

Mapping Lab: Europe and Russia

MAKING A MENTAL MAP

1. Look at the unfinished outline map of Europe on the next page. Then draw and label these features where you think they are located:
 - the prime meridian
 - the British Isles, Spain and Portugal, and Italy
 - political boundaries for any other countries you think you know
 - the ocean that lies west of this region and the large body of water that lies • south of this region
 - any European cities you think you know
2. Look at the outline map of Russia on the next page. Then draw and label these features where you think they are located:
 - the Arctic Circle
 - the ocean that lies north of this region
 - any area(s) that you think have a cold, polar climate • any Russian cities you think you know
3. Revise this mental map at the end of the Mapping Lab. Follow these steps to analyze your mental map:
 - Use one color to highlight or circle at least three details that were correct or fairly accurate.
 - Use another to highlight or circle at least three details that were inaccurate. Correct those items.
 - Use a third to add at least three new items.
 - At least one item should represent information about physical geography, and at least one should represent information about human geography.



Europe and Russia

Introduction

Europe and Russia occupy part of the huge **landmass** called Eurasia. Eurasia reaches from the Atlantic to the Pacific Ocean. It is so large that geographers divide it into two continents, Europe and Asia.

Europe is the world's second smallest continent. Oceans and seas border Europe to the north, south, and west. Asia borders Europe on the east.



Russia is the world's largest country. It spreads over two continents. Western Russia lies on the continent of Europe, while Eastern Russia stretches across Asia to the Pacific Ocean. The Ural Mountains, at 60°E longitude, mark the dividing line between Europe and Asia and between western Russia and eastern Russia.

Geoterms

Eurasia – The huge landmass that contains both Europe and Asia.

Physical Features



Europe and Russia share a **landscape** of sweeping plains and rugged mountains. Large rivers wander across the broad plains. These rivers drain into three of the world's five oceans—the Atlantic, the Pacific, and the Arctic oceans.

The Alps cut through France, Italy, Switzerland, Lichtenstein, Austria, and Slovenia.

Europe

On a map, the European landmass looks like a giant **peninsula** attached to Eurasia. Smaller peninsulas jut out from all sides of Europe. They include the Balkan Peninsula, the Iberian Peninsula, Italy, and

Scandinavia. Various seas, bays, and gulfs are tucked in between. Several big islands are also part of Europe.

Much of Europe lies on the Northern European Plain, which is one of the largest expanses of flat land on Earth. It extends almost 2,500 miles from east to west. Several mountain ranges cross Europe. The Alps form a major barrier between central and southern Europe. The Pyrenees separate France and Spain. The Apennines run through Italy.

Europe's rivers serve as water highways. They also provide drinking water and power for electricity. The Danube River flows through 10 countries, more than any other major river in the world. The Rhine river valley is one of the most productive industrial and farming areas in the world.

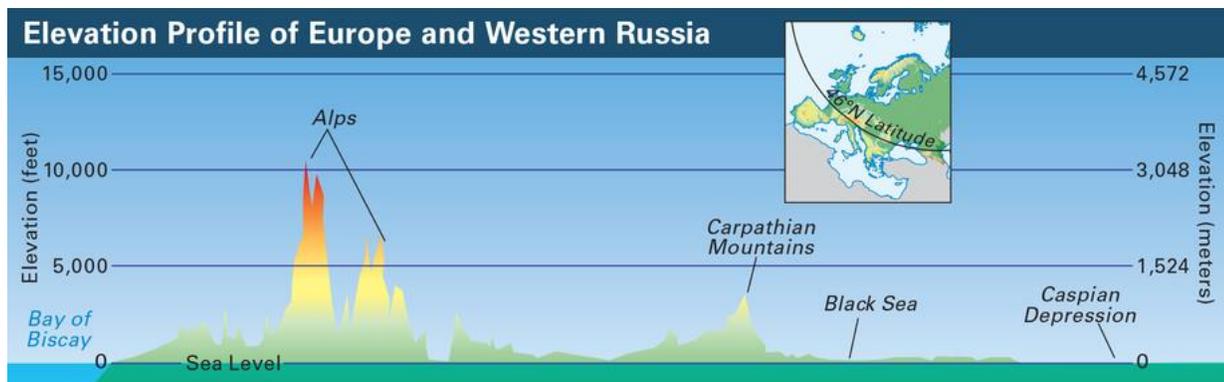
Russia

Much of Russia also lies on broad plains. The western, or European, part of Russia shares the Northern European Plain. Western Russia extends to the Ural Mountains in the east and to the Caucasus Mountains in the south.

From the Ural Mountains, eastern Russia spreads across the full width of Asia. This area is called Siberia. The West Siberian Plain is a large area of flat land with many lakes and swamps. To the east lies the Central Siberian Plateau. Rivers have carved narrow canyons through this high, flat plateau.

Russia has thousands of lakes. The largest is Lake Baikal, the oldest and deepest lake in the world. It holds one-fifth of Earth's fresh water. In winter, the lake freezes with ice up to three feet deep.

The Kamchatka Peninsula at the eastern edge of Russia reaches into the Pacific Ocean. More than 100 **volcanoes** rise from this finger of land. No roads or railroads connect the peninsula to Siberia. Everything must arrive by airplane or boat.



Find two or more sentences with information that is graphically represented on the Physical Features map.

Climate

Three factors shape Europe's climates. The first is latitude. Areas south of the Alps have more **temperate** climates than areas to the north.

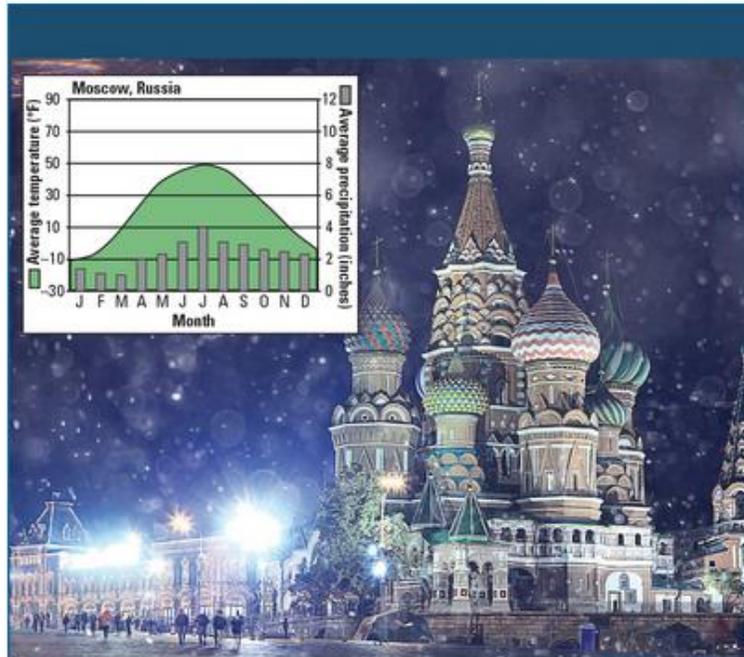
The second factor is **relative location**. Areas near the ocean have a **marine climate**. Marine means "found in or close to the sea." Ocean winds and warm ocean currents help keep temperatures about the same all year. Inland areas far from the sea have a **continental climate**. Continental means "influenced by a large landmass." Ocean winds and currents do not affect places with a continental climate. As a result, summers are usually hotter than near the sea, while winters are colder.

Mountain ranges are the third factor. The Alps and Carpathians block the cold air from the north that influences the climate of southern and eastern Europe.

Europe

Crowds of tourists often head to the Mediterranean Sea for vacation. Southern Europe has a **Mediterranean** climate. Its summers are longer, hotter, and drier than in northern Europe. Its winters are short and mild.

Most of northern Europe has a **marine west coast** climate. A warm current that flows across the Atlantic from the Gulf of Mexico keeps winters from being too cold. Cool ocean breezes keep summers from being too hot and bring year-round rain to northern Europe.



Moscow, the capital of Russia, has a humid continental climate. When are people living in Moscow likely to have very high heating bills?

Russia

Russia is known for its long, harsh winters. The Arctic Ocean on Russia's northern border is frozen most of the year. As a result, it does not have a marine influence on Russia's climate. In some areas, snow covers the ground for eight or nine months of the year.

The most northern part of Russia has a **tundra** climate. The weather is so cold all year that the land is always frozen. Winter temperatures can drop as low as -90°F .

Much of Siberia has a **subarctic** climate. Winters are still long and very cold. Summers are too cool and short for farming.

Areas to the south and west have milder climates. Much of western Russia has a **humid continental** climate. Winters here are still freezing cold, but summers can be hot and steamy. The most southern parts of Russia have a **semiarid** climate. Here, the hot summers and cool winters are both fairly dry. Most of Russia's crops are grown in these areas with longer growing seasons.



Summer sun thaws the surface of Siberia's tundra. With the return of winter, this boggy area will freeze solid.

Geoterms

marine climate: a type of climate that is influenced by the sea. This type of climate is marked by relatively mild winters, cool summers, and fairly regular precipitation.

continental climate: a type of climate that occurs in inland areas and other places not affected by the sea; marked by hot summers, cold winters, and relatively little precipitation

Mediterranean: a climate or climate zone with warm to hot, dry summers and mild, rainy winters

Find two or more sentences with information that is graphically represented on the Climate Zones map.

Vegetation

Europe and Russia have a mix of **vegetation zones**, but forests are the most common. One of the largest forests on Earth, the Russian **taiga**, stretches across most of the Eurasian landmass.

Three types of forests are found in this region—**deciduous**, **coniferous**, and **mixed forests**. All three are named for the types of trees that are found in them. Deciduous trees have broad, flat leaves that drop each fall. Coniferous trees have needle-like leaves that stay green all year. Mixed forests have both deciduous and coniferous trees.



The Russian taiga accounts for about 17 percent of Earth's land surface.

Europe

All three types of forests once thrived in Europe. But over time, people cleared the forested areas to use the land for farming. Pockets of deciduous and mixed forests can still be found. Large coniferous forests survive in the far northern parts of the continent.

The coastal parts of Europe bordering the Mediterranean Sea are covered with **chaparral**. Here, the small trees and bushes are well adapted to long, rainless summers. They send their roots deep into the soil to search for hidden water sources. Most have thick bark and small leaves that keep them from losing water during the dry season. Olive trees and cork trees are common in this vegetation zone.

Russia

In northern Russia, the **tundra** is treeless. Because the ground is always frozen under the surface, trees cannot send their roots down into the soil. During the short summer, the top layer of soil thaws. Then, for about two months, mosses, grasses, and scrubs cover the ground.

South of the tundra lies the taiga, a vast region of thick, dark forests. The taiga consists mainly of coniferous trees such as cedar, fir, pine, and spruce. Further south, the taiga becomes more mixed forest with the addition of aspen, birch, and other deciduous trees.

Far to the south lie the **steppes**, or grassy plains, of Russia. This region of **temperate grasslands** is too dry to support trees. The steppes have mostly been plowed for farms.

Geoterms

chaparral: a vegetation zone of mainly small trees and bushes adapted to a Mediterranean climate; also refers to the type of vegetation in this zone

tundra: a climate zone with very cold winters, cold summers, and little rain or snow; a vast, treeless plain in the arctic regions between the ice cap and the tree line; also a vegetation zone that is a treeless plain with grasses, mosses, and scrubs adapted to a cold climate

steppe: a vast, grassy plains of Russia

Find two or more sentences with information that is graphically represented on the Vegetation Zones map.

GEOGRAPHY CHALLENGE 1

Part A: Locate Physical Features of Europe and Russia

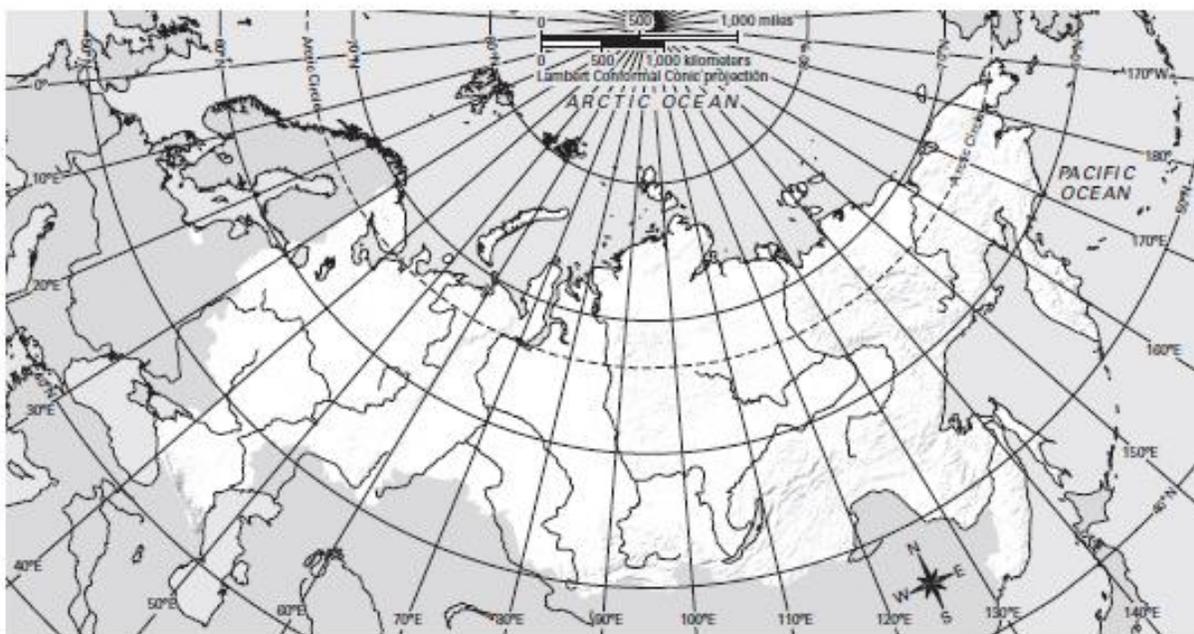
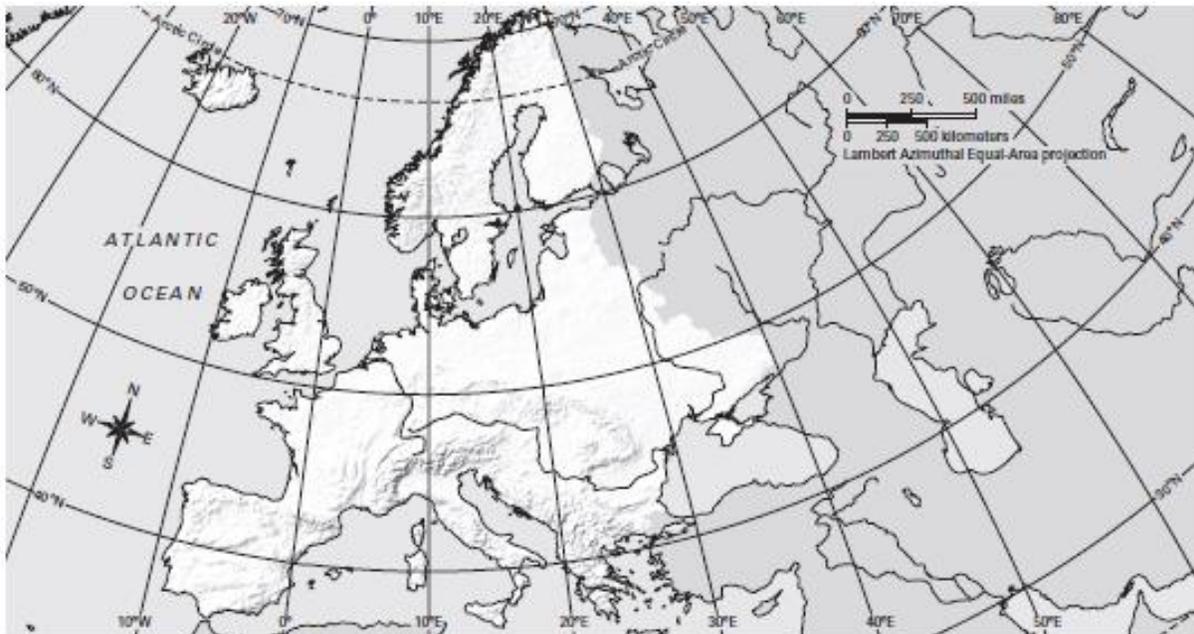
Use the coordinates to locate and label each feature. Make sure it is clear where each feature is.

Europe

1. Northern European Plain (55°N, 25°E)
2. Iberian Peninsula (40°N, 5°W)
3. Danube River (45°N, 20°E)
4. Apennines (43°N, 13°E)
5. Black Sea (43°N, 35°E)

Russia

6. Central Siberian Plateau (65°N, 100°E)
7. Kamchatka Peninsula (55°N, 160°E)
8. Lake Baikal (53°N, 108°E)
9. Ob River (62°N, 65°E)
10. Caucasus Mountains (43°N, 45°E)



Human Geography

The region of Europe is home to 44 countries, including Russia. You've learned that Russia is the world's largest country. It covers about 6.6 million square miles. At the other extreme, Vatican City is the world's smallest country. It covers only 109 acres. It lies in the center of the city of Rome, Italy.

The people of Europe and Russia are linked together by language and culture. At least 50 languages are spoken here. Yet most of them belong to just three language families: Latin, Germanic, and Slavic. Europeans and Russians also share many elements of culture. These include art, music, and religion.

Write some questions you have about human geography in this region. As you read through the sections on the human geography, come back here to add more questions.

History

Europeans and Russians are linked by history. For thousands of years, peoples and armies have moved back and forth across this region. Ideas and ways of life have moved with them.

Early Times

Two great civilizations appeared in Europe in ancient times. The first arose on the Greek peninsula in the 700s b.c.e. The Greeks created distinct styles of art and literature. They also invented the idea of democracy.

The second great civilization arose on the Italian peninsula. Around 500 B.C.E., the city of Rome began to grow. It would become a mighty **empire**. At its peak, the Roman Empire included most of Europe.

Roman rule collapsed in the late 400s. But the Romans left behind their language and ideas about law and government.

The Rise of Nations

After Rome fell, many small kingdoms arose in Europe and Russia. The times seemed dangerous and uncertain to many. People focused on faith and their relationship to God.

In the 1300s, some began looking back to the ideas of ancient Rome and Greece. This began the Renaissance, which means “rebirth.” Thinking focused more on science than on faith. The Renaissance began in the Italian city-states. By the late 1500s, it had spread throughout Northern Europe.

In the meantime, rulers increased their power. They formed modern **nations**. In 1469, for example, Ferdinand of Aragon married Isabella of Castile. Together, they created the nation of Spain. In 1533, Ivan the Terrible, the Grand Prince of Moscow, began to conquer vast lands. By 1547, he was czar, or ruler, of all Russia.

Soon, rulers looked for new lands to conquer. The Russian czars expanded their control east across Asia. European rulers created colonies in the Americas, Africa, and Asia.

The Modern Era

More recently, two kinds of revolutions shaped Europe and Russia. The first was economic. The **Industrial Revolution** began in the 1700s. It moved the production of goods out of homes and into factories. Machines began to take over work that had been done by hand. European nations led this revolution. They became the world’s first **developed countries**.

The second kind of revolution was political. Political revolutions led to changes in how countries were ruled. In some cases, they led to the rise of democratic governments. The Glorious Revolution of 1688–89 is an example. It limited the power of England’s monarchs. This was a step toward democracy.

In other cases, political revolutions led to the rise of **dictators**. A dictator is a leader who rules a country with absolute power, and often with brutal force. In 1917, the Russian Revolution drove the last czar from power. A series of dictators then ruled for more than 70 years.

Today, elected governments rule most countries in this region.

Geotermis

empire: a group of territories, peoples, or nations ruled by a single authority

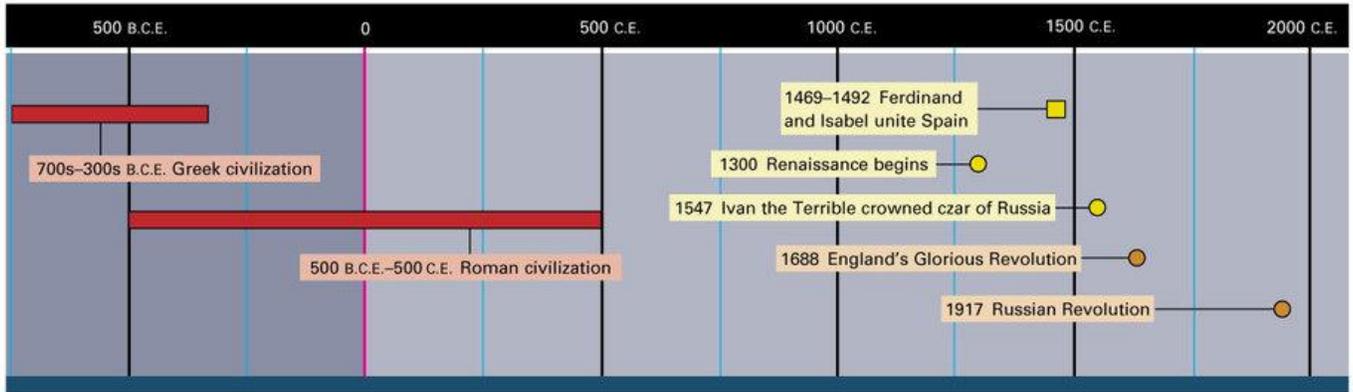
nation: a large group of people who share a common history and culture. Not all nations have their own government or control a territory, but the word nation often means a country or nation-state.

Industrial Revolution: the huge social and economic change in Europe and the United States that was produced by the shift from hand tools to machines in the 18th and 19th centuries

developed countries: a wealthy country with an advanced economy. Developed countries have many industries and provide a comfortable way of life for most of their people

Europe and Russia Timeline

Early Times Rise of Nations Modern Era



Find two or more sentences with information that is graphically represented on the timeline.

Define each Geoterm. Write a sentence using the term. Then draw a symbol to help you remember the meaning.

empire

Symbol:	Definition:
	Sentence

Nation

Symbol:	Definition:
	Sentence

Industrial Revolution

Symbol:	Definition:
	Sentence

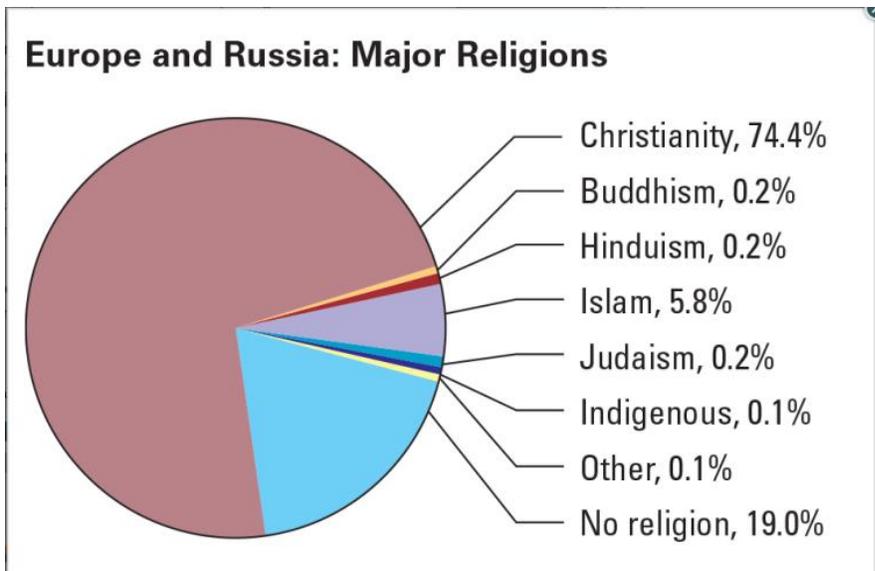
Developed countries

Symbol:	Definition:
	Sentence

Population

Europe and Russia are home to almost one-tenth of the world's people. In 2017, about 742 million people lived in this region. Most of them live west of the Urals.

Europe has long been very **urban**. Rome was the first city to reach 1 million people. That was 2,000 years ago. In 1810, London became the first modern city to reach a million people. Today, most Europeans and Russians live in towns and cities. **Rural** eastern Russia is thinly settled.



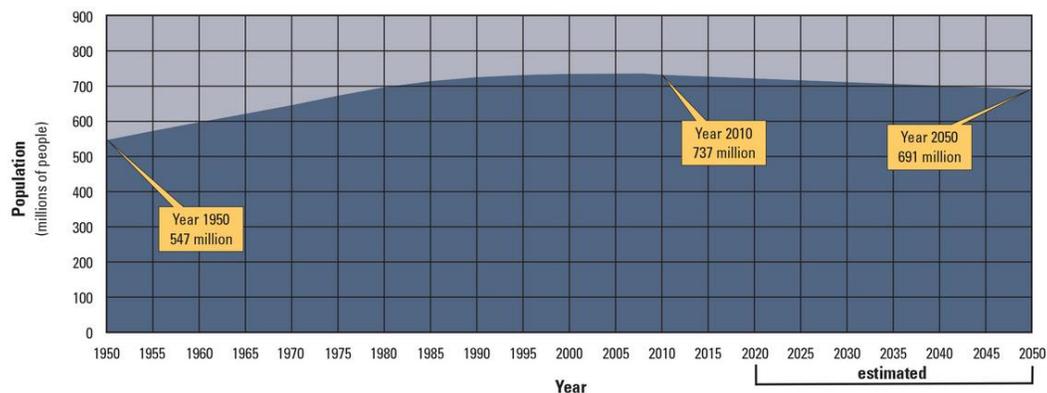
Most parts of the world have growing populations. But in parts of Europe and Russia, populations have stopped growing. Some are even shrinking. The main reason is a drop in the **birth rate**, or the number of births per 1,000 people.

Christianity is the most common religion in Europe and Russia. More than one-third of all Europeans belong to the Roman Catholic Church. Most Christians in Russia follow the Russian Orthodox faith. Islam is the second largest faith in this region.

Europe and Russia: Urban and Rural Population, 2007



Europe and Russia: Population Growth, 1950–2050



Sources: United Nations Department of Economic and Social Affairs, Population Division. Encyclopaedia Britannica.

Find two or more sentences with information that is graphically represented on the Population Density map.

Economic Activity

Europe and Russia are both important industrial areas. Russian factories produce heavy machinery, such as electric motors and tractors. Factories in Denmark turn out sound systems, furniture, dishes, and silverware. German factories produce steel, automobiles, and electronics. Swiss factories turn out watches, chocolate, and medicines. Global trade has made Europe and Russia one of the world's richest regions.

Resources

Europe and Russia are rich in **natural resources**. These include **fossil fuels** and minerals. About one-fourth of the world's coal reserves are found in Siberia. In addition, Siberia has mines for gold, copper, lead, and diamonds.

In the North Sea and Russia, people drill for petroleum and natural gas. Russia is also a major producer of **hydroelectric power**. Most of this power comes from dams located along Russia's rivers.

Land Use

Outside of its cities, Europe is largely a land of farms. Commercial farms are spread out along river valleys and across the vast Northern European Plain. In Western Europe, farmers use machines to produce large **cash crops**. In poorer parts of Eastern Europe, however, some families are limited to **subsistence farming** on small plots of land.

In Scandinavia, **forestry** and fishing are both big industries. Even though Norway is very far north, a warm ocean current keeps some of its ports free of ice. As a result, fishing can continue all year. Fishing is also the main industry of Iceland.

Manufacturing has become important to Russia over the last century. But many Russians still use their land in more traditional ways. In southern Russia, farmers grow a wide variety of crops, from wheat to apples. Across the taiga, forestry is a major industry. On the northern tundra, people herd reindeer. Reindeer are a source of meat and hides.



In Poland, much of the land is used for commercial farming.

Geoterns

fossil fuels: any fuel, such as petroleum, coal, and natural gas, that is made from the remains of prehistoric

cash crop: a crop that is grown to be sold rather than to be consumed by the farmers and their families

subsistence farming: farming carried out mainly to provide food for farm families, with little surplus for sale to others

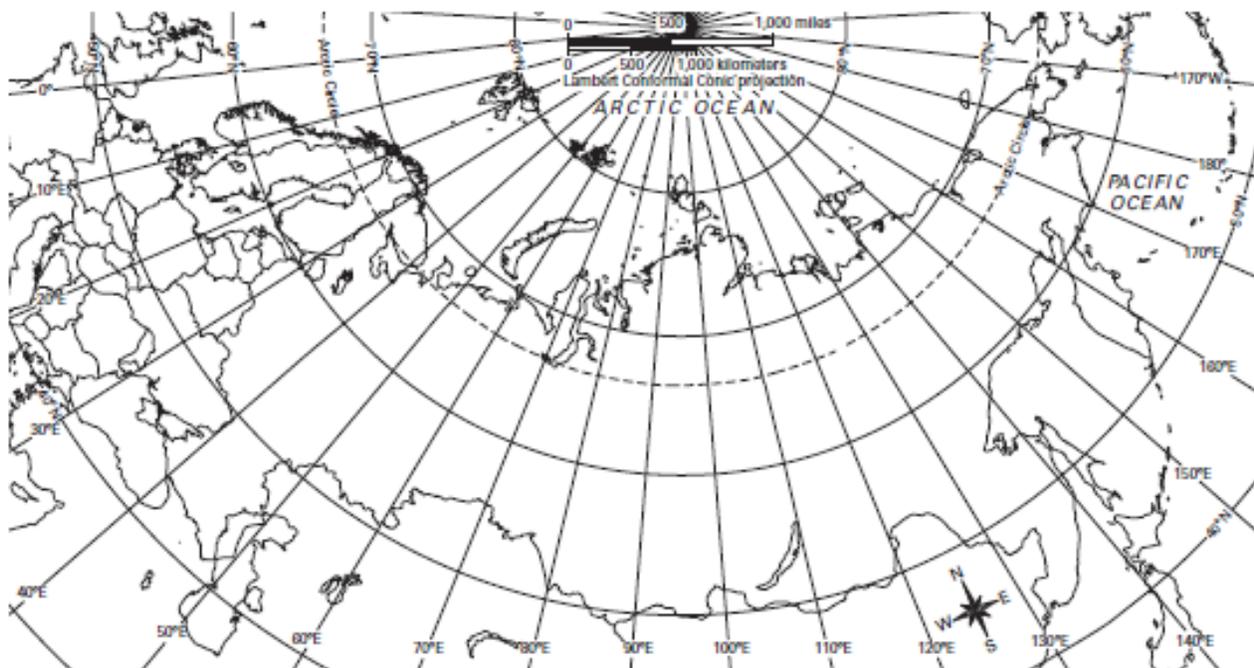
forestry: the planting, growing, and harvesting of trees

Find two or more sentences with information that is graphically represented on the Economic Activity map.

Part B: Locate Countries of Europe and Russia

Use the coordinates to locate and label each place. Make sure it is clear where each country is.

1. Croatia (45°N, 15°E)
2. Finland (65°N, 25°E)
3. France (45°N, 3°E)
4. Greece (40°N, 22°E)
5. Hungary (47°N, 20°E)
6. Italy (45°N, 10°E)
7. Poland (52°N, 20°E)
8. Russia (60°N, 90°E)
9. Ukraine (50°N, 30°E)
10. United Kingdom (52°N, 2°W)



GEOGRAPHY CHALLENGE 2

Use the thematic maps to answer the questions. For each question,

- write your answer.
- record the thematic maps you used.

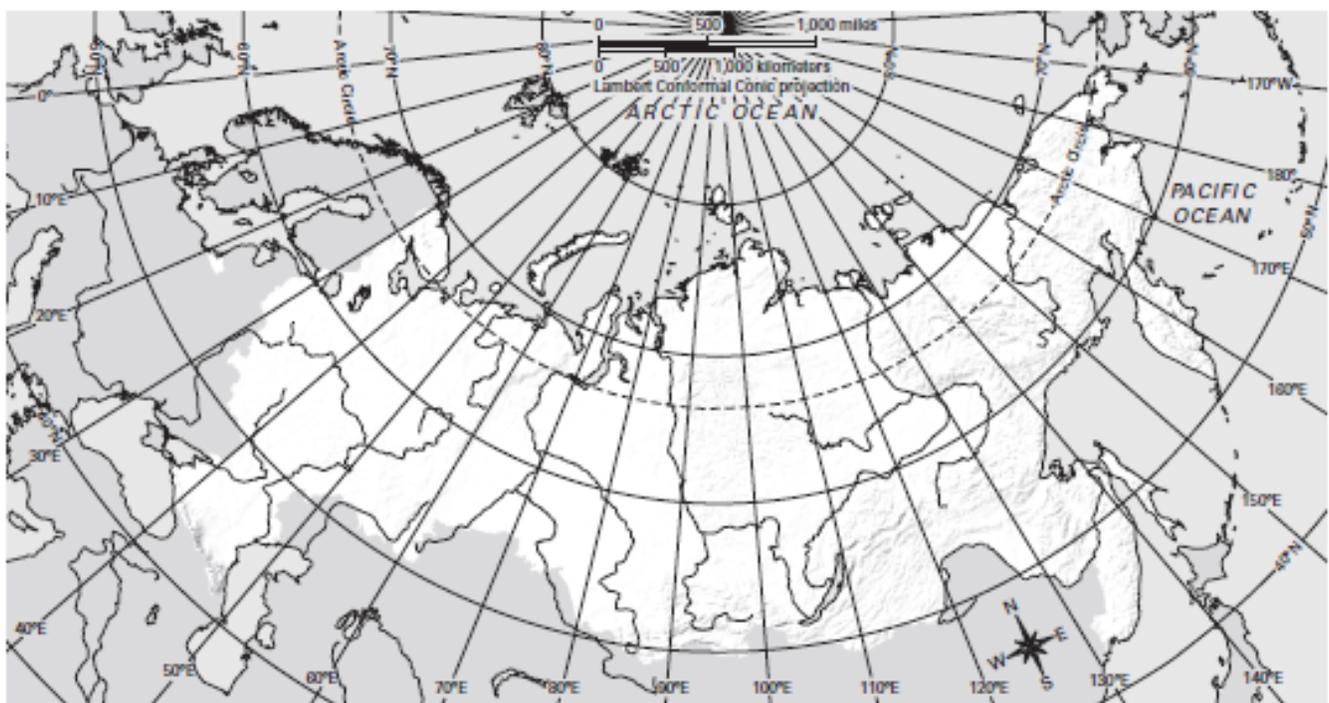
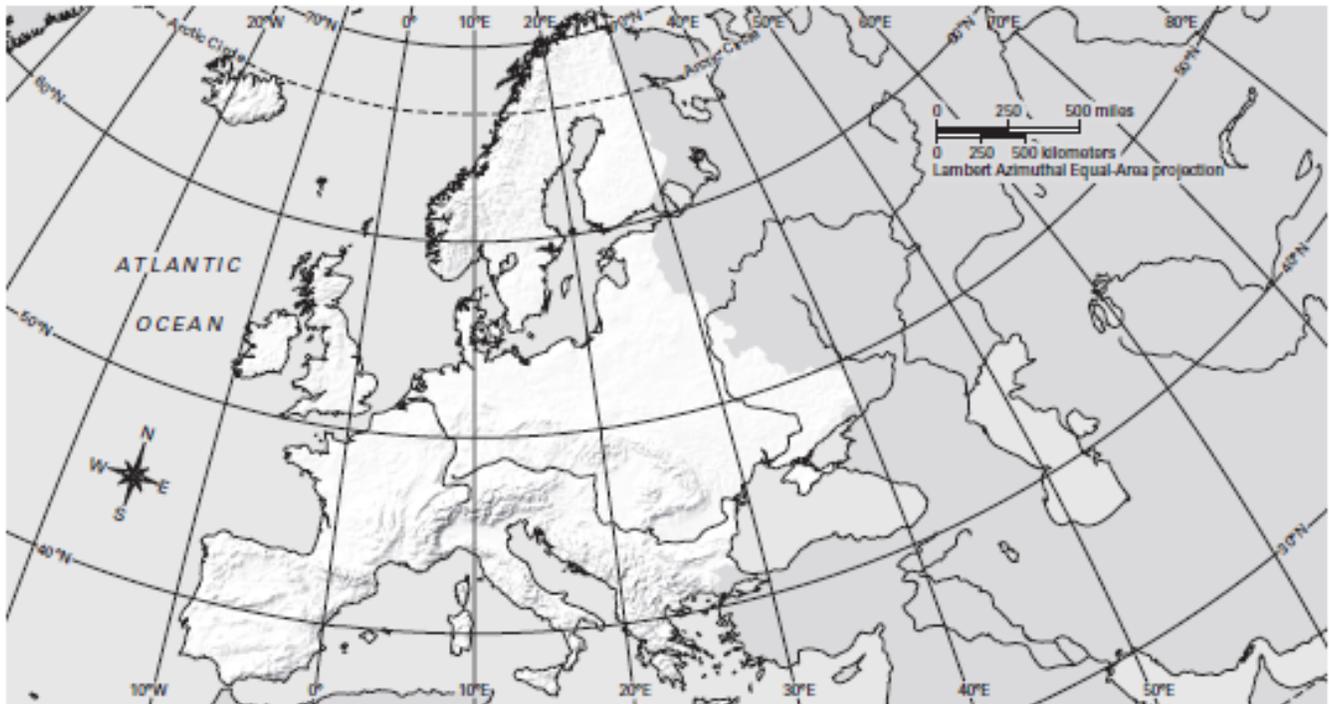
Question	Answer
1. What climate is most common above 70°N latitude? What countries have this climate?	
Map Used:	
2. What is the most common resource found in Russia east of 90°E?	
Map Used:	
3. What highly populated city of Europe lies on the prime meridian?	
Map Used:	
4. Which four countries in Europe have the lowest overall population density?	
Map Used:	
5. What kind of vegetation is common in the countries around the Mediterranean Sea? Name three countries that have this vegetation type.	
Map Used:	
6. What is the most common type of climate in Europe? Name five countries that have only this climate type.	
Map Used:	

<p>7. What river runs through the center of Hungary, into Serbia, and then runs along the border between Romania and Bulgaria?</p>	
<p>Map Used:</p>	
<p>8. Find a single longitude line in Russia where there is a cluster of minerals, including iron, precious metals, coal, and petroleum. What degree of longitude is it? What physical feature might explain this cluster, and why?</p>	
<p>Map Used:</p>	
<p>9. What is the main economic activity in Poland, Belarus, Lithuania, Latvia, and Estonia? How might the climates there explain why this is the main activity? How might the physical features of the land help explain it?</p>	
<p>Map Used:</p>	
<p>10. In which European city does this man most likely live? Why do you think so? “I am from a city of over 4 million people. I work in a plant where we manufacture handbags. Most of my friends work in manufacturing, too. I like to climb in the mountains not far from my home. I also love driving to the Mediterranean seashore for the weekend. The climate where I live is great, because winters are mild with just a little rain.”</p>	
<p>Map Used:</p>	

GEOGRAPHY CHALLENGE 3

1. Mark locations A, B, and C on the map.

- Location A (66° north, 25° east)
- Location B (57° north, 22° east)
- Location C (67° north, 79° east)



2. Use the thematic maps to write as much information as possible about the three locations.

Thematic Map	Location A (66° north, 25° east)	Location B (57° north, 22° east)	Location C (67° north, 79° east)
Physical Features			
Climate Zones			
Vegetation Zones			
Population Density			
Economic Activity			

Where Are You! Game

We think the field photograph best matches Location _____ .

Supporting-evidence statements:

1. From the _____ map, we learned that this location ...

In the field photograph, we see ...

2. From the _____ map, we learned that this location ...

In the field photograph, we see ...

3. From the _____ map, we learned that this location ...

In the field photograph, we see ...

Population Dilemmas in Europe

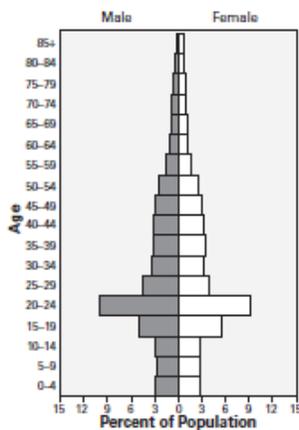
How do population trends affect a country's future?

Preview

A population pyramid shows the size of age groups by sex within a population. Look carefully at the four population pyramids below. They show information from Census data about four American cities.

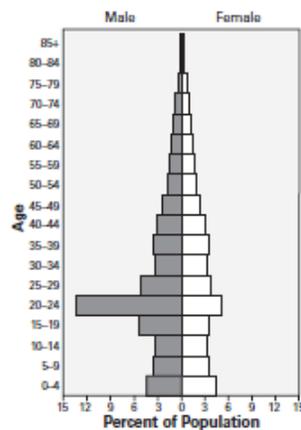
Think about the people who live in each of these cities. Suppose you took a photograph of a group of people in each city. What might they look like? What type of clothing might they be wearing? Your teacher is projecting four photographs. Try to match each one to one of the pyramids below.

Photograph _____



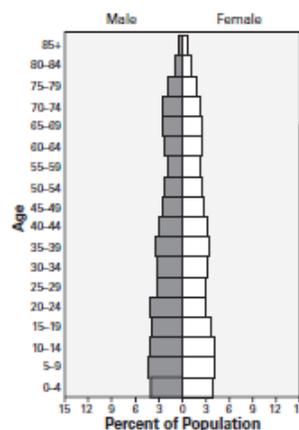
College Point

Photograph _____



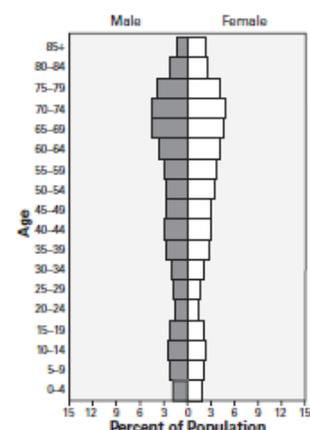
LeJeune

Photograph _____



Youngsville

Photograph _____



Sunset Haven

Population Dilemmas in Europe

Introduction

You are driving in southern Italy on a hot summer day. As you wind your way through dry, brown hills, you decide to stop for a cold drink. You park your car in the tiny village of Cersosimo. As you wander through the old narrow streets, you notice something strange. Cersosimo is filled with elderly people! In fact, for every three faces you see, two of them are at least 65 years old. Looking in at the village school, you see that children of all ages are studying together in just one small class.

Finally, you find a shop where you can buy your cold drink. You ask the shopkeeper why there are so many elderly people and so few children in Cersosimo. He replies that families here just aren't having children these days. A few years ago, the village tried to change this trend by offering to pay mothers a "birth bonus" for every baby born in Cersosimo. However, even with the birth bonus, little had changed, and villagers still preferred to have small families.

The story of Cersosimo is the story of Italy, and according to geographers who do research in **demography**, it is also the story of Europe. Demography is the study of human populations and how they change over time. Demographers look at **birth rates**, **death rates**, and human migration. These measures help them track population trends, or the general direction in which population numbers are moving, as well as their effects. In Europe, for example, they are examining the consequences of long-term low birth rates.

In this lesson, you will learn about population trends in Europe. You will see some of the problems created by shrinking family sizes and explore how European countries are attempting to address these problems.



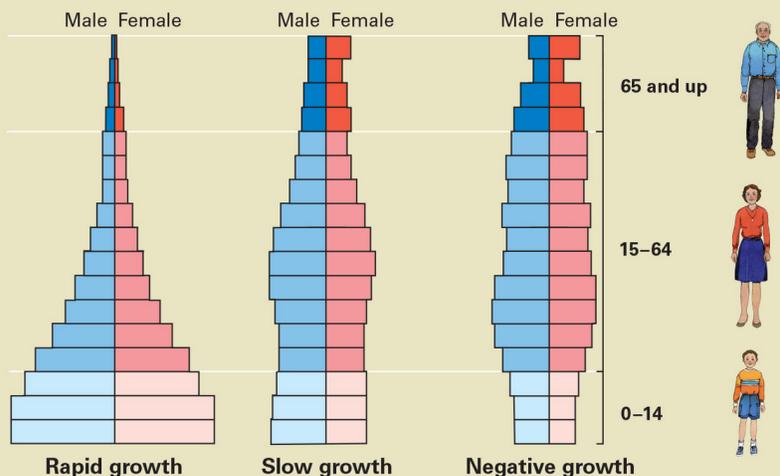
With few babies being born, Italy has one of the oldest average ages in the world.

Essential Question

How do population trends affect a country's future?

These diagrams are called **population pyramids**. They show the makeup of a country's population by sex and age groups. Geographers use such diagrams to study population trends in a country. Notice how each pyramid has a different shape. Keep these pyramids in mind as you try to answer the Essential Question.

Graphic Organizer



The Geographic Setting

Europe is one of the smallest continents in size, but approximately 10 percent of the world's people live there. This high population density may not hold steady much longer for two reasons. First, Europe has the oldest population of any continent. Second, it has the lowest birth rate, or number of births per 1,000 people, of any continent. As a result, its population is on course to begin shrinking.

Population Change: Births, Deaths, and Migration The study of population trends focuses on three factors: births, deaths, and migration. Whether a population grows or shrinks depends on the trends of these three factors.

Children are born every day in Europe, but the average number of babies born to each woman is low. This average number of births is called the **total fertility rate**, or TFR. In 2016, for example, the TFR in Italy was less than 1.5 babies per woman.

If the TFR remains this low, Italy's population will decline. To stop this trend, the TFR would need to rise to the **replacement rate**, or the rate at which enough babies are born to replace the people who die each year. In Italy and the rest of Europe, the replacement rate is just over 2 babies per woman.

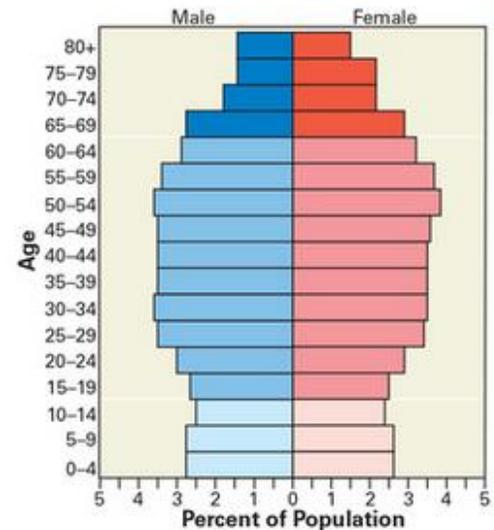
People also die every day in Europe, but they die at older ages than they used to. Over the past century, **life expectancy**, or the number of years a person can expect to live, has increased in Europe. In 2016, the average person in France could expect to live about 82 years. In 1900, life expectancy in France was only 45 years.

Additionally, people move into and out of Europe every day. In the past, most migration was out of Europe, as people left to escape wars and poverty. Today more people are migrating into Europe than are leaving it. However, there still are not enough immigrants arriving to keep Europe's population stable.

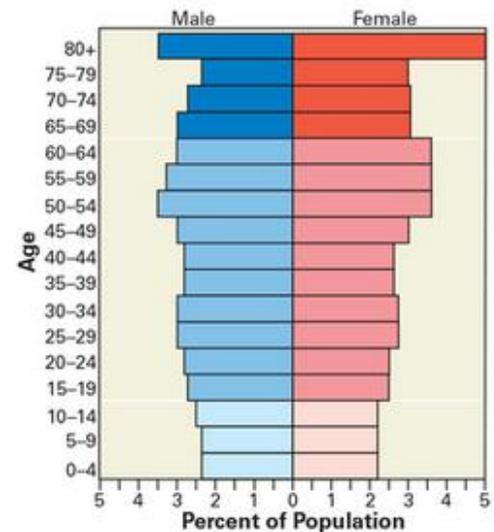
Population Pyramids Show Growth Trends Geographers use pyramid-shaped graphs to study population. These graphs show the ages and sexes in a population, with the youngest ages displayed at the bottom and the oldest at the top.

The shape of a population pyramid reflects how a country's population is growing. A pyramid that is wide at the bottom shows rapid population growth, which means more people are

Europe, 2015



Europe, 2040 (Estimated)



Source for all population pyramid data:
United Nations Population Division.

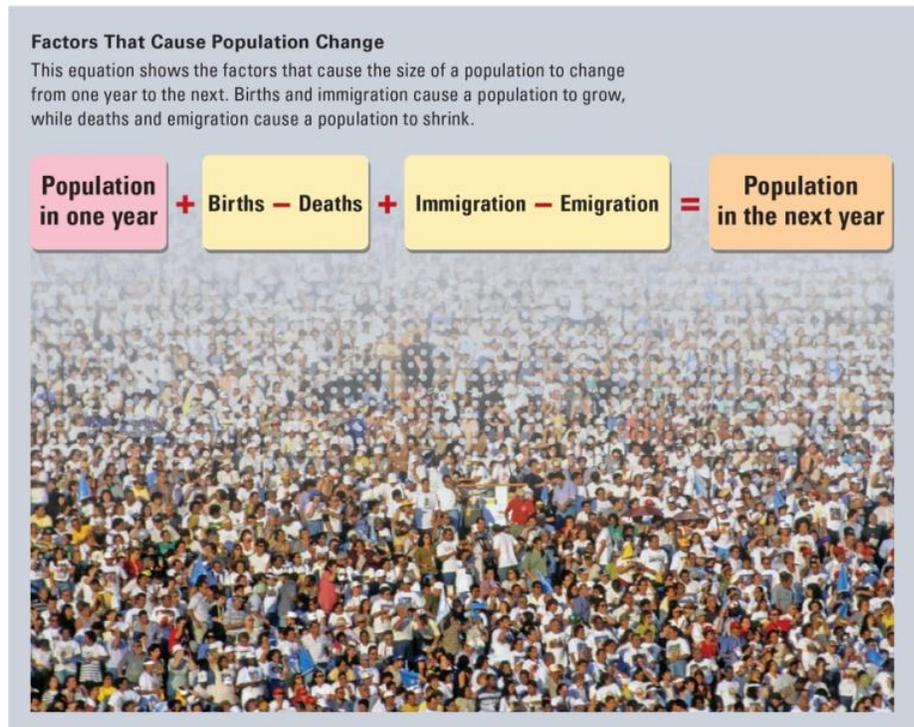
Population Trends in Europe

A population pyramid is made up of two back-to-back bar graphs. One shows the number of males in different age groups, and the other shows the number of females in different age groups. The first of these pyramids graphs Europe's population in 2015, and the second reveals how that makeup is likely to change by 2040.

being born than dying each year. A pyramid with straight sides

indicates slow population growth, with births and deaths nearly equal in that country. A pyramid that is narrow at the bottom reflects negative population growth, which means more people are dying each year than are being born.

Population growth affects a country's **dependency ratio**. This ratio compares the number of people too young or old to work with the country's working-age population. In Europe, most young people under the age of 16 do not work, and the age of retirement is 65 in many countries. Both groups depend on other people to support them. A low dependency ratio indicates that workers have few dependents to support. A high dependency ratio means just the opposite—that there are a lot of young or old people for workers to support. Later you will see how Europe's high dependency ratio has posed problems for its economy.



► Geoterms

demography the study of human populations, including how they change due to births, deaths, aging, and migration

dependency ratio the number of old and young dependents who do not work compared with the working-age population. The higher the ratio, the more young and old people the workers have to support.

life expectancy the average age that a person in a given population can expect to live to. Life expectancy varies from one country to another.

replacement rate the total fertility rate needed for a population to replace itself. This number varies by country, but it is about 2.1 in most developed countries.

total fertility rate (TFR) the average number of children a woman in a given population will have in her lifetime. This number is different in different countries.

Write true or false next to each statement.

1. Population growth affects a country's dependency ratio.

2. In order for Italy's population to stop declining, the replacement rate must be higher than the total fertility rate.

3. The decreasing Italian life expectancy is a direct cause of the decreasing population in Italy.

4. The amount of births, deaths, and migration are directly related to population trends.

Section 1 - The Geographic Setting

Read the Introduction and Section 1. Then, create an illustrated dictionary of the Geoterms by completing these tasks:

- Create a symbol or an illustration to represent each term.
- Write a definition of each term in your own words.
- Write a sentence that includes the term and the word *Europe*.

demography

Symbol:	Definition:
	Sentence

dependency ratio

Symbol:	Definition:
	Sentence

life expectancy

Symbol:	Definition:
	Sentence

replacement rate

Symbol: rural decline:	Definition:
	Sentence

total fertility rate (TFR)

Symbol:	Definition:
	Sentence

2. Population Change in Europe

In 1840, Queen Victoria of England married Albert of Saxe-Coburg-Gotha, a German prince. The royal couple had nine children, and the family served as the model for other English families in that age. In those days, such large families were common in Europe, but as you have read, families of that size are now rare in Europe. In fact, Europe has gone from a growing population to one that is stable and likely to shrink in the 2020s.

From Slow to Fast to No Growth Before the 1750s, the population of Europe rose and fell over time. In bad years, plagues, famines, and wars killed huge numbers of people. In good years, there was enough food to support large families. Overall, there were slightly more births than deaths, keeping population growth low.

In the 1750s, Europe entered a long period of accelerated population growth. Improvements in sanitation and health care caused death rates to decline, while food supplies increased, making it possible for the population in Europe to grow quickly.

After 1900, most Europeans moved from farms to cities. As a result, they no longer needed large families to help with the farming, and birth rates began to fall. As birth rates declined, population growth slowed and, from 1996 to 2001, Europe's total population shrunk.

A Model of Population Change Demographers have identified several stages of population growth. The four major stages appear in the **demographic transition model** graphic in this section. A model is a simplified version of something complex that can be used to make predictions. According to this model, populations go through transitions, or changes, as a country develops economically.

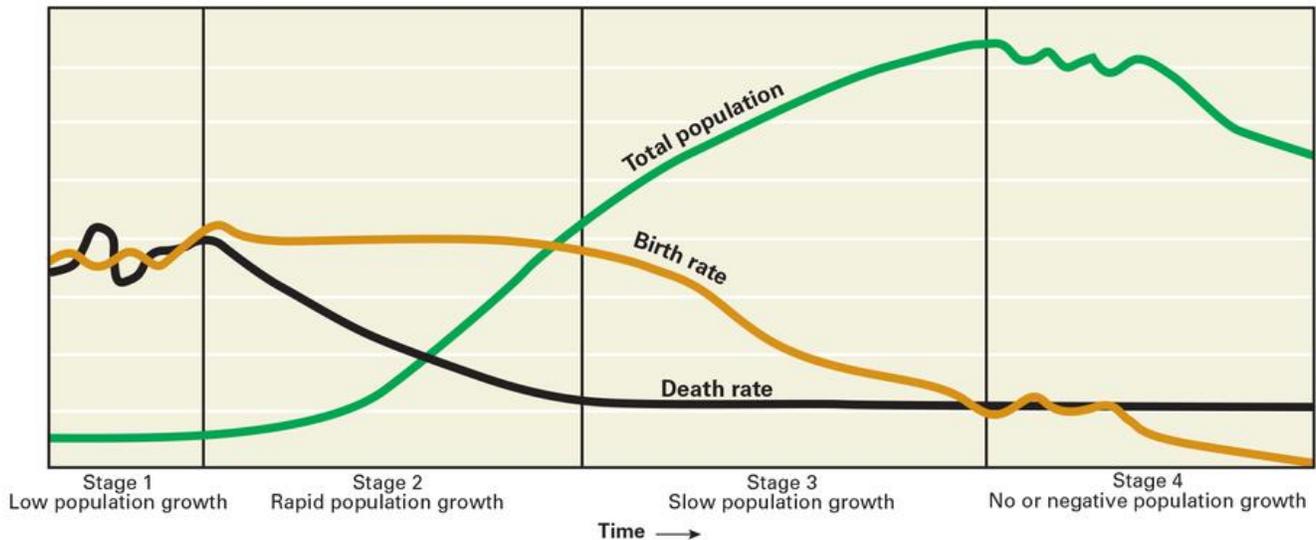
- **Stage 1: Low population growth.** All populations begin at this stage. In this stage, high birth rates and high death rates result in little population change.
- **Stage 2: Rapid population growth.** Birth rates remain high as economic development begins. However, death rates fall as food supplies increase and health care improves. The result is rapid growth.
- **Stage 3: Slow population growth.** As the economy improves, birth rates decline, the death rates stay low, and population growth begins to slow.
- **Stage 4: No or negative population growth.** In **developed countries**, both birth rates and death rates drop to low levels. As a result, there is little or no population growth, and birth rates may eventually fall behind death rates, resulting in a shrinking population.



A Large Royal Family

In the 1800s, Queen Victoria and Prince Albert had nine children, five of whom are pictured. More than a century later, Prince Charles and Princess Diana had two children: Prince William and Prince Harry.

The Demographic Transition Model



Populations in Transition

The demographic transition model shows population change over time. The word *transition* means change. There is no fixed time for each stage. Some countries may pass through all four stages as they develop, but others may not.

Write true or false next to each statement.

1. Before the 1750s, Europe's population was very steady and rarely increased or decreased in large amounts.

2. Low population growth often comes as a result of high birth rates but also high death rates.

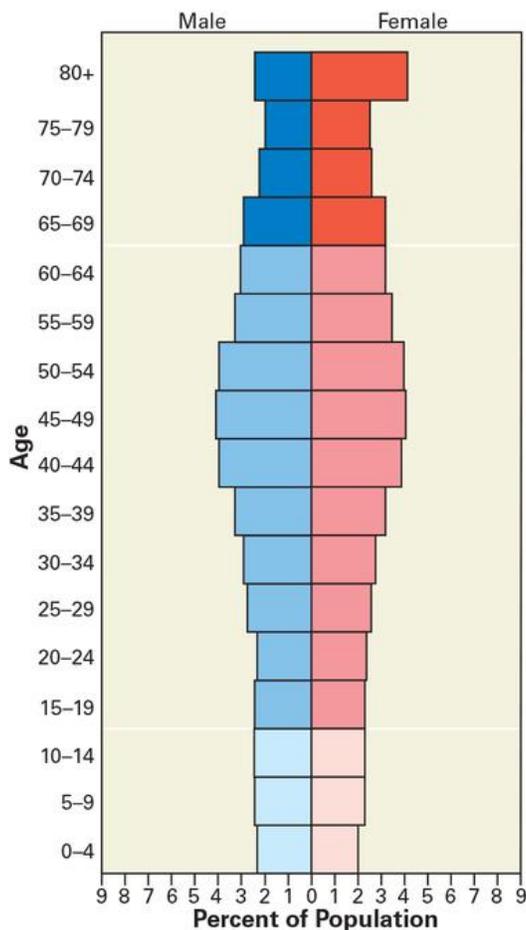
3. Rapid population growth comes as a result of high birth rates while death rates begin to fall.

4. The third stage as a country develops its economy involves slow population growth as birth rates continue to skyrocket.

1. Before reading Section 3, brainstorm at least three answers to this question:
What causes negative population growth?

3. Dilemma One: A Shrinking Population

Italy, 2017



Between 2015 and 2060, Italy's population is expected to shrink from more than 59 million people to fewer than 53 million people. This dramatic plunge in population could have far-reaching effects on the country. Looking ahead, Italy might see empty schools, vacant apartments, and closed businesses.

Causes of Negative Population Growth

A country's total fertility rate is an important factor in determining its future population. Italy's TFR fell well below the replacement rate of 2.1 children per woman several decades ago, and as of 2016, it was 1.43. And Italy is not alone. Across Europe, total fertility rates remain below the replacement rate.

There are many reasons for Europe's low birth rates. More European women are delaying having children so that they can pursue their education and careers. Women who wait until they are older to start having babies tend to have fewer children. Moreover, access to family-planning methods in Europe makes it possible for women to control the number of children they have.

Shrinking Population in Italy

This pyramid shows the population of Italy in 2017. The narrow base of the graph indicates that the Italian population is shrinking.

Family finances also play a part in how many children people choose to have. The high cost of living in much of Europe makes people concerned about their ability to support a family. Because housing costs are expensive, young couples often need two incomes to buy a home. As a result, young women sometimes delay having children so that they can work and earn an income.

Working couples who want children face the issue of childcare. In the past, mothers cared for their children at home. When both parents work, however, they need help caring for their children during the day. Quality childcare can be expensive and hard to find, discouraging couples from having large families.

Problems Caused by Negative Growth Many problems arise when populations shrink. Fewer children need fewer schools and teachers. Over time, declining enrollment likely leads to school closures and teachers losing their jobs. Other people who work with children may also find themselves out of work. For example, businesses geared toward children, such as toy stores and clothing stores, could go out of business.

Declining population can have a serious effect on a country's economy. Babies grow up to be workers, so low birth rates can eventually lead to labor shortages. When businesses cannot find enough workers, they sometimes move to countries that offer a larger labor supply. This change could hurt Europe's economy.

Negative growth also means fewer people available to serve in military forces. Consequently, European countries may lose some of their power and influence in the world.

Which of the following statements are true about Italy's decreasing population?

- A. Many women are putting off having children so they can pursue careers.
- B. With the increasing cost of living in Europe, many couples need two incomes to run a household.
- C. The Italian military has increased in size as a result of young men and women not having children.
- D. Europe's economy has benefited from the fact that so many people do not have children.

Check Answer

Reset



Complete this sentence: *Negative population growth can cause problems for a country because. . .*

4. Before reading Section 4, consider this critical thinking question: *What is the best way to prevent negative population growth?*

Rank the plans listed here from strongest (1) to weakest (5). If your group thinks of other ideas, add them to the ranked list. Be prepared to justify your rankings.

Plan	Your Rank
A. Provide free childcare to working parents.	_____
B. Allow parents to have paid time off when children are born.	_____
C. Encourage parents to have children earlier in their lives.	_____
D. Pay parents a "birth bonus" for each child they have.	_____
E. Other:	_____

4. Responses to Negative Growth

Historically, large families have been part of Italy's culture. Despite this, many couples have decided against having lots of children. In 2003, the government attempted something new and began offering cash benefits. As of 2017, Italy provides at least 80 euros, or around \$95, per month for the first three years of a child's life.

Cash and Benefits for Having Babies It may seem strange to pay families for having babies. However, Italy is not the only country in Europe to offer a cash incentive for larger families. France, for example, provides monthly payments to families that have more than one child. Families with three or more children receive additional benefits depending on how much income they earn. Since 2000, the TFR in Italy and France has risen slightly. However, Italy's population is projected to decline in the long term, whereas France's is expected to continue to grow slowly.

Other countries offer government assistance to families to ensure that children have financial support. For example, in Sweden, the government provides an allowance to families until a child reaches the age of 16 or finishes his or her education. The aim is to support parents in raising their children rather than paying them to have babies.

Family-Friendly Policies for Parents European governments recognize that the difficulty of balancing work and family life discourages many couples from having children. Quality childcare is one prevalent issue. Another is job security. Working parents often want to take time off work to care for their children.

Most European governments have responded to this desire with family-friendly policies to help working parents. For example, the European Union has set minimum standards that its 28 member states must follow with regard to maternity and paternity leave. Leave policies allow new parents to stay home with their baby without losing their jobs and while still being paid. When the leave ends, the parent returns to work. Other policies include flexible work hours and the right to work part time. Governments hope that policies like these will remove some of the barriers to having children and to staying in the workforce.



Maternity and Paternity Leave

Most European governments have family-friendly policies that allow new parents to take time off when they have a baby. When their leave is finished, new parents can return to their jobs.

How did the Italian government respond to the demand for childcare and job security?

- A. The government gave free reliable, quality childcare to parents so they could continue to work.
- B. The government allowed parents to stay home with their children without losing their job.
- C. While parents stayed home with their children, they were not paid by the company.
- D. When the parent returns to work, policies include flexible work schedules and the right to work part time.



Check Answer

Reset

Answer these questions in complete sentences: *Which European program for preventing negative population growth do you think is most likely to be successful? Why?*

Before reading Section 5, brainstorm at least three answers to this question: *What causes a population to age?*

5. Dilemma Two: An Aging Population

Europe is sometimes called “the old continent” because of its aging population. For example, by 2050, the average age of a person in Spain will be 52 years, making the population of Spain one of the oldest in the world. This aging population will also mean more elderly people for Spain to care for.

Causes of an Aging Population A population ages for two reasons: a rise in life expectancy and a drop in the birth rate. Both trends are currently present across Europe. As a result, there are more elderly people and fewer young people than in the past, which means that Europe has an aging population.

Europe will age even more rapidly in the years ahead because of a **baby boom** from 1945 to the 1960s. A baby boom is a sudden increase in the birth rate. Europe’s baby boom began not long after World War II ended. As soldiers returned home and countries recovered from war, marriage rates increased, which in part led to higher birth rates. The average total fertility rate in Europe was greater than 2.5 during much of this period. This means that there is a large population of Europeans born in these baby boom years. However, by the 1970s, birth rates had started to decline.

By 2010, the people born toward the end of Europe's baby boom were entering their 50s. Many baby boomers have already retired, and others will retire in the next decade, swelling the elderly population of Europe.

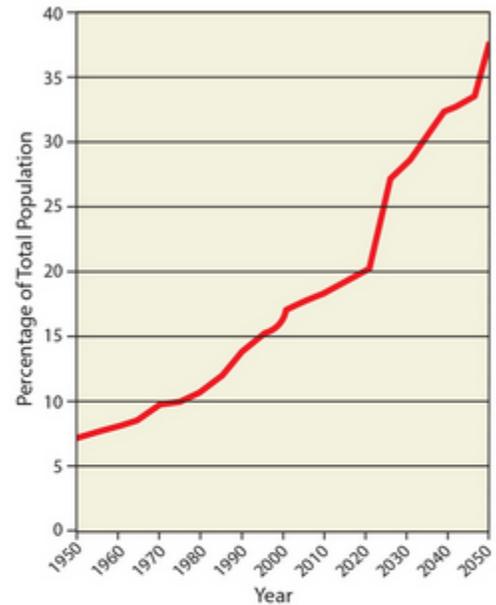
Problems Caused by an Aging Population Most people would agree that living longer, healthier lives is a good thing. Yet an aging population also creates problems for a society. In many aging societies, the two biggest concerns are **pensions** and health care.

A pension is a fixed amount of money paid to a retired person by a government or former employer. A pension is usually paid from the time a person retires until he or she dies.

Health care is of concern because as people age, their need for health care increases. Older people are more likely than younger people to suffer from such diseases as cancer, diabetes, and arthritis. They are more likely to need expensive surgeries and costly medicines. Some need special care available only in nursing homes. All of these needs cost money.

Most European governments provide pensions and health care for senior citizens. The money to pay for both comes from taxes paid by working people. This system functions as long as the dependency ratio is low. However, the combination of a growing elderly population and fewer

Spain's Elderly Population



Population Aging in Spain

This line graph shows how the percentage of people aged 65 and over has increased in Spain since 1950. It also predicts how that population will grow in the future. One reason for the change since 1950 is a steady rise in life expectancy.

young people joining the workforce is causing the dependency ratio to rise. In other words, an ever-smaller workforce is supporting an ever-larger elderly population.

The simplest solution to rising costs is for governments to budget more money for pensions and health care. However, because of the financial crisis in the late 2000s, many governments in Europe, including Spain's, limited or reduced spending. In 2017, Spain was expected to return to or surpass its 2011 spending levels.



Europe's Aging Population

Spain is not the only country with an aging population. By 2050, the average age in Greece and Portugal will be around 53 years old, which will make them two of the oldest countries in the world.

Geoterms

baby boom: a sudden increase in the birth rate of a population

pension: a fixed amount of money paid to a retired person by a government or former employer

Which of the following statements are true about Europe's aging population?

- A. The aging population in Europe has caused taxes for the working people to drop.
- B. The government or former employer is forced to pay pensions.
- C. The government is in charge of health care for senior citizens. This money to pay for health care comes from taxes paid by working people.
- D. Since the dependency ratio of Europe is very low right now, this policy of health care for senior citizens works efficiently.

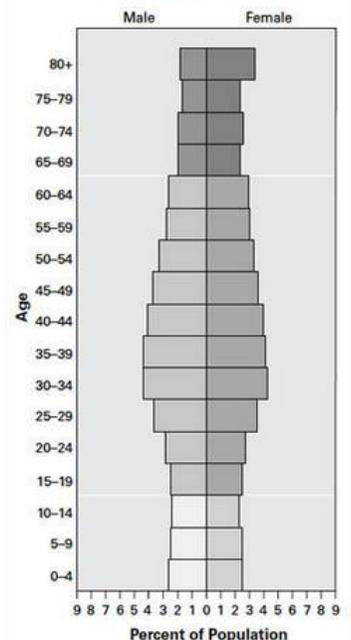
Check Answer

Reset



Complete this sentence: *Population aging can cause problems for a country because. . .*

Spain, 2008



4. Before reading Section 6, consider this critical thinking question: *What is the best way to cope with population aging?*

Rank the plans listed here from strongest (1) to weakest (5). If your group thinks of other ideas, add them to the ranked list. Be prepared to justify your rankings.

Plan	Your Rank
A. Require people to save for their own retirement.	_____
B. Give people over 65 a “pension bonus” for each extra year they work.	_____
C. Pay relatives who stay home to help older family members.	_____
D. Encourage companies to pay for health care.	_____
E. Other:	_____

6. Responses to an Aging Population

In 2002, Spain hosted the United Nations Second World Assembly on Ageing. Kofi Annan, who was then the United Nation’s secretary-general, opened the meeting. For the first time in history, he reported, older people will soon outnumber younger people. Borrowing a line from a song by the English band the Beatles, Annan asked the assembly, “Will you still need me, will you still feed me, when I’m 64?” Then he added, “I trust the answer is yes.”

Dealing with Pension Costs One of the issues discussed at the UN assembly was how to solve the problem of rising pension costs. With more retired people in Europe than ever before—who are also living longer than in the past—European countries face the challenge of how to support their seniors. And the challenge has grown since the assembly.

One way to reduce pension costs is to cut the amount of money each worker receives. However, cutting pensions too much seems unfair to people who depend on this income to live, and it is generally an unpopular policy. When Greece cut pensions in 2017, pensioners staged massive protests.

Another approach is to raise the retirement age. Keeping people in the workforce longer will shorten the time that they will need government pensions. Countries across Europe have already raised the retirement age in recent years and further increases are scheduled into the 2030s. Also, some countries, such as Spain and the Czech Republic, have increased the time that a worker must contribute to the system in order to receive a full pension.

Providing Health Care Governments are also searching for smarter ways to provide health care for their elderly citizens. For example, two relevant principles guide health care policies for Germany’s elderly population. The first principle is that preventing health problems is better than treating them. The second is that home care is preferable to care in a nursing home.

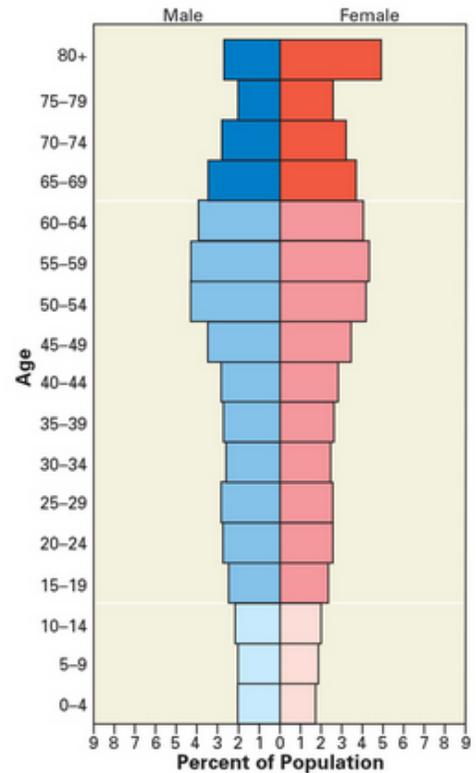
Many countries are looking at ways to encourage family members to care for older relatives at home. Home care costs less and is often preferred by older people. For example, Austria offers financial support for people who provide long-term care for family members.



Pension Reform

These people are protesting against proposed pension reforms outside the British Parliament. Like many older Europeans, the elderly in the United Kingdom live on monthly payments from their government.

Spain, 2030 (Estimated)



Spain’s Baby Boom “Bulge”
 Note the “bulge” in this population pyramid. It represents Spain’s baby boomers. Over time, the bulge will move up the pyramid. At this happens, the number of pensioners in Spain will increase.

Answer these questions in complete sentences: Which European program for coping with populations aging do you think is most likely to be successful? Why?

Before reading Section 7, brainstorm at least two answers to this question: *What causes a workforce to decline?*

7. Dilemma Three: A Declining Workforce

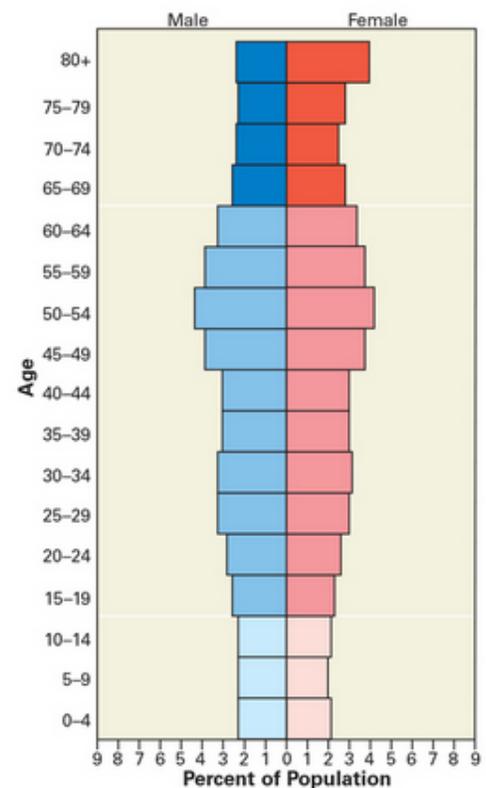
In 2004, a German museum opened an exhibit called “Shrinking Cities.” It showed what happens when a city like Leipzig, Germany, loses most of its workforce. Leipzig’s problems began with a drop in the birth rate which, in turn, meant an eventual drop in the city’s workforce. Faced with a shortage of workers, businesses left the city, and workers followed in search of jobs. Leipzig recovered through a series of development and modernization programs that helped to attract new residents, but the city may be an outlier in Europe’s changing demographics.

Causes of Workforce Decline The main cause of workforce decline across Europe is simple: more workers retire each year than join the workforce. This decline will only grow worse as baby boomers continue to retire. The number of people of working age in Germany, for example, will likely fall from around 49 million to 34–38 million by 2060.

Workforce decline changes the dependency ratio—the ratio of dependents to workers—as more people are dependent on fewer workers. In Germany, there were 52 dependents for every 100 workers in 2010. By 2040, estimates show that there will be 76 dependents for every 100 workers. That’s a rise of 32 percent in Germany’s dependency ratio.

Problems Caused by Workforce Decline In many European countries, young people have trouble finding jobs. To them, a shrinking workforce may appear to be a good thing because as older workers retire, there will be more jobs for younger workers.

Germany, 2017



Germany's Working-Age Population in 2017

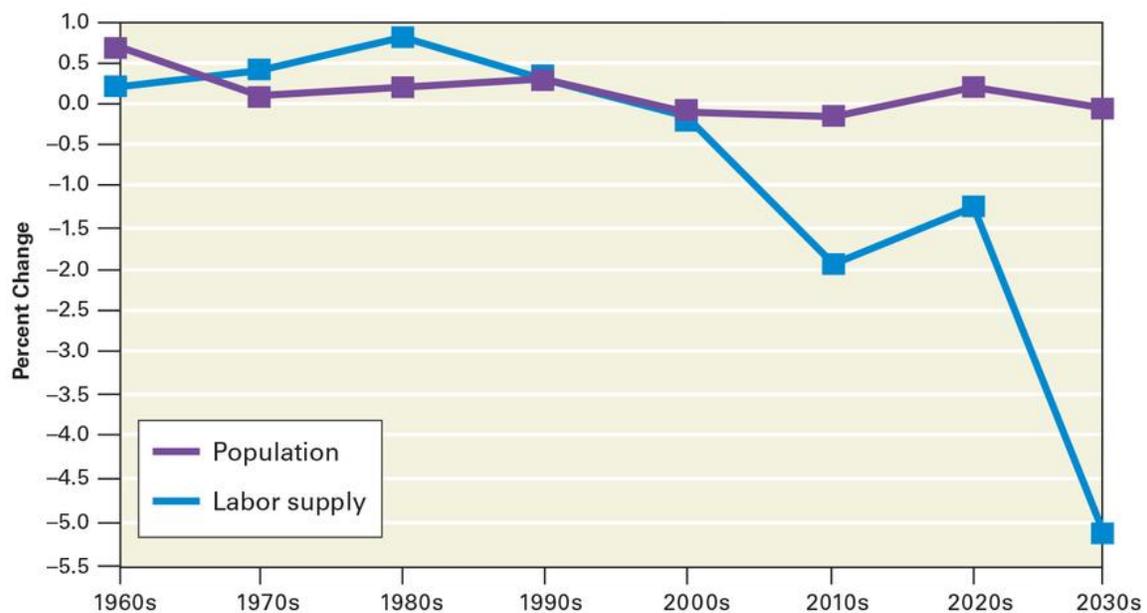
Germany's working-age population is shown in medium colors in the middle part of this graph. People too young to work are shown in light colors at the bottom. People too old to work are in dark colors at the top. In 2017, working-age people outnumbered those who were too young and too old to work.

For a business, workforce decline can be problematic. Facing a shortage of skilled workers, businesses may move to other countries, shrink their operations, or close their doors altogether. If this happens to many businesses in a country, the national economy may shrink.

Not only does workforce decline cause problems for businesses, but it also poses a big problem for the government. Workers pay most of the taxes that support government programs. Fewer workers will mean less tax money just at a time when the dependency ratio is rising.

Some countries may take steps to fix these problems. The German government has eased immigration restrictions on skilled labor. By accepting refugees, it may increase the working-age population.

Changes in Germany's Population and Labor Supply



Fewer Workers in Germany's Future

Germany's shrinking population creates problems for businesses, such as fewer customers and a shortage of skilled workers. This will get worse as baby boomers continue to retire. Look at the percentage of change for each decade. Note the major change predicted to occur by the 2030s.

Complete this sentence: *A declining workforce can cause problems for a country because. . .*

Write true or false next to each statement.

_____ As workers begin to retire, it opens up more jobs for younger workers.

_____ Workforce decline leads to changes in the dependency ratio.

_____ Despite this workforce decline and decrease in skilled workers, many companies will choose to stay in Germany.

_____ When more workers retire each year than join the workforce, the workforce declines.

_____ Workforce decline is an issue for many businesses because it leads to a decrease in skilled workers.

Before reading Section 8, consider this critical thinking question: *What is the best way to cope with a declining workforce?*

Rank the plans listed here from strongest (1) to weakest (5). If your group thinks of other ideas, add them to the ranked list. Be prepared to justify your rankings.

Plan	Your Rank
A. Allow workers from other countries to take available jobs.	_____
B. Give mothers paid time off and flexible schedules.	_____
C. Require current workers to work more years before they retire.	_____
D. Move factories to other countries.	_____
E. Other:	_____

8. Responses to a Declining Workforce

In mid-2017, about 700,000 jobs in Germany went unfilled. Employers could not find enough skilled German workers to fill these positions. This occurred despite the fact that Germany accepted more than one million asylum seekers in 2015 and 2016.

Finding More Workers in Europe Some countries in Europe are trying to slow workforce decline. One approach is to keep older workers working longer. In Germany, for example, companies retrain older workers and adjust workplaces to better suit the needs of these workers. Other countries encourage older people to work part time or at home.

Another approach to slowing workforce decline has been to encourage more women to join and then stay in the workforce. In the past, a woman often left the workforce after having her first child because she found it difficult to balance work and family life. However, the gender gap in employment rates has plateaued in recent years, and the gap between men and women aged 20–24 is half that of the gap in older age groups.

In recent years, European governments have realized how crucial family-friendly work policies are to retaining women in the workforce. You read earlier about such policies as giving parents paid time off work when they have a baby, allowing flexible work schedules, and ensuring quality childcare. By helping women balance work and family, governments hope to make staying in the workforce appealing.

Looking for Workers Outside of Europe Another way to address the problem of workforce decline is to look for workers outside of Europe. One way to find those workers is to move jobs once performed in Europe to different parts of the world. For example, the German company Volkswagen has only 28 production plants in Germany but 92 in other countries, including Brazil, Mexico, South Africa, and the United States.

A second way to find additional workers is to encourage immigration to Europe. Not all Europeans, however, welcome this idea. They worry that immigration may cause more problems than it solves.



Training New Arrivals

This education center in Berlin provides vocational training to immigrants who have recently arrived in Germany. The goal is to prepare those who stay in Germany to find employment.

Answer these questions in complete sentences: Which European program for coping with a declining workforce do you think is most likely to be successful? Why?

Summary

In this lesson, you learned about demography, the study of human populations and how they change. You learned how a type of graph called a population pyramid shows the population makeup of a country. These graphs show whether a particular population is likely to grow, stay the same, or decline.

Negative Growth in Europe You also learned that most countries in Europe will face negative population growth in the future. This will happen because the total fertility rate has dropped below the replacement rate. In other words, women are not having enough babies to replace the people who die each year. At the same time, Europe's population is aging because life expectancy is rising.

Negative population growth in Europe poses several problems, including an increase in dependency ratios. Most retired Europeans depend on their governments for pensions and health care. Governments, in turn, depend on taxes paid by working people to pay for these benefits. However, with declining populations, there are fewer workers each year to pay those taxes at the same time that there are more older people depending on those taxes for support.

Global Population Trends Europe is not the only place with an aging population. Developed countries in other world regions are seeing the same population trends. Japan, for example, is aging as rapidly as Europe, if not faster.

Many developing countries are seeing different population trends than developed countries. In developing countries, total fertility rates are dropping more slowly, and life expectancy is rising slowly as well. For example, in Nigeria the total fertility rate in 2017 was 5.4 children per woman. Life expectancy for a child born that year was 54 years. As a result, Nigeria's population is young and still growing.

As you look at the next section, think about these population trends in developed and developing countries around the world.



A Young Population in Nigeria

Nigeria has a much higher birth rate than Italy. As a result, around 44 percent of its population is under the age of 15. In contrast, just over 13 percent of all Italians are under the age of 15.

Use the flipbook of U.S. population pyramids from 1950 through 2050 that you created during this lesson to answer the questions below.

1. Flip through the U.S. population pyramids from 1950 through 2050. List three interesting things you notice as the bars move.

2. Is the population aging? Analyze the pyramids in your flipbook to answer this question. Explain your answer in at least two sentences.

3. How can the United States prepare for the demographic changes that are predicted by 2050? Rank the plans listed here from strongest to weakest. If you think of other ideas, add them to the list.

4. Justify your top two rankings in complete sentences.

Plan	Your Rank
A. Encourage immigrants to continue to enter the United States.	_____
B. Require baby boomers to work until age 70.	_____
C. Provide government-sponsored childcare for working parents.	_____
D. Pay a \$2,000 "medical bonus" to seniors who do not rely on the government for health insurance.	_____
E. Other:	_____
