STUDY AND REVISION GUIDE

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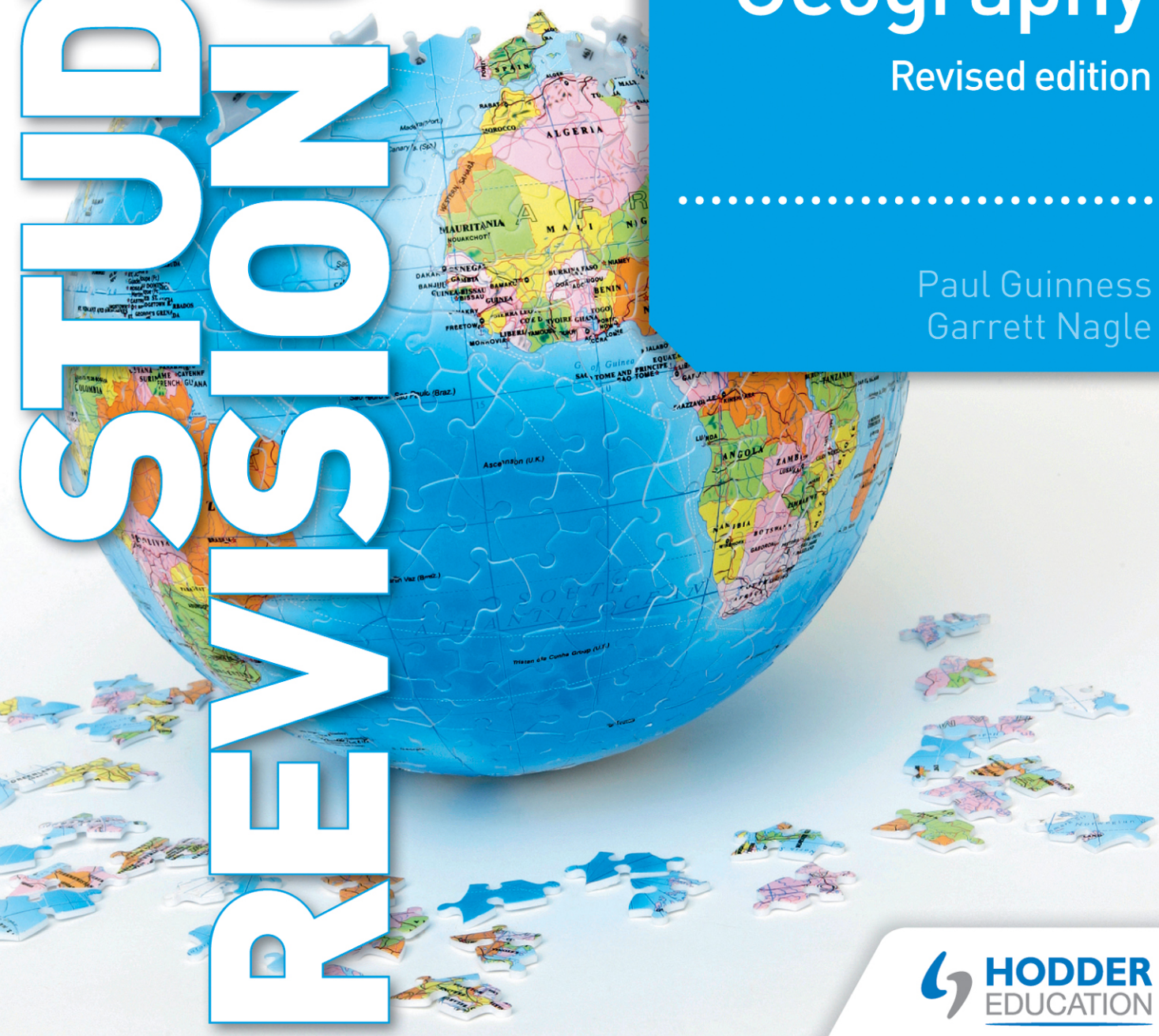
IGCSE™ Cambridge and O Level

Geography

Revised edition

Paul Guinness
Garrett Nagle



HODDER EDUCATION

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HODDER EDUCATION
AN HACHETTE UK COMPANY

Dedication:

To Angela (Garrett Nagle)
To Mary (Paul Guinness)

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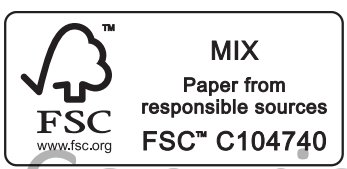
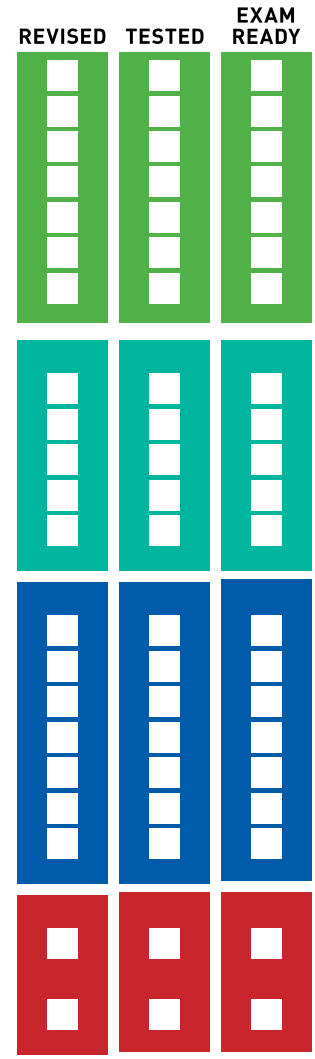


Contents



Introduction

Welcome to the *Cambridge IGCSE™ and O Level Geography Study and Revision Guide*. This book has been written to help you revise everything you need to know for your Geography exam alongside the *Cambridge IGCSE and O Level Geography Third Edition Student's Book*. Following the Geography syllabus, it covers all the key content as well as sample questions and answers, case studies and practice questions to help you learn how to answer questions and to check your understanding.

How to use this book

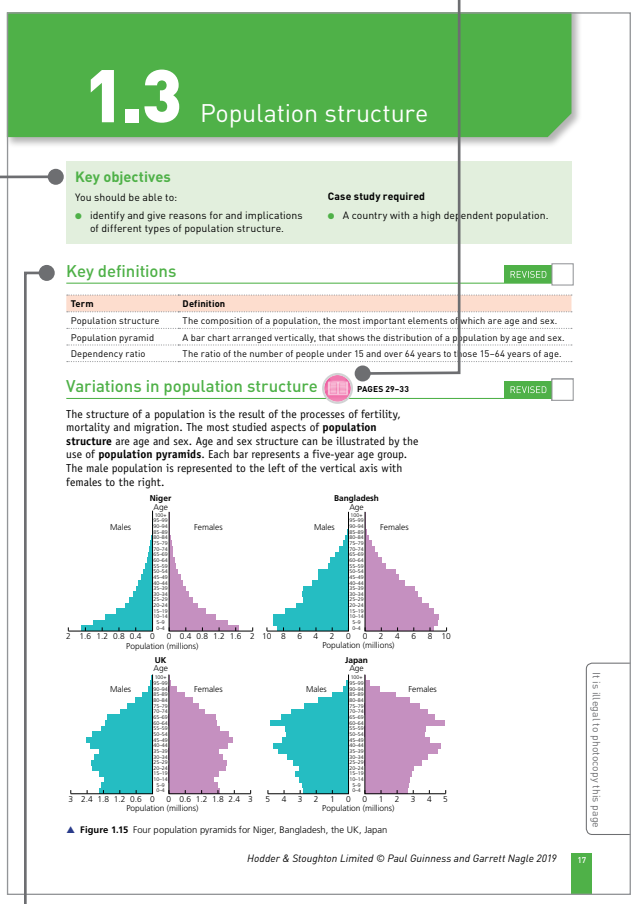
Key objectives

A summary of the main information.

Test yourself

Questions for you to check your understanding and progress.

Cross-references to the Student's Book are shown by this icon .



1.3 Population structure

Key objectives

You should be able to:
- identify and give reasons for and implications of different types of population structure.

Case study required
- A country with a high dependent population.

Key definitions REVISED

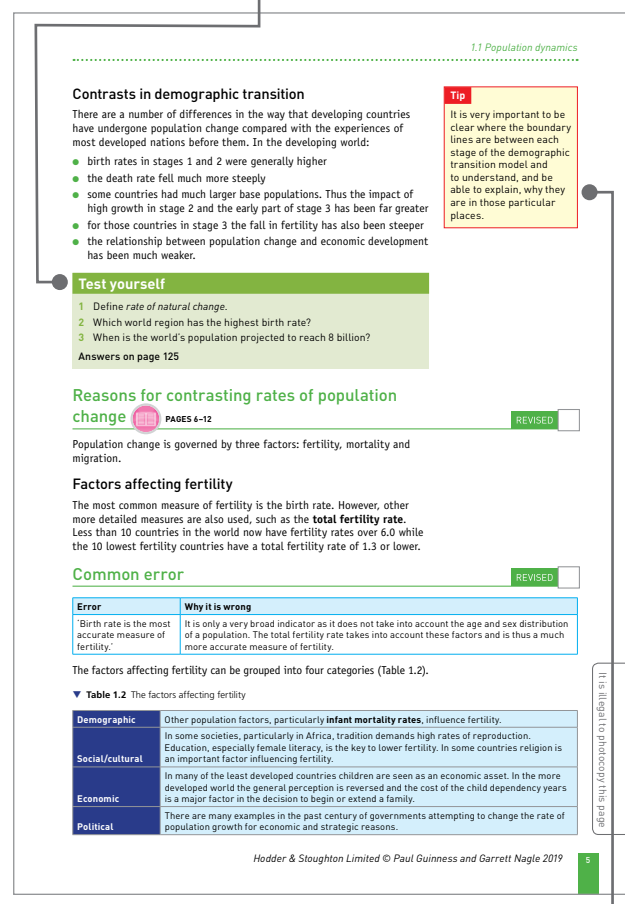
Term	Definition
Population structure	The composition of a population, the most important elements of which are age and sex.
Population pyramid	A bar chart arranged vertically, that shows the distribution of a population by age and sex.
Dependency ratio	The ratio of the number of people under 15 and over 64 years to those 15–64 years of age.

Variations in population structure PAGES 29–33 REVISED

The structure of a population is the result of the processes of fertility, mortality and migration. The most studied aspects of **population structure** are age and sex. Age and sex structure can be illustrated by the use of **population pyramids**. Each bar represents a five-year age group. The male population is represented to the left of the vertical axis with females to the right.

Niger, Bangladesh, UK, Japan

▲ **Figure 1.15** Four population pyramids for Niger, Bangladesh, the UK, Japan



Contrasts in demographic transition

There are a number of differences in the way that developing countries have undergone population change compared with the experiences of most developed nations before them. In the developing world:
- birth rates in stages 1 and 2 were generally higher
- the death rate fell much more steeply
- some countries had much larger base populations. Thus the impact of high growth in stage 2 and the early part of stage 3 has been far greater
- for those countries in stage 3 the fall in fertility has also been steeper
- the relationship between population change and economic development has been much weaker.

Tip

It is very important to be clear where the boundary lines are between each stage of the demographic transition model and to understand, and be able to explain, why they are in those particular places.

Test yourself

1 Define *rate of natural change*.
2 Which world region has the highest birth rate?
3 When is the world's population projected to reach 8 billion?

Answers on page 125

Reasons for contrasting rates of population change PAGES 6–12 REVISED

Population change is governed by three factors: fertility, mortality and migration.

Factors affecting fertility

The most common measure of fertility is the birth rate. However, other more detailed measures are also used, such as the **total fertility rate**. Less than 10 countries in the world now have fertility rates over 6.0 while the 10 lowest fertility countries have a total fertility rate of 1.3 or lower.

Common error REVISED

Error	Why it is wrong
'Birth rate is the most accurate measure of fertility.'	It is only a very broad indicator as it does not take into account the age and sex distribution of a population. The total fertility rate takes into account these factors and is thus a much more accurate measure of fertility.

The factors affecting fertility can be grouped into four categories (Table 1.2).

▼ **Table 1.2** The factors affecting fertility

Demographic	Other population factors, particularly **infant mortality rates**, influence fertility.
Social/cultural	In some societies, particularly in Africa, tradition demands high rates of reproduction. Education, especially female literacy, is the key to lower fertility. In some countries religion is an important factor influencing fertility.
Economic	In many of the least developed countries children are seen as an economic asset. In the more developed world the general perception is reversed and the cost of the child dependency years is a major factor in the decision to begin or extend a family.
Political	There are many examples in the past century of governments attempting to change the rate of population growth for economic and strategic reasons.

Key definitions

Definitions of the key terms you need to know.

Tip

Advice to help you give the perfect answer.

Sample exam questions

Exam-style questions for you to think about.

Student's answers

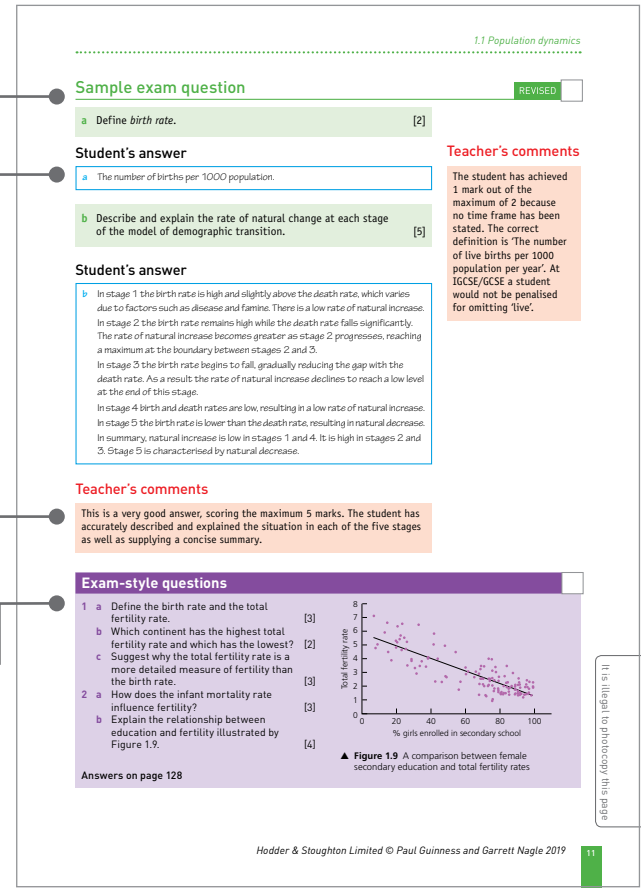
Model student answers to see how the question might be answered.

Teacher's comments

Feedback from an examiner showing what was good, and what could be improved.

Exam-style questions

Exam questions for you to try to see what you have learned.



1.1 Population dynamics

Sample exam question REVISED

a Define *birth rate*. [2]

Student's answer

a The number of births per 1000 population.

Teacher's comments

The student has achieved 1 mark out of the maximum of 2 because no time frame has been stated. The correct definition is 'The number of live births per 1000 population per year'. At IGCSE/GCSE a student would not be penalised for omitting 'live'.

b Describe and explain the rate of natural change at each stage of the model of demographic transition. [5]

Student's answer

b In stage 1 the birth rate is high and slightly above the death rate, which varies due to factors such as disease and famine. There is a low rate of natural increase.
In stage 2 the birth rate remains high while the death rate falls significantly. The rate of natural increase becomes greater as stage 2 progresses, reaching a maximum at the boundary between stages 2 and 3.
In stage 3 the birth rate begins to fall, gradually reducing the gap with the death rate. As a result the rate of natural increase declines to reach a low level at the end of this stage.
In stage 4 birth and death rates are low, resulting in a low rate of natural increase.
In stage 5 the birth rate is lower than the death rate, resulting in natural decrease.
In summary, natural increase is low in stages 1 and 4. It is high in stages 2 and 3. Stage 5 is characterised by natural decrease.

Teacher's comments

This is a very good answer, scoring the maximum 5 marks. The student has accurately described and explained the situation in each of the five stages as well as supplying a concise summary.

Exam-style questions

1 a Define the birth rate and the total fertility rate. [3]
b Which continent has the highest total fertility rate and which has the lowest? [2]
c Suggest why the total fertility rate is a more detailed measure of fertility than the birth rate. [3]
2 a How does the infant mortality rate influence fertility? [3]
b Explain the relationship between education and fertility illustrated by Figure 1.9. [4]

Answers on page 128

▲ **Figure 1.9** A comparison between female secondary education and total fertility rates

Common error

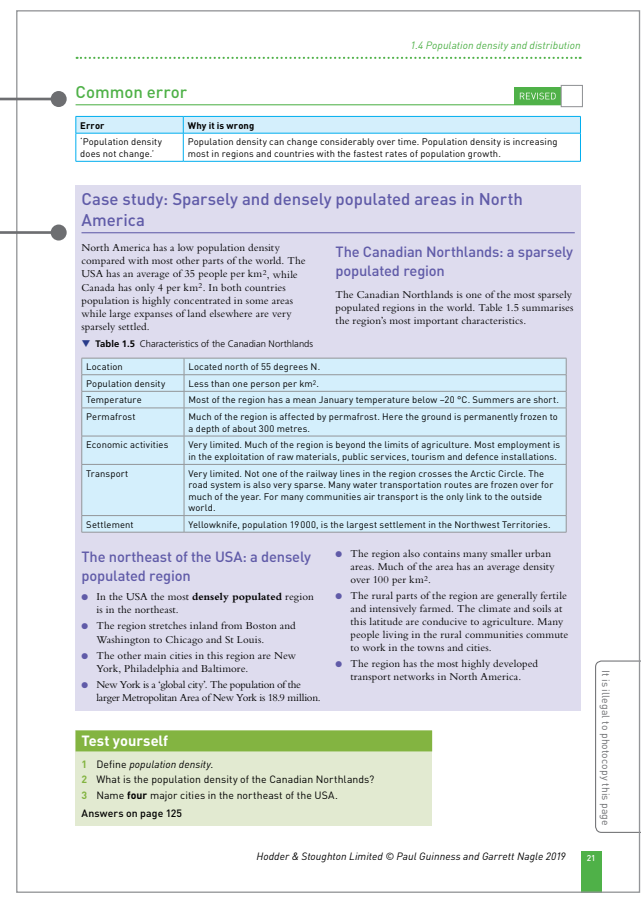
Mistakes that students often make, and how to avoid them.

Case study

Real examples to help you explain what you have learned.

Answers

Outline answers to the Test yourself questions and the Exam-style questions from page 125.



1.4 Population density and distribution

Common error REVISED

Error	Why it is wrong
'Population density does not change.'	Population density can change considerably over time. Population density is increasing most in regions and countries with the fastest rates of population growth.

Case study: Sparsely and densely populated areas in North America

North America has a low population density compared with most other parts of the world. The USA has an average of 35 people per km², while Canada has only 4 per km². In both countries population is highly concentrated in some areas while large expanses of land elsewhere are very sparsely settled.

The Canadian Northlands: a sparsely populated region

The Canadian Northlands is one of the most sparsely populated regions in the world. Table 1.5 summarises the region's most important characteristics.

▼ **Table 1.5** Characteristics of the Canadian Northlands

Location	Located north of 55 degrees N.
Population density	Less than one person per km².
Temperature	Most of the region has a mean January temperature below –20 °C. Summers are short.
Permafrost	Much of the region is affected by permafrost. Here the ground is permanently frozen to a depth of about 300 metres.
Economic activities	Very limited. Much of the region is beyond the limits of agriculture. Most employment is in the exploitation of raw materials, public services, tourism and defence installations.
Transport	Very limited. Not one of the railway lines in the region crosses the Arctic Circle. The road system is also very sparse. Many water transportation routes are frozen over for much of the year. For many communities air transport is the only link to the outside world.
Settlement	Yellowknife, population 19 000, is the largest settlement in the Northwest Territories.

The northeast of the USA: a densely populated region

- In the USA the most **densely populated** region is in the northeast.
- The region stretches inland from Boston and Washington to Chicago and St Louis.
- The other main cities in this region are New York, Philadelphia and Baltimore.
- New York is a 'global city'. The population of the larger Metropolitan Area of New York is 18.9 million.
- The region also contains many smaller urban areas. Much of the area has an average density over 100 per km².
- The rural parts of the region are generally fertile and intensively farmed. The climate and soils at this latitude are conducive to agriculture. Many people living in the rural communities commute to work in the towns and cities.
- The region has the most highly developed transport networks in North America.

Test yourself

1 Define *population density*.
2 What is the population density of the Canadian Northlands?
3 Name **four** major cities in the northeast of the USA.

Answers on page 125

1.1 Population dynamics

Key objectives

You should be able to:

- describe and give reasons for the rapid increase in the world's population
- show an understanding of over-population and under-population
- understand the main causes of a change in population size
- give reasons for contrasting rates of natural population change
- describe and evaluate population policies.

Case studies required

- A country which is over-populated.
- A country which is under-populated.
- A country with a high rate of natural population growth.
- A country with a low rate of population growth (or population decline).

Key definitions

REVISED

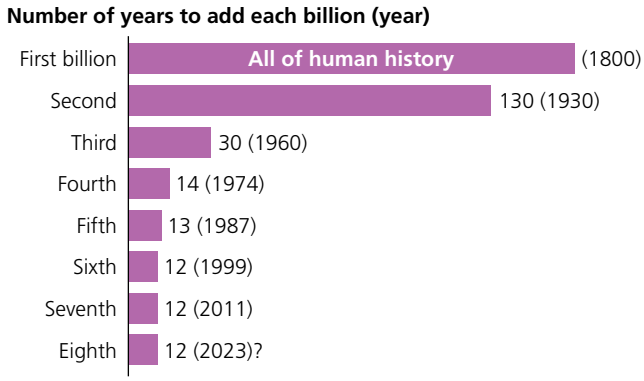
Term	Definition
Population explosion	The rapid population growth of the developing world in the post-1950 period.
Birth rate	The number of live births per 1000 population in a year.
Death rate	The number of deaths per 1000 population in a year.
Rate of natural change	The difference between the birth rate and the death rate. If it is positive it is termed natural increase. If it is negative it is known as natural decrease.
Rate of net migration	The difference between the rates of immigration and emigration.
Model of demographic transition	A model illustrating the historical shift of birth and death rates from high to low levels in a population.
Total fertility rate	The average number of children a women has during her lifetime.
Infant mortality rate	The number of deaths of children under one year of age per 1000 live births per year.
Life expectancy at birth	The average number of years a newborn infant can expect to live under current mortality levels.
Depopulation	A decline in the number of people in a population.
Optimum population	The best balance between a population and the resources available to it. This is usually viewed as the population giving the highest average living standards in a country.
Under-population	When there are too few people in an area to use the resources available effectively.
Over-population	When there are too many people in an area relative to the resources and the level of technology available.
Underemployment	A situation where people are working less than they would like to and need to in order to earn a reasonable living.
Population policy	Encompasses all of the measures taken by a government aimed at influencing population size, growth, distribution or composition.
Pro-natalist policies	Such policies promote larger families.
Anti-natalist policies	Such policies aim to reduce population growth.

The rapid increase in the world's population

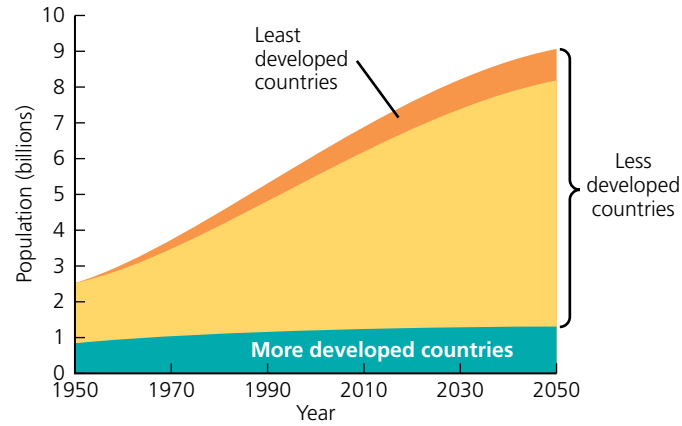
PAGES 2–4

REVISED

During most of the early period in which humankind first evolved, global population was very low. Ten thousand years ago, when people first began to domesticate animals and cultivate crops, world population was no more than 5 million. The world's population reached 500 million by about 1650. From this time population grew at an increasing rate. By 1800 global population had doubled to reach 1 billion. Figure 1.1 shows the time taken for each subsequent billion to be reached, with the global total reaching 7 billion in 2011. China and India together account for 36.5 per cent of the world's population.



▲ **Figure 1.1** World population growth by each billion



▲ **Figure 1.2** Population growth in more and less developed countries, 1950–2050

Recent demographic change

In 2016, world population increased by 89.8 million, the result of 147.2 million births and 57.4 million deaths. The bulk of this population increase is in the developing countries (Figure 1.2). The very rapid growth of the world's population over the last 70 years or so is the result of the largest ever difference between the number of births and deaths in the world as a whole.

However, only since the Second World War has population growth in the poor countries overtaken that in the rich. The rich countries had their period of high population growth in the nineteenth and early twentieth centuries. For the less developed countries high population growth has occurred since about 1950.

The highest-ever global population growth rate was reached in the early to mid 1960s. At this time the term **population explosion** was widely used to describe this rapid population growth. But by the late 1990s the rate of global population growth was down to 1.8 per cent and by 2016 it had reduced further to 1.2 per cent. However, even though the rate of growth has been falling for about 50 years the number of people added each year remains very high. This is because there are currently so many women in the child-bearing age range.

Tip

It is important to remember that while the world's population continues to increase, the rate of global population growth has been falling for over 50 years.

The causes of a change in population size

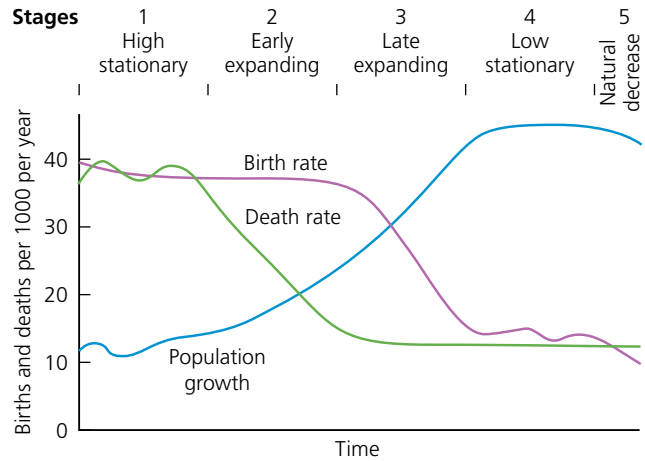
PAGES 4–5

REVISED

Population change in a country is affected by (a) the difference between the **birth rate** and the **death rate** (the **rate of natural change**), and (b) the balance between immigration and emigration (**net migration**). For most countries natural change is a more important factor in population change than net migration.

▼ **Table 1.1** Birth and death rates, 2016

Region	Birth rate	Death rate
World	20	8
More developed world	11	10
Less developed world	22	7
Africa	36	10
Asia	18	7
Latin America/Caribbean	17	6
North America	12	8
Oceania	17	7
Europe	11	11



▲ **Figure 1.3** The demographic transition model

The demographic transition model

PAGES 5–6

REVISED

The **demographic transition model** helps to explain the causes of a change in population size (Figure 1.3). No country as a whole retains the characteristics of stage 1, which only applies to the most remote societies on Earth. All the developed countries of the world are now in stage 4 or stage 5. The poorest of the developing countries are in stage 2. Most developing countries which have undergone significant social and economic advances are in stage 3 while some of the first newly industrialised countries such as South Korea and Taiwan have entered stage 4. Stage 5, natural decrease, is mainly confined to Eastern and Southern Europe at present.

- **The high stationary stage (stage 1):** The birth rate is high and stable while the death rate is high and fluctuating due to the sporadic incidence of famine, disease and war. Population growth is very slow and there may be periods of decline.
- **The early expanding stage (stage 2):** The death rate declines to levels never before experienced. The birth rate remains at its previous level as the social norms governing fertility take time to change. The rate of natural change increases to a peak at the end of this stage.
- **The late expanding stage (stage 3):** After a period of time social norms adjust to the lower level of mortality and the birth rate begins to decline.
- **The low stationary stage (stage 4):** Both birth and death rates are low. The former is generally slightly higher, fluctuating somewhat due to changing economic conditions. Population growth is slow.
- **The natural decrease stage (stage 5):** In a limited but increasing number of countries, mainly European, the birth rate has fallen below the death rate.

Tip

Population data change frequently over time, so when you quote data you should also state the year to which they apply. For example, in Table 1.1, the birth rate for 'Latin America/Caribbean' in 2012 was 19/1000, as stated in the previous edition of this book.

Contrasts in demographic transition

There are a number of differences in the way that developing countries have undergone population change compared with the experiences of most developed nations before them. In the developing world:

- birth rates in stages 1 and 2 were generally higher
- the death rate fell much more steeply
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Test yourself

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2 Which world region has the highest birth rate?
3 When is the world's population projected to reach 8 billion?

Answers on page 125

Reasons for contrasting rates of population change

PAGES 6–12

REVISED

Population change is governed by three factors: fertility, mortality and migration.

Factors affecting fertility

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Common error

REVISED

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Social/cultural	In some societies, particularly in Africa, tradition demands high rates of reproduction. Education, especially female literacy, is the key to lower fertility. In some countries religion is an important factor influencing fertility.
Economic	In many of the least developed countries children are seen as an economic asset. In the more developed world the general perception is reversed and the cost of the child dependency years is a major factor in the decision to begin or extend a family.
Political	There are many examples in the past century of governments attempting to change the rate of population growth for economic and strategic reasons.

Factors affecting mortality

In 1900 the world average for **life expectancy** was about 30 years. It is presently 72 years. The highest life expectancy of 79 years is in North America, while the lowest of 61 years is in Africa.

The causes of death vary significantly between the developed and developing worlds (Figure 1.4). Apart from the challenges of the physical environment in many developing countries, a number of social and economic factors contribute to the high rates of infectious diseases. These include:

- poverty
- poor access to healthcare
- antibiotic resistance
- evolving human migration patterns
- new infectious agents.

Tip

Using 'categories' to structure your explanation, as in Table 1.2, can help to produce a logical sequence of arguments for questions requiring detailed answers.

Increasing mortality due to HIV/AIDS

Although, in general, mortality continues to fall around the world, in some countries it is rising, due mainly to HIV/AIDS. However, globally, deaths from AIDS are falling. In 2015, 1.1 million people died from AIDS-related causes worldwide – 45 per cent fewer deaths than in 2005. Eastern and southern Africa remained the region most affected. Factors linked to such a high incidence include:

- high levels of other sexually transmitted infections
- the low status of women
- sexual violence
- high mobility, which is mainly linked to migratory labour systems
- ineffective leadership during critical periods in the epidemic's spread.

World Health Organization

What are the main differences between rich and poor countries with respect to causes of death?

Online Q&A
30 April 2012

Q: What are the main differences between rich and poor countries with respect to causes of death?

A: In high-income countries almost 50% of the deaths are among adults 80 and over. The leading causes of death are chronic diseases: cardiovascular disease, chronic obstructive lung disease, cancers, diabetes or dementia. Lung infection remains the only leading infectious cause of death.

In middle-income countries, chronic diseases are the major killers, just as they are in high-income countries. Unlike in high-income countries, however, HIV/AIDS, tuberculosis and road traffic accidents also are leading causes of death.

In low-income countries around 40% of all deaths are among children under the age of 14. Although cardiovascular diseases together represent the leading cause of death in these countries, infectious diseases (above all HIV/AIDS, lower respiratory infection, tuberculosis, diarrhoeal diseases and malaria) together claim more lives. Complications of pregnancy and childbirth together continue to be a leading cause of death, claiming the lives of both infants and mothers.

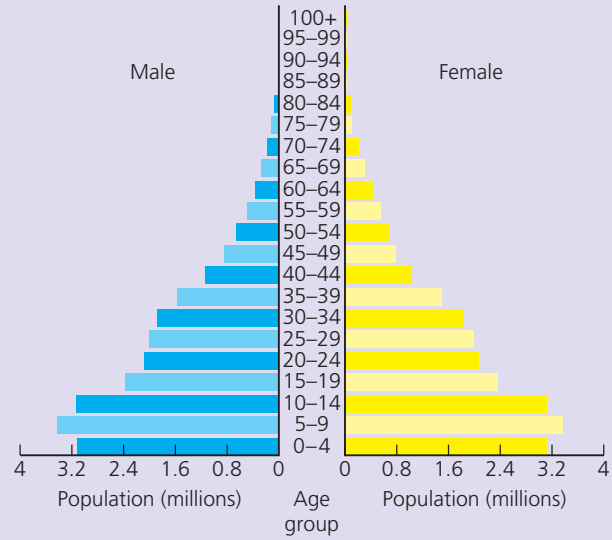
▲ **Figure 1.4** World Health Organization – What are the main differences between rich and poor countries with respect to causes of death?

▼ **Table 1.3** The impact of HIV/AIDS

Labour supply	The economically active population reduces as more people fall sick and are unable to work.
Dependency ratio	An increasing death rate in the economically active age group increases the dependency ratio.
Family	AIDS is impoverishing entire families, and many children and old people have to take on the role of carers. There are a large number of orphaned children.
Education	With limited investment in education many young people are still unaware about how to avoid the risk of contracting HIV.
Poverty	There is a vicious cycle between HIV/AIDS and poverty.

Case study: Kenya – a country with a high rate of population growth

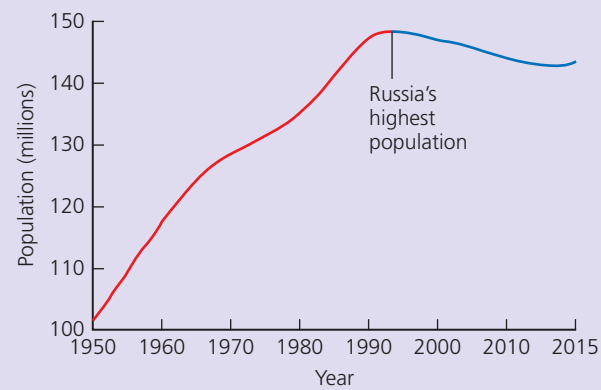
- Kenya has a high rate of population growth due to high fertility and falling death rates, particularly in infant mortality.
- Although Kenya's total fertility rate is falling, the population is forecast to grow to 65.9 million by 2030. Rapid population increase puts heavy pressure on a country's resources.
- Kenya has a very high youth dependency ratio (Figure 1.5) with over 42 per cent of the population under 15.
- A rapidly growing population results in a lower amount of land per capita available to farmers and their children.
- Young people who cannot find work on the land often migrate to urban areas.
- Youth unemployment is a considerable problem as the rate of population increase is greater than the rate of job creation.
- Although the poverty rate fell from 47 per cent in 2005 to 38 per cent in 2012, Kenya remains among the most unequal countries in Africa.
- While progress has been made in health, education, infrastructure and other aspects of society, a significant proportion of the population continue to live in fragile conditions with sub-standard access to water, sanitation and energy.



▲ **Figure 1.5** The growth in Kenya's population between 1969 and 2030

Case study: Population decline in Russia

- In 2016, Russia's birth and death rates were equal, at 13/1000. Such stagnant population change or natural decrease is common in Eastern Europe.
- Russia's population reached its highest level of almost 148.7 million in 1991 (Figure 1.6). Since then it has been mainly in decline.
- Population decline/very slow growth has been due to: low birth rates; high death rates, particularly among men; emigration.
- Unemployment and poverty are major concerns for many people. The cost of raising children is perceived to be high when both parents need to work to make ends meet.
- Education standards for women in Russia are high and thus women in general have a major say in decisions about family size. The use of contraception is high.
- In 2016 life expectancy for women was 77 years, but only 66 for men.
- Population decline has had its greatest impact in rural areas, with 8500 villages said to have been abandoned since 2002. The cold northern regions of Russia have experienced the highest levels of **depopulation**.



▲ **Figure 1.6** Russia's population 1950–2015