

# WHERE DO PEOPLE LIVE?

Demographers use the term **population distribution** to describe the way that people are arranged in a given area. Figure 1.7 shows how Earth's population is distributed. Only 29 percent of the world's surface is land—71 percent is water. Less than half of Earth's land can actually support settlements. Where do you think most settlements are located?

## POPULATION DISTRIBUTION PATTERNS

Most people on Earth live in close groupings, or **clustered** populations, in South Asia, Europe, and Southeast Asia, as you can see in Figure 1.7. Some areas, such as Siberia, Russia, have large populations that are **scattered**, with great distances between settlements. Sometimes the settlements form a **linear**, or line, arrangement, such as those along the Nile River in northeastern Africa. In other areas, such as South America, population distribution is **peripheral**, with major cities mainly along the coasts. Figure 1.8 shows how to identify different population distribution patterns. Try to match the patterns shown in the diagrams to the features in each photo.

**population distribution**  
the patterns of how people are arranged in an area

**clustered** close together and unevenly distributed over an area

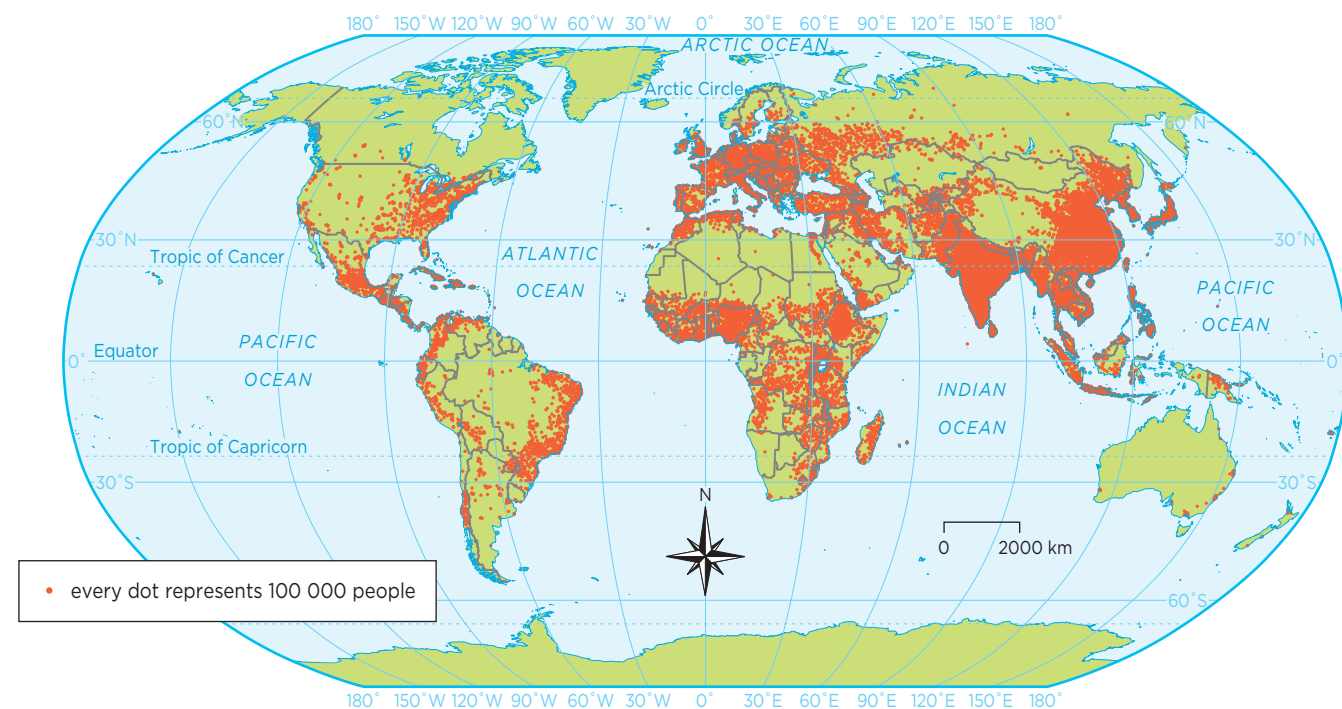
**scattered** spread over a large area and not grouped together

**linear** forming a line, which can be straight or wavy

**peripheral** distributed along the outer perimeter of an area

What factors could be affecting the population distribution in Africa?

World Population Distribution



**FIGURE 1.7** Earth's population is distributed in an irregular pattern. What distribution patterns can you see on this map?

A. Clustered

- The population is tightly packed in a small area.



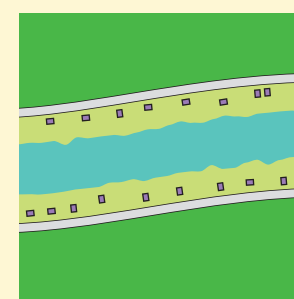
B. Scattered

- The population is spread out over a larger area.



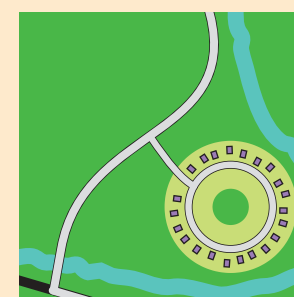
C. Linear

- The population lines up along a natural or human-built feature.



D. Peripheral

- The population surrounds a feature, like a mountain or stadium, or circles the edge of a territory.



**FIGURE 1.8** (A) A cluster of houses in the town of Yanguas de Eresma, Spain (B) A scattered population near Queensland, Australia (C) The Thames River in London, England, attracts settlements along its shores. (D) People have settled around the Interlagos Racetrack in São Paulo, Brazil.



POPULATION DENSITY

Population distribution refers to where people live. **Population density** describes how many people live in a given area.

To calculate population density, divide the number of people living in a country or region by the land area in which they live:

number of people ÷ km²

For example, Singapore has a population of 5 469 724 living in an area of 718.3 km². Mongolia has a population of 2 953 190 living in an area of 1 564 116 km².

You can calculate the population density of each country as follows:

**Singapore:** 5 469 724 people ÷ 718.3 km² = 7614.8 people per km²

**Mongolia:** 2 953 190 people ÷ 1 564 116 km² = 1.9 people per km²

Singapore has a much higher population density than Mongolia.

Population density varies greatly across the world. Many countries, such as Bangladesh and Singapore, have large numbers of people working and living close together in a small area. They have **dense** populations, or high population density. Countries such as Australia and Mongolia have relatively few people in large areas. They have **sparse** populations, or low population density. Countries with moderate density are somewhere in the middle.

A population density under 15 people per km² is considered to be low. A population density over 150 people per km² is considered to be high. China has a density of 145 people per km², so it has moderate to high population density. Monaco has the highest population density of any country in the world, with 18 916 people per km². **Figure 1.9** shows areas with high and low densities.

**population density** the number of people in a given area

**dense** describes high population density—many people crowded together in a given area

**sparse** describes low population density—a small number of people scattered over a large area

**FIGURE 1.9** (A) Monaco is the most densely populated country in the world. (B) Mongolia has very low population density.

I wonder how different life is in Monaco compared to Mongolia?



SETTLEMENTS

Settlements are established at a particular site and may grow over time. They may be founded for agricultural, trade, transport, industrial, political, or spiritual reasons. Settlements can be as small as a single home or as large as a city.

Urban planners use a concept called a **settlement hierarchy** to describe the relative sizes of settlements. The smallest, after a single home, is a hamlet. A hamlet consists of fewer than 100 people. The next largest settlement is a village (at least 100 people), followed by a town (at least 1000 people), and a city (at least 100 000 people). The largest settlement is a megacity and it can have more than 10 million people. (Not all settlements follow this classification, but this is a general guide.) As a settlement increases in size, the number of functions and services available within it also increases.

**settlement hierarchy** an ordering of settlements by size of population

GEOGRAPHY AT WORK

URBAN PLANNER

Jennifer Keesmaat (**Figure 1.10**) has always been fascinated by walkable communities. Her interest in designing neighbourhoods for pedestrians led her to study politics and planning at university. Now, as the Chief Planner for the City of Toronto, Keesmaat helps to decide where parks, office buildings, and schools should be built. She also helps to connect these different land uses with bike and walking routes, public transportation, and roads. As an urban planner, her goal is to create a community where people love to live, work, and play.

According to Keesmaat, one big challenge facing urban planners is climate change. We should plan cities to reduce the negative impact of severe weather events, such as flooding. We should also plan cities to reduce our negative impact on Earth.

Also, more people are moving into cities, so we have to find somewhere for them to live.

To prevent flooding, planners can design neighbourhoods so that storm water goes into the ground instead of the sewer. To reduce our negative impact on Earth and support growing populations, planners can build dense communities where people live close to work, school, and shopping and can move around without using a car.

Keesmaat feels that it is important for communities to be involved in planning. Whether you are 9, 25, or 85 years old, the first thing you should do is step outside your door and fall in love with the place where you live. Having students and adults share their ideas for improving their neighbourhoods is important because planning decisions affect everyone.



**FIGURE 1.10** Jennifer Keesmaat speaks to local citizens on the Toronto subway.

MAKING CONNECTIONS

- 1. Is there something you would like to see improved in your community? For example, is your community missing a safe bike path or a sidewalk to your school? How can you take action?
- 2. What skills and education do you think planners need to have? Create a list. Then compare your list with a classmate's list.



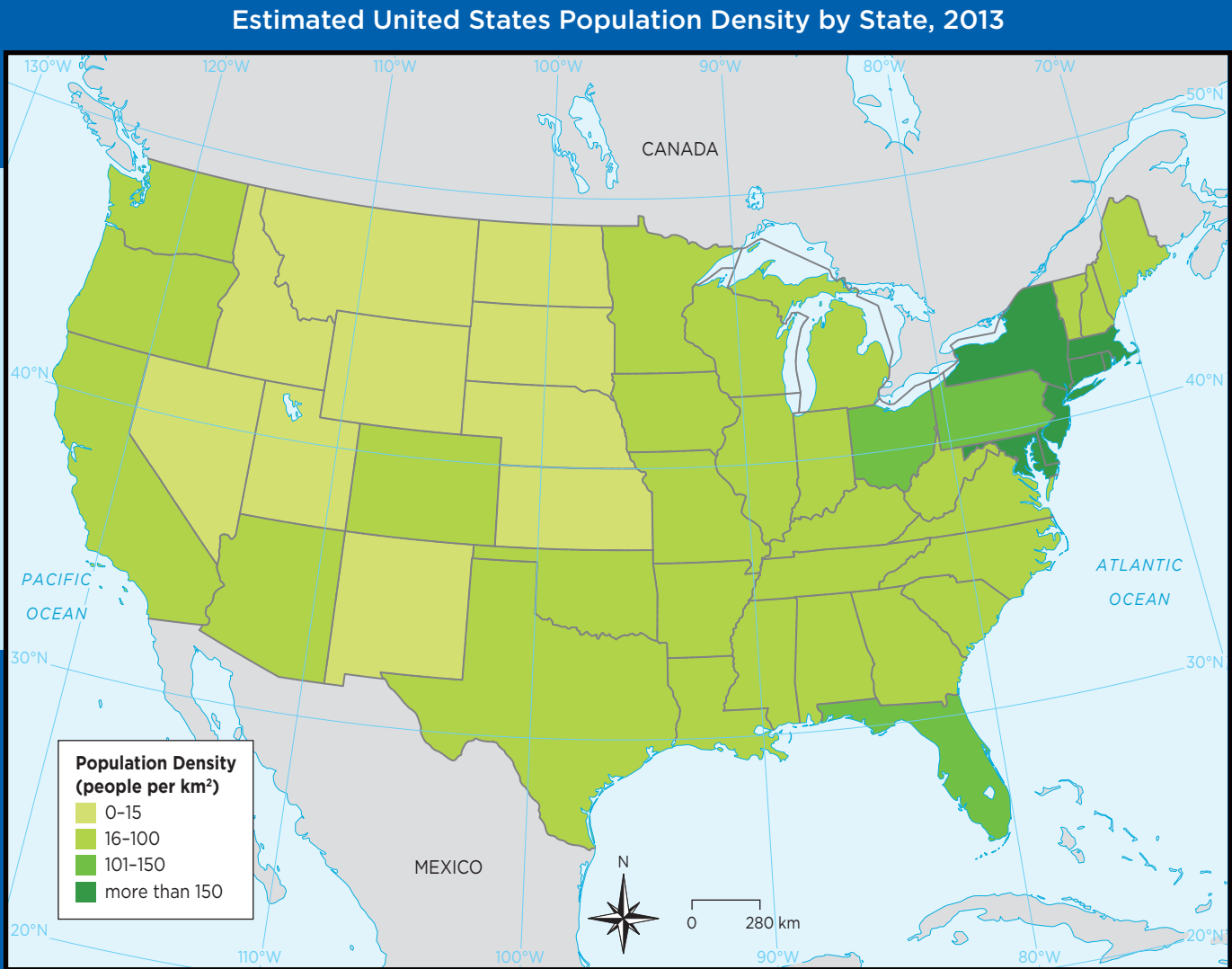
# CREATING AND ANALYZING CHOROPLETH MAPS

A choropleth map is a type of thematic map that shows one type of data (or values). Shades of a colour are used to show the range of data within a geographic area. This makes it easy to focus on patterns and to identify geographic relationships.

The map in **Figure 1.11** is a choropleth map that shows the population density in the mainland United States. By looking at how the map is shaded, you can see if there are any patterns in population density. Where are the areas with dense populations? Where are the areas with sparse populations? What factors could account for this distribution pattern?

If you compare maps showing data from different time periods, you may also recognize trends as the patterns change over time.

In the following activity, you will create and analyze a choropleth map showing the population density for South America.



**FIGURE 1.11** This choropleth map shows the population density in the mainland United States. The different shades represent the different ranges of data.

## HOW TO CREATE A CHOROPLETH MAP

Choose a base map of South America that shows the national borders. Make sure that your map has space for a title, legend, scale, and compass rose.

**STEP 1**

Use the data in **Figure 1.12** to calculate the population density for each country. Record the population densities in a table. Decide how you are going to group your data (for example, under 5, 6 to 10, 11 to 20, 21 to 40, 41 and over).

**STEP 2**

Select a colour series (for example, shades of green or red or brown) to represent the data groups. Decide, based on your data, what information you want to stand out. For example, is it more important to show places with high values or low values? If you want the highest values to stand out, use the darkest shade for this data group. Then use a slightly lighter shade for the next highest data group, and so on.

**STEP 3**

Shade the countries according to their population density.

**STEP 4**

Create a legend for your map using your colour series. Add a title, compass rose, and scale.

**STEP 5**

Population and Land Area Data for South American Countries, 2014

Country	Population	Area (km <sup>2</sup> )
Argentina	43 024 374	2 736 690
Bolivia	10 631 486	1 083 301
Brazil	202 656 788	8 459 417
Chile	17 363 894	743 812
Colombia	46 245 297	1 038 700
Ecuador	15 654 411	276 841
French Guiana	250 109	89 150
Guyana	735 554	196 849
Paraguay	6 703 860	397 302
Peru	30 147 935	1 279 996
Suriname	573 311	156 000
Uruguay	3 332 972	175 015
Venezuela	28 868 486	882 050

**FIGURE 1.12** Use this data to calculate the population density of each country.

## HOW TO ANALYZE A CHOROPLETH MAP

Examine your map. What distribution patterns do you see? Which data group appears more frequently? Why?

**STEP 1**

Population density is just one measure that helps us understand populations. How would your map be different if you had mapped total population instead of population density?

**STEP 2**

Look back at the maps you have seen so far in this chapter. Are there areas in South America where the population density is sparse, moderate, or dense? Use an atlas that shows physical features of South America to explain this pattern.

**STEP 3**



PATTERNS AND TRENDS

Geographers examine data from maps and satellite images to help them understand settlement patterns. They use the following characteristics to describe a settlement:

- location
- landforms and structures in and around the settlement
- population size and density
- population distribution pattern

Understanding these characteristics helps geographers describe the patterns, or the arrangements of features, of a settlement. Understanding these characteristics also helps geographers predict trends, or the way that a settlement and its population will change over time.

CASE STUDY: LUBECK, GERMANY

Lubeck is a medieval city (a city built between the fifth and fifteenth centuries) located in northern Germany. The city was built around a castle and has a total area of about 214 km<sup>2</sup>. Lubeck is enclosed by a body of water, the River Trave (Figure 1.13).

Many medieval cities were built around a castle or within a fortress to protect the people living there from attacks. Often, the wealthiest people lived inside the walls. When space inside the settlement ran out, poorer people had to live outside the walls.

Today over 200 000 people live in Lubeck. The city has three universities. The city centre is a United Nations World Heritage site because of its culturally important buildings. This means that the buildings, churches, and streets are protected by law from changes or new development.



FIGURE 1.13 An aerial view of Lubeck, Germany. This image shows the different population patterns along and around the River Trave.

TRY IT

1. Copy this chart into your notebook. Complete it using the information about Lubeck and the photo.

Settlement Characteristics	Description of Lubeck
location	
landforms and structures	
population size	
population density	
population distribution pattern	

2. Use what you learned on page 26 to decide if Lubeck's population is dense or sparse.
3. What distribution patterns do you see in Figure 1.13? List two factors that might have caused Lubeck's population distribution pattern.
4. Describe how the characteristics of Lubeck might affect future population trends.

UNDERSTANDING POPULATION PATTERNS

You have learned several ways to describe population patterns:

- urban or rural
- growth rates
- distribution (clustered, scattered, linear, or peripheral)
- density (sparse or dense)

Why do population patterns matter? In today's world, everyone needs access to services such as education, healthcare, law enforcement, and transportation. Governments need demographic information to plan for these services. They can use population data to figure out where schools need to be built or where to extend bus routes. Figure 1.14 shows Songdo, South Korea, a city that was designed to make access to services as easy as possible. For example, Songdo has sensors in its buildings and streets to track energy use and traffic flow.

Population density and distribution data also help governments make decisions on how to best use natural resources. The data can help inform decisions on sustainability and how to provide services. Also, looking at population density and distribution helps us compare different regions of the world and understand global issues.

FIGURE 1.14 Songdo is considered one of the world's "smart cities." It was designed with many high-tech features to improve efficiency and attract families.

I wonder how population data was used to plan this community?



CHECK-IN

1. **GATHER AND ORGANIZE** Use a t-chart to compare and contrast population density and population distribution.
2. **INTERPRET AND ANALYZE** Identify a region in Figure 1.7 that shows each population distribution pattern: clustered, linear, scattered, and peripheral.
3. **SPATIAL SIGNIFICANCE** Canada's population density is 4 people per km<sup>2</sup>. Why does Canada have such a low population density? Explain your reasoning.
4. **INTERPRET AND ANALYZE** Bangladesh has an area of 144 000 km<sup>2</sup> and a population of 156 594 962. What is the population density of Bangladesh?