

# POPULATION STRUCTURE

## POPULATION TERMS

**DON'T FORGET**

Using the correct geographical terms will mean higher marks in your exam.

**Demography** is the study of population.

**Crude birth rate (CBR)** is the number of people born each year per thousand head of population. CBR takes no account of the age and sex structure of a population. An alternative measure of fertility is the **general fertility rate** – the number of live births per 1000 women aged 15 to 44.

**Crude death rate (CDR)** is the number of people who die each year per thousand head of population.

**Natural increase**, calculated as birth rate minus death rate, is the increase in population per 1000 people. It can also be expressed as a percentage.

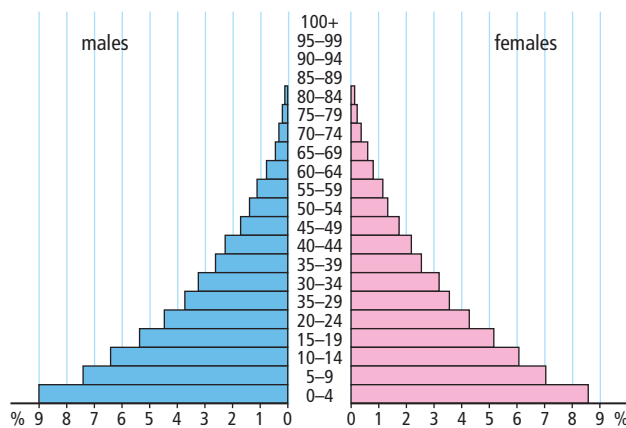
**Life expectancy** is the average number of years somebody will live for. Globally this is estimated to be 65 for men and 70 for women.

**Infant mortality rate** is the number of deaths of infants under one year of age per thousand live births.

## POPULATION STRUCTURE

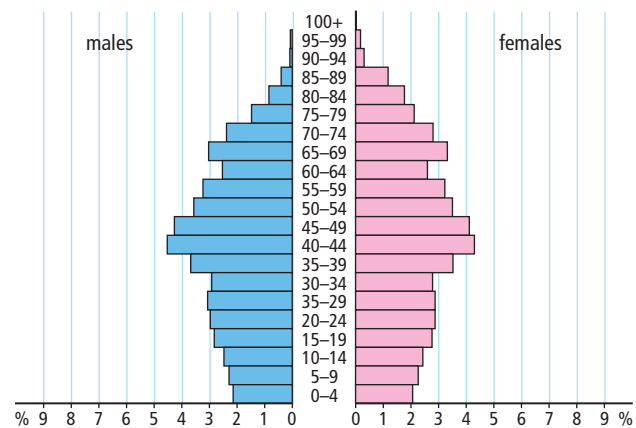
**Population pyramids** are used to show the **age and sex structure** of a country, a region or other administrative area. A pyramid shows the numbers of males and females in five-year bands starting with infants (aged 0 to 4 years) and continuing to 80 years and over. Normally they show the percentage of males and females in each **cohort** but sometimes absolute numbers are used instead.

Countries at different stages of development typically show different characteristics in their population pyramids.



Population pyramid for Afghanistan in 2008

- a **wide base** as a result of a high CBR
- a **narrow apex** showing a relatively low life expectancy
- big decreases upwards from one age cohort to the next indicating a high CDR and, near the base, a high infant mortality rate
- a high percentage of the population aged between 0 and 14 (**this structure is indicative of a very poor developing country**)



Population pyramid for Germany in 2008

- a **narrow base** due to a low and decreasing CBR
- a **blunt apex and straight sides** gradually tapering upwards to show low CDRs and a long life expectancy
- a high percentage of the population aged 65 and over reflecting an **ageing population (this structure is indicative of a relatively rich developed country)**

Both pyramids show the longer life expectancy of women that exists in nearly all countries.

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**POPULATION STRUCTURE contd****The dependency ratio**

The **dependent population** refers to those people who do not work so includes **young dependents** aged between 0 and 14 and **old dependents** aged over 65 who have usually retired.

The **economically active** or **working population** is aged between 15 and 64.

The **dependency ratio** is calculated as:

$$\frac{\% \text{ young dependents} + \% \text{ old dependents}}{\% \text{ economically active}}$$

A high dependency ratio means there are less people in jobs making money and paying taxes to provide for those too young or too old to work. The analysis of dependency ratios has implications for planning in education and health and in calculating the tax burden. Young dependents will need money spent on education whereas old dependents may need more expensive health services especially as people are living longer and medical advances are increasingly costly.

**PROBLEMS CAUSED BY DIFFERENT POPULATION STRUCTURES****More Economically Developed Countries**

An increasingly ageing population causes **stagnation** and, sometimes, **population decline**. Having more old dependents increases the burden on the economically active because of the increasing costs and strain on pension schemes, health care, home care services and sheltered housing and the need for greater public transport.

Having fewer births and less young dependents may result in the closure of schools and maternity wards.

It may be necessary to raise the retirement age to compensate for the lack of economically active people or to raise taxes for those still in work. Encouraging immigration is a solution to increase the number of people in work but can bring other social problems.

**Less Economically Developed Countries**

A high percentage of young dependents means more money is spent on child healthcare and education. Schools can not cope and young girls are less likely to be educated so birth rates remain high. Over time, more young people move into adulthood and become parents. Many are unemployed because the number of jobs can not keep pace with the population increase.

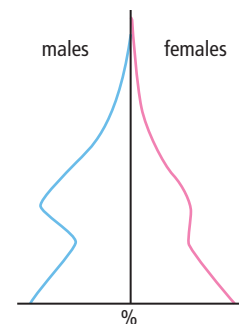
The number of old dependents also increases with time leading to more strain on scarce services and poor infrastructure.



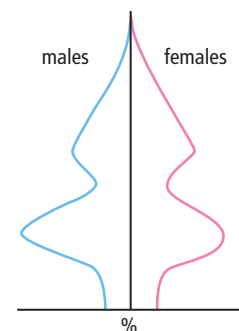
Population pyramids for every almost every country can be built at <http://www.census.gov/ipc/www/idb/pyramids.html>

**DON'T FORGET**

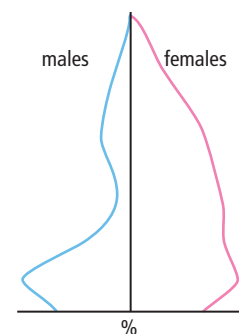
Population pyramids show long-term trends and the differences between developing and developed countries. Distinct bulges also indicate events such as war, natural disasters, famine, epidemics, government policies and migration.



*Effects of migration*



*Effects of government policies to limit births*



*Effects of war*

**LET'S THINK ABOUT THIS**

Population pyramids provide a quick visual comparison between population structures of different countries. Make sure you can interpret them, identify specific events and can consider the implications of certain structures for the future of the countries concerned.

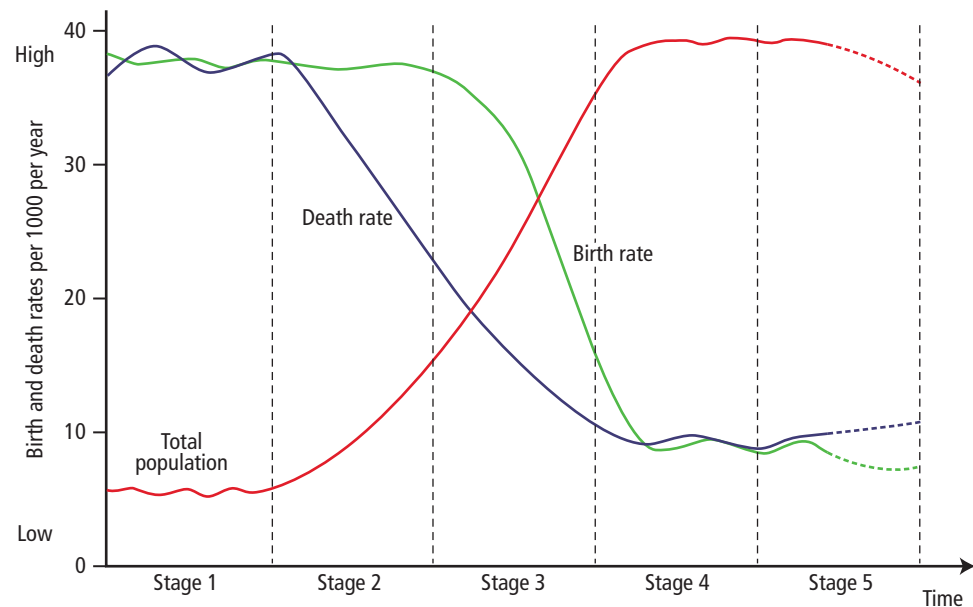
# DEMOGRAPHIC TRANSITION

## MODELLING DEMOGRAPHIC TRANSITION

**DON'T FORGET**

Countries may be at the same stage of the demographic transition model for completely different reasons. Learn your case studies and especially the different factors influencing population change in developing and developed countries.

The demographic transition model attempts to show how population changes over time. It has five different stages and can be used to explain how CBRs and CDRs respond to different economic and social situations. The stages can also be drawn as population pyramids



The demographic transition model

### Stage 1: High fluctuating

- Death rates are high because of wars, famine, plagues and epidemics, a lack of clean water and very basic medical care.
- Birth rates are high because of a lack of birth control, low marriage age and because children work, mainly in agriculture, to add to the family income.
- Life expectancy and average age are low.
- Population growth is slow or stagnant.

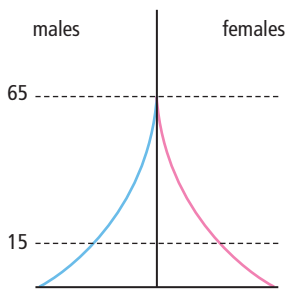
Scotland was in this stage pre-1760 but, today, only a few remote tribes in the Amazon and New Guinea show these characteristics.

### Stage 2: Early expanding

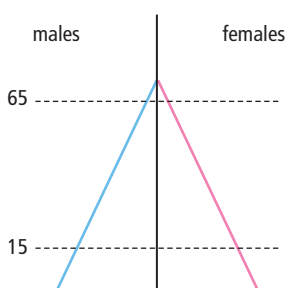
- Death rates drop because of: surgical advances, the increased availability of medical supplies and the introduction of vaccines for diseases such as smallpox; improved nutrition, sanitation and water supplies; rising wages leading to better personal hygiene.
- Birth rates remain high because of religious factors, the importance given to men with large families and the low status of women in society.
- Life expectancy increases, infant mortality decreases.
- Population growth is very rapid.

Scotland was at this stage between 1760 and 1870. Today some very poor developing countries such as Afghanistan and Sierra Leone are in this stage but most have moved on because of improving health care.

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Stage 1: population pyramid



Stage 2: population pyramid



Detailed information on Scotland's population structure and characteristics can be found at <http://www.scrol.gov.uk/scrol/common/home.jsp>

**MODELLING DEMOGRAPHIC TRANSITION contd**

**Stage 3: Late expanding**

- Death rates continue to drop with further improvements in sanitation, health care and medical facilities.
- Birth rates show a huge drop due to: the adoption of family planning and the development and spread of contraception; declining infant mortality rates; the desire for consumer goods combined with the increased costs of keeping children leading to smaller families; mechanisation meaning less labourers needed for agriculture and factory work. Better educational opportunities for women and higher female literacy rates also decrease the desire for large families.
- Life expectancy continues to increase.
- Population growth is still rapid but slowing.

Scotland was at stage 3 from 1870 to 1950. Many developing countries including India, Brazil and Mexico are now at this stage.

**Stage 4: Low stationary**

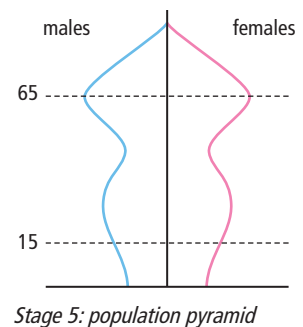
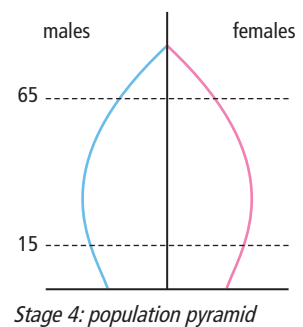
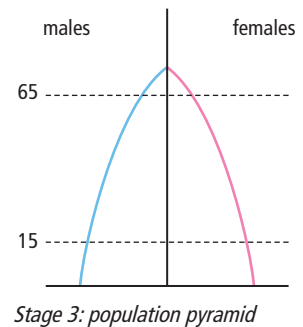
- Birth rates have decreased to roughly the same level as death rates but continue to fluctuate in response to economic conditions. Very effective birth control enables people to limit the number of children they want and the average marriage age increases as women pursue careers before starting families. Migration of young, fit individuals also contributes to the fall in birth rates.
- Population is high but steady.

Scotland entered this stage around 1950. Some richer developing countries e.g. Argentina will soon be at stage 4.

**Stage 5: Declining population**

- Death rate shows a possible rise because a greater proportion of the population is elderly.
- Birth rate is low and decreasing as people delay child-rearing or make a lifestyle or economic choice to have only one child.
- Population is decreasing.

So far, only a few highly developed countries with very low fertility rates such as Italy, Germany and Sweden are in this stage. Scotland may enter stage 5 soon.



**NATALIST POLICIES**

Governments often try and influence the birth rate in their countries through the introduction of anti-natalist or pro-natalist policies.

Anti-natalist policies discourage child birth by removing financial benefits or imposing financial penalties on those couples who have more than one child. Massive contraception campaigns and adverts showing the benefits of small families may be launched. Policies can be very forceful and involve compulsory abortions and sterilisation and, in China for example, public denunciation and huge social pressure to have only one child.

Pro-natalist policies encourage larger families, usually with rewards or financial benefits. In Nazi Germany medals were given to women with lots of children. More recently, in the UK, increased child benefit payments and tax credits have been introduced. Flexible working hours for parents and longer periods of maternity and paternity leave are also common in developed countries such as Sweden and Norway.

**DON'T FORGET**

China's one-child policy is an excellent example of anti-natalist policies at work. Up-to-date examples of pro-natalist policies, especially from the UK, are also useful.

**LET'S THINK ABOUT THIS**

The demographic transition model has been criticised because it is based on European history. Regional variations in poorer continents and differences between urban and rural areas within countries also need to be considered. Make sure you understand how the model relates to any individual countries you use as case studies.