Introduction

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

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.
1. 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 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.

Source for all population pyramid data:
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 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.
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.
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.

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.

### The Demographic Transition Model

![Demographic Transition Model Graphic]

#### 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.

### 3. Dilemma One: A Shrinking Population

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.
A 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.

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.

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.

**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.

**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.
**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.

**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.

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**Spains Elderly Population**

**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 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.

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.

![Spain, 2030 (Estimated)](image)

**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.
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.

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.

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.
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.

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

![Graph showing changes in Germany's population and labor supply from 1960s to 2030s.]

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.
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.
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.
Global Connections

This map divides the world into developed (rich) and developing (poor) countries. Most rich countries have industrial economies and a high per capita GDP. Most poor countries have an agricultural economy and a low per capita GDP. The pyramids compare the populations of rich and poor countries in 2015 and in 2040.

Why do developed countries have lower birth rates than developing ones? People in all countries want children, but in developed countries, children usually are not needed to support a family or aging parents. Instead, the cost of raising children is seen as an expense. Also, family-planning methods are more available to help couples choose the size of their families.

![World Population, 2015](image)

Why do developing countries have higher birth rates than developed ones? In poorer countries, poverty plays a role in family size. Children often help support their families by working, and because the government does not offer health care and pensions, they continue to do so as their parents age. As a result, a large family is seen as a benefit, not an expense. In addition, many poor countries have a high infant mortality rate. Couples sometimes choose to have many children, fearing that some may die early in life. Finally, a lack of access to family-planning methods means that women sometimes have little control over the number of children they have.
How might high birth rates affect a country’s future? Countries with high birth rates have more young than old people. However, they may not have enough schools to educate their children or enough jobs to employ their young adults. Anger over the lack of such opportunities may lead to widespread frustration and unrest.