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?

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

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:

\[
\text{Population density} = \frac{\text{number of people}}{\text{km}^2}.
\]

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:**
\[
\text{Population density} = \frac{5,469,724}{718.3} = 7,569.7\text{ people per km}^2.
\]

**Mongolia:**
\[
\text{Population density} = \frac{2,953,190}{1,564,116} = 1.9\text{ people per km}^2.
\]

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.

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

- **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.

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

It is fascinating to compare the population densities of these two countries. Monaco, with a population density of 7,569.7 people per km², is considered to be a densely populated country. On the other hand, Mongolia has a much lower density of 1.9 people per km², which is considered to be very sparse.

To further understand the differences, consider the following:

- **Monaco:**
  - **Population:** 39,000
  - **Land Area:** 2 km²
  - **Population Density:** 19,500 people per km²

- **Mongolia:**
  - **Population:** 3,056,725
  - **Land Area:** 1,564,116 km²
  - **Population Density:** 1.9 people per km²

These numbers highlight the stark contrast in population density between these two countries. Understanding these differences can provide insights into the living conditions, resource allocation, and urban planning strategies in each location.
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.

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.

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).

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.

Shade the countries according to their population density.

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

HOW TO ANALYZE A CHOROPLETH MAP

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

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.
FOCUS ON

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 km². 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.

TRY IT

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

<table>
<thead>
<tr>
<th>Settlement Characteristics</th>
<th>Description of Lubeck</th>
</tr>
</thead>
<tbody>
<tr>
<td>location</td>
<td></td>
</tr>
<tr>
<td>landforms and structures</td>
<td></td>
</tr>
<tr>
<td>population size</td>
<td></td>
</tr>
<tr>
<td>population density</td>
<td></td>
</tr>
<tr>
<td>population distribution pattern</td>
<td></td>
</tr>
</tbody>
</table>

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.

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

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 km². Why does Canada have such a low population density? Explain your reasoning.

4. INTERPRET AND ANALYZE Bangladesh has an area of 144,000 km² and a population of 156,594,962. What is the population density of Bangladesh?