

HOW IS EARTH'S POPULATION CHANGING?

Human geography is the study of the interaction between humans and their environment. Studying the dynamics of a **population**, or group of people, can help us understand our interactions with the environment.

The UN predicts that our global population will hit 9.6 billion people by 2050. **Figure 1.1** contains additional population statistics. The world population will keep growing for the next century. What will this mean for our existing cities and towns? How will cities like Kolkata, India (**Figure 1.2**), change as the world becomes more populated?

population a group or type of people

FIGURE 1.1 This infographic displays some 2014 global population statistics, but the global population is always changing. Which statistic stands out to you?

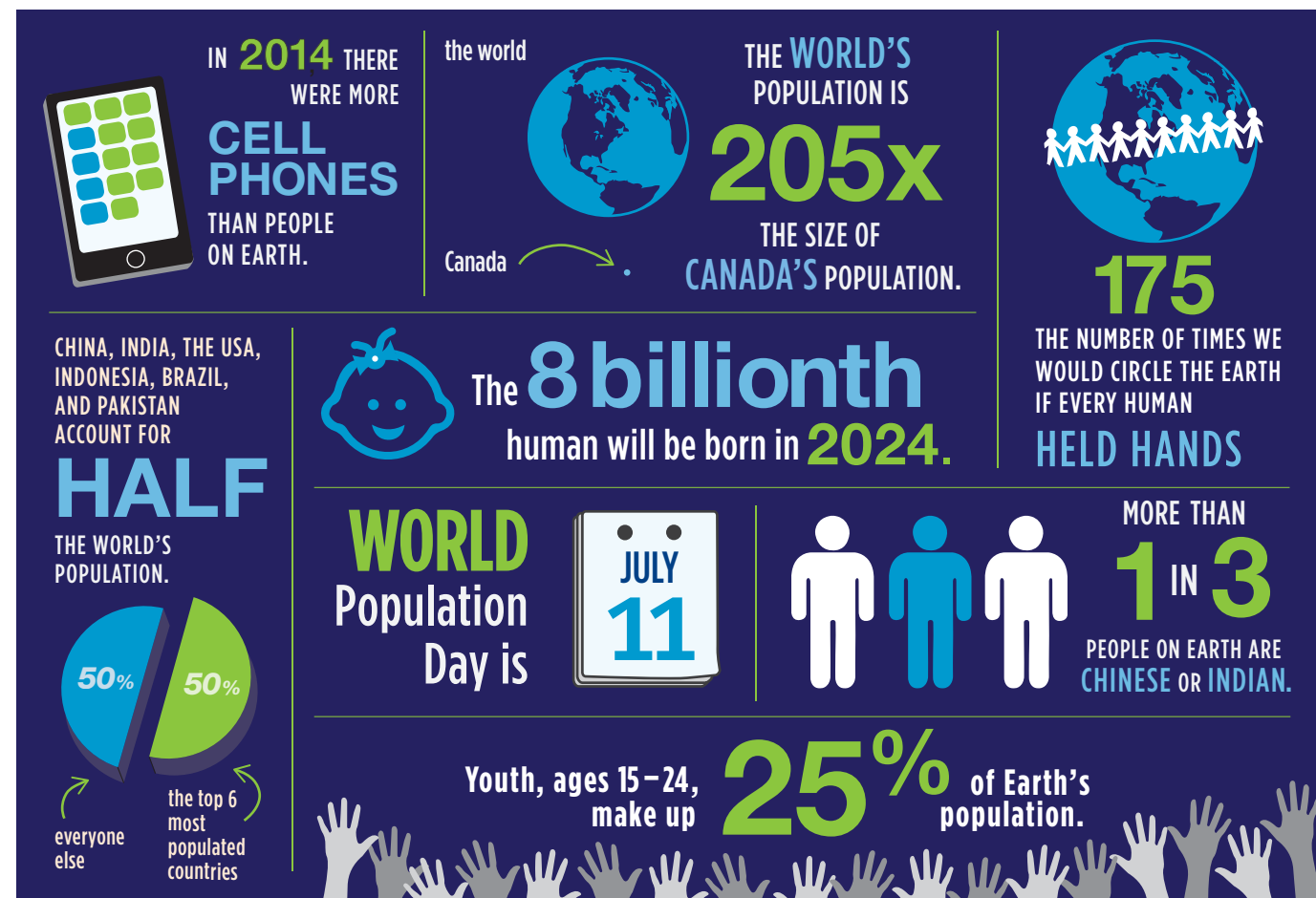


FIGURE 1.2 This is a street scene in Kolkata, India. More than 14.4 million people live in Kolkata, and 400 000 more people arrive each year.

I wonder how cities looked before the Industrial Revolution?

THE AGRICULTURAL AND INDUSTRIAL REVOLUTIONS

With the development of agriculture 12 000 years ago, humans started to create settlements—places where we could live as a community. Crops and animals could be farmed to supply food for greater numbers of people.

The world's population increased dramatically during the sixteenth to nineteenth centuries. This was a time of agricultural revolution: new farming techniques, such as the horse-drawn hoe and seed drill, were invented. These new farming methods meant that people could produce more food, more efficiently. Larger numbers of people could then be fed, leading to population increases.

Eventually, fewer people needed to work on farms to provide food for the community. People began to move away from **rural**, or countryside, areas to find different work in **urban** centres. The growing population in urban centres led to the Industrial Revolution, which began in the late eighteenth century.

The Industrial Revolution saw major changes in technology and manufacturing. The steam engine was an important invention of the time. Improvements in sanitation, medicine, and nutrition helped fight against deadly diseases like smallpox, cholera, and typhoid. The world's population grew from 700 million to 1 billion people during the Industrial Revolution.

rural areas or populations outside cities

urban areas or populations inside cities or towns

UNDERSTANDING
CHANGES IN POPULATIONS

demography the study of human population statistics

One type of geography is **demography**. Demographers examine data about human populations, learning about where and how people live. Demographers use tools like a census, which asks people questions that help them create a description of a population’s characteristics. This research helps us understand why people live where they do.

One statistic that demographers use to describe populations is growth rate. **Growth rate** is the increase or decrease in a population over a unit of time, usually a year. A positive growth rate means that a population has increased. A negative growth rate means that a population has decreased. For example, a growth rate of 5 percent for a population of 100 people means that the population has increased by five people in one year.

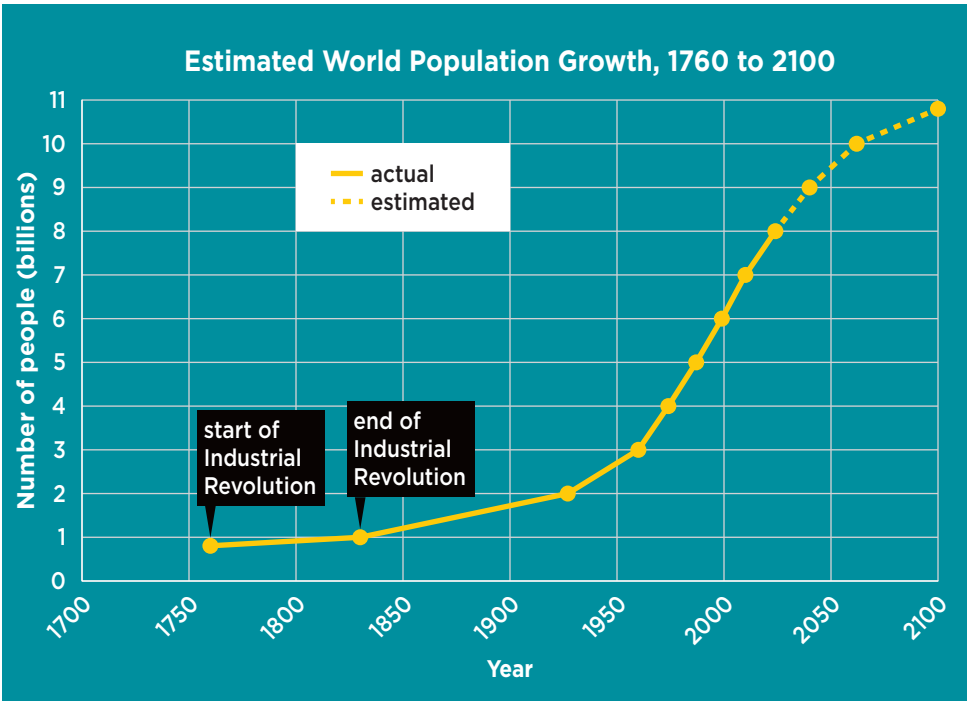
FACTORS INFLUENCING GROWTH RATE

The birth rate, death rate, and amount of migration have the biggest impact on a population’s growth rate. **Birth rate** and **death rate** refer to the number of people who are born and die in a year. **Migration** describes the number of people who permanently leave or move into an area.

Around the world, the rate of population growth is not equal. Europe has 0.2 percent growth, while Africa is growing by nearly 3 percent every year. Though 3 percent may seem like a small increase, based on a population of 1.1 billion in 2014, Africa’s population grows by 33 million people a year.

Figure 1.3 shows the growth of the human population since the start of the Industrial Revolution. The growth rate increased sharply after 1900. The number of people on Earth is expected to pass 10 billion in the year 2062. The growth rate is predicted to decrease after we reach this number. This decrease would be mostly due to lower birth rates.

FIGURE 1.3 This graph shows the growth of the human population since the beginning of the Industrial Revolution. The graph also shows estimated population growth to the year 2100.



economy the system by which goods and services are produced, sold, and bought in a country or region

Population growth is also influenced by other factors:

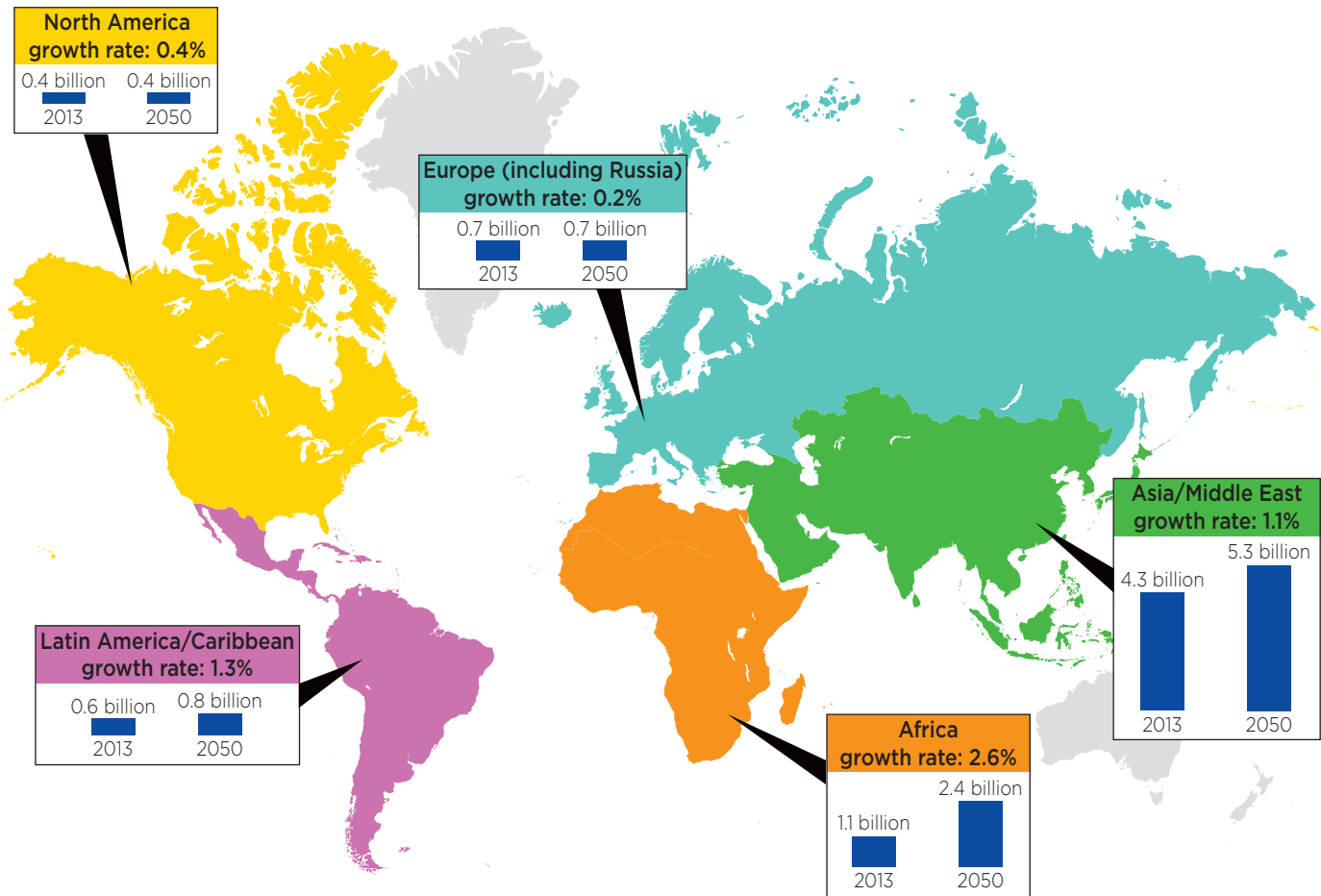
- **Population demographics:** The proportions of younger and older people in a population affect how fast it grows. Countries with a high percentage of people aged 15 to 45, like Mexico, will grow much faster than countries with a high percentage of elderly people, like Japan (**Figure 1.4**).
- **Social attitudes:** Different cultures have different norms for family size. Where large families are common, the population growth rate may be higher.
- **Economy:** Economic stability reduces the need for a large family. Living in an area with a strong economy can provide more opportunities for jobs and education. A population with a high proportion of employed females may have a lower growth rate.
- **Education:** As education levels increase, particularly for women, the average marriage age increases. Women who marry later tend to have fewer children, which lowers the birth rate.
- **Healthcare:** Where people have access to hospitals, doctors, and health services, more children are likely to survive to adulthood. Better healthcare can increase the growth rate.

FIGURE 1.4 Almost one quarter of Japan’s population is over the age of 65. Its total population has declined by nearly 1 million people since 2010.

I wonder what other factors affect Japan’s growth rate?



FIGURE 1.5 This map shows the estimated 2050 populations for different regions. Each estimate is based on the region's current annual growth rate.



POPULATION CHANGES VARY BY REGION

The differences in growth rate for some world regions are shown in **Figure 1.5**. North America and Europe have slow growth in comparison to Africa, which will more than double in population by 2050. Asia will have over 5 billion people in 2050, but its growth rate is slowing down.

carrying capacity
the maximum number of people that a region can support without running out of resources

THE IMPACT OF A GROWING POPULATION

Over the past few decades, the worldwide growth rate has actually declined from over 2 percent to 1 percent. Since the world currently has 7.3 billion people, 1 percent growth will add about 73 million people annually. These new people will need food, clothing, shelter, and water. How long can our resources last?

Overpopulated regions do not have the resources to support a growing population. **Carrying capacity** measures the maximum population that can survive without using up resources. For example, if a region has limited farmland, it can only produce a certain amount of food for its people. If the population increases, demanding more food than can be produced, its carrying capacity is reduced.

Overpopulation can impact natural resources like land, water, and air. Too many people in an area can also drain social resources, like welfare and housing. **Figure 1.6** describes some of these challenges.

A. Resources and land use

Challenge

- Larger populations need more resources and land.
- People fight over limited resources.

Example

There is conflict in Egypt and Ethiopia over their shared water supply.



B. Poverty

Challenge

- Jobs may not be available for everyone.
- The cost of living may increase as resources run out.

Example

In many countries, such as Spain, more than half of the youth (ages 18 to 24) are unemployed.



C. Pollution

Challenge

- More people means more waste is produced.
- Air quality is reduced as the population grows and creates more pollution.

Example

Large cities like Naples, Italy, struggle to deal with the waste people create.



FIGURE 1.6 (A) Ethiopia's Renaissance Dam could affect water flow to Egypt. (B) People line up at an unemployment office in Spain. (C) Garbage piles up on a roadside in Naples, Italy.

CHECK-IN

- INTERRELATIONSHIPS** Create a flow chart to show events that increased the worldwide growth rate. Which event do you think had the greatest impact on population growth?
- PATTERNS AND TRENDS** Review **Figure 1.5**. Summarize the current pattern of population growth for each region.
- INTERPRET AND ANALYZE** What factors might have influenced the pattern you described in question 2?
- COMMUNICATE** Use an example to explain the difference between a place with low carrying capacity and a place with high carrying capacity.
- EVALUATE AND DRAW CONCLUSIONS** Examine **Figure 1.5**. Identify three rate changes between 2013 and 2050. Give a possible reason for each change based on what you have read in this section.
- GEOGRAPHIC PERSPECTIVE** Review **Figure 1.6**. Imagine your community becomes overpopulated. What challenges might arise?