

Unit 1

Population dynamics

Glossary

Dynamics – continually changing

Population is the centre around which human geography revolves. Because populations change constantly over time it is necessary for geographers to understand and study population **dynamics**. This topic is the theme of Unit 1 and 2.

As you work through this material you will learn about the growth, distribution, movement and structure of populations. You will also analyse the causes of, and consequences associated with, under – and overpopulation in the developed and developing world.

This unit is divided into four sections:

A	World population growth
B	Patterns of population growth
C	Population structure
D	Human welfare and quality of life (H)

In this unit you will learn to:

- describe the growth of the world's population
- compare population growth rates for the developed and developing world
- identify and suggest reasons for contrasting patterns of population growth
- describe the problems, causes and consequences of different patterns of population growth
- analyse population pyramids to describe the structure of populations
- measure human welfare and quality of life using a variety of different data.

A World population growth

The population of the world increases by 27 people every 10 seconds (according to the Population Reference Bureau). In 1750, there were around 0,8 billion people living in the world. By 1950, the number of people had increased to 2,5 billion. In October 1999, the United Nations Organisation announced that the world's population had officially reached 6 billion people. If current **growth rates** are maintained, this figure is likely to double to 12 billion by the year 2030!

The natural population growth rate of a country is determined by the difference between number of births (per thousand per year) of the total population and the number of deaths (per thousand per year) of the total population. It is usually expressed as a percentage. The population of a country increases when the number of babies born is greater than the number of people who die.

The greater the difference between births and deaths the larger the population change will be over time. This rate is referred to as the **natural increase** of a population.

ACTIVITY 1

Study Table 1 which shows birth and death rates for various countries.

Country	Birth rate	Death rate	Growth rate/1 000	Percentage growth	Ranking	Developed or developing
Kenya	47	10	37	3,7		
UK	14	12				
Japan	12	8				
USA	14	9				
India	31	10				
Brazil	26	8				

Table 1
Population data for different countries

- Calculate the natural growth rates of the different countries. (Use the hint box if you need help.)
The growth rate for Kenya has been worked out for you. It was calculated as follows:
 $47 - 10 = 37$ per thousand
 $37 \text{ divided by } 1\ 000 \times 100 = 3,7\%$
- Rank the countries in the table in order from the highest growth rate to the lowest.
- To complete the last column of Table 1, study the world map in Figure 1. This map shows how the world can be divided into developed and developing countries. Locate each of the countries in the table in an atlas and determine its stage of development.
- What conclusion can you now make using the countries, their growth rates and their levels of development?
- Look at Figure 1 again. What do you think is significant about the position and distribution of the developing regions?

Hint

To calculate the natural growth rate of a country, first determine the difference between the birth and death rate. Divide this difference by 1 000 and multiply by 100 to get a percentage (in other words you are dividing the difference by 10).

If you study the birth and death rates of different countries of the world, you will notice a correspondence between high birth rates and falling death rates in developing countries and low birth rates and death rates in developed countries. The population growth rate is not the same in all countries therefore populations grow at different rates. In the United Kingdom the difference between birth and death rates is very small so the total population is increasing very slowly.

In Kenya there is a big difference between the birth and death rate so the population is increasing rapidly. Some developed countries, such as Denmark, have no difference between birth or death rates so their population numbers are steady. In countries where the death rate is higher than the birth rate population numbers decrease. (See Figure 2.)

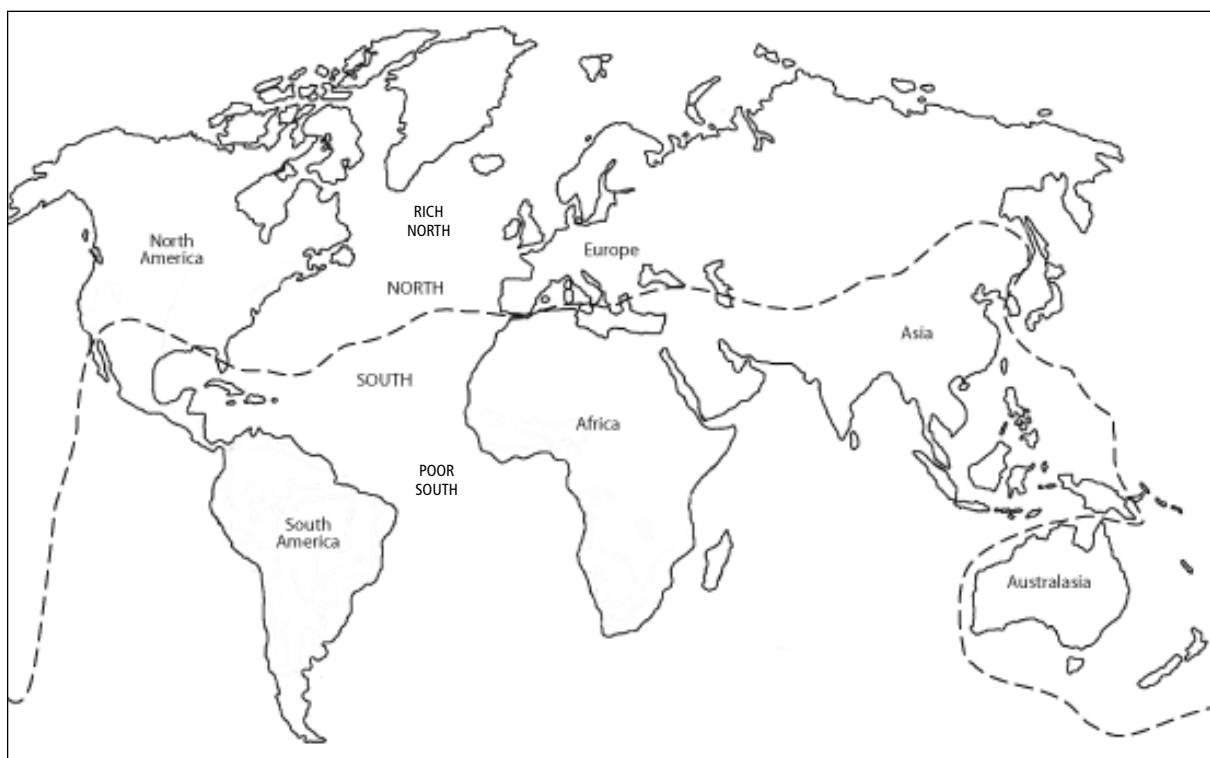


Figure 1
 Developed and developing regions of the world

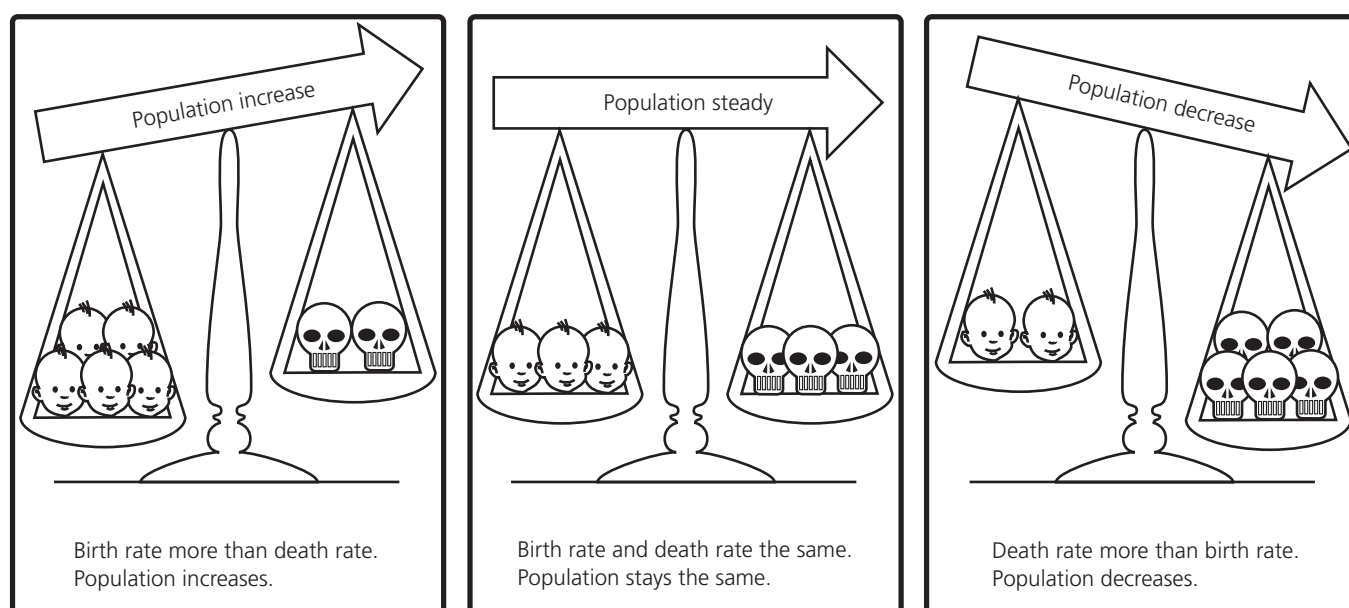


Figure 2
 Developed and developing regions of the world

Figure 3 shows how the population of the world and each continent has increased over time. Notice that all continents show an increase in population but at differing rates. Asia and Africa show large increases over time, while North America shows a smaller increase over the same period of time. The population has grown rapidly since 1900. This rapid increase in the world's Population is sometimes referred to as the **population explosion**. The term refers to the sudden increase in population growth in recent times.

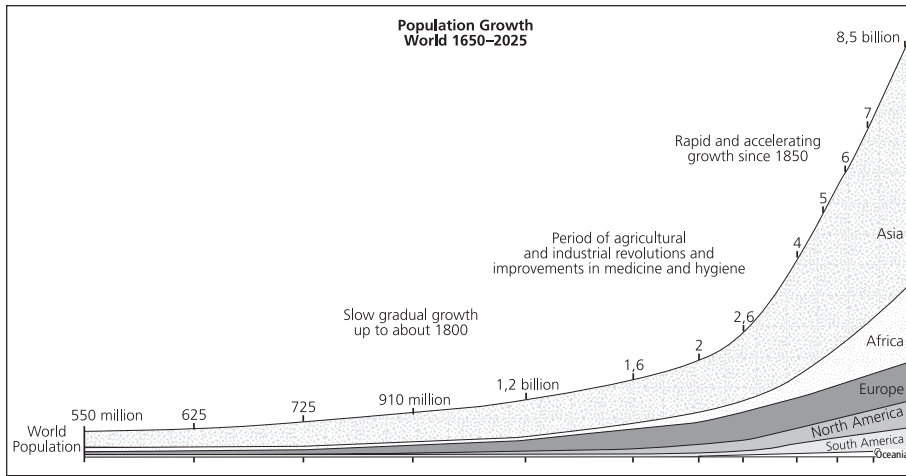


Figure 3
 World population growth from 1650 – 2025

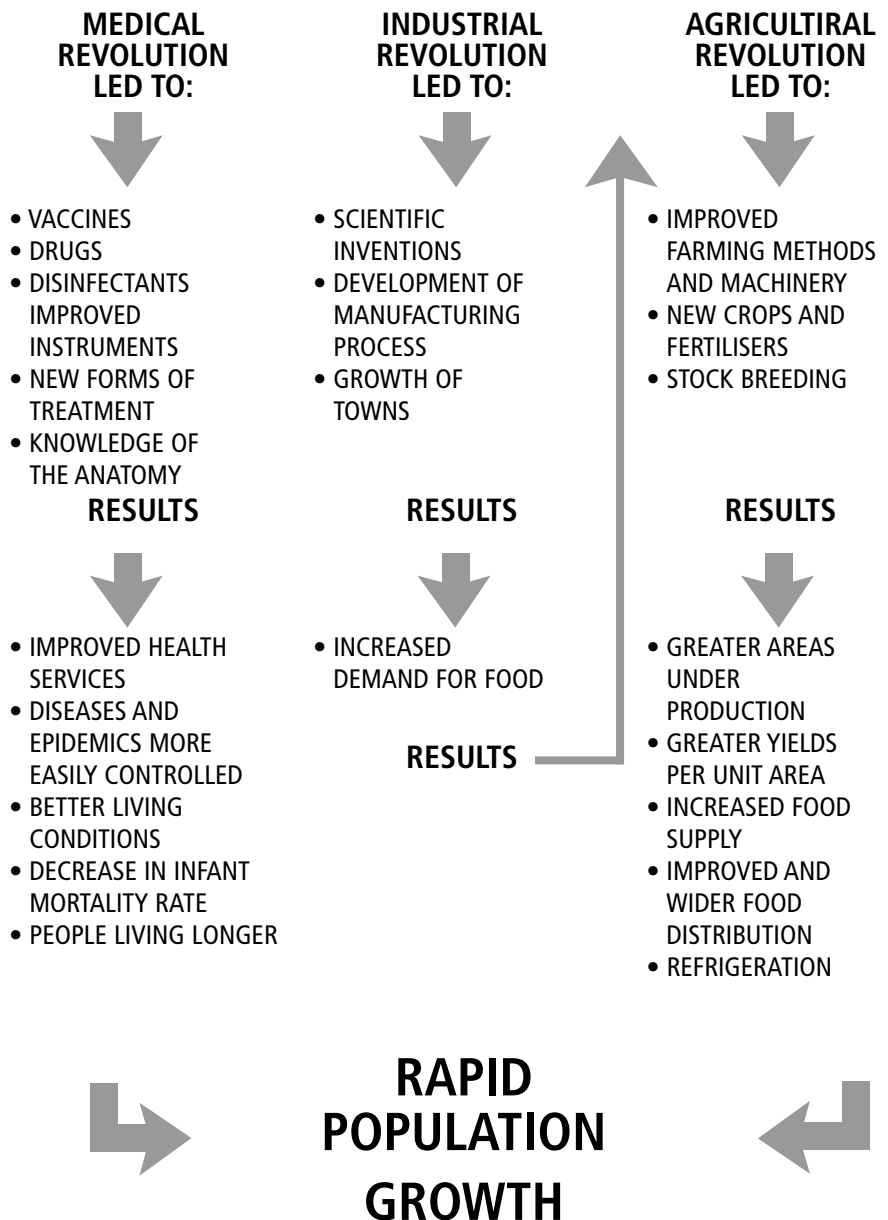


Figure 4
 Reasons for rapid population growth in recent years

ACTIVITY 2

Study Figure 3 and Figure 4 and answer the following questions.

- 1 Determine the world's population in 1700.
- 2 Determine the world's population in 1900.
- 3 Calculate the population growth for the whole world between 1700 and 1900.
- 4 Calculate the population growth for the whole world between 1900 and 1998.
- 5 What conclusions can you draw from your answers to Questions 1 to 4 above?
- 6 Which continents have shown the largest population growth since 1900?
- 7 Suggest reasons for the rapid growth shown in Figure 3. Use Figure 4 to assist you.
- 8 What effects may the reasons you listed in Question 7 have on the birth and death rates of countries?

Hint

Remember that
 1000 million = 1 billion

The population explosion has led to **overpopulation** in some countries. The causes or reasons for overpopulation are similar to those for the population explosion.

A country is overpopulated when the resources and technology of that country, cannot provide for and are therefore put under pressure, to supply the **basic needs** of the population. This leads to a decline in infrastructure and standards of living and an increase in pollution. Many developing countries are overpopulated and still show a rapid growth rate.

Life in an overpopulated area

Tables and maps which compare countries of the world are very useful for giving us overall patterns. But these abstract statistics translate into hunger, drudgery and early death for almost half of the human beings on this planet. When you walk into a typical rural village or urban slum in one of the developing countries, you are greeted with the stench of refuse, open sewers and smoke. Groups of malnourished children may be sitting around wood fires eating breakfasts of bread and coffee. Children and women have to carry jars or cans of water from a muddy, disease – infested river, canal, or single water tap. At night some people may sleep on the street in the open or under makeshift canopies.



Other families of 10 and 12 may crowd into single – room shacks, often made from straw, reeds, cardboard, or rusting corrugated sheet metal. Three or four people may be in one or two beds, but most sleep on the dirt floor.

The father and perhaps most of the children may work in the

fields or beg for food in the city. If lucky, the father may earn a small wage to feed the family of eight or nine. The parents, who themselves may die by age 35, know that three or four of their seven children may die as infants of hunger or childhood diseases. The children that survive add to the flood of people in the slums or to those who leave their farms and head for urban slums hoping to find jobs that do not exist.

The list of problems of rapid population growth in developing countries throughout the world could go on and on.

from *Living in the Environment*, 2nd edition, G. T. Miller © 1979. (Reprinted with permission of Brooks/Cole, a division of Thomson learning. Fax 800 730 – 2215)

ACTIVITY 3

Hint

Basic needs refer to a sufficient and well balanced diet, adequate housing, employment and income, adequate service such as education, medical facilities, water and power supplies and sanitation.

Glossary

Policy – a plan of action

Maternal benefits – financial assistance to mothers before and after the birth of their babies

Resources – things that are useful to people

Hint

Refer to Unit 2 Section B for more on the subject of migration.

Glossary

Migration – people moving from place to place, such people are called migrants

Emigration – people moving out of a country permanently

Immigration – people moving into a country permanently

Read the newspaper article on page 5.

1 Draw up a table with the following headings.

Basic need not provided	Phrase or word in article illustrating this
Well balanced diet	
Housing	
Employment and income	
Basic services not provided e.g. running water	
Medicine available	
Running water for sanitation	
Electricity or other sources of power	

Refer to the hint box about basic needs and use the information to complete the table.

The governments of some countries have **policies** which are designed to deliberately increase their population size. France, Bulgaria, East Germany and Rumania provide financial assistance, child care, and **maternal benefits** in order to encourage people to have larger families. A country is regarded as underpopulated when there are more than enough **resources** to meet the needs of the population.

Another factor which influences population growth rates is **migration**. **Emigration** from a small country with a small population may result in a noticeable **decrease** in the population. For example the population of Ireland (UK) decreased by 20% between 1841 and 1851 as a result of emigration, mostly to the USA. **Immigration** may result in an increase in a country's population. Such an increase occurred in the USA between 1880 and 1890 when the population grew by 43% as a result of immigration.

B Patterns of population growth

In this section we identify and suggest reasons for contrasting patterns of population growth. We will study the factors which influence these patterns and also investigate the benefits and problems associated with different patterns.

Population growth patterns describe how the number of people changes over time and from place to place. Birth rates, death rates and migration influence these patterns. We have already noted that the population in the developing world is increasing at a faster rate than the developed world and examined the part played by growth rates.

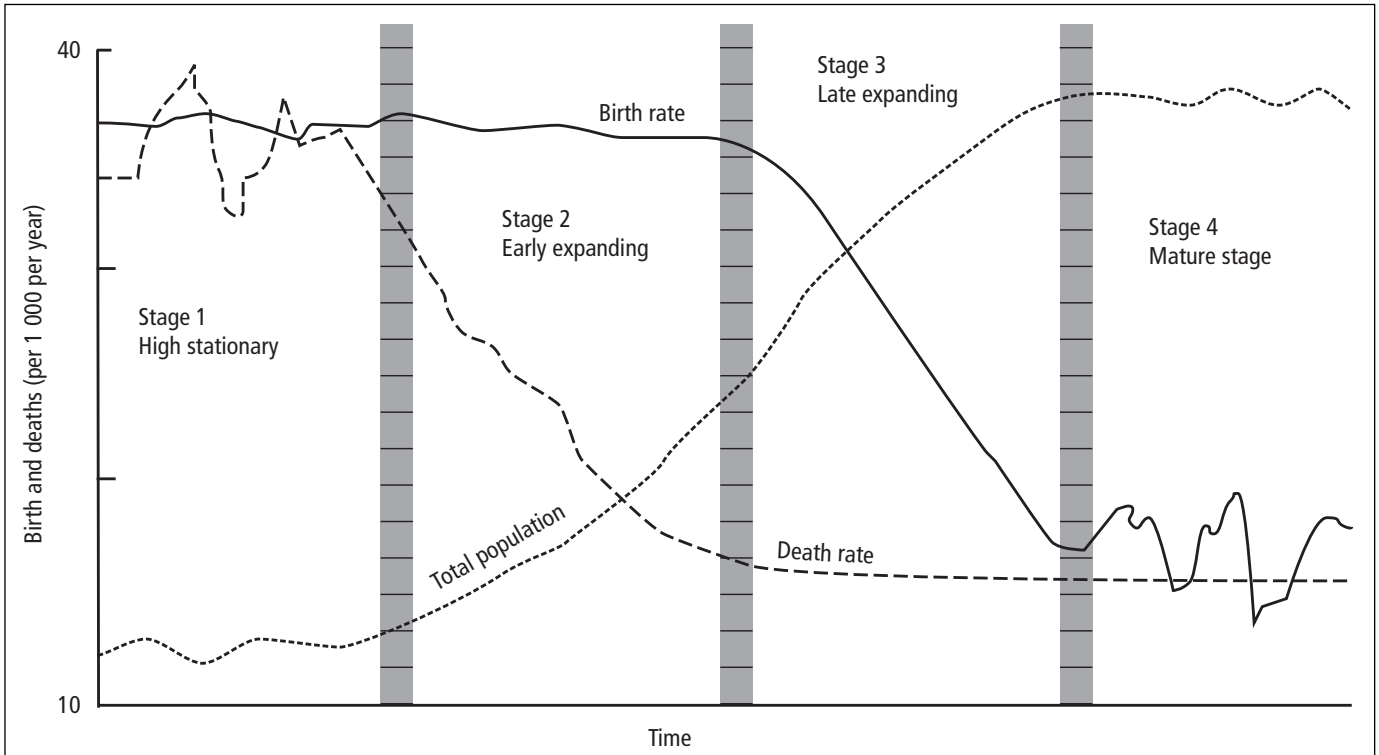


Figure 5
The demographic transition model

Glossary

Model – a real situation simplified so that other situations can be compared to it and used to help explain real phenomena

An examination of the history of population growth rates in developed countries has allowed geographers to design a **model** that shows patterns and changes over time. This model is called the demographic transition model. It shows population growth in four stages. Different countries are placed in different stages depending on their birth and death rates and each stage reflects different patterns of population growth. Most developed countries have already been through the first three stages and are now entering, or are already in, the fourth or mature stage.

ACTIVITY 4

Hint

Refer to Section A on page 2 to help you calculate the growth rate.

1 Study the graph in Figure 5 and use it to complete the table below. Obtain your data from the line indicating the end of each stage.

Rates	Stage 1	Stage 2	Stage 3	Stage 4
Birth rate	36			
Death rate	34			
Growth rate	0,2%			

2 Copy and complete the following passages. Use the graph in Figure 5 and the list of missing words to help you find the answers.

Missing words

medical, high, war, epidemic diseases, infant, famines, Europe

In Stage 1, birth rates are _____ but so are death rates, though the death rate may vary owing to _____, _____ and _____.

In particular _____ deaths are high and more than half the children die below the age of fifteen. _____ was like this 200 years ago. Only the poorest countries and very primitive societies without _____ services are now like this.

Missing words

medical adv _____, increases rapidly _____, high, nineteenth century _____, imp
 sanitation, _____ decreasing

In Stage 2, the birth rate remains _____ but owing to _____ and _____ the death rate is _____. This means that population _____. This stage developed more slowly in Europe in the _____, but has occurred in South America, Asia and Africa in the last 30 years.

Missing words

children, still decreasing, _____ standard of living, _____ birth control, low, gov
 controls _____

In Stage 3, the death rate is _____ and the birth rate is _____ because of strict _____ and the use of _____. People realise that more _____ will survive and they will have a better _____ if they have fewer children.

Missing words

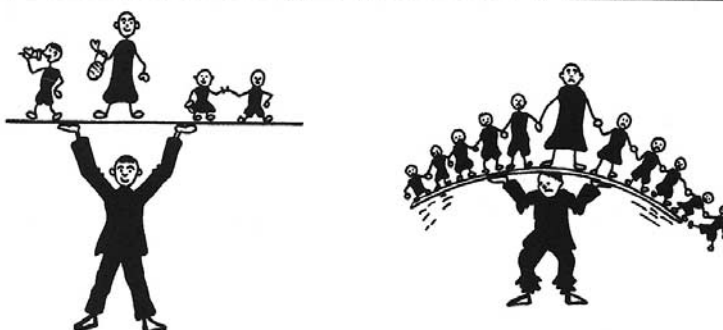
changing, more developed countries _____, low, equal, high

In Stage 4, the birth and death rate are _____ and roughly _____. Most of the _____ are now at this stage. Population numbers are _____ but are not _____ very much.

HOW MANY ARE YOU SUPPORTING?



Figure 6
 An advertisement for family planning



WE MUST HAVE THE NUMBER OF CHILDREN THAT:
 WE CAN **FEED** PROPERLY
 WE CAN **EDUCATE** WELL
 WE CAN **CLOTHE** WELL
 WE CAN **CARE FOR** PROPERLY

Hint

Use Figure 5 and the completed table from your answer to Question 1 to assist you in answering Question 3 to 8.

- 3 In which two stages will the population grow very slowly?
- 4 In which stage will the population grow very rapidly?
- 5 In which stage will the population growth rate slow down?
- 6 In which stages will the population have a high proportion of young children?

- 7 In which stage of the model is the country in Figure 6? Explain your answer.
- 8 In which stage are developing countries likely to be in?
- 9 In which stage are developed countries likely to be in?
- 10 Of what use or value is this model to developing countries such as Kenya?

It should be evident from the demographic transition model and your answers to Activity 1 that birth and death rates directly affect growth rates. How have these rates been altered and affected and what influences the rates? A few of the factors that influence these rates have already been introduced in your answers to Question 2 in Activity 4.

Changing birth rates

Factors that affect birth rates include:

- economic development
- government intervention on birth control
- wars
- migration
- cultures, traditions and religions
- education level
- the status of women.

Glossary

Issues – important subjects requiring decisions

Hint

Social security is money that a government sets aside from taxes to support people who are sick, unemployed or too old to work.

In 1994, an International Conference on Population and Development was held in Cairo, Egypt. Many people from different countries were involved. Among other **issues**, the conference looked for reasons why some people still have big families. We need to understand these reasons before we consider any practical ideas put forward to encourage people to have smaller families.

Below is a list of some reasons why people have large families. These reasons also explain why there are high population growth rates in countries at Stage 2 and the early part of Stage 3 of the demographic transition model.

- In many developing countries people earn very low wages. Their governments offer little or no social security and therefore families must look after themselves. Many parents have large numbers of children to look after them in old age.
- Children can work to bring in extra money as well as helping with daily chores – carrying water, collecting firewood and minding the family's **livestock**.

Glossary

Livestock – any animal kept by humans to serve a purpose

Glossary

Family Planning Clinics – places where men and women can obtain contraception advice and methods so they can have sex, without necessarily falling pregnant; such services are usually free of charge

- Many babies and young children die young as a result of disease. In the poorest parts of Africa, one out of 5 children dies before the age of five. People may have large families to be sure some children will live to be adults.
- The governments of some underpopulated countries encourage their citizens to have large families. In the early 1980s, nearly 20 countries still had policies encouraging larger families. The Bolivian government, for example, wanted to encourage growth so it closed **family planning clinics** and made abortion illegal.
- Different communities and cultures follow different religions and traditions. In some cultures men see having many children as a sign of manhood. In some countries, women still have little power to choose how many children they will have.
- Families tend to be large in developing countries where education is lacking, especially for women. Schooling in Britain became compulsory in 1870. Soon afterwards the family size became smaller.

The reasons given in the list relate to economics, tradition, culture, education and government intervention.

In the middle of Stage 3 of the demographic transition model, there is a sudden change in the birth rate. We have already looked at some of the many reasons for large families. These reasons need to be understood before we can appreciate action which may be taken to try to reduce the number of children parents are having. The governments of most countries in the developing world have agreed that there is a need to slow down rapid rates of population growth. Many countries have a population policy in which the factors that have a direct or indirect effect on population patterns are expressed.

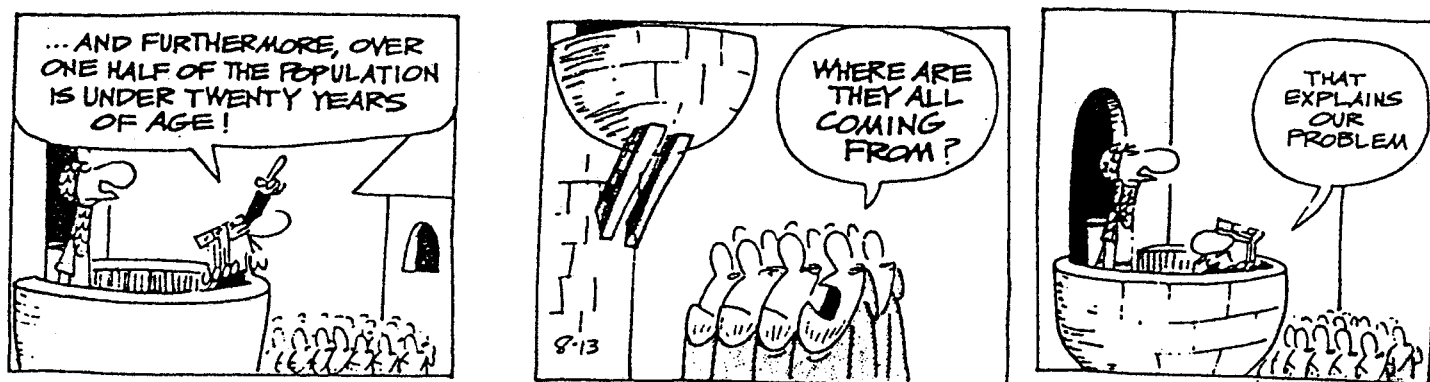


Figure 7
 A cartoon about population structure

What population problem does the cartoon suggest?

Direct methods of population control include: providing contraception, legalising abortion, limiting couples to one or two children, compulsory sterilisation and reducing immigration.