**Unit 3: Population and Migration (Lessons 1-4)**

**Introduction**

How many people are there in the world? The number of people on Earth continues to grow. As of October, 2014, an estimated 7.195 billion people live on our planet. Experts predict that the world population will grow beyond 10 billion in the next forty years. Does the planet have enough resources for all of these people?

The maps below show the dramatic population growth of our world.

![Figure 1](image1.png)  
**Figure 1:** In 1800, the human population on Earth was 1 billion.

![Figure 2](image2.png)  
**Figure 2:** The world population in 1927 was 2 billion.

![Figure 3](image3.png)  
**Figure 3:** The world population in 1999 was 6 billion.


The study of population patterns and change is known as **demography**. There are many global issues connected to population. Since the earth has limited resources, changes in the world’s population will affect the
allocation, use, and distribution of these resources. The size and characteristics of a country’s population can have economic, social, environmental, and political consequences for people living there.

Let’s look at an example. Suppose you live in a country where most of the people are under the age of 18 years old. What if most of the people living in that country could not provide food, clothing, or shelter for themselves? Who would help them?

In this unit, we will explore questions about population, migration and urbanization such as:

- How do social scientists investigate population issues?
- How are population, migration, and urbanization issues connected?
- In what ways are issues related to population, migration and urbanization global problems?
- How do social, political, and economic decisions societies make reflect and influence demographics?

It is hard to imagine how many people there are on the planet and how that number continues to change. The population of the planet grows faster and faster each year. The following website will help you visualize how fast the human population is growing on Earth: [http://www.census.gov/popclock/](http://www.census.gov/popclock/).

Understanding and predicting population growth or decline allows us to plan for the future. Many local decisions such as whether to build roads, or open or close school buildings are connected population changes. Similarly, many national public policy issues such as health care and the retirement age are related to population concerns.

**Population Distribution and Density**

People are not evenly distributed across the Earth. Some places on the Earth are densely populated and some are sparsely populated. Demographers are social scientists who study changes in population and population patterns. Population is the total number of people in a particular area. In the United States, the government counts the
population every ten years in what is called the census. Put on your
demographer hat and look at the map below based on the 2010 census. Do
you see any spatial patterns? What are they?

Figure 5

**Population density** is a mathematical concept. It is defined as the number
of people living in a defined area. There are some regions of the United
States that are more crowded than others. This means that they have a
higher population density. For example, the population density of New
York City is 26,000 people per square mile. However, there are also areas
in the United States where there is just one person per square mile.
Overall, the average population density of the U.S. is about 88 people per
square mile.

The natural features or characteristics of a region often influence where
people live. Based on the map in Figure 5, there are more people in the
eastern half than the western portion of the United States. It is easier for people to build communities on flat land. In addition, water provides resources and a means for transportation. These physical features act as pull factors in attracting people to settle near them. There are other physical features that act as push factors since it is difficult to live in certain environments such as mountains or deserts. Looking at the patterns in the map above, what physical features may explain why the population density is high in certain areas? Can you think of any physical features that may explain why the population density is sparse in other areas?

Similarly, people are not evenly distributed across the Earth. Population distribution refers to the spread or pattern of settlement in a given region. Population distribution is the spatial pattern you see when you look at the various population densities in a given area. Both the distribution and density of people on the Earth is related to differences in geographic features and the availability of resources such as jobs, food, water, and transportation.

Demographers study both population density and population distribution. Some questions that their investigations raise include:

- Is the world overpopulated? If the world is not overpopulated now, can it ever be? What criteria would you use to determine “overpopulation”?
- What problems might arise in crowded areas?
- How might living in a crowded place affect your quality of life?

**Population Growth**
The population of a region does not usually stay the same. Everyday babies are born, people die, and yet others move. Population growth depends on three factors: birth rate, death rate, and migration.

![Figure 6: Factors in Determining Population Growth](image)
Birth Rates
How fast is the human population on Earth growing? Every day people are born. The birth rate of an area is the number of births each year per 1,000 people. Birth rates are related to education, economic stability, infant mortality rates, fertility rates, and other factors. Birth rates tend to be high in many less developed countries. In those places, often children are needed to work on farms and eventually care for the elderly. Less developed countries also tend to have lower levels of educational attainment and higher levels of infant mortality, which are linked with high birth rates. On the other hand, higher educated people tend to have fewer children.

Fertility rates can also affect birth rates. The fertility rate is the number of children women on average have. People living on continents such as North America have a lower fertility rate (1.9), while those on continents such as Africa with a large number of less developed countries have higher fertility rates (4.7).

Death Rates
Population growth also depends on the number of people who die. The death rate is the number of deaths each year per 1,000 people. When people live longer we say that they have a higher life expectancy. A higher life expectancy results in a lower death rate. Today, people live longer than ever before due to improved health care and sanitation. However, life expectancy rates are not high all over the world. Poor living conditions, poor sanitation, and lack of available health care all contribute to shorter life expectancy. Due to these factors, less developed countries tend to have higher death rates than more developed countries.

Calculating Population Growth
For a country’s population to grow, the birth rate has to exceed the death rate. As seen in Figure 7 below, population growth rates are higher in less developed countries than they are in more developed countries. Less developed countries tend to have birth rates that are considerably higher than their death rates. Thus, the poorest countries tend to experience the most population growth.
To determine how fast a country’s population is growing, demographers calculate what is known as the rate of natural increase. The rate of natural increase is calculated by subtracting the number of deaths (e.g., death rate) from the number of births (e.g., birth rate). The rate of natural increase is expressed as a percentage. In the United States, the rate of natural increase is about 0.5 percent.

The following video helps visualize the world population growth over time: [http://www.npr.org/2011/10/31/141816460/visualizing-how-a-population-grows-to-7-billion](http://www.npr.org/2011/10/31/141816460/visualizing-how-a-population-grows-to-7-billion).

**Migration**

Although birth rates and death rates are the major factors that contribute to population growth, the movement of people also plays a role. Migration refers to the semi-permanent movement of people. Sociologists classify the causes of the movement of people into two categories: push factors and pull factors. Mass migrations can affect the overall population of a region. Mass migrations tend to occur in response to natural disasters, conflict, or a lack of resources in a region.

**A Demographic Transition Model**

Demographers try to predict the growth of populations so that nations and communities can plan ahead. Decisions such as whether to expand a region’s infrastructure (roads, bridges, water supply, etc.), build schools, or add hospitals have to be made years in advance. Governments need time to draw up plans, raise funds, and complete construction.

Due to the work of demographers studying patterns of population growth, people can now plan ahead. Demographers have found that countries
typically go through four distinct stages of population growth. They call this pattern the demographic transition model. It shows how countries move from a period of high birth and high death rates to a period of low birth and low death rates. This pattern happens as countries become more economically developed. These stages are illustrated in the graph below.

![Figure 8: A Demographic Transition Model](image)

In stage one, both birth rates and death rates are high. This occurs in less developed countries. These countries tend to be agriculturally based and birth rates are high due to the desire for large families. More children means more help with farm work. In addition, poor health conditions mean not all children will survive to adulthood. So, having more children will ensure at least some children will survive to adulthood and be able to support their elderly parents. Poor health and harsh living conditions are also the cause the high death rate in these countries. There will be little population growth for countries in this stage since the birth and death rates are about the same.

In stage two, death rates plummet while birth rates begin to drop only slightly. Improved living conditions and better health practices tend cause the death rate to drop during this stage. Many less developed countries are at this stage because improved health and sanitation conditions result in lower death rates. The United States and many countries of Europe entered stage two during the Industrial Revolution. Improvements in living conditions during this time period lowered the death rate. However, it takes time for birth rates to adjust. In stage two, birth rates take longer to change and drop only slightly. This is because many less developed countries are still agriculturally based, so large families are still desired. Although a country becomes more developed during this stage, it often takes a long
period of time to change attitudes and behaviors about family size; therefore, changes in the birth rate do not happen quickly. As a result, countries in stage two continue to have high population growth.

In stage three, birth rates continue to decline, eventually catching up with death rates. For countries in stage three, population growth will be high at the early part of this stage but fall to near zero in the later part as the birth rates and death rates become almost equal. On the graph above, this can be seen when the green and red lines intersect.

In stage four, birth rates and death rates remain low and become stable. Countries in stage four will have very little population growth since the death rates and birth rates are nearly equal. Today, the United States and other more developed countries such as Japan and many European countries are at stage four of the demographic transition model.

**Population Campaigns**

Since population growth tends to soar when death rates decrease, governments of some less developed countries have made efforts to address this problem by encouraging smaller families. Below are two government-created posters used to try to influence people to have fewer children:

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**Figure 9:** This poster is in support of China’s ‘one child’ policy, which was instituted in the 1970’s as the country became increasingly concerned with its ability to feed its growing population. This policy stipulates that urban couples should have only one child.

**Figure 10:** This poster from India equates large families with lots of problems. India implemented a family-planning policy in the 1950s. Its total fertility rate has declined by more than 40 percent since the 1960’s, and today the average number of children is three per family. Despite these efforts, current projections predict that India will overtake China’s position as the most populous country by 2050.
Why does the age of a population matter?

The age distribution of a population is a factor that many social scientists consider when studying political, economic, geographic, or social issues. Demographers have created a special type of graph called a population pyramid to help social scientists understand the age distribution of population.

Population pyramids can provide three types of very useful information:

- how different ages and genders are distributed,
- whether a population is growing, stable or shrinking, and
- what the age distribution of a population will look like in the future.

Age and Gender Distribution Information

Below is an example of a population pyramid. It shows the population distribution of United States in 2010 in terms of millions of people. One side of the population pyramid shows males and the other shows females. The bars on the graph correspond to different age groups. The width of the bars reflects the size of the population at each age group. Using the pyramid we can see that there were approximately 10 million males between the ages of 0-4 in the United States in 2010.
Notice how wide the bars are for the age groups of 45-49 and 50-54. This group creates a bubble on the population pyramid. These people were born in the 1950’s and are commonly referred to as “baby boomers”. Right now, this age group is still in the work force. How might this group affect the United States in 2020, when they are no longer in the work force?

Demographers refer to two groups of people as dependents, those younger than 15 and those 65 and older. Both these groups are often dependent on the middle group for economic support. The number of dependents compared to the number of people in the work force is often called the dependency ratio. When the dependency ratio gets high, the large number of dependents becomes a bigger financial burden for workers to bear.

Notice the population pyramid of Tanzania below. It looks very different from that of the United States and depicts more of a true pyramid shape. In Tanzania there are many more young dependents relative to those of working age compared to the United States. A country with so many young people will put a strain on its existing schools, teachers, and hospitals. Also, as these children grow older, it will be challenging to provide enough jobs for them.

Population Growth Information
A population pyramid always reflects a country’s current population growth trend. If the number of children at the bottom of the pyramid is large compared to the young adults of child-bearing age, it means the population is growing rapidly. Figure 13 below shows what a population pyramid looks like in this situation. When the number of young adults is approximately equivalent to the number of children, the population is relatively stable.
(Figure 14). When there are fewer kids at the bottom of a pyramid than those people who are in their child-bearing years, it means there are people choosing not to have children, and the population overall is shrinking (Figure 15).

![Figure 13: Rapid population growth](image1)
![Figure 14: Stable population growth](image2)
![Figure 15: Negative population growth](image3)

**Future Population Information**

Population pyramids are helpful in providing current information. They also can be used to project future population growth and to identify potential consequences of the growth pattern. As time passes, people move up the age brackets. Although looking at a current population pyramid may not reveal any problems or issues, “aging” that pyramid can reveal new information. For instance, in the U.S. population pyramids below, it becomes very apparent that by 2050 there will be many more people at the top. These elderly people, who will be at retirement age, may pose a serious strain on the working class who are financially supporting them. The government can use this information and make decisions today to plan for this challenge.

![Figure 16: Changes in U.S. population by age as depicted on three population pyramids.](image4)