vast interior desert

Field Note

"The contrasting character of the Egyptian landscape could not be more striking. Along the Nile River, the landscape is one of green fields, scattered trees, and modest houses, as along this stretch of the river's west bank near Luxor (Fig. 2.4 top). But anytime I wander away from the river, brown, wind-sculpted sand dominates the scene as far as the eye can see (Fig. 2.4 bottom). Where people live and what they do is not just a product of culture; it is shaped by the physical environment as well."

Figure 2.4 top
Luxor, Egypt. © Alexander B. Murphy.

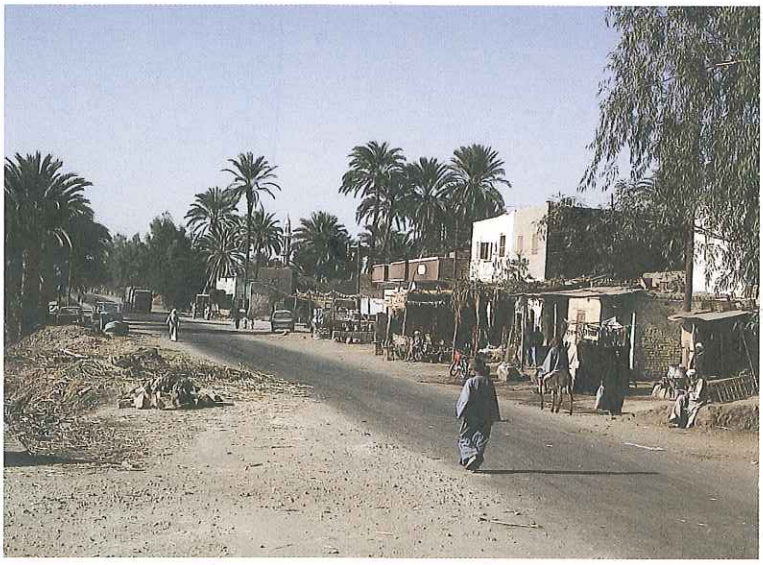


Figure 2.4 bottom
Luxor, Egypt. © Alexander B. Murphy.

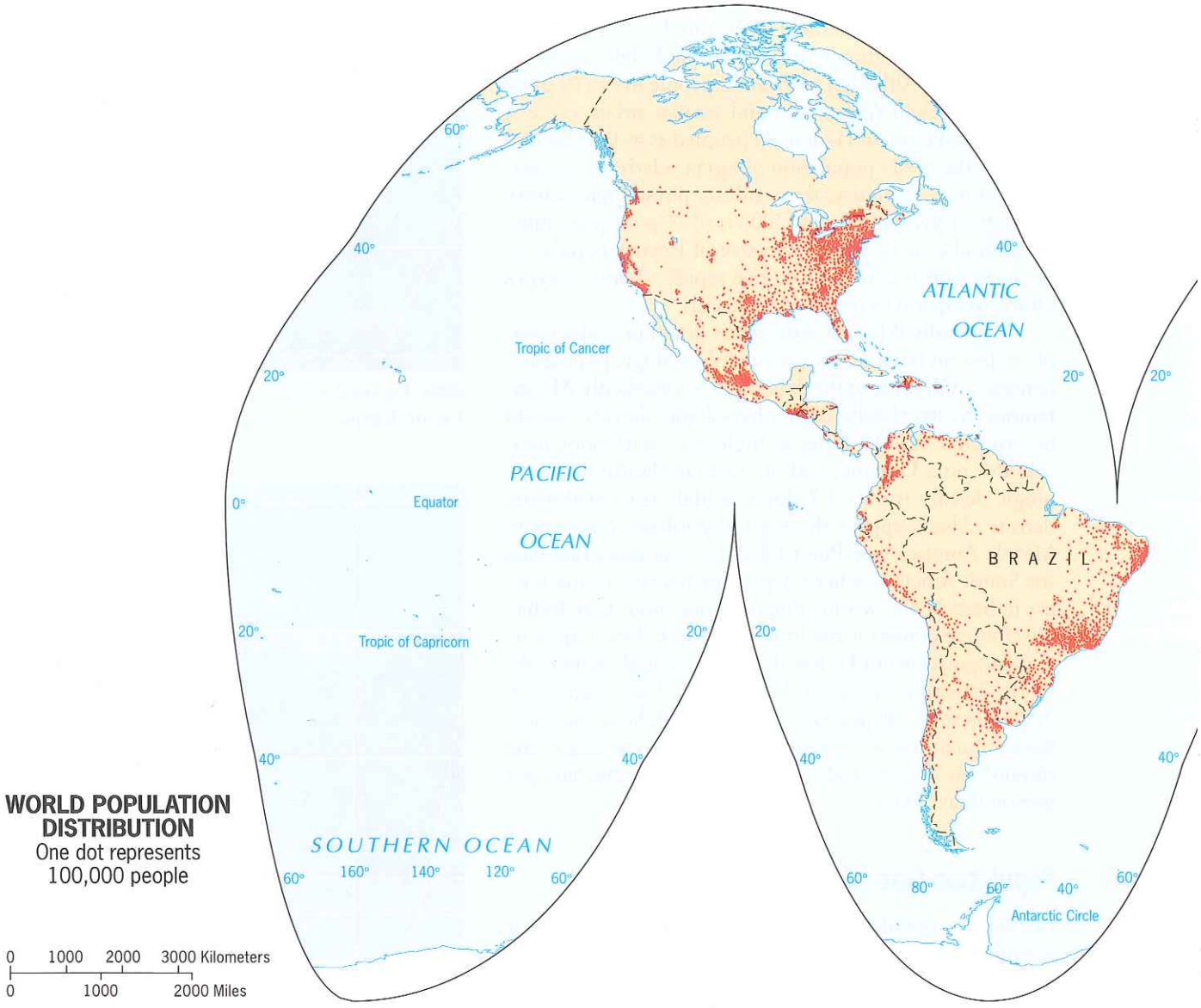
in China) where people are absent or sparsely distributed. In addition to studying population densities, geographers study **population distributions**—descriptions of locations on the Earth's surface where individuals or groups (depending on the scale) live. Geographers often represent population distributions on **dot maps**, in which one dot represents a certain number of a population. At the local scale, a dot map of population can show each individual farm in a sparsely populated rural area. At the global scale, the data are much more generalized. In the following section of this chapter, we study a dot map of the global population.

World Population Distribution and Density

From the beginning of humanity, people have been unevenly distributed over the land. Today, contrasts between crowded countrysides and bustling cities on the one hand and empty reaches on the other hand have only intensified. Historically, people tended to congregate in places where they could grow food—making for a high correlation between arable land and population density. Cities began in agricultural areas, and for most of history, people lived closest to the most agriculturally productive areas. In recent history, advances in agricultural technol-

Figure 2.5

World Population Distribution.



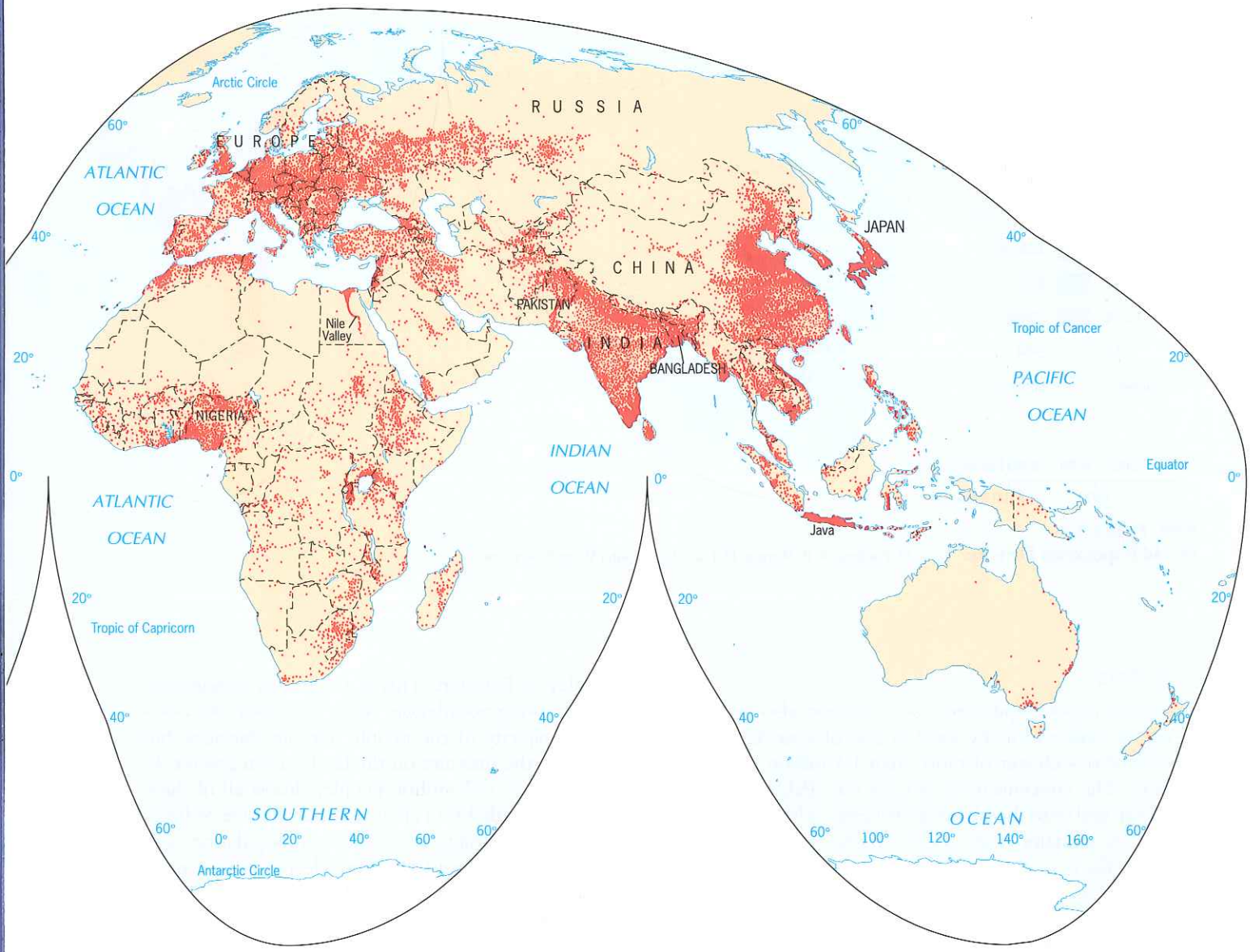
ogy and in transportation of agricultural goods have begun to change this pattern.

At the global scale, where one dot on a map represents 100,000 people, three major clusters of population jump out (Fig. 2.5). Each of the three largest population clusters is on the Eurasian (Europe and Asia combined) landmass. The fourth largest is in North America.

East Asia

Although the distribution map (Fig. 2.5) requires no color contrasts, Figure 2.6 depicts population density through shading: the darker the color, the larger the number of people per unit area. The most extensive area of dark shading lies in East Asia, primarily in China but also in Korea and Japan. Amost one-quarter of the world's population is concentrated here—over 1.3 billion people in China alone.

In addition to high population density in China's large cities, ribbons of high population density extend into the interior along the Yangtze and Yellow River valleys. Farmers along China's major river valleys produce crops of wheat and rice to feed not only themselves but also the population of major Chinese cities such as Shanghai and Beijing.



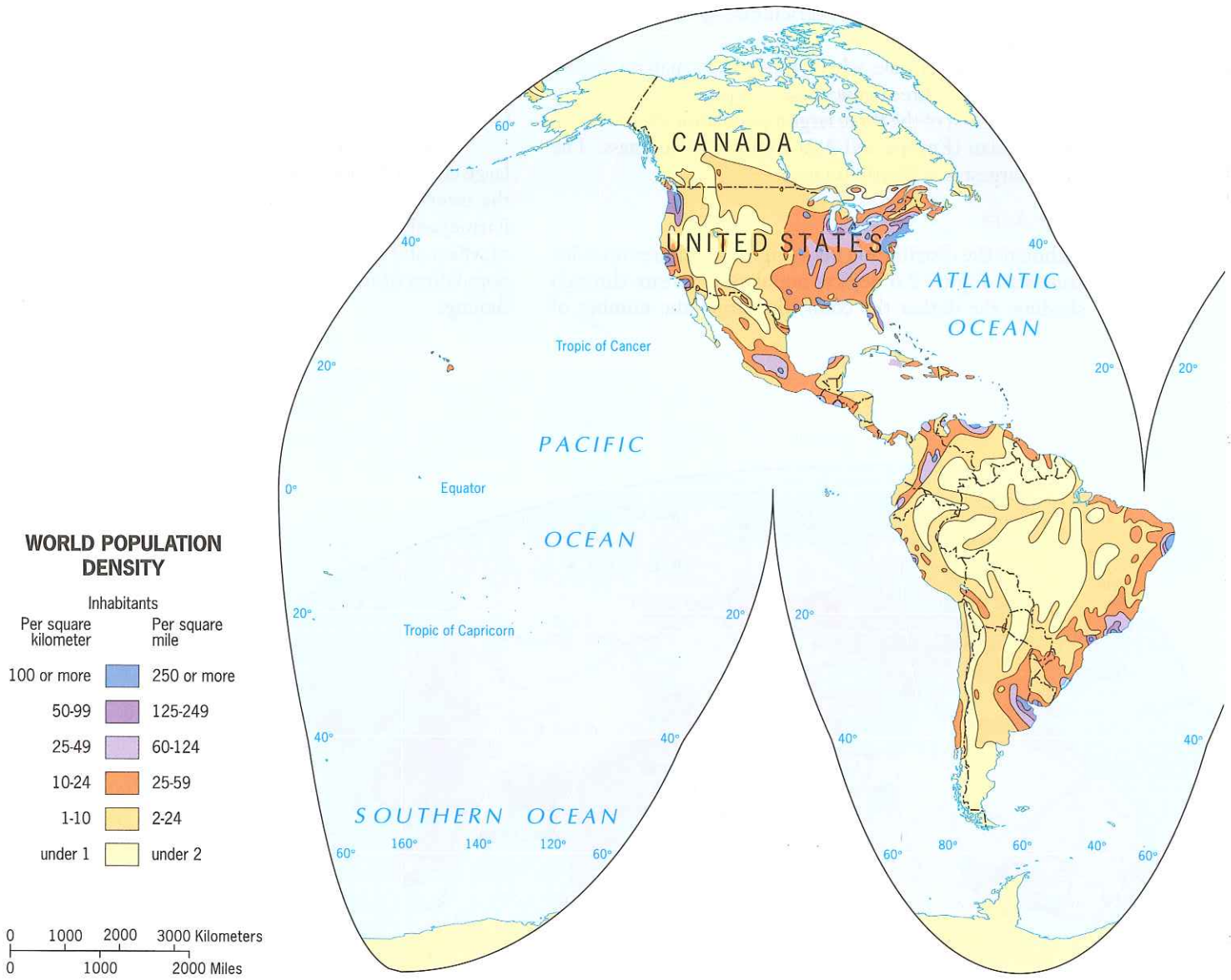
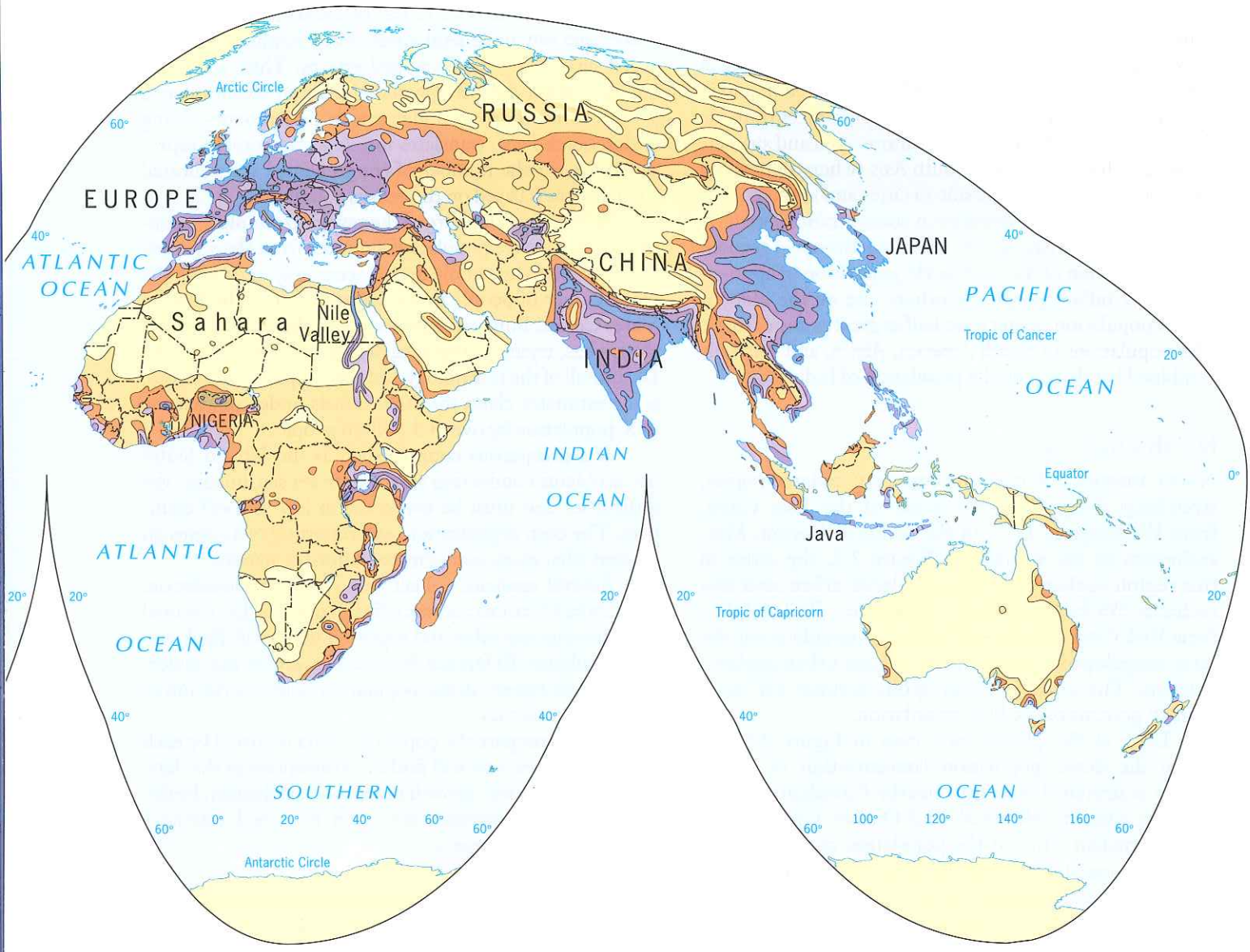


Figure 2.6
World Population Density.

South Asia

The second major population concentration also lies in Asia and is similar in many ways to that of East Asia. At the heart of this cluster of more than 1.5 billion people lies India. The concentration extends into Pakistan and Bangladesh and onto the island of Sri Lanka. Here, people again cluster in major cities, on the coasts, and along rivers, such as the Ganges and Indus.

Two physical geography barriers create the boundaries of the South Asia population cluster: the Himalaya Mountains to the north and the desert west of the Indus River Valley in Pakistan. This is a confined region with a rapidly growing population. As in East Asia, the overwhelming majority of the people here are farmers, but in South Asia the pressure on the land is even greater. In Bangladesh, over 152 million people, almost all of them farmers, are crowded into an area about the size of Iowa. Over large parts of Bangladesh the rural population density is between 3000 and 5000 people per square mile. By comparison, in 2006 the population of Iowa was just under 3 million people, and the rural population density was well under 30 people per square mile.



Europe

An axis of dense population extends from Ireland and Great Britain into Russia and includes large parts of Germany, Poland, Ukraine, and Belarus. It also includes the Netherlands and Belgium, parts of France, and northern Italy. This European cluster contains over 715 million inhabitants, less than half the population of the South Asia cluster. A comparison of the population and physical maps indicates that in Europe terrain and environment are not as closely related to population distribution as they are in East and South Asia. For example, note the lengthy extension in Figure 2.5, which protrudes far into Russia. Unlike the Asian extensions, which reflect fertile river valleys, the European extension reflects the orientation of Europe's coal fields. If you look closely at the physical map, you will note that comparatively dense population occurs even in mountainous, rugged country, such as the boundary zone between Poland and its neighbors to the south. A much greater correspondence exists between coastal and river lowlands and high population density in Asia than in Europe generally.

Another contrast can be seen in the number of Europeans who live in cities and towns. The European

population cluster includes numerous cities and towns, many of which developed as a result of the Industrial Revolution. In Germany, 88 percent of the people live in urban places; in the United Kingdom, 89 percent; and in France, 74 percent. With so many people concentrated in the cities, the rural countryside is more open and sparsely populated than in East and South Asia (where only about 30 percent of the people reside in cities and towns).

The three major population concentrations we have discussed—East Asia, South Asia, and Europe—account for over 4 billion of the total world population of approximately 6.7 billion people. Nowhere else on the globe is there a population cluster even half as great as any of these. The populations of South America, Africa, and Australia combined barely exceed the population of India alone.

North America

North America has one quite densely populated region, stretching along the urban areas of the East Coast, from Washington, D.C. in the south to Boston, Massachusetts in the north. On Figure 2.5, the cities in this region agglomerate into one large urban area that includes Washington, D.C., Baltimore, Philadelphia, New York City, and Boston. Urban geographers use the term **megalopolis** to refer to such huge urban agglomerations. The cities of megalopolis account for more than 20 percent of the U.S. population.

Look at the global scale map in Figure 2.5 and notice the dense population concentration of megalopolis is stretched west into nearby Canadian cities of Toronto, Ottawa, Montreal, and Quebec City. Adding these Canadian cities to the population of megalopolis creates a population cluster that is about one quarter the size of Europe's population cluster. If you have lived or traveled in megalopolis, you can think about traffic and comprehend what dense population means. However, recognize that the total population of megalopolis is 2.8% of the East Asian population cluster, and that the 5,309 people per square mile density of New York City does not rival the density in world cities like Mumbai, India, with a population density of 76,820 per square mile or Jakarta, Indonesia, with a population density of 27,137 per square mile.

Reliability of Population Data

When the United States planned and conducted its 2000 population **census**, various groups protested the practice of trying to count every single person in the country. Rather, many advocates of homeless, minorities, and others insisted the census practices resulted in a serious undercount of these disadvantaged populations. Much federal government funding depends on population data. If the population of a disadvantaged group is undercounted, it translates into a loss of dollars for city governments that rely on federal government funding to pay for social services to disadvantaged groups. Thus, advocates are concerned that the people already in disadvantaged groups suffer more so under census undercounts. Being undercounted also translates into less government representation, for the number of congressional seats allotted to each state is based on the census counts.

Advocacy groups urged the census to sample the population and derive population statistics from the samples. They argued this would more accurately represent the true number of people in the United States. The United States Census Bureau continued to conduct its census as it always has, trying to count each individual in its borders. Despite all of the technology and people-power employed, some estimates claim the 2000 census undercounted the U.S. population by over 3.3 million people.

If a prosperous country such as the United States has problems conducting an accurate census, imagine the difficulties that must be overcome in less well-off countries. The cost, organization, and reporting of a census go beyond what many countries can afford or handle.

Several agencies collect data on world population. The United Nations records official statistics that national governments assemble and report. The World Bank and the Population Reference Bureau also gather and generate data and report on the population of the world and of individual countries.

If you compare the population data reported by each of these sources, you will find inconsistencies in the data. Data on population, growth rates, food availability, health conditions, and incomes are often informed estimates rather than actual counts.

As we discussed in the field note at the beginning of this chapter, populations are falling in some parts of the world. How will Figure 2.5 look different 50 years from now? If you were updating this textbook in 50 years, where would the largest population clusters in the world be?

WHY DO POPULATIONS RISE OR FALL IN PARTICULAR PLACES?

In the late 1960s, alarms sounded throughout the world with the publication of Paul Ehrlich's *The Population Bomb*. Ehrlich and others warned that the world's population was increasing too quickly—and was outpacing our food production! We can trace alarms over the burgeoning world