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VCE GEOGRAPHY

UNIT

4

Human Population



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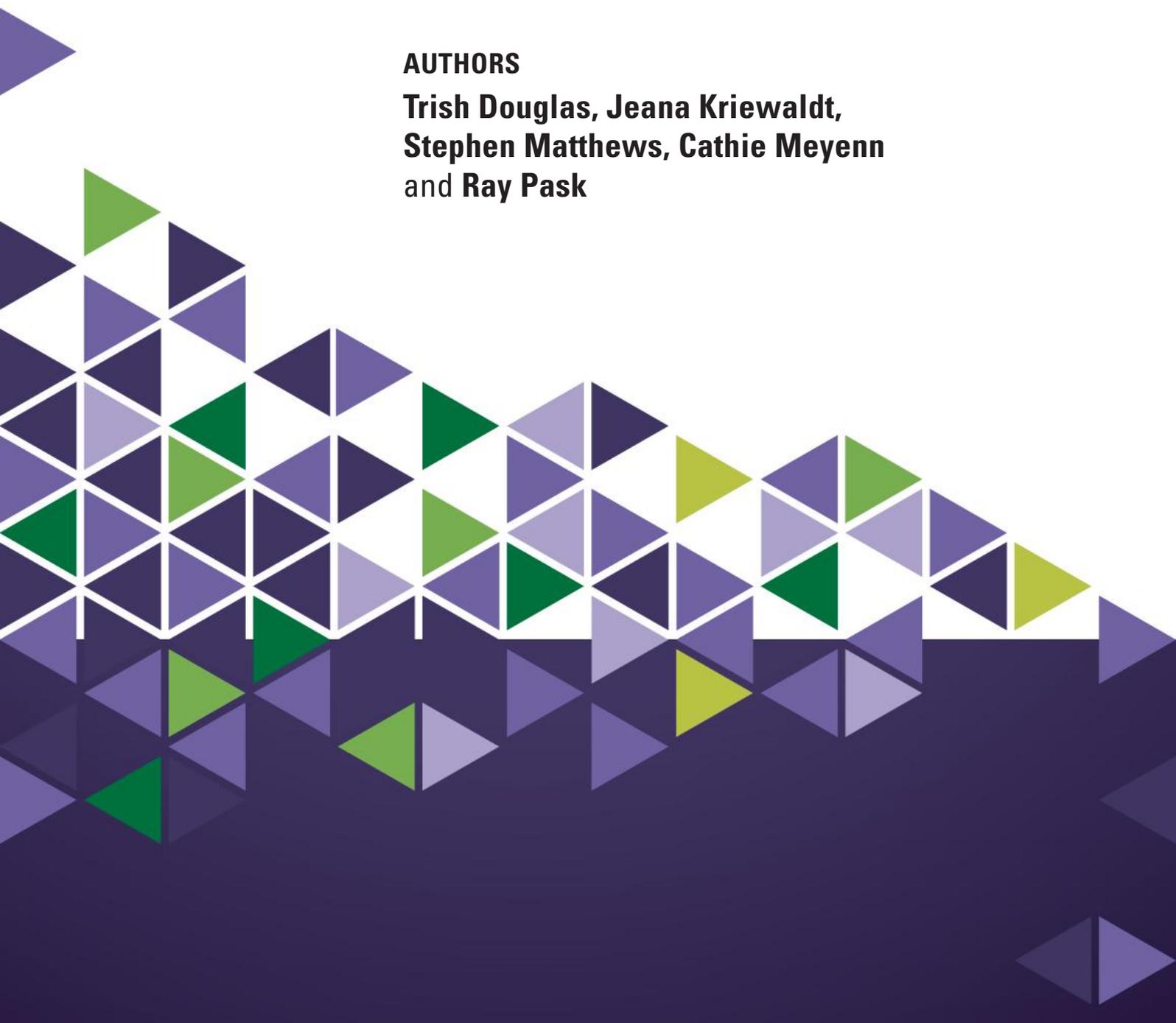
VCE GEOGRAPHY

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4

Human Population

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Contents

1	Geographical concepts and questions	2
2	Population dynamics	20
3	Population movement	42
4	Population trends and issues: growth in Bangladesh and Saudi Arabia	66
5	Population trends and issues: growth in China and USA	84
6	Population trends and issues: ageing in Japan and Germany	100
7	Population trends and issues: ageing in Singapore and Australia	116
	Glossary	132
	Index	134
	Acknowledgements	140



1

Geographical concepts and questions

Introduction

Geographers investigate and interpret the *places* that make up our world by exploring, analysing and understanding their characteristics and the *processes* that shape them. Geographers use a number of concepts in this process. Concepts are the big, organising ideas which, together, uniquely belong to Geography as a field of study.

VCE Geography is underpinned by ten interrelated key geographical concepts. These should form part of your vocabulary and guide you in your thinking, description, analysis, synthesis and communication in Geography. The concepts are used in conjunction with skills, and are applied to topics of study to create a uniquely geographical way of investigating and understanding the world.

In VCE Geography the ten key geographical concepts are: *place, scale, distance, distribution, movement, region, change, process, spatial association* and *sustainability*. It will become clear through your work with the concepts in this chapter that they interconnect with and support one another extensively.

The purpose of this chapter is to provide an understanding of, and some experience with, using key concepts that are of importance to the study of Geography, particularly as they relate to human population. Your aim should be to understand and apply each concept as a means of thinking and working geographically.

▼ **Figure 1.1** Beijing Lu, a busy retail street in Guangzhou, China



Key geographical concepts in context

Place

'Where's your *place*?' It is a common enough question to ask someone where they live, but there is more behind this question than you might think. A reply might be as generic as a reference to a suburb, as specific as a street address, or (with the aid of a smartphone) even a latitude and longitude. The latter two are regarded as absolute locations, there being no other *place* on Earth that meets that locational definition. In addition, a six-figure grid reference from a topographic map will allow you to give an absolute location. Location is the 'where of *place*' and is an important component of *place* in its own right. The two locations given by the coordinates 23° 7' 33.93" N latitude, 113° 15' 58.75" E longitude, and 21° 1' 23.56" N latitude, 105° 49' 56.35" E longitude are in a similar *region* of the world, sharing some historical, cultural and political similarities. These coordinates, however, are totally meaningless by themselves. If you now look at figures 1.1 and 1.2, the *places* themselves become clear, and their individual characteristics might be compared and contrasted. *Place* becomes critical in understanding population characteristics, what issues might exist, and then thinking about how challenges might be overcome to address the populations issues facing a particular *place*. A competent geographer will always be aware that a location, though of great relevance and importance, has a *place* behind it, and that what is going on in that *place* is often critically instructive to achieving geographical understanding. In a topic such as population, it is sometimes easy to let the

broad statistics mask the detail, reality and humanity of the situations behind them, also highlighting the necessity to view things at a variety of *scales*.

Relative location refers to the *distance* and direction from one *place* to another. The use of *place* names, landmarks and *regions* helps to specify the relative location of one *place* by comparing it to the location of another *place*. This will assist you in describing where in the world you are discussing and analysing.

Understanding a *place* relates to the perception of, and meaning people attach to a location and its immediate surroundings; this creates their 'sense of *place*'. Though people may recognise the significance of the *place* as a home, the sense of *place* is naturally much greater for the person living there because of their direct attachment to, experiences in, and valuing of that *place*.

With the meaning of *places* comes value. A value could be the monetary value for a property; but, for a natural landscape, the *place* is valued on the basis of other, less tangible qualities such as aesthetic beauty, untouched remoteness or, for some people, a spiritual significance and attachment to *place* going back many generations.

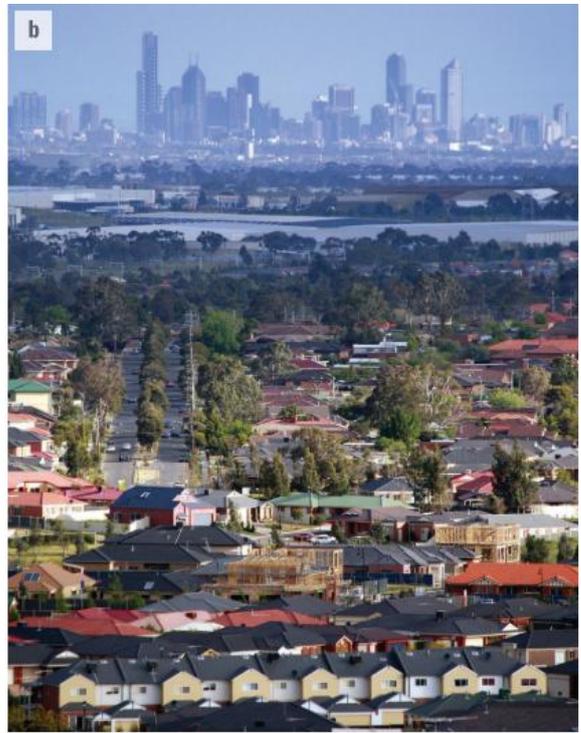
Place is central to (though often overlooked) studies of population. Local circumstances — social, cultural, economic, environmental, historical, political, and others — serve to influence the characteristics and dynamics of population in a given *place*. Though quite proximate to one another, two *places*, when viewed

▼ Figure 1.2 A busy street in Hanoi, Vietnam





▲ **Figure 1.3** (a) Housing Commission block (background) near inner-city light commercial properties



► **Figure 1.3** (b) Urban growth corridors — new houses for families



▲ **Figure 1.3** (c) Farms of the fringes — people live and work here, at least until the pressure for urban growth prevails



▲ **Figure 1.3** (d) Wealthy suburbs — large house blocks, ageing populations



▲ **Figure 1.3** (e) Former inner-city industrial areas repurposed for apartment and townhouse living



▲ **Figure 1.3** (f) Inner-city terrace house — family homes since the late 1800s, more often occupied by couples in recent times

at the same *scale*, may exhibit distinct population characteristics. Often, it is the very characteristics of population that significantly shape *place*. A *place* with high population density, low socioeconomic status and a large number of children will develop an atmosphere and character very different to a *place* with an ageing, wealthy population living at a much lower density. The features of housing, and the nature and availability of services are also likely to vary significantly.

In different *places* around the world, it might be topography, climate, prevalence of disease, level of education and economic development, or susceptibility to natural hazards that give rise to particular demographic characteristics and population issues to be managed. Figures 1.3(a)–(f) show various *places* around Melbourne. It does not matter that it is Melbourne, as similar situations could be found in and around many of the world’s cities, though Victoria’s capital is not significantly affected by any of the factors listed above. What should be evident with these *places* in Melbourne, however, is the likely variation in living conditions. Living conditions as portrayed in the images will often be influenced by differences in population density, and consequently the apparent wealth of the areas and the likelihood that family size, fertility, birth and mortality rates in each *place*, within the same city, are not exactly the same. Then consider again that the nature of the populations themselves does bring about visible differences in *places* — populations shaping *place*, not just *place* shaping populations.

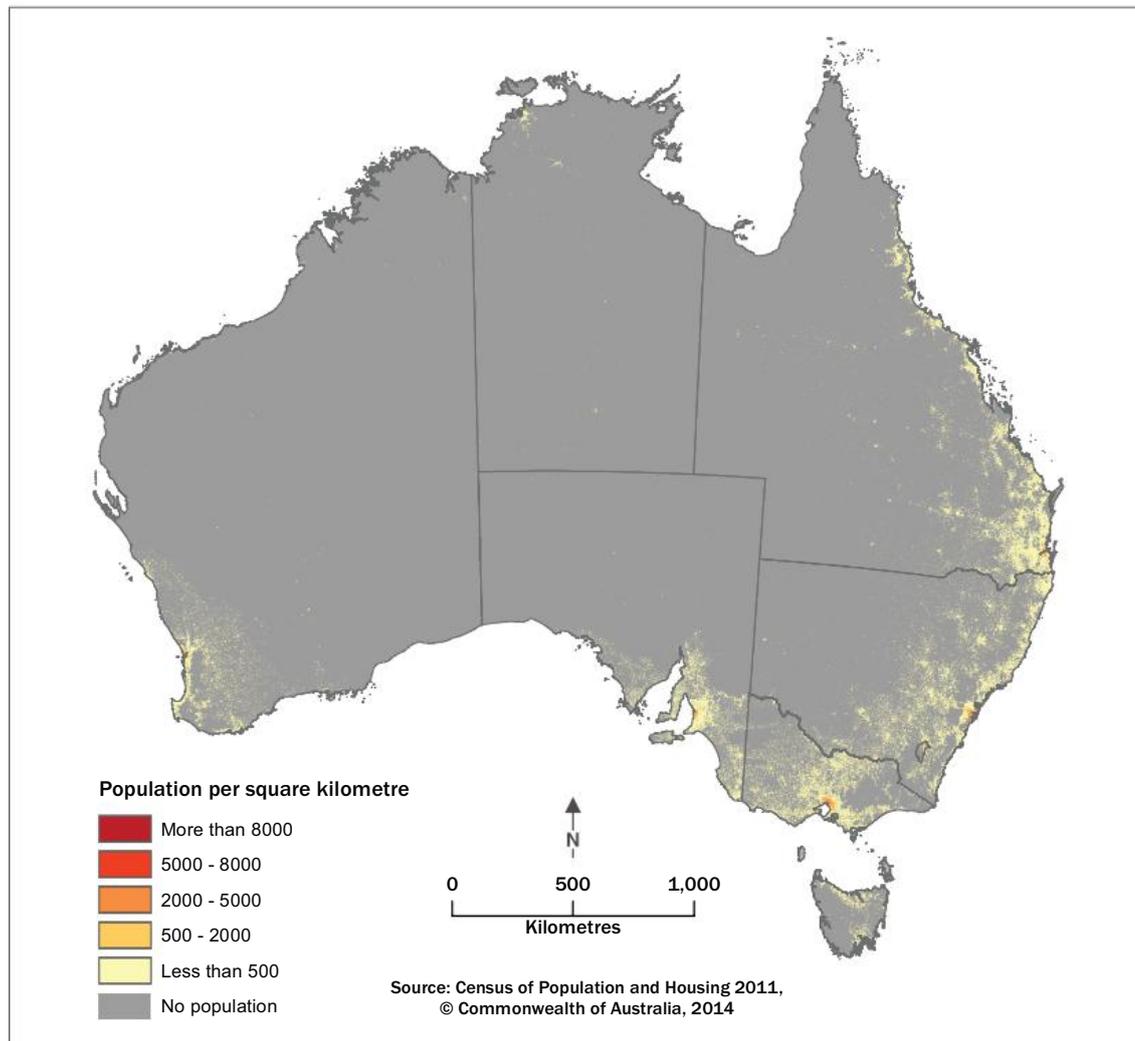
Scale

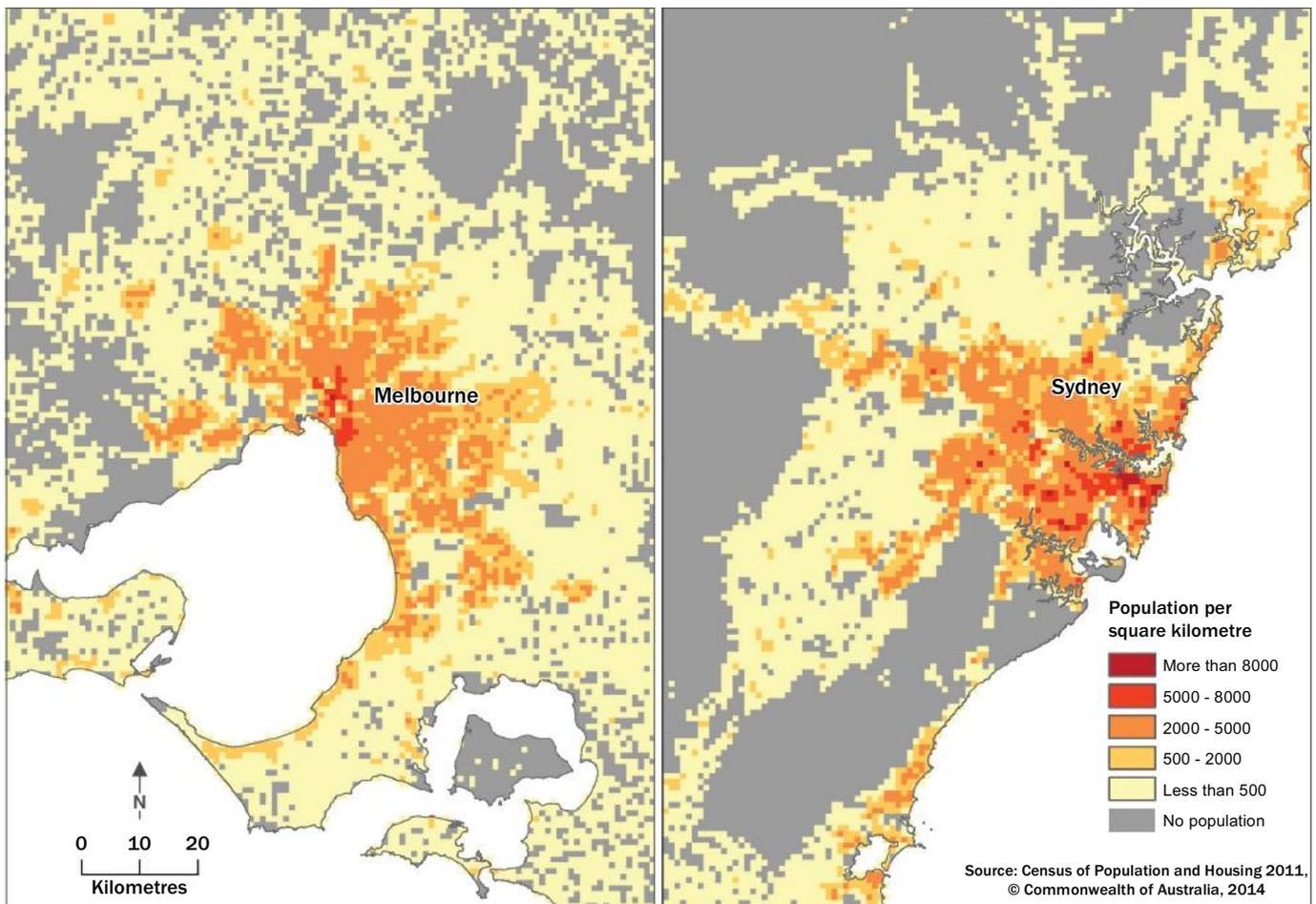
Scale refers to the size of something compared with something else and is used in one of two practical ways in Geography.

In one sense, we use *scale* on maps to determine the size relationship between the reality of something on the Earth’s surface, and the size at which that thing can be represented on a much smaller map. You will be familiar with *scales* expressed as statements, ratios and in linear form. The *scale* of a map influences how it can be used, and how clear the data on the map may appear. Figure 1.4 shows the population density of Australia based on a 1 square kilometre grid, and is considered a small-*scale* map as it depicts a large area in relatively little detail. At this *scale* the map gives a clear impression of how sparsely populated the country is overall, only providing an overview of where different population densities are *distributed* nationally. The larger-*scale* figure 1.5 (page 6) shows the same population density data, but in greater detail for smaller areas, such that the *distribution* of densities within each city is clearly visible, allowing for finer analysis.

The second use of *scale* in Geography is observational. These are the logical and descriptive size-based units into which geographers divide the world in order to structure the study and understanding of *places*, *regions* and phenomena. The *scales* geographers use are summarised in figure 1.6 (page 7).

▼ **Figure 1.4** A small-*scale* map of Australia’s population density based on a 1 square kilometre grid





▲ **Figure 1.5** A large-scale map of population density in Melbourne and Sydney based on a 1 square kilometre grid

Investigating the characteristics of population can involve all *scales*. Many characteristics of population — such as population density — are appropriately viewed at local, *regional* (figure 1.5), national (figure 1.4, page 5) and global (figure 1.11, page 9) *scales*. This unit specifically involves understanding population characteristics on a global *scale*, as well as specific investigations at a national *scale* where countries featured in case studies have rapidly growing or ageing populations, and at an international *scale* where refugee *movements* are concerned.

Inter-*scale* relationships are also occurring and should be considered when relevant. For example, the Australian government has for some time been dealing with the issue of differences between Indigenous and non-Indigenous Australians which lead to population-specific disparities. Figure 1.7 shows a marked contrast in age–sex structure between Indigenous and non-Indigenous people. Differences in life expectancy are clearly evident in figure 1.7, but other ‘gaps’ exist. For example, in 2012, the infant mortality rate for Aboriginal and Torres Strait Islander children was 6.2 deaths per 1000 live births, and 3.7 for non-Indigenous children, while the maternal death rate for Indigenous women was almost three times the rate for non-Indigenous women. This is a national-*scale* issue, yet the challenges of overcoming the issues, and many of the potential solutions, have occurred at a *regional*, if not a local *scale*.

Similarly, the (national-*scale*) civil war in Syria, beginning in 2011, has seen nearly 14 million Syrians displaced to February 2016; of these, eight million within the country itself, but six million seeking refuge in neighbouring countries in the immediate *region*, and further afield in Europe, thus making an international-*scale* situation, but with global-*scale* implications (figure 1.8).

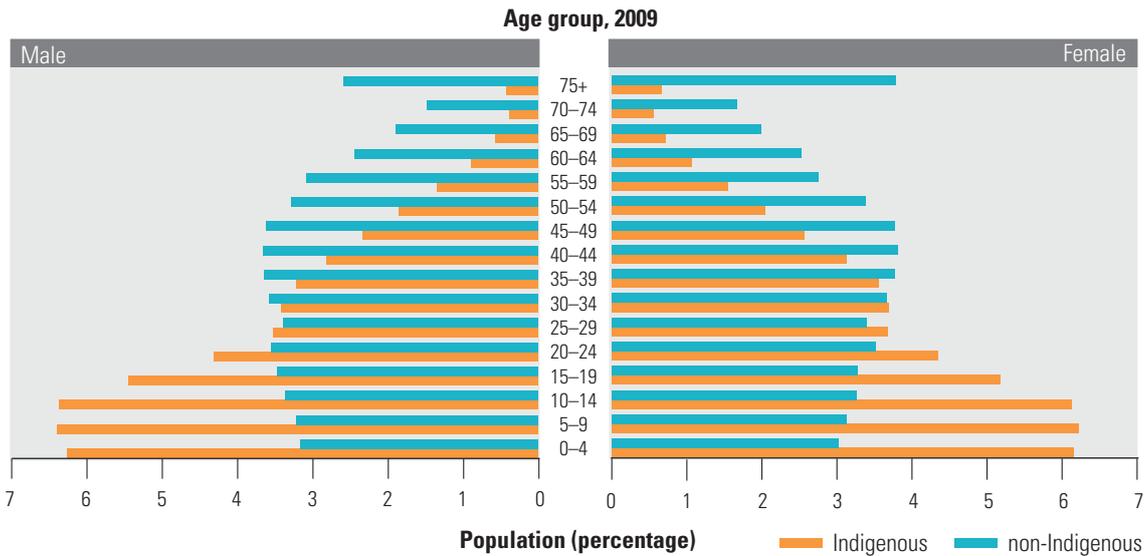
Geographers require the ability to freely zoom in and zoom out in their *scale* view, when seeking explanations, relationships, influences and outcomes of and between phenomena.

▼ **Figure 1.6** Applying observational *scale* in Geography

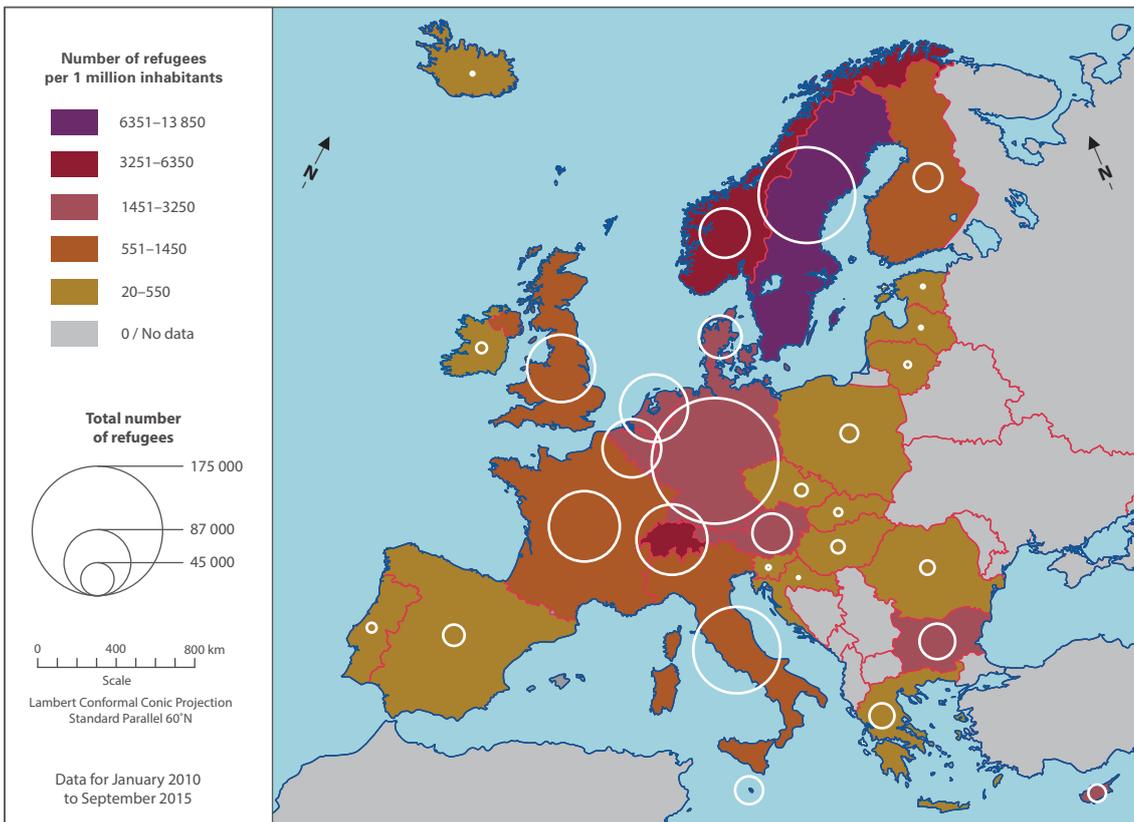
OBSERVATIONAL SCALE	EXAMPLES
Local	Involving a limited area such as a farm, shopping centre, a suburb or rural town; the immediate area around a location
National	Involving an entire county, or being of national significance and impact
International	Involving two or more countries, crossing national borders
Global	Involving the entire Earth, or impacting on the planet as a whole
<i>Regional</i>	Flexibly defined, varies in size and nature (see <i>Region</i>)

Increasing scale

▼ **Figure 1.7** Population pyramid contrasting the age–sex structure of Indigenous and non-Indigenous Australians



▼ **Figure 1.8** Refugees from the civil war in Syria — refugees granted asylum relative to the host country's total population (choropleth shading), and as an absolute number (proportional circles)



Region

A *region* is a definable area containing one or more characteristics that distinguish it from surrounding areas. *Regions* can be defined at a range of *scales* by physical characteristics such as mountain ranges and drainage basins, politically by official decisions about boundaries and names, and by common usage or for a given purpose by selecting a particular characteristic such as the western suburbs of Melbourne. Smaller *regions* can exist within larger ones, and different *regions* can overlap.

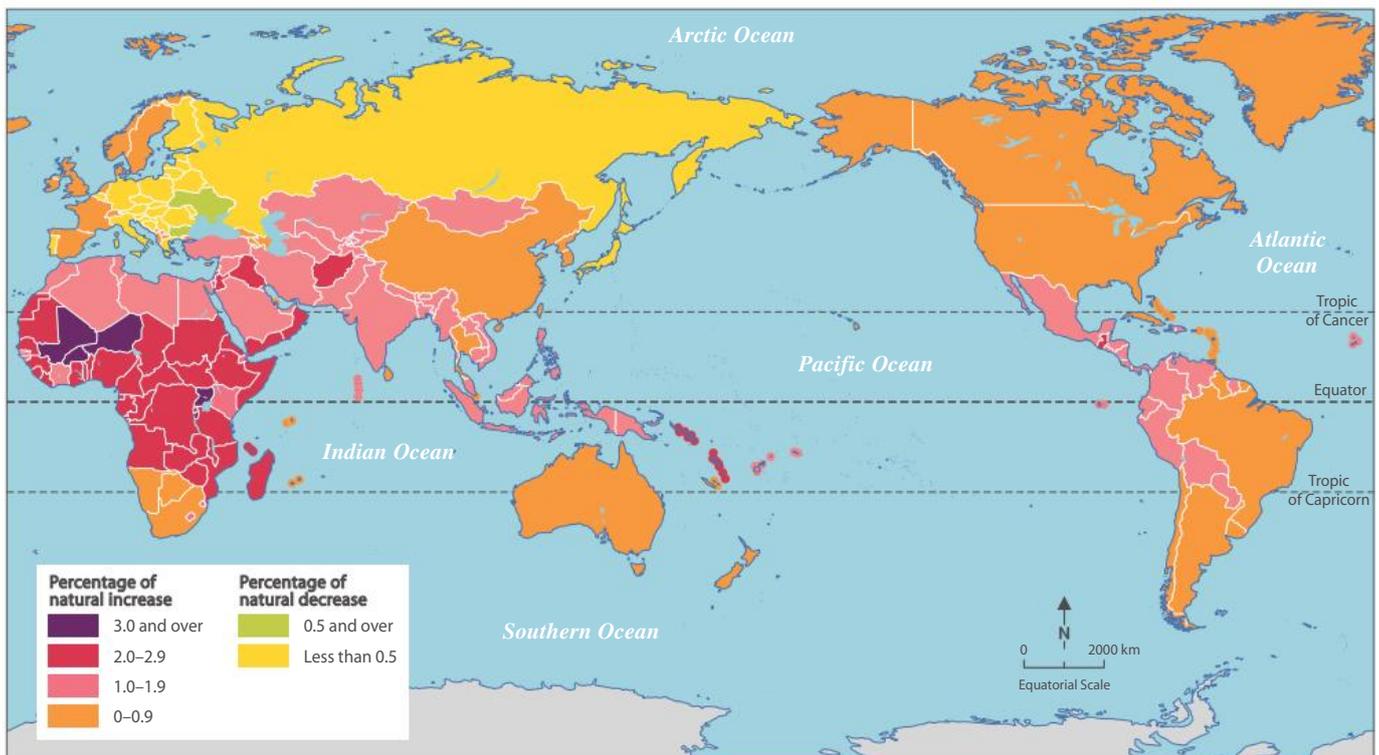
Region is important in terms of *scale*. *Regions* can be seen and defined at each of the local, national and international *scales*. Figure 1.9 provides examples of *regions* at a variety of *scales* that can be classified into various types. In this way, *region* itself can be used to represent a *scale*.

Regions can be defined by population characteristics, this being a way of summarising data to allow for more efficient description, comparison and analysis. Figure 1.10 shows the global *distribution* of rates of natural population increase and decrease. In this case, *regions* are formed by the grouping of rates of population *change* as indicated by the choropleth map colours, with descriptive names chosen based on appropriate geographical *regions* and directions. For example, central and north-western South America can be identified as a *region* experiencing a 1.0–1.9 per cent population increase. This *region* could be compared with others with similar or contrasting population characteristics, and might be investigated to determine common factors which influence the situation.

▼ **Figure 1.9** Examples of *regions* at different *scales* and how they are defined

REGION	SCALE RELATIONSHIP	DEFINED BY...
Inter-tidal zone	Local	Physical
Chadstone Shopping Centre	Local	Land use
Otways rainforest	Local	Vegetation
Melbourne Central Business District	Local	Political/administrative, land use
Victorian Central Highlands	National	Political/administrative, physical
Great Victoria Desert	National	Climate, physical
South-eastern Australia	National	Location, common use
Amazon Basin	International	Physical
Tropics	International	Location, climate
Sub-Saharan Africa	International	Location, common use

▼ **Figure 1.10** Global rates of natural population increase or decrease



Distance

Distance is measured in a number of ways. In its simplest form, it is the space between two different locations and can be determined using an absolute measure such as kilometres. *Distance* is used to assist with defining where things are in space, often also using direction. As an example, Bendigo is 150 kilometres north-west of Melbourne.

Distance is clearly used as an indication of proximity, which itself often relates to the existence of relationships between things. Greatly distant phenomena are less likely to influence one another.

Relative *distance* is a second broad category that can be measured in other ways. The amount of time it takes to travel a given *distance* (for example, 'I live 20 minutes away from here. '), or the cost of traveling a certain *distance* (for example, 'It's expensive to fly to South America. ') are examples of relative *distance*. It is also possible to use less tangible measures such as psychological *distance*, where familiar *places* seem closer than less familiar ones (for example, 'I thought the trip to Mildura would be much faster by train. ').

In population geography, *distance* can be a key consideration. *Distance* is clearly involved in migration, both in absolute terms — the *distance* from origin to destination — but also as a relative measure. The psychological *distance* for migrants is often considerable, particularly where population *movement* is forced, or involves great cultural difference (e.g. social norms, language, and customs), living conditions and economics circumstances, or proximity to existing family and social networks, when compared to a home location.

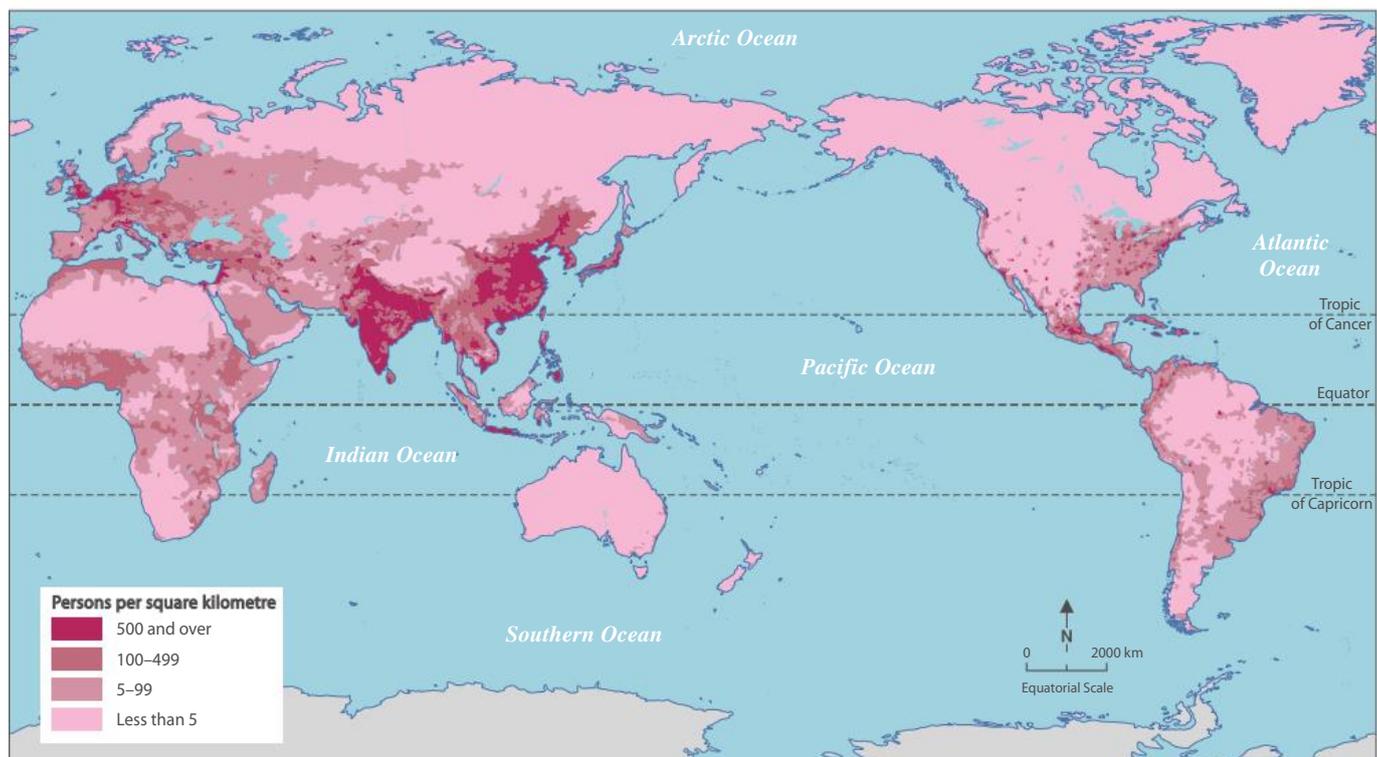
Distribution

Distribution involves the arrangement of features or objects on the Earth's surface. *Distributions* can occur at all *scales*, and often patterns can be observed and described as the arrangement or density of phenomena.

Distribution is a critical factor in many population issues, and can lead to particular challenges all on its own, be it too many people in a small space, or indeed too few. Figure 1.11 depicts the global *distribution* of population. It will be clear that some *regions* are more densely populated than others. As the world's population has risen at different rates over time, in different *regions*, *distributions* are shifting as a consequence. In recorded history, China has always been the world's most populous country. Today, China ranks 159th in population growth, and is expected to be surpassed in population by India before 2030. Meanwhile, the population of Nigeria (currently the seventh most populous country) is expected to exceed that of the United States (currently ranked third) by 2050.

Changes in *distributions* of populations are also significant when identifying, analysing and explaining cause and effect relationships. Population *distribution* is observable at all *scales* and can bring about a variety of impacts at the same *scale*, or at other *scales*, in social, cultural, political, economic, and environmental ways.

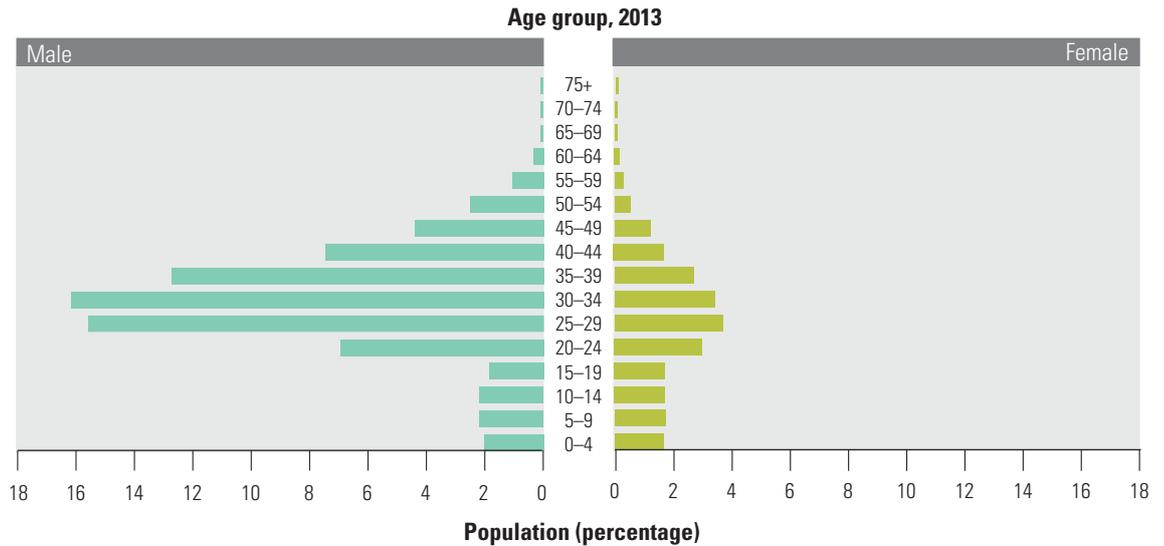
▼ **Figure 1.11** Global population *distribution*



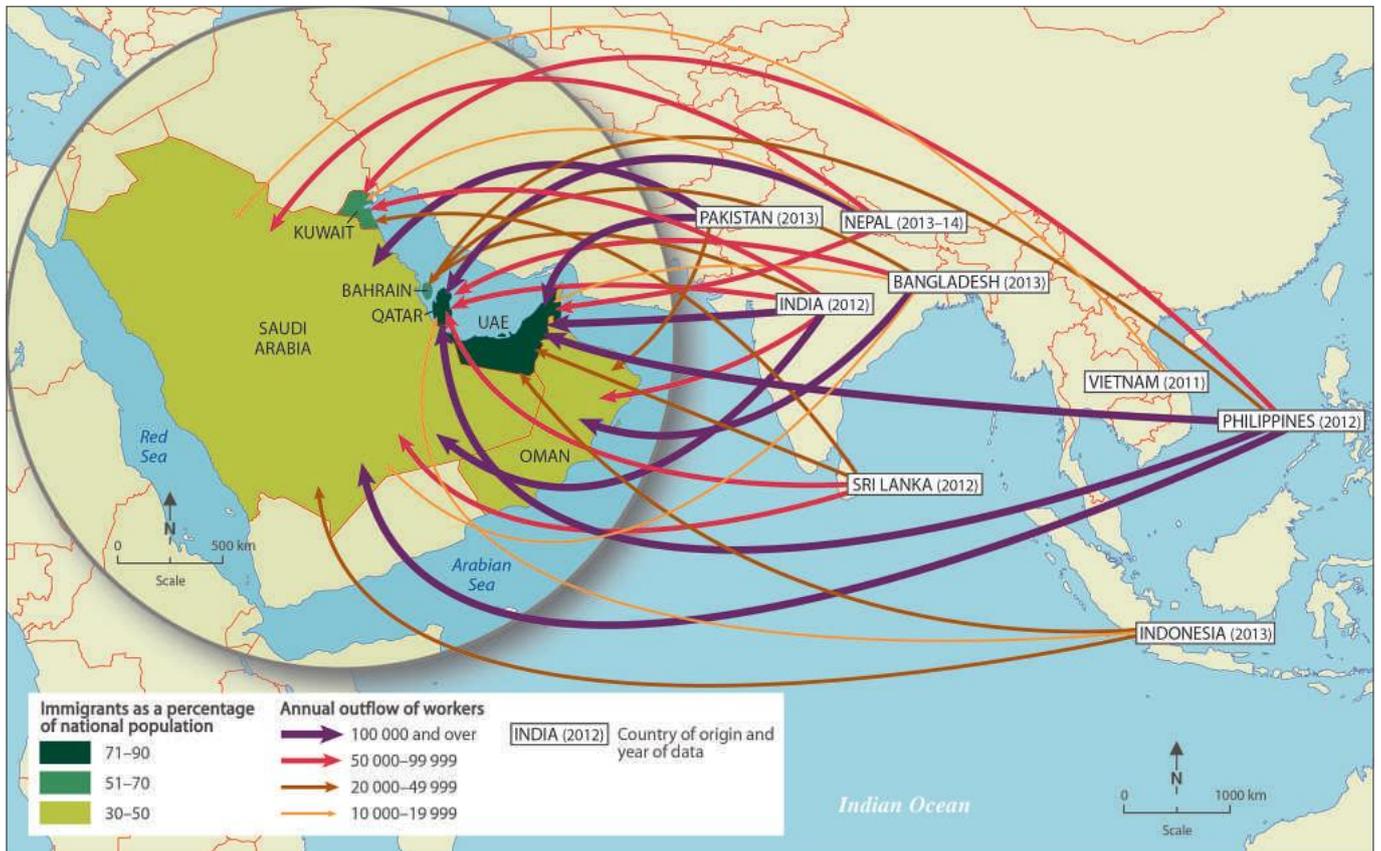
A non-spatial *distribution* especially relevant to population is exemplified in population pyramids (or profiles). These representations enable the analysis of *distributions* of males and females at age-group intervals within a population, either by percentage of total population or total population numbers. The difference in pyramids between Indigenous and non-Indigenous Australians has been shown in figure 1.7 (page 7). The example of Dubai (figure 1.12) provides an even greater contrast. This is unusual as it shows an extremely skewed *distribution* of males when compared to females, particularly in the 'working age groups' between 20 and 64.

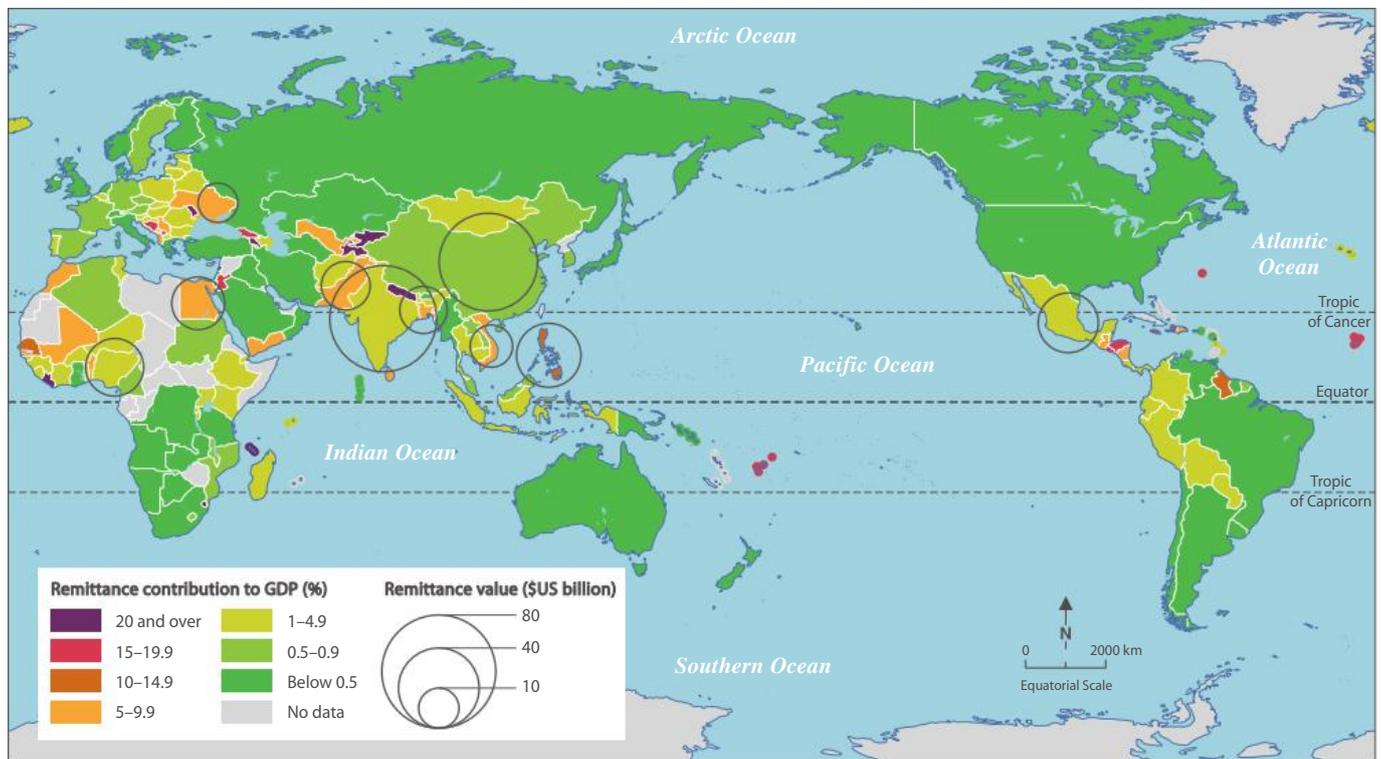
When an unusual *distribution* such as this is observed, or a difference between *distributions* of groups in the one country (figure 1.7), this is the geographer's invitation to seek an explanation. Time-series population pyramids show how age–sex *distributions* can *change* over time.

▼ **Figure 1.12** Population pyramid showing the skewed age–sex *distribution* of the Emirate of Dubai



▼ **Figure 1.13** Movement of migrants — mainly remittance workers — to the Gulf States





▲ **Figure 1.14** Remittance money from migrant workers flowing back to their country of origin is a significant driver of population *movement* in addition to providing economic benefit.

Movement

Movement involves a *change* in location of phenomena such as people, goods and ideas through travel or flow. Population fundamentally involves *movement* through migration, either voluntary or forced, as is the case for refugees and asylum seekers. Where *movement* is concerned, *distance*, direction, the mechanism bringing about *movement* in addition to the frequency, volume or magnitude of *movement*, may all be considered. *Movement* is represented in different ways graphically — colour and lines can show the rate of spread while arrows can show the *distance* and direction of *movement*.

Figure 1.13 shows the *movement* of migrants into the Gulf States, the vast majority of whom are workers. This situation has brought about the unbalanced age–sex *distribution* of populations in many *places*, an example of which is seen in Dubai in figure 1.12. These migrant workers fall somewhere between forced and voluntary migrants. Unlike refugees who flee their home countries due to adverse environmental, political or cultural factors, these so-called ‘remittance workers’ *move* to work away from their home countries because of a lack of local opportunity and the promise of relatively higher pay. This remittance money, in turn, gives rise to another kind of population-related *movement* — the flow of funds back to families in workers’ home countries. Figure 1.14 shows both the percentage contribution remittance money makes to a country’s GDP, and the total value of remittance in-flows to the top ten receiving countries in the developing world.

Change

Change relates to the degree to which something alters, or is modified, over time. As phenomena studied in Geography are dynamic, they are often best understood by investigating how the focus of investigation has developed over space and time. It is also valuable to examine the effects and impacts of *change*, and this often relates to *sustainability*.

Change can be spatial and *place*-related. This can include *changes* in the location (that is, *movement*), size, *distribution*, density or pattern of phenomena. The transformation of the use, nature or quality of a *place* can also be identified. *Change* can be non-spatial and still be of relevance to Geography such as *changes* in policies relating to population, as well as the characteristics of population themselves.

Figures 1.15(a)–(e) on the following page are population pyramids for Bangladesh over a 150-year time span. It is apparent that at each time interval, the shape of the pyramid is different. Temporal *change* — or *change* over time — such as that shown in the data in these figures will lead a geographer to consider what factors are behind the observed *change*. One of the outcomes of the differences in the pyramids is to be seen in the total population of Bangladesh over time and, consequently, the rate of *change*, which can be seen in figure 1.15(f). Figures 1.15(a)–(f) also highlight that *change* can be viewed looking backwards in time, based in documented data, the present using current data, but also predicted into the future. Though the data in the figures here is based on projections past 2015, this is done using current trends and an understanding of population dynamics as a reaction to a range of factors. Often, such population projections include a range of estimates from high to low, with a conservative middle path.

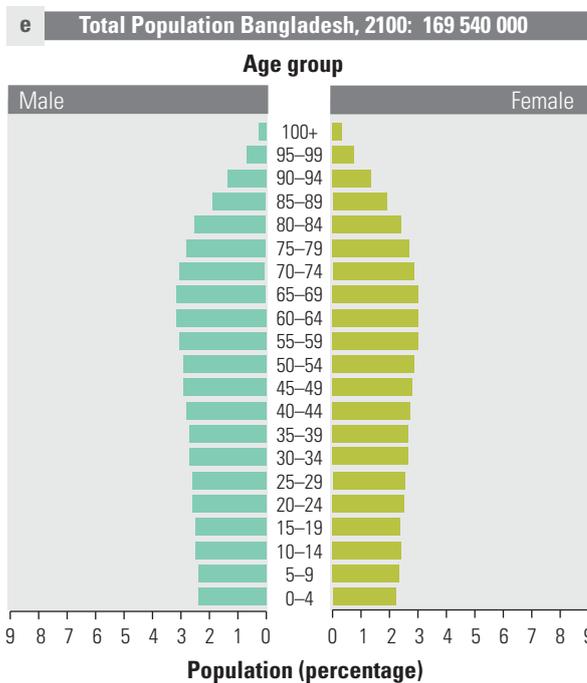
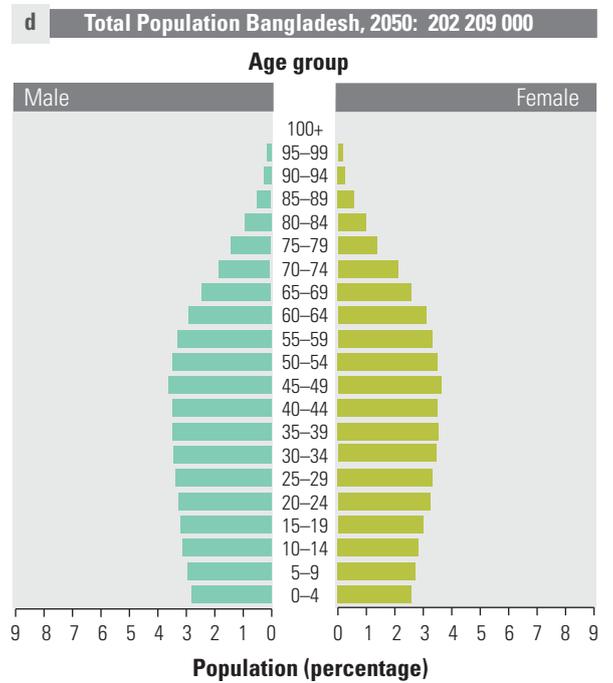
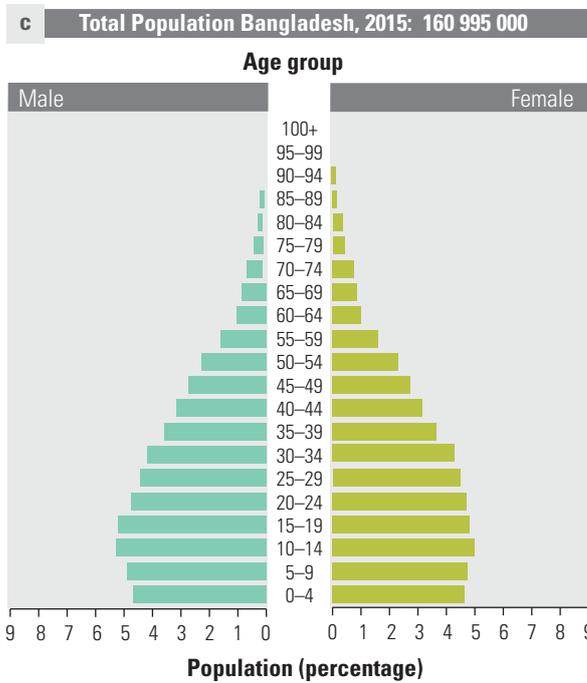
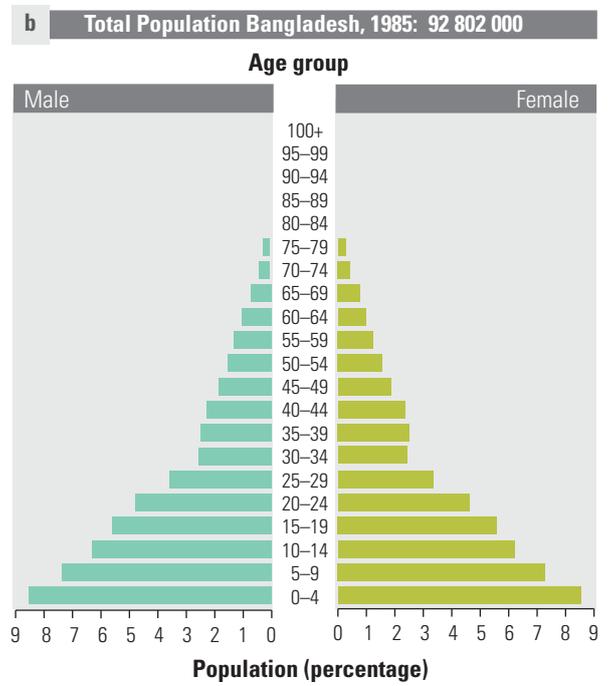
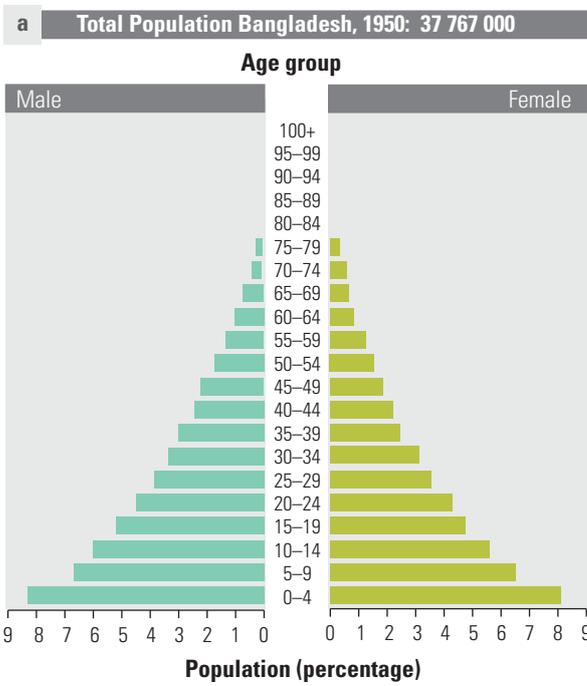
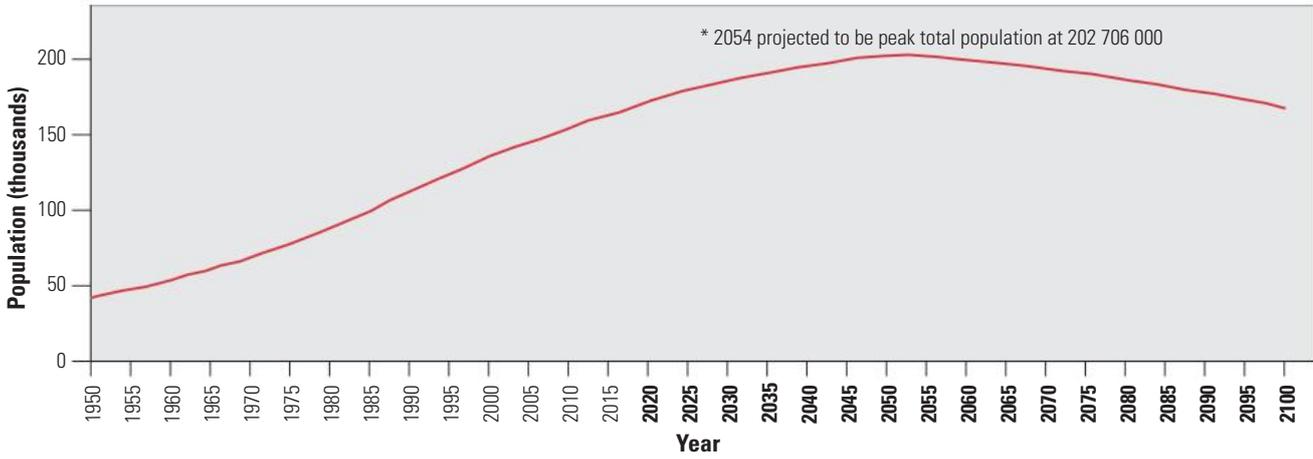


Figure 1.15 (a)–(e) Population pyramids for Bangladesh at intervals between 1950 and 2100

f ▼ **Figure 1.15** (f) *Change in the population of Bangladesh, 1950–2100*



Process

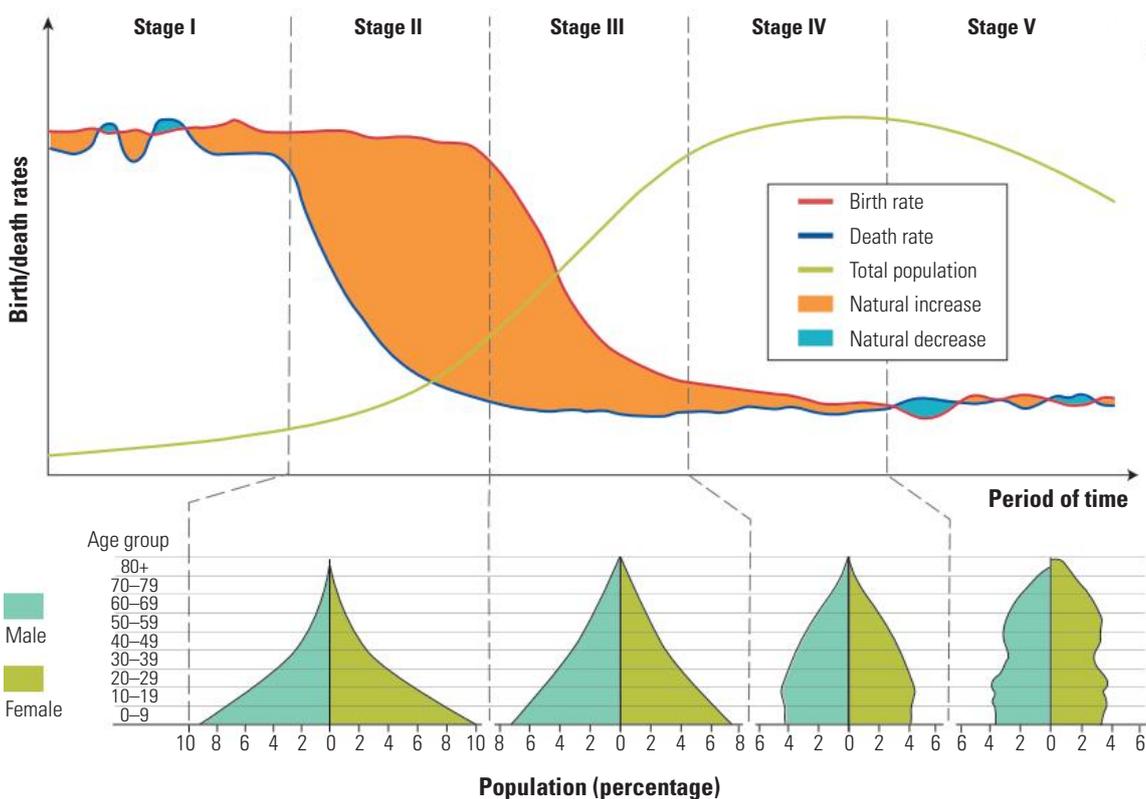
Processes involve a series of ongoing events or steps that lead to the development, *change* or preservation of something. Often *processes* create cause-and-effect relationships between things. *Processes* can operate within and between *places*, and at a variety of *scales*.

Where population is concerned, *processes* lay behind the dynamics we observe. One *process* often used to summarise population dynamics is the Demographic Transition model (figure 1.16). This model shows the interaction between *changing* population characteristics of birth and death rates and how this affects total population. The steps in the *process* are made clear by each of the stages, and the impacts these have on age–sex structures are shown using the population pyramids. The *process* of *change* evident in the model has been observed repeatedly in countries of the world over time, though the stage at which a country might be, and the rate at which *change* is occurring, varies considerably.

External *processes* influence population *change* and population, in turn, affects other *processes*. Natural

processes such as disease and other hazards, or human-induced *processes* like conflict, climate *change* or political decision-making, all have the power to *change* population. Population drives *processes* such as migration and urbanisation, and can exacerbate environmental pressures at all *scales*. Governments and organisations are interested in dealing with and managing population issues and challenges using political *processes*, with *sustainability* in mind.

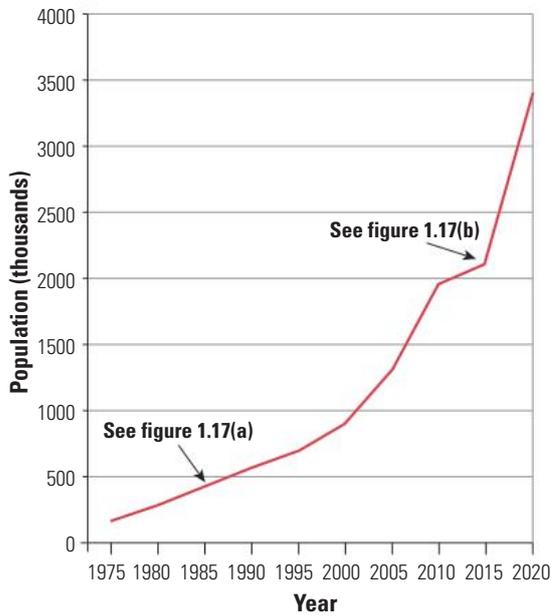
The satellite images in figure 1.17 (page 14) show the effects of population-driven urbanisation as a *process* in Dubai between 1985 and 2015. Dubai’s rapid expansion has been planned, a political *process*, and population growth rates are among the highest in the world, averaging 5–8 per cent per year (figure 1.18, page 14). Extraordinary building projects, including land reclamation visible in the images — and only achievable through large numbers of migrant workers (see figure 1.12, page 10) — along with commercial enterprises and tourism are fuelling growth.



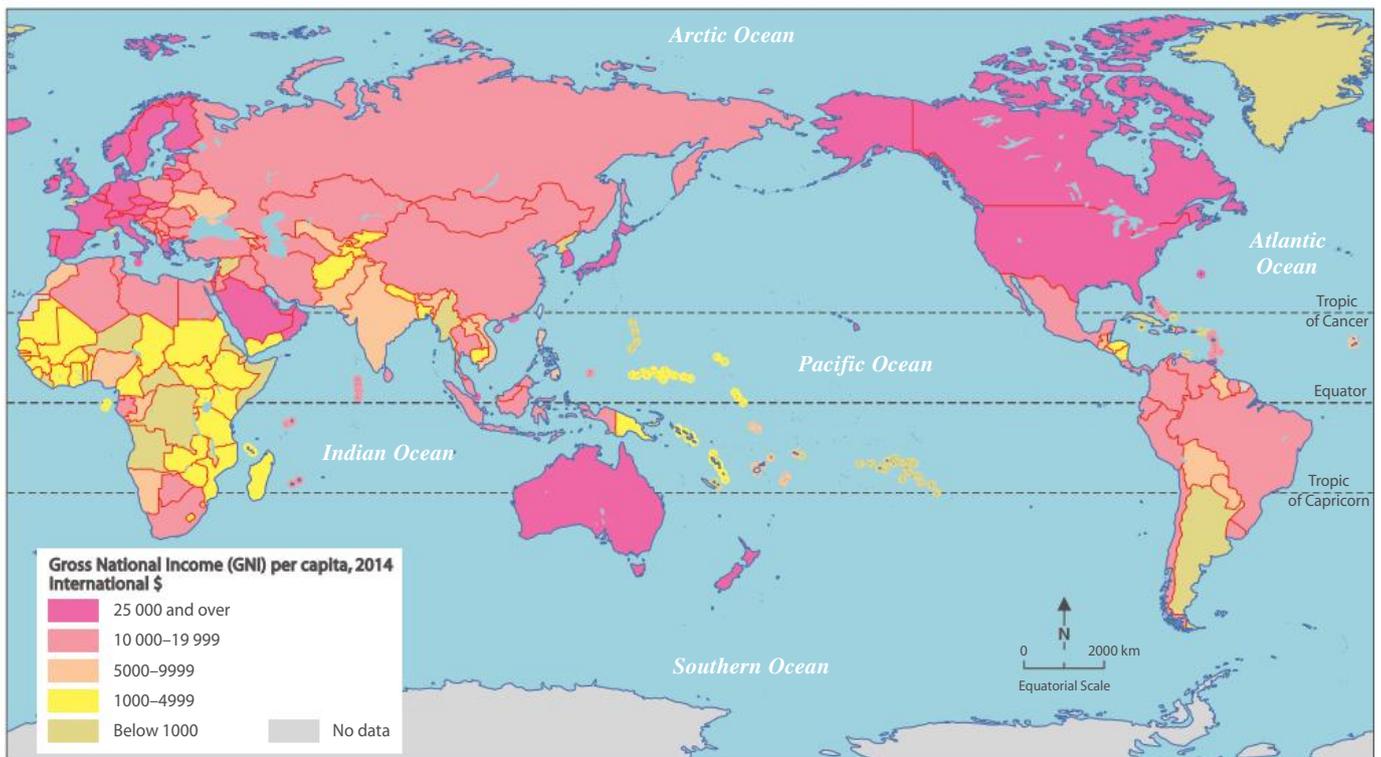


▲ **Figure 1.17** The *process* of urbanisation in Dubai showing *change* from 1985 (a) to 2015 (b)

▼ **Figure 1.18** Dubai's rapid population growth



▼ **Figure 1.19** Gross National Income (GNI) 2014 — an indicator of wealth



Spatial association

It is common to find things occurring together on the Earth's surface. *Spatial association* is the degree to which two or more phenomena are similarly *distributed* or arranged on the Earth's surface. Where *distribution* patterns of phenomena are consistently similar, a strong or high degree of *spatial association* exists. For example, there is a strong *spatial association* between areas of the Earth with low rainfall and low population density. When one phenomenon has a high frequency and another phenomenon is lower in frequency, there is a weak or low degree of *spatial association*. For example, there is naturally a weak degree of *spatial association* between urban areas and the *distribution* low population densities. It is also possible for there to be no *spatial association* at all. The task of the geographer is to determine the degree of *spatial association* and explore potential underlying reasons for the existence of a relationship, or lack thereof.

Figure 1.19 depicts global Gross National Income (GNI), which is an indicator of a country's wealth. This map can be compared with figure 1.10, page 8 (global rates of natural population increase or decrease) to determine the degree of *spatial association*. Similarly, the comparison can be made between figures 1.19 and 1.11, page 9 (global population density) to see what level of *spatial association* exists.

Spatial association can also be viewed through the perspective of impacts. The coincidence between phenomena spatially might occur by chance, but the fact that they do have overlapping *distributions* has consequences.



Sustainability

Sustainability is a different concept from the others, and it encourages the formation of evaluations or judgements about current situations and their potential *change* into the future. *Sustainability* is the capacity of the environment and social systems to support people and other living things now and into the future. It involves environmental, social, economic and political considerations.

When considering population, *sustainability* can be used as a concept in various ways from an evaluative standpoint. Initial questions might focus on whether or not the type or nature of population *change* itself is *sustainable* or even desirable; for example, where social, cultural, environmental or other impacts result from population *change*. Excessive or rapid population growth can have impacts on resources that may not be *sustainable* (figure 1.20). As an example of this, Malthusian theory (a knowledge point for this unit) directly relates to *sustainability* in this way — where population growth may outpace the ability of agriculture to support it, growth is deemed *unsustainable*. Conversely, an ageing population, such as in Japan, might leave a country deficient in an employed workforce, which could have flow-on impacts on *sustainability*.

Though some way into the future, eventually the world's population will naturally decrease. The world has reached 'peak child', a term indicating there are as many children on the planet as there ever will be, and the population will age overall (see figure 1.21). The question remains, will the intervening period of growth — up to over 11 billion by 2100 — be *sustainable*, before the decline begins?

Sustainability is also appropriately considered where dealing with specific population issues or challenges. Are, for instance, identified population issues arising because of concerns over *sustainability*? Do the challenges that face those responsible for population management involve *sustainability*, and, following on from this in an evaluative sense, are proposed responses themselves *sustainable* solutions?

◀ **Figure 1.20** Population growth is a critical issue, as reflected in these newspaper headlines.

▼ **Figure 1.21** Growth in numbers of children under 15 years

YEAR	CHILDREN UNDER 15 YEARS (billions)	PERCENTAGE OF WORLD POPULATION	MEDIAN AGE OF WORLD POPULATION
1960	1.0	35.0	23.0
2015	1.9	26.1	29.6
2050	1.9	20.0	36.1

▶ ACTIVITIES

Place

- Use figures 1.1 and 1.2.
 - Refer to an atlas or Google Earth to calculate an approximate *distance* between the two *places*.
 - To what extent could these two *places* be said to be in the same *region*?
 - Despite being at similar latitudes, near the coast, having a similar climate, and running ostensibly under the same political system, what differences can you observe that make these two *places* distinct?
 - Hanoi has an average population density of 2059 people per square kilometre while Guangzhou has an average population density of 1708 people per square kilometre (and climbing). Discuss issues which may arise in the two locations given their density, and how the nature of the *places* has an impact thereon.
- Using figures 1.3(a)–(f), outline how *place* might exert push (repelling) and pull (attracting) forces on populations. Consider this from the point of view of (a) a member of a household with a large, young family, (b) a farmer, (c) an unemployed person, and (d) an affluent professional person. Use this table format on an A4 page:

	1.3(a)		1.3(b)		1.3(c)		1.3(d)		1.3(e)		1.3(f)	
	Push	Pull										
a.												
b.												
c.												
d.												

Scale

- Using the figures in this chapter, identify by figure number an example of each of local, *regional*, international and global *scales*.
- Refer to figures 1.4 and 1.5. Outline how the *scale* of the two maps affects your ability to discuss population density at the national, *regional* and local *scales*.
- Explain how figure 1.8 can be a *regional*, international and global *scale* issue at the same time.

Region

- Using figure 1.4, describe Australia's population *distribution* in *regional* terms.
- Figures 1.10 and 1.11 both map different population characteristics, rate of natural increase/decrease and density, respectively.
 - Explain how *regions* might need to be described differently in the case of each map.
 - Identify which of the two figures you find easier to use when describing *regions*.

Distance

- All of the images in figure 1.3 are in Melbourne. Evaluate the statement that 'the absolute *distance* between the images is small, but the relative *distance* is great', by using *distance* examples.
- Use Google Earth to calculate a linear *scale* for the Dubai satellite images (figure 1.17). Note that airport runways are handy for such a task.
 - Calculate the length of coastline visible in figure 1.17(a).
 - Use figure 1.17(b) to calculate the maximum *distance* that urbanisation extends inland and that land reclamation extends into the Persian Gulf.
 - Use Google Earth to determine where the boundary is between Dubai and Sharjah, a separate Emirate, but part of the Dubai–Sharjah–Ajman metropolitan area.

Distribution

- Using figure 1.5, with a physical map from an atlas or Google Earth, discuss why the population *distributions* of Melbourne and Sydney are different, based on the physical environment.
- Using the age–sex *distributions* in figure 1.7, identify the apparent stage of the Demographic Transition model that applies to Indigenous and non-Indigenous Australians.
- Use figure 1.15(a)–(f).
 - Comment on your observations of the *change* to the 0–4 age groups and the 90+ age groups at each time interval. What would account for these occurrences?
 - For each of the four pyramids, identify where the 0–4 age groups would be in the subsequent pyramids' age groups (e.g. 0–4 in 1950 would be 35–39 in 1985). What conclusions can be reached about the trends in *distribution* over time?
- Use figure 1.12.
 - Account for the skewed *distribution* observable in the population pyramid for Dubai.
 - What accounts for the comparatively large drop in the male population beyond age 64?

▶ ACTIVITIES *continued*

Movement

14. Use figures 1.8 and 1.14, both of which provide total values (proportional circles) and relative data (choropleth colouring).
 - a. Which factor accounts for the apparent lack of relationship between the total value of remittances and the contribution to GDP as a percentage?
 - b. Discuss how both sets of data might be better shown on the map to assist in your understanding of different levels of response of European countries to the crisis of refugee *movements* from North Africa and Syria.
 - c. Explain why absolute and relative sets of data are useful.
15. Using figure 1.13, discuss the potential impacts of the *movement* shown in the map. Some research about remittance works in the Gulf States will assist.
16. Using figure 1.14, clarify how this map involves *movement*.
17. Explain how the data in figures 1.12, 1.13 and 1.14 can be related, each to the other.

Change

18. Look through all the figures in this chapter with the exception of figure 1.15(a)–(f). Identify those which involve some aspect of *change* and note the nature of that *change*.
19. As population growth continues in Melbourne, *change* is inevitable. Comment on the likely relationship between figures 1.3(b) and 1.3(c), and 1.3(e) and 1.3(f) in terms of the *process* of *change*.
20. Using figure 1.7, explain which population characteristics need to *change* to 'close the gap' between Indigenous and non-Indigenous populations, reflecting on why this *process* will not happen quickly.

Process

21. Use figures 1.15(a)–(f) and 1.16.
 - a. Apply the Demographic Transition model to the population pyramids for Bangladesh to identify the stage of the *process* the country is in, at each time interval.
 - b. Describe the trends in birth and death rates, and total population, for each stage using appropriate quantification in your answer.
22. Use figure 1.16 with figure 1.7. To what extent do you agree with the statement, 'Australia is like two countries in one'. Justify your response using the *process* of Demographic Transition.

Spatial association

23. Analyse figure 1.14.
 - a. Determine what, if any, relationship exists between a country's physical size and remittance share of GDP >15%.
 - b. Can this be considered a *spatial association*, and if so, how strong is it?
24. Discuss the degree of *spatial association* evident between global Gross National Income (figure 1.19) and global rates of natural population increase/decrease? Ensure you employ the concept of *region* and provide appropriate quantification in your response.
25. Using figures 1.11 and 1.19, identify *regions* where there appears to be a high degree of *spatial association* between low Gross National Income and high population density.

Sustainability

26. Using figures 1.15(a)–(f), comment upon the apparent long-term *sustainability* of population *change* in Bangladesh. To what extent do you think the population's issues become 'worse' before they get better? Justify your response.
27. Use figures 1.17(a)–(b) and 1.18 with background research as necessary.
 - a. Describe the landscape and climate conditions of Dubai.
 - b. Summarise the nature of population growth in Dubai, taking care to quantify your response.
 - c. To what extent, based on your previous responses and keeping *sustainability* in mind, would you agree with the statement 'Dubai is a perfect *place* to build a large city and achieve sustained, rapid population growth'?
 - d. Dubai is hosting the Sustainable World Expo in 2020. Unlike other Gulf countries, only five per cent of Dubai's income is from oil, and it aspires to be environmentally and economically *sustainable*. How is Dubai seeking to achieve its goals?
28. Use figures 1.20 and 1.21.
 - a. Make a list of the 'resources' the population increase represented in the headlines might affect. Use the categories natural resources and human resources to organise your thinking.
 - b. Explain how the world's population will naturally decrease in the long term using data in your explanation.

Analysing and interpreting data

In many cases in Geography, analysing and interpreting data relates directly or indirectly to the key geographical concepts. Developing a conceptual understanding and applying concepts to information analysis is the basis of many activities in this textbook. Some questions or tasks will include a concept by name, while others imply the use of one or more concepts in your thinking.

Tips for using concepts:

- ▶ In written responses to tasks which name a particular concept, it is usually appropriate to use that concept by name in your answer.
- ▶ Conceptual understanding can often be demonstrated visually; for example, in a map, graph or diagram. Examples of concepts shown well on maps include *scale*, *distance*, *distribution*, *region*, *movement*, *change* and *spatial association*. Commonly graphed examples include *distribution*, *movement* and *change*, particularly those involving a time *scale*. *Process* might be appropriately shown in a flow diagram.
- ▶ Higher quality written responses often communicate clear conceptual understanding, without necessarily using the concept by name.
- ▶ Avoid using concepts in responses unnecessarily. Doing so does not always show an understanding of the concept.

Applying instructional terms in Geography

Throughout the chapters in this book, instructional (or directive) words are used in many activities. They specify how you should approach and complete a given task. Understanding these words and knowing what is expected of a response are important skills, and will improve the quality of your answers and enhance geographical understanding.

The following table provides explanations for instructional or directive terms found in this book, or likely to be used in class activities, assessments or fieldwork.

Account for	State reasons to explain an event or why something exists.
Analyse	Show the essence of something (e.g. a situation or a map) by breaking it down into separate points and critically examining the relationship between each part.
Annotate	Add labels, comments or explanatory notes to images, maps, graphs, diagrams or text.
Apply	Use particular skills or incorporate specific information and ideas to a situation.
Assess	Weigh up the value of or judge the strengths and weaknesses of something. Similar to 'evaluate', but more about the overall situation.
Calculate	Use data or statistics provided in various forms to determine an answer.
Categorise	Arrange or group by distinctive characteristics.
Clarify	Make clear or simplify facts, opinions, issues or arguments.
Classify	See 'categorise', above.
Comment on	Give an opinion and explain reasons for support or a lack of support for an idea or issue. Can involve discussing the relevance or merit of a provided statement.
Compare	Show the similarities or differences when examining two situations, events, ideas, features or <i>processes</i> .
Consider	Think about what has been observed about something, being able to support observations using appropriate evidence.
Construct	Put together an argument, point of view or a series of reasons to account for a particular situation. It also means to create, develop or draw a map, diagram, graph or table.
Contrast	Highlight the differences when examining two or more situations, events, ideas, features or <i>processes</i> .
Define	Provide a meaning or identify the essential qualities of a key term, word or expression.
Demonstrate	Show or provide proof by using examples from specific case studies, events or issues.
Describe	Provide characteristics of a situation explaining what is observed.
Design	Decide upon the look and functioning of a product such as a map, diagram or social survey.
Distinguish	Identify what is different between one or more similar situations or phenomena.
Discuss	Show understanding of a situation, where appropriate, by presenting both sides of a situation, issue or event. Include the strengths and weaknesses of available data. Usually involves more detail than 'explain'.

Evaluate	Weigh up and interpret a statement, viewpoint or situation and state a conclusion about its value or importance. Similar to 'assess', but with a focus on the outcome or result. Include consideration of different opinions.
Evaluate the relative importance of	A combination of 'rank' and 'evaluate'
Explain	Relate cause and effect. Give reasons why a situation exists or a <i>process</i> occurs.
Explore	Adopt a questioning approach, looking at all aspects of the situation, including points for and against. Similar to 'discuss'.
Identify	Establish the nature of a situation by distinguishing its features and naming them.
Illustrate	Make something clear and explicit, by providing examples or evidence. May require the use of visual representations (e.g. maps, diagrams, tables, graphs and statistics).
Interpret	Examine visual data such as a map, graph or diagram, to make sense of what is being depicted and to draw conclusions.
Justify	Use examples or find sufficient evidence to show why, in your opinion, a viewpoint or conclusion is correct.
Observe	Identify significant items from numerical or visual data, or fieldwork.
Outline	Summarise the main points of given information, or events, in a situation.
Predict	Suggest what may happen in a given situation based on evidence gathered.
Quantify	Use numbers or statistics to describe a phenomenon and support conclusions.
Rank	Arrange factors, outcomes or elements in order of importance.
Recommend	Provide reasons in favour of a proposal.
Reflect on	Think about what has been presented, considered or observed and communicate those thoughts.
Sketch	Refers to a map, diagram or field drawing; a relatively simple, quick, hand-drawn representation that follows accepted, relevant conventions, but without an accurate <i>scale</i> .
Suggest	Present a hypothesis or theory about a particular situation.
Summarise	Retell concisely the relevant and major details of arguments, events and patterns.
To what extent do you agree	A clear statement of agreement, disagreement or partial agreement concerning a proposition is required. See 'assess'.

2

Population dynamics

Geographers study population for many reasons:

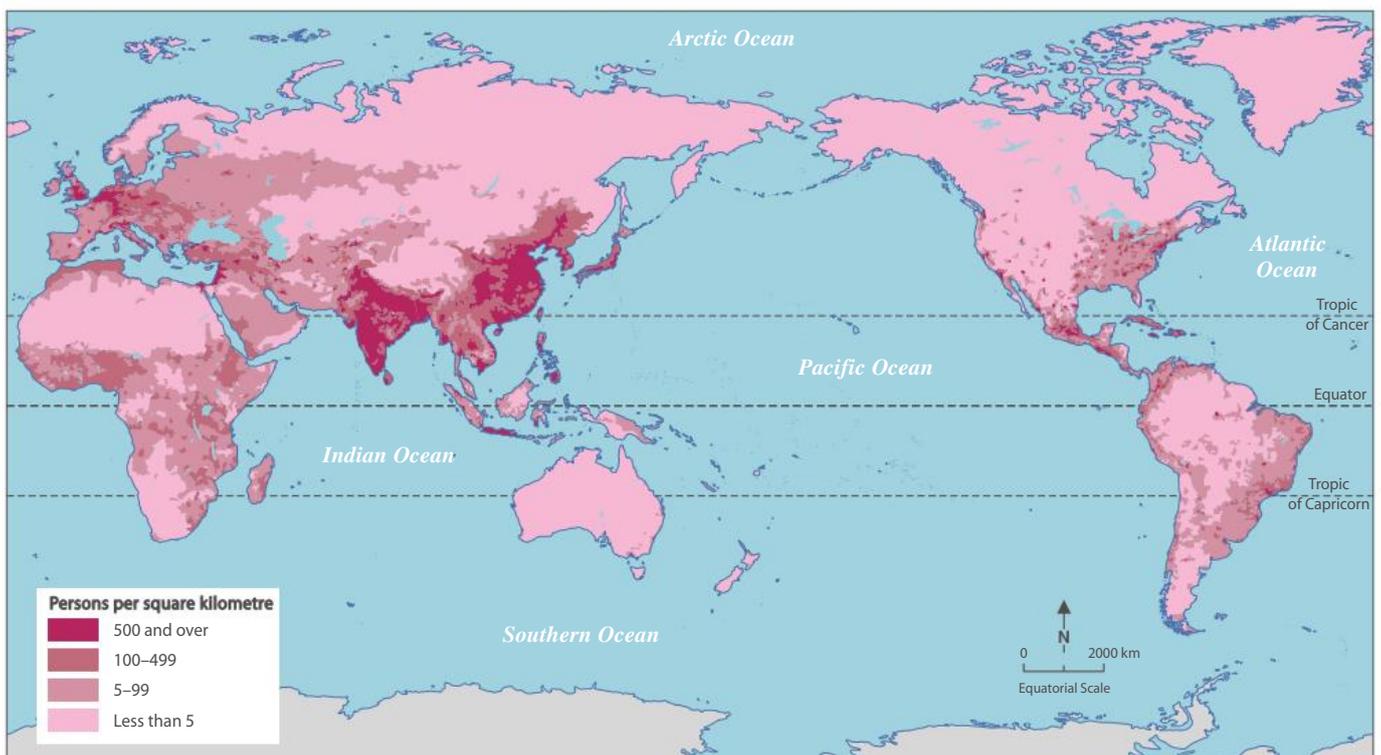
- ▶ to develop an understanding of where our fellow humans live and, collectively, how they grow, decline, age and move
- ▶ to help develop policies to mitigate the effects of population growth or decline and the impacts of population *movement*
- ▶ to determine how *changes* in population characteristics are closely related to levels of development at all *scales*
- ▶ to bring about more effective planning for the use of the Earth's resources.

Introduction

The term population dynamics refers to the *changes* that occur in a population, and includes how and why these *changes* occur. Population *change* can result from the difference between birth rates and death rates. In turn, *changes* to birth rates and death rates can be the result of many factors interconnecting with each other: for instance, *changing* social and economic conditions, government policies, wars and revolution,

and disease. This can produce a natural increase or a natural decrease. Further, a population can age, or become younger, because of *changes* in birth rates and death rates. Migration into or out of an area can have a further impact on population *distribution*, age and ethnicity, as well as further increase or decrease its size.

▼ **Figure 2.1** Global population *distribution*



Population distribution

A global population of 7 226 794 000 reached in early 2015 was very unevenly *distributed*, as figure 2.1 shows. Approximately 75 per cent of the world's population lived within 1000 kilometres of a coastline, whereas less than 10 per cent lived in the Southern Hemisphere. Just over half of the world's population now lives in urban areas, with two billion of them in 1000 urban areas of 500 000 people or more. The planet now has 26 megacities, such as Tokyo–Yokohama (Japan) and Mumbai (India), each with over 10 million people.

The highest densities of people (that is, the number of people per area, usually per square kilometre) were located in the *regions* of Asia and Europe, especially South and East Asia, Central and Western Europe, as well as north-east North America. Lower population densities occurred over wide areas of Africa, Australia, Northern Europe, and Western and Northern Asia. Antarctica is the only continent without a permanent population.

Urban areas, like the one in figure 2.2, support some of the highest population densities in the world. For example, Karachi (Pakistan) has an average of 23 400 people per square kilometre while Dhaka (Bangladesh) averages 43 500 people per square kilometre. These levels seem even more extreme when compared with Melbourne's average of 1500 people per square kilometre. Remember, these densities are only averages. There is likely to be a considerable range in density either side of the average.

Tehran in Iran, see figure 2.2, with over 12 million people in its wider metropolitan area, has densities exceeding 10 000 per square kilometre in the older

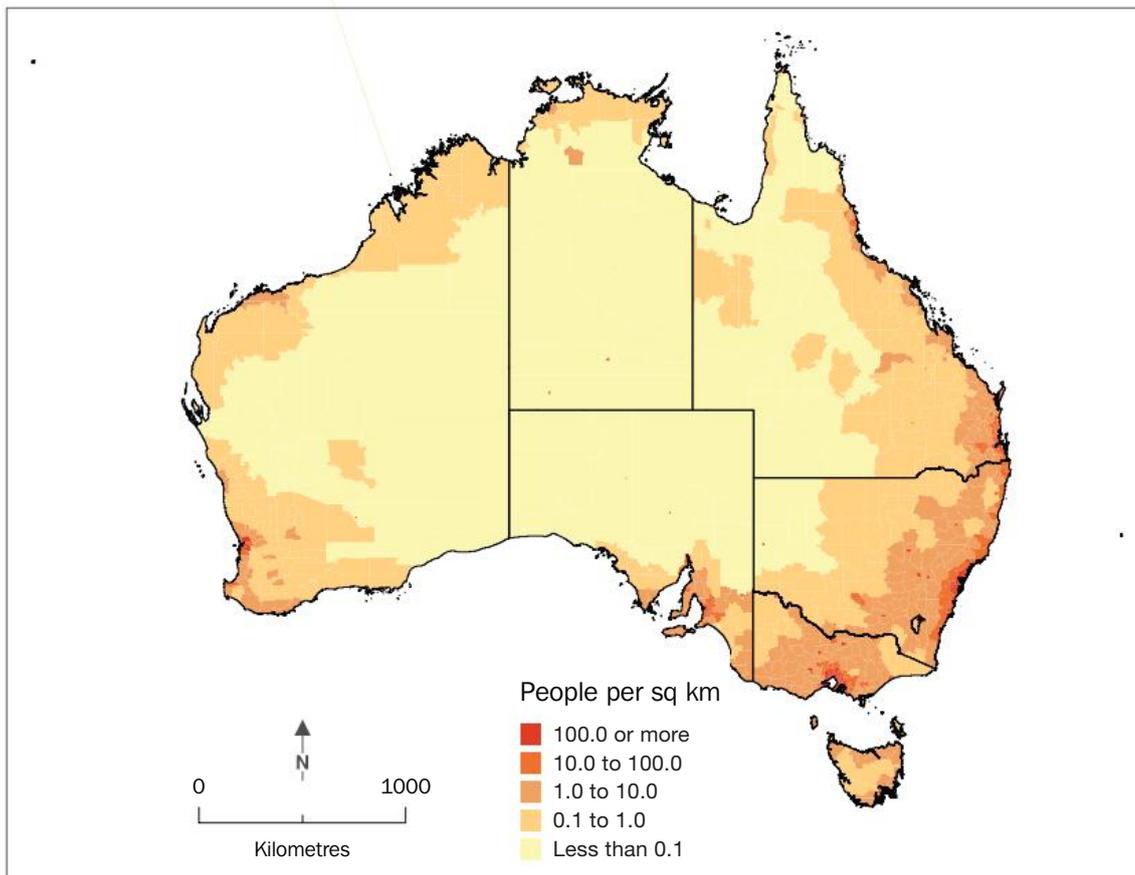


▲ **Figure 2.2** Tehran in Iran has a population of over 12 million people

centre at the foot of the Alborz Mountains. Tehran's growth has been especially rapid since the 1960s with the population more than tripling in number. Government authorities are planning to *redistribute* key administrative functions to other urban centres as a way of reducing the megacity's growth.

Variations in population *distribution* become very evident at national *scales*. For example, China has an average density of 146 people per square kilometre. However, the eastern *region* of the country supports densities above 400 people. Shanghai, the *region's* major urban centre, with more than 23 million people, has an average population density of 3631 people per square kilometre. Some parts of inner Shanghai have an average in excess of 40 000. In contrast, the western part of the country has fewer than 10 people per square kilometre.

▼ **Figure 2.3** Australia's population *distribution*





▲ **Figure 2.4** Urban Australia has the highest population densities.



▲ **Figure 2.5** The Australian outback supports a very low population density.

▶ ACTIVITIES

1. Define population density. How is it different to population *distribution*?
2. Describe the *distribution* of the global population. Include place names of at least three different *regions* and three different countries as well as numerical values from figure 2.1.
3. Select a large country or *region* with a high population density and another with a low population density.
 - a. Describe their global context using figure 2.1.
 - b. What variations in population density can you find within each country or *region*?
 - c. Research the key reasons for their contrasting population densities.
4. Discuss in a group why cities can grow into megacities with over 10 million people. Consider factors such as location, potential for trade and political importance.
5. 'There is no country or inhabited *region* of the world with such a low population density and varied *distribution* as Australia.' How far do you agree with this statement? Back up your views with evidence from figures 2.3, 2.4 and 2.5.

Australia's differences in population *distribution* (see figures 2.3, 2.4 and 2.5) are the result of a combination of many factors interacting with each other. Inhospitable environmental factors including short growing seasons associated with low and unreliable rainfall, steep topography and/or poor accessibility have led to extensive areas of low population density, as shown in figures 2.3 and 2.5. These situations may be reversed by the use of local water sources such as artesian basins, the discovery of minerals and the need for defence sites. Urban concentrations at port sites such as Melbourne and Sydney, together with their growth as major administrative and manufacturing centres, account for Australia's highest densities. In between these extremes of low and high population densities, the better watered and gentle sloping lands of the east and south-east support farming communities and service towns at low and medium population densities.



CAREER PROFILE

Svenja Keele
**PhD Candidate in Political
 Environmental Geography at
 the University of Melbourne**

I have been involved in Geography studies and Geography-related work for over 15 years. In my undergraduate degree (BA/BSc) I majored in Physical Geography, which allowed me to pursue my fascination with how different landscapes form through interactions between rock, water, climate, the biosphere and human populations. I went on to do honours research in Geography, using soil sediments to reconstruct over a century of environmental impacts of mining on the west coast of Tasmania and comparing these to historical records like photographs and diary entries from early explorers.

I have always thought that a focus on real-world challenges and the ability to bridge the physical and social sciences are key strengths of Geography, so important to achieving more holistic responses to complex contemporary environmental challenges. After university I started my career in environmental consulting and in the subsequent decade I worked for four different consultancy firms in the UK and in Australia, as well as for a Melbourne council. The work was diverse,

Global population growth

Until the 1750s global population growth was slow as both birth rates and death rates were high. Most societies at the time were based on agriculture, and life expectancies were low. With improvements in farming techniques producing food surpluses, and better and more accessible medicine and hygiene, death rates fell and life expectancies increased, especially in Europe. As a result world population began to grow more rapidly. By the early nineteenth century the world's population had reached one billion (see figure 2.6).

It took around 120 years for the world's population to reach its second billion but just 35 years for its third billion. This exponential growth — that is, growth at an increasing rate — gave rise to the term 'population explosion'. In the mid 1960s the world's fastest growth of 2.1 per cent a year occurred, allowing a fourth billion to be reached in 1975. As figure 2.6 shows, the world's population reached six billion in 1999.

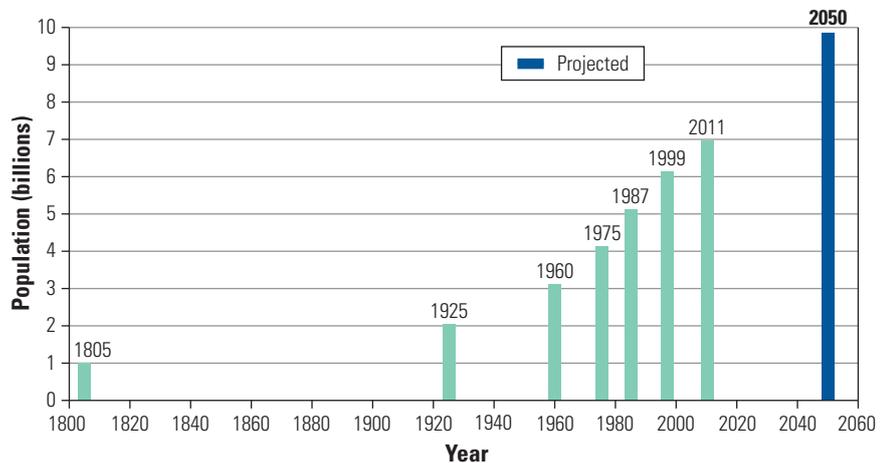
Since the 1990s world population growth rates (see figures 2.7(a) and 2.7(b)) have slowed due to a rising age for marriage, wider use of contraceptives and smaller families in many countries. Although growth rates have slowed, huge increases in absolute numbers continue to occur because the base population totals remain so large. For example, there were almost 135 million births in 2015 (and 57 million deaths) compared to around 53 million births 30 years earlier. Figure 2.8 summarises these *changes*.

The populations of China and India play special roles in world population data, including growth. Together these two countries account for around 36 per cent of the global population (China 19.2 per cent, India 16.4 per cent). Significant falls in their birth rates, particularly China's, have made impacts on global statistics. Chapter 5 looks in greater detail at China's

population dynamics. By 2015 world population was increasing by around 77 million a year (see figures 2.7(a) and 2.7(b)) — or close to over two people for each second.

Future projections of world population size are based on individual national projections of population growth. Over long time periods, *changes* in fertility rates, birth rates and death rates (see pages 26–33 for the role these terms play in population *change*) can occur quite rapidly. Nonetheless, the United Nations projects a world population of around 9.6 billion by 2050 and perhaps 11 billion by the end of the century. The eight biggest contributors to this likely growth are Nigeria, India, Tanzania, Congo, Niger, Uganda, Ethiopia and the United States. Six of these countries are in Africa where the total projected growth is from 2.1 billion in 2014 to 4.2 billion by 2100. Nigeria's population growth will be Africa's stand out: from 181 million in 2015 to a projected 400 million by 2050. Europe's share of the world's population will shrink from over 10 per cent to less than six. Even Asia's share is projected to shrink from 60 per cent in 2015 to around 43 per cent by 2100.

▼ **Figure 2.6**
Billions of people



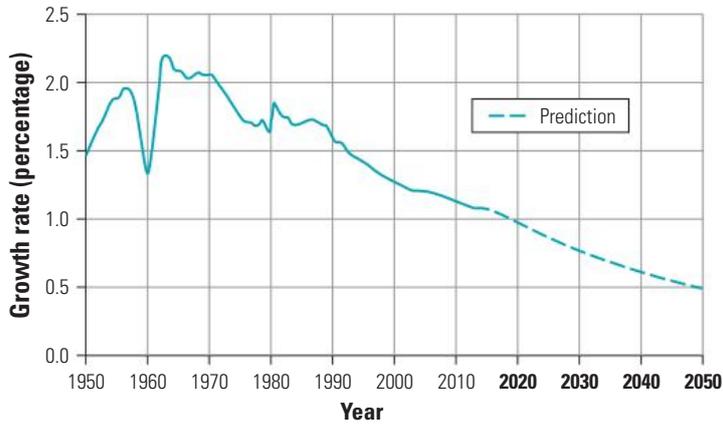
encompassing contaminated land, environmental impact assessments, environmental approvals and environmental management systems as well as sustainability assessments, sustainable master planning, behaviour change for sustainability and, most recently, climate change adaptation. Delivering these kinds of projects drew on a range of general academic/scientific skills like literature reviews, data gathering and report writing but also a host of geographic skills in population and spatial analysis, in using both quantitative and qualitative data, and in good science communication.

Environmental consulting is an excellent career option for Geography students who are often fluent across multiple disciplines and able to see the significance of connections between specialist studies. We understand how urbanisation is connected to population growth and demographic change, to land use and infrastructure planning, and to economic concentration but we also understand how these link to changes in family and work life, to experiences of inclusion or marginalisation, to

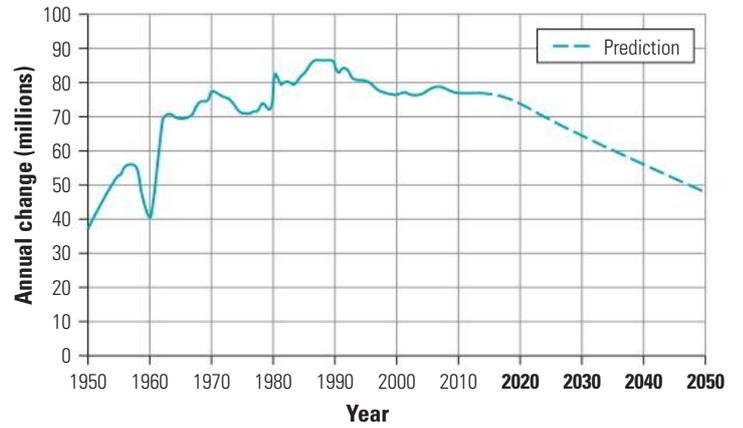
developments in technology, to patterns of resource consumption and pollution, and to broader trends like globalisation. This is a world view that cannot be over-emphasised, in my opinion, and it is one that employers value highly.

During my decade of work, I became increasingly interested in the social, political and economic aspects of how we manage natural and urban environments — driven, in large part, by my frustration with lack of progress towards sustainable development and a safe climate. This inspired a return to study five years ago, initially to do a Masters of Environment and more recently a PhD in political environmental geography researching how political processes influence how we plan for a changing climate. I also now teach various Geography subjects and, best of all, help with the running of Geography field trips! I'm not sure where this will take me next, but I have thoroughly enjoyed my career to date and have Geography to thank for equipping me with the training, inspiration and networks to make it happen.

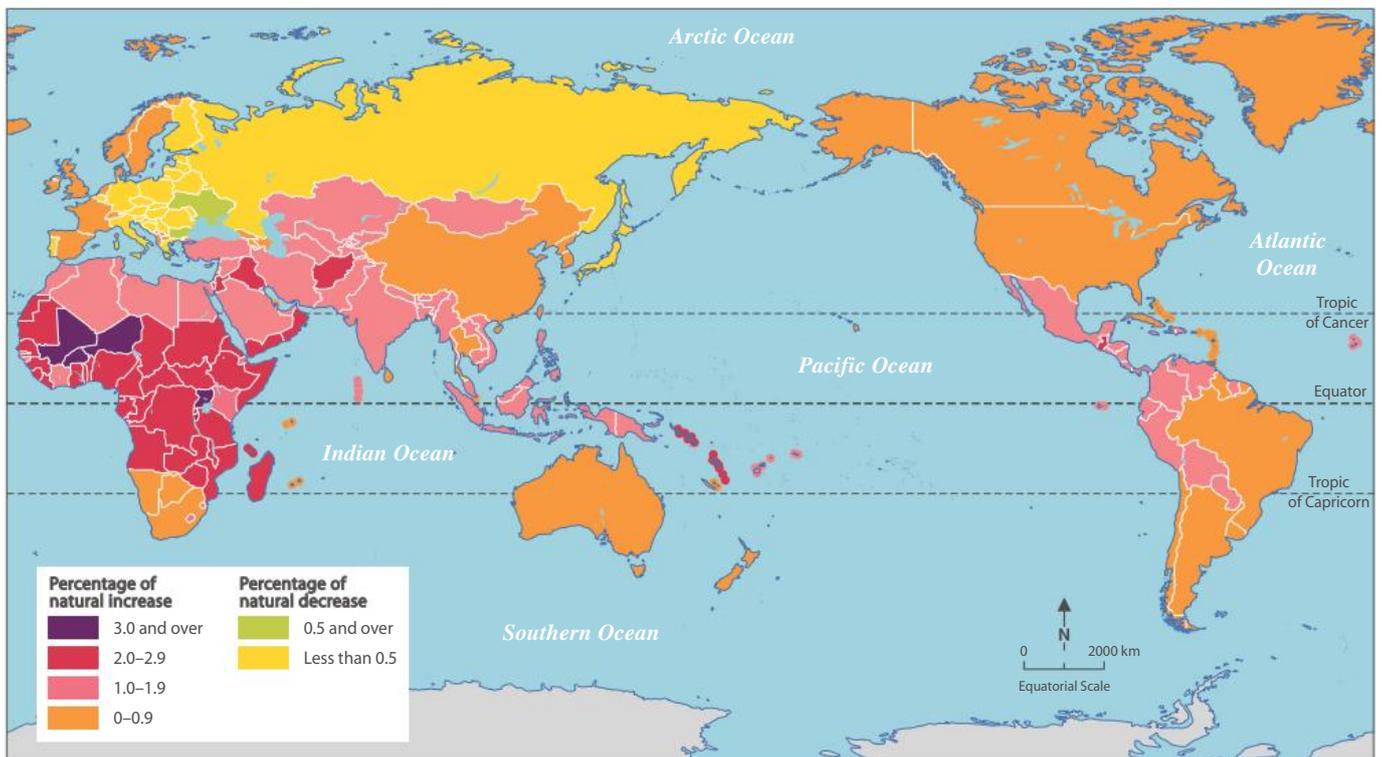
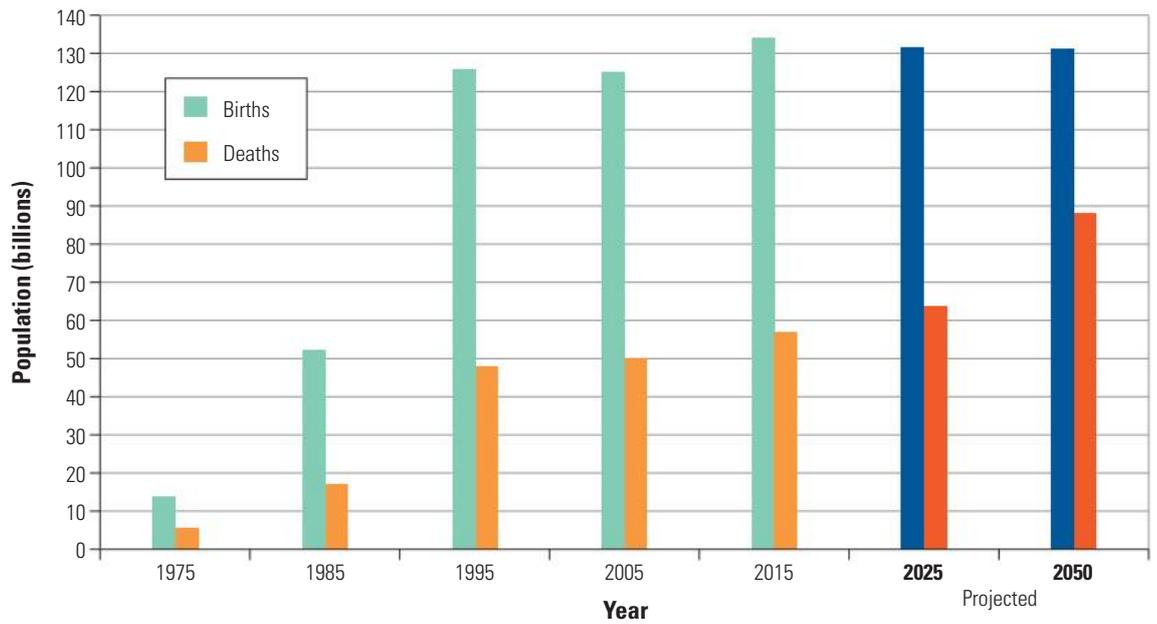
▼ **Figure 2.7 (a)** World population growth, 1950–2050



▼ **Figure 2.7 (b)** Annual world population change, 1950–2050



▼ **Figure 2.8** Births and deaths, 1975–2050



▲ **Figure 2.9** Distribution of natural increase and natural decrease, 2015

Natural population growth and decline

Population growth rates around the world show considerable variation by *region* and between countries (figure 2.9). In 2015 the highest growth rates were found in Africa and the Middle East: Mali, Niger and Uganda, each with an annual natural increase above three per cent. At these rates countries could see their populations double in less than 25 years. A large proportion of Africa, excluding the southern states and the northern states bordering the Mediterranean Sea, is growing at annual rates of two per cent or more.

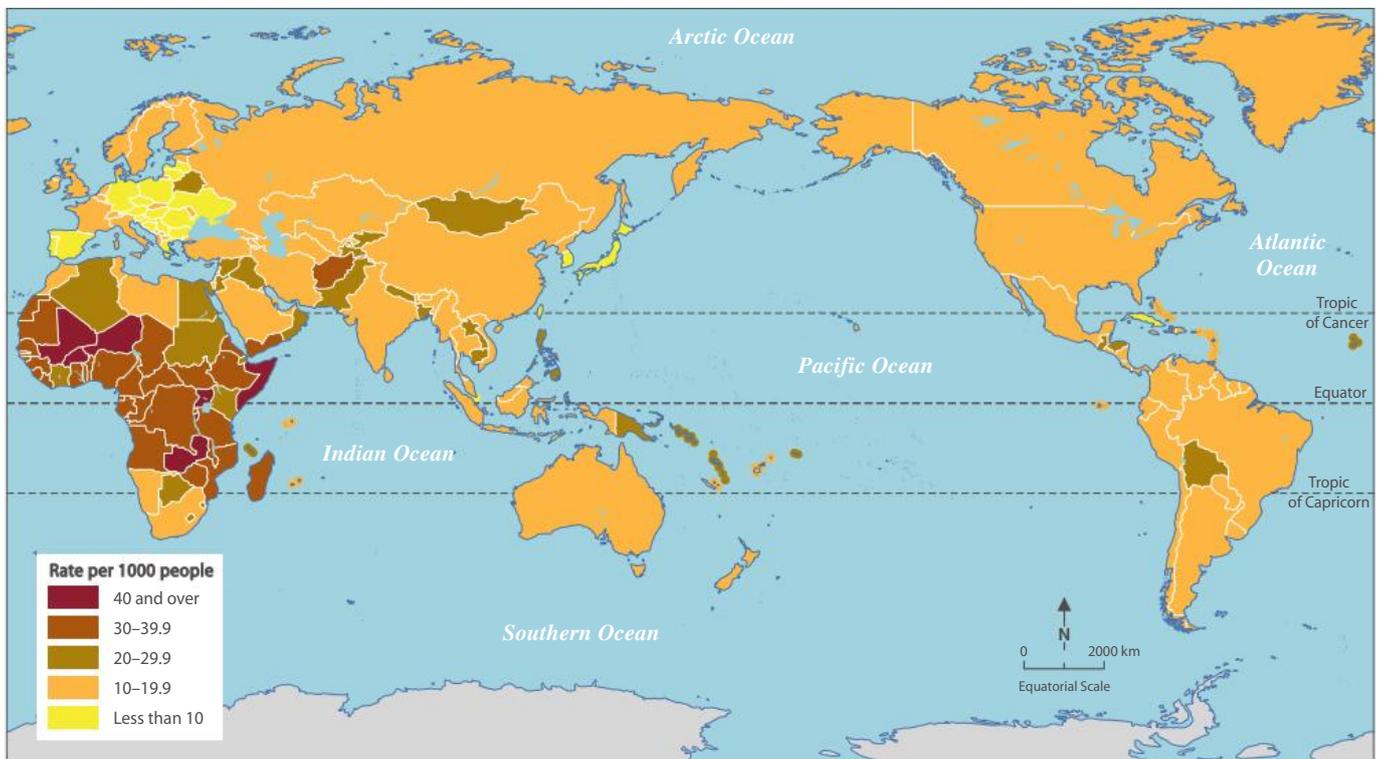
Figure 2.9 indicates that low population growth has a wider global *distribution* and is found in all inhabited continental *regions*. It is particularly pronounced in Europe, North-East Asia, Australasia, North America and southern Africa. Southern Africa continues to suffer the consequences of HIV/AIDS and its impact on death rates and life expectancy. The other *regions* reflect falling and low birth rates, together with slightly rising death rates. The latter trend is mostly associated with ageing populations. Australia's natural population growth rate of just 0.5 per cent in 2015 (see also chapter 7) meant it could take over 120 years

to double its total population if the country did not have a substantial rate of in-migration.

More than 20 of the world's countries were experiencing a natural decrease in 2015, because death rates exceeded birth rates. The European countries of Ukraine, Russia, Bulgaria and Germany recorded the largest percentage declines in 2015, with the Ukraine's population declining by 0.54 per cent. Russia's population is predicted to shrink by 13 million between 2015 and 2050 because of its low birth rate, high death rate and out-migration, particularly of people in the reproductive age group. In the same period, Japan's total population is likely to drop to 107 million from approximately 127 million (see chapter 6).

▶ ACTIVITIES

1. With the assistance of the glossary on pages 132–133, develop an understanding of the following terms: crude birth rate, crude death rate, natural increase, total fertility rate, infant mortality rate and life expectancy.
2. On the internet, search for the World Population Clock. Keep a record of the increase for one 15-minute period. Search for, and compare it to, a 15-minute period using China's Population Clock. What conclusion do you reach?
3. Use figure 2.6 to describe the *changing* gap in each additional billion that has been added (and is likely to be added) to the world's population.
4. Look at figure 2.6 and figures 2.7(a) and (b).
 - a. Decide which period had the fastest growth.
 - b. Compare this fastest growth to the predicted slowest growth.
 - c. In 1959–60, China's death rate rose and its fertility rate dropped, due to a combination of natural calamities and large-*scale* government planning failures. How does this show itself on a global *scale*?
 - d. Discuss which population dynamics are likely to be most responsible for the post-2000 trends shown on figure 2.7(a) and figure 2.7(b).
 - e. Suggest why global population growth rates of 0.5 (see figure 2.7(a)) in 2050 will add more people to the total population (see figure 2.7(b) and figure 2.8) than in the 1970s when growth rates were more than 2.5 per cent.
5. Suggest how future *changes* in growth rates could affect world population *distribution*.
6. Describe the global *distribution* of either the countries in the highest two categories of natural increase, or the countries in the categories of natural decrease. Use your atlas and figure 2.9 to include specific examples in your answer.
7. Compare the patterns of natural increase in one of the following pairs of *regions*:
 - ▶ Africa and Europe
 - ▶ North America and South America
 - ▶ North-East Asia and West Asia
 - ▶ Australasia and South-East Asia.
8. Discuss in a group the implications for specific national governments of the global trends of:
 - ▶ large and rapidly increasing populations
 - ▶ ageing populations
 - ▶ decreasing populations.



▲ **Figure 2.10** Crude birth rates, 2015

Birth rates, death rates and natural increase

Variations in birth rates and death rates are major causes of natural population increases and decreases. Natural increase or decrease is the result of differences between birth rates and death rates.

Crude birth rates (CBR)

Birth rates are correctly termed crude birth rates or CBR. These rates are calculated as the number of births per 1000 people per year in a population. Since this measure does not take into account the gender or age of the population, it is termed a crude birth rate.

The global patterns of crude birth rates shown in figure 2.10 have a strong *spatial association* with the natural increase patterns represented in figure 2.9. The highest levels of birth rates are occurring in African countries, with the exception of those located to the north and south of the continent. In 2015 Niger and Mali in West Africa recorded the world's highest birth rates of 45.5 and 45.0 per 1000 respectively. A substantial proportion of the Earth's countries record birth rates of between 10 and 20 per 1000, substantially helping

to bring the world average to 18.5 per 1000. As also shown in figure 2.9, much of Europe and East Asia stands out. Many countries of these two *regions* have very low birth rates therefore producing natural population decreases. Japan with a crude birth rate of 7.9 per 1000 and Germany with 8.5 per 1000 in 2015 had the world's lowest birth rates.

Making generalisations about economic development levels and birth rates can be misleading. Not all economically developed countries such as the United States and Australia have very low birth rates or have naturally declining populations. The reverse is more accurate when considering the highest levels of birth rates — these are mostly associated with poorer economically developed countries such as Ethiopia and Papua New Guinea. There is an enormous range in the level of economic development for countries ranked in the middle levels of crude birth rates, as shown in figure 2.10: Australia, Vietnam, India, Myanmar (Burma), North Korea, Norway and Namibia for example. Clearly other factors affecting the dynamics of their populations are involved and these are considered below.

▼ **Figure 2.11** Changing crude birth rates, 1950–2015

	1950–55	1960–65	1970–75	1980–85	1990–95	2000	2010	2015
Egypt	49	45	38	39	27	25.2	25	23
India	44	42	38	35	28.2	26	22.3	19.6
Indonesia	43	43	38	32.7	25.1	22.6	18.5	16.7
Italy	18	19	16	11	9.2	9.4	9.3	8.7
Japan	24	17	19	13	10	9.6	8.7	7.9
Kenya	53	53	53	45.1	38.2	37.8	35.3	26.4
Mexico	47	46	43	32.5	27.5	23.6	20	18.8
World	37.2	34.9	30.8	27.9	24.7	21	19	18

Over time, the number of births in the world has mostly exceeded deaths leading to a natural increase in population. Since the 1950s birth rates have fallen and are likely to continue to fall, as figure 2.11 indicates. Even traditionally high birth rate areas have experienced considerable falls: Pakistan, Philippines and Angola for example. In China, government planning since 1979 has restricted couples to fewer children and at a later age; though since 2015 this policy has been modified (see chapter 5). Smaller families such as the one in figure 2.13(b) are dominated by older adults. However, birth rates can remain high in some *regions* of the world for a number of interconnecting reasons:

- ▶ high infant and child mortality rates due to unsafe drinking water, disease or food shortage, so couples have additional children to try to ensure some survive to adulthood
- ▶ in rural areas especially, children can be seen as an economic asset as they help farm or do household chores from a young age; when older, they can earn money for the family (figure 2.13(a))
- ▶ children, especially sons, provide old-age support and security for their parents; few governments in less economically developed countries provide aged pensions
- ▶ a considerable proportion of couples in rural areas have limited or no access to contraception; family planning may be limited
- ▶ women may have little choice about family size and planning. Low levels of education may inhibit their power to make decisions
- ▶ religious beliefs may inhibit the use of family planning

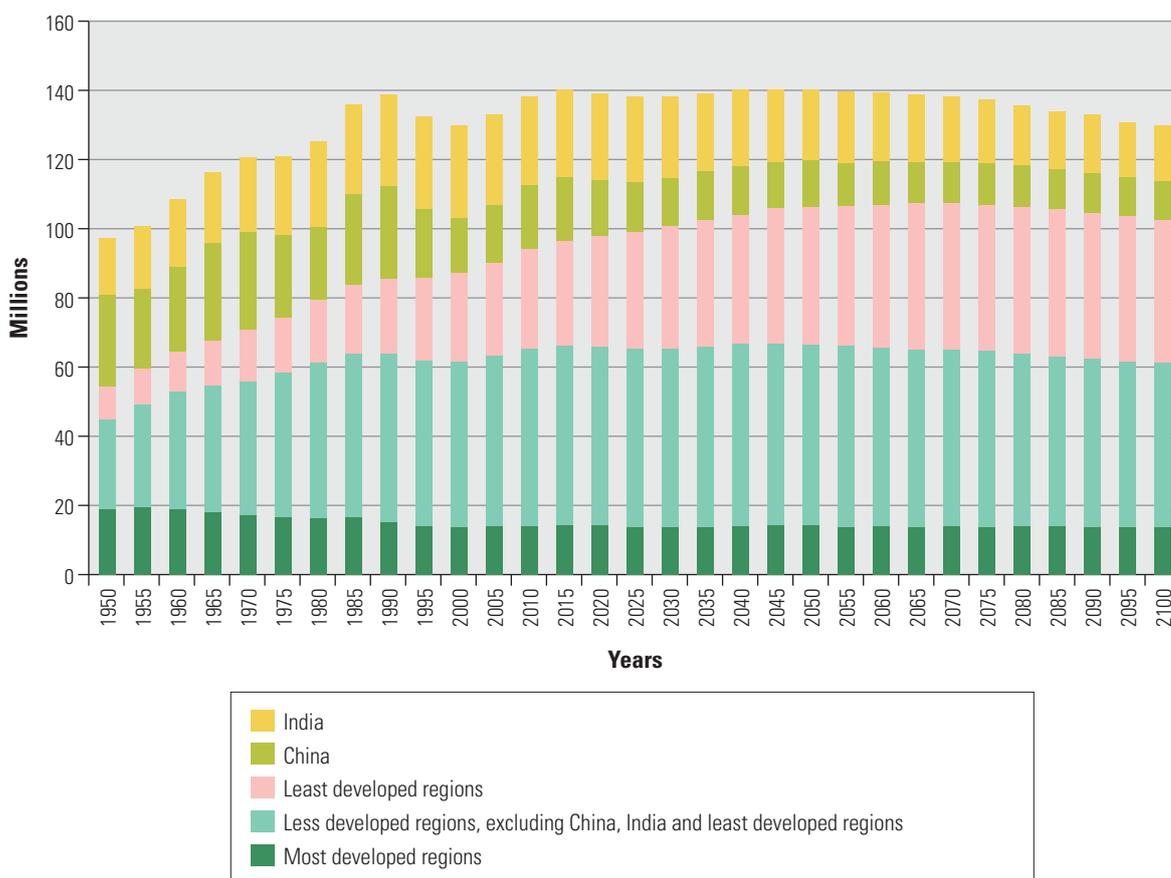
- ▶ pro-natalist policies of some governments legislate against birth control and abortion
- ▶ some cultures equate social success with large families.

In more economically developed countries such as Japan, Australia and France, birth rates have lowered for a number of interconnecting reasons:

- ▶ low infant and child mortality rates due to safe drinking water, access to health services and reliable food supply help ensure most children survive to adulthood
- ▶ children may be seen as an economic liability due to the high cost of raising them, particularly with education and housing (there may be less household income if one parent is at home most of the time)
- ▶ welfare systems and/or superannuation schemes exist to support parents when they retire
- ▶ widespread access to and knowledge of contraception and family planning is available
- ▶ many women expect to have careers outside the home, so delay childbearing or choose not to have children
- ▶ pro-natalist religious beliefs may be rejected by many couples
- ▶ social success is not equated with family size; less family pressure to marry and/or have children.

The global pattern of crude birth rates has become more complex as figures 2.11 and 2.12 show. Falling birth rates in China and India are being partly countered by the overall increase in births in the less economically developed and least economically developed *regions* of the world.

▼ **Figure 2.12** The number of births by *region*





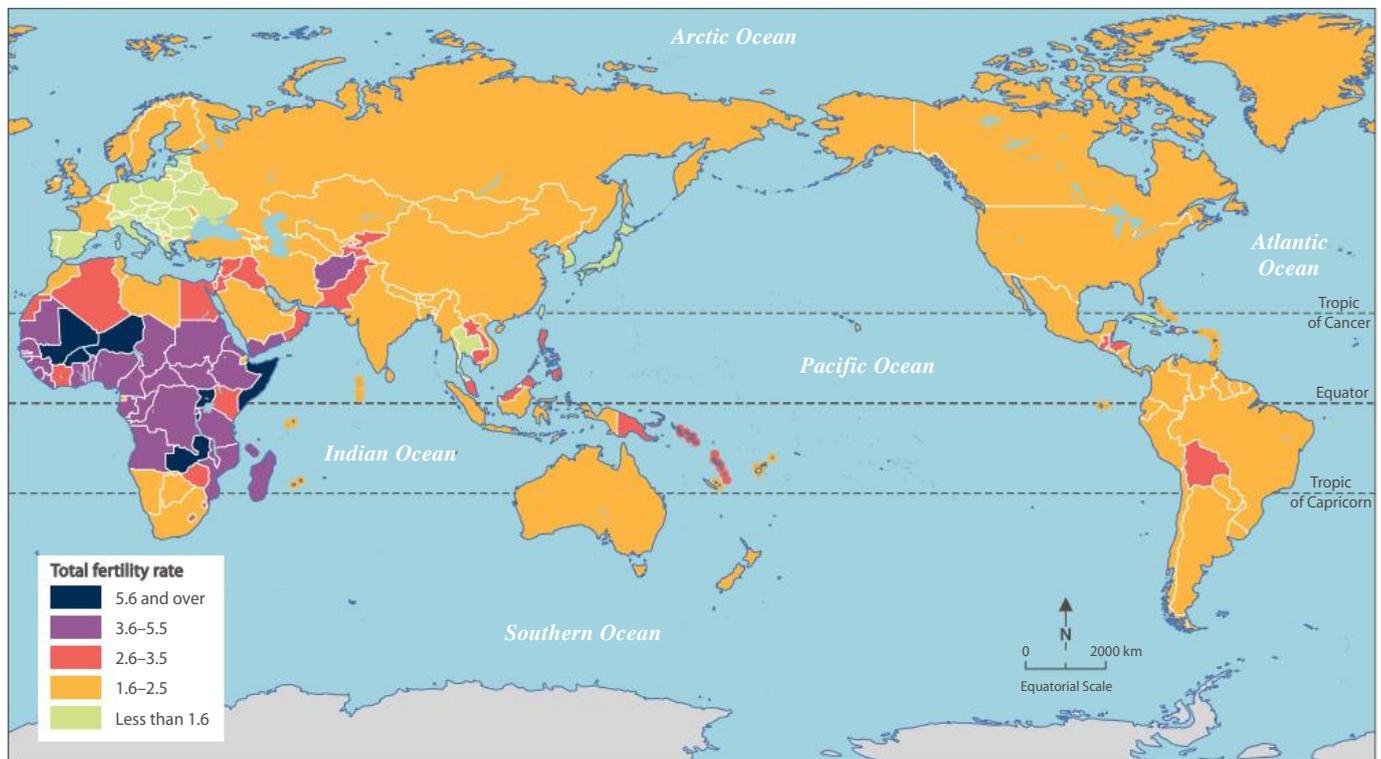
▲ **Figure 2.13** (a) A large farming family. Children are an economic asset, helping with farm work.



▲ **Figure 2.13** (b) China's smaller families feature few young children.

▶ ACTIVITIES

1. Compare figure 2.9 with figure 2.10 to locate and name countries
 - a. that are not in the top category of each map
 - b. that are not in the bottom category of each map.
2. On the internet, locate Gapminder. Select three countries, each with different levels of economic development. Plot crude birth rate against a development indicator such as income per person or life expectancy. Watch the graphic *change* over time. What conclusions do you reach? Compare your results with those of other people who selected different countries.
3. Discuss the likely impact on crude birth rates in economically developing countries of each of the following:
 - ▶ widespread availability of ultrasound equipment that determines the gender of unborn babies
 - ▶ increased mechanisation of farming activities
 - ▶ higher levels of female literacy
 - ▶ an end to a long-running civil war.
4. Discuss the likely impact on crude birth rates in more economically developed countries of each of the following:
 - ▶ increasing age of marriage and birth of a first child
 - ▶ celebrities having large families
 - ▶ government promotion of births through cash incentives and child care vouchers
 - ▶ rising costs of raising children and tertiary education fees.



▲ **Figure 2.14** Total fertility rates, 2015

Total Fertility Rates (TFR)

The total fertility rate (TFR) is the average expected number of births per woman of child-bearing age. Child-bearing age is generally considered 15 to 49 years. TFR is based on current birth rates. Clearly, CBR and TFR are closely related. The global *distribution* of these two population dynamics has very significant similarities as a comparison of figure 2.14 with figure 2.10 shows.

In 2015 the world's TFR averaged 2.41 but, as figure 2.14 shows, there was considerable variation between countries and *regions*. Singapore's rate of 0.8 was the world's lowest, while the African countries of Niger, Mali and Somalia recorded the highest estimates of 6.8, 6.1 and 6 respectively.

As with birth rates, total fertility rates have been falling in all *regions* of the world, and seemingly regardless of the levels of economic development. In 1970 the world's TFR was 4.7, almost twice that of 2015. Almost 50 per cent of the world's population now live in countries with fertility rates of 2.1 or less. The factors influencing low birth rates in the more economically developed countries can be generally applied to many parts of the world's population. The major influences on continuing declines in fertility rates are:

- ▶ the extension of family planning programs from urban to rural areas and into areas of lower economic development
- ▶ improvements in health care resulting in lower death rates (see pages 32–33) of young children and therefore reducing the need for replacement children. Health care improvements include vaccinations and safer childbirth and abortions

- ▶ an extension of women's education and status. Education has proven to empower the choices available for women in family planning
- ▶ the role of government policies, which may include all the above influences, but also promote an anti-natalist line. China's one child policy (see chapter 5) and Bangladesh's two child policy (see chapter 4) are examples.

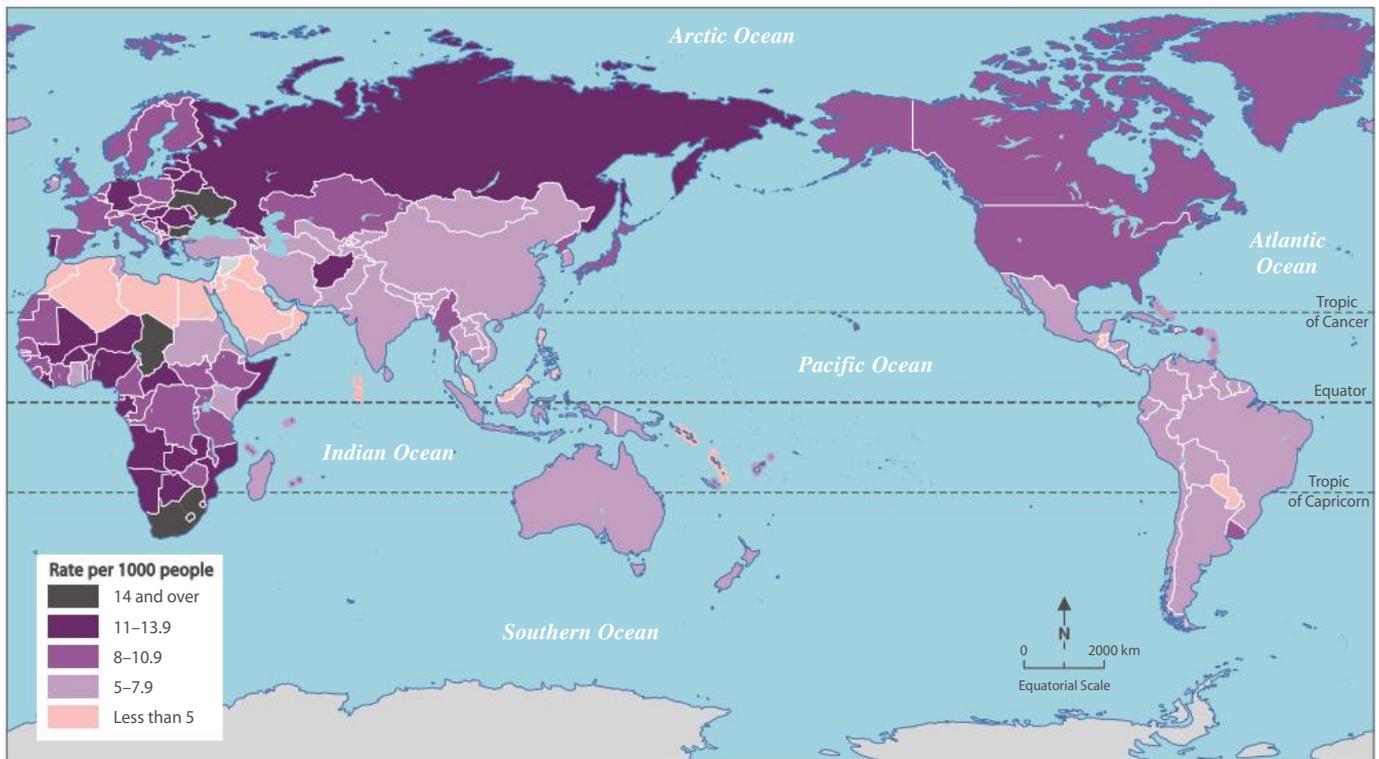
Total fertility rate is regarded by demographers and planners as a valuable indicator of future population growth. A key factor is the fertility rate of 2.1. This level is frequently referred to as the replacement rate. It is the average number of births needed to replace the number who have died in a population in a year. However, even when the fertility rate falls below this replacement level, a population can continue to grow significantly. This is because large numbers of young people, born in previous years of higher fertility, are moving into their reproductive years. Several decades of continuous population growth are assured, often compounded by falling death rates among infants and young children. As an example, China's TFR reached the replacement rate of 2.1 in 1992 and has remained below 2.1 since. Yet its population has continued to grow, although at a slower rate than previously. Not until about 2050, when a 1.6 billion projected population is reached, will its total population start to fall.

In the long term, the impact of birth rates and fertility rates can produce a 'demographic dividend' with a large, young labour force able to spur a country's economic development further. As that population ages, the dividend may become an ageing liability with a growing and significant proportion of the population being supported by a much smaller workforce. This *process* is looked at in greater detail on pages 34–35.

▶ ACTIVITIES

- Describe the difference between crude birth rate and total fertility rate.
- Identify the major similarities between the global *distribution* patterns of crude birth rates (figure 2.10) and total fertility rates (figure 2.14).
- What is the significance of a total fertility rate of 2.1 for population planners?
 - Explain the time lag between a population reaching a replacement rate of less than 2.1, and the time taken for a population to begin to decrease.
- Discuss the likely interconnection between the factors that will influence future falls in total fertility rate in both developed and less developed economies.
- Discuss in a group the pros and cons of a population experiencing a demographic dividend.
- Refer to figure 2.12 to:
 - Describe how the number of births has *changed* between 1950 and 2015 for more developed *regions* such as Australasia and North America, and the least developed countries, such as Bangladesh and Tanzania.
 - Identify how either China or India is different to one of the *regions* described above.
 - Comment on the world's less developed *regions'* projected number of births in 2050 and those of the rest of the world. Your comment should include a comparison with the number of birth between 1950 and 2000.

▼ **Figure 2.15** Crude death rates, 2015



▼ **Figure 2.16** Changing crude death rates, 1950–2015

	1950–55	1960–65	1970–75	1980–85	1990–95	2000	2010	2015
Egypt	24	20	16	13	9	7.1	7	5
India	25	19	16	13	9.6	9	7.5	7.3
Indonesia	26	22	17	11	8.2	6.4	6.3	6.4
Italy	10	10	10	10	9.7	9.6	9.6	10.2
Japan	9	7	7	6	6.9	7.6	8.9	9.5
Kenya	25	21	17	10	9.6	12.1	7.9	6.9
Mexico	16	11	9	6.7	5.2	4.8	5.2	5.3
World	19.5	15.4	12.5	10.1	9.1	8.7	8.2	7.9

Crude Death Rates (CDR)

Deaths in a population are correctly termed crude death rates or CDR. These rates are calculated as the number of deaths per 1000 people in a year in a population. Like its counterpart of crude birth rate (see page 26), this measure does not take into account the gender or age of the population. Hence it is termed a crude death rate. The crude death rate is subtracted from the crude birth rate to produce either a natural increase or a natural decrease. If the result is neither, zero population growth is said to be achieved.

In 2015 the world's average crude death rate was 7.9 per 1000, but as figure 2.15 shows, there were considerable variations. Qatar had just 2.5 deaths per 1000 people, while South Africa, the United Kingdom and Germany rated 17.5, 15.7 and 12.5 per 1000 respectively. Death rates for the more economically developed countries and the less economically developed countries often show similarities.

Some more developed economies have death rates in excess of some less developed economies (see figure 2.16). This is despite differences in their demographic histories: the populations of more developed economies such as Japan and Italy are generally ageing and have slightly rising death rates. The populations of less developed economies have been reducing their death rates with improvements in health services and food supplies.

Globally, crude death rates have fallen considerably since 1950 when ones in excess of 30 per 1000 were calculated for *places* such as Ethiopia, Guinea, Zimbabwe, North and South Korea. Figure 2.11 details the falling crude death rates of some countries.

Crude death rates have fallen globally for a number of reasons:

- ▶ the spread of knowledge and more effective control of diseases (see figure 2.17). In particular the widespread use of vaccines has lowered deaths from tuberculosis, polio and influenza in economically developing *regions*
- ▶ individual government programs and international efforts have targeted safer water supplies (see figure 2.17) which has reduced instances of cholera and gastroenteritis
- ▶ the impact of the green revolution has been an increase in global food supplies. In Asia the threat of national famines and associated deaths has been sharply reduced.

▶ ACTIVITIES

1. 'Crude death rates, like crude birth rates, are highest in African countries and lowest in the more economically developed *regions* of the world.' To what extent do you agree or disagree with this statement? What evidence can you offer to support your agreement or disagreement?
2. Compare the data in figure 2.16 with that of figure 2.12.
 - a. Establish which country had the highest natural increase in the 1950–55 period. Which country had the lowest natural increase in the same time period?
 - b. Did these two countries have the same ranking in 2015? If not, which ones were highest and lowest?
 - c. Give at least two reasons for the overall downward trend in crude death rates from 1950–55 to 2015.

▼ **Figure 2.17** In Burma, as elsewhere, safer, reliable water supplies have improved hygiene levels and reduced deaths from water-borne diseases.



Infant and child mortality rates (IMR) and life expectancy

Crude death rates are interconnected with several other population dynamics: infant and child mortality, maternal mortality, life expectancy and ageing.

Infant mortality rate (IMR) refers to the average number of deaths of persons less than one year of age per 1000 live births in a year. Child mortality rate refers to the average number of deaths of children aged one to five per 1000 children aged one to five in a year. Both mortality measures are age-specific rates, unlike the more general crude birth and death rates discussed earlier.

The levels of infant mortality and child mortality clearly have an impact on the level of crude death rates. Consequently there is a clear *spatial association* between the *distribution* of crude death rate (figure 2.15, page 30) and infant mortality rate (figure 2.18). This is especially so in Africa where both crude death rate and infant mortality rate are high, but less so in Europe and North-East Asia where infant mortality rates are low but death rates are in the middle to high levels.

Global averages for infant mortality and child mortality rates, like those for crude death rate, have declined steadily since the 1950s. In 1960 the global infant mortality rate averaged 113.7 per 1000 live births with some of the world's least economically developed *regions* reaching over 250 deaths per 1000 live births (for example, Afghanistan 252.7, Yemen 322.3).

By 2015 global averages were down to less than 17 per 1000 live births, an impressive achievement. But many of the global statistics remain disturbing:

- ▶ children in Sub-Saharan Africa are 16.5 times more likely to die before reaching age five than elsewhere in the world
- ▶ in 2013, 2.8 million babies died in the first month of their life (a substantial improvement on 4.6 million in 1990)

- ▶ in 2014–15, 400 000 Indian babies died within 24 hours of their birth.

Infant and child health have become a major priority for governments throughout the world. Their programs recognise that the causes of infant deaths are often preventable. Millennium Development Goal 4 was the reduction of mortality rates for children aged below five years by two-thirds in the 1990–2015 period — a goal mostly achieved. Infant deaths are largely due to respiratory distress associated with low birth weight and are frequently complicated by conditions including diarrhoea, gastroenteritis, measles and influenza. Infant mortality and child mortality rates fall as conditions of safe water supply, adequate sanitation, effective housing and better quality food are achieved.

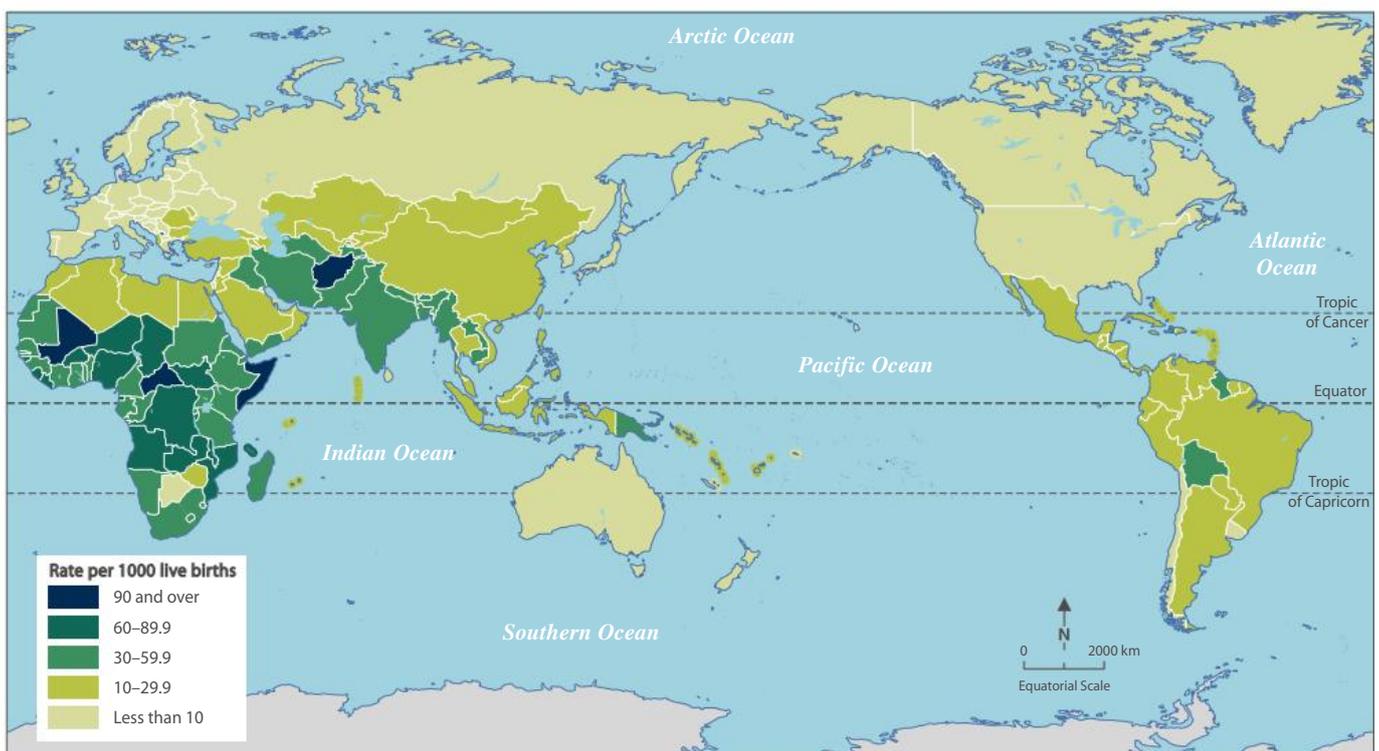
Maternal mortality (MM)

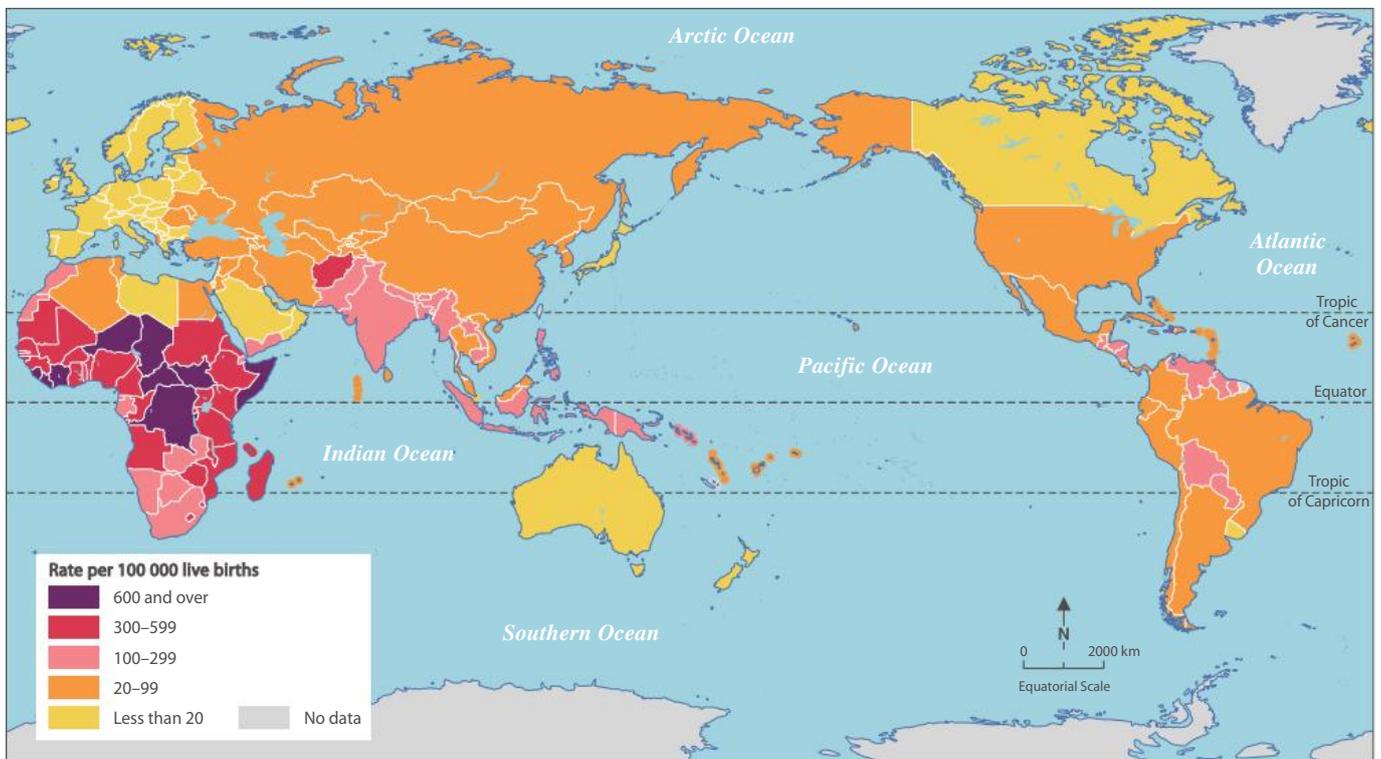
A component of crude death rate is maternal mortality. This refers to the number of mothers who die because of childbirth-related conditions. A familiar global *distribution* pattern is evident in figure 2.19: most African countries are in the highest categories and the two lowest categories are dominated by a mixture of the more economically developed *regions*. In countries where specific health programs have targeted the deaths of birthing mothers, rates have lowered substantially. Saudi Arabia, United Arab Emirates, Malaysia and Thailand are successful examples.

Life expectancy (LE)

Crude death rates have a positive relationship to life expectancy. Life expectancy is defined as the average number of years a person can be expected to live from birth. An assumption is made that demographic factors affecting life, such as family structure, health services and security remain unchanged. As crude death rates continue to fall throughout the world, the United Nations has projected that around 2100 most countries will average life expectancies at over 80 years.

▼ **Figure 2.18** Infant mortality rates, 2015





▲ **Figure 2.19** Maternal mortality, 2013

India's *changing* population characteristics shown in figure 2.20 illustrate the interconnection between the various components of a population. Crude death rates have fallen along with infant mortality rates. In response, life expectancy has risen. The gap between crude birth rate and crude death rate narrows but the total population has continued to rise.

The data on life expectancy shows only part of a more complex picture. There is a marked difference in life expectancy for males and females, with females in most societies having a longer life expectancy than males. Indian males born in 2015 have a projected life expectancy of around 67 years, while females have a life expectancy of around 69 years. By contrast, Japanese males and females born in 2015 have a life expectancy almost one-third longer than Indians: 87.3 for females 85 for males.

Differences in life expectancy are not the only differences between males and females. Typically at birth, 105 males are born to every 100 females in nearly all locations throughout the world. Exceptions can be found in China, India and South Korea where

▼ **Figure 2.20** India's *changing* population statistics

YEAR	TOTAL POPULATION (millions)	CBR	CDR	TFR	IMR	LE
1960	447.8	42.3	22.5	5.7	160	42.4
1970	555.9	40.1	16.4	5.2	129	48.8
1980	700.1	36.3	12.3	4.6	115	55.4
1990	873.8	30	10.6	4.0	88	58.5
2000	1054	24.8	8.9	3.4	68	62.2
2010	1225	22.8	7.5	2.6	49.1	65.7
2015	1307	19.6	7.3	2.8	42.2	68
2025 (projected)	1396	17	7.2	2.3	30	71

sex selection abortions (mostly illegal now) have favoured higher male to female ratios. Through all major age groups females naturally have greater numbers, but it is especially noticeable in the older age groups (see figure 2.23, page 36).

▶ ACTIVITIES

1. What major similarities are there between the *distributions* of infant mortality rates and crude death rates? Why should this be so?
2. How does the infant mortality rate differ from the child mortality rate?
3. Explain how a decline in infant mortality rate and child mortality rate could affect each of the following:
 - ▶ life expectancy
 - ▶ crude death rate
 - ▶ total fertility rate.
4. Suggest why global figures for infant mortality rates and child mortality rates have declined since the 1950s.
 5. What are the likely factors preventing further declines, especially in less developed economies?
 6. What is maternal mortality? Suggest the types of health programs governments could implement to lower maternal mortality rates.
 7. On the internet, visit the India Population Clock. Comment on how the *changes* relate to crude birth rates and crude death rates. Compare the *change* to China's Population Clock.
 8. Describe the relationship between India's *changing* total fertility rate and the *change* in the total population. How might a TFR of 2.1 or less have an impact on total populations?
 9. What is life expectancy? Discuss how social, economic and political factors could impact positively and negatively on levels of life expectancy.

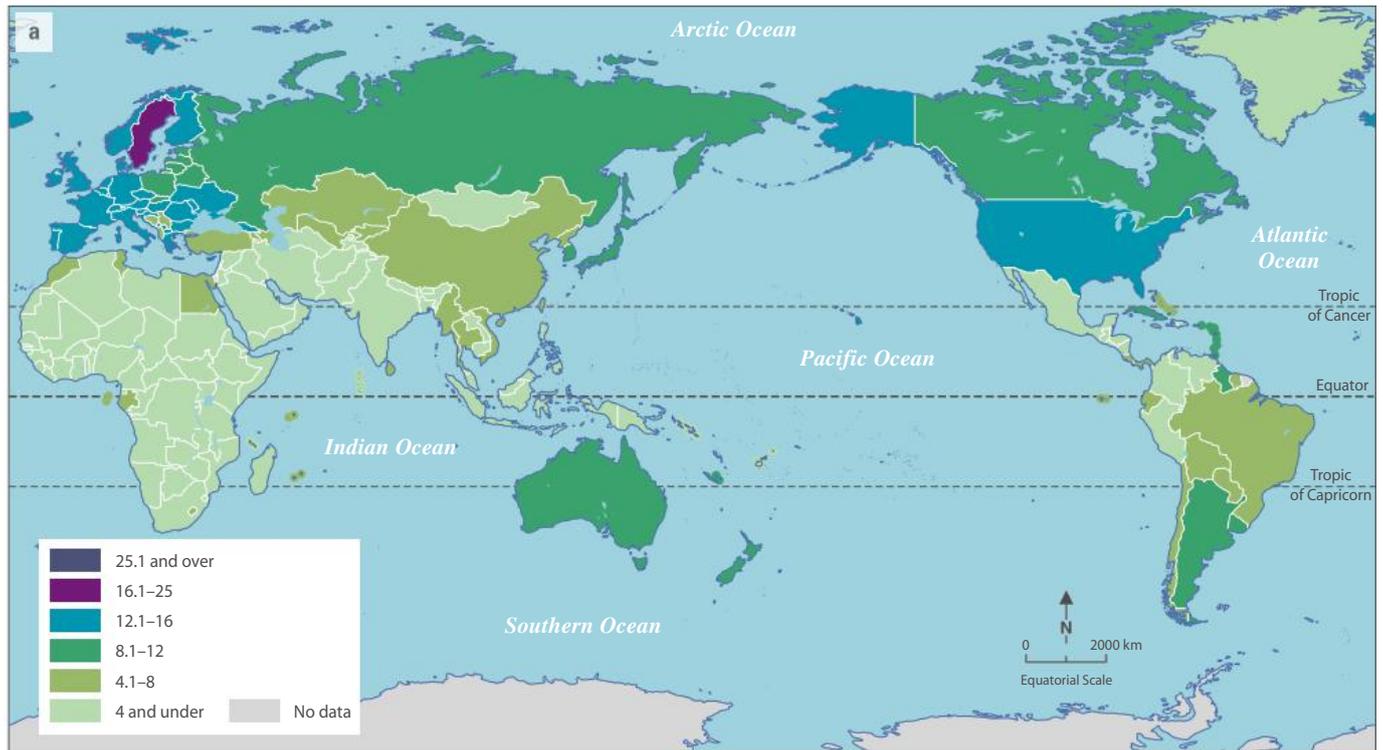
Ageing

An ageing population is one in which the proportion of the population 60 to 65 years and over is increasing. Ageing populations are the result of falling birth and death rates and rising life expectancy. As a result there are fewer young people and more older people making up the total population.

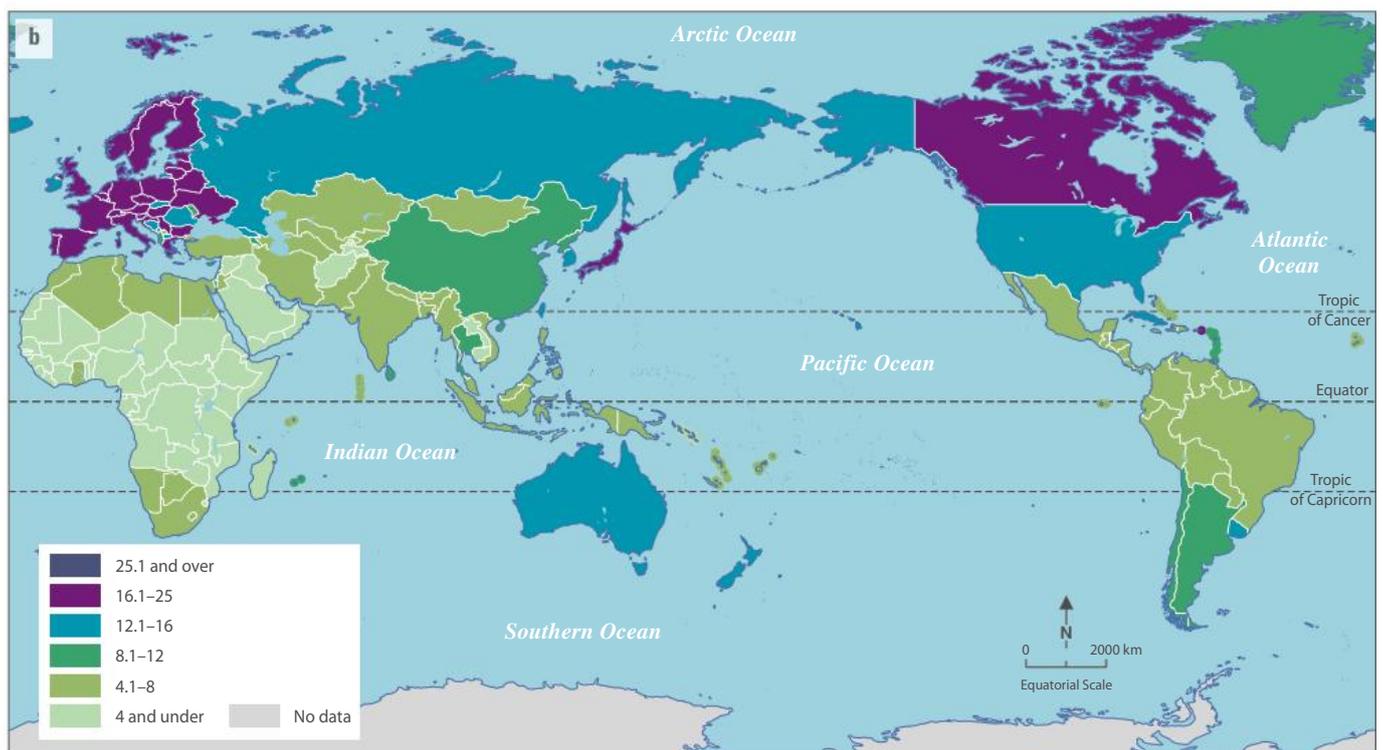
The *process* of ageing is increasingly common throughout the world as figures 2.21(a), (b) and (c) show. In 1900 the world's average life expectancy was around 30 years. By the 1980s it had more than doubled to 62 years. In 2013 it stood at 71 (68.5 years for males and 73.5 years for females). Australia's equivalent figures were 80.5 years for males and 84.6 for females. The breakdown of the world's ageing population is shown in figure 2.22.

The World Health Organization (WHO) projections for 2050 are a doubling of the over 60s population to two billion, while the over 80s could be as many as 400 million. Historians may well label this century 'the ageing century' as a consequence. The startling *changes* shown in figure 2.21(a), (b) and (c) reinforce this label.

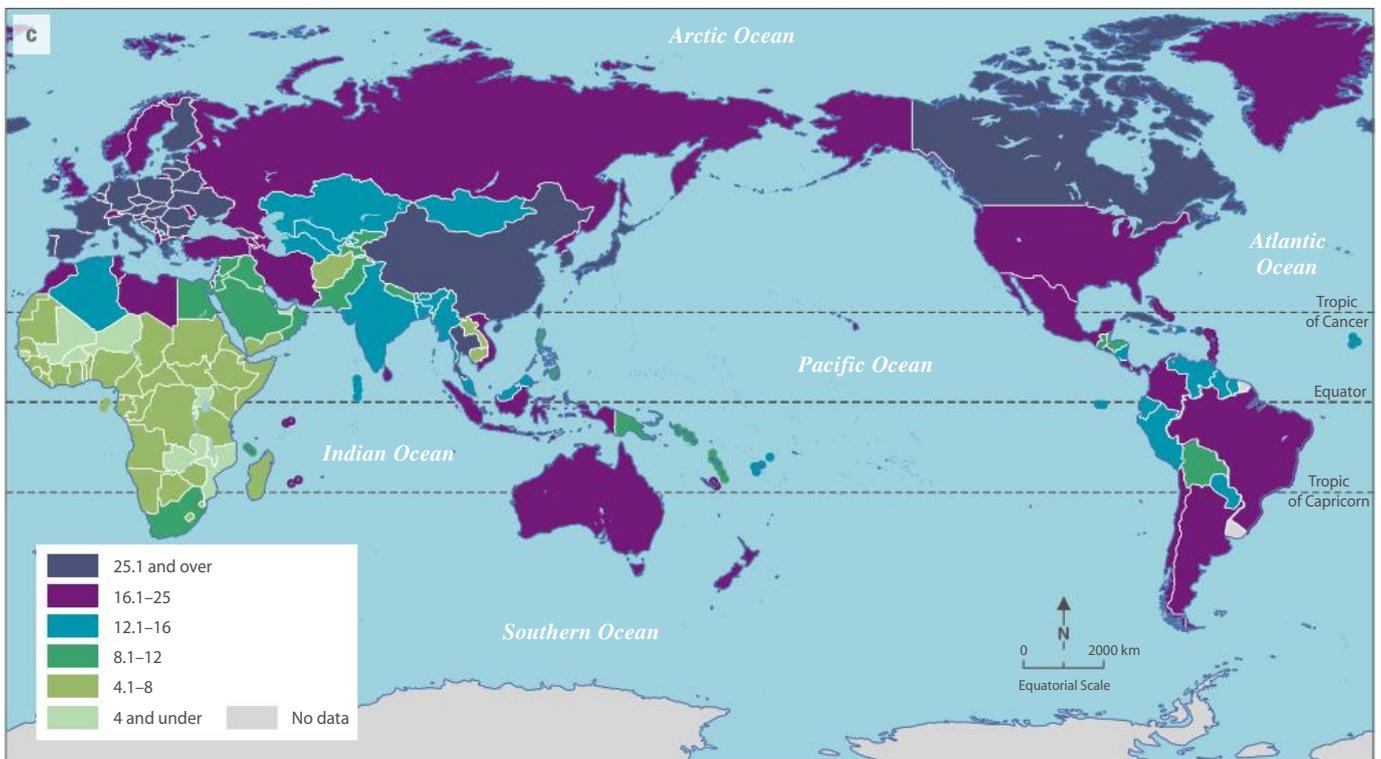
By 2050 those *regions* of the world currently considered as less economically developed, such as Sub-Saharan Africa, will have between 10 and 20 per cent of their populations made up of people aged 65 and over. Today's more developed countries, including Russia and Italy, will by then have up to 30 per cent or more of their populations aged 65 and over. The prediction for Japan is 39.6 per cent by 2050.



▲ **Figure 2.21** (a) Percentage of the population age 65 and over, 1990



▲ **Figure 2.21** (b) Percentage of the population age 65 and over, 2015



▲ **Figure 2.21** (c) Percentage of the population age 65 and over, 2045

▼ **Figure 2.22** The world's aged population

TOTAL WORLD POPULATION 2015: 7 253 000 000	
AGE GROUP	NUMBERS
60 and over	903 911 000
75 and over	243 119 000
85 and over	53 884 000
95 and over	3 348 000

Falls in the CDR (and infant and child mortality rates) have produced a young population structure in many economically developing *regions* of the world. However, this demographic dividend may not last. The young population will eventually age and, combined with predicted falls in the TFR, the speed of ageing is likely to be more rapid than it was for the more developed economies. For example, it took around 100 years for France's population of 65 years and over to grow from seven to 14 per cent of the total population. But it has taken less than 25 years for an equivalent growth in Brazil and in China (see chapter 5).

The *process* of ageing is a significant issue, challenging governments and organisations as well as individuals. In Australia, as elsewhere, the concept of a working life and a retirement period is being discussed and rethought. A higher dependency population (i.e. a lower proportion of the population working), with more people dependent on their own means and government support, needs to be funded. A European Union estimate is that by 2050 there could be fewer than two people working for each person above age 65. The ratio in 2010–12 was approximately four potentially working-age persons for each person aged 65 and over.

Longer life expectancy brings long-term care needs: the WHO believes between 25 and 30 per cent of those aged 85 and over will develop some form of dementia, for example. And this age group is facing an enormous increase in numbers.

Dependency population

Demographers, economists, planners and politicians are some of the people who use the term 'dependency population'. It is closely related to two other terms: 'economically active' and 'non-economically active'.

The economically active or working population is considered to be in the 15 to 65 age group. The non-economically active are those persons under age 15 and those aged 65 and over. This latter group is considered dependent on other family members, pensions, investment payments. These are obviously very broad groups which do not always take into account school leaving age and tertiary study or early and late retirement ages or part-time work.

Falls in CBR and TFR in more developed economies have been offset by the increasing number of people aged 65 and over. The dependency ratio may be lower in less developed economies where there are fewer older people but a higher proportion of young dependents. In many of these economies, young persons become part of the workforce at earlier ages than their counterparts in more developed economies.

▶ ACTIVITIES

1. What do you understand by the term 'ageing population'?
2. 'The *distribution* of the ageing population in 2015 has a strong *spatial association* with other population dynamics such as crude birth rate and crude death rate.' Discuss.
3. Discuss why different *regions* of the world are ageing at different rates and times.
4. Why are ageing populations an issue, and a challenge, for governments as well as individuals?

Population pyramids

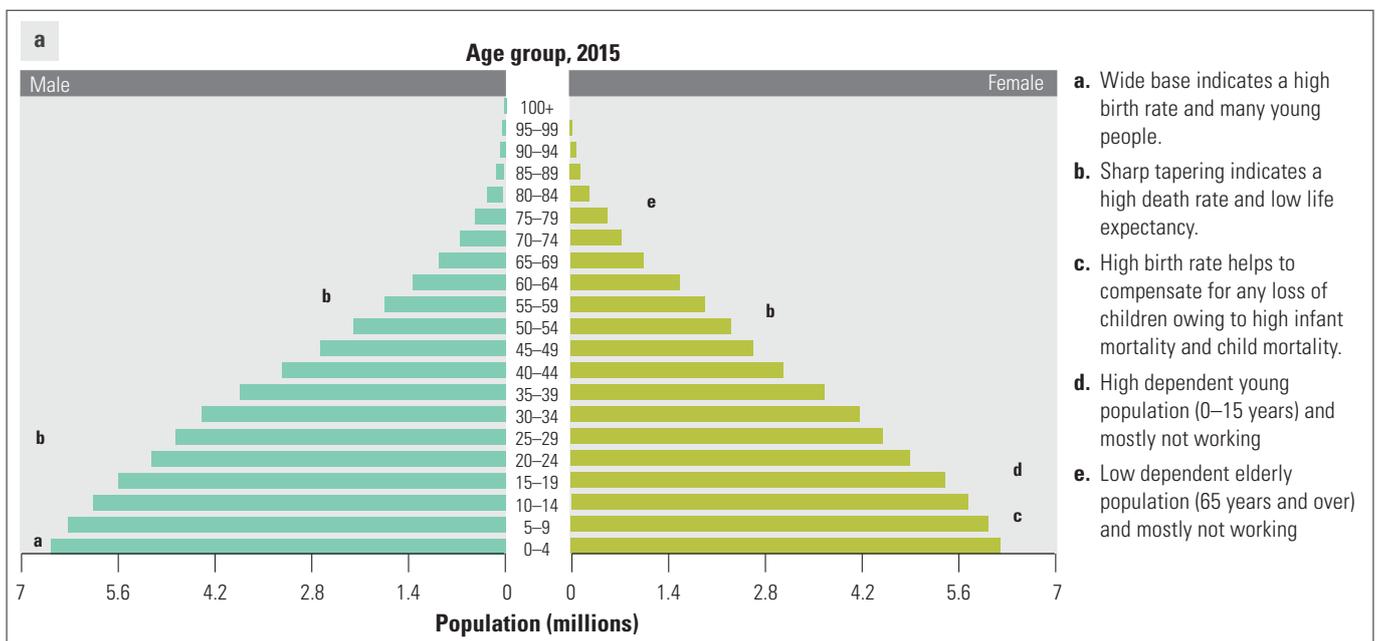
Population pyramids, or age–sex structures, are widely used to illustrate the characteristics of a population such as age and gender. Population pyramids are back-to-back bar graphs with males on one side and females on the other, typically arranged in five-year age groups. The bars on the graph may be shown as both the total number of males and the total number of females, or as the percentage of the total population. Figure 2.23 shows how population pyramids can be read.

Inferences about a population’s past demographic history and future trends can be made from population pyramids. For example, a larger-than-average number aged 10 to 20 in a population (possibly from a previous baby boom) suggests there will be an

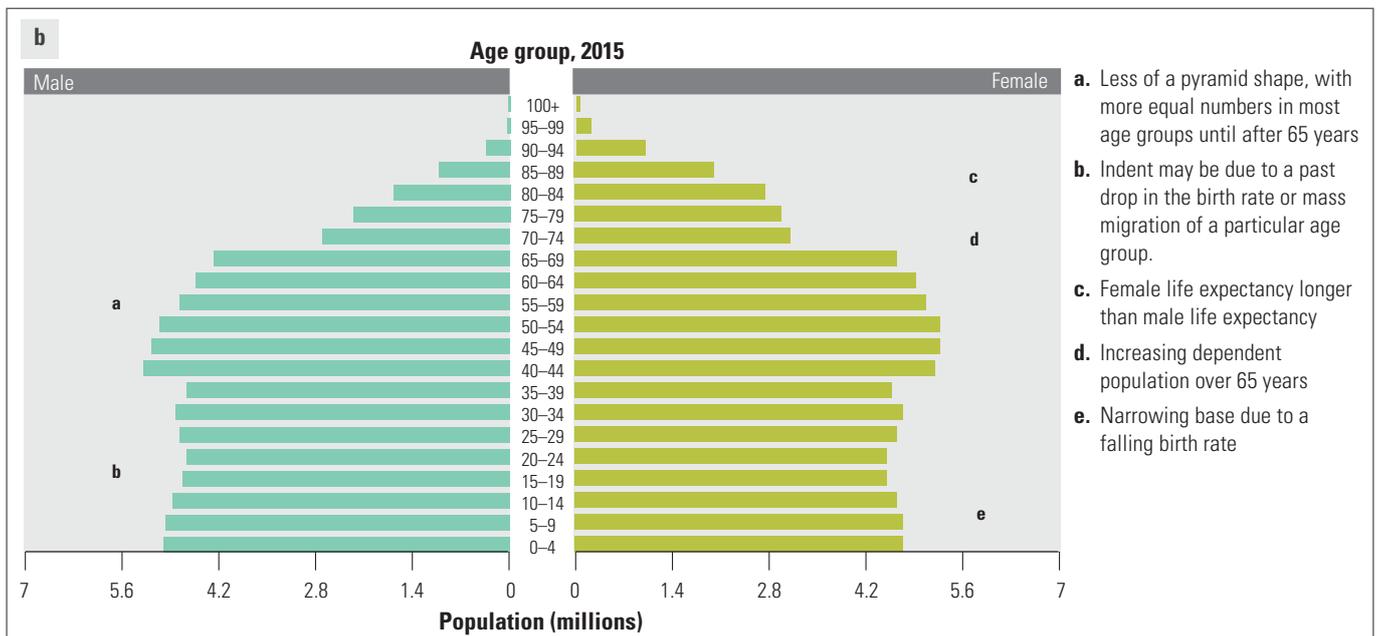
increased demand for tertiary education, employment opportunities and housing in the next 10 to 20 years. Figure 2.24 is analysis of a complex demographic history with future issues and challenges identified.

Population pyramids can be developed to show other important population characteristics: ethnicity, birth *place* and migration, a city or *region*, employment, and infection and vaccination rates for example. Figure 2.25 shows the living arrangements for the Canadian population: a valuable tool for planners, housing investors and sociologists.

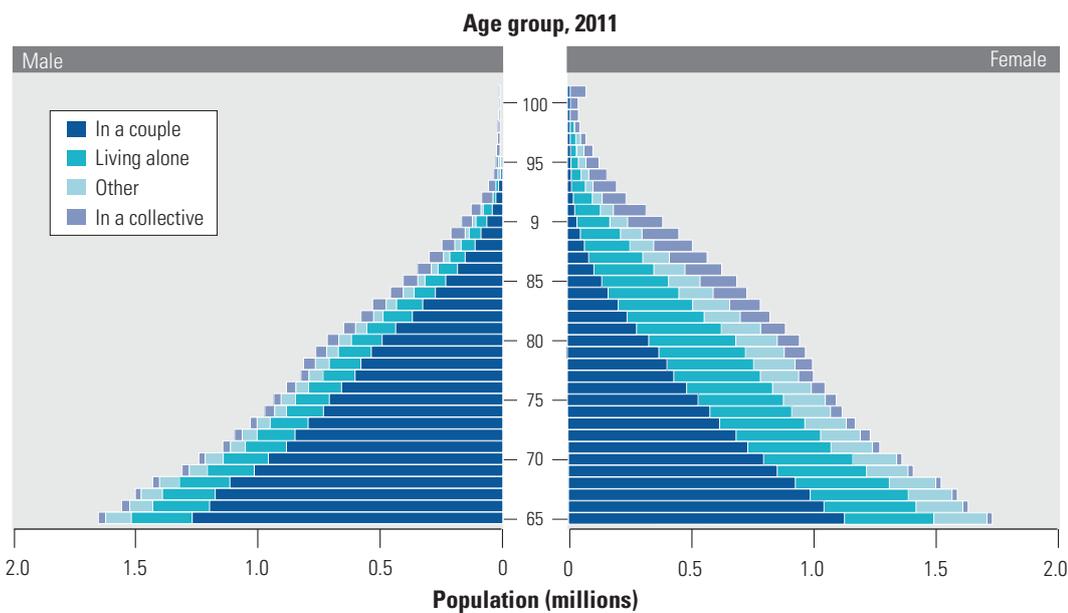
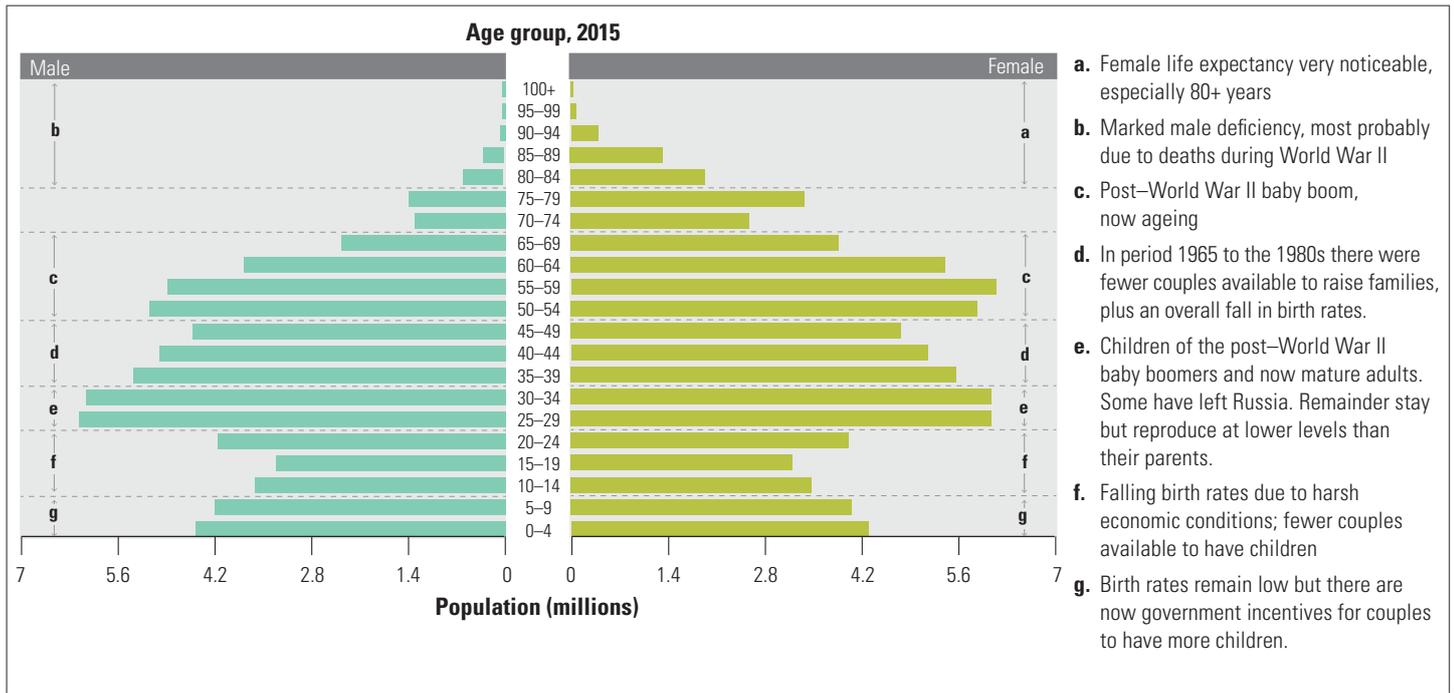
▼ **Figure 2.23** Interpreting population pyramids (a) A young population: Philippines, 2015



▼ **Figure 2.23** (b) A mature population: France, 2015



▼ **Figure 2.24** Interpreting Russia's population pyramid, 2015



◀ **Figure 2.25**
Living arrangements of Canadians, 2011

► **ACTIVITIES**

1. Which population, Philippines or France, is likely to have a high birth rate? Justify your answer from figure 2.23(a) and (b).
2. Identify the locations of France's post-World War II baby boomers (i.e. born between 1945 and 1960).
3. Using examples from Russia's population pyramid, discuss how a population *change* in one period can have an impact on later periods.
4. How might continued emigration of young Russians affect the country's future population structure?
5. a. What implications does a high dependent young population have for its government?
b. How do these implications differ for a high dependent ageing population?
6. Identify and describe three characteristics of Canada's 2011 population shown in figure 2.25 that would not be found from a more traditional population pyramid.

Population change over time

There have been various attempts by geographers, sociologists, economists and others to consolidate the *processes* bringing about *change* in populations through the use of theories and models. Two of these have made considerable impacts on approaches to our understanding of the *process* of population *change*: Malthus's 'Essay on the Principle of Population' and the 'Demographic Transition model'.

Malthus

One early demographer was Englishman Thomas Malthus (1766–1834) who wrote 'Essay on the Principle of Population' in 1798. At this time England's Industrial Revolution was *changing* the structure of the population. It was becoming increasingly urban, death rates were starting to fall but the birth rates remained high. It seemed as if the population was growing out of control. Malthus hypothesised that while the world's population would grow exponentially (2, 4, 8, 16, 32...), food production would only increase arithmetically (2, 4, 6, 8, 10...), over the same period.

Consequently there would be a gap between the ability of an area to support a population and the size of the population wanting to live there. In other words, population growth would eventually outstrip the resources needed to support the population. Malthus' arguments were strongly critical of Britain's working class for their rapid reproduction, which he believed would lead to widespread poverty. Charity for this section of the population would only encourage further reproduction and eventually more poverty.

Malthus believed there was a solution, or rather a series of situations that could check population growth:

- ▶ couples should practise abstinence, delaying marriage and sex until they could afford to raise children

- ▶ marriage between couples of extreme poverty or with 'social defects' should be restricted
- ▶ a population unable to feed itself would be subject to starvation, disease and or war. These events could help reduce the size of a population to more sustainable levels.

Malthus's predictions and strategies were not realised. Despite a greatly increased world population (see pages 23–24), there have been major increases in food production during the nineteenth century and especially in the second half of the twentieth century. At the same time, fertility rates have fallen, particularly as populations have become more urbanised.

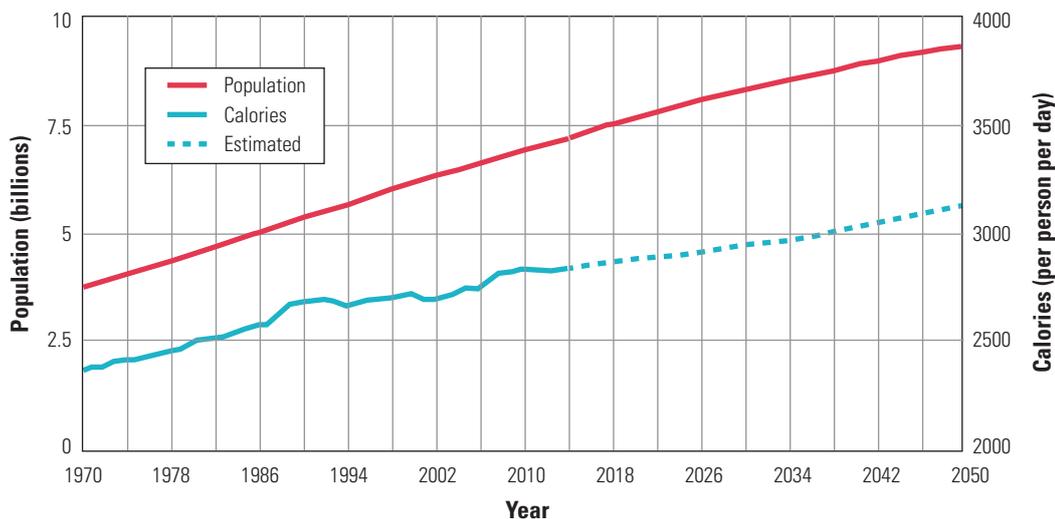
In recent decades Malthus's arguments have regained some favour. Neo-Malthusians have redeveloped some of his original ideas, in particular:

- ▶ there is ongoing evidence that population growth will eventually outstrip resources. In Sub-Saharan Africa, food production has fallen way behind population increases. The Malthusian checks of starvation and disease have been realised at various times since the 1960s — in Ethiopia, Somalia, Sudan, Chad and Niger, for example
- ▶ population control advocates often take up Malthus's viewpoints. Restricting the number of children a couple can have would help reduce the pressure on existing and future resource use, as well as food supplies. China's one child policy (see chapter 5) can be seen as a Malthusian argument. While Neo-Malthusians support contraception and abortion as a means of population control, Malthus believed in self-control
- ▶ Neo-Malthusians have extended the original argument to one concerning population growth, and an inevitable environmental degradation and resource overuse. They point to the apparent dwindling oil reserves of the world; the pressure on farming land, as well as its loss due to overuse and partial replacement with urban land uses; and the overfishing of the world's oceans. Neo-Malthusians' arguments were taken up in several influential publications including Ehrlich's *The Population Bomb* (1968) and the Club of Rome's *The Limits to Growth* (1972).



▲ **Figure 2.26** Thomas Malthus, author of 'Essay on the Principle of Population'

▼ **Figure 2.27** The Food and Agricultural Organization's prediction of population growth and calorie supply, 1970–2050





▲ **Figure 2.28** A refugee camp in Somalia

▶ ACTIVITIES

1. In what way could a disease such as HIV/AIDS be considered a Malthusian natural check on population growth? How far do you agree with this perception? What additional information would help you with your decision?
2. Green revolution, blue revolution and genetic farming are three broad trends that appear to demolish Malthus's theory. In what way is this so? What other information would you need to prove otherwise?
3. To what extent do figures 2.27 and 2.28 support or refute
 - a. Malthus's original arguments
 - b. Neo-Malthusian arguments?

The Demographic Transition model

A more recent model for identifying population *changes* is the Demographic Transition (figure 2.29). It attempts to describe, explain and predict the way a population could *change* over time, passing through a series of stages from an agriculturally based society to an urban-based one.

In Stage I, both birth rates and death rates are high and variable, resulting in a mostly low rate of population growth. Fluctuations in population growth would have been due to famine, war, natural disasters, peaceful periods and good harvests. There are no countries in this stage today but, historically, most pre-industrial societies would have been in this early stage.

In Stage II the birth rate remains high as the death rate falls rapidly as a consequence of improvements in hygiene, medical care and agriculture. Thus natural increase rates are high and rise throughout this stage. In 1980s and 1990s, many Sub-Saharan countries such as Niger and Burkina Faso were at this stage. As birth rates fall globally, there are fewer countries left to experience most of this stage. Populations in both Stage I and Stage II had an age–sex structure, or population pyramid, with a broad, young base tapering rapidly to a narrow, old apex, or top. At the time of his writing, Malthus' England was most likely in this stage (see previous section).

During Stage III the birth rate begins to fall. Typically this is due to improvements in education, availability of contraception, and lower infant and child mortality — features commonly associated with a society growing wealthier and more urbanised. The death rate continues to fall, but at a slower rate than in the previous stage. Natural increase is initially high but begins to fall as birth rates drop. Brazil, Vietnam and Bangladesh would fall into this stage. Population pyramids for Stage III continue to be broad based but with a thickening in the middle years as the surviving children from an earlier time age and enter the economically active age groups.

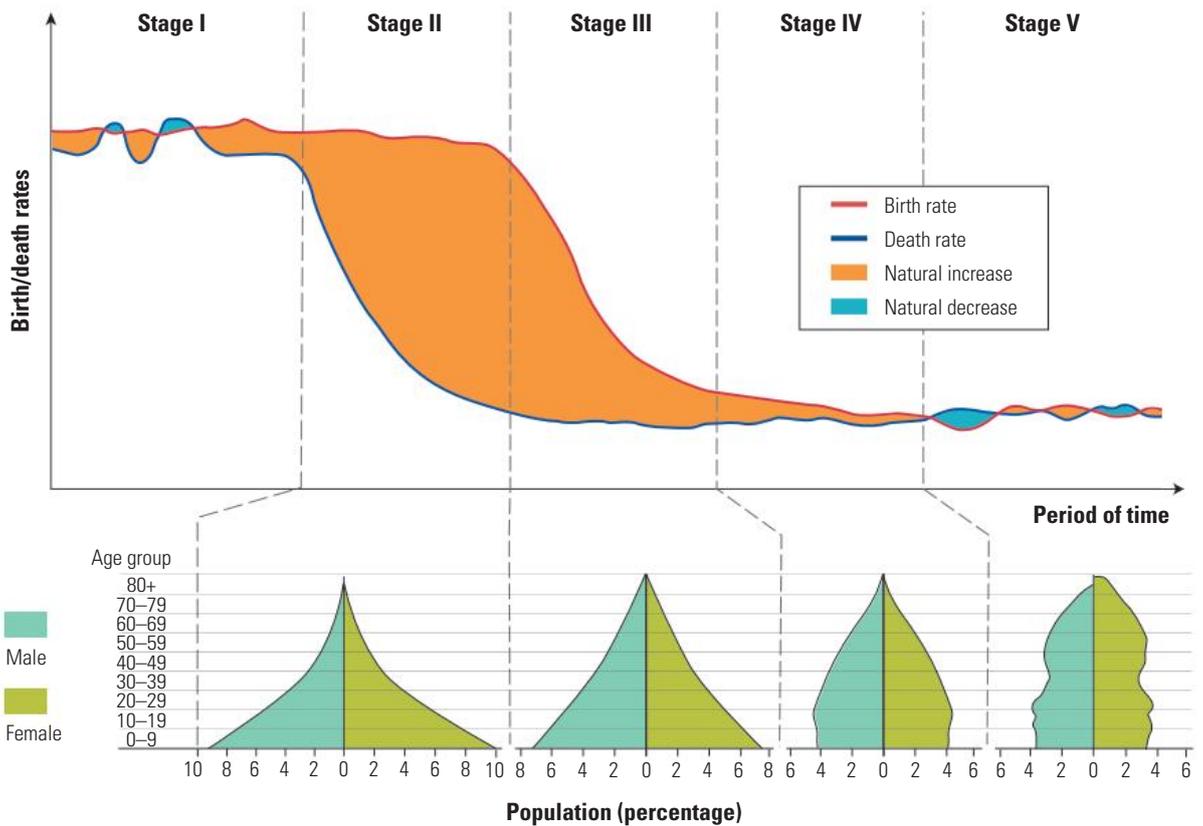
In Stage IV both birth rates and death rates are low, producing low rates of natural increase. Populations experiencing this stage would average long life expectancies. Urbanised, developed economies such as those of the United States, France and Australia would be in this stage. Some demographers have added another stage to this model — Stage V — to account for the phenomenon of an ageing population, and its associated causes of low birth rates and slightly rising death rates. Countries in Stage V have close to

zero population growth or a declining population total. Russia, Japan and Germany are experiencing Stage V conditions. Pyramids for populations in Stage IV and Stage V exhibit a shrinking young base and a broadening older top. As such the graphic representation becomes less and less like the shape of a pyramid.

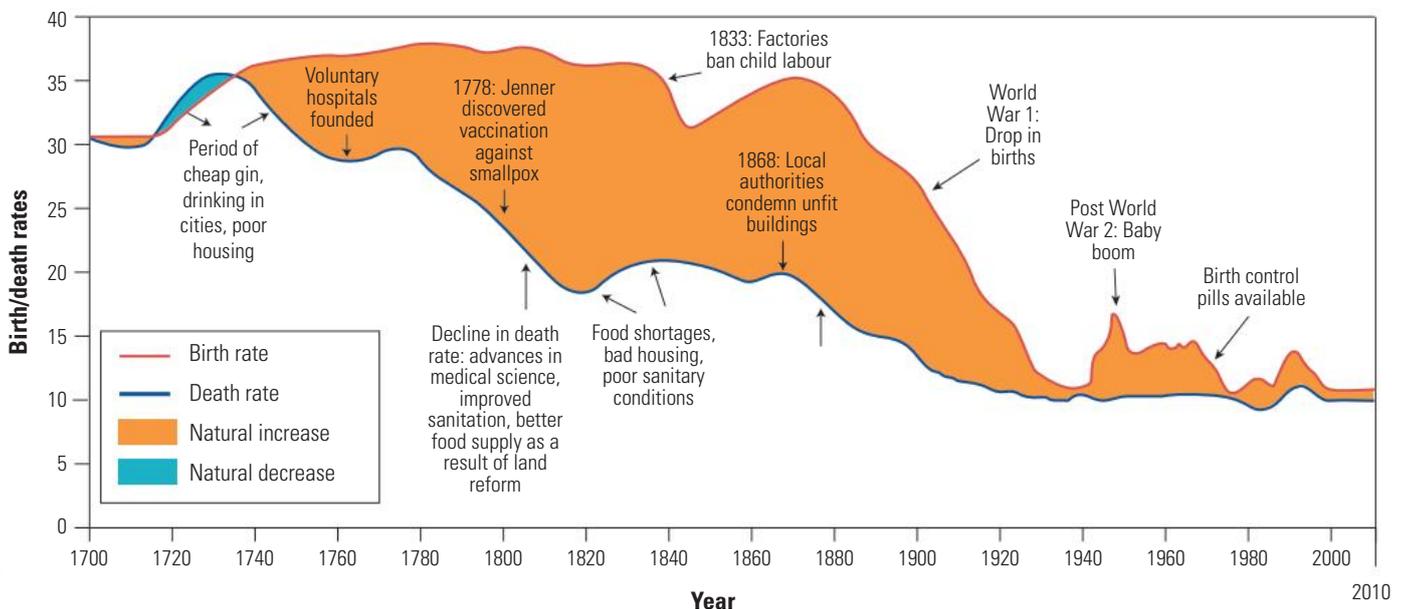
Changes in birth rates and death rates for England and Wales (figure 2.30) provided the basis for the original Demographic Transition model. The economic, social and political events that helped determine these *changes* are not intended as a guide for countries to follow, but rather as an indication of how future birth

rates, death rates and natural increases may evolve. While it is possible to find examples of countries that fit the stages of the Demographic Transition, not every country will necessarily match the model. The disastrous famine in China from 1959 to 1961, the impact of HIV/AIDS in southern African countries in the 1990s and 2000s, the civil and international conflicts of the Middle East in the 2010s, or the baby booms after prolonged wars, do not fit comfortably into the stages of the Demographic Transition. The time period for countries to go through these stages is not specified and not all countries may end up at Stage IV or Stage V.

▼ **Figure 2.29** The stages of the Demographic Transition and associated population pyramids



▼ **Figure 2.30** The Demographic Transition of the United Kingdom



▶ ACTIVITIES

- Why do the bases of the population pyramids shown in figure 2.29 broaden then begin to narrow? Give your answer using the terms birth rate, death rate, total fertility rate and life expectancy.
- Evaluate the extent to which you think the United Kingdom's demographic history shown in figure 2.30 fits the Demographic Transition model.
 - Use the annotations in figure 2.30 to suggest how each situation impacted on the birth rate and the death rate.
- Look carefully at the data in the table below.

	1950–55	1960–65	1970–75	1980–85	1990–95	2015
COUNTRY A						
Birth rate	48	53	52	49	46	39
Death rate	32	30	26	23	19	14
COUNTRY B						
Birth rate	39	35	39	27	17	16
Death rate	12	9	8	6	7	8
COUNTRY C						
Birth rate	30	20	18	19	12.6	10.1
Death rate	11	8	8	10	10.1	10.2
COUNTRY D						
Birth rate	45	42	34	31	20	14
Death rate	15	12	10	8	9	7

- For countries A, B, C and D suggest, with a reason for each, their position on the Demographic Transition in 1950–55. How had these positions changed by 2015?
 - The four countries are Sri Lanka, Afghanistan, Brazil and Poland — but not in that order. Suggest which country fits each set of statistics. On what basis did you make your decisions?
 - Use the world maps of this chapter to describe the 2015 global context of each country identified above.
- Discuss in a group how each of the following could impact on the position of a country's population in the Demographic Transition. Try to consider more than one immediate consequence of each event:
 - ▶ increasing urbanisation of the population
 - ▶ successful rural health programs established
 - ▶ widespread civil war leading to a famine
 - ▶ sustained improved agricultural yields
 - ▶ average age of marriage rises from 20 to 32 years
 - ▶ more women enter the workforce.



3

Population movement

Overview

Global population *movement* has been and continues to be an important issue in the twenty-first century, and is even the subject of street art (figure 3.1). Migration is an important factor in overall population growth in many *places* including the United States (see chapter 5). Population growth rate is calculated using natural increase plus net migration. Today there are more people on the move than ever before, in part forced by conflict. The United Nations reported that, globally, there were almost 232 million international migrants in 2013 (figure 3.2). Between 1990 and 2013, the number of international migrants worldwide rose by over 77 million or by 50 per cent.

In 2013, 3.2 per cent of total world’s population lived in a country other than that of their birth, though this varies widely between countries. For example, China had 0.4 per cent and Australia had 2.8 per cent of total world’s migrant population in 2013. Globally, the most important direction of flow of people is from less economically developed to more economically developed *regions*, though there are also significant flows from developed to developed countries and less developed to less developed countries. As migration affects the *distribution* of people in different *places*, it is an important part of the study of human population. Internal and international migration affects urbanisation because most internal and international migrants immigrate to cities.



▲ **Figure 3.1** Anti-racist street art in Bristol, England

▼ **Figure 3.2** Overview of international migrants by development level and major area, 1990–2013

	INTERNATIONAL MIGRANTS (millions)			
	1990	2000	2010	2013
World	154.2	174.5	220.7	231.5
Developed <i>regions</i>	82.3	103.4	129.7	135.6
Developing <i>regions</i>	71.9	71.1	91.0	95.9
Africa	15.6	15.6	17.1	18.6
Asia	49.9	50.4	67.8	70.8
Europe	49.0	56.2	69.2	70.8
LAC (Latin America and Caribbean)	7.1	6.5	8.1	8.5
Northern America	27.8	40.4	51.2	53.1
Oceania	4.7	5.4	7.3	7.9



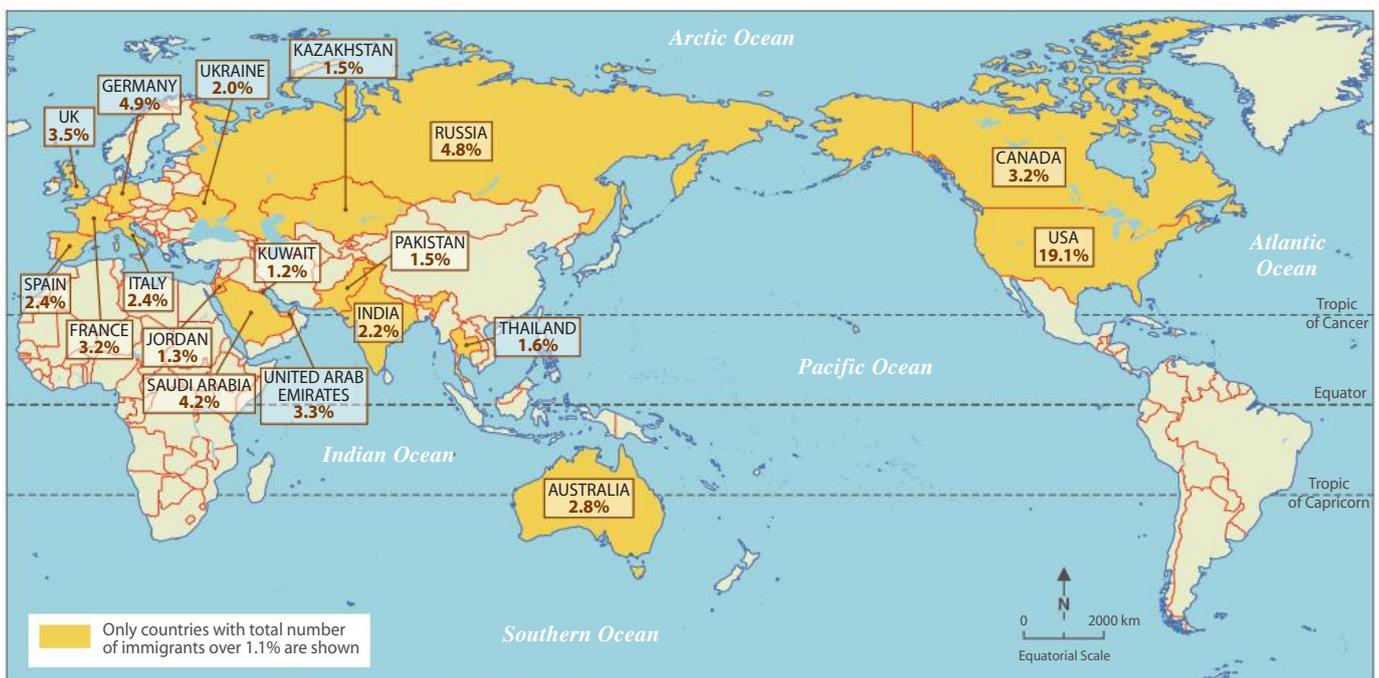
▲ **Figure 3.3** Somali children attend an outdoor classroom at the Friends Primary School in Ifo Refugee Camp, Dadaab, Kenya. Ifo is one of five refugee camps in the area. Ifo has 75 000 Somali refugees, and 350 000 people are housed across the five camps.

Internal, or within country, migration does not feature in international statistics. It is difficult to provide statistics as many countries do not collect data on internal migration. However, the United Nations states that internal migration is accelerating especially in populous countries including China and the USA (see chapter 5), and is far greater than international *movements*. High internal migration flows may not bring about significant *changes* in population *distribution* if outward flows are offset by inward flows. Government policies may shape internal migration patterns.

What is an international migrant?

An international migrant is defined by UNESCO as 'any person who lives temporarily or permanently in a country where he or she was not born, and has acquired some significant social ties to this country'. But definitions vary. Migrants can become naturalised citizens or legal permanent residents. They may be refugees (figure 3.3) and asylum seekers, international students and others on long-term temporary visas, or unauthorised immigrants. Nomadic peoples are usually not considered migrants, though they may regularly cross international borders. Two small groups that maintain a nomadic lifestyle are the European Roma and the Tuaregs of Northern Africa.

▼ **Figure 3.4** Share of world's migrant population in 2013



Which country has the highest migrant populations?

The United Nations reports that in 2013 around half of all international migrants lived in just ten countries. These are listed below.

1	United States of America	45.8 million
2	Russian Federation	11.0 million
3	Germany	9.8 million
4	Saudi Arabia	9.1 million
5	United Arab Emirates	7.8 million
6	United Kingdom	7.8 million
7	France	7.5 million
8	Canada	7.3 million
9	Australia	6.5 million
10	Spain	6.5 million

Who migrates?

Overall, almost equal numbers of males and females migrate, though this varies from *place* to *place*. For example, there is a high demand for male migrant workers in the oil-driven construction booms in countries of Western Asia. They are mostly adults, and some are highly skilled and others are not.

▶ ACTIVITIES

1. Refer to figure 3.1. What does it mean? Where do you think such street art might be found in Australia?
2. Match the following terms with the definitions below.

internal migration asylum seeker
 net migration international migration migration
 country of destination emigrant
 internally displaced person emigrate host country
 immigrant immigrate country of origin

- a. the *movement* of people from *place* of residence to another
- b. the number of people arriving in a country minus those departing from that country, usually reported over a 12-month period
- c. the *movement* from one country to another
- d. person who moves from their existing country of residence to live somewhere else
- e. to move from one's native land to another
- f. a person who moves to a country from another one
- g. to move to a new *place*
- h. the *movement* to a new home within one country
- i. the country that is a source of migratory flows (sending country, source country)
- j. the country that is an end point for migratory flows (host country, receiving country)

- k. the country receiving immigrants
- l. a person who leaves their own country because they fear for their safety so they seek protection from the government in another country
- m. according to UNHCR, these are 'persons or groups of persons who have been forced to flee, or leave, their homes or *places* of habitual residence as a result of armed conflict, internal strife, and habitual violations of human rights, as well as natural or man-made disasters involving one or more of these elements, and who have not crossed an internationally recognised state border'

3. View these immigration images online.
<http://migrationmuseum.org/output/exhibition/100-images-of-migration/>

Select one or two images that you found

- ▶ interesting
- ▶ surprising
- ▶ confusing.

Discuss why with a classmate or as a whole class.

4. Refer to figure 3.4.
 - a. Name the highest three recipient countries for migrants by percentage.
 - b. Describe the global *distribution* of migrants.
 - c. Predict how this might *change* in the next ten years. On what basis did you make your prediction? What factors might account for predictions that differ from yours?

Types of movement

What are the major types of population movement?

Why do people *move* from the *place* where they were born? These *changes* of residence can be classified by their duration (time) and their spatial patterns. Taking a holiday or business trip is not classified as migration. Likewise, people temporarily evacuating when there is a disaster does not count as migration, as those who are affected will return to their homes. Migration can be classified as voluntary — such as when people decide to move for study or work — or forced, as occurs with refugees (figure 3.5).



▲ **Figure 3.5** Refugees from Eritrea, in the Horn of Africa. They fled from Eritrea in 2008 and now live in Tel-Aviv, Israel.



▲ **Figure 3.6** Temporal migration — seasonal strawberry picking in Plant City, Florida

Types of migration

Spatial migration is a classification that considers the *scale* of the *movement*.

Spatial categories

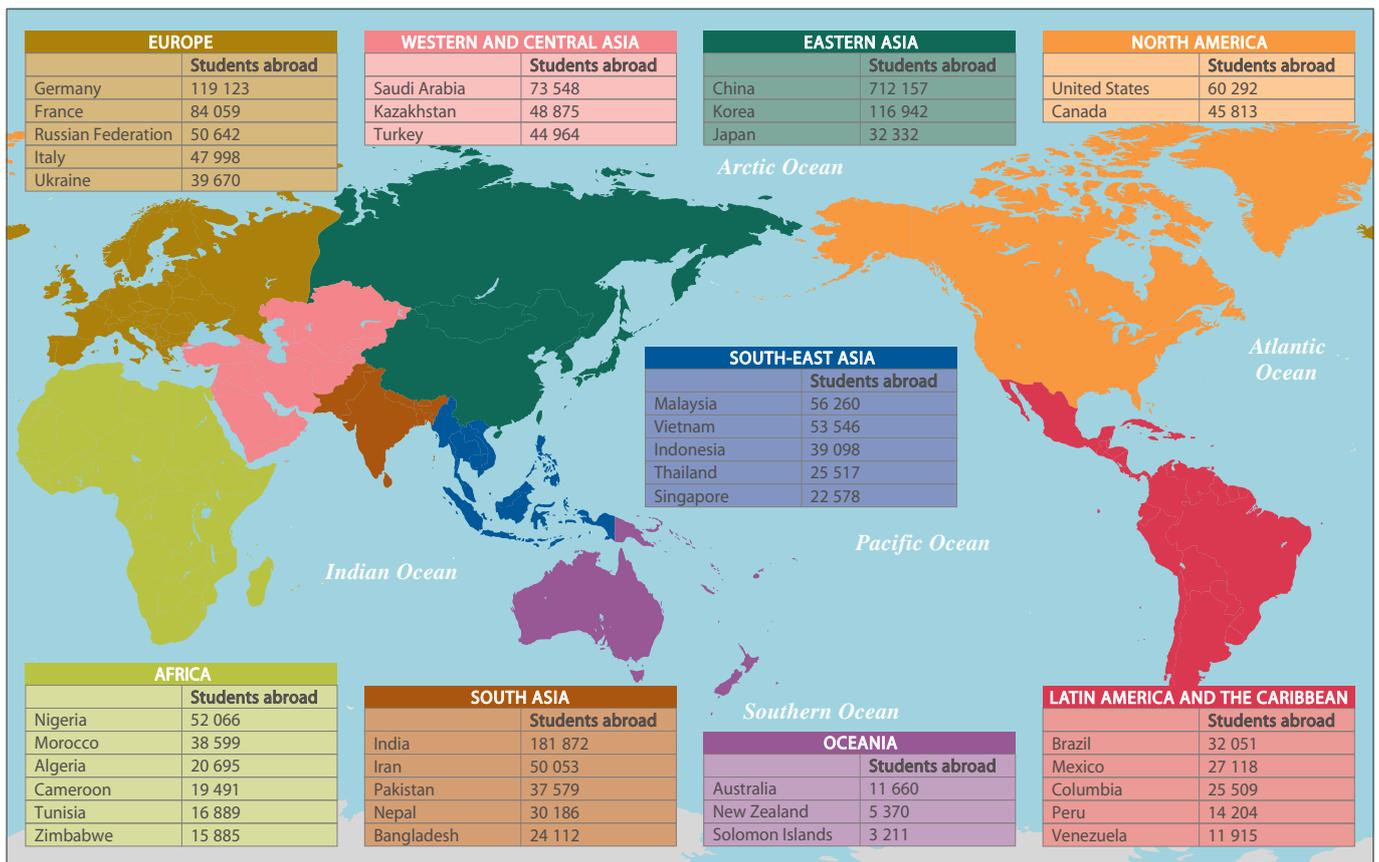
- ▶ Intra-urban migration — describes *movements* within urban areas. For example, people moving from a house in a city to an apartment in the city.
- ▶ Internal migration — describes *movement* within a country. For example, a worker moves from a city to a *regional* centre to get a better job.
- ▶ International migration — describes *movements* across national boundaries. For example, once Poland joined the European Union in 2004, in the following three years over half a million Polish people migrated to the UK in search of employment to support a better quality of life.

Temporal migration is a classification that considers the time frame of the *movement*.

Temporal categories

- ▶ Seasonal migration — describes a periodic *movement* to a new address often to harvest a fruit or vegetable crop over several weeks or months (figure 3.6). This term also describes migration where, in *places* including Northern Ghana, people move from the northern savannah during the dry season to more humid areas to access a better food supply. They return to their subsistence farming lifestyle in the rainy season.
- ▶ Temporary migration — refers to a semi-permanent kind of migration; for instance, young adults leaving the family home to study at a *regional* university
- ▶ Recurrent migration — occurring more than once. Migrant workers in France may come for a year or two and later return.
- ▶ Indefinite or permanent migration — long-lasting *change* of residence. This can be triggered by a search for a better quality of life, which may include employment opportunities, lifestyle factors, seeking asylum and personal freedom. Permanent migration can also be the result of indefinite migration. Most international migration to Australia is permanent.

Case study: Where do international students go to study?



▲ **Figure 3.7** Top countries of origin of foreign students, by *regions* of the world, in 2011

Numbers of internationally mobile students are surging, from two million in 2001 to an estimated four million in 2015. International students are students who are not residents or citizens of the country where they study. Many students obtain a student visa to leave their home country to study an undergraduate and postgraduate program. They are classified as temporary migrants if staying longer than one year, though some will complete their studies and follow the immigration laws to remain in their new residence. If international students stay less than one year they are classified as tourists, not migrants. According to the OECD (Organisation for Economic Co-operation and Development), worldwide an average of 25 per cent of international students gain permission to remain in their host country mainly for work-related reasons once their studies have finished. In Australia the stay rates were 30 per cent in 2011.

In 2012, the top ten countries of origin of mobile students are:

- ▶ China (694 400 students studying abroad)
- ▶ India (189 500)
- ▶ Republic of Korea (123 700)
- ▶ Germany (117 600)
- ▶ Saudi Arabia (62 500)
- ▶ France (62 400)
- ▶ United States (58 100)
- ▶ Malaysia (55 600)
- ▶ Vietnam (53 800)
- ▶ Iran (51 600).

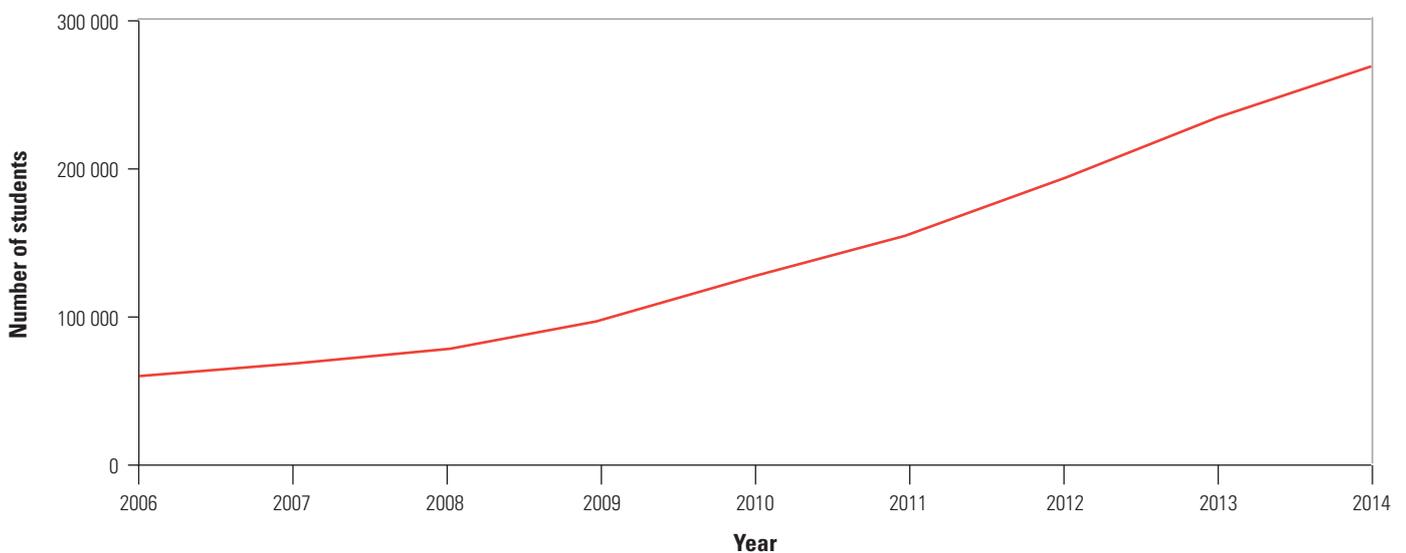
Internationally mobile students bring significant economic, academic and cultural benefits to the host country. For example, in 2015 government statistics stated that they contributed a record \$17.5 billion to the Australian economy for the 12 months to the end of March. Unfortunately some international students may face difficulties in finding affordable accommodation, making local friends and becoming familiar with local culture. They may miss family, and find it challenging to understand a different educational system. At a local *scale*, one in every five persons living in the City of Melbourne is an international student. The rapid increase in international student numbers has resulted in a boom in the building of student accommodation close to universities though there remains a shortfall of accommodation.

▼ **Figure 3.8** Global top 5 student destinations, 2012

DESTINATION COUNTRY	NUMBER OF INTERNATIONAL STUDENTS	WHERE ARE STUDENTS COMING FROM? (Top three home countries)
US	740 482	1. China (210 452) 2. India (97 120) 3. Republic of Korea (70 024)
United Kingdom	427 686	1. China (76 913) 2. India (29 713) 3. Nigeria (17 542)
France	271 399	1. Morocco (28 778) 2. China (26 479) 3. Algeria (21 804)
Australia	249 588	1. China (87 497) 2. Malaysia (17 001) 3. India (11 684)
Germany	206 986	1. China (18 323) 2. Turkey (12 222) 3. Russian Federation (10 007)

Source: UNESCO Institute for Statistics (UIS)

▼ **Figure 3.9** Chinese students are a significant group of temporary migrants in USA.



▶ ACTIVITIES

- Some groups use the term refugee and others displaced person. What are the similarities and differences in these terms?
- Draw a concept map of types of migration.
- Refer to figure 3.6. Does this fit your stereotype of an international migrant?
- Access the interactive map and answer the following questions:
www.uis.unesco.org/Education/Pages/international-student-flow-viz.aspx
 - Which are the three main overseas countries that Australians choose to study in?
 - From which three overseas countries are students studying in Australia most commonly found?
- Predict and explain what may happen to the number of Chinese students:
 - as China has more and more universities that are ranked as world class
 - if there is an economic downturn in China.
- Evaluate these statements with reference to data from figures 3.7, 3.8, 3.9 and the interactive map in question 4.
 - ▶ Most international students choose to study in a country that is close to their home country.
 - ▶ Most international students choose to study in English-speaking countries.
 - ▶ Asia is a significant source of students who are studying abroad.

What are the factors that lead to migration?

The decision to leave one's home can be understood by considering the forces that *push* a person to leave their current home as well as the forces that *draw* a person to a destination. These forces are known as push factors and pull factors. Push factors can include famine, such as the famine that took place in Ethiopia in the 1980s. Pull factors include the lure of jobs, as has happened for girls who move to the Bangladeshi capital of Dhaka to find work in the garment industry. Often people migrate because of a combination of push and pull factors (figure 3.10). These decisions are based on perceptions of the destination that may be different from what occurs, and the move may result in disappointment. Even in the poorest countries, rapid urban growth is a common phenomenon.

Why is rural-to-urban migration so common?

Rural–urban migration describes the *movement* of people from the countryside to a city. Push and pull factors of migration can be applied more broadly to the examination of any migration flow, but are commonly applied to rural–urban migration or (as it is sometimes called) 'countryside to curbside'. The world is rapidly becoming more urban as overall quality of life is often thought to be better in cities. In 1900, 15 per cent of the world population lived in cities; by the 1950s, this had doubled to 30 per cent. By 2010, more than 50 per cent of the world's population was living in cities, according to the UN. However, the trend of increasing urbanisation varies between countries. For example, in 2014, Singapore was 100 per cent urbanised, followed by Australia at 90 per cent, Canada and the USA at 80 per cent, China at 55 per cent and Indonesia at 50 per cent.

Urban areas are growing faster in less economically developed countries than anywhere else in the world. In less developed cities, rural migration to the city often ends in life in an informal settlement — a slum or shanty town in which dwellings are poor quality and services are inadequate (figure 3.11). Slums are described as informal settlements as they are unplanned and buildings are constructed using poor materials. Slums face a range of problems as they develop on land that is vacant, including government land, and next to railway lines. Some of these sites are flood-prone, polluted, degraded or subject to landslides. Infrastructure including water, sewerage, waste disposal, power and public transport is often lacking. This leads to problems of overcrowding, high risk of fires and easy spread of disease.

▼ **Figure 3.10** People migrate for negative (push) and positive (pull) reasons.

PUSH FACTORS	PULL FACTORS
Unemployment	Potential for employment
Poverty	Greater wealth, higher standard of living
Famine	Fertile land
Drought or flood leaves subsistence farmers without food	Adequate and reliable food supplies
Political, religious or social persecution	Better safety and tolerance
War, conflict	Political security
Lack of services	A range of services provided (education and health)
Disasters	Less hazardous situation
Isolation and loneliness	Access to family and friends
Adverse climate	Less extreme climate



▲ **Figure 3.11** Mumbai slums have developed on vacant land adjacent to the railway line, a safety risk for children living there.

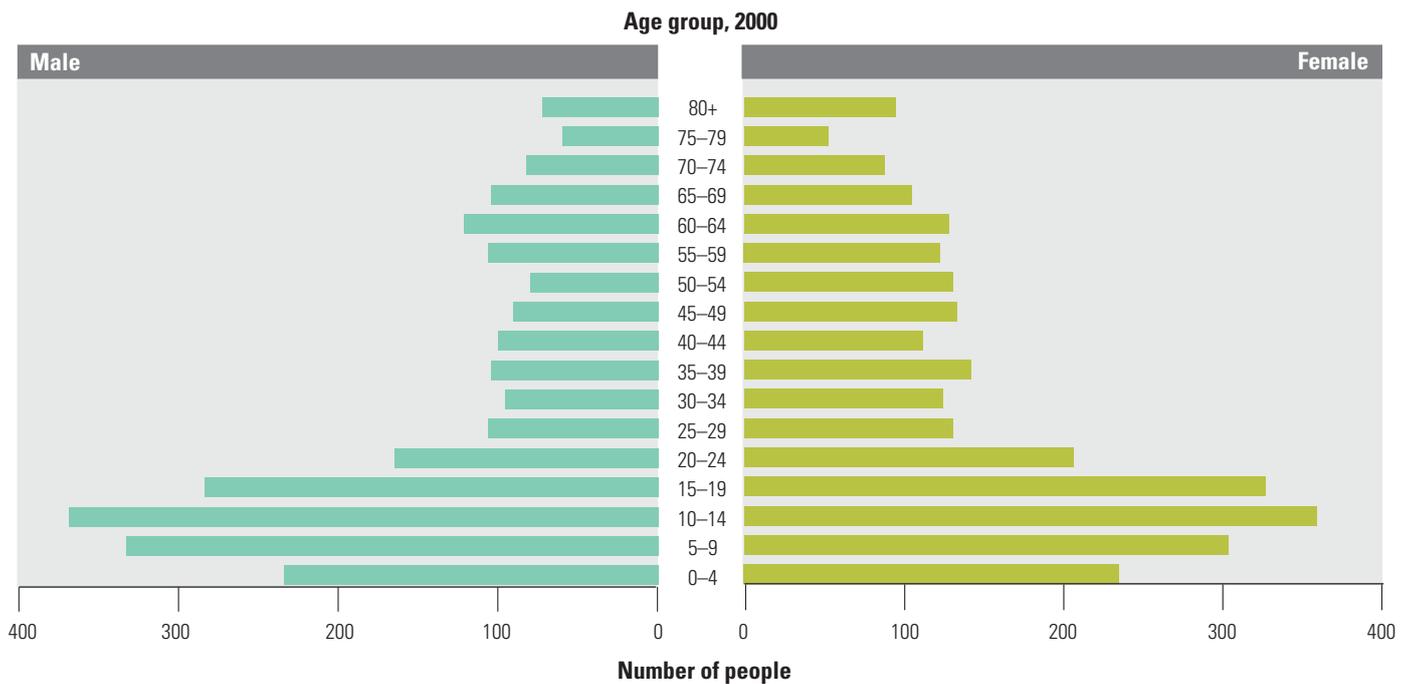


▲ **Figure 3.12** A rickshaw driver pedals through the flooded streets of Dhaka, Bangladesh.

In 2014, the World Bank estimated that an average of over 400 000 migrants arrive in Dhaka, Bangladesh's capital city, each year, seeking work. Dhaka is one of the most densely populated cities in the world, as well as one of the world's fastest growing cities. Half of the 15 million people in Dhaka live in shanty towns. Located in wetlands and almost surrounded by rivers, parts of the city are little more than two metres above sea level, putting residents at risk of constant flooding during the monsoon season (figure 3.12). For the vast majority, there is no supply of safe fresh water.

The consequences of rural–urban migration are not simply population decline in rural areas but a shift in the demographic composition of the donor and host areas. It is the young who migrate most often, adding to the host area's economic potential and leaving older adults in the donor areas. For example, in 2002, migration affected the Mexican village of Piaxtla, as many of the 20 to 40-year-olds migrated to the United States, leaving 1600 residents of Piaxtla who were either children or elderly (figure 3.13).

▼ **Figure 3.13** Population structure for Piaxtla, Mexico

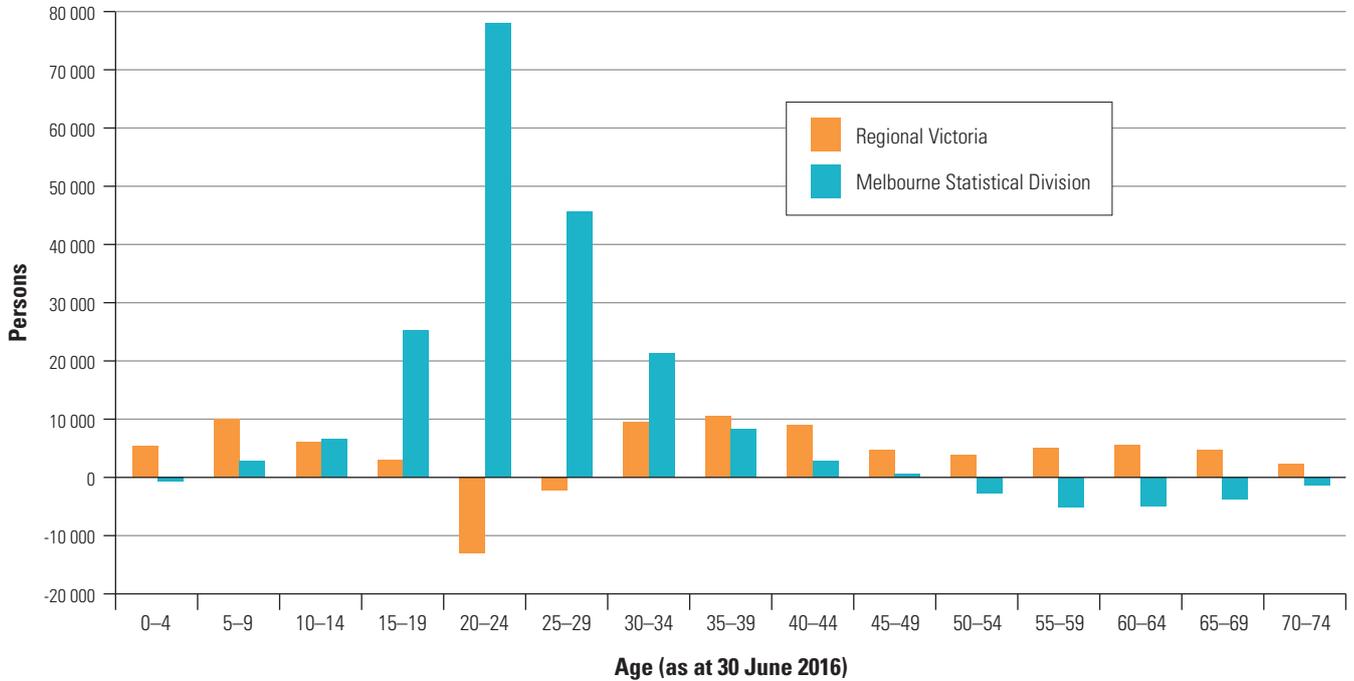


What is happening in urban areas?

In Victoria, Australia, the population continues to grow, but growth is not the same in all areas, as cities are growing faster than other areas. Young people might migrate from *regional* Victoria to the city for education and employment opportunities, and may also be attracted to the city's lifestyle possibilities.

Retirees and young families may *move* to *regional* Victoria to reduce their cost of living and because they are attracted to a different way of life (figure 3.14). People who make the *move* from capital cities to country towns for lifestyle reasons are sometimes called 'tree-changers'.

▼ **Figure 3.14** Net migration to Melbourne and *regional* Victoria by age, 2011–16



▶ ACTIVITIES

1. What are push and pull factors?
2. Give two examples of a push factor and two examples of a pull factor.
3. Why is rural-to-urban migration a worldwide trend?
4. What are some of the problems associated with rural-to-urban migration in less developed cities?
5. How does rural-to-urban migration affect population structure in the donor area and in the host area?
6. Refer to figure 3.13. What are the key features of the population profile? Sketch a population profile of a city that has rapid rural-to-urban migration.
7. Refer to figure 3.14. What are the three main trends in this graph?
8. Discuss: Rural-to-urban migration can be a means to a better life for well-prepared, skilled workers or it can simply displace workers to an urban environment in which they are equally poor.
9. Research your local area using ABS data and other sources. What trends of migration have occurred in your lifetime? Compare this with another local area that you predict will be different to your area. What are the similarities and differences?



▲ **Figure 3.15** Major flow of remittances from the United States, the United Kingdom and Canada, 2012

Why do people migrate?

The world has witnessed many migrations, across continents and across millennia, as people have left their homes in search of a better way of life. There are exceptions, such as the transatlantic slave trade from the fifteenth to nineteenth century, a forced migration that is the largest that the world has witnessed. This chapter will focus on the more recent migration that has occurred since the 1950s.

Overall migration patterns have been increasing in the last 25 years. Many factors influence population migration including the impact of government policies, economic conditions, wars and revolution, political boundary *changes* and hazard events. Through the ages people moved seeking more reliable food supply, safety or more favourable resources — they were seeking a better life, just as people are now (figure 3.16). The situations and stories are different, yet similar patterns exist. From ‘boat people’ who fled Vietnam after the end of the Vietnam War in 1975 who were fleeing political repression to the less well-known *movement* of Guatemalans to Mexico seeking better economic opportunities — the study remains a fascinating one.

Overseas migrants often send or ‘remit’ some of the money they earn to people in their home country. This transferred money is known as remittances (figure 3.15).

Internal and international migration after retirement has become a growing trend over the last decade among people with strong financial resources. Many Britons choose to settle in sunny Malta, Spain and Cyprus while Portugal has the third-largest European expatriate community after Spain and France. Many of these are retirees. Americans flock to Florida (figure 3.16) resulting in Florida boasting a high proportion of elderly (19 per cent). Other Americans choose to retire abroad, often in Mexico, Central America, Asia or Europe. Thousands of financially independent Australians are making their retirement homes in Indonesia, Vietnam, Malaysia or Thailand. It is an appealing option as costs are between 50 per cent and 80 per cent lower than living in Australia.



▲ **Figure 3.16** This apartment block complex on the Florida beach is the type of retirement housing prized by retired Americans.

Who decides when and where to migrate?

Reasons for migration are complex. They can be the result of a personal decision (which is known as high agency) or in response to forces that individuals cannot control (low agency). Often the decision of one household member affects the rest of the household (figure 3.17).

A factor rarely considered in population studies is that people sentenced to imprisonment are forced to migrate from their *place* of residence. Nationally, Aboriginal and Torres Strait Islander adults are 15 times more likely to be imprisoned than non-Indigenous Australians. This concerning migration pattern is one that the Australian government wants to *change*, by improving community programs and strategies to address the underlying causes of Indigenous offending.

As well as examining those factors that shape migration patterns by agency, factors can also be classified by type as environmental, social, economic, political and cultural. These factors, often in combination, can be a useful tool which geographers use to analyse the reasons for migration patterns. Factors have positive and negative effects. People may flee the devastation of earthquakes (for example, Nepal in 2015), some never to return; others may be attracted to an area which has a successful irrigation project leading to job growth in agriculture. For example, in the Emerald *region* of Queensland west of Rockhampton, the Fairbairn Dam has enabled increased production of melons, grapes and citrus crop, attracting agricultural workers to the area.

Factors that influence population *movement*

A range of factors have positive and negative effects on population *movement*.

Environmental: major biophysical characteristics and *processes* including climate, landforms, vegetation, water, soil. These include monsoons, mountainous landforms, tundra and floodplains. Biophysical features that have been altered by humans are also relevant. Environmental hazards such as floods, earthquakes and tsunamis may result in permanent and temporary population *movements*.

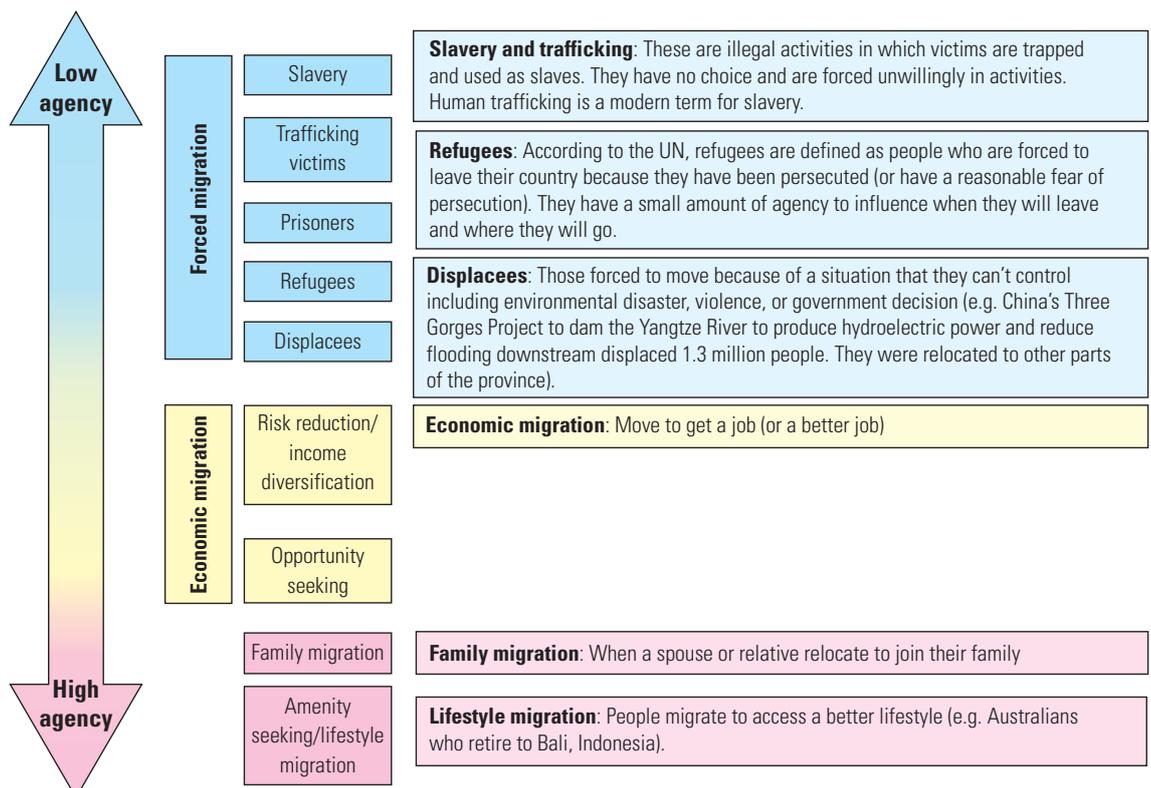
Social: those elements relating to people, their community, type of society; for example, rural areas, traditional villages and urban centres. Some people may be able to migrate to a different *place* if they already have family members who have settled before them.

Economic: aspects related to income generation, employment, investment opportunities and expenditure including cost of living, countries' main exports. There has been a huge internal population migration in China in recent years due to job opportunities in the large and growing *regional* cities, especially in the eastern provinces.

Political: relating to government, such as laws, policies and regulations. The type of government is also relevant; for instance, whether it is democratic or communist. Political action can be carried out by a government or by groups and organisations. Australian government policies provide incentives to encourage migrants to settle in rural and *regional* centres rather than capital cities.

Cultural: those elements that are related to customs and beliefs including religion. Religious persecution is the most common cultural reason for migrating. This is sometimes included in social factors but it can be useful to consider this separately.

► **Figure 3.17**
Continuum of migrant
agency and migrant
categories



Source: Adapted from Robert McLeman, 2014, *Climate and Human Migration*, Cambridge University Press, New York

▶ ACTIVITIES

1. Refer to figure 3.15. Describe the flow of remittances from the United States, the United Kingdom and Canada.
2. Justify where you would put imprisonment on the agency continuum in figure 3.17.
3. Using the table format and headings below, classify the following headline statements according to factors that shape migration patterns.
 - a. Jewish immigration into Israel surges more than 40 per cent in the first four months of 2015.
 - b. 151 000 Irish emigrate between 2010 and 2014 to find work — it's a brain drain.
 - c. After the 2010 earthquake disaster, affected Haitians migrate to stay with friends.
 - d. Retirees migrate to the United States sun belt.
 - e. After the transfer in 1997 of sovereignty of Hong Kong, many Chinese settle in Vancouver, Canada.
 - f. Indonesian government's transmigration program moves six million people to less populous areas of the country.
 - g. Turkish guest workers apply to stay as permanent settlers, and later bring their families.
 - h. Filipino women find work as domestic cleaners and carers in Italy.
 - i. 70 per cent of immigration to USA involves family reunion.

Use your prior knowledge to add an example in column 3 of the table.

FACTORS	STATEMENTS	ANOTHER EXAMPLE
Environmental		
Social		
Economic		
Political		
Cultural		

4.
 - a. What type of migrant is depicted in the Haiti photograph (below)?
 - b. Briefly outline the event that caused this population movement.
 - c. Why is this movement temporary?



A tent city in Port-Au-Prince, Haiti after the 2010 earthquake.

Irregular migration

An irregular migrant is a migrant without documented approval to remain in a country. Such a migrant is also called an illegal or unauthorised migrant. They enter a country illegally, or have overstayed the duration of their visa. A refugee or asylum seeker is generally not considered an illegal immigrant as their refugee status has not been determined.

In many parts of the world, more so-called illegal immigrants come by land or arrive with a visa but do not return as they seek asylum instead. However, illegal immigrants are highly visible when they arrive

illegally by sea, as happened in recent years in Australia. Migrants also sail from Cuba and Haiti but the numbers are small — 4358 people in 2014. This becomes a humanitarian disaster if the boats sink and they drown at sea. The following case study is worthy of examination in world terms given the number of people taking perilous boat journeys and the effects on the destination *region*.

Case study: Migrants crossing the Mediterranean in 2015

Migrants risk their lives aboard unseaworthy boats in the Mediterranean. In April 2015, a boat transporting nationals from Syria, Eritrea, Somalia, Mali, Sierra Leone and Senegal capsized off Libya drowning hundreds of people. The European Union (EU) — an alliance of 28 countries located in Europe — faced a migration crisis of unauthorised transportation of asylum seekers. It is challenging to manage irregular migration as people who are faced with hunger, persecution and war take desperate actions to improve their situation. Other vessels in difficulties have been rescued and, tragically, some vessels in the Mediterranean have been discovered sunken without rescue alert raised. With nearly 3300 lives lost at sea through people smuggling in 2014, this has become an international humanitarian concern. As well, Italy, Spain, Greece and Malta carry most of the burden of processing asylum claims as most boats arrive on their shores (figure 3.18). Over 107 000 people entered the EU illegally in 2013, including some 60 174 people who came by boat, and this continues to escalate.

Under the Geneva Conventions, refugees fleeing from persecution or life-threatening violence have a right to claim asylum in Europe. Escalating conflicts in Syria, Iraq, Afghanistan, Somalia and Libya are pushing migrants towards Europe. In 2014, of the 626 000 people who applied for asylum to the EU, only a small proportion came by boat (figure 3.19);

184 665 of the applicants who were processed were granted asylum (figure 3.20). Though the EU is trying to reach an agreement on how asylum seekers can be more equitably *distributed* within the EU, this has not yet been resolved.

Some individuals and groups who oppose immigration suggest that irregular migrants arriving by boat are mostly economic migrants who risk the journey for the chance of economic improvement; nevertheless, many are in fear of persecution or starvation. It is challenging to assess the claims.

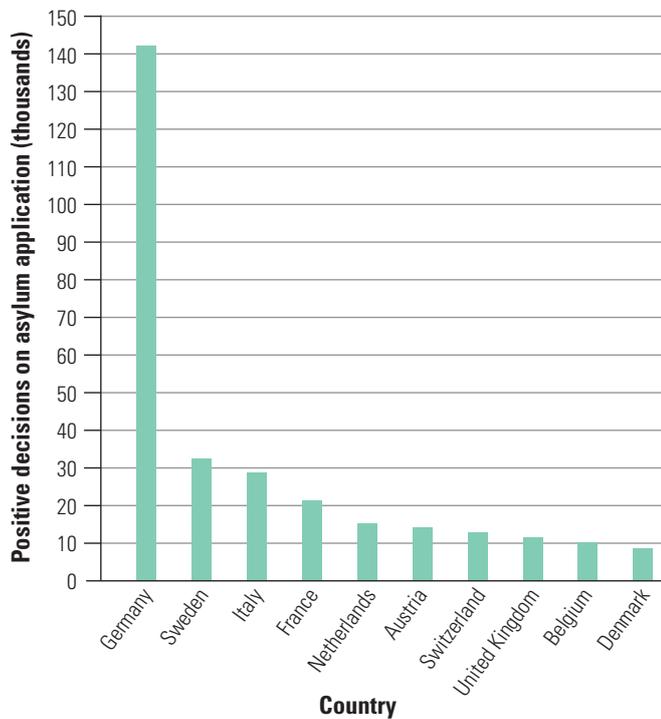
▼ **Figure 3.18** Migrant arrivals by sea in the Mediterranean region, from 1 January to 13 July, 2015

COUNTRY OF ARRIVAL	ARRIVALS
Greece	746 714
Italy	144 100 (IOM est.)
Spain	3592
Malta	105
Estimated total	894 511

Note: All numbers are minimum estimates based on data from respective governments and International Organization for Migration (IOM) field offices.

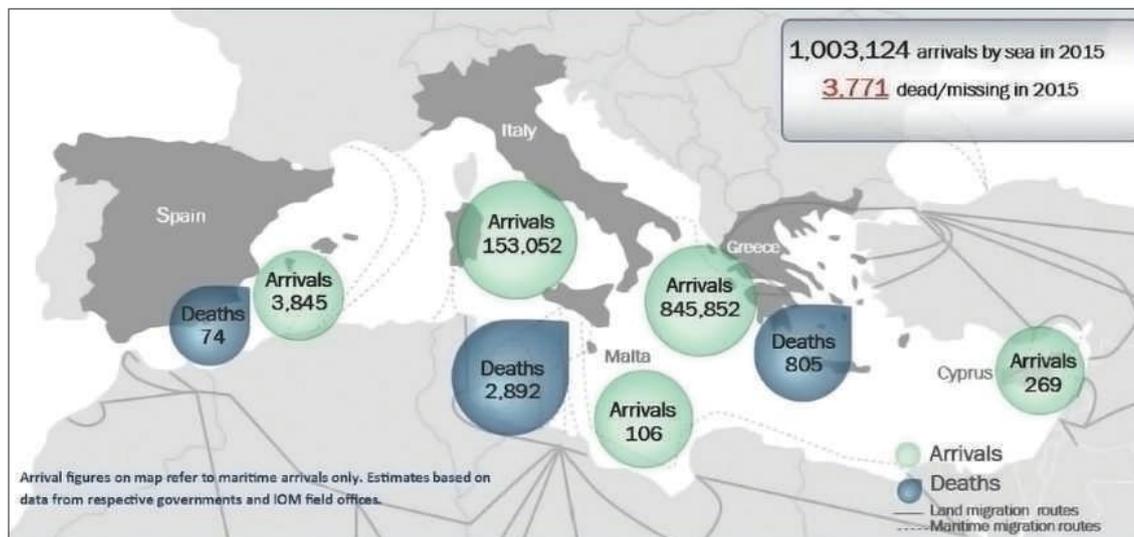


▲ **Figure 3.19** An inflatable boat filled with refugees and other migrants approaches the north coast of the Greek island of Lesbos. Turkey is visible in the background. More than 500,000 migrants had crossed by boat from Turkey to the Greek islands as at October 2015.



◀ **Figure 3.20**
Positive decisions on asylum applications by EU country, 2014

▼ **Figure 3.21** Mediterranean migrant arrivals and deaths by route, from 1 January to 7 May, 2015



▶ ACTIVITIES

1. What is the EU?
2. Irregular migrants are said to be fleeing conflict or persecution in *places* such as Libya, Eritrea, Afghanistan and Syria, or poverty and hunger in Sub-Saharan Africa.
What is an irregular migrant?
3. Compare the data in figure 3.18 and figure 3.21. In the two months from 7 May to 13 July 2015, how many asylum seekers arrived by sea to Italy, Malta, Greece and Spain.
4. Refer to figure 3.20. Describe which countries accepted asylum seekers in the EU in 2014.
5. Myth or fact? Form teams to investigate these statements about asylum seekers arriving in Australia. Discuss your results in class and use data and facts to support your findings.
 - ▶ Most asylum seekers arrive by boat to Australia.
 - ▶ Australia faces one of the largest volumes worldwide of asylum seekers.
 - ▶ Asylum seekers take up Australians' jobs.
6. Go to the UNHCR (UN Refugee Agency) at data.unhcr.org/mediterranean/regional/php and investigate how the numbers have changed since July 2015.

Migrant workers: the global movement of workers

Labour or worker migration is a significant worldwide pattern. In 2014, the ILO (International Labour Organization) estimated that there were 126 million people living outside their country of origin in order to work for 12 months or more. Governments recognise that immigrant labour can make a valuable contribution to the economy where there are worker shortfalls. It is important that government policies are able to protect migrant workers, who can be vulnerable to exploitation.

There are many broad patterns of labour migration. Since the 1980s many labour migrants have *moved* from:

- ▶ Southern Europe to North-West Europe
- ▶ Central America to North America
- ▶ South Asia to the Middle East
- ▶ New Zealand to Australia.

More than 4.4 million Indonesians are working outside their home country: 70 per cent of them are women, many of whom work in the domestic sector as maids.

Greece provides a recent example of the consequences of the global economic downturn of 2010, which has led more than 200 000 Greeks to emigrate to seek employment in 2010–15. As Greece's unemployment spiralled to 22 per cent in 2012, Greeks immigrated to other parts of Europe encouraged by the European Union's laws that allow citizens the right to 'move and reside freely within the EU'. Fifty per cent have found work in Germany. Others have also sought work as far afield as Australia, which has also accepted a wave of Greek immigrants since 2010, many of whom

are well educated and highly skilled. An estimated 6000 Greek and Cypriot residents migrated to Victoria during 2010–15. Many of these migrants are returnees, usually holding dual citizenship.

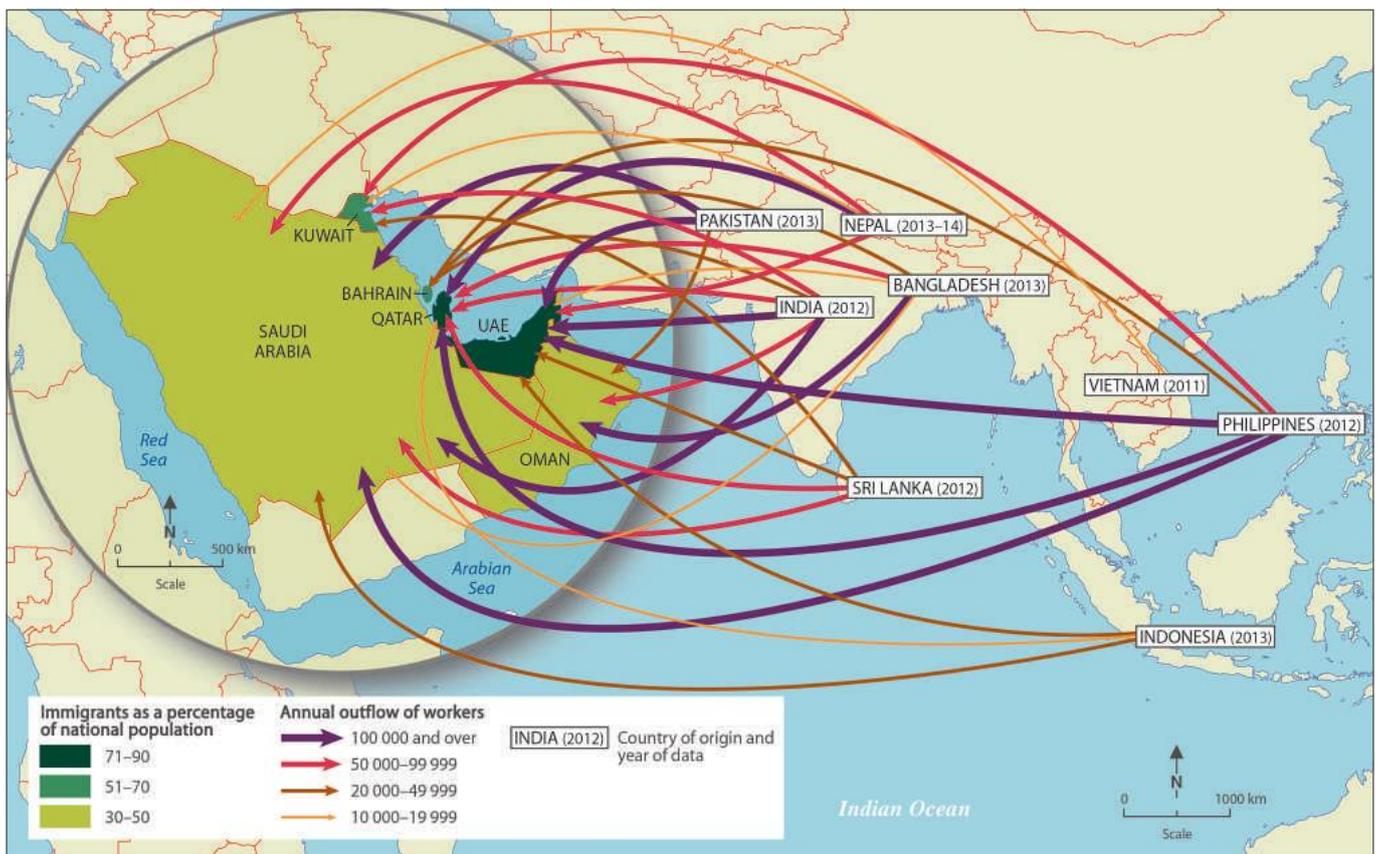
What happens to migrant workers in the host country?

Migrant workers in United Arab Emirates

The highest density of foreign nationals is found in the Gulf countries of United Arab Emirates (UAE), Qatar, Kuwait, Bahrain, Oman and Saudi Arabia. On average, more than 50 per cent of the population of each of these countries is made up of labour migrants, sometimes known as 'guest workers'. Workers are mainly employed in construction though, increasingly, guest workers are needed to meet shortages in management, law, education and health. In 2013, the majority of flows of annual labour workers to Gulf countries came from South Asia (figure 3.22). India has the largest annual flow and, overall, it is also the largest donor country with an estimated four million Indians working in the Gulf in 2013.

South Asian migrant workers who work in the United Arab Emirates (figure 3.23) arrive on visas that are tied to individual employees. Reports that the employers have removed workers' passports so that they have no authority to leave are common. The pay and living conditions are usually poor for unskilled workers because UAE have few laws to protect the basic rights of the migrant workers. The UAE's sponsorship system gives employers nearly total control over the workers' employment. Employers can have a worker's visa revoked, leading to deportation. The Human Rights Watch has investigated reports of abuse and

▼ **Figure 3.22** Labour migrants to the Gulf countries



exploitation of workers. At worst they described situations of forced labour, in which workers' wages were inadequate and their accommodation sub-standard. Men who went on strike about their low pay and conditions were deported. Unions are banned and summer working conditions are arduous. During summer months in July and August, average maximum temperatures reach above 40 °C.

Benefits and disadvantages of labour migrants

Migration can be beneficial for migrants, though sometimes they can be exploited. Both the donor countries and the host countries gain economic benefits from labour migration but overall the score card is complex.

Host country

International migration benefits more developed countries, as it boosts supply of low-cost labour. Services can be maintained through filling job vacancies. The use of cheaper immigrant labour can reduce the costs in industries including agriculture, manufacturing, construction, restaurants and child care so that economic growth can be sustained.

Migrant workers can face language difficulties. They place pressure on housing and services. When the immigrant population has limited skills or education, they can be trapped in unskilled jobs with no prospects to develop their career. Locals may fear losing their jobs to incoming workers. Yet the host country benefits, as migrants contribute to economic growth by spending money on food and services.

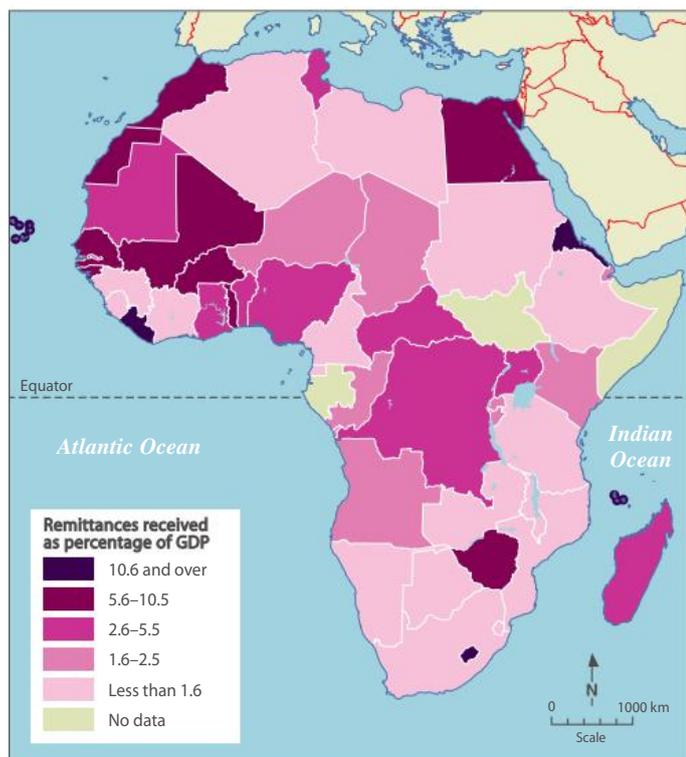
Labour workers often come not intending to stay, but find that long-term settlement is an attractive option. For example, large-scale migration of workers from Turkey to Germany occurred in the 1960s and 1970s. They worked in many occupations including the German car industry. In Germany, there are 1.55 million people who hold Turkish citizenship, thus forming the largest group of non-citizens in Germany. Though Turks are now the largest ethnic minority in Germany, with a significant community of second- and third-generation Turks, it has been difficult for them to obtain German citizenship. This *changed* in 2000 when a new citizenship law took effect. Children born to foreigners in Germany now receive German citizenship, if one parent has been a legal resident for at least eight years. Even with these legal measures, some racial or ethnic tensions still remain.

Donor country

Many labour migrants come to the host country to better support their families at home, and hope to return home in the future. Their earnings (known as remittances) are sent back to families and provide an important source of funds (figure 3.24). The World Bank estimated that remittance flows to developing countries totalled \$436 billion in 2014. Worldwide, remittance flows, including those to high-income countries, were an estimated \$583 billion in 2014. In developing countries, remittances from international



▲ **Figure 3.23** Migrant workers wait at a bus stop in Dubai, United Arab Emirates.



▲ **Figure 3.24** Remittances received in African countries as a percentage of GDP, 2013

migrants are far greater than the funds sent to poor countries from foreign aid. In this way, the donor *region* benefits from the money. The hundreds of millions of dollars sent back each year have a dramatic effect on rural communities enabling them to purchase food and other goods, and invest in improvements in their farming activities. Remittances reduce poverty though it is not always the poorest in the community who have a family member who sends money home. Returning migrants bring savings, skills and international contacts.

However, families are separated, and when children are left behind with extended family they grow up without everyday contact with their parent. There is also a loss of young and able working people and those most likely to have education and skills.

► **ACTIVITIES**

1. What is labour migration?
2. Explain the term remittance using your own words.
3. Examine figure 3.22.
 - Rank the donor countries according to size.
 - Which three Gulf countries have the highest proportion of migrants?
4. Construct a table that shows the benefits and disadvantages of labour migration.
 - a. For the *place* losing people:

BENEFITS	DISADVANTAGES

- b. For the *place* gaining people:

BENEFITS	DISADVANTAGES

5. Examine figure 3.24. Which African countries have the highest remittances as a percentage of GDP?
6. Examine the interactive map Snapshot: Global Migration at http://www.nytimes.com/ref/world/20070622_CAPEVERDE_GRAPHIC.html
Click on the 'Money sent home as a share of GDP' tab and explore the content.
Choose one country that has a high proportion of remittances and investigate which countries host these nationals.
7.
 - a. Outline the advantages and disadvantages for the seasonal workers represented in the photo.
 - b. Investigate and describe how important seasonal workers are to some Australian businesses.



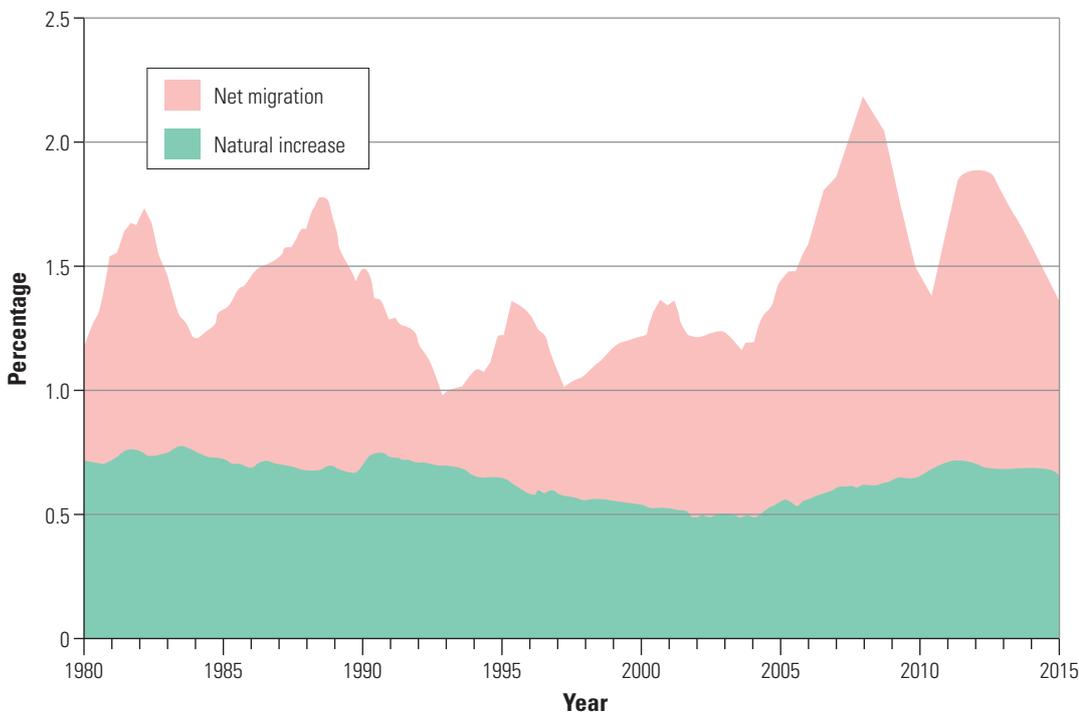
Seasonal workers in the cotton fields on the Harran plain near Syria border of Turkey work in very difficult conditions.

Snapshot of Australia's migration patterns

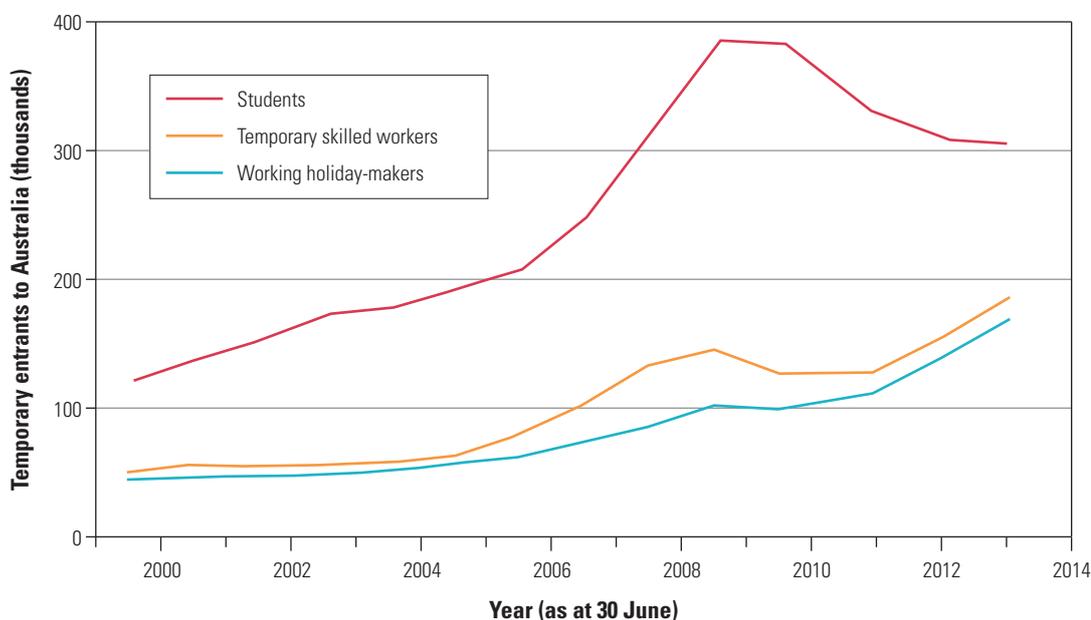
Australia is a significant destination of migrants from all over the globe. It has become a culturally diverse country with more than 180 non-indigenous languages spoken. Australia has one of the highest population growth rates in the developed world which is largely driven by net migration (figure 3.25). Australia's annual population growth was between 1.0 and 1.7 per cent from 1980 to 2005 and peaked at over 2 per cent in 2008. This rise in net migration between 2004 and 2008 was mainly a result of an increase in the number of overseas students and a higher intake of permanent and temporary skilled migrants (figure 3.26). A skilled migrant is a migrant worker who, because of his or her skills, is granted preferential treatment regarding admission to a host country. Overall the largest component of international migrants comes from the skilled migrant scheme. The next largest category of international migration is the family reunion program in which family members are given permission to join family who have migrated.

Where do Australia's migrants originate?

Australia's first peoples are estimated to have arrived over 50 000 years ago. The first European migrants arrived in the seventeenth and eighteenth centuries. Australia's significant post-war migration program began at the end of World War II in 1945. The government encouraged migration — including settling displaced people from war-torn Europe in Australia. Australia accepts migrants from every country in the world. More than one in four of Australia's 24 million people were born overseas according to figures released in 2015 by the Australian Bureau of Statistics (ABS). The United Kingdom and New Zealand have been major source countries for settlers to Australia (figure 3.27, page 60). The number of settlers from China and India has increased significantly since 2005. In contrast, the proportion of the population born in the United Kingdom has fallen in the same period (figure 3.28, page 60).



◀ **Figure 3.25**
Contributions to population growth for Australia, 1980–2015

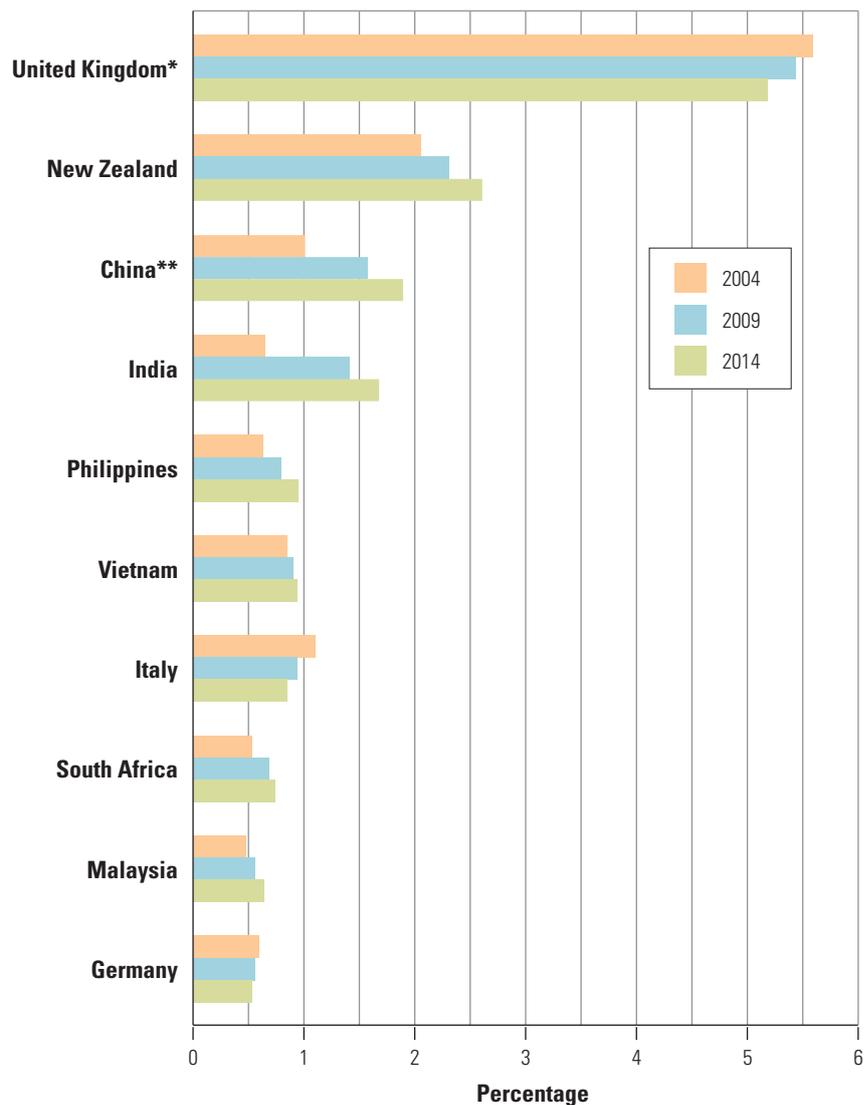


◀ **Figure 3.26**
Temporary entrants in Australia, 1999–2013

▼ **Figure 3.27** Top 10 countries of birth in Australia, selected characteristics, 30 June 2014

Country of birth	PERSONS		MEDIAN AGE	SEX RATIO
	Number	Percentage of Australian population	Years	Males per 100 females
United Kingdom	1 221 300	5.2	54.4	104.6
New Zealand	617 000	2.6	39.7	105.2
China	447 400	1.9	35.5	81.9
India	397 200	1.7	33.2	119.7
Philippines	225 100	1.0	39.5	63.7
Vietnam	223 200	1.0	44.5	85.0
Italy	201 800	0.9	68.8	108.5
South Africa	176 300	0.8	40.9	99.8
Malaysia	153 900	0.7	38.6	88.3
Germany	129 000	0.5	62.9	92.4

▼ **Figure 3.28** Country of birth, proportion of Australia's population



*Includes Channel Islands and Isle of Man

** Excludes Taiwan and Special Administrative Regions: Hong Kong, Macau

Where do migrants settle in Australia?

The net overseas migration (NOM) component of population growth is the key component of population growth for Australia (figure 3.29). The larger capital cities have the highest growth rates in Australia, particularly Perth, Darwin, Brisbane, the Gold Coast, Melbourne and Canberra.

▼ **Figure 3.29** Net overseas migration to Australian states and territories, selected characteristics, 2013–14

STATE OR TERRITORY	NET OVERSEAS MIGRATION (NOM)		NOM ARRIVALS		NOM DEPARTURES	
			OVERSEAS ARRIVALS	MEDIAN AGE	OVERSEAS DEPARTURES	MEDIAN AGE
	Number	Percentage	Number	Years	Number	Years
New South Wales	73 300	34.5	166 227	27.2	92 927	29.1
Victoria	59 358	27.9	124 867	26.1	65 509	28.2
Queensland	30 270	14.2	87 253	26.2	56 983	28.3
South Australia	11 166	5.2	23 424	26.2	12 258	27.7
Western Australia	32 270	15.2	71 096	27.2	38 826	28.9
Tasmania	1 322	0.6	3 809	26.9	2 487	28.6
Northern Territory	2 983	1.4	7 598	27.8	4 615	29.4
ACT	2 017	0.9	8 148	27.4	6 131	28.6
Australia	212 686	100.0	492 422	26.7	279 736	28.6

▶ ACTIVITIES

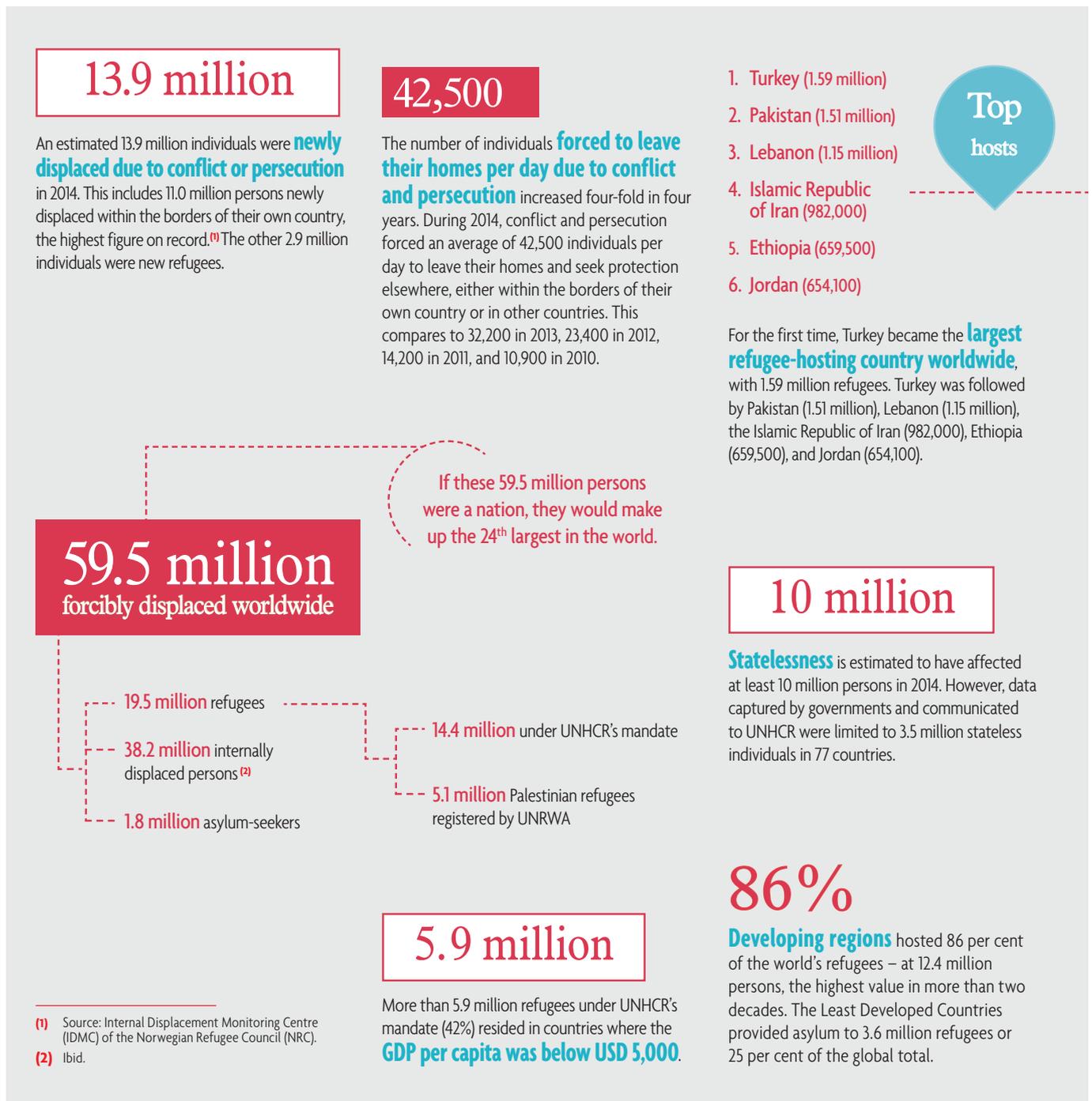
- Examine this online chart: qz.com/192440/where-everyone-in-the-world-is-migrating-in-one-gorgeous-chart
 - What country is the most significant source of migrants (donors) for Australia?
 - Describe the three most significant flows.
 - Note one flow that surprised you, and compare this with others in your class.
- Refer to figure 3.25. Describe the contributions to population growth over the period.
- Refer to figure 3.26. What is the most significant class of temporary entrants in Australia?
- Refer to figures 3.27 and 3.28.
 - Describe the proportion of country of birth for Australia
 - Which countries have the highest growth from 2004 to 2014?
- Refer to figure 3.29. Are the following statements true or false?
 - Victoria has the highest NOM.
 - The median age of overseas arrivals is 30.
 - Some states or territories have more people departing than arriving.
 - Overall, 212 686 migrants arrived in Australia in 2013–14.
 - Overall, 492 422 migrants arrived in Australia in 2013–14.
- Investigate the *changes* in Australia–New Zealand migration flows in 2015–16. Why does New Zealand Prime Minister John Key find this notable?

What are refugees, their *distributions* and responses to the state of affairs?

Refugees are forcibly displaced people. In 2014, there were more than 51.2 million forcibly displaced people worldwide, and half were under 18 years old according to the United Nations. Eighty per cent of the world's refugees are in less developed countries which have fewer resources to manage the problem. Included in the broader definition of forcibly displaced people are refugees, asylum seekers and Internally Displaced Persons (IDPs). Internally displaced persons are those who have been forced to leave their homes as a result of armed conflict or disaster and have not crossed an international border (figure 3.30). In 2014, the highest numbers of refugees came from Syria (figures 3.31 and 3.32), Palestine and Afghanistan. In 2015, Turkey was the country housing the most refugees of any country, 1.7 million Syrians (figure 3.31).

The Office of the United Nations High Commissioner for Refugees (UNHCR) states that 'the terms asylum seeker and refugee are often confused: an asylum seeker is someone who says he or she is a refugee, but whose claim has not yet been definitively evaluated. On average, about one million people seek asylum on an individual basis every year. In mid 2014, there were more than 1.2 million asylum-seekers.' <http://www.unhcr.org/pages/49c3646c137.html>

▼ **Figure 3.30** UNHCR global trends, 2013





▲ **Figure 3.31** A Syrian boy receiving food in a refugee camp on the Turkish–Syrian border

Reasons for refugees

People become refugees for a number of reasons:

- ▶ They flee persecution for their political or religious beliefs, ethnicity, nationality or membership of a particular social group
- ▶ They leave as a result of war
- ▶ They leave because of a natural disaster, though this may be because of human-induced climate *change*.

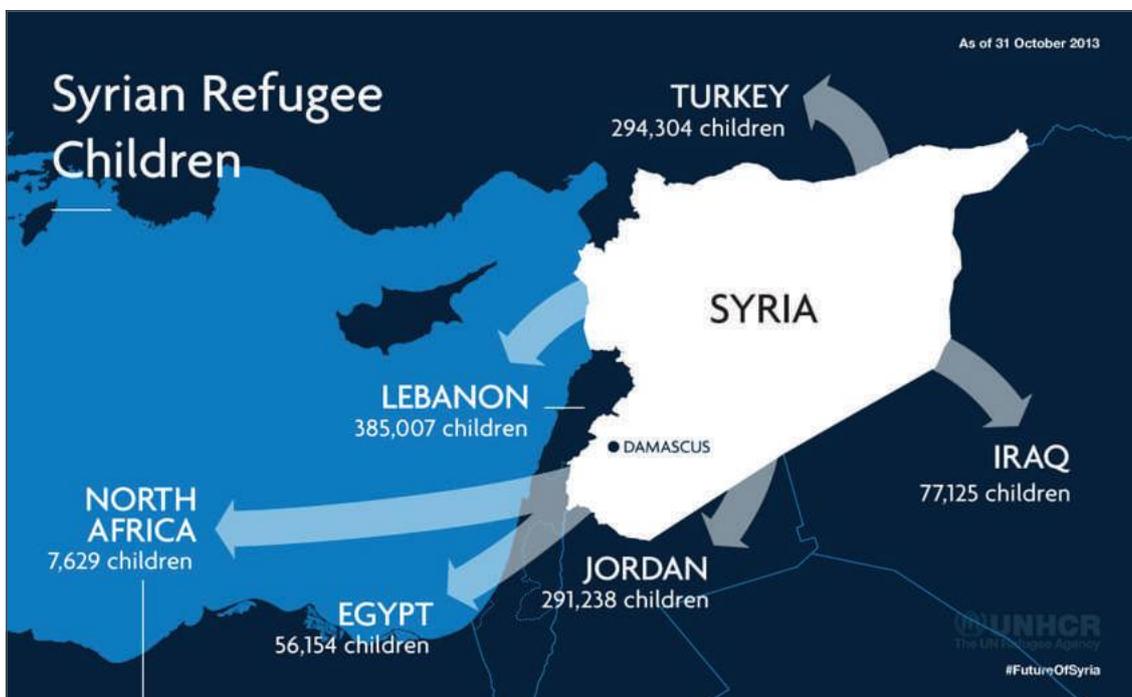
General responses to refugees are:

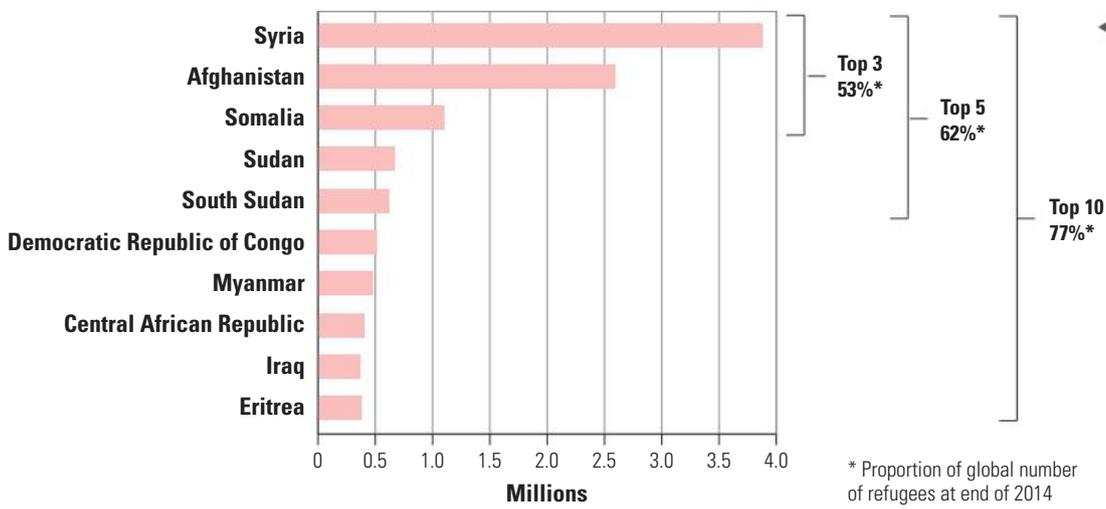
- ▶ Refugee warehousing. Many refugees are exiled in refugee camps in which they survive but their life opportunities are wasted. It is not a long-term solution. Millions live in refugee camps, in sub-standard

conditions, with little chance of building their skills or access to educational opportunities. Many people exist in camps for five, ten or more years

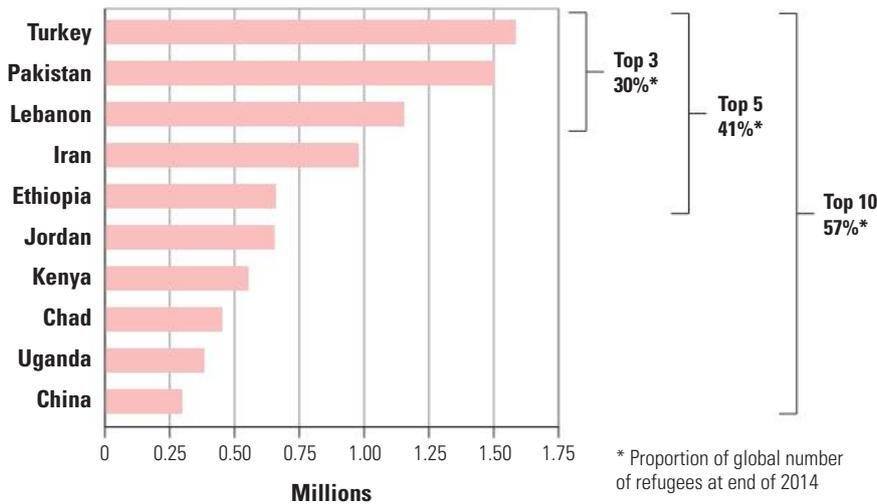
- ▶ Repatriation (return) to the country of origin once the situation is safer. Refugee repatriation is at a 15-year low. During 2013, some 414 000 refugees returned to their various countries of origin. While that may sound like a lot, it's actually only one-third of the average annual return rate of the first decade of the twenty-first century
- ▶ Resettlement into the country to which they have fled, or to a third country. In 2013, less than one per cent of the 10.5 million refugees registered with UNHCR were resettled (figure 3.35, page 65).

▼ **Figure 3.32** The Syrian refugee crisis has significant impacts on the lives of children, many of whom are without one or both parents, without passports and without access to education. Children fear for their safety and suffer from violence and dislocation.





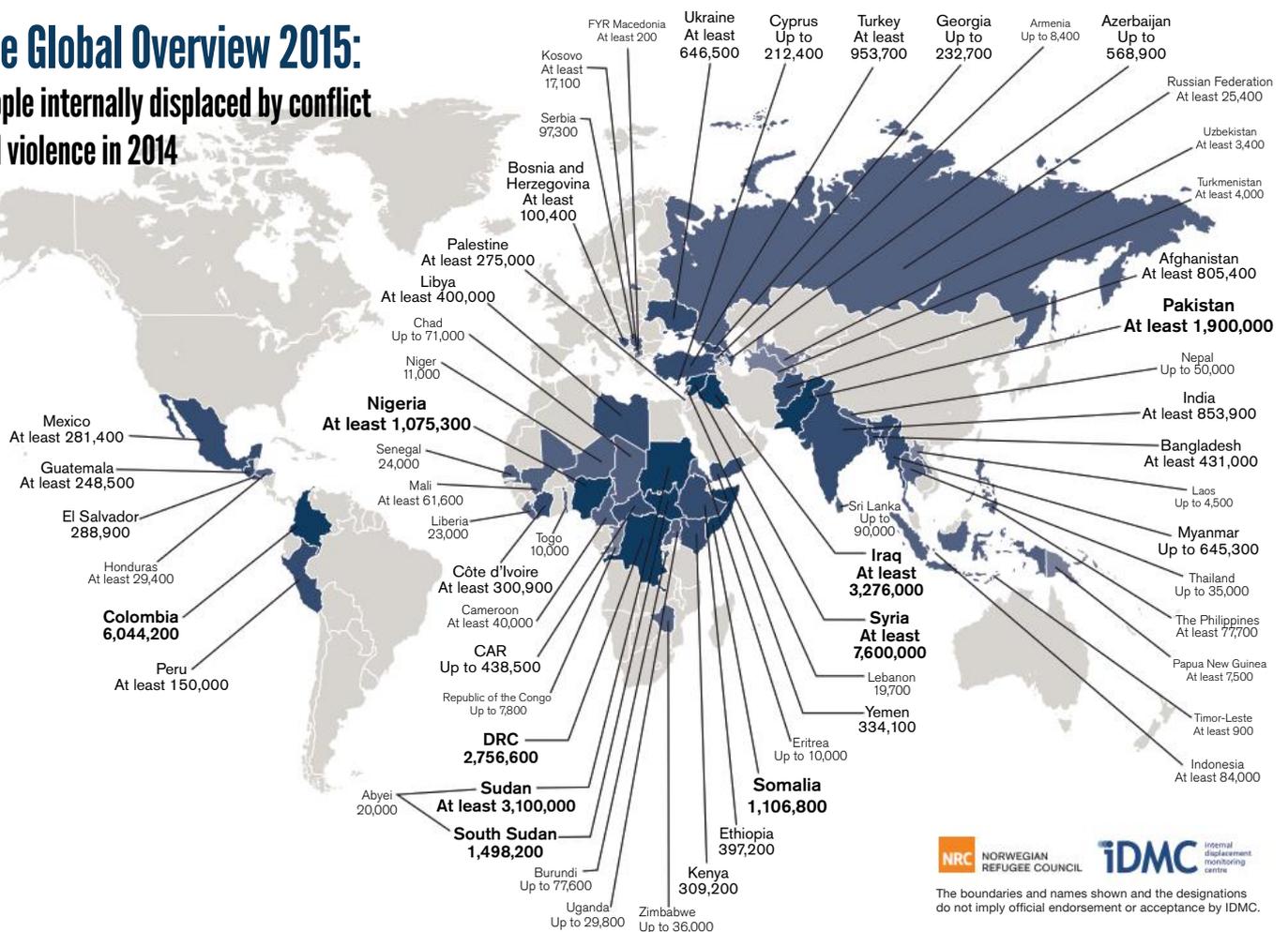
◀ **Figure 3.33**
Major source countries of refugees, end 2014



◀ **Figure 3.34**
Major refugee-hosting countries, end 2014

▼ **Figure 3.36**
Distribution of people internally displaced by conflict and violence.

The Global Overview 2015: People internally displaced by conflict and violence in 2014



▼ **Figure 3.35** Resettlement to a third country, 2013

COUNTRY	RESETTLEMENTS
United States	59 548
Australia	10 691
Canada	9 160
Germany	4 775
Sweden	2 456
Norway	1 202
Netherlands	1 029
Finland	929
New Zealand	894
United Kingdom	710
All others	1 832
Total	93 226

Source: UNHCR

▶ ACTIVITY

1. Analyse the data depicted in the figures in this section (pages 62–65) to outline the world *distribution* and magnitude of forcibly displaced people. Select one location to investigate and evaluate the immediate and longer-term responses to this issue by national and global organisations.

Locations that you might select include Syria, Afghanistan, Azerbaijan, Bosnia and Herzegovina, Burkina Faso, Central African Republic, Columbia, Democratic Republic of Congo, Ethiopia, Guatemala, Iraq, Libya, Mali, Myanmar, Pakistan, Philippines, Somalia, Sri Lanka, Sudan and Yemen (figure 3.36).

Vieli Choka Settlement Case Worker, Whittlesea Community Connections

My job involves settling refugees and migrants in the City of Whittlesea. I assist my clients with locating housing, furniture and material goods plus schooling for children, language courses and other programs that help transition new arrivals into their new homes. Most of my clients have suffered trauma and experienced conflict in their homeland. My role is to help them.

I grew up in Ghana in the border region of Burkina Faso. My father worked in Ghana but has family in Burkina Faso. Burkina Faso had been a French colony, with a different culture and economic base to Ghana, which had been colonised by the British. My brothers and sisters and I regularly moved backwards and forwards across the border and became accustomed from an early age to appreciating cultural differences. This provided a framework for my later career as a case worker for refugees.

I studied Geography at school and have always loved it. Geography isn't so much a subject; it is more a way of thinking. My first job was as a Human Rights Advocate with the commission for Human Rights and Administrative Justice in Ghana. This job involved working with villages in the northern parts of Ghana in the West African region. Our aim was to break

down the social barriers that discourage girls from attending school. Later I worked with Liberian refugees in camps. This was to be my first introduction to work with refugees. Growing up and working in Africa, I was exposed to a number of different cultures and I was very aware of poverty and social disadvantage. I moved to Australia with my beautiful wife and lived in Canberra, where I was blessed with two beautiful kids, a boy and a girl.

I studied community development and worked with Companion House, assisting survivors from torture and trauma — mainly refugees — in Canberra, and met and worked alongside people from many other countries and cultures. Many of these people had studied Geography.

Geography encourages respect for different cultures and an understanding of the socio-political factors that might lead to migration, such as refugee movement. I have always been fascinated by different cultures and wanted to help people. If you want to work in a variety of places and with people from different cultures, particularly in refugee advocacy, studying Geography would be ideal.



CAREER PROFILE

4

Population trends and issues: growth in Bangladesh and Saudi Arabia

Nations can be classified as having either a growing population or an ageing population. Globally, the world has reached what is called 'peak child'. This means that no matter what the world population will reach in the future, there will be no more than two billion children under 15 years of age at any point. The reason is that 40 per cent of the world's population have fewer than two children per woman, thus compensating for the 18 per cent that have more than three children per women.

Bangladesh and Saudi Arabia are examples of growing populations, and will be discussed in this chapter. Each has differing factors contributing to this growth, and differing issues and concerns as a result. These nations have responded by using contrasting strategies to meet the needs of their population.

Changes in population characteristics occur due to certain factors and the impact they create. Factors are reasons for the *change in process* or the acceptance of a particular aspect of a phenomenon. They include social, historical, economic, environmental and political factors (known as SHEEP factors). Social factors include any reason attributed to and affecting people. Economic factors relate to the financial aspects of a country and political factors are those introduced and acted upon by governments at a range of *scales*, global to local. Environmental factors can be either natural or human related, such as droughts or urbanisation. Historical factors relate to decisions and occurrences in the past.



▲ **Figure 4.1** (a) Location of physical features of Bangladesh



▲ **Figure 4.1** (b) Location of Bangladesh and Saudi Arabia

Bangladesh



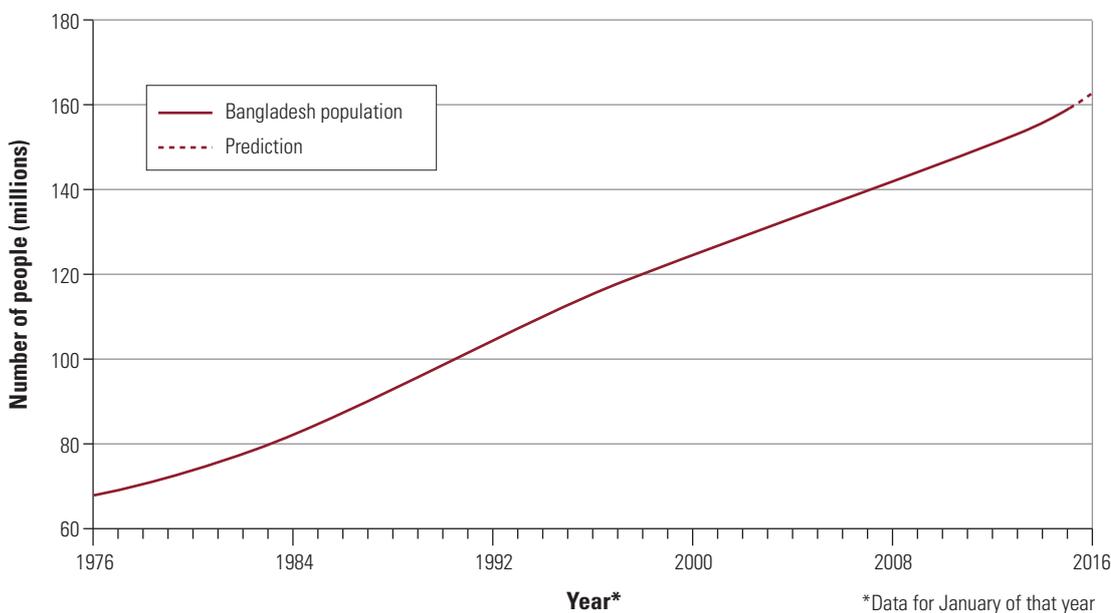
◀ **Figure 4.2**
Low-lying fertile areas
in Bangladesh

What are the main geographic characteristics of Bangladesh?

Bangladesh is a small country *located* between India and Burma in southern Asia (figure 4.1a and 4.1b). It has a small-*scale* land size of approximately 144 000 square kilometres (around half of the size of Victoria or 0.02 times the size of Australia); 90 per cent of this land has an average elevation of around 10 metres. Due to its *relative* location, Bangladesh is a vulnerable nation having to cope with many natural disasters, such as flooding and cyclones. During the monsoon season, excessive rain, high tides and coastal erosion of land pose huge problems for the large population who live on land that is prone to flooding. Approximately 10 000 square kilometres of Bangladesh will be covered in water, heavily affecting both people and the environment.

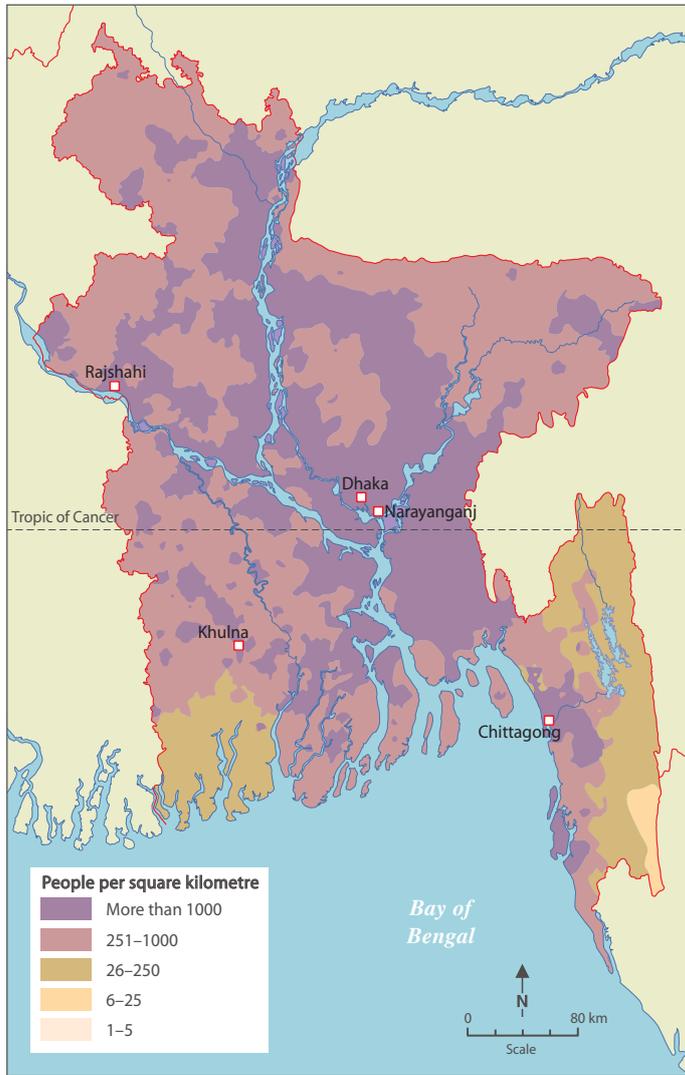
▶ ACTIVITIES

1. Describe the *relative location* of Dhaka, the capital of Bangladesh, from figure 4.1(a) and figure 4.1(b).
2. Describe the physical characteristics of Bangladesh as shown in figure 4.1(a).
3. What environmental issues may arise for the population from the location of the capital Dhaka?
4. Identify issues that may arise for those farmers located in the rural *region*, south of Barisal?
5. Refer to figure 4.1(a). What issues may arise for people living on the delta? Create a table with three columns, headed social, environmental and economic issues.
6. Describe how the physical features of Bangladesh may influence population density and *distribution* using figure 4.1(a) and figure 4.2.



◀ **Figure 4.3**
Population *changes*
in Bangladesh

▼ **Figure 4.4** The distribution of population density in Bangladesh



What are the population characteristics of Bangladesh?

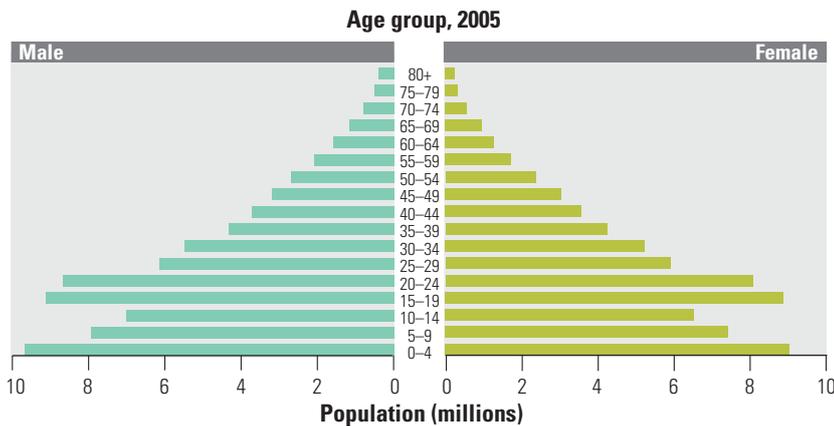
The population of Bangladesh is shown in figure 4.3 (page 67). In 2014, it was estimated to be approximately 166 000 million, making it the eighth most populous nation globally. It is estimated that by 2050 the population will be 260 million. This large-scale change in population over a relatively small time period will create many population issues.

In 2014, Bangladesh was the world's most densely populated nation — if city states such as Monaco are excluded. The population density of 1175 people per square kilometre in 2011 can be compared to Australia, which had a 2.91 person average. Spatial technologies, such as the GIS data used to produce figure 4.4, enable the government and its planning department to pinpoint regions of high density and high needs in terms of education, transport and health infrastructure in the future.

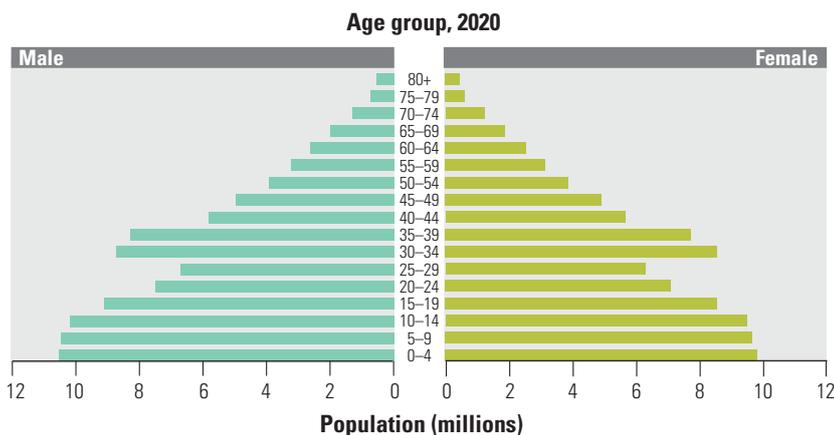
Bangladesh is currently ranked 140 out of 177 countries on the Human Development Index (HDI). The HDI is a tool developed by the United Nations to measure and rank a country's levels of social and economic development. It is based on four criteria: life expectancy at birth; mean years of schooling; expected years of schooling; and Gross National Income (GNI) per capita (person). Bangladesh is a country where demographic change is fast; however, with such a low HDI ranking, it needs to make significant progress in terms of managing its population, if the wellbeing of its citizens is to improve in the future.

Bangladesh's population is homogenous (i.e. with similar characteristics), being dominated by the indigenous Bengalis at 98 per cent. Overall, 89.5 per cent of the population is Muslim, with Hindus being the next largest group of 9.6 per cent. The nation is still very much an agrarian one with 80 per cent of the population living in rural areas. There is an increasing movement of rural dwellers to the major cities, mirroring a major global trend. The process of changing from an agrarian population to an urban one can result in many problems, such as the one in figure 4.10 (page 71), where city living is overcrowded.

▼ **Figure 4.5** Bangladesh population structure, 2005



▼ **Figure 4.6** Bangladesh population structure, 2020





▲ **Figure 4.7** Urban crowds in Bangladesh

What is the population structure of Bangladesh?

The population has increased 2.5 times since independence in 1971 and is expected to increase by as much as 160 000 monthly, or 1.6 per cent, in 2014. Figures 4.5 and figure 4.6 show a series of population pyramids and the population characteristics over a 15-year time span. The pyramids clearly show a growing population. This is characterised by a wide base and decreasing top, the classic pyramid shape. It is this shape which provides the momentum for an increase in population over time. As the wide base moves up into reproductive age, there will be a spike in number of births. In the 2005 pyramid, there is one anomaly to the classic shape — a large indentation shown in the 10–14 age cohort. This decrease in number of children relates to the devastating cyclone in 1991 that had a major impact on the population of Chittagong.

The total dependency ratio (a measure showing the number of dependents aged 0–14 and over 65) to the total working age population (aged 15–64) is 52.2 per cent whereas in Australia it is 51 per cent. The major difference is evident between the youth dependency of 44.9 per cent in Bangladesh compared to Australia of 28.9. The elderly ratio in Bangladesh is 7.3, as there are fewer older persons, compared to Australia where it is 22.1 per cent. As Australia is an ageing population the difference in ratios is greatest in the over-65 age group.



▲ **Figure 4.8** High population density in Bangladesh

ACTIVITIES

1. Identify which age cohorts have the largest and smallest percentage, as seen in figures 4.5 and 4.6.
2. Refer to figures 4.5 and 4.6.
 - a. Describe the *changes* that have occurred from 2005 to 2020 in each of the three major population groups: 0–14 years; 15–59 years; and over 60.
 - b. Identify which cohort you think has undergone the greatest *change* over the 15 years shown in these diagrams.
3. Based on the population pyramids and what you know about increasing populations, identify the characteristics of a growing population.
4. Based on the trends shown, sketch a possible pyramid for 2050 and explain why your pyramid looks as it does.
5. Do an internet search by using the key words of: population pyramids; world; 1950–2100. You can generate your own population pyramid of Bangladesh for any year you choose to research. Compare it to your own, and discuss the similarities and differences you find.
6. Refer to figure 4.4.
 - a. Describe the *distribution* of population densities of over 1000 people per square kilometre.
 - b. Suggest reasons to account for the *distribution* pattern you see.
7. What would be the main factor to account for the lower density *distribution* patterns shown around the coastline? See figure 4.1(a).
8. Describe the *spatial association* between elevation types as seen in figure 4.1(a) and population density as shown in figure 4.4.
9. In small groups, explore the issues associated with high population density in Bangladesh.
10. Refer to figures 4.7 and 4.8. Categorise all the possible issues related to a high population density in Bangladesh.
11. What evidence is there in figure 4.7 and figure 4.8 to indicate that Bangladesh is a developing country?
12. For each piece of evidence identified:
 - a. state whether it has a positive or negative effect on the population
 - b. recommend one method to help resolve this negative effect in the future.



CAREER PROFILE

Jane Bunn Meteorologist, Seven News, Melbourne

In my work as a meteorologist and presenter, I analyse new weather model data and compare them with observations (and a little bit of gut instinct) to determine what is the most likely weather scenario. I then plan the best way to communicate this information to the public.

I studied a Bachelor of Science, Mathematics and Atmospheric Science at Monash University and then a Graduate Diploma of Meteorology with the Bureau of Meteorology. I apply a range of geography skills and knowledge in my work. It can be something as simple as looking out the window to see the first cirrus clouds ahead of a cool wind change — to scrutinising arrows on all the different weather models to determine exactly when that change will arrive and the impact it might have.

I was inspired to study Geography because I was always interested in the world around me, particularly the weather. But after I went skiing for the first time, I was obsessed. I would spend hours finding out all the information about the next snowfall. Eventually my hobby turned into my career.

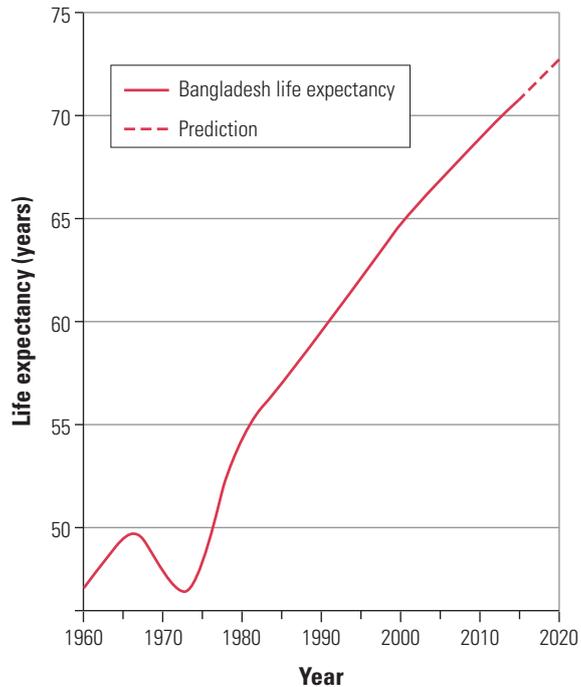
For geographers who have a keen interest in the weather, there are possibilities for careers in research, forecasting and the media. You could discover a new way to track the heat island effect of the city, and then tell everyone about it on the 6 PM news!

What is life expectancy in Bangladesh?

Figure 4.9 shows that in 2011 the average life expectancy was 69.89 years, compared to 66.24 years in 2002, while in 1972, it was only 41.79 years. In 2014, the figure had increased to 70.65 years but still ranks at a lowly 150 compared to other nations. This life expectancy is similar to the overall global average, which is 70.7 years, according to the United Nations World Population Prospects 2012 Revision. In 2014 in Bangladesh, males can expect to live to 68.48 years while women live to 72.31 years on average. This improving life expectancy is a result of improvements seen in both the crude birth and crude death rate in the country. The crude death rate in 1971 was 19.2 per 1000 people. It fell to 5.7 people in 2012 and is expected to keep falling to 8 per 1000 people in 2020. The crude birth rate was 47 per 1000 people in 1971. It fell to 20.3 in 2012 and is expected to be 18 per 1000 people in 2020.

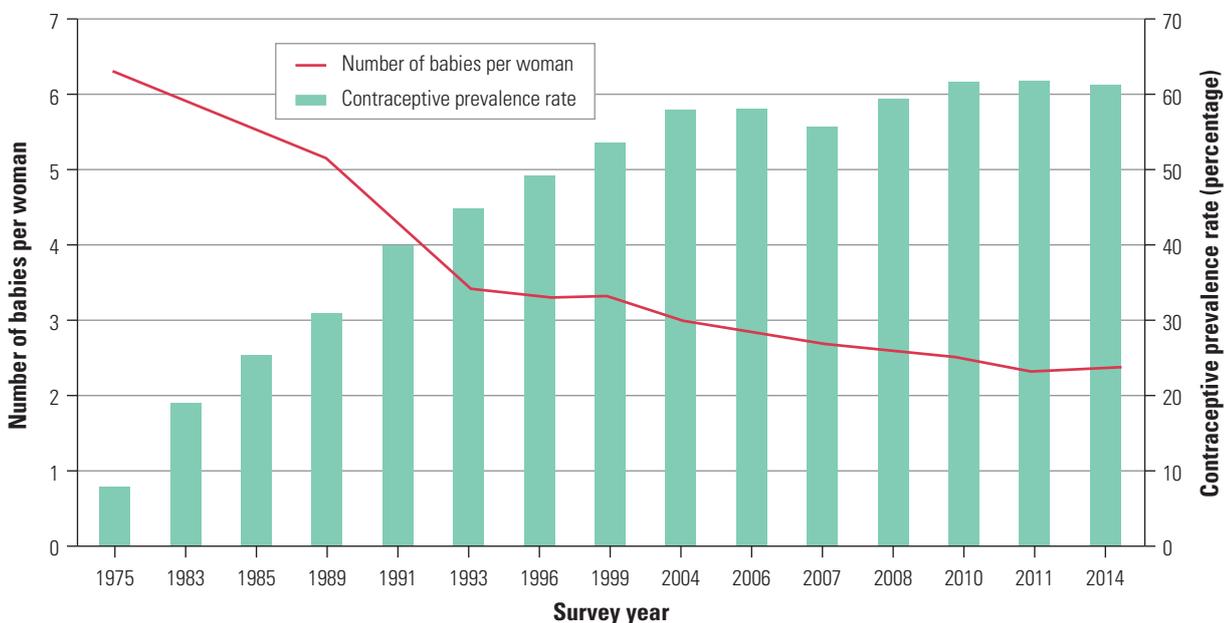
What are the past and future fertility rates in Bangladesh?

In 1971, the total fertility rate (TFR) in Bangladesh was high, at up to 6.5 to 7 babies per woman. This figure has decreased to a more *sustainable scale* at 2.45 children per woman, in 2014. In comparison, Australia in 2014 had a fertility rate of 1.77 babies per woman. In 2014, the global average fertility rate was 2.5 babies per woman; thus Bangladesh is similar to the global average. Based on a survey in England in 2013, administered by the global statistics body called Gapminder, over 80 per cent of respondents agreed that the fertility rate of Bangladesh was high with an average of 4.5 babies per woman. The respondents had been given four categories to choose from: 2.5, 3.5, 4.5 and 5.5 babies per woman. This point highlights the psychological *distance* that exists between developed and developing countries, and it is also perhaps an example of a lack of knowledge or familiarity with the global birth rate. Overall, a positive trend is shown in figure 4.10 with total fertility rates declining as the contraceptive rate increases.

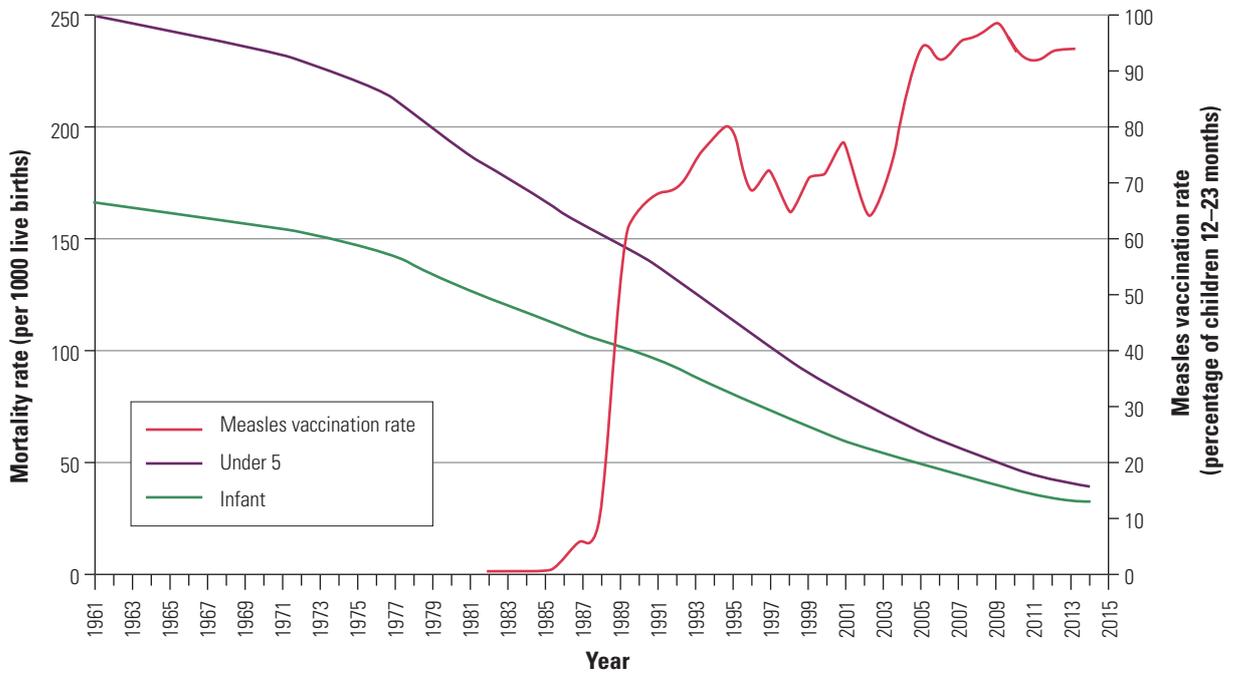


◀ **Figure 4.9**
Life expectancy in Bangladesh

▼ **Figure 4.10** Falling fertility rates in Bangladesh



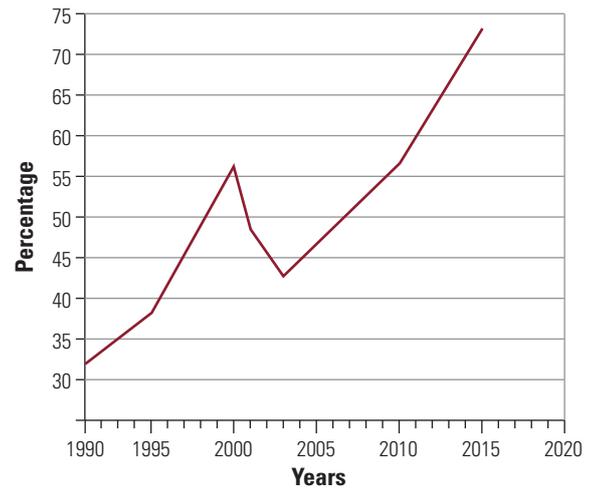
▼ **Figure 4.11** Child mortality rates in Bangladesh



What are the current trends in infant and child mortality rates in Bangladesh?

Infant and child mortality, shown in figure 4.11, shows a positive trend with the lowering of both rates over time, and a positive trend in the increase in vaccination rates overall. While fertility rates have declined, and the number of deaths of children under five is decreasing, it is still high by world standards. Bangladesh has an infant mortality rate of 45.67 deaths per 1000 live births compared to Australia, with 4.43 per 1000 live births. Bangladesh has an under-five mortality rate of 41 per 1000 live births compared to 4.90 per 1000 live births in Australia. Vaccinations for children are also on the increase, improving the quality of life and life expectancy for children overall. Rates have increased from a low of zero per cent of vaccinations to an estimated 94 per cent of the under-five age group for the measles vaccine. The *process* of achieving high vaccination rates has been successful and *change* has been accepted by the population.

▼ **Figure 4.12** Positive trend in education levels



▶ ACTIVITIES

- Refer to figure 4.10.
 - Describe the trend shown in the fertility line from 1975 to 2014.
 - Describe the trend shown in the use of contraceptives for the same time period.
 - Is the relationship between the two graphed lines positive or negative? Justify your answer.
 - Suggest reasons to account for this relationship.
- Construct an argument to explain how life expectancy can be improved over time.
- Based on the trend shown in figure 4.9, describe the future life expectancy in Bangladesh.
- Refer to figure 4.11.
 - Describe the trends as shown in this diagram. Use data in your answers.
 - What impact do you think that the measles vaccination has had on the child population over time?
 - Describe the relationship between two of the indicators as shown in figure 4.11.
- Figure 4.12 shows a positive trend in education. Comment on this trend in relation to the increase in vaccination levels.

Factors responsible for the changes in population growth

Change occurs in every population, at some point related to a particular indicator. It may relate to fertility rates, life expectancy rates or literacy rates for example; and the *change* experienced is a reflection of a particular society at a particular time. The *change* may highlight the progression of a society from a developing nation to a developed nation or it may show *change* as a reaction to a particular event, such as a disease, or an environmental disaster, such as a cyclone. The reasons for these *changes* can be broken into component parts known as factors.

What are the main factors responsible for *change* in Bangladesh?

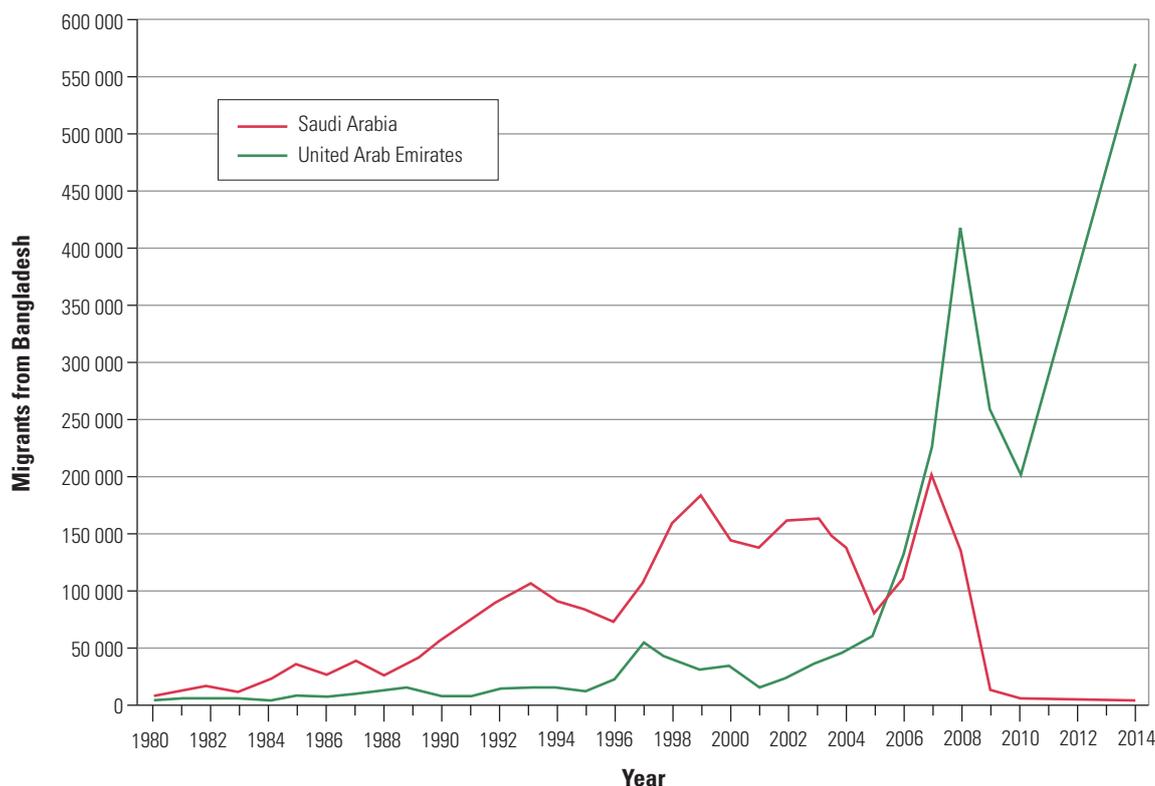
- ▶ social *change*, with females now staying at school longer
- ▶ social *change* with the marriage age under review (currently, the minimum legal marriage age for women is 18 years)
- ▶ more people moving from the rural *places* to urban *places*
- ▶ an uptake in the level of contraception use
- ▶ the overall status of woman has been improved. Women have fewer children, are now able to gain employment in the burgeoning textile industry and are becoming better educated, thus making choices for themselves
- ▶ political factors have also been instrumental in bringing positive *change* in Bangladesh. After independence, the government began to implement policies relating to fertility levels, education and health, and more recently to encourage foreign investment. Direct foreign investment (DFI) has doubled in the past four years



▲ **Figure 4.13** Loss of land due to flooding

- ▶ economic factors show that over time Bangladesh has been able to improve its income per person. In 1972, the average annual income per capita was a mere \$600 per person; but, by 2012–13, the per capita annual income had risen to US\$1044. It is planned that this figure will increase to \$2000 by 2021
- ▶ the Green Revolution provided new crops and improved techniques in agriculture: growing two crops per year boosts the income of the poorer rural worker
- ▶ basic social spending by the government has generally improved health and education services, benefitting the poorer rural workers. Non-Government Organisations, (NGOs) are working in the rural *regions* alongside the government to help improve these services
- ▶ large multinational companies have established factories nationally, employing many people. This *process* has led to an increase in the middle class with more money and more choices, and encouraged rural-to-urban *movement*.

▼ **Figure 4.14** Labour migration from Bangladesh, 1980–2014



What are the main issues relating to the population in Bangladesh?

In any given population, *change* and the *processes* involved in the *change* can give rise to a range of issues. An issue is an important topic or problem for debate or discussion, at a global, national, local or community level. Many of these issues will require a solution in the form of a policy with strategies at a government level in order for the population to benefit.

In Bangladesh there is a range of issues, many resulting from environmental pressures. One such environmental pressure is the low elevation of Bangladesh, as seen in figure 4.1(a) (page 66). With a high population density, 46 per cent of the Bangladeshi population live within 10 metres of sea level. This makes them vulnerable to storm surges, cyclones or flooding during the monsoon season, as shown in figure 4.13 (page 73).

The growth of the population in urban areas is twice as fast as in rural areas. This is due to both the migration of the rural population and the high birth rate. The growth of slums in cities has seen the following issues associated with *place*:

- ▶ no clean water or sanitation
- ▶ high levels of disease
- ▶ poor nutrition prevalent
- ▶ poor education attendance, with only 18 per cent of the eligible children attending school
- ▶ higher than average birth rates.

In rural areas, only 19 per cent of births have a skilled attendant compared to 45 per cent in urban areas. Adult literacy is lower in rural areas with only 48 per cent literate in rural areas compared to 66 per cent in urban areas.

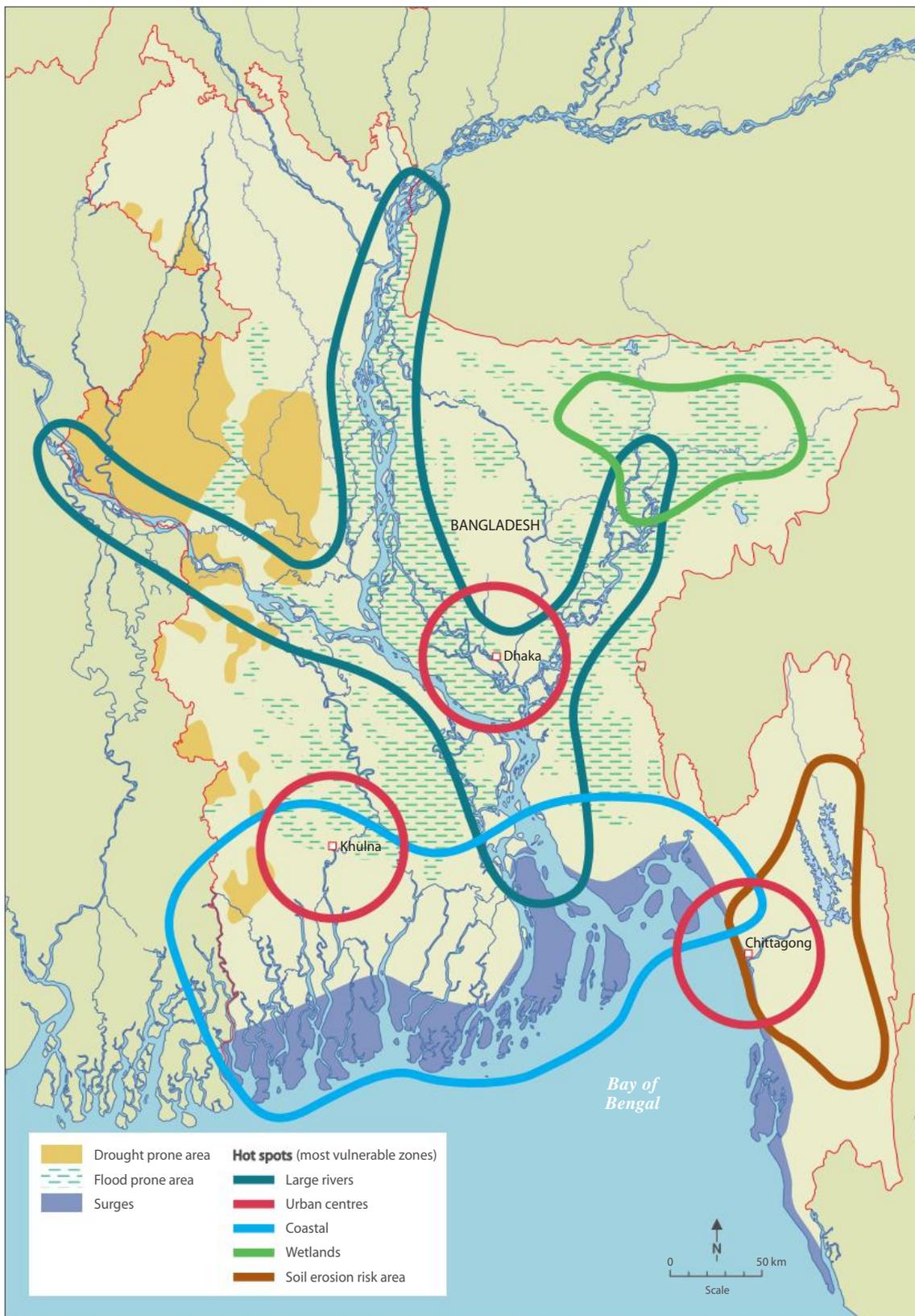
Figure 4.15 shows that Bangladesh is prone to the natural hazards of flooding, storm surges, erosion and drought. In 2010, it was estimated that more than one million hectares of land had been seriously affected by salinity, as a result of salt water inundation, reducing the long-term *sustainability* of the land. This phenomenon has resulted in many small-*scale* rice farmers selling their damaged farms to larger-*scale* shrimp farmers and *moving* to the larger cities in search of poorly paid jobs — thus increasing the slum populations. In 2004, approximately two-thirds of Bangladesh was flooded. Five million people were exposed to serious health hazards, one million homes were destroyed and three million were seriously damaged. Over 33 million people were affected in total. The overall damage bill was approximately seven billion dollars, placing great strain on the economy of Bangladesh.

It has been estimated by the government's 2009 Bangladesh Climate Change Strategy and Action Plan that over 20 million people may be displaced and become climate *change* refugees if sea and salinity levels continue to rise over the next 50 years. This ultimately puts pressure on the larger cities as the *movement* of people becomes more large *scale* as they search for poorly paid work resulting in a *change* in overall population *distribution*.

Social issues relating to malnutrition among children (which remains one of the highest in the world, with 48 per cent of children under five being underweight), poor drinking water supply, early and forced marriages, and illiteracy among women, have an impact on the population. The mortality rate of children under five years of age living in slums is nearly double the average urban rate and 50 per cent higher than the rural rate.

A growing trend in Bangladesh is the psychological *distance* at which poor, landless people view the opportunities overseas as a means of earning a wage. This psychological *distance* refers to the perception that some Bangladeshis have that life outside of their own country can be more beneficial in terms of earning an income, sufficient enough to provide well for their families. This has resulted in an estimated seven million Bangladeshis working overseas at any one time, as shown in figure 4.14, contributing greatly to their families, communities and the country's economy through money being sent home. This psychological *distance* is also true for the well-educated graduates with estimates indicating that over 5000 students travel overseas annually to study medicine, engineering and teaching. As a result up to 80 per cent of these do not return to work in their country, thus contributing to a 'brain drain' within the country.

The *movement* of people internally can be attributed to three main reasons. There is an economic push for around 55 per cent of people who move to urban areas to look for work; a further 27 per cent migrate due to environmental reasons such as river erosion and soil salinity, as shown in figure 4.15; and a further 10 per cent are known to migrate to reunite with family.



▲ **Figure 4.15** Vulnerability to hazards

▶ ACTIVITIES

1. Refer to figure 4.14.
 - a. Describe the labour trends shown for Saudi Arabia and U.A.E. Use data in your answer.
 - b. Suggest reasons why migration has occurred from Bangladesh to these countries.
 - c. Suggest one reason to account for the spike in 2008.
2. Describe the *spatial association* between flood-affected areas in figure 4.15 and the *distribution* of people in figure 4.4.
3. Describe the *spatial association* between surges and coastlines, as seen in figure 4.15.

What are the population strategies implemented in Bangladesh?

In 1973–78 the Bangladeshi government initiated the first Five Year Plan. This stated that no civilised measure would be too drastic to keep the population of Bangladesh on the smaller side of 150 million, a goal necessary for the sheer ecological viability of the nation. Lowering the fertility rate and implementing a national contraceptive service through a national family planning program were seen to be critical at national level. A motivation campaign to promote the benefits of the two-child norm was also launched. In 2014, this strategy was being implemented by the Family Planning Service. This grass roots service employs women in villages to go door-to-door to promote the benefits of having only two children. The women, who themselves are mothers, offer advice, give moral support and offer women a range of suitable contraceptives. Empowering women to make choices for themselves is seen as vital to this strategy succeeding. In the 40 years of implementing this strategy, there has been an overall reduction in fertility rate from 7 to 2.5. Figure 4.16, which shows an interactive infographic, highlights the benefits that a typical family enjoyed while participating in a specific population program, the Matlab Program. The Matlab Program found that families in communities where the program was implemented became wealthier and healthier than similar families who lived in other communities at the time the Matlab Program was begun.

Since the first Five Year Plan, there has been a succession of other Five Year Plans. Two major phases have been planned and initiated. Phase One was launched in 1997 with emphasis placed on:

- ▶ supporting the lowering of the fertility rate
- ▶ development of home visitation by trained professionals
- ▶ advice on contraceptive choice.



▲ Figure 4.16 Family planning in Bangladesh

Phase Two began in 1998 and is still continuing. Central to this phase is the drive to a client-centred program. Issues are identified to help individuals make appropriate *change*. The current population policy, formulated in October 2004, had a target of reaching replacement-level fertility of 2.1 by 2010, and to stabilise the population at 210 million around the year 2060. These goals can be reached only if the current level of education for girls increases, and the age at which girls have their first baby increases to greater than 18 years. To boost the achievability of this target the government has implemented the following initiatives:

- ▶ payment of fees by the government to keep girls at secondary level (girls now outnumber boys at this level)
- ▶ to teach at school about the advantages of smaller families
- ▶ to increase employment opportunities for women, particularly in the textile industry, by increasing available choices
- ▶ to reduce the incidence of child marriage. Child marriage has been common in Bangladesh but, in 2014, the Prime Minister set a goal to reduce by one third the number of girls marrying between 15 and 18 years of age. Bangladesh pledged to end all child marriage by 2041.

Women and Children First is an NGO that began working in Bangladesh in 2002 in partnership with the Diabetic Association of Bangladesh's Perinatal Care Project. Their aim was to reduce the maternal mortality rate and the newborn mortality rate in three specific districts. The strategies implemented included mobilising communities so that help was available to mothers; strengthening the local health systems; and disseminating information to promote safe motherhood and newborn care. Results of the program showed a 38 per cent reduction in newborn death rates and 27 per cent decrease in pregnancy-related deaths. Hygiene in the home also improved resulting in better newborn and child health practices being implemented.

Improved information and data collection, as shown in figure 4.4, has made management of issues at a national *scale* easier to predict and control. Effective planning for the future is possible by identifying problematic *regions* of environmental impact, high population density and future areas for development.

▶ ACTIVITIES

1. In small groups, discuss the issue of child marriage. Decide which social, economic and political factors have enabled this practice to continue over time.
2. How can Bangladesh bring about *change* to the acceptance of child marriage?
3. Develop strategies to facilitate the implementation of the policy to reduce child marriage by 2041.
4. What impact will these strategies have on *changing* the population structure in the future?
5. Evaluate the effectiveness of the current policy and its strategies in helping to reduce the overall fertility rate.
6. How successful do you think the interactive website such as the one depicted in figure 4.16 has been? Research the Matlab Program in detail.
7. What population strategy do you think has been the most effective and why?
8. Which groups of people may be resistant to *change* and why?
9. At which *scale*, local or national, do you think the policy *changes* have been more effective? Justify your choice.

Saudi Arabia

Saudi Arabia is a nation with a population that has tripled over the past 34 years. This places Saudi Arabia in the category of one of the fastest-growing populations in the world. It is ruled by a royal family and its rulings are based on the teachings of Islam. Workers from countries such as Bangladesh are allowed to come to Saudi Arabia for work purposes but tourism activities are very much controlled. Figure 4.32 (page 83) shows the major *movement* of workers to Saudi Arabia. Its *place* in the *region* of the Middle East is of great significance as it is the largest of the countries, as seen in figure 4.1(b) (page 67) and 4.17. Further, with 20 per cent of the global oil reserves it also has the largest *regional* economy.

What are the geographic characteristics of Saudi Arabia?

Saudi Arabia is the largest of the Middle Eastern countries *located* on the Arabian Peninsula *region*, with desert-like conditions covering 95 per cent of the land. Its land size is measured at 2 149 690 square kilometres, with a population density of approximately 12.77 people per square kilometre in 2010. There are no rivers in the nation, agriculture is restricted and most of the food is imported. Water for drinking is mostly generated using desalination plants or by utilising groundwater aquifers. The climate is harsh with average summer temperatures of 45 °C, but can reach inland 55 °C. These environmental factors restrict overall *distribution* of the population to areas which can access water from either underground or desalination plants.

What are the population characteristics of Saudi Arabia?

The population of Saudi Arabia was approximately 29 650 000 million in 2014. Figure 4.18 (page 78) shows the upward trend of population growth from 1960 to 2015. It has been estimated, though, that around 30 per cent of this total includes immigrant workers. Its Human Development Index (HDI) ranking is currently at 34 out of 177 nations measured by the United Nations. This indicates that Saudi Arabia has a better standard of living compared to Bangladesh with a ranking of 140, but is lower than Australia, currently ranked number two. The HDI is a ranking based on life expectancy at birth, mean years of schooling, expected years of schooling and gross national income per capita. Thus, Saudi Arabia is seen to be making good progress in relation to these indicators of development compared to Bangladesh, but further improvements can still be made.

The population consists mainly of Arab Saudi nationals, followed by foreign workers, with the remaining population Afro-Asian. Riyadh, which is the capital of the Kingdom of Saudi Arabia and also the largest city in the country, is home to about seven million people. This accounts for 24 per cent of the population of the entire country. Riyadh as a central *place* is of great national, archaeological and historical significance,



▲ **Figure 4.17** Location of Saudi Arabia

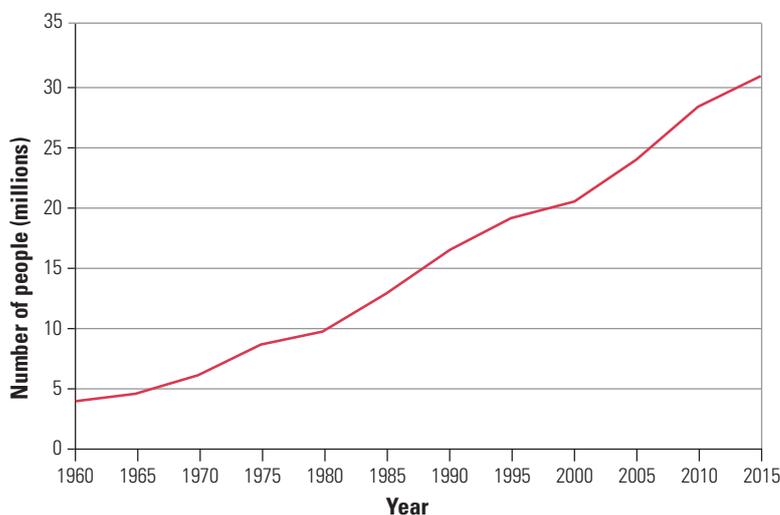
▶ ACTIVITIES

1. Describe the *location* of Saudi Arabia within the Middle East and in relation to Australia.
2. Describe the *relative location* of Riyadh, the capital of Saudi Arabia, as seen in figure 4.17.

and is *located* on sedimentary plateau 600 metres above sea level. It has a very dry climate with limited rainfall, but a reliable underground water supply makes it one of the few natural fertile areas in the kingdom outside the south-west, as seen in figure 4.23 (page 80).

The population has *changed* significantly over time. In 1950 a census was held within the country and the population was recorded at 3 121 000. By 2016, the population had reached 30 million and continues to increase. The government realised that the country was becoming *unsustainable* and has introduced *processes* to curb the population growth.

In 2015 the crude birth rate in Saudi Arabia was 19.01 births per 1000 people, and the total fertility rate was 2.26 children born per woman. The number of births per year has been increasing over the past years. Figures for 2015 indicate 569 000 births per year and 98 000 deaths per year.



◀ **Figure 4.18**
Population growth
of Saudi Arabia

▶ ACTIVITIES

- Outline the growth of population in Saudi Arabia from 1960 to 2015 using figure 4.18.
- Suggest two social factors to account for the increase in the population.
- Identify which age cohorts have the largest and smallest percentage in figure 4.19 and figure 4.20 respectively.
- Refer to figures 4.19 and 4.20. Describe the *changes* that have occurred from 2003 to 2014 in each of the three major population groups: 0–14 years; 15–59 years; and over 60.
- Based on the population pyramids and your knowledge of growing populations, identify the characteristics of a growing population.
- Identify which cohort you think has undergone the greatest *change* over the 11 years from 2003 to 2014, as shown in figures 4.19 and 4.20. Suggest reasons to account for this *change*.
- Identify the difference observed between male and female numbers in the 20-to-40 age bracket shown in figure 4.19.
- Sketch a possible pyramid for 2050 and justify your *changes*.
- Do an internet search by using these key words: population, pyramids, and world, 1950–2100. You can generate your own population pyramid of Saudi Arabia for any year you may want to study. Compare it to the pyramid you drew, and discuss the similarities and differences you find.

What is the population structure of Saudi Arabia?

Any population can be divided into age cohorts and further broken into male and female sections. This can be shown on a population pyramid such as shown in figures 4.19 and 4.20. Any major *change* that occurs in a population is reflected in the pyramid. The influx of migrant workers is one such *change* seen in Saudi Arabia.

Is tradition in jeopardy?

The traditional lifestyle of the Bedouin Arabs is chosen by more than 700 000 Saudi Arabians. Tradition dictates that the lifestyle of their ancestors is important and one that promotes the *sustainability* of the land. Bedouins move around the land with their herds following the pastures, living in tents (as seen in figure 4.21) and living off the land as much as possible. Many of these families may own houses in towns but prefer to live the life of a nomad. Over time, there has been large-scale *movement* of people to settle more permanently in the urban *regions*. Urbanisation of the population is around 82 per cent and this figure is increasing by 2.38 per cent annually. Overall, the population is small in comparison to land size with the population density at 12.77 per square kilometre.

The dependency ratio (DR) in Saudi Arabia is currently decreasing for children but is expected to rise as the number of older people increases. In 1950, the DR was 92 per cent but by 2010 it was 51 per cent.

It is expected to decrease to 35 per cent by 2035. After this time it will increase to 52 per cent, to cater for old-age dependency by 2050. This *movement* in the DR will place pressure on the economy of the country and a strain on the infrastructure needed to cater for older citizens. This economic factor is one which the government may need to rectify as oil production and revenue is expected to reduce output, yet Saudi Arabia is heavily reliant on this resource for its income.

Life expectancy in Saudi Arabia is increasing and can be seen to have had rapid growth in this demographic indicator.

Average life expectancy in Saudi Arabia has increased as elsewhere in the world. It has *changed* from a low of 39.9 years average in 1950–55 to around 76 in 2014, with an expectation that it will rise to 79.4 by 2045. This trend is shown in figure 4.24 (page 80) and can be divided into two main phases. The first phase, from 1955 to 1983, shows a rapid *change*, while the rate of *change* slowed after 1983 and continues to slow in 2014. Both the crude death and birth rates help explain why life expectancy has improved over time. In 2000, the crude death rate was 6.02 per 1000 people. It dropped to 3.32 in the year 2012 and is expected to fall further to three per 1000 people in 2020. The crude birth rate was 37.47 in the year 2000, dropping to 19.19 in the year 2012. It will continue to fall to reach 11 per 1000 in 2020.

What are current population trends in Saudi Arabia?

Overall, there has been a remarkable *change* in total fertility rates (TFR) in Saudi Arabia. Figure 4.25 (page 81) shows the TFR has reduced from 7.2 babies per woman in 1980 to 3.03 children in 2005; by 2030, it will be around 2.10 babies per woman. This positive trend shows a strong correlation to lowering child mortality rates from 77 deaths per 1000 live births in 1985 to 15 deaths per 1000 in 2010, and it is projected to continue decreasing to four deaths per 1000 by 2050.

Health experts in Saudi Arabia, in 2015, offered these reasons for the decreasing fertility rate:

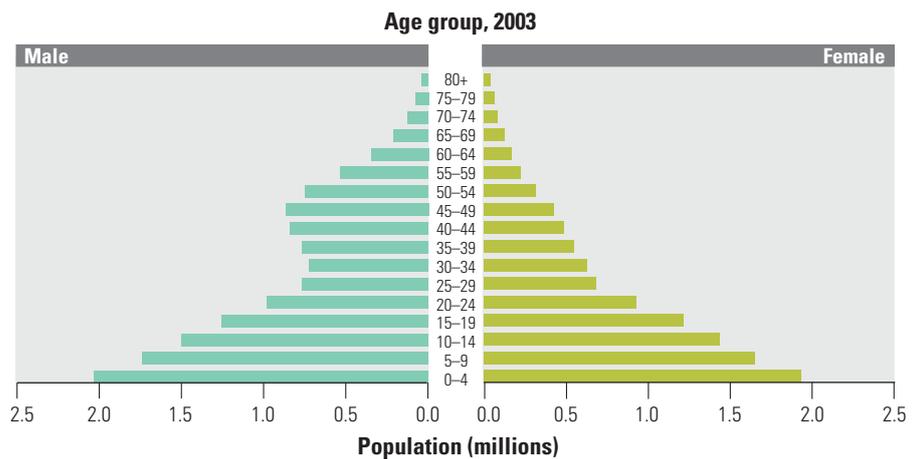
- ▶ lifestyle obesity
- ▶ suffering from diabetes and having high blood pressure
- ▶ lifestyle factors such as eating unhealthily and smoking
- ▶ female choice
- ▶ living in an 'unsuitable environment' due to poverty
- ▶ rising education levels.

As life expectancy has increased there has been a decrease in the death rate, as shown in figure 4.26 (page 81). In 1960 the death rate was at a high of 21 deaths per 1000 head of population. In 2011 this rate had dropped to 4 per 1000 and in 2014 to 3.24.

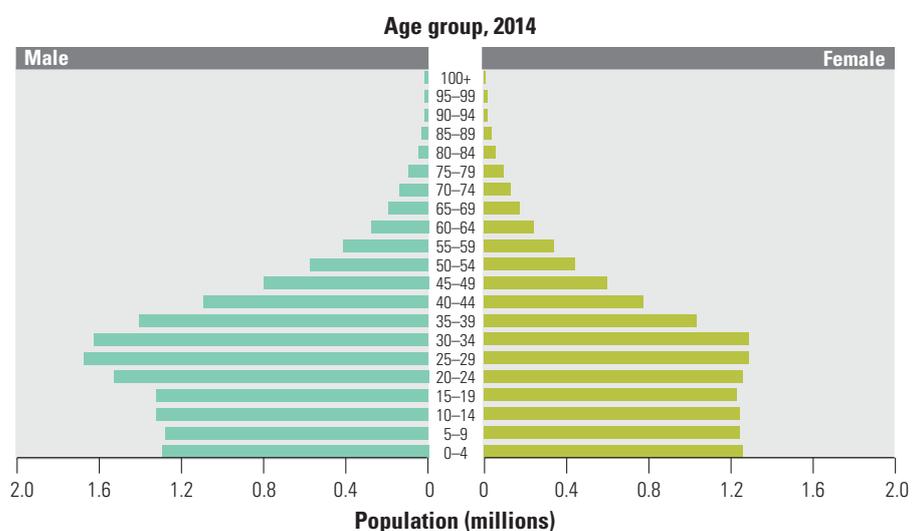
The United Nations Development Program (UNDP) implemented the Integrated Health Care Program which related to Millennium Goal 4 (the UN set eight specific goals to be met by 2015, which were co-signed by 189 governments). This program provides continuous follow-up for children until the age of five, using the health record system which covers registration of all health visits and follow-up stages during the natal and post-natal stage. Activities to control childhood diseases by promoting increased vaccination levels are being used with great success. The rate of vaccination for children under five has risen to around 98 per cent. Health services within Saudi Arabia have also improved greatly in primary care in all population centres, with greater efficiencies introduced. Posters have aided in spreading the health care message, as shown in figure 4.27 (page 81).

The literacy rate in Saudi Arabia is also improving, with greater emphasis placed on education for women. Approximately 94 per cent of the population is literate, with the male population at around 97 per cent and the female population at around 91 per cent. With improvement in the female literacy rate over time, women may feel empowered to make more independent and informative choices in terms of taking advantage of career opportunities or number of children they choose to have.

▼ **Figure 4.19** Population pyramid for Saudi Arabia, 2003



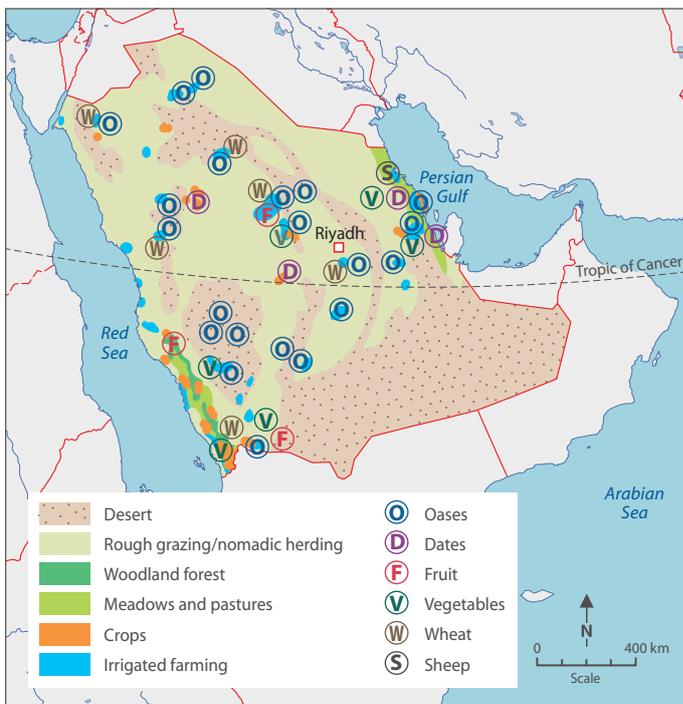
▼ **Figure 4.20** Population pyramid for Saudi Arabia, 2014



▲ **Figure 4.21** Traditional Bedouin Arabs

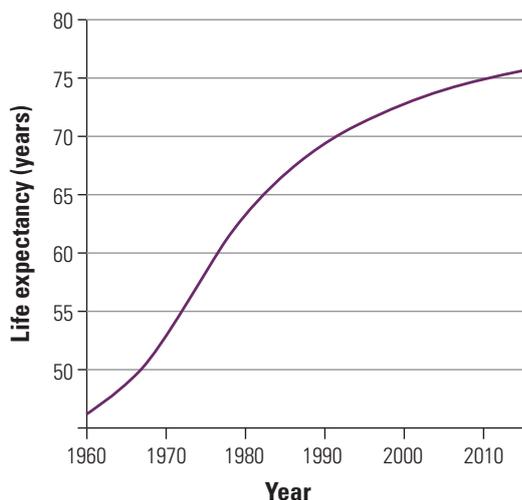


▲ **Figure 4.22** Population density of Saudi Arabia



▲ **Figure 4.23** Land uses in Saudi Arabia

► **Figure 4.24**
Life expectancy in Saudi Arabia



► **ACTIVITIES**

1. Refer to figure 4.21. Outline the major population issues faced by the traditional Bedouins.
2. What difficulties might these traditional people encounter if they wish to move to urban areas in the future?
3. Describe the population *distribution* in Saudi Arabia from figure 4.22.
4. Describe the *distribution* of oases in Saudi Arabia using figure 4.23.
5. Referring to figures 4.22 and 4.23, describe the *spatial association* between population density and land use.
6. Refer to figure 4.24 to outline the trend shown in life expectancy in Saudi Arabia.
7. Suggest reasons to account for the rapid *changes* in overall life expectancy.
8. On a blank diagram of the Demographic Transition model, plot the population characteristics of Saudi Arabia. What stage do you think the nation is in and why? Justify your answer.

What are the main issues related to population in Saudi Arabia?

Due to the rise in total population, there is a need for another 1.65 million new homes to be built by the end of 2015. There are two main reasons for this increased demand.

1. The influx of expatriate workers who need to be housed
2. Continued growth of population which is increasing at more than two per cent per year.

The Saudi Arabian king has offered more than \$93 million to help ease the housing problem over the long term. With such a large youth population there is massive underemployment and unemployment, with 12 per cent of all youth under 25 years of age being unemployed, creating the potential for social unrest. To meet the demands of an increasing population, there is a need for new hospitals and educational facilities so that the positive trends achieved so far are maintained in the future. Hospitals, schools, healthcare centres, sporting clubs and labour offices are being built in great numbers to ease this pressure of lack of facilities. Employment opportunities for women are limited, due to the cultural preference that women do not work outside of the home and the use of foreign nationals in the child-minding and domestic service industries. There is still a large psychological *distance* prevalent between what women want in the future and what the government sees as appropriate for women. In 2014, this psychological *distance* was shown to the world when women began to demand that they be allowed to hold a license and drive a car, which is currently illegal.

Another major problem in Saudi Arabia is the growth of poverty, despite the wealth the country receives from oil. It has been estimated that one-quarter of the population live on less than \$17 a day, which is considered to be the level from which poverty is measured within the country. A psychological *distance* exists with the wealthy and growing poverty. It is a phenomenon that was not recognised until 2002 — with the rich finding it hard to accept that poverty actually existed in their country.

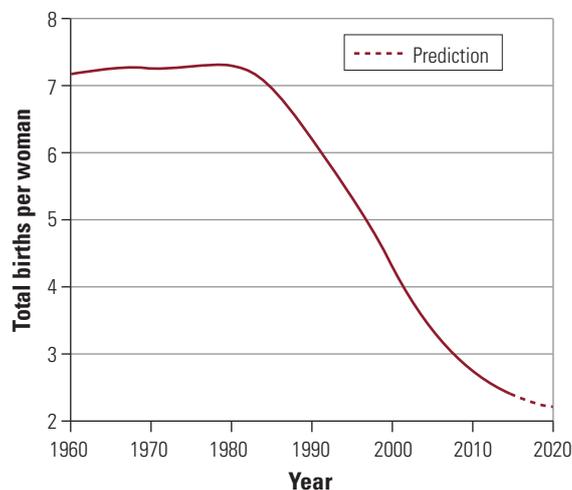
There is an unequal *distribution* of clean drinking water in Saudi Arabia due to the nation's *location* in a desert environment. Only 0.7 per cent of the land surface contains fresh water. Cities such as Jeddah have had to pipe water in, making the amount of water per person very limited in this *region*. In the cities within close proximity to the 27 desalination plants, water use is not monitored but averages over 250 litres per head per day, making this level of use *unsustainable* in the long term based on the number of desalination plants currently being used. The government actually subsidises the production of water by 99.7 per cent, thus ensuring that use increases rather than declines as it appears endless in quantity. Figure 4.30 (page 82) shows the *distribution* of desalination plants and the *spatial association* between the desalination plants and towns. Increasing population growth and urbanisation are expected to drive the need for more water and, by 2025, water will be in short supply.

Identifying locations of specific challenges with Saudi Arabia

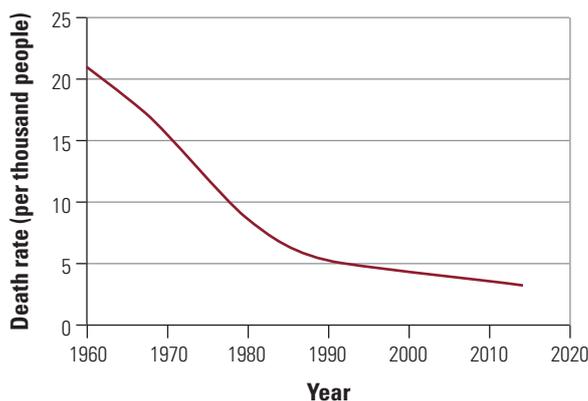
The most challenging situation that Saudi Arabia may have in the future is the unequal *distribution* of population in the western and eastern provinces (the population of the northern and southern provinces remains more static). As the commercial hubs and businesses are mainly *located* in the west and east, it is the logical destination for the *movement* of the people in search of work and a better standard of living.

What are the main population movements within Saudi Arabia?

Saudi Arabia is the birthplace of Islam and has two of its holiest sites. These two social factors make this nation a major hub for international population *movement*. Over seven million pilgrims annually come to Saudi Arabia to visit the holy sites and, with approximately 9.4 million non-national residents, Saudi Arabia is ranked among the top five migrant destination countries worldwide by the Gulf Research Centre in 2014. The *movement* of people from a tribal and nomadic lifestyle to an urban lifestyle within Saudi Arabia has grown at an unprecedented manner. Figure 4.31 (page 83) shows that urbanisation has increased from 48 per cent in the 1900s to 80 per cent in the year 2000 and is estimated by The Ministry of Municipal and Rural Affairs (MMRA) that by 2025 the rate will be 88 per cent.

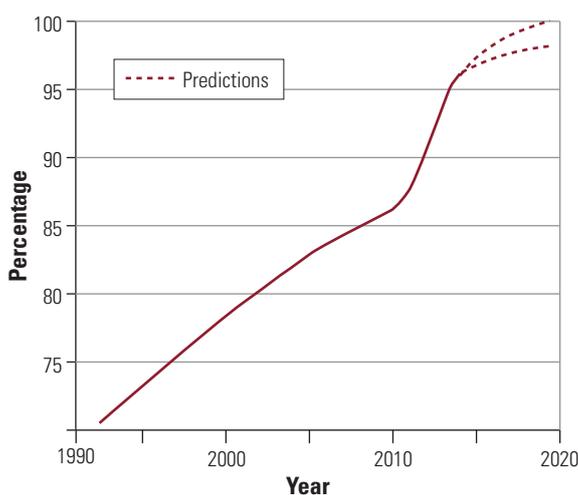


◀ **Figure 4.25**
Fertility rate
in Saudi Arabia



◀ **Figure 4.26**
Crude Death Rate

▼ **Figure 4.27** United Nations and child mortality in Saudi Arabia



◀ **Figure 4.28**
Improving literacy
rates in Saudi Arabia

▶ ACTIVITIES

1. Examine figure 4.24. Describe the trend shown in the graph.
2. Suggest which factors have helped *change* life expectancy levels over time.
3. What factors would account for the decrease in the fertility rates as seen in figure 4.25?
4. Evaluate the success of the UNDP programs in improving health in Saudi Arabia.
5. Literacy rates have improved sharply over time, as seen in figure 4.28. What factors could have been responsible for this *change*?
6. Figure 4.27 is presenting a message about child mortality. What is your understanding of what is depicted in the poster?

How has Saudi Arabia managed its population growth?

The government of Saudi Arabia has introduced a number of population strategies to cope with the increase of population numbers and rate of urbanisation.

In 2010, the MMRA launched the National Spatial Strategy in conjunction with the UNDP. This strategy aims to collect and analyse data concerning the demographic situation in Saudi Arabia and includes a 20-year plan to resolve the uneven population *distribution*. According to UNDP, the strategy aims are as follows:

introduce and manage the development of six new 'economic cities' across the country. These cities would serve as foreign-investment zones for a new generation of high-tech and knowledge-oriented industries, to spread public services more evenly and broaden the scope and effectiveness of development policies among *regions*.'

Spatial technologies are being implemented and can be measured as Saudi Arabia builds the new population centres. Located on the coast of the Red Sea, a *distance* of 100 kilometres north of Jeddah, the King Abdullah Economic City (KAEC) is one of four new cities being created in Saudi Arabia to promote industrial expansion, diversify its economy away from oil, and to provide housing and job opportunities for a young

population, 65 per cent of whom are under the age of 30 years. It is estimated that this city will be completed in 2025 and will have a population of 1.7 million.

Figure 4.32 shows the major *regions* for foreign labour in Saudi Arabia. The lure of paid and regular work is a strong socioeconomic factor for many unskilled and skilled personnel from other countries. Coupled with the large proportion of unemployed youth in Saudi Arabia, the government brought in the Saudization Law. In essence, the Ministries were looking to decrease the ratio of foreign to Saudi workers and encourage more Saudi employment. They set an initial 75 per cent target to hire local people by 2005. By 2014, however, the 75 per cent figure was reviewed, as few young Saudi nationals had been lured into the workforce into menial jobs they saw as being beneath them. The Ninth Development Plan, 2010–14, was reviewed, and it was found that the target of bringing down unemployment of the youth to 5.5 per cent had not been achieved. Its aim, however, was designed to create 1.12 million new jobs for Saudi nationals by 2014. The Saudization Law specifies a strategy that classifies the country's private firms into four categories: Premium, Green, Yellow and Red. Premium and Green must contain high numbers of Saudi nationals while the Yellow and Red companies may have low numbers of nationals.



▲ **Figure 4.29** Typical housing in Saudi Arabia



▲ **Figure 4.30** Distribution of desalination plants in Saudi Arabia

The **population forecast** to increase from 27 million in 2014 to **39 million by 2020**.

Most people live in **Riyadh**, the **Western Province** and **Eastern Province**.

Migration rate to Riyadh decreased from 8% to 4%.

Urbanisation has increased from 48% in the 1970s to around 80% in 2000. It is forecast that 88% will live in cities in 2025.

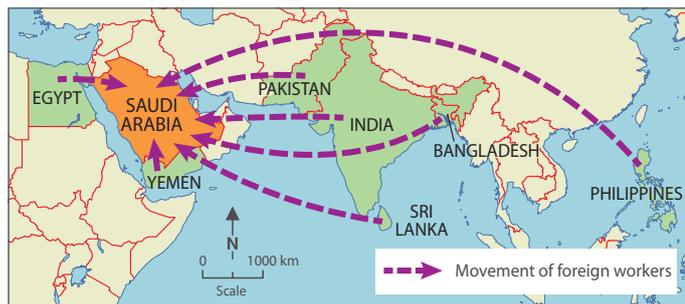
By **2030** Riyadh will have 8.2 million people, 75% of whom will be Saudi.

▲ **Figure 4.31** Rate of urbanisation in Saudi Arabia

Population growth has not formally been addressed but, in January 2015, the King of Saudi Arabia was asked to consider implementing a population control policy to benefit the country. Advisers to the King warned that a doubling of the population in just 15 years had left Saudi Arabia in worsening economic trouble. Three main factors have contributed to the need for such a policy to be implemented.

1. While oil revenue has provided free health and education, and living quarters to the kingdom's nationals, the increasing population is placing strain on the economy.
2. Continued high unemployment in the under-29 age group is leading to social unrest.
3. No taxes are collected to supplement the government's spending.

The King's advisers actively want to pursue birth control in order to reduce expenses and provide better education and facilities to their children. While it is understood what needs to be done to help the economy of Saudi Arabia, only time will tell if this proposal will be introduced.



▲ **Figure 4.32** Movement of foreign workers to Saudi Arabia

▶ **ACTIVITIES**

1. a. Design a simple population policy that could be implemented in Saudi Arabia to reduce the number of births per woman.
b. Outline two strategies that could be implemented to fulfil the policy.
c. For each strategy, predict a likely outcome that might be seen in ten years' time.
2. Design a policy with strategies that could be implemented in Saudi Arabia to help reduce youth unemployment from 29 per cent in 2015 to the specified 5.5 per cent.



5

Population trends and issues: growth in China and USA

China

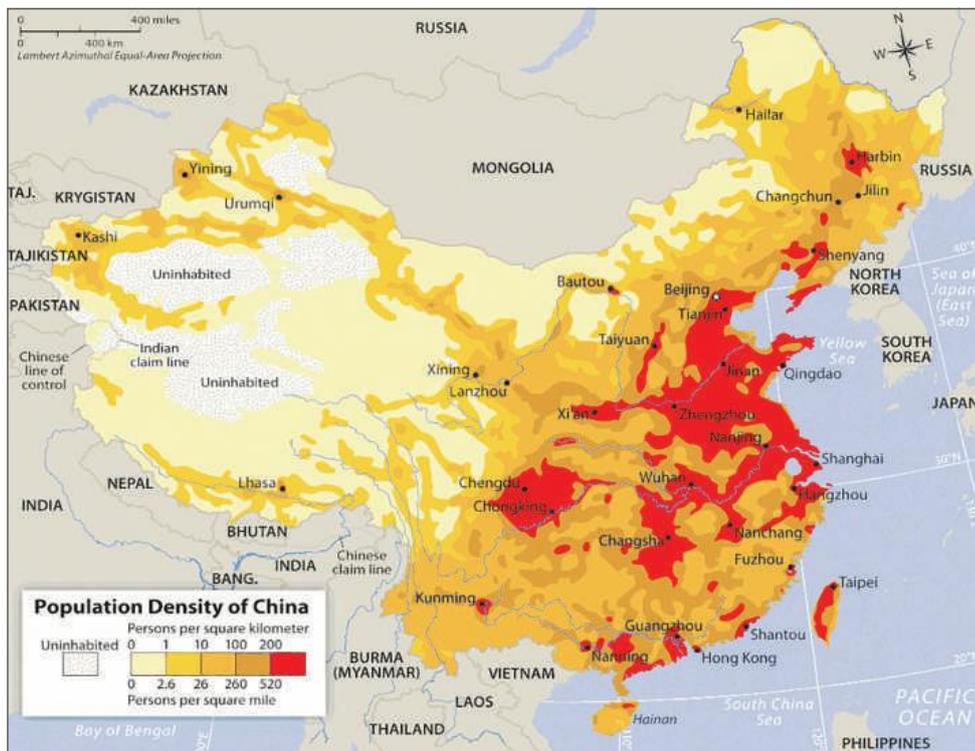
China's population is a fascinating demographic study as it is both a growing and an ageing population. In mid 2014, China had the world's largest population of 1.36 billion people (figure 5.1) and a current annual growth rate of 0.47 per cent. Today 19.2 per cent of world's people live in China and, although it is approximately the same size in area as the United States, which has the world's third largest population, China has four times the number of people as the United States.

China's population is unevenly distributed, with the population concentrated in the east as shown in figure 5.2. China's cities are among the most densely populated areas in the world (figure 5.3). Approximately 50 per cent of the population live in rural areas. The *movement* of people from rural areas has been constrained by a residential registration system (the hukou) that deemed each person as a rural or urban worker, and regulated who could migrate between rural and urban areas. The hukou restrictions have been relaxed in recent times. Though there are 56 ethnic groups in China, 92 per cent of the population are Han Chinese who are generally concentrated in the eastern *region* of China.

▼ **Figure 5.1** Ten most populous countries in the world, 2014

2014	POPULATION (millions)
China	1364
India	1296
United States	318
Indonesia	251
Brazil	203
Pakistan	194
Nigeria	177
Bangladesh	158
Russia	144
Japan	127

▼ **Figure 5.2** China's population is unevenly distributed.



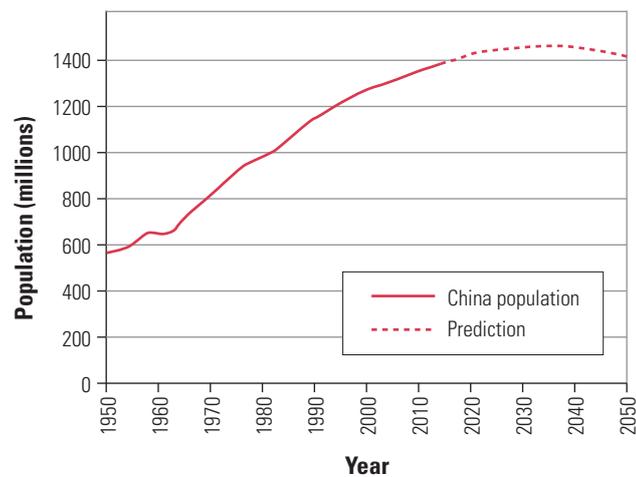


▲ **Figure 5.3** A fishing village just a few decades ago, Shenzhen is now a bustling megacity with 10.3 million people.

Population issues and challenges

Population growth rates in China have *changed* considerably (figure 5.4). Since the 1950s infant mortality has decreased, and life expectancy has increased because of improvements in public health access, clean water and food supply. High fertility rates were encouraged during the 1960s as Chairman Mao believed that a large population provided economic strength. This led to rapid population growth, with the population increasing from approximately 562 million people in 1950 to 820 million people in 1970 (figure 5.4). Faced with this huge population growth, the Chinese government authorities feared that the country would not be able to provide sufficient resources for its population — a Neo-Malthusian view. This led to a new family planning policy, the well-known One Child Policy.

▼ **Figure 5.4** Population growth in China from 1950



▶ ACTIVITIES

- Refer to figure 5.1. It is commonly predicted that India will be the world's most populous country by around 2026. What demographic factors are likely to explain this prediction?
- Refer to figure 5.2.
 - Describe the *distribution* of population in China.
 - What physical characteristics might lead to an area that is uninhabited?
 - What factors may explain the differences in population *distribution* in China?
- Refer to figure 5.3. Estimate the average number of levels in buildings shown in this photograph. Why is this urban structure used?
- Refer to figure 5.4.
 - In which decade was population growth most rapid?
 - Why did China's population continue to grow after the introduction of the One Child Policy in 1979?
 - In what year is maximum population projected?
 - What could happen to China's population after 2030? Why?



▲ **Figure 5.5** This type of artwork is displayed in China to support the One Child Policy.

China's population control policy

China introduced the One Child Policy in 1979. Until 2015 when this policy was significantly *changed*, it set a minimum age of marriage and regulated the number of children that each couple could have. It is known as an anti-natalist policy. The policy extended the earlier 'later, longer, fewer' family planning campaign that began in 1972 at a time when women in China had an average of six children. By delaying marriage women would have babies when they are older, with a longer gap between pregnancies, and fewer births per woman. The One Child Policy took this 'later, longer, fewer' campaign to further extremes: couples were discouraged from having more than one child. In addition it promoted the value of one child families to the nation (figure 5.5).

Couples were encouraged to follow the policy through a complex system of rewards and penalties. Despite the significant *changes* to the system in late 2015, many features of the One Child Policy remain. Contraception, including sterilisation and abortion, was, and still is, freely available. Official permission is required to marry and also to endeavour to conceive a child. Those couples with one child who pledged that they will not have a second child were given a certificate

which provided benefits including cash bonuses, longer maternity leave, preferential treatment in housing allocation and better maternal health care. Children from one-child families received preferential treatment in education, health care and job assignment. Penalties for those parents who had a second child included fines, demotions and lack of access to education for their children. The One Child Policy proved very successful in reducing birth rates, particularly in the cities. However, since the 1990s, some households prospering from China's market economy decided that they could afford the fines and penalties imposed on them and choose to have a second child.

By late 2015 when the government announced all couples would be allowed two children, the existing One Child Policy had already undergone considerable modifications. These modifications to the one child ruling occurred when:

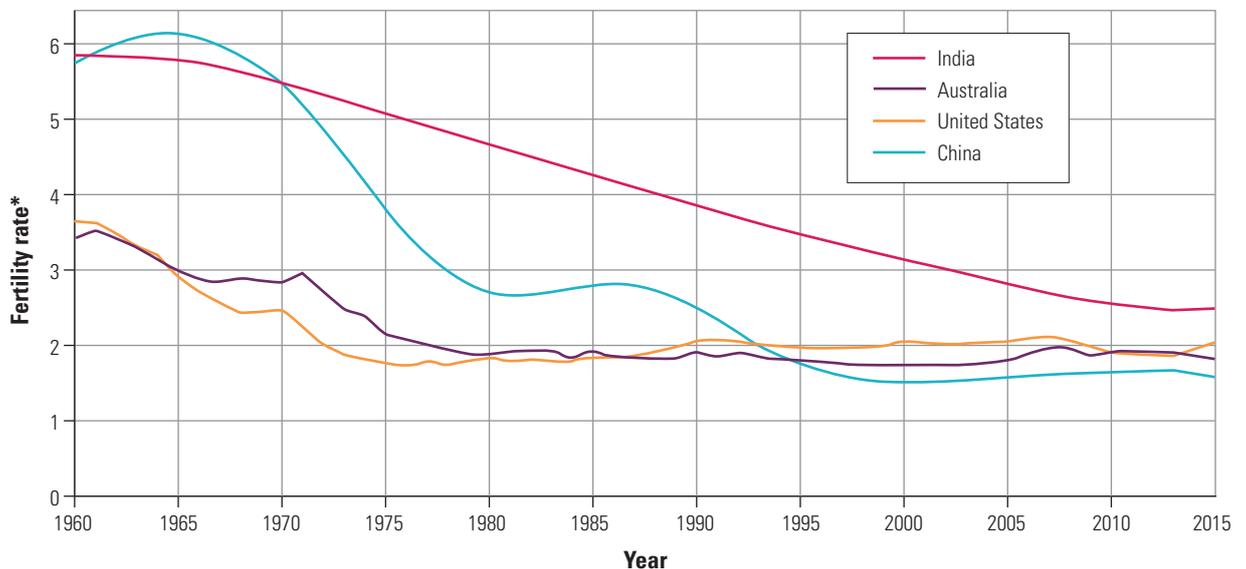
- ▶ one or both parents are only children (they may have two children)
- ▶ a first pregnancy results in a multiple birth, for example twins
- ▶ the first born is severely disabled
- ▶ parents are part of an ethnic minority
- ▶ parents are border residents.

As well, in some provinces, rural families may have more than one child where children are an essential part of the labour force.

The One Child Policy was applied most strictly to urban-dwelling Han Chinese. Since 2008, if the first child of Han Chinese rural families is a girl, the family could apply to have a second child.

The total fertility rate (TFR) is the average number of children a woman is likely to have if she lives to the end of child-bearing age. This is a reasonably reliable indicator of future population growth, though it is based on current fertility which will *change*. China's TFR was 5.76 in 1960; 6.16 in 1965; and, by 2012, it had fallen to 1.66 (figure 5.6). Indeed China's TFR is similar to the world average for more economically developed countries.

▼ **Figure 5.6** Changes in total fertility rate for China, Australia, India and USA, 1960–2015



*Refers to average number of births per woman

Implications of the policy

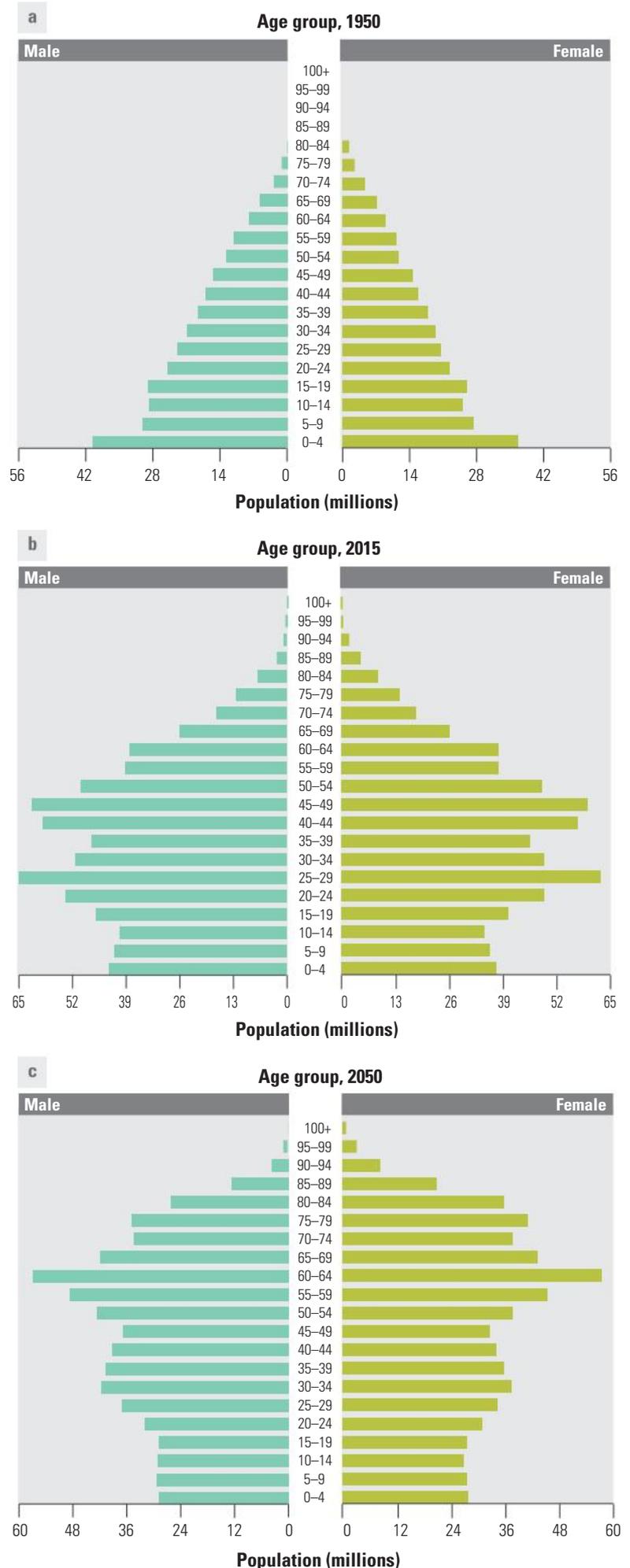
By maintaining its One Child Policy over the next two decades, China believed that the population would begin to decrease after 2030. However, *changes* in the policy have occurred. In 2014, Shanghai was one of six *regions* to relax its birth control policy to allow couples to have a second child if either parent is an only child. From late 2015 all couples were allowed a second child. Demographers were not expecting a rapid and sustained return to higher birth rates and higher fertility rates. They believe the desire for large families has lessened nationally. In urban areas the careers of young couples, and especially of young women, may be of greater importance than raising a large family. With around fifty per cent of the population urbanised, this is a major shift in social thinking.

As you know from chapter 2, population profiles are graphs that show the age–sex *distribution* of a given population and are a useful tool to understand age–sex structure. A population profile may show population in numbers, but more often it displays percentages for five-year cohorts. Population profiles are useful to identify past population trends, to analyse the current structure, and also to predict how the population structure may *change* in the future. Figure 5.7 shows the population profile for China in 1950, 2015 and a prediction for 2050.

▶ ACTIVITIES

1. What was the One Child Policy? What did it aim to do? How has it been successful?
2. Why do some Chinese couples ignore the official One Child Policy?
3. Produce an annotated time line describing China's *changing* population characteristics since 1949.
4. Identify China's past baby booms from figure 5.7. What impact could each have on the age structure of the national population?
5. Sketch a population profile of China for 2020 using figure 5.7. Annotate the key features that are shown in your prediction.
6. Outline three major differences in China's population profile from your sketch of 2020 to 2050.
7. Refer to figure 5.7.
 - a. Quantify the percentage of population aged 0–14, 15–64, and over 65 for 1950, 2015 and 2050, and record this in a table.
 - b. Comment on these figures: What are the implications for the Chinese government?
 - c. In pairs, list strategies that China could use to support a more aged population in 2050.

▼ **Figure 5.7** China's *changing* population structure



How has the One Child Policy affected China?

The impacts of reducing birth rates using fertility control in China are that:

- ▶ **the One Child Policy has slowed population growth**, and resulted in the unique bonus that more people have become available to be part of the workforce, with relatively fewer dependent children to be supported. But China's working-age population reached its peak in 2010, and now the dependency ratio has begun to increase. From 1990 to 2010, economic growth in China has been very strong. In part, this is said to be because of the lower dependency ratio (see chapter 2, page 35), which leads to fast growth in the working-age population, providing a higher supply of labour. In 2014, China's total dependency ratio was 37.4 per cent, which is made up of a youth dependency ratio: 24.9 per cent and an elderly dependency ratio: 12.5 per cent. By 2033 the dependency ratio was projected to increase to 52 per cent as a result of an ageing population. Relaxation of the One Child Policy in late 2015 could help alleviate problems of a growing elderly dependency — if birth rates rise. Figure 5.8 displays the growth of aged population in China.
- ▶ **there is an approaching challenge to provide welfare for the elderly.** Life expectancy in China has increased from 44 years in 1950 to 63 in 1970; in 2015, it was 75. The retirement age in urban China is 60 years of age. Chinese socialist culture has no history of saving for retirement and the government faces a significant challenge to

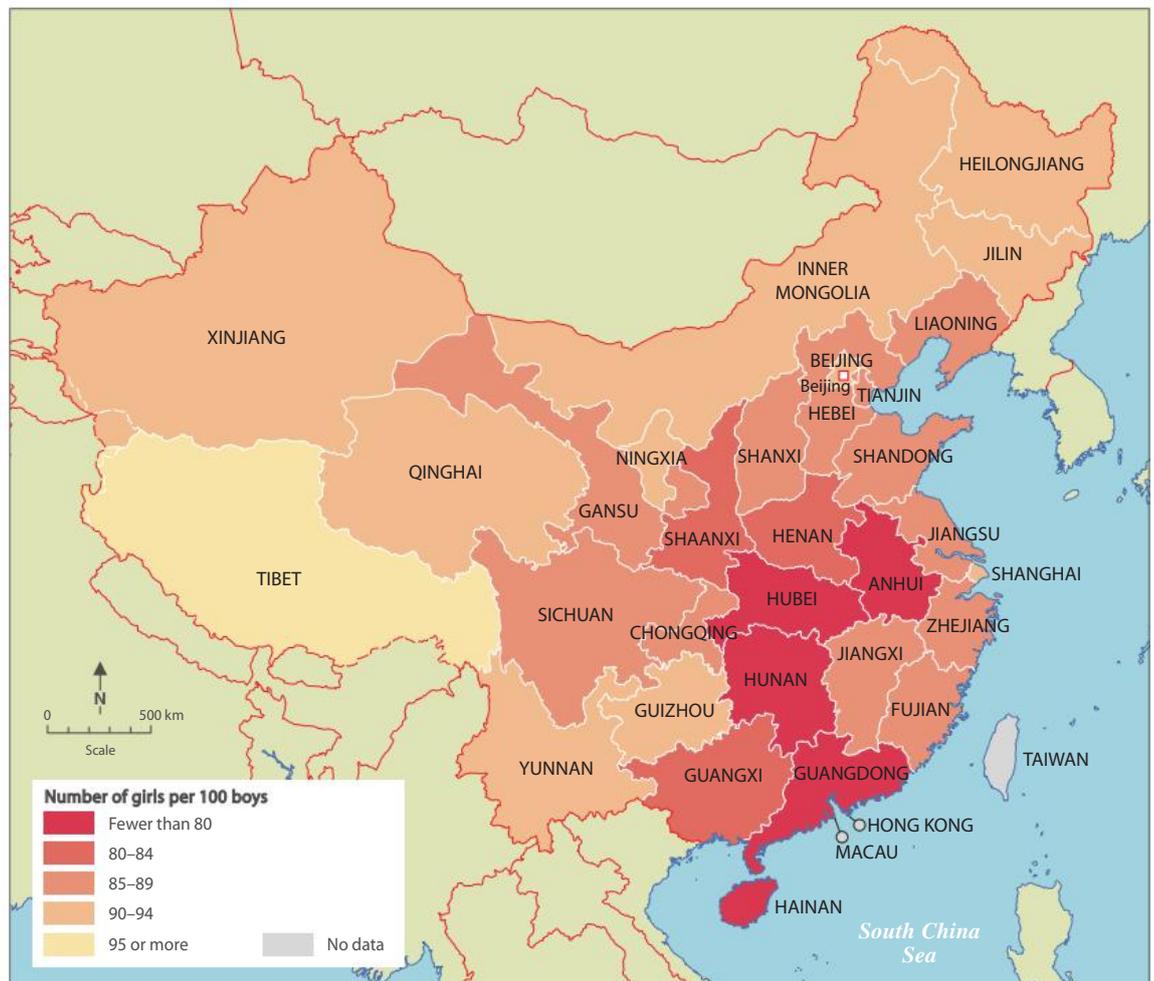
▼ **Figure 5.8** Changes in the proportion of the population aged over 60 in China

YEAR	PER CENT OF TOTAL POPULATION OVER 60
1990	4
2000	9.9
2010	12
2050 (projected)	34

provide for the elderly. In the future, the elderly will be less able to rely on their children to care for them — the so-called 4-2-1 conundrum where one offspring is responsible for the care of both parents and four grandparents. Yet the aged tend to be highly regarded as active, involved and respected community members. Family bonds remain strong. Will the state need to take on the expense of looking after the elderly, which could be considerable? China is one of only a few countries worldwide in which the population has begun to significantly age *before* becoming a high-income country. As a middle-income country, the challenge to support the aged population is especially high.

- ▶ **there is a 'missing girl' or 'surplus men' conundrum.** China has developed an imbalanced sex ratio compared to the global average of 100 girls born to 107 boys. In 2014, for every 100 girls in China, there were about 113 boys. The ratio

▶ **Figure 5.9**
The missing girls





◀ **Figure 5.10**
A typical Chinese family — one child with parents who are only children and one set of grandparents

was much higher in some rural areas (figure 5.9). Conventionally in China, family lineage is passed down through men so when a woman marries, she joins her husband's family, making sons more highly valued as they support their parents in old age. Causes suggested for this gender imbalance included increased deaths of female babies due to infanticide, neglect or abandonment. As well, though it is illegal, many couples practised sex-selective abortions after ultrasound. In some areas the imbalance leads to an excess of bachelors, with approximately 30–50 million more men than women across the nation. One small village of 300 residents has no young women of marriageable age. This so called 'bachelor village' of Banzhushan in Hunan province is the most extreme example of the conundrum where girls born in this poor area have moved and outsiders stay away. With the abandonment of the One Child Policy this imbalance may become less evident over several decades.

- ▶ **generations of single children are growing up with devoted parents and grandparents** (figure 5.10). Some are known as little emperors and empresses. It was thought that only children would be indulged, yet this perception is not as prevalent as expected. However, childhood obesity in China is rising. In 2015 a study found that more than 16 per cent of China's minors are overweight, a significant increase from 4 per cent in 1970.

▶ **living standards have increased rapidly in China during the era of the One Child Policy.**

At the same time, *changes* in economic policy including the expansion of private enterprise make it difficult to determine the relative contribution of each of these factors. Increased living standards are both a cause and a result of declining birth rates.

▶ **human rights groups such as Amnesty International continue to condemn coercive abortions in China as this violates human rights.**

These are reported as possibly millions of late-term and forced abortions. They have also been critical of the loss of personal freedom imposed on people who are not able to choose their family size, though less so now as there has been a relaxation of some aspects of the policy. The abandonment of the One Child Policy does suggest less coercion from government and party authorities is likely.

When you examine China's population policy, it is essential to remember the Chinese government's perspective, which is that human procreation and material production must be in balance — a Neo-Malthusian approach. Population planning is considered a social decision rather than an individual one. Private and public interests are considered inseparable.

▶ **ACTIVITIES**

1. Although the birth rate has continued to fall, China's population continues to increase. Why?
2. How successful has the One Child Policy been in its aim to reduce birth rate?
3. What new issues have emerged as a result of the One Child Policy?
4. What is the 4-2-1 phenomenon?
5. Explain the 'later, longer, fewer' slogan.
6. Draw a table to identify and describe the positive and negative social, economic, environmental and political impacts of the One Child Policy.
7. Discuss the following statements about China's population policies as a class.
 - a. The One Child Policy was more difficult to enforce in rural areas than in urban areas.
 - b. The One Child Policy was not necessary; other influences such as urbanisation would have reduced birth rates.
 - c. Personal freedom of choice has been sacrificed for the national good.
 - d. The One Child Policy has created more problems than it has solved.
 - e. A Two Child Policy will not be able to overcome the challenge of an ageing population.

Role of population *movements* in China

Internal migration is having a major impact on the nation's population structure and *distribution*.

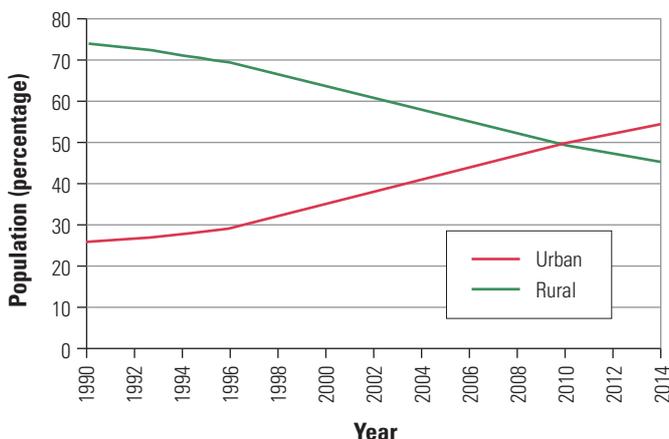
Rural-to-urban migration is a significant socioeconomic trend in China. From 1958 to 1983, rural workers were not allowed to leave their villages to seek opportunities without official permission. Basically this was an 'internal passport system'. This policy changed in 1984 at a time when the commune system had recently been replaced with the Responsibility Scheme, and Special Economic Zones (SEZs) were developed. The *movement* of internal migrants to cities has fuelled China's industrial growth. Nationally, China is a growing population, and it is the urban areas that are growing fastest (figure 5.11).

Rural migrants comprise most of the labour force in many construction projects that are underway in cities including Beijing and Shanghai. They receive a low wage even though they work long hours. By living in basic conditions they manage to save money to send to their home villages (see chapter 3 for more information about remittances). This has a positive impact on the local economy of rural areas.

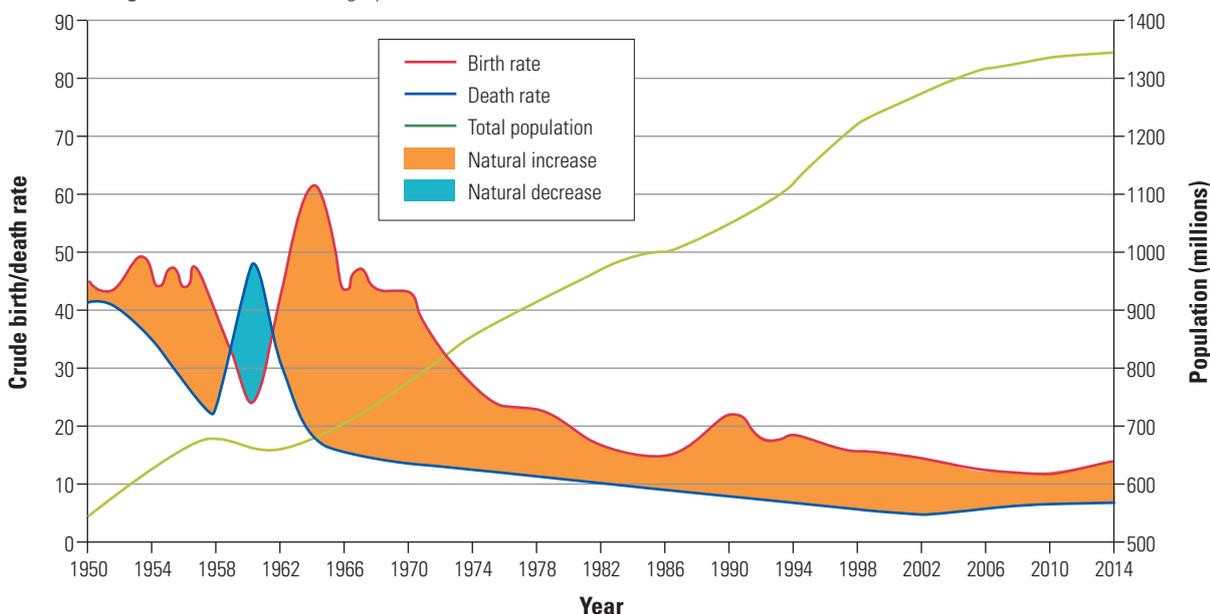


▲ **Figure 5.12** This market vendor has emigrated from rural China to settle in Hengdian, China. Frequently, migrants become street vendors because the start-up investment is small and the skills required are often easily learned.

▼ **Figure 5.11** Changes in rural and urban populations



▼ **Figure 5.13** China's demographic transition



Location of issues and challenges within China

Rural areas are depopulated by the departure of young adults (figure 5.12). More females than males leave. Some couples leave to find work leaving their offspring to be raised by grandparents. As well, lifelong bachelorhood is an unintended outcome of China's long-term preference for sons. Young men who are unlikely to start a family are higher in low income areas. The demographics of some remote Chinese villages are *changing* due to lack of prospective wives in the village. Young women are leaving poor rural villages and relocating in the cities where they have good opportunities to live, work and marry in higher income areas. They are leaving behind growing numbers of bachelors.

As the gender imbalance peaked at 121.2 boys for every 100 girls in 2004, approximately 30 million more men than women will reach adulthood and may wish to marry by 2020. Some social commentators predict that these young men may become disaffected, which can lead to increased crime, gambling and alcohol abuse. Until now there is no evidence that this is occurring. On the other hand, the situation is very good for women because they have more suitors. Whether or not the *change* in population policy in 2015 will help adjust this situation remains to be seen.

China's demographic cycle

The demographic cycle for China from 1950 shows the effects of policies on birth rates, *changing* patterns of death rates and the overall natural increase (figure 5.13). *Changes* in birth rates were influenced by state policies, but the fall of death rates is mainly due to increases in food availability and improvements in medical care. However, in the 'Great Leap Forward' between 1959 and 1961, all energies were directed to industrial development and farming was neglected resulting in a disastrous famine. Fast-forward to 2014 when 13 million marriages were registered in China, indicative of more prosperous times for some (figure 5.14).



▲ **Figure 5.14** Wedding time: the parents of the next generation. One, two or more children?

▶ ACTIVITIES

1. Investigate the issues of disaffected young men in China and abductions of girls and young women.
2. Refer to figure 5.13. Describe what happened to birth rates, death rates and natural increase during the famine of 1959–61? Quantify your response.
3. At what stage of the demographic cycle is China currently in? Justify your answer.
4. Examine the interactive timeline at <http://www.theguardian.com/world/interactive/2012/mar/23/china-decade-change-interactive-timeline>. Are demographic aspects of China featured? Why or why not?
5. Investigate and describe one strategy such as the 'care for girls' campaign which seeks to improve the status of girls and assist families with daughters in China.
6. Use appropriate criteria to evaluate the effectiveness of strategies such as the One Child Policy to reduce population growth, and the 'care for girls' campaign which aims to compensate for the gender imbalance.

USA

The United States does not have any policy to regulate population apart from its migration laws. The government does not recommend population control. Family size is decided by the preferences of couples, not governments. So, this study of population policy must begin with the nation's demographics.



▲ **Figure 5.15** Like this Mexican-born boy carrying a United States flag, many immigrants chose to become US citizens at a naturalisation ceremony.

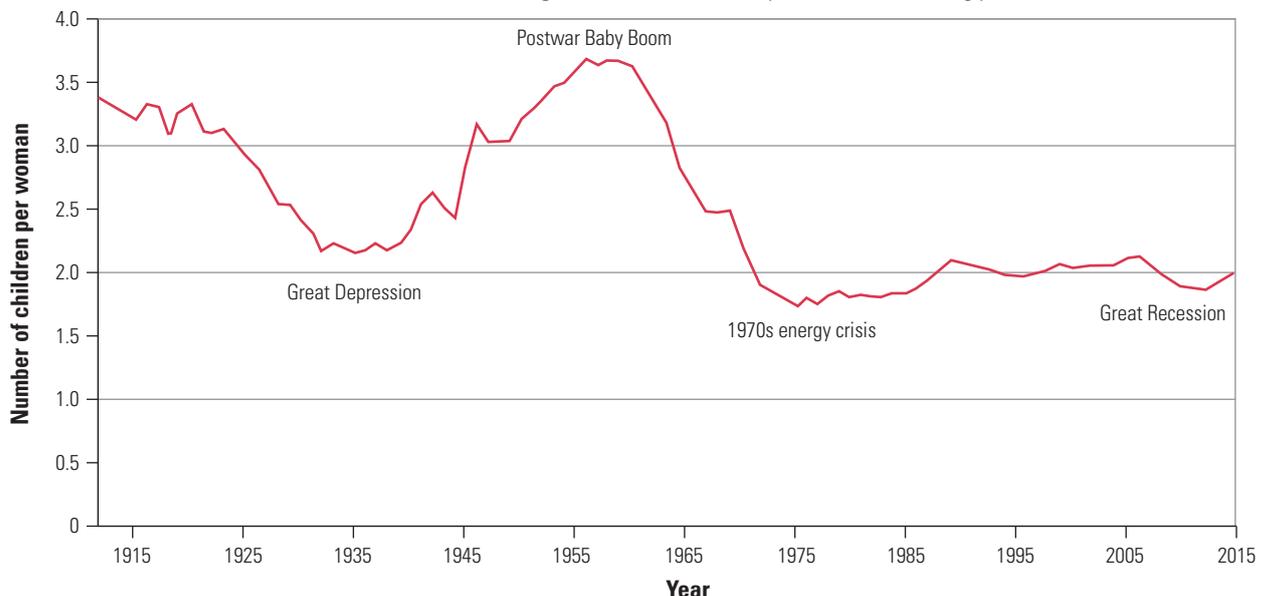
USA's demographic characteristics

The United States population of 320 480 000 (2015) makes it the third most populous country in the world after China and India. The United Nations predicts a US population of 401 million in 2050, an increase of 32 per cent from 2007. However, during 2013 the growth of population slowed to levels not seen since the Great Depression era of 1933–37. Population growth rate compares the average annual per cent *change* in populations, which is a result of a surplus (or deficit) of births over deaths, and the balance of migrants entering and leaving the country. This rate may be positive or negative. The United States growth rate was 0.77 per cent in 2014. This growth remains ahead of many other more economically developed nations, particularly numerous European countries, whose populations may actually decline between now and 2050.

In 2015, USA's Total Fertility Rate (TFR) was 2.01. Figure 5.16 shows variations in fertility rates. Usually fertility is the most important factor in determining future population growth. A TFR of about 2.1 is needed to replace population over time. By 2014 more than 100 countries had fallen below this replacement level. Many developing countries had lower fertility than the United States — for example, China (with a TFR of 1.55), Puerto Rico (1.64), Cuba (1.46) and South Korea (1.25). However USA's population growth rate is high for an industrialised country due to net immigration, rather than a higher fertility rate (see chapter 2).

USA is becoming more diverse and, particularly, more Hispanic — the Hispanic population grew a staggering 43.1 per cent between 2000 and 2010. Persons who originate from (or have recent ancestry to) Mexico,

▼ **Figure 5.16** The US fertility rate has fallen during periods of economic decline.



Puerto Rico, Cuba, Central and South America (except for Brazil) and other Spanish cultures are defined as Hispanic (figure 5.15). This includes Spain, which is the origin of Spanish culture.

In USA, the term ‘minority’ is used to describe anyone who is not single-race white and not Hispanic. Minority groups in the US make up 36 per cent of the population but they contribute a higher proportion to birth rates. The US Census Bureau estimated that, for 2012, 50.4 per cent of American children under the age of one year old belonged to minority groups. Population growth is fastest, therefore, among minorities as a whole. In common with many countries, immigrants and their resident-born descendants will provide most of the population gains in the decades ahead, through relatively higher birth rates.

Though percentage *changes* are useful in population analysis, raw numbers also provide an understanding of the situation. Figure 5.18 displays the total number of births for each year from 1930 through to 2013 in the United States. Notice the increase in births from 1946 to 1964. The end of World War II marked the beginning of a baby boom in many Western countries, including the United States. Many factors were together responsible for the boom. Soldiers returning from the war were entitled to purchase homes and

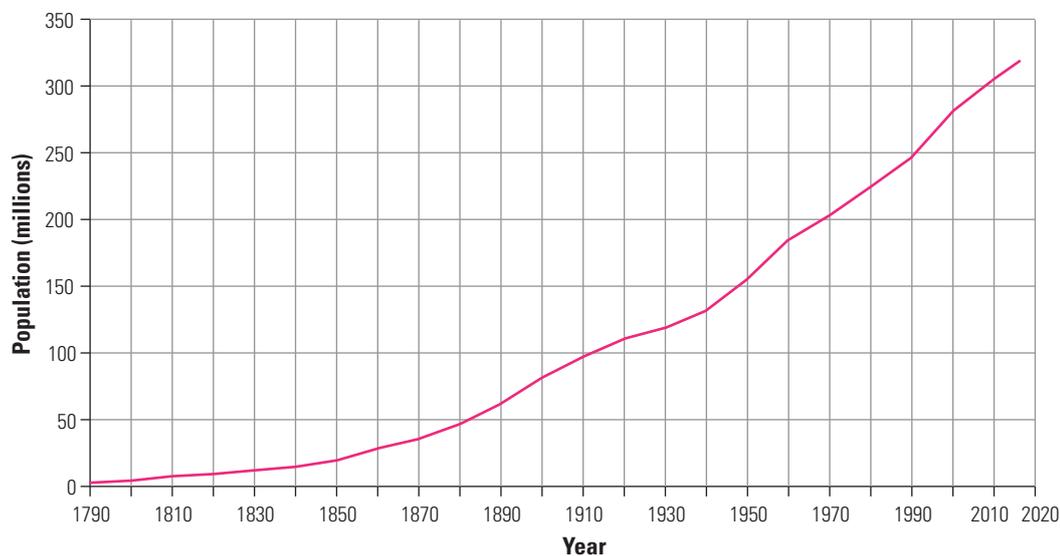
take on higher education through access to low interest loans. Jobs were plentiful and economic growth was strong so families were confident that the future would be prosperous. Family size increased during the baby boom, and the social pattern was that couples married young, became pregnant soon after and often had three or four children. In 1940, the average American woman married when she was almost 22 years old; by 1956, she married at 20. Eight per cent of married women in the 1940s never had children, compared to 15 per cent in the 1930s.

In this century, more women are getting higher education qualifications, and an increasing number of these educated women are delaying childbearing. According to the US Census Bureau, among women aged 25 to 34 in 2000, 83 per cent with less than a high-school education had given birth. Of women with bachelor degrees, just 42 per cent of women had given birth.

The death rates for the United States have steadily declined and for the last five years the crude death rate has been stable at approximately 8 per 1000 people. This is a very common trend among more economically developed countries and is illustrated in the theoretical demographic transition model (see chapter 2, page 40).

YEAR	BIRTHS
1930	2.2 million
1933	2.31 million
1935	2.15 million
1940	2.36 million
1941	2.5 million
1942	2.8 million
1943	2.9 million
1944	2.8 million
1945	2.8 million
1946	3.47 million
1947	3.9 million
1948	3.5 million
1949	3.56 million
1950	3.6 million
1951	3.75 million
1952	3.85 million
1953	3.9 million
1954	4 million
1955	4.1 million
1956	4.16 million
1957	4.3 million
1958	4.2 million
1959	4.25 million
1960	4.26 million
1961	4.3 million
1962	4.17 million
1963	4.1 million
1964	4 million
1965	3.76 million
1966	3.6 million
1967	3.5 million
1973	3.14 million
1980	3.6 million
1985	3.76 million
1990	4.16 million
1995	3.9 million
2000	4 million
2004	4.1 million
2007	4.317 million
2010	3.999 million
2013	3.932 million

▼ Figure 5.17 The population of America almost quadrupled during the twentieth century.



► ACTIVITIES

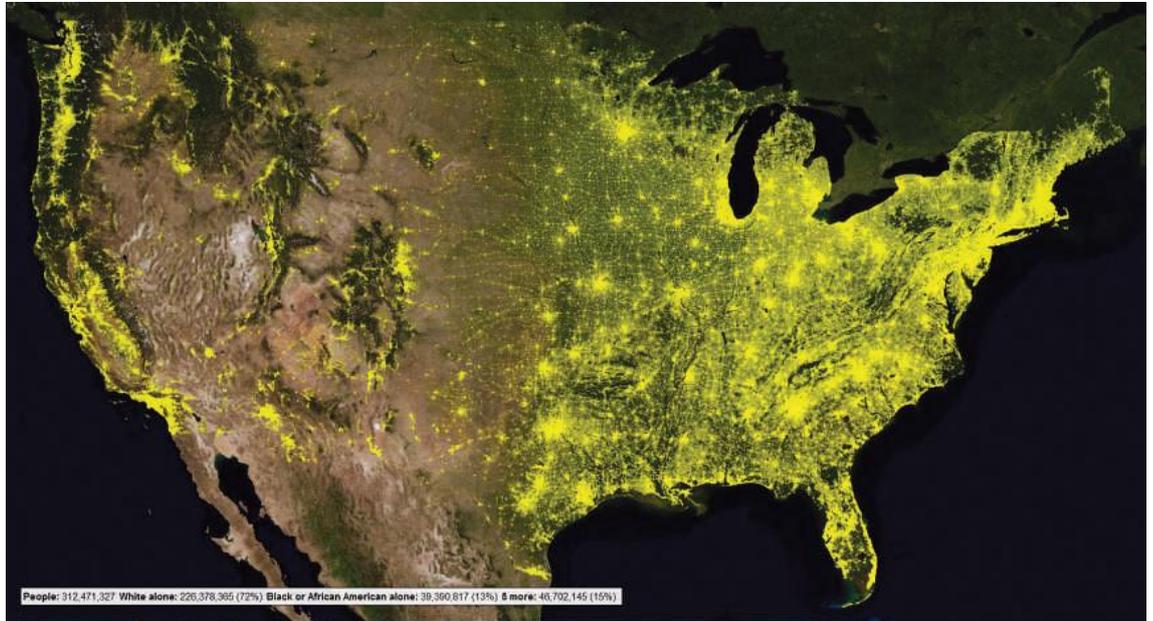
1. What was the USA’s population growth rate in 2014?
2. What does Hispanic mean?
3. Refer to figure 5.16. What was the impact of the Great Depression on TFR?
4. Refer to figure 5.17. Describe the *changes* in USA’s total population from 1790 to 2015.
5. Refer to figure 5.18. Create a graph of US births from 1930 to 2013. Describe the pattern.
6. With reference to the data provided in this section, at what stage of the demographic transition model is USA currently in?

USA's population *distribution*

Two-thirds of the US population live in states along the coast (figure 5.19). Most of the population lives in cities and suburbs, with an urbanisation rate of 82 per cent. Figure 5.20 depicts this more accurately than a US State choropleth map as population density is shown in small areas (Census Tracts).

▼ **Figure 5.19** Two-thirds of the US population live in states along the coast.

COASTAL STATES	PERCENTAGE OF POPULATION
Atlantic	38
Pacific	16
Gulf of Mexico	12



▲ **Figure 5.20** US 2010 population *distribution* by areas of approximately 4000 people, known as Census Tracts. Each Census Tract is shown as a yellow dot. The intensity of the dot is determined by the number of people in the Census Tract.

CAREER PROFILE

John Roney Urban Planning Consultant



As an urban planning consultant I provide advice to a range of clients regarding the growth and development of cities. Throughout my 30-year career, I have been responsible for major planning and development projects involving site analysis, environmental and heritage considerations, economic impact assessment, community infrastructure planning and urban design.

I have always been interested in how cities work and the inter-relationship between various land uses. At high school I studied Geography and was fascinated by urban settlement. I remember projects requiring us to plan new towns and having to think about all of the various components that a new community should enjoy. This inspired me to complete a Bachelor of Town and Regional Planning at university.

Geographic skills have provided an important platform in my work. The spatial

analysis of the urban and rural landscape is fundamental in helping to understand where future growth should be directed. I regularly analyse geographic data such as demographic trends, topographic information, environmental mapping, subdivision patterns and journey-to-work data. This information is important in helping to understand the form and function of the city.

In 2016, Melbourne's population was around 4.4 million people. By 2051, it is anticipated that this will increase to around 7.8 million residents. Where will all these new people live, work and play? How will they move around the city? What will Melbourne look like in 2051? These are the questions that I get involved with in my work.

Geographers and urban planners have an important role to play in helping to shape the future of our towns and cities. As our population grows it will be important to ensure that our communities are economically productive, environmentally sustainable and socially equitable. Geography provides critical insights into these and many other important considerations for our future.

USA's population structure

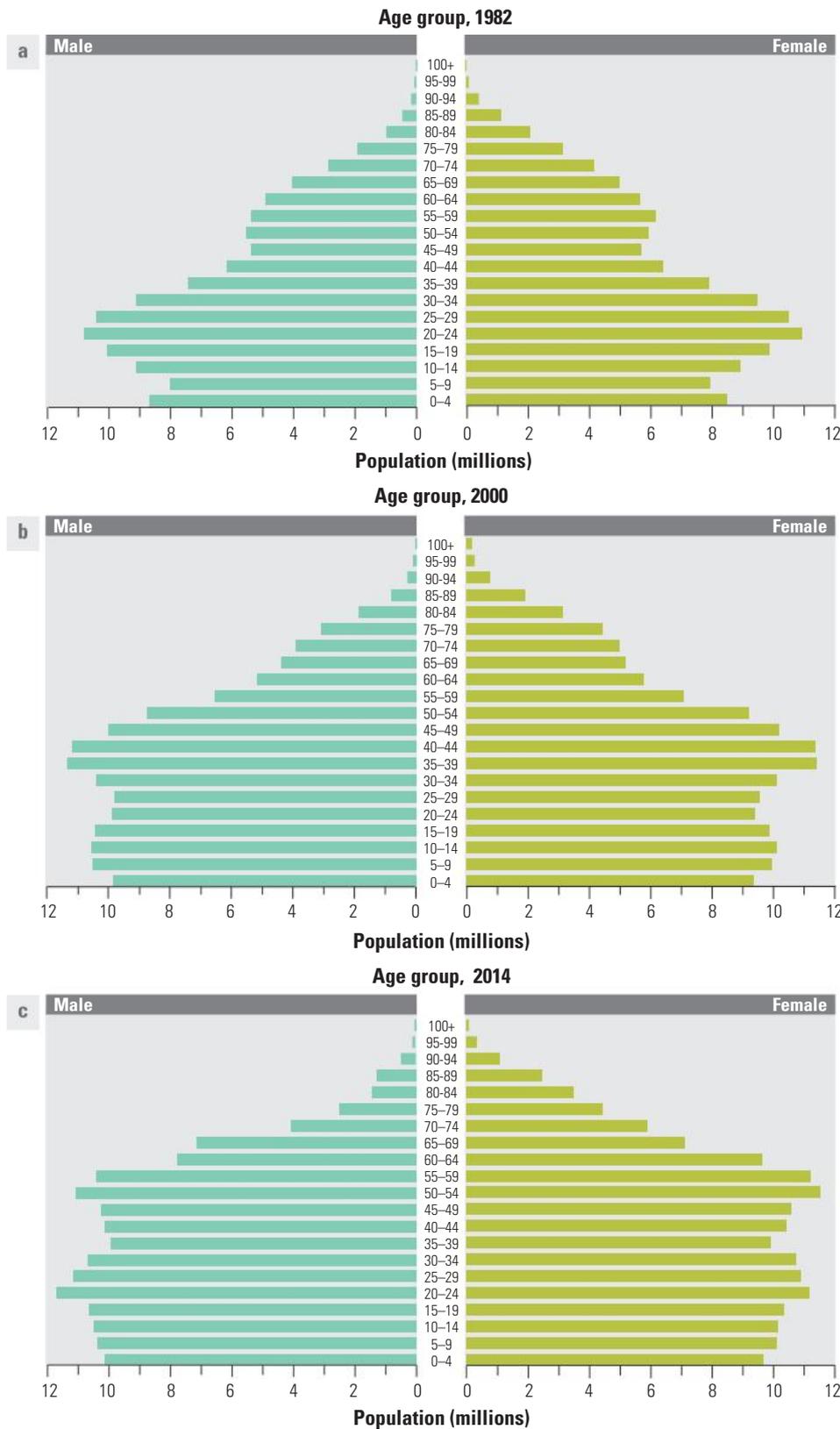


Figure 5.21
Population structure, 1982, 2000 and 2014

ACTIVITIES

- Refer to figure 5.20. Describe the *distribution* of population in USA. You must use the terms Pacific or western seaboard, Atlantic or eastern seaboard, Gulf of Mexico, Rocky Mountains, Mississippi River and Great Plains in your response.
- Using figure 5.21 and the interactive at http://en.wikipedia.org/wiki/File:United_States_Population_by_gender_1950-2010.gif, answer the following questions.
 - Identify USA's past baby booms from figure 5.21. What impact could each have on the age structure of the national population?
 - Sketch the likely shape of USA's population profile for 2050. Justify your prediction.

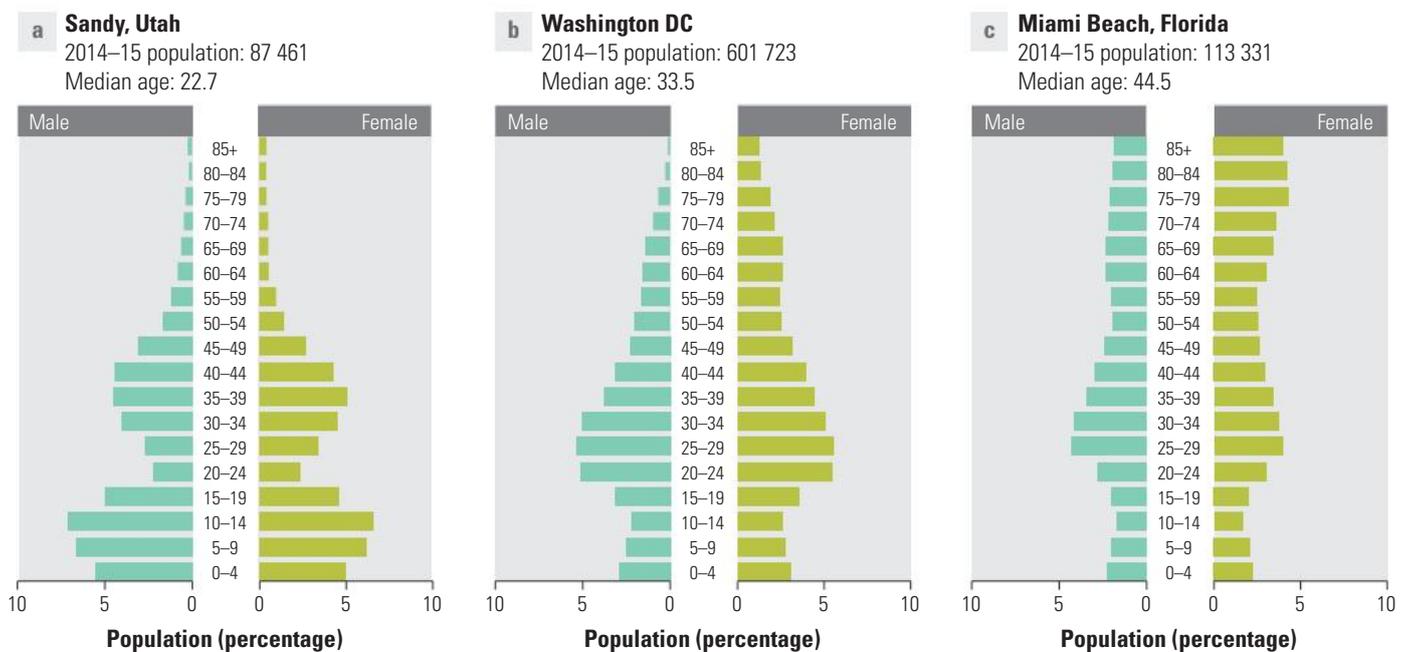
Dependency ratios

The US does not currently have an immediate challenge of an ageing population. The median age in 2013 was 37.2 years — this compares to 45.7 years in Japan, 35.2 years in China and 19.5 years in Laos. Dependency ratios measure the proportion of the population who are not typically in the workforce. The United Nations Population Division estimated that in 2014, the USA total dependency ratio was 51 per cent (with a youth dependency ratio of 29.4 per cent and an elderly dependency ratio of 21.6 per cent).

National population profiles provide an overview of the age–sex structure of a country but population structures vary between areas and these variations have important implications for *places*. In the United States, Sandy, Washington and Miami Beach are examples of three areas that have different population structures to the national averages (figure 5.22).

Utah is the centre of Mormon cultural influence in the United States. Family is highly valued and birth rates are higher than the national average. However, the large youthful population under 15 years in Sandy, Utah, *changes* as there are no local colleges, so young people leave to go to college. Also, as part of the religious beliefs for the high numbers of Mormons living in this area, between the ages of 19 to 21 they are required to go away on a two-year mission.

▼ **Figure 5.22** Population profiles for three urban areas in USA: (a) Sandy, Utah; (b) Washington, DC; (c) Miami, Florida



▶ ACTIVITIES

- Refer to figure 5.22. Suggest reasons for the key patterns in the age structure of
 - Washington, DC
 - Miami Beach, Florida.
- East Lansing, Michigan, is a college town. Almost 60 per cent of the population in East Lansing, which is home to Michigan State University, are aged 15 to 24. Sketch the general shape of a population profile for East Lansing.
- Examine this storymap:
<http://storymaps.esri.com/stories/2014/census-metro-micro-change/>
What population *changes* does it depict?
- Compare the population profiles of United State and China using figures 5.7 and 5.21.

▼ **Figure 5.23** Size and proportion of foreign-born population in USA, 1970–2013

YEAR	SIZE OF IMMIGRANT POPULATION (millions)	IMMIGRANT SHARE OF TOTAL US POPULATION (%)
1970	9.6	4.7
1980	14.1	6.2
1990	19.8	7.9
2000	31.1	11.1
2010	40	12.9
2013	41.3	13.1

Source: Migration Policy Institute

Role of population movements

The United States is a nation that has been built on immigration. In 2013, there were 41.3 million immigrants living in the United States, making up 13 per cent of the overall US population (figure 5.23). Immigration is a significant feature that influences the country's population profile. Approximately 41 million residents are foreign-born. This means 13 per cent of the population are immigrants and nearly one-quarter of all US residents are foreign-born or the US-born children of immigrants. The United Nations reports that the largest *movement* of international migration worldwide is between the United States and Mexico. In 2013, there were 13 million persons born in Mexico living in the United States. As well, 2.2 million foreign-born from China, 2.1 million from India and 2.0 million from the Philippines are living in the United States. In this century, the pattern is shifting with a doubling of the number of international migrants born in China or India living in the United States, whereas the number of Mexican foreign-born has only increased by about 31 per cent.

Who is allowed to immigrate?

When an immigrant is granted permission to live and work in the United States on a permanent basis, they are issued with a Green Card. There are various rules governing under what conditions a Green Card will be issued. As well, the Diversity Visa Lottery is an intriguing component of the American immigration system. Known as the Green Card Lottery, once a year people can apply for one of 55 000 permanent resident visas and their names are selected from a ballot. It is designed to diversify population in the country. Only those born in any territory that has less than 50 000 immigrants to the United States in the previous five years are eligible to apply. Before they are granted permission to immigrate to the United States, lottery

winners must have a high school education or two years of work in an occupation that requires at least two years of training or experience. They also must pass a medical exam and their security background is checked.

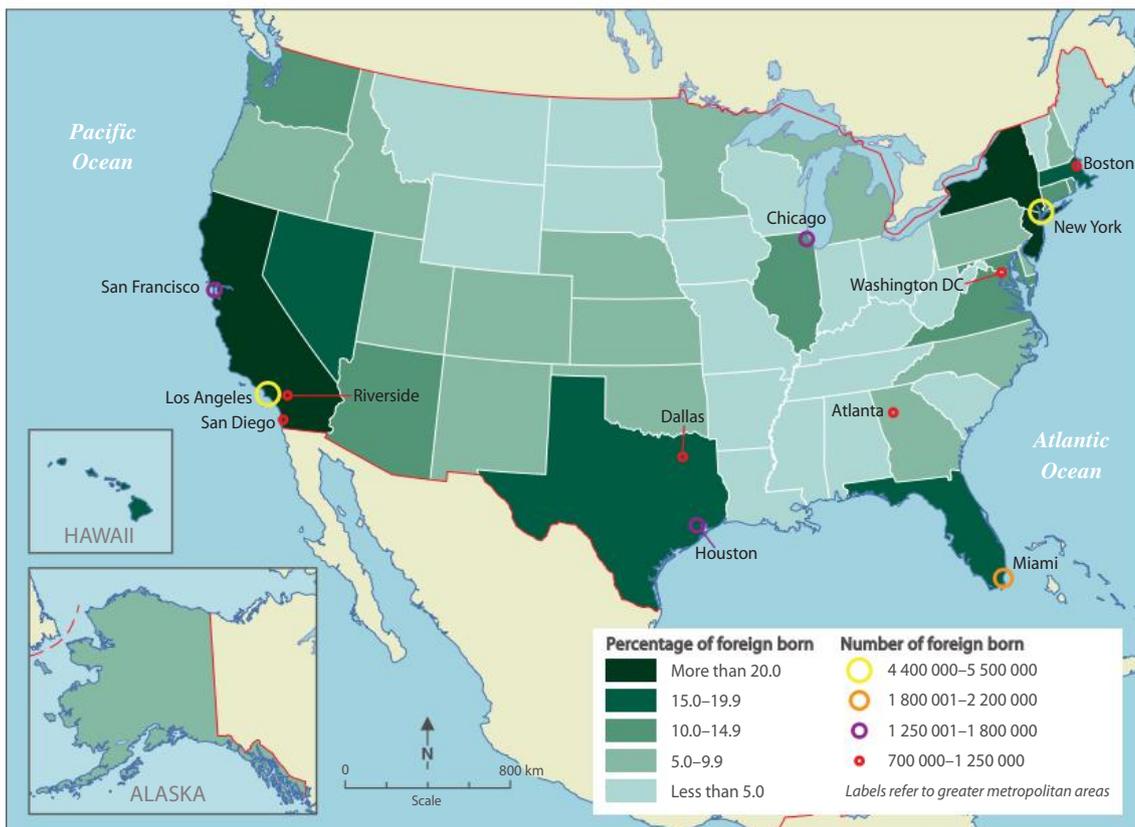


▲ **Figure 5.24** People march for immigration reform in Southern California's largest city, Los Angeles (2015).

▶ ACTIVITIES

1. What is a Green Card?
2. Refer to figure 5.25.
 - a. Name the four states that have the highest proportion of immigrants.
 - b. Which cities have more than 1 250 000 foreign-born residents?
 - c. Refer to the interactive maps of immigrant density <http://www.migrationpolicy.org/programs/data-hub/charts/us-immigrant-population-state-and-county?width=1000&height=850&iframe=true>

Then write a response of two to four paragraphs to the question 'Is the United States a "nation of immigrants"?'



◀ **Figure 5.25** Distribution of foreign-born population in the US, and metropolitan areas with 700 000 or more foreign-born residents in 2012

What impacts does immigration have in the US?

Immigration brings positive and negative issues to the United States. These can be generally classified as economic, political, social and environmental impacts.

Economic

Immigration can drive positive economic growth and job creation, especially if high-skilled immigrants, graduates and entrepreneurs are given priority. Economists agree that immigrants benefit USA as they contribute to the economy in many ways, including by paying taxes.

Many immigrants provide cheap labour in manufacturing and service industries that contribute to economic growth; this can serve to keep inflation in check. As well, immigrants provide scarce and needed expertise for the advanced services sector. For example, at 36 per cent, Silicon Valley's percentage of foreign-born residents is significantly higher than California (27 per cent) or the United States (13 per cent). Silicon Valley is so named as it has been a high-tech hub for the development of modern computing and associated technologies since the 1970s.

Located in California, in the northern part of Santa Clara County, an area extending from the south end of the San Francisco Bay Area to San Jose, it attracts immigrants many of whom are granted residency under a H-1B visa which enables the employment of workers in specialty occupations.

Political

Recently, the US Census Bureau stated that there are likely 11–12 million illegal or 'unauthorised' immigrants in the country. Of course these are estimates. According to United States Department of Homeland Security, unauthorised resident immigrant population is defined as all foreign-born non-citizens who are not legal residents. Most unauthorised residents either entered the United States illegally or arrived legally with temporary, non-immigrant visas and then overstayed. Visa overstays account for up to half of illegal immigrants in the United States.

Over half the illegal immigrants in the United States are Mexicans, and illegal Mexican immigrants outnumber the legal. Immigrants assist areas throughout the United States to meet labour needs. Commonly, illegal immigrants work in lower qualification industries including food production, agriculture, construction and domestic service. They are generally poorly paid and may live in poverty. They predominantly settle in California, Texas, Florida and New York (figure 5.26). These unauthorised residents operate in an underground or informal economy, not paying taxes and are not protected by health and safety regulations.

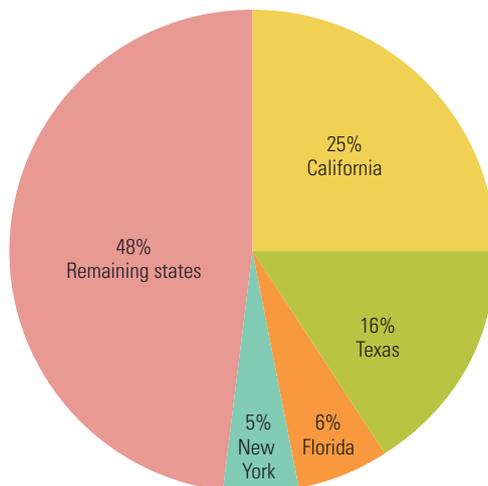
Immigration is an important political issue, brought about through major differences in immigration policies among parties. Periodically, the US decides to give residency to long-term illegal migrants through special programs. On 20 November 2014, Democrat President Barack Obama announced amnesty to an estimated four million illegal immigrants who have been resident in the US for five years. This important immigration reform enables immigrants to avoid prosecution and deportation. They must pass criminal and security checks, and pay taxes and a fine. The Republican Party is divided on the issue of how to deal with illegal immigration.

Social

Patterns of immigration have significant effects on the ethnic composition of American society. Social effects can be positive because immigrants enhance the diversity of the population, but increased immigration may cause increased racial and ethnic tensions.

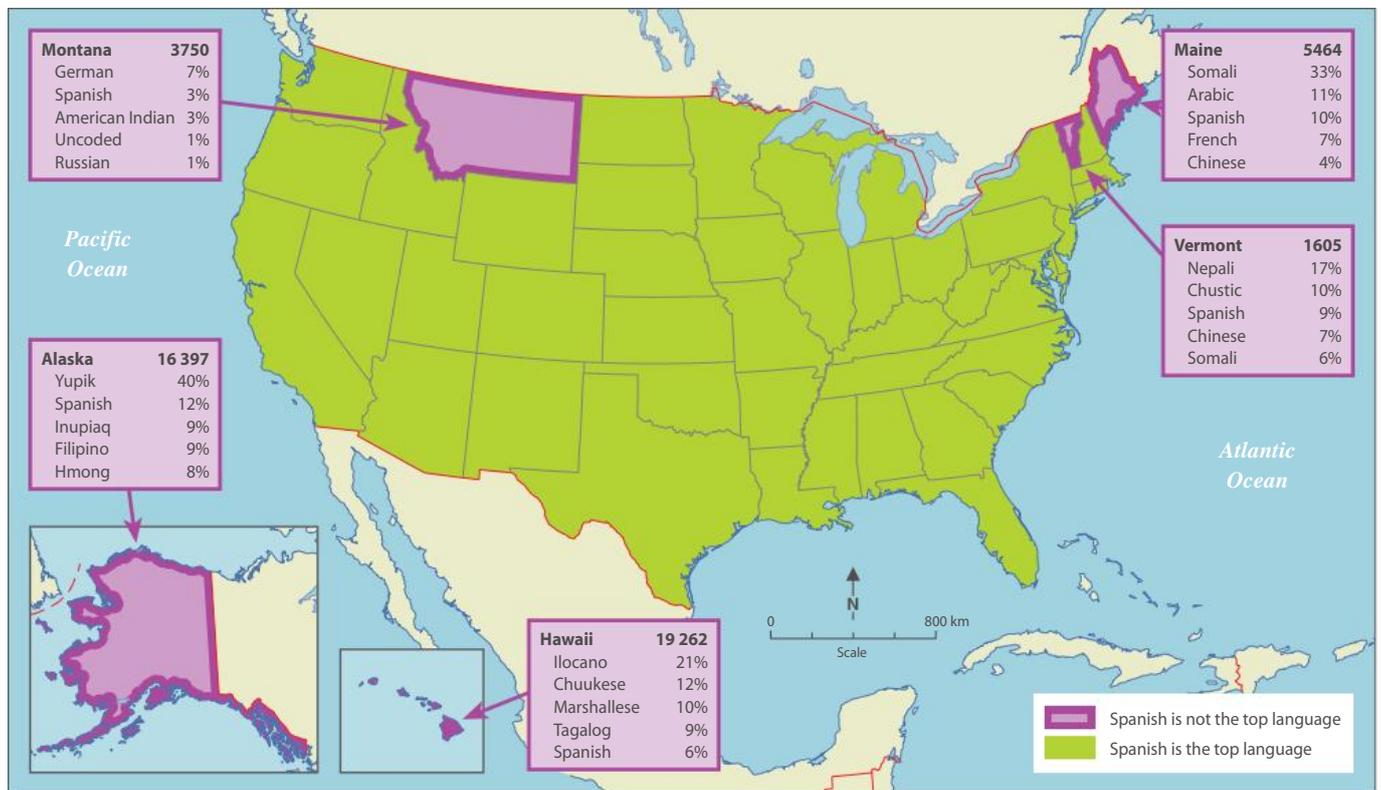
Immigrants face challenges of language barriers. In 2014, approximately 22.4 million adult immigrants were unable to speak English well. For adults this impedes their opportunities for work and for training. As well, their wage-earning potential is limited as they are funnelled to low-paying jobs with little opportunity for advancement. Limited English Proficient residents (LEP) are often immigrants or children of immigrants.

► **Figure 5.26**
Recipient states of unauthorised immigrants



▼ **Figure 5.27** These Somali children are greeted by a police officer working with other community members to provide sporting opportunities for refugees.





▲ **Figure 5.28** Seven states with a language other than Spanish as the top language spoken by English Language Learners (ELL)

In 73 per cent of LEP homes, Spanish is the home or first language, followed by Chinese (3.8 per cent, figure 5.28). However, in some states indigenous languages are the leading first language such as Ilocano in Hawaii, and others have a cluster of refugee groups, such as Somali in Maine.

As of 2012, there were around 85 700 people with Somali ancestry in the US. During the Somali civil war and the famines of 1991–92 and 2011, Somali fled firstly to neighbouring Kenyan refugee camps. The United States has made it a priority to resettle more than 12 000 Bantu refugees. The Bantu are a minority ethnic group from Somalia who have been persecuted in Somalia. Many Somali came initially to the town of Shelbyville, Tennessee, to work at a chicken-processing plant.

After settlement in Shelbyville and other areas, a significant number have now settled in Maine attracted by promising employment opportunities including the employment of many Lewiston Somalis at L. L. Bean, an online retailer. Lewiston is the second-largest city in Maine, home to about 36 000, including 1000 Somali settlers. These refugees are warmly welcomed by some locals (figure 5.27) and also face hostility from other residents.

Environmental

Discussions of the environmental impacts of immigrants rarely feature in the immigration debates. This is because it is not simply numbers of people but their attitudes and behaviours that lead to consumption patterns which have effects on the environment. These effects may be noticed in the local area or far from the home destination.

What about internal movements and emigration overseas?

Most analysis of US population focuses on immigration. Population *change* affects different *places* depending on the *scale of movement*. Americans move an average of 11 times in their lives, though mostly they move within national boundaries, and often within the same or nearby communities. There are no accurate statistics of the total number of Americans living abroad, and estimates range from 2.2 million to 6.7 million. It is generally agreed that Mexico and Canada have the largest population of US citizens.

▶ ACTIVITIES

1. Describe the impacts of immigration to Lewiston on people and *places*.
2. Draw a concept map to illustrate the interconnections or links between migration issues and challenges.
3. Identify and describe the social, economic, environmental and political factors contributing to the impact of population *change* in USA.
4.
 - a. Investigate strategies and the impact of strategies related to population *change* in USA.
 - b. Using criteria that you develop, evaluate the effectiveness of the approach to one migration issue in USA.
5. What percentage of adult immigrants in USA are Limited English Proficient (LEP)?
6. Suggest why Mexico and Canada have the largest populations of US citizens outside USA.
7. Investigate and discuss: Migration of diverse ethnic groups forms multicultural societies and, though segregation policies no longer exist in USA, patterns of segregation are still evident.

6

Population trends and issues: ageing in Japan and Germany

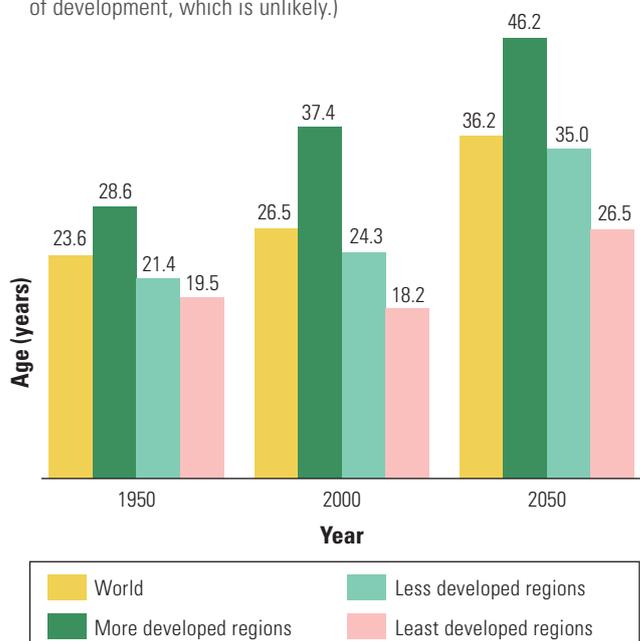
Global-scale ageing

Every second two people across the world celebrate their sixtieth birthday! Population ageing is a global trend, across both more developed countries and less developed countries, although it is occurring most quickly in the latter. An ageing population may be defined as one in which an increasing proportion of the population is in the older age groups. While the United Nations uses 60 years as a reference point, many more developed countries use 65 years, as this is often the age at which people become eligible for social security benefits. In 2012, one in nine people in the world was aged 60 years and over; this is projected to increase to one in five people by 2050 or approximately two billion people in total (refer to figure 6.1). An ageing population is reflected in the increasing median age of a population, as shown in figure 6.2. There is considerable *regional* variation in this *process*, as shown in figure 6.3.

▼ **Figure 6.1** Key statistics on global ageing

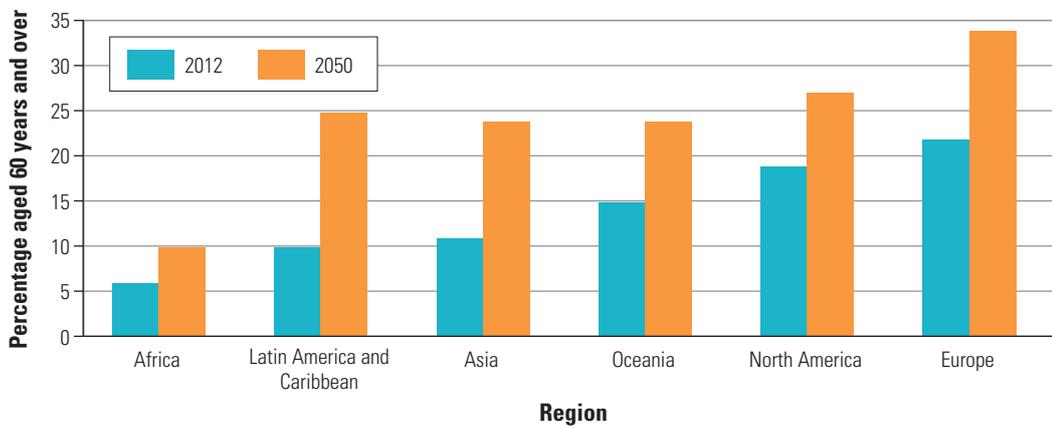
COUNTRY OR AREA	NUMBER (THOUSANDS) AGED 60+		PERCENTAGE OF TOTAL POPULATION AGED 60+		LIFE EXPECTANCY AT BIRTH, 2010–2015	
	2012	2050	2012	2050	Men	Women
World	809 743	2 031 337	11.5	21.8	67	72
More developed countries	279 287	418 326	22.4	31.9	75	81
Less developed countries	530 455	1 613 011	9.1	20.2	66	69
Least developed countries	46 389	181 568	5.3	10.5	58	60

▼ **Figure 6.2** Median age of the population over time. (Note: These categories assume constant categories of development, which is unlikely.)



As shown in figures 6.3 and 6.4, the greatest concentration of aged people is in the *region* of Europe; however, the *distribution* of total population means that the *region* of Asia has the greatest number of those in the sixty plus age group — in China alone, there are an estimated 200 million people aged 60 and over.

An ageing population is the product of past higher birth rates and falling death rates as more countries move into Stages IV and V of the Demographic Transition (see page 40). In 1900 the world's average life expectancy was around 30 years. By the 1980s it had more than doubled to 62 years while a baby girl born in 2013 could expect to live an average of 73 years, and a baby boy to 69 years. As more people survive for more years — and as fertility rates continue to drop — populations will age, with much more rapid *change* occurring in less developed *regions* (see figure 6.2). This allows them less time to plan and adapt to the consequences of an ageing population. The global *distribution* of people aged 60 years and over in 2015 is shown in chapter 2.



◀ **Figure 6.3**
The *changing* proportion of aged persons by *region*, 2012–50

▼ **Figure 6.4** Global-*scale* responses to ageing

YEAR	NAME	ACTIONS
1982	First World Assembly on Ageing held in Vienna	Established the International Plan of Action on Ageing. Aimed to strengthen the capacity of governments to deal with ageing. Documented the rights of the elderly.
1990	The UN General Assembly voted to establish October 1 as the International Day of Older Persons	Aimed to raise awareness about issues affecting the elderly and to appreciate the contributions that older people make to society.
1991	United Nations General Assembly adopted the UN Principles for Older Persons	18 Principles seek to ensure that priority attention will be given to the situation of older persons, and address the following five areas: independence, participation, care, self-fulfilment and dignity of older persons.
2002	Second World Assembly on Ageing held in Madrid	Established the Madrid International Plan of Action on Ageing. Governments agreed for the first time on the need to link ageing with human rights to enable ageing with security and dignity. The Plan makes 239 recommendations for action linked to the 18 Principles. However, it is non-binding on UN member nations.
2009	UN Commission to Eliminate Discrimination Against Women	Included recommendations about older women and their rights so that they can participate fully without discrimination and on the basis of equality.
2014	WHO launched a new website, Age-friendly World	The site provides guidance and tools for starting, implementing and evaluating age-friendly initiatives, as well as information on projects that are already up and running around the world via the WHO Global Network of Age-friendly Cities and Communities.

The world's older population is more likely to be female (55 per cent) and an urban dweller (51 per cent). The 'oldest of the old' — those aged 80 years and over — are growing more quickly than those aged over 60 years as a whole: globally, 1.6 per cent of the population in 2012 was aged 80 or over, with the proportion projected to rise to 4.3 per cent by 2050.

One concern about the impact of an ageing population is the increase in the dependency ratio — the proportion of those in the dependent population (those under 15 years of age and over 65 years who are supported by those in the workforce). There are also the economic implications of this, as well as the need to plan for the specific needs of this age group, particularly in terms of health requirements. These issues are explored at a national *scale* in this chapter. The 2012 United Nations Population Fund (UNFPA) report, 'Ageing in the twenty-first century', views the ageing *process* as both an achievement and a challenge. It considers that increasing life expectancy due to improvements in health should be a source of celebration as older people can make important contributions to society as family members, volunteers and as active participants in the workforce. However, the extent of the social, economic and cultural challenges to individuals, families and societies will depend on how quickly and effectively we respond

to the needs of an elderly population. At a global *scale* there have been a number of responses to such concerns. Figure 6.4 summarises these international responses to an ageing population, primarily via the United Nations and its agencies.

▶ ACTIVITIES

1. Examine the data in figure 6.2. Which group of countries became younger before older? Suggest why this is the case.
2. Refer to figure 6.3. Compare the rates of ageing for the different *regions* as reflected by their *changing* percentage of aged population.
3. 'The *distribution* of the ageing population is *spatially associated* with other population dynamics such as birth rates and death rates.' Discuss.
4. Suggest why the speed of ageing in less developed countries has been much faster than for more developed countries.
5. The United Nations recommendations on ageing are 'non-binding'. Suggest what this term means. What problems could this create for elderly people?
6. Use the internet to access information on the Madrid International Plan of Action on Ageing. For each of the three priority directions (older persons and development; advancing health and wellbeing into old age; ensuring enabling and supportive environments) identify the issue which you consider to be most important. Justify your decisions.

Japan

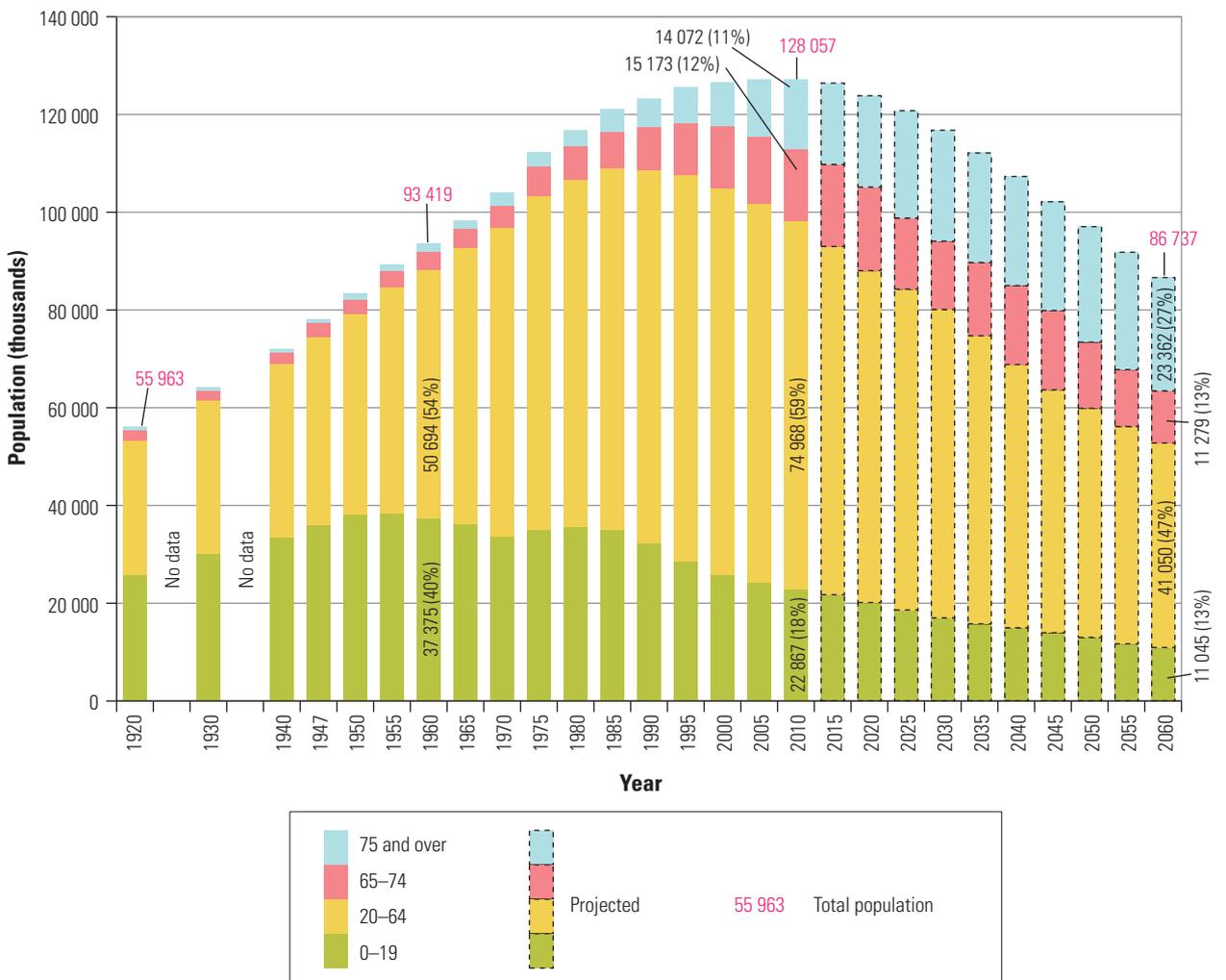
Japan's population dynamics

Japan had an estimated population of 126.9 million people with a median age of 46.2 years in early 2015. Of these, 93 per cent of the population live in urban areas. While it was the tenth most populous country in the world at the time of this estimate, its population has been steadily declining every year since it reached a peak of 128 million in 2010 (refer to figure 6.5). This has resulted in a substantially different demography to any other current population: Japan was the first country in the world to be considered 'hyper-aged' — defined according to the United Nations as a country with more than 20 per cent of its citizens aged over 65 years.

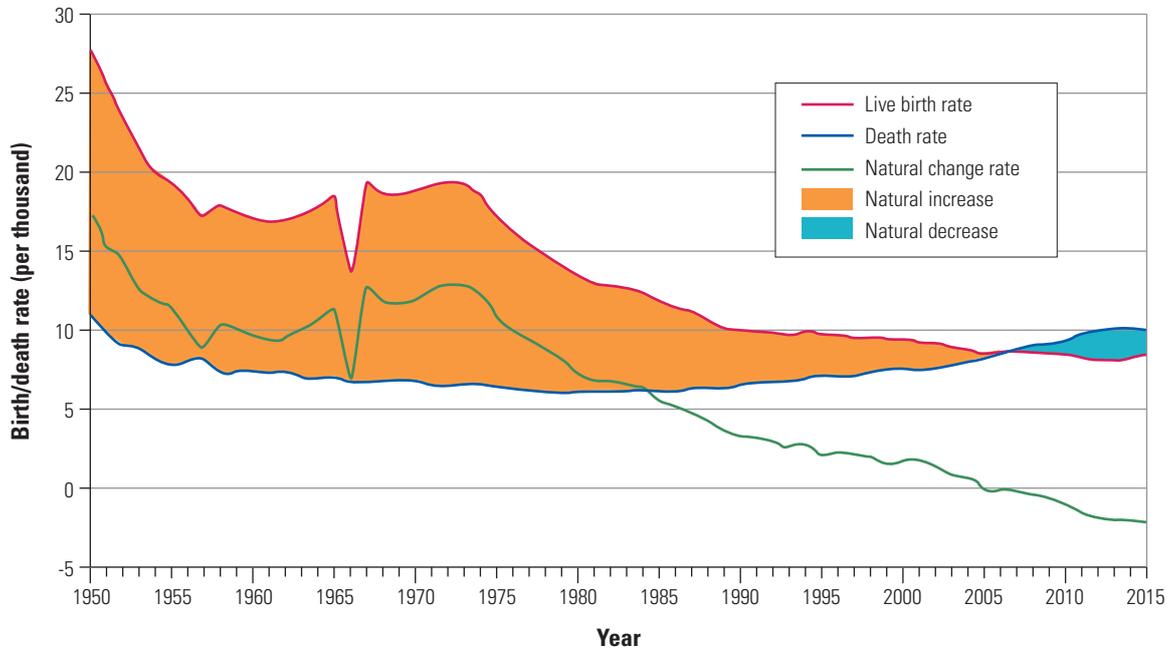
Until the mid-nineteenth century, Japan's population was reasonably stable at approximately 30 million people. As the country improved health services, and infant and child mortality fell, its population grew,

reaching 60 million in 1926. The post–World War II baby boom led to relatively rapid growth with the 100 million mark reached in 1967. The annual pace of population growth averaged about one per cent in the 1960s and 1970s — there was a small increase in the birth rate as the number of people born in the post-war baby boom reached the typical marriage age of their mid-twenties. However, as figure 6.6 illustrates, the birth rate has continued to fall since then from 18 to 8 per 1000 per year. The death rate showed little *change* between 1975 and 1987 (between 6 and 6.3 per 1000 per year). Since 1988, however, it has increased due to the increased percentage of aged persons in the population. The death rate was 10.1 per 1000 in 2013. From 2005, there has not been a natural increase but a decrease — in 2013 the natural *change* rate was minus 1.9 per 1000.

▼ **Figure 6.5** Japan's *changing* population growth and structure, 1920–2060



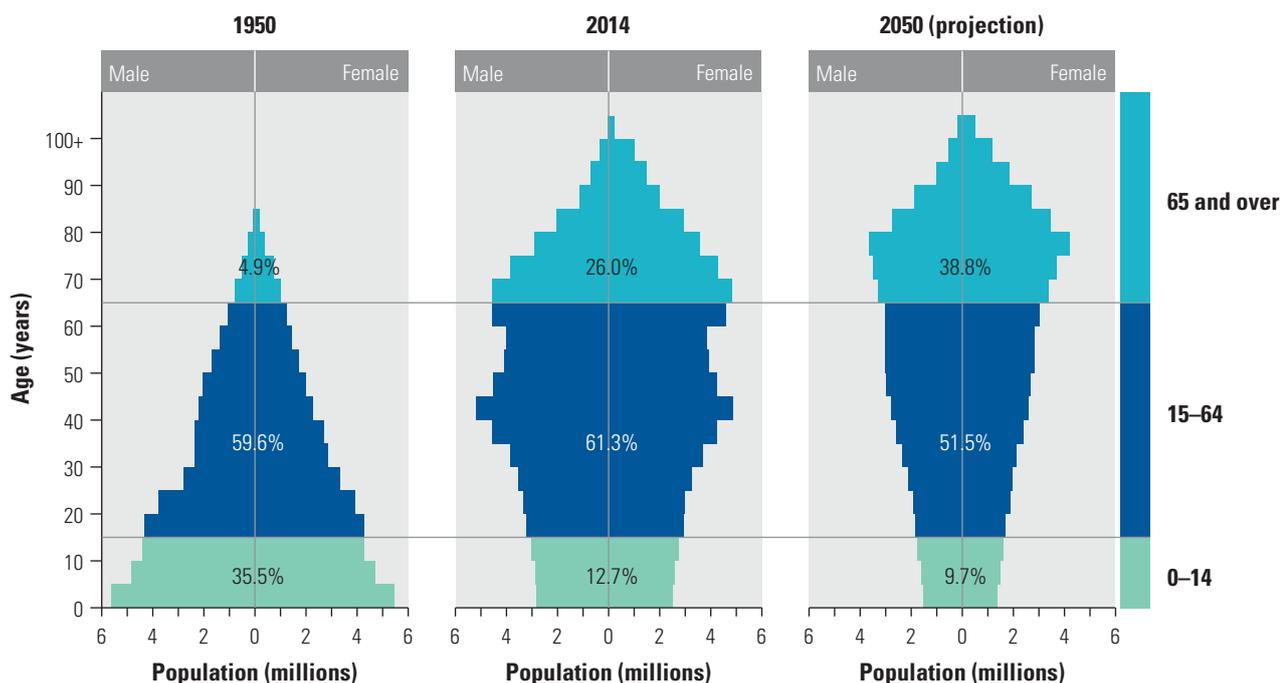
▼ **Figure 6.6** Japan's *changing* birth and death rates



The resulting population structure of Japan is illustrated by the population pyramids in figure 6.7. The broad base of the 0–14 age groups in 1950 (35.5 per cent of the population) had more than halved by 2014 to 12.7 per cent of the population. Conversely, the percentage of people aged 65 years and above increased from 4.9 per cent in 1950 to 26.0 per cent in 2014 and is expected to contain over a third of the population by 2050. The proportion of the population in the working age groups (61.3 per cent in 2014) has been declining since 1993 and is expected to continue to do so. The population profile has moved from a pyramid shape to a coffin shape, reflecting the ageing society.

As indicated in chapter 2, the speed of the ageing *process* in Japan has been much faster than that in any other country to date. This *scale of change* has significant implications in terms of responses to the impacts of this population issue, as discussed on the following page.

▼ **Figure 6.7** Japan's *changing* population pyramids



What processes are responsible for Japan's population dynamics?

As indicated in chapter 2, an ageing population is a function of two main *processes*: increased life expectancy and declining fertility. The rates of *change* of these two components, however, are unique to Japan due to the specific characteristics of Japanese society.

As shown in figure 6.8, Japan has experienced a steady increase in life expectancy since 1950 and the country now has the highest average life expectancy in the world. According to the World Health Organization this is over 83 years: 87 years for women and 80 years for men. Japan also has the highest number of years lived in good health — 78 years for women and 72 years for men. Suggested reasons for this high life expectancy have included:

- ▶ the healthy Japanese diet which contains lots of fresh vegetables, fish and soy products with minimal sugar
- ▶ after World War II the Japanese government invested heavily in public health to reduce infectious diseases and created a universal health insurance regime to ensure that anyone could receive necessary medical treatment. It has also run campaigns to reduce the intake of certain harmful foods such as salt
- ▶ the Japanese people place a strong emphasis on hygiene and most people have regular health check-ups
- ▶ the active lifestyle of Japan's retirees — not only in terms of physical activity but in terms of community and family involvement.

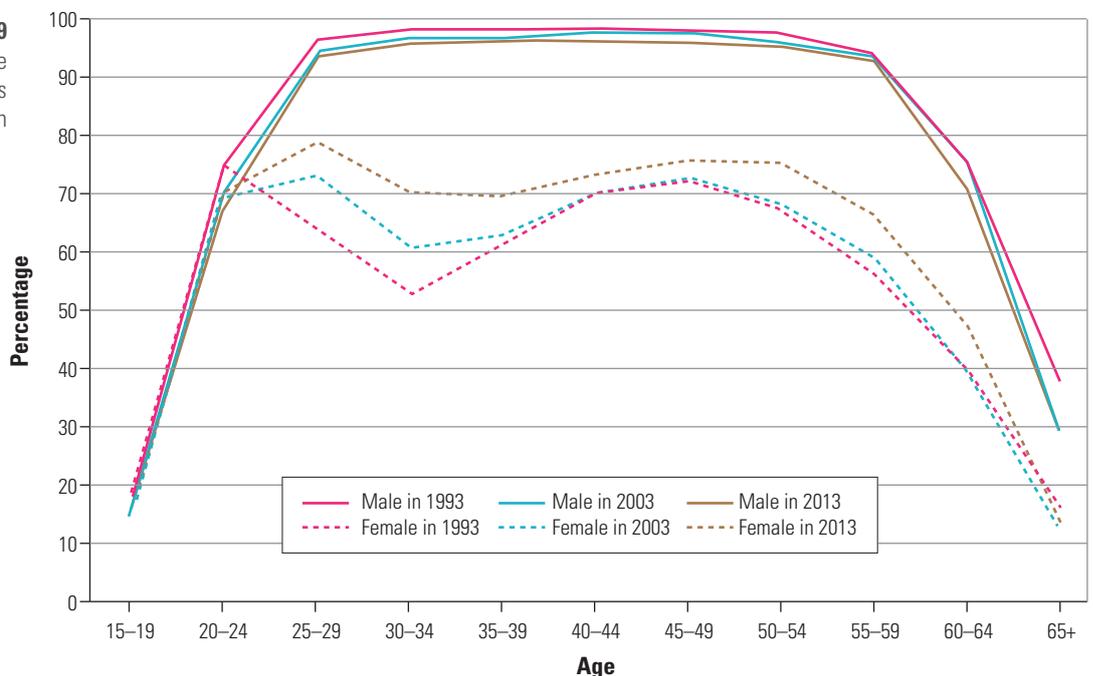
▼ **Figure 6.8** Changing life expectancy and fertility rates in Japan

YEAR	LIFE EXPECTANCY (years)	TOTAL FERTILITY RATE
1950	60	3.65
1960	67.67	2.00
1970	71.95	2.14
1980	76.09	1.90
1990	78.84	1.34
2000	81.08	1.40
2010	82.84	1.34
2015	84.74	1.41
2025	87.06 (projected)	1.40 (projected)

Fertility rates have experienced a significant decline in the post-war period and have been below replacement rate since the mid 1970s (refer to figure 6.8). In the 1950s and 1960s, fertility rates were initially lowered via abortion, but in later decades additional family planning options were available. Japan's fertility rates have remained low for a number of reasons:

- ▶ the rising marriage age of Japanese women (29 years) has resulted in fewer reproductive years in which to have children. Marriage remains the only socially acceptable way to have children in Japan: far fewer children are born outside wedlock than in other more developed countries (two per cent of births in Japan compared to 43 per cent in Britain)
- ▶ the traditional expectation that women will not remain in the workforce once they marry and have children. As figure 6.9 shows, workforce participation for Japanese women is substantially lower than that for males and those rates fall considerably for women aged 25 to 39 years of age. Roughly 70 per cent of women stop work after the birth of their first child compared to one third in the USA

▶ **Figure 6.9**
Changing labour force participation rates for males and females in Japan





▲ **Figure 6.10** Parasite singles — young singles who typically remain living with their parents and pursue a consumer rather than a family lifestyle

- ▶ long work hours — the Japanese work ethic and the expectation that employees will devote long work hours to their company make it very difficult for family life. Eleven per cent of employees work more than 60 hours per week. In addition, few Japanese people take all their annual leave entitlements (ten days) as they feel they are letting their company down if they do so
- ▶ child care is costly and in short supply. According to government estimations there are 25 000 children on a waiting list across the country. Costs are means tested but range from around A\$1000 to \$1500 per month
- ▶ Japanese husbands do not make a significant contribution to child care and housework — an estimated one hour per day compared with three hours per day in Germany and USA
- ▶ the high cost of living, the weak economy and limited living space in urban areas discourage large families. Education fees for children are also expensive
- ▶ the high cost of housing means that many young people remain living with their parents rent free until about the age of 30. These 'parasite singles' (pictured in figure 6.10) use their disposable income on themselves rather than planning to take on their own family responsibilities.

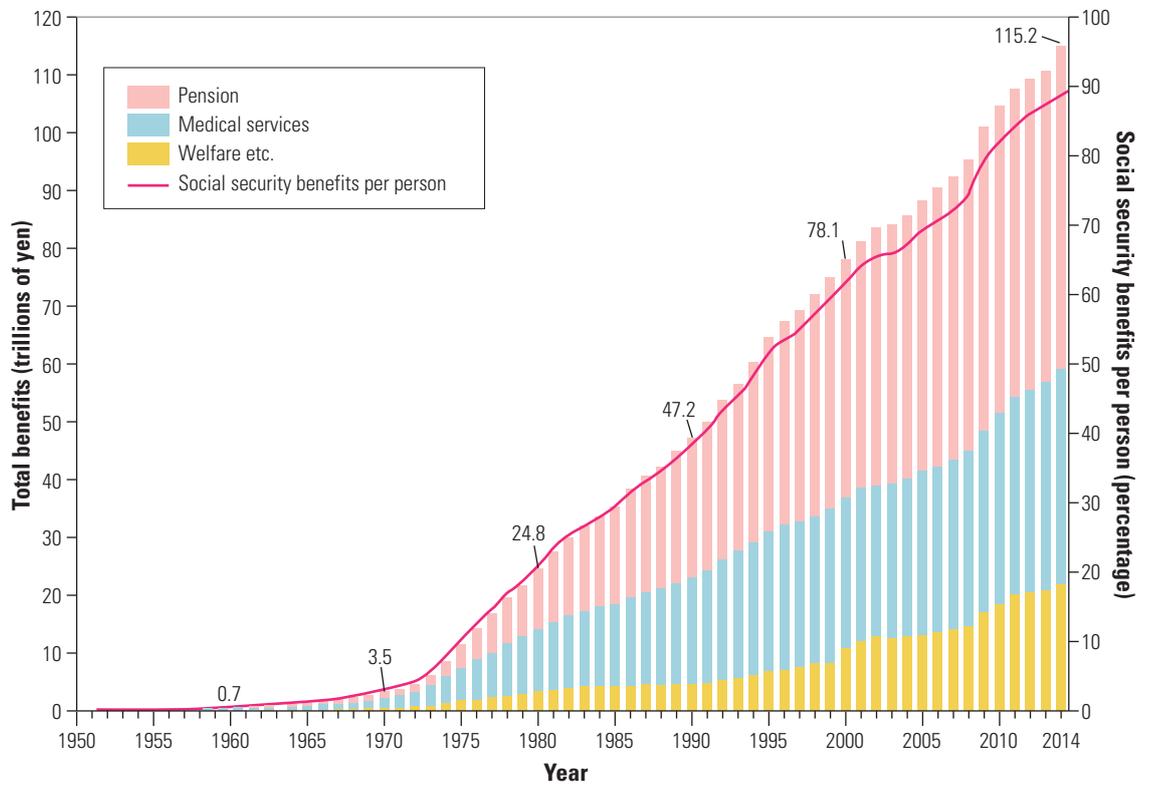
What are the impacts of Japan's population changes?

Japan has been experiencing a decline in the working population since 1995. The number of working age people is expected to roughly halve between 2010 and 2060, decreasing from 81.73 million to 44.18 million. Unless the rate of labour force participation increases dramatically, the resulting smaller workforce means that there are fewer taxpayers to support each elderly person. The elderly dependency ratio (the ratio of the elderly to the working age population) is increasing rapidly. In 1985 there were seven productive individuals to support each person over 65 years. This fell to 2.8 by 2010 and is projected to drop to 1.7 by 2035.

The economic implications of these *processes* are significant. Less revenue is received by the government via taxation but it must spend more on social security such as pensions and aged health care.

Benefits for the aged account for approximately 70 per cent of Japan's total expenditure on social security benefits which is over A\$1000 billion annually. Pensions account for half of this and medical care almost another third (refer to figure 6.11, page 106). Such expenditures are forecast to continue growing, causing considerable budgetary pressure for the government. In addition, the smaller population will result in a smaller domestic market and less demand for goods and services which will have an impact on the country's Gross Domestic Product. A smaller labour force could lead to labour shortages and therefore upward pressure on wages. Such impacts could also discourage further investment by manufacturers in Japan, lowering economic growth.

► **Figure 6.11**
Changes in Japan's social security over time



Of course an ageing population may also present new opportunities for companies (see figure 6.12). Products aimed specifically at the 'silver market' are in increasing demand; for example, mobility scooters, household services, financial management, travel tours designed for seniors and accessible housing.

There is considerable *regional* variation in Japan's *changing* population (see figure 6.13). As a result of mass rural–urban migration, especially during the 1950s and 1960s, the average age of Japanese farmers has increased from 51 years in 1980 to 65.9 years in 2011. Many rural communities in Japan have already faced not only an ageing population, but a declining one. For example, the population of the city of Yubari in Hokkaido has plunged by 90 per cent since the closure of its coal mines in 1980 and, of those remaining residents, nearly half are older than 65. Some towns have depopulated to the extent that populations are falling below the threshold for viability. However, the

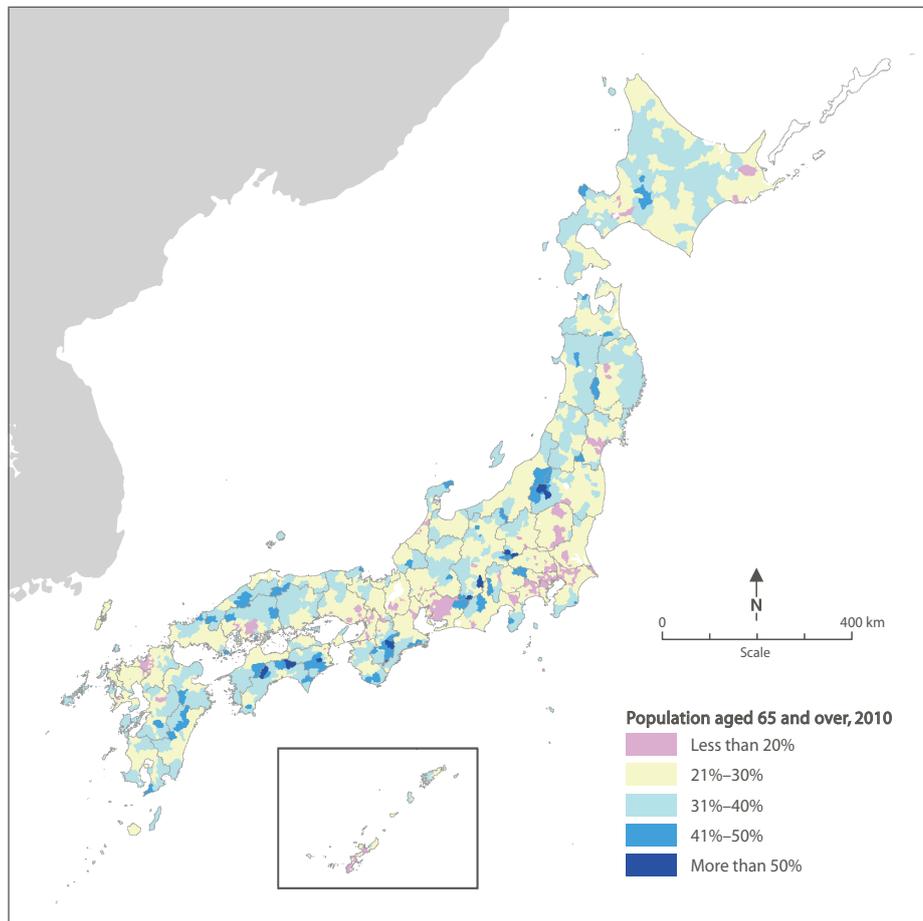
greatest increase in elderly population in future will be in the large urban areas — Tokyo's aged population is projected to increase by 50 per cent by 2035.

Household composition has shown a steady increase in single-person households and a decline in nuclear family and three-generation households (see figure 6.14). It is anticipated that single-person households will almost double from 3.87 million in 2005 to 7.17 million by 2030. Both the *distribution* and structure of aged households have considerable implications for the provision of relevant aged care.

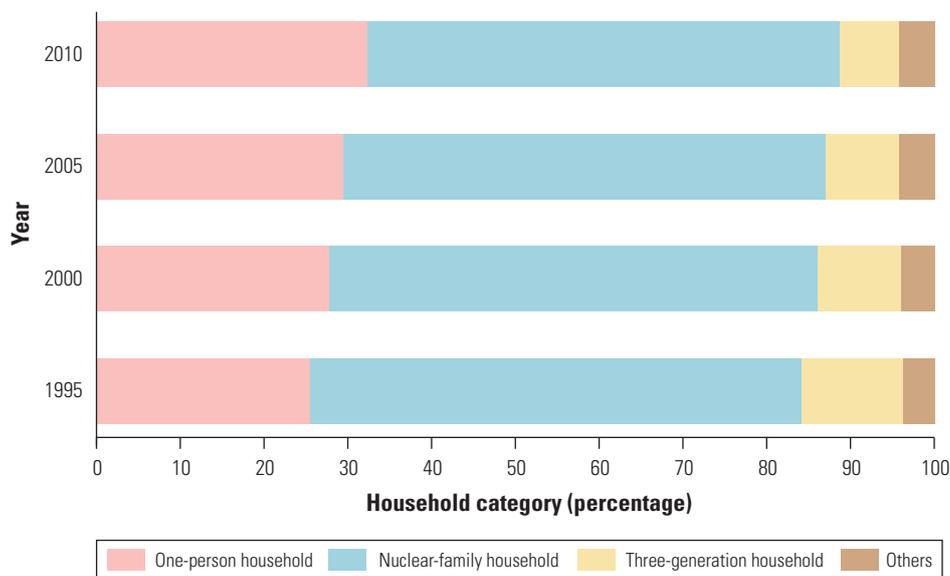
In terms of political impact, Japan's senior citizens will have increased electoral clout, given that they will comprise an increasing percentage of voters. The possibility exists for intergenerational conflict over the future allocation of government spending and the question of the *sustainability* of the debt burden faced by the country.

▼ **Figure 6.12** Japanese wave after modeling the latest styles of adult nappies during a show in Tokyo. The show was organised to raise awareness of some of the issues facing the county's rapidly ageing population.





◀ **Figure 6.13**
The *distribution* of the aged population in Japan



◀ **Figure 6.14**
Change in Japan's household composition

▶ ACTIVITIES

- Japan's birth rate, as shown in figure 6.6, showed a significant dip in 1966. This has been attributed to the 'year of Hinoeuma' (the fire horse). Use the internet to find out what this is and why it affected Japan's birth rate.
- Classify the factors affecting Japan's life expectancy and fertility rates (you may use the SHEEPT categories or devise your own).
 - Which factor do you consider to have the greatest relative importance on (i) life expectancy and (ii) fertility rates in Japan? Justify your decision.
- Draw a futures wheel or flow chart to show the impacts of Japan's ageing population.
- Identify those locations shown in figure 6.13 which have over 50 per cent of their population aged over 65 years.
 - List the specific facilities you think these areas will need to have in order to cater for the specific needs of a hyper-aged population.

National-scale responses to Japan's ageing population

In 1989, Japan's fertility rate reached a record low of 1.57, well below the replacement level of 2.1. Since then successive Japanese governments have attempted to address the *scale* and impacts of an ageing population in a number of ways. The Japanese Health Ministry initiated the 'Angel Plan' in 1994. This pro-natalist policy aimed to encourage women to have more children as well as increasing labour force participation by women. Strategies included the provision of infrastructure to support dual parenting including paid maternity leave of eight weeks on 60 per cent of salary and increasing the retirement age to 65 years (and possibly to 70 years in the future). There were plans for the construction of 50 000 day-care facilities near train stations (although not all these were built due to funding shortfalls). Costs of childbirth were not previously covered by the national health insurance scheme (pregnancy and childbirth were not viewed as illnesses) until 2008. The 'Angel Plan' was further amended by the 'Plus One Proposal' in 2009 which aimed to create family-friendly working conditions by encouraging workers to use all their annual leave, attempting to halve the number of workers who work over 60 hours per week and by increasing the amount of time husbands spend on child care and housework from one hour per day to 2.5 hours per day. In addition they hoped to increase the percentage of those aged 60–64 years who are working from 53 per cent to 60 per cent.

Some income support has been provided to families under the Act of Child Allowance since 2010. However, the amount is quite low — approximately US\$100 per child per month — and varies according to household income and the age of the child.

As indicated by figure 6.8 (page 104), these responses have had little impact on fertility levels. There was some initial increase from 1.34 in 1990 to 1.40 in 2000 but this fell back once more to 1.34 by 2010. Since the implementation of the policy, fertility rates have remained well below replacement level.

In terms of providing for the increasing number of aged, the Japanese government introduced a long-term care insurance system in 2000 to supplement the universal healthcare system. Until then caring for the elderly was a family responsibility. Now, all those aged over 40 years pay a compulsory premium which is used to partly fund care for those aged over 65 years who require it. The remainder of costs are covered by national and local taxation and a 10 per cent user contribution. Due to the increasing costs it faces, the government has also been steadily raising co-payments on medical services.

Currently approximately 30 per cent of the cost burden is passed to the consumer.

'Abenomics'

In June 2014, Japanese Prime Minister Shinzo Abe announced a number of reforms, dubbed 'Abenomics', aimed at increasing Japan's economic growth. Some of these centred on tackling the nation's shrinking population and declining workforce. His particular focus in this regard is to increase workforce participation by women, as traditionally many women have resigned from their jobs on motherhood. One aim is to create an additional 400 000 new childcare places by March 2018 and he has set both businesses and government a target of having women occupy 30 per cent of supervisory positions by 2020. Stockmarket-listed companies are encouraged (but not required) to have at least one woman on their boards. In addition there is a plan to reduce immigration restrictions that have limited the admission of foreign nannies and housekeepers, and has pledged to raise the number of highly skilled foreign workers.

The option of increasing population *movement* to Japan via immigration is not viewed as a popular measure to increase the workforce. Foreigners currently comprise only 1.3 per cent of the total population (1.6 million) although this represents a 5.9 per cent increase in the past five years. The largest group is from China (460 000), followed by Koreans (423 000), Brazilians (153 000) and Filipinos (146 000). A government report published in February 2014 recommended that 200 000 new immigrants per year from 2015 onwards be admitted, but this was met with hostility (although they were to be classed as temporary migrants, not permanent). The country has a largely homogenous society and unique culture which the majority of the people perceive would be threatened if more foreigners were admitted. One of the main issues facing migrants to Japan is the struggle to read and write Japanese. In addition, the Japanese government has provided little support for migrant groups, such as addressing the educational needs of immigrant children, so it is highly unlikely that migration will play a large role in addressing the needs of Japan's ageing population in the future.

▼ Figure 6.15 Some of Japan's elderly population



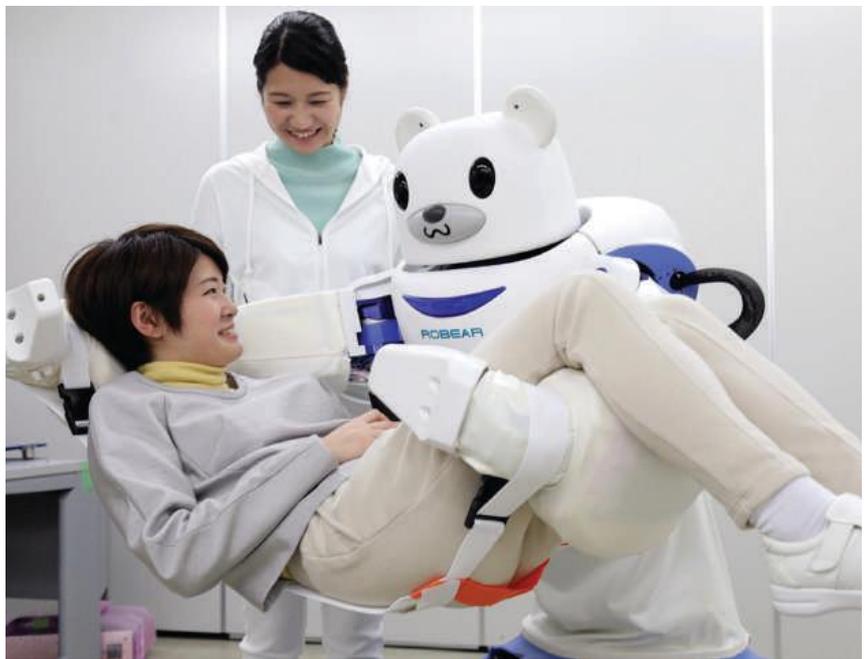
Local-scale responses

The industry sector in Japan has used its expertise in automation in the production line to design robots to assist the elderly and to help offset aged care staffing shortages. The domestic robot market is already a A\$1.8 billion a year industry. Toyota has created a robot butler that is controlled via a tablet computer and can be trained to pick up and fetch objects. A robotic body suit for stroke victims and a robot used to lift hospital patients (as shown in figure 6.16) are two of many devices currently on the market.

Other companies have been more direct in their approach to ageing. In 2000, toymakers Bandai Corporation, obviously concerned for long-term economic loss, announced it would pay a bonus of one million yen (approximately A\$12 500) for each baby an employee had after their second child.

At the local government level the township of Yamatsuri in northern Honshu aimed in 2006 to create a *sustainable* town by maintaining their population. They placed support for child care at the centre of their policies, cutting fees and extending hours. In addition, the town gives a cash gift of one million yen (approximately A\$12 500) to a family at the birth of the third child and 1.5 million yen (about A\$18 700) at the birth of the fourth. This policy has had limited success: after a slight initial increase in the birth rate, the population fell from 7000 in 2009 to just under 6000 in 2014. Other prefectures such as Yamanashi (on the island of Honshu, south west of Tokyo) and Kochi (on the south coast of Shikoku) have established matchmaking services in an attempt to increase their marriage rates. Such social gatherings have been well attended and some funding for such events is available via grants from the central government.

Local government and citizens have been involved in joint ventures to provide 'community holistic care'. The idea is that older people will be taken care of by others living in the vicinity, whether related to them or not. Day care and activity centres have been established and run by citizens with financial support from local government, such as in Musashino City in Tokyo. Community buses provide transport and local residents can receive training as volunteers to assist older persons. This supportive environment provides a choice of services for older persons that can meet their changing needs and is being progressively implemented in other local municipalities.



▲ **Figure 6.16** Robots are increasingly used in the care of the elderly to help overcome workforce shortage. Here, a nurse is demonstrating the use of a robot to lift a patient.



▲ **Figure 6.17** An unusual response to declining population. Dolls have been made to take the place of people in the emptying town of Nagoro in the south-western island of Shikoku. The aim of the dolls is to help create a greater feeling of community.

▶ ACTIVITIES

1. Evaluate the effectiveness of each of the strategies taken by the Japanese government to deal with the ageing population.
2. The Japanese government hopes to prevent the population from falling below 100 million people. What would be the advantages and disadvantages to Japan of meeting this target?
3. a. Use the internet to investigate more specifically the ways in which robots are being used to support Japan's elderly population.
b. Imagine you are an elderly person in Japan. Discuss the pros and cons of having a robot to assist you in your home.
4. Debate this topic as a class: 'Could immigration solve the issues associated with Japan's ageing population?'

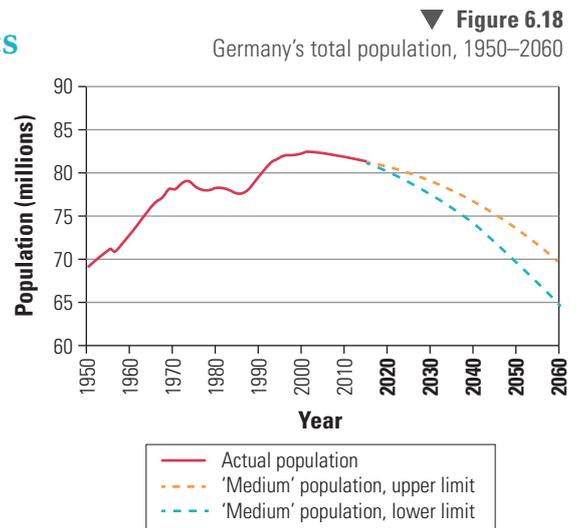
Germany

Germany's population dynamics

Germany had an estimated population of 82.5 million in early 2015 ranking it the most populous country in Europe and sixteenth in the world. With a median age of 45.9 years, Germany has an ageing population and it has also moved into the hyper-aged category with 21 per cent of its population over 65 years of age, second after Japan. As shown in figure 2.9, page 24, Germany is one of a number of countries in the European *region* experiencing negative population growth. Its population has been declining since 2004 when it reached a peak of 83.8 million. Like Japan, Germany also has a predominantly urban population with 74 per cent of the people living in urban areas.

In terms of population *change*, Germany's population grew relatively rapidly in the postwar period although, as shown in figure 6.18, its baby boom occurred slightly later — in the 1960s — than that of countries such as Australia as families faced greater economic pressures. Fertility rates then declined steadily from 2.36 in 1970 to hover around the 1.3–1.4 mark in West Germany since 1975. East Germany experienced more variability in fertility in response to some government incentives provided in the 1980s but, following national reunification in 1989–90 and improvement in living standards, its fertility fell quickly to mirror that of West Germany (refer to figure 6.19).

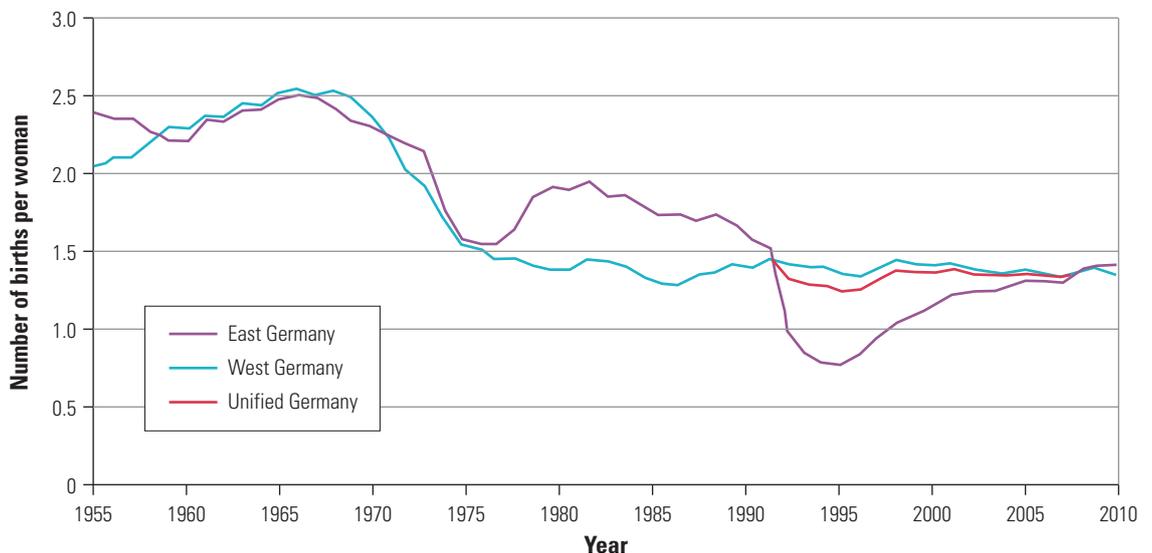
As in the case of Japan, fertility rates have fallen, not only due to improved education about contraception, and its availability, but due to *changing* roles and aspirations of women. While a greater proportion of children are born out of wedlock in Germany compared with Japan, those German women who do have children are doing so at a later age — on average 30 years. German women also face hurdles trying to balance career and motherhood. In Germany societal attitudes towards working mothers are generally unsympathetic — women who juggle jobs with children are commonly referred to as 'raven mothers', implying neglect. A study undertaken in 2012 found that the majority of Germans believe children are



harmed if the mother works fulltime. In addition, until recently, many childcare centres operated for only part of the day, closing in the afternoon thus making it difficult for working mothers. Given such circumstances, it is therefore not surprising that women in Germany are having fewer children.

Germany's death rate of 11.2 per 1000 people currently outnumbers its birth rate of 8.42 per 1000 people, clearly placing it at Stage V of the Demographic Transition (refer to figure 6.20 and see also page 40 in chapter 2). As the fertility rate has been well below the replacement rate for 40 years, this generation of children has been smaller in number than their parents' generation. High rates of immigration to Germany since the 1950s prevented the overall population from shrinking accordingly. The German economy has a history of dependency on 'guest workers' from south and south-east Europe for factory and service labour. The collapse of the communist system in the 1980s led to a *movement* of migrants of German origin from the former Soviet Union, Romania and Poland. There are currently more than 15 million people with an immigrant background living in Germany with the largest group being from Turkey (2.5 million) followed by those from the former Yugoslavia or its successor states (1.5 million).

▼ **Figure 6.19** Changing fertility rates in Germany, 1955–2014



The year 2015 saw a major *movement* of asylum seekers into Germany following Chancellor Angela Merkel's compassionate 'open door' policy in regard to Syrian refugees who were fleeing their country due to civil war. Over 800 000 asylum seekers arrived in Germany in 2015, with one in three from Syria. Albanians and Kosovans were also major groups arriving but their citizens are not normally eligible for political asylum as the German government considers their countries of origin to be safe.

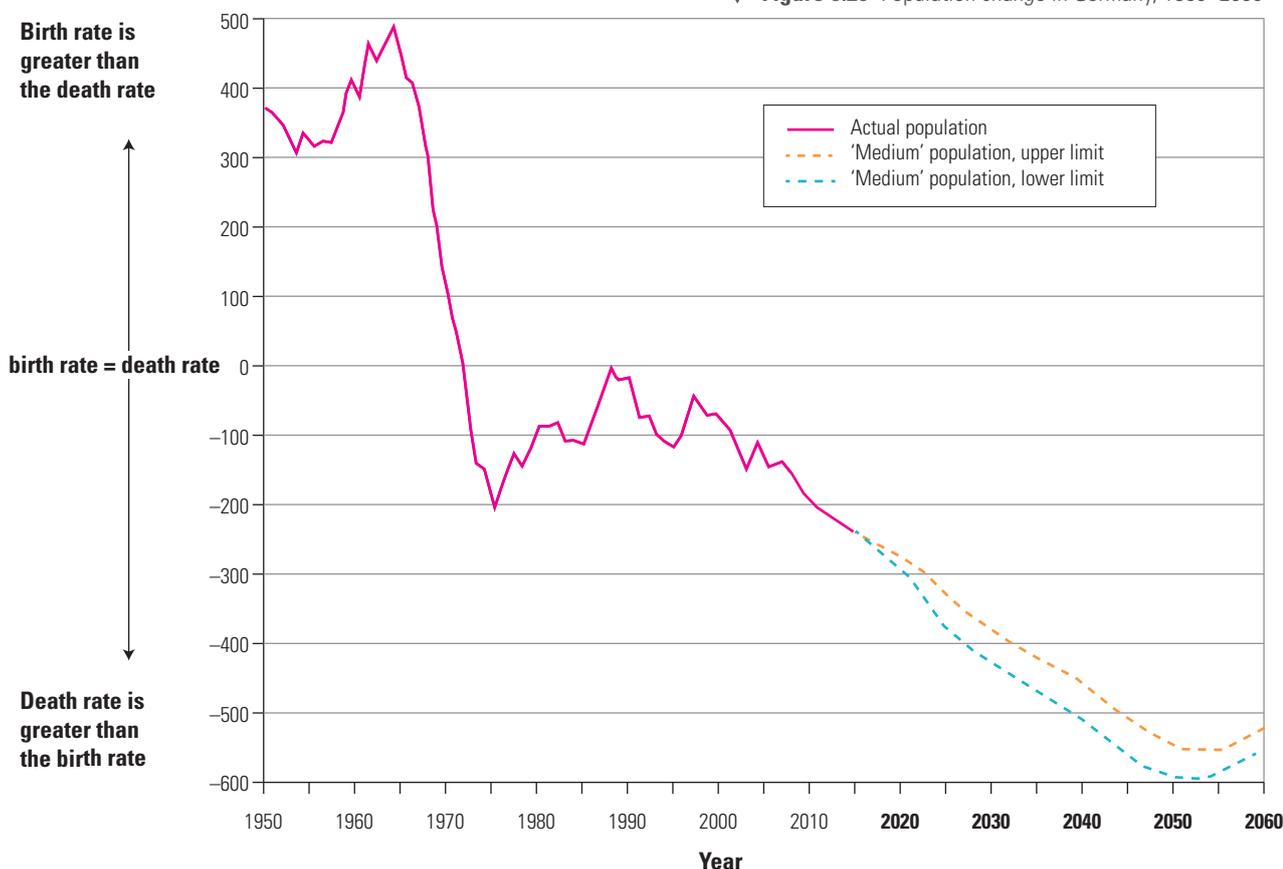
What are the impacts of Germany's changing population?

The German Federal Statistics Office estimates the population will shrink to between 65 and 70 million by 2060 (depending on a net migration of from 100 000 to 200 000 per year). As the *changing* population pyramids in figure 6.21 (page 112) show, the percentage of young people in the overall population is decreasing and the percentage of elderly people rising. The percentage of retirees will grow to over one-third of the population by 2050 with the median age increasing to 47.4 years. Consequently, the old-age dependency ratio will also increase. In 2008, there were 34 workers for every 100 retirees. By 2030, only two people will be working to support each retiree, falling further to 1.8 by 2040.

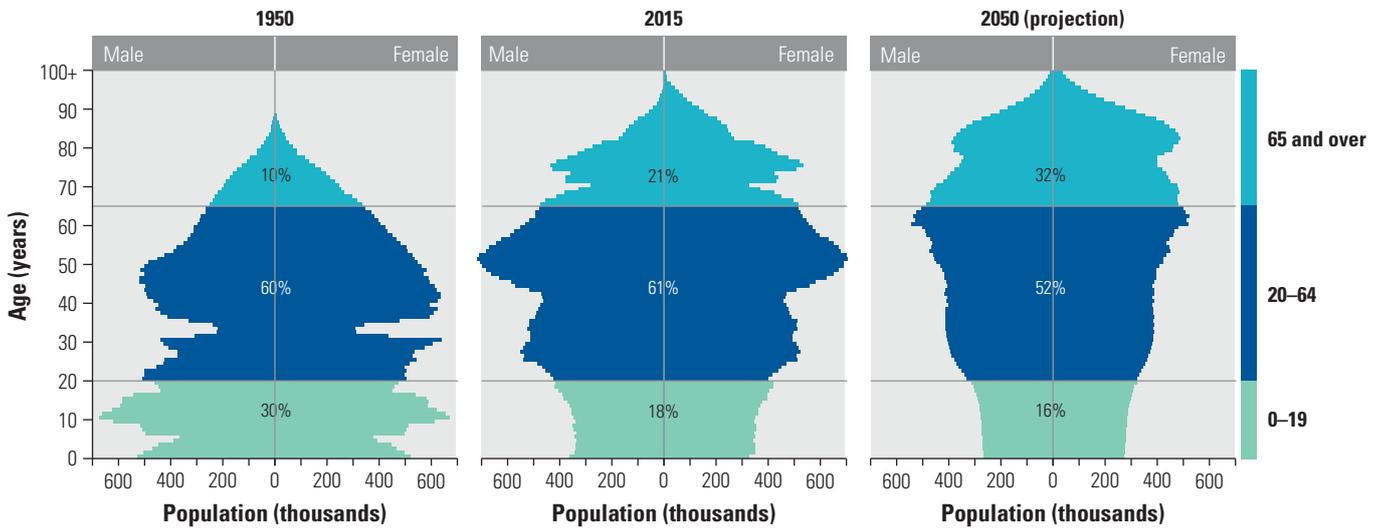
This, in turn, has implications for the health and social welfare systems in Germany. Germany's pension system is a 'pay as you go' system — each set of retirees is paid for by the subsequent working generation. Around 85 per cent of the average pensioner's income is state financed which is considered to be *unsustainable* (figure 6.22, page 112). Medical care in Germany is high quality and guaranteed for everybody. Health care is the largest employment sector in Germany, providing over four million jobs. However, the large proportion of elderly means a large percentage of the country's gross domestic product is spent on health. At 10.4 per cent of GDP, its health spending is 1.5 per cent more than the OECD average.

In addition to health, businesses that are predicted to grow due to Germany's *changing* population include asset management, pharmaceuticals, bio-technology, and support and social services. There will be less demand for products and services brought by younger people and families. Products that supply the local retail market only (not exporting) and real estate are likely to be hardest hit by the decrease in numbers and *changing* population structure. The contraction of the labour force creates both positive and negative impacts: for instance, a decrease in the unemployment rate on one hand but potential skills shortages on the other.

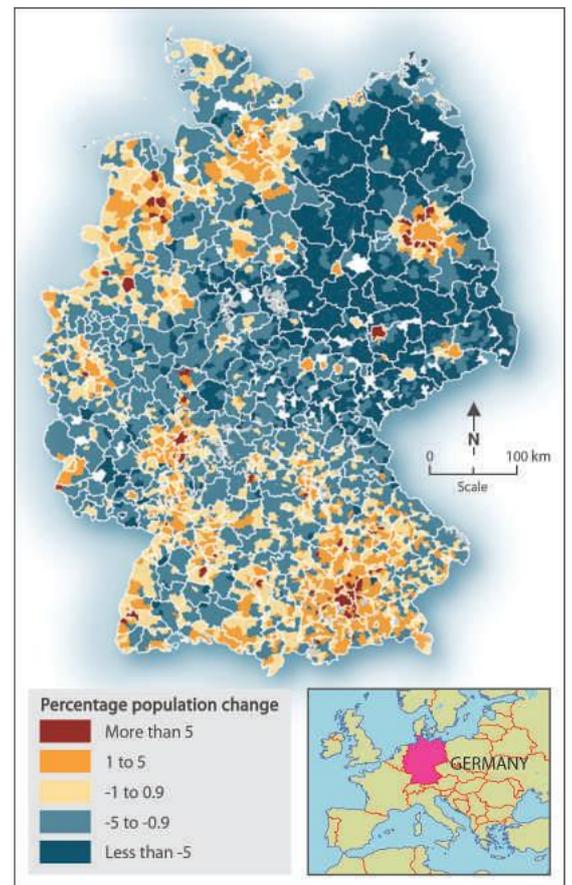
▼ Figure 6.20 Population change in Germany, 1950–2060



▼ **Figure 6.21** Germany's changing population structure



Like Japan, the *distribution* of Germany's ageing, declining population is uneven. As shown in figure 6.23, the greatest *change* is taking place in the former East Germany where widespread *regions* experienced over five per cent decrease in population between 2006 and 2011. In contrast, *regions* of population growth are dispersed mainly in the south and north-west, centred on major cities such as Munich and Frankfurt. Low population growth in the east has been exaggerated by population *movement* from east to west, especially by young women in search of employment (although increasingly there is return *movement*). Small towns such as Wittenberge contain boarded-up and crumbling buildings. Fewer numbers of women in these economically depressed locations has contributed to frustrated youth and right-wing extremism. On the positive side, after nearing extinction, numbers of wolves are slowly increasing in Germany's depopulated eastern states.



▲ **Figure 6.23** Population change in Germany, 2006–2011

► **Figure 6.22**

Cartoon depicting the burden of Germany's age dependency ratio



► ACTIVITIES

1. Compare and contrast the *changing* dependency ratio and the rate of population decline for Germany and Japan.
2. Refer to figure 6.21. Account for the *changing* characteristics of Germany's population structure from 1950 to 2050.
3. Refer to the cartoon figure 6.22. Do you consider this is an accurate representation of Germany's population? Justify your answer using appropriate statistics.
4. Refer to figure 6.23. Describe the *distribution* pattern shown. Refer to an atlas if necessary to identify appropriate examples.

National-scale responses to Germany's ageing population

As mentioned earlier, in contrast to Japan, Germany has a history of using immigration to help fill workforce shortages. Numbers of people with a migrant background are expected to increase from the current 20 per cent of population to 26 per cent by 2030. While this can help deal with some of the impacts of ageing in the short term, it is estimated that Germany would need an unrealistic net migration of 500 000 per year to stabilise its workforce size, and a massive net migration of 261 million over the next 90 years to stabilise the current old-age dependency ratio. Migrant numbers from the newest European Union members Bulgaria and Poland have increased, but more competition from other countries in the *region* for labour is also likely in the future. The intake of refugees, primarily from Syria, may assist with some workforce shortages in the short term. As in Japan, language is proving a barrier to recruitment — schemes to attract migrants from countries such as India and Indonesia in fields such as information technology and health have not met targets. Issues relating to the acceptance and integration of migrants into German society have also been contributing factors although the federal government is working to overcome this issue through its 'National Integration Plan'.

The German government has implemented a number of legislative reforms in response to its ageing population including:

- ▶ Agenda 2010: in 2004, former Chancellor Schroder introduced taxes on retirement funds in an effort to keep people working longer. Incentives and disincentives were provided to try to get people to work beyond 65 years — pension cuts of 3.6 per cent for every year you retire before 65 years and pension bonuses of five per cent for working beyond that. A 'sustainability factor' was brought in to assess finances each year and determine entitlements based on the funds available

- ▶ from 2012 there has been a gradual increase of one to two months per year in the retirement age from 65 to 67 years by 2030
- ▶ increased salary contributions towards social security from 20 per cent to 22 per cent of salary by 2029.

In order to try to raise the birth rate, a number of family-friendly measures have been introduced under Chancellor Merkel from 2006:

- ▶ parental leave provisions of up to three years to care for a new child. Both parents are entitled to this leave and employers are legally compelled to keep work positions open
- ▶ Kindergeld allowance (children's money) of approximately A\$255 per month is paid to parents to help support their children until 18 years of age (or until 25 years if they pursue further education)
- ▶ Elterngeld allowance (parents' money) is a limited income subsidy covering the first 12 to 14 months of a child's life. Payments total 67 per cent of the parent's income for a maximum of approximately A\$2500 per month. Payments can be split between the mother and father so that responsibility for child rearing can be shared.

However, as in the case with Japan, these measures have had little impact on Germany's fertility rate — and at considerable cost to the government. For example, births in 2010 totalled 678 000, a decrease from 685 000 in 2007 despite the government paying around A\$6 billion in parental leave payments.

One additional government response to deal with a declining population has been to tear down vacant, run-down buildings, mainly in the former East Germany, and replace them with parks. This saves maintenance costs and improves the quality of the environment for remaining residents. Between 2002 and 2012 an estimated 300 000 empty residences had been removed with plans for another 250 000 by 2016.

▼ **Figure 6.24** Pensioners enjoying outdoor chess





▲ **Figure 6.25** An elderly shopper uses the magnifying glass provided to read product information in a supermarket.

Local-scale responses

German companies have responded in a number of ways to the increasingly ageing demographic. Supermarket chain Kaiser's has opened a number of senior-friendly stores. Most retirees in Germany have plenty of disposable income so it is a lucrative market to target. They added new tools that would help the shoppers such as magnifying glasses for reading price and product information (figure 6.25), and shopping carts with built-in seating. In addition, they also *changed* the store layouts to better serve this growing population including wide aisles and non-slippery floors.

Catering for its ageing workforce, car manufacturer Volkswagen has redesigned its assembly line to ease bending and overhead work by employees. Moving heavy parts is more often fully automated. Other companies are providing more flexible work hours in order to retain older workers.

Faced with a declining population, the town of Schladen-Werla in Lower Saxony is providing volunteer van services to replace buses. The mayor also persuaded a group of doctors to visit the town regularly by providing free use of a building which enabled the aged care home to continue to operate. In Pattensen, a 'multigenerational house' provides activities not only for pensioners but also services for children such as 'rent-a-granny', where volunteers read books to the children once a week and provide relief for exhausted parents. Inhabitants of such towns report that rules and bureaucratic paperwork pose the biggest hurdles in dealing with such issues.

▶ ACTIVITIES

1. Identify those national-*scale* responses of the German government which may be considered pro-natalist policies. Justify your answer.
2. What advantages and disadvantages does immigration pose for Germany in terms of dealing with its ageing population?
3. Debate as a class whether the empty buildings in the eastern states of Germany should be demolished.
4. Refer to the local-*scale* responses discussed. Note the ways in which such responses may have a positive impact on German society.
5. Suggest other solutions for dealing with an ageing population at a local *scale*.
6.
 - a. Compare and contrast the response of the Japanese and German governments to an ageing population.
 - b. Which do you consider more successful? Justify your answer.
7. Study ageing at a local *scale* in your local area:
 - a. Identify facilities in a section of your Local Government Area which provide specifically for the aged. For example, senior citizens centre, allocated car parking, recreational facilities which may target older people such as bowls clubs, cafés that may provide a seniors' discount and so on.
 - b. Plot the *distribution* of these facilities on a base map.
 - c. To what extent is there a *spatial association* between the *distribution* of these facilities?
 - d. Devise a survey and conduct interviews with some elderly members of your community to gauge their opinions of the services provided and their needs.
 - e. Graph and describe your survey results.
 - f. With reference to Australian Bureau of Statistics data for your Local Government Area and your own data, evaluate the extent to which these facilities are likely to meet the needs of an aged population into the future.

Associate Professor Libby Porter

Academic researcher in urban Geography

I am an academic researcher in urban Geography at RMIT University. My title is Associate Professor and Vice Chancellor's Principal Research Fellow. That simply means I do academic research. I studied Geography in Year 11 and 12 and really enjoyed it. When I went to University I decided to take a degree in urban planning which uses lots of geographical and spatial concepts, but applies them to real-world problems in cities and human settlements.

Now all of my work is a mix of urban planning and urban Geography. Mostly I try and answer questions about how cities work and how we can make them work better for a more equitable, sustainable and socially just world. I'm especially interested in how some people get pushed out of areas because of the way that cities develop. I use my Geography skills every day, because Geography for me is about understanding the relationship between people and place, and how we should manage that relationship so that everyone can benefit. Lots of my work involves using maps in participatory research trying to understand this relationship between people and place and what it means for how we think about and manage cities. I also use my geographical analysis skills to understand the layers of cities over time.

I work with people from many different disciplines including geography, planning, architecture, Indigenous studies, anthropology, politics and sociology. I feel most at home with geographers! There are lots of ways that people who study Geography can make a real contribution to the major challenges that face the world — you can do research that involves Geography; design policies; consult to governments, communities and industry; and work overseas.

Every day I'm inspired to keep studying Geography because place is so important to all of our lives. If we don't have good places to connect with, then our daily life is diminished in important ways. We each live out our daily lives in ways that are *placed* — we live in a place that we call home, work in places that become familiar, have fun in places that are important to our spirit and wellbeing, care for our families and friends in places that perhaps they call home, and help produce places every day.



CAREER PROFILE

7

Population trends and issues: ageing in Singapore and Australia

Singapore

Singapore is a tiny island with a high population density *located* in South-East Asia (see figure 7.1). It was founded as a British colony in 1819, became part of the Malaysian Federation in 1963, and gained its independence in 1965. Due to its strategic *place* in the world, and importance within the south-eastern *region* of Asia, it quickly became one of the most prosperous countries with a strong economy and trading links. Its GDP is one of the strongest in the world today. It is also a country with an ageing population. This type of demographic is one where the population is living longer but also where fewer births are occurring. The resultant *change* in the population structure will be discussed in this chapter.

What are the geographic characteristics of Singapore?

Singapore has a total land size of only 682.7 square kilometres with 193 kilometres of coastline. It could fit into Port Phillip Bay which is 1930 square kilometres in size. It is located between Malaysia and Indonesia and, as figure 7.1 shows, the *distance* to Malaysia is relatively close, with bridges linking the two countries. The climate is hot and humid with a monsoon season. It is a low-lying land, with the highest elevation of only 166 metres. Its small *scale*, in size, makes it one of the smallest countries worldwide, but provides advantages

to its population because of this size. However, the small size means there is a high population density. Less than one per cent of its land size is used for agriculture. Its major exports are electronic equipment and financial services. As a major stopover for the global airline industry, it supports large-*scale movement* of tourists and goods through its facilities.



▲ **Figure 7.1** Location of Singapore within its region

ACTIVITIES

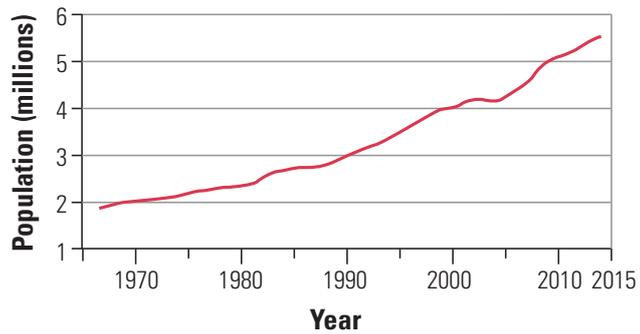
1. Describe the *relative location* of Singapore City within its *region* as shown in figure 7.1.
2. What is the *distance* from Singapore to the Second Link Causeway in the south-western area of Malaysia?
3. Describe the *distribution* of the largest residential areas of Singapore.
4. Discuss both positive and negative effects the physical size of Singapore will have on its population.

What are the population characteristics of Singapore?

The population of Singapore comprises a variety of ethnic groups with the Chinese being the largest sector at 74 per cent, Malay at 13 per cent, Indian at nine per cent and four per cent of others. In July 2014, the population was 5 567 301 and is expected to rise to 7.5 million by 2050. Population density is 7681 people per square kilometre making it the second most densely populated nation globally after Monaco. In 2015 Singapore's Human Development Index was nine out of 166 globally, reflecting a society with good education, health and economy, enabling the population to enjoy a high standard of living. Population growth, as seen in figure 7.2, has steadily increased from the 1960s to 2015, partly due to natural increase and partly due to expatriates

moving to Singapore for work, as shown in figure 7.8. This social factor is one in common with Australia.

▼ **Figure 7.2** Population growth in Singapore

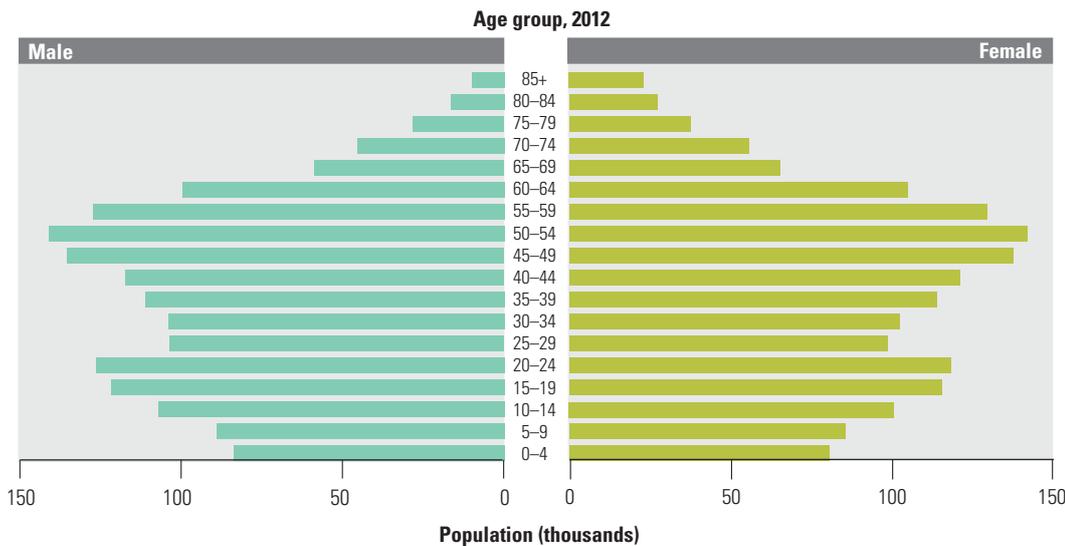


What is the population structure of Singapore?

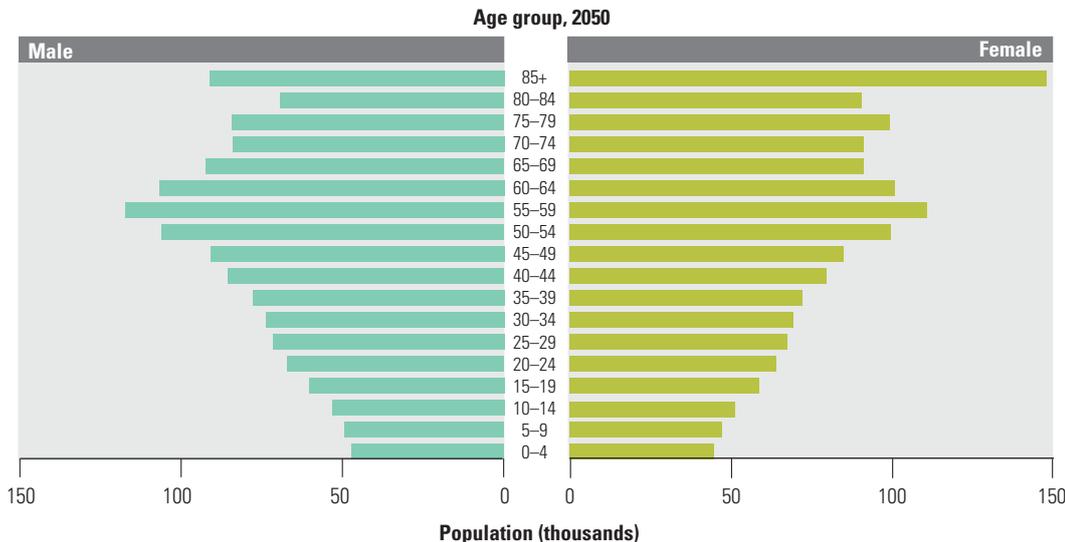
Figure 7.3(a) shows the population structure for Singapore in 2012. The largest age group is the 50–54 cohort and the smallest age group is the 85+ cohort. In the 2050 pyramid, figure 7.3(b), the 85+ cohort is the largest with more women than men. It is also clear that the *process* of population *change* has been large *scale* in the 0–4 age cohort, with a marked decline in

babies born in Singapore in 2050. The *changes* seen in the overall shape of the population pyramid between 2012 and 2050 reflect an ageing population, with a shrinking of the under 15 age groups and a thickening of the older age groups.

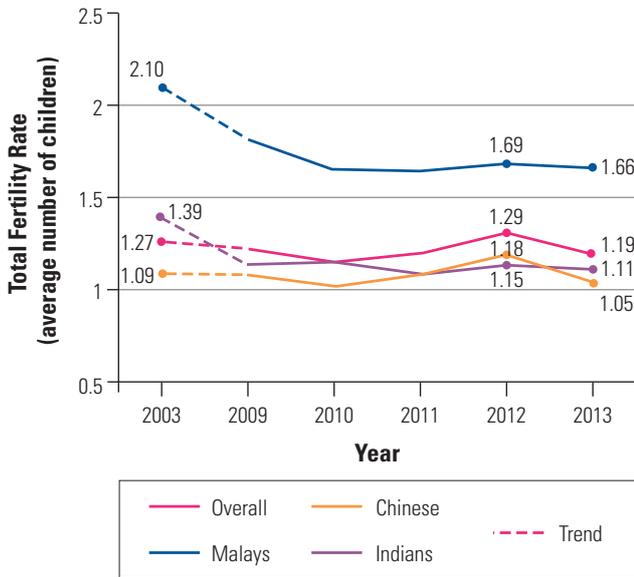
▼ **Figure 7.3** (a) Age profile of the population of Singapore, 2012



▲ **Figure 7.3** (b) Predicted age profile of the population of Singapore, 2050



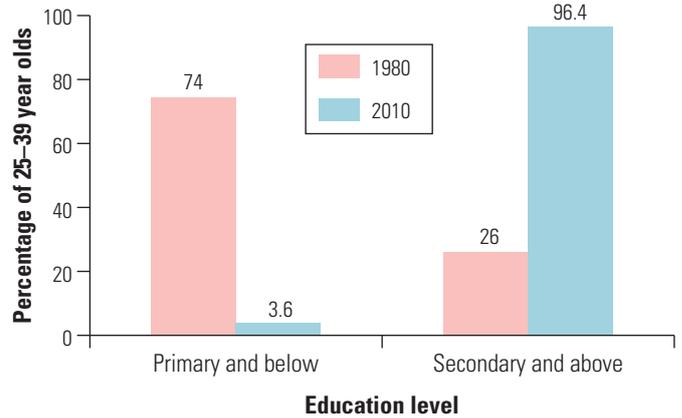
▼ **Figure 7.4** Fertility rate of women in Singapore



The overall fertility rate of women may account for some of the *changes* identified in the population pyramids. Figure 7.4 highlights the differences between ethnic groups in Singapore over the past ten years. The national average is around 1.29 babies per woman, which is less than replacement level of 2.1 children per woman and one required to keep the population at a *sustainable* level. The population growth rate was 1.92 per cent in 2014. This low fertility rate accounts for the decline of the under 14 age group. However, a study of the differing nationality groups shows that the Malays had the highest fertility rate in Singapore at 1.69 babies per woman. All groups showed a slight increase in 2012, possibly due to the government's incentives which were introduced to promote births, but have since gone back into decline.

Social demographic indicators show that Singapore has a high literacy rate for both males and females and high enrolments in tertiary education. Figure 7.5 shows that, over one generation, 96.4 per cent of 25–39 year olds have received a secondary or tertiary education compared to only 3.6 per cent in 1980. This transformation in one generation was focused on the mantra of 'Dream, Design and Deliver'. Education was seen as being central to building both the economy and being a developed nation. The rewards of this quest for improvement have included steady jobs, better incomes, bigger homes, and a healthier and happier lifestyle — but it also has resulted in a lowering of fertility rates as women make choices to have smaller families.

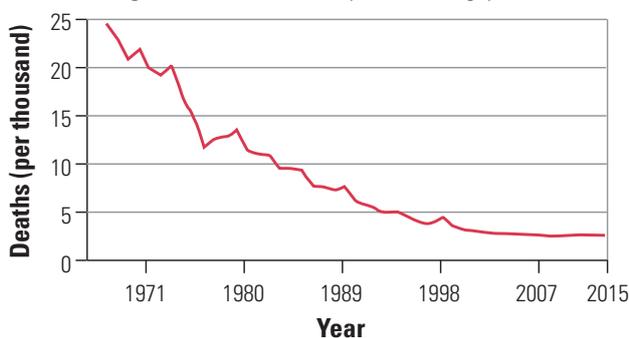
▼ **Figure 7.5** Increase in tertiary education attainment in Singapore



The infant mortality rate in Singapore, as shown in figure 7.6, is the envy of most countries and is currently ranked in the top five countries globally. It has seen a steady decline in the number of deaths of children aged 0–1 years since 1900. By the year 2000, the infant mortality rate was a low eight per 1000 live births. In 2014 this number had reduced to 2.48 deaths per thousand live births. This figure is comparable to other developed countries such as Japan and Sweden whereas in Sierra Leone the figure is currently 185 deaths per thousand live births. This remarkable turnaround has been due to factors such as access to clean water, connection to sewage treatment plants, money spent on pre-natal and anti-natal care of mothers, and education about care for children with births taking place in hospitals with trained staff. With improved infrastructure, medical attention is close by, accessed by excellent road and rail networks, contributing to improvement in the infant mortality rate.

The crude death rate has fluctuated over time. In 1960 it was 6.2 deaths per 1000 people and decreased to a low of 3.9 in the year 2000. By 2015 the crude death rate had risen to 4.6 per 1000 and is expected to rise to 7.2 per 1000 by 2030, further rising to 12.3 in 2060. The crude birth rate has seen a sharp decline from a high of 22.1 live births per 1000 in 1970 to a low of 9.3 per 1000 in 2015. In 1980 there were 17.6 births per 1000 and by 1990 the figure was 18.2. Forward projections show the crude birth rate to be at 8.7 in 2030 and by 2060 it will be 8.

▼ **Figure 7.6** Infant mortality rates in Singapore

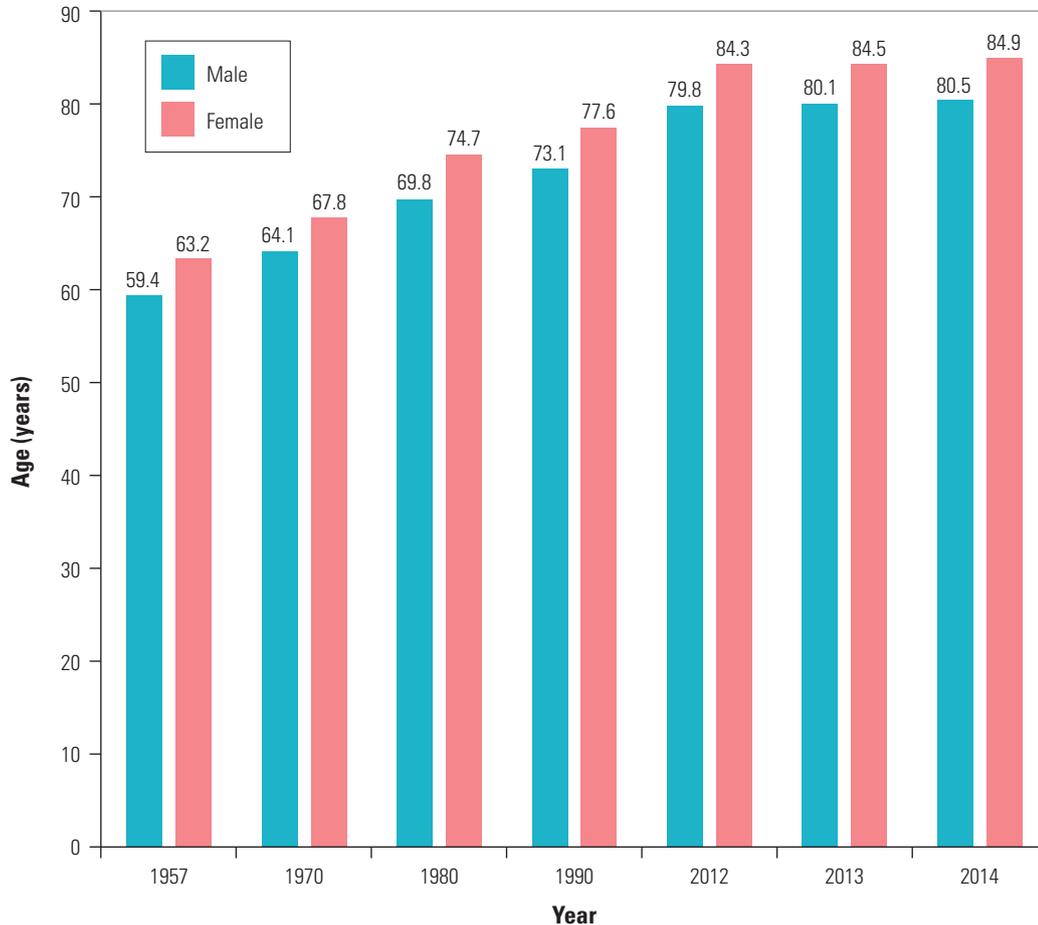


Life expectancy in Singapore, shown in figure 7.7, has risen sharply, from a low of 61.3 average years of male and female combined in 1957, to a high of 82.7 average in 2014, ranking it in the top four countries globally. This is similar to Japan at 83 years and Australia averaging 82.1 years. Singapore and other developed countries such as Australia have achieved this high life expectancy due to the *process* of accumulating wealth. As people accumulate wealth they tend to buy and eat more healthy foods, and smoke and drink more moderately. They also have access to the best health care. Affluent countries also tend to have low rates of violent crime and civil unrest.

Economic, political, environmental and social factors all contribute to a society with more positive trends in the indicators of education and health. There would be strong *spatial association* between *regions* of wealth and *regions* of old age in many populations.

Singapore has a Gross Domestic Product per capita (GDP) of \$62 400 per person, placing it in the top seven richest countries globally. The government spends

five per cent of its budget on health and three per cent on education. Australia has a GDP of approximately \$37 500 per person in 2015 and spends seven per cent on education. Both countries, therefore, have high educational attainment, low total fertility rates, high levels of wealth and general prosperity.



◀ **Figure 7.7**
Life expectancy in Singapore

*Data from 1980 onwards refer to the resident population. Data for 2014 are preliminary.

▶ ACTIVITIES

- Describe the trend in population growth in Singapore. Justify your answer with data from figure 7.2.
- In the 2014 population profile, figure 7.3(a), which cohort has the lowest and which cohort has the highest population?
 - In the 2050 population profile, figure 7.3(b), which cohort has the lowest and which cohort has the highest population?
 - Outline the main differences shown in the two profiles in figure 7.3(a) and 7.3(b). Use data in your answer by referring to the 0–14, 15–59 and over 60 age groups.
 - Account for these *changes* referring to social, historical, economic, environmental and political factors.
- Identify areas of policy *change* the government may need to implement in the future to address the *changes* identified in question 2.
- Make a list of reasons to account for the growth in the over 60 age group.
- Describe the overall trend in the fertility rate in Singapore shown in figure 7.4.
- Identify one reason to account for the slight rise in fertility growth around the year 2012 in all nationality groups in Singapore, as shown in figure 7.4.
- Compare the fertility rate for Malays and Chinese shown in figure 7.4. Use data in your answer.
- Based on the trends shown in the population profiles in figures 7.3(a) and 7.3(b), predict the population size and structure for 2070. Justify your answer.
- Identify both social and economic factors which may have contributed to this population *change* over time.

What are the issues related to the population characteristics of Singapore?

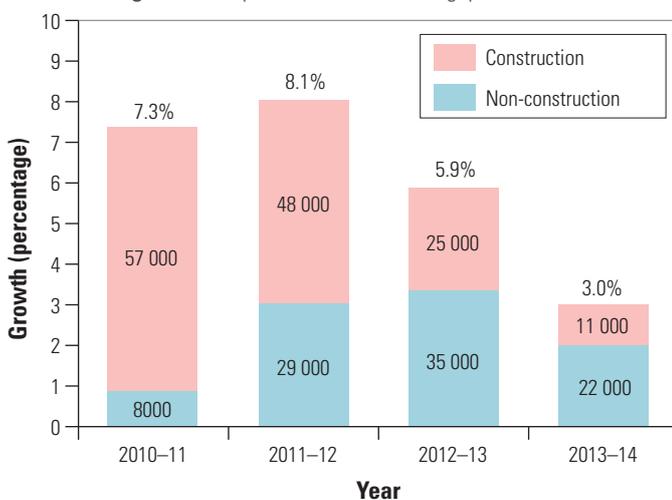
The government of Singapore estimated in 2013 that by 2030 there will be 900 000 persons aged 65 or above. This is a tripling of this age group since 2013. An older population presents the government with new challenges such as providing suitable housing, and keeping the dependency ratio to a *sustainable* level. To support each person over 65 in 1970, there were 13.5 working people. By 2030, there will only be 2.1 working-age citizens for each citizen aged 65 and over. This may mean that the retirement age could be raised to keep older people active for longer. In 2015, Singapore's statutory minimum retirement age was 62, but employers had to offer re-employment to those eligible up to age 65. As the proportion of the elderly rises, there is a decline in the ratio of the workforce, shown in figure 7.9. This declining old-age support ratio points to an increase in tax and an economic burden on the working-age population over time.

Singapore accepts migrants as they are attracted to the high standard of living and employment opportunities. Around 58 000 migrants take up residency each year; and, as the birth rate is now slightly elevated for this group of people, there is concern over existing infrastructure and how it will cope with the expected growth in population.

The government is trying to address the *changing* fertility rate. One strategy the government is using is to allow fewer migrants to keep the jobs local people could perform. Unemployment, overall, is not seen as a major issue as the rate dropped to 1.90 per cent in 2014. The key is trying to maintain this figure so that the youth of the nation remain employed in the future. Figure 7.8 clearly shows the decline in expatriate workers in Singapore, implementing the changes to migrant workers as directed by the government.

The area of most concern which has been occurring during the 2000s is the ageing of the population. The birth rate in 2015 means the median age of the population will rise to 47 in 2030 from a low of 39 in 2011. Life expectancy has increased by 10 years over the past 30 years, thus exacerbating the rise in over 60s in the population. This trend can be seen in figure 7.9.

▼ **Figure 7.8** Expatriate workers in Singapore, 2015



▼ **Figure 7.9** Change in the dependency ratio in Singapore

Year	Elderly citizen	Citizens in working-age band of 20-64 years of age	Ratio
1970	1 elderly citizen icon	13.5 working-age citizen icons	13.5
2000	1 elderly citizen icon	8.4 working-age citizen icons	8.4
2011	1 elderly citizen icon	6.3 working-age citizen icons	6.3
2015	1 elderly citizen icon	4.8 working-age citizen icons	4.8
2020	1 elderly citizen icon	3.6 working-age citizen icons	3.6
2025	1 elderly citizen icon	2.6 working-age citizen icons	2.6
2030	1 elderly citizen icon	2.1 working-age citizen icons	2.1

What are the factors contributing to Singapore's population characteristics?

Overall, there are many social, political and economic factors that have contributed to the *change* in the population structure in Singapore. There has been a trend towards staying single longer, as shown in figure 7.10. Marriages are occurring later and couples are having fewer children. Higher education opportunities have been increased and encouraged by the government, and this has delayed entry into the workforce and family formation.

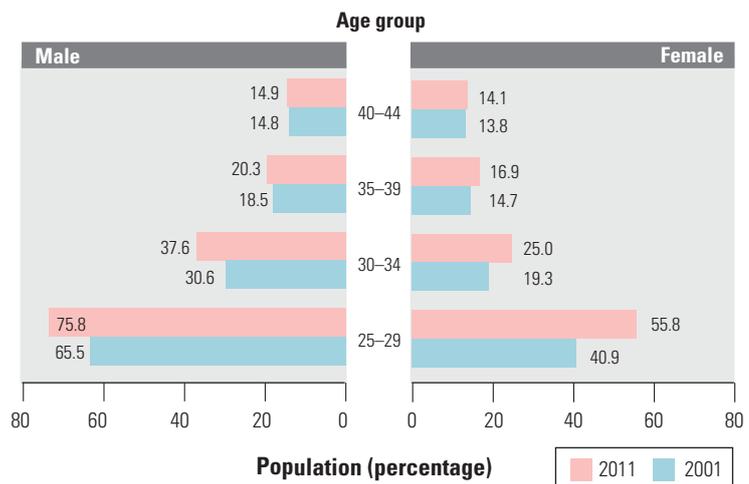
Politically, the government has been able to exert great influence over the people. It has introduced pro- and anti-natalist policies to help rectify issues over a 60-year period of time. These policies have had the effect of both lowering and increasing the fertility rate over time thus slowing population growth. As education levels improved, more women chose to have fewer children in favour of maintaining their employment, thus improving their standard of living. Women made up 44 per cent of the resident labour pool in 2013, as the government encouraged greater participation and offered larger tax breaks to working mothers.

What are some population strategies used in Singapore?

Population growth has been dynamic, with many *changes* over time; these are shown in figure 7.11. While pro-natalist and anti-natalist policies have been used to help modify population trends, other factors, such as Chinese New Year customs, had an impact on birth rates in Singapore. One policy, called 'Stop at Two', was introduced in 1966 and was only superseded in 1982. In this anti-natalist phase the government wanted families to have only two children in order to help increase the economic status of the country, as

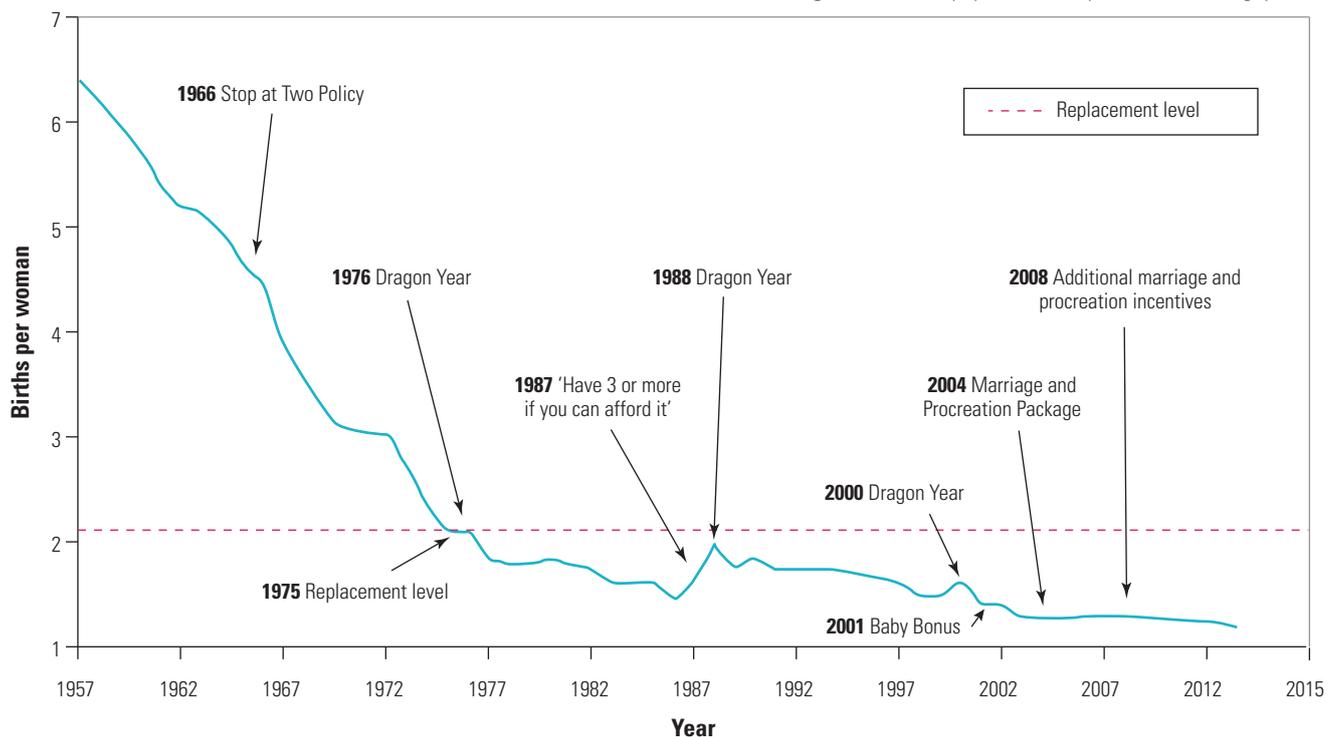
In 2010, female graduates outnumbered males in three of the five most common fields, including business and administration. In the mid 1980s around 21 per cent of women remained childless or had only one child, but the figure rose to 28 per cent in the 2000s. Economically, the cost of raising a child in Singapore is high at an average of \$340 000 from infancy to the age of 21. This cost has had an influence on the total fertility rate.

▼ **Figure 7.10** Rise in the number of single people in Singapore



shown in figure 7.12 (page 122). 'Stop at Two' was implemented alongside greater attendance of women at educational institutions and higher employment rates for its citizens. It achieved a drop in fertility rates from around 4.8 babies per woman in 1967 to around two babies per woman in 1973. The promotional poster for this campaign can be seen in figure 7.13 (page 122). Posters were placed in high-visibility *places* such as around the metro system.

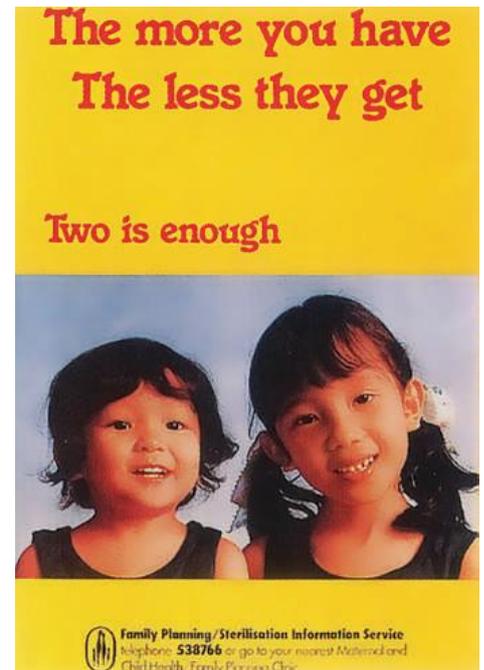
▼ **Figure 7.11** The population story over time in Singapore



▼ **Figure 7.12** Phases of population *change* in Singapore

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
	1940s–1960s	1970s–1980s	1990s–2000s	Current
Fertility	High	Declining	Low	Lowest low
Mortality	High	Declining	Low	Lowest low
Migration	High	Low	High	High
Population growth	From births and migration	From births	From births and migration	From migration
Population policy	None	Anti-natalist	Pro-natalist	Pro-natalist

Spikes in population growth can be seen for each Year of the Dragon, as being born in this year is traditionally seen as a good omen. Overall, the fertility rate has been greatly reduced from 6.4 births per woman to around 1.3 births per woman in just 45 years. The government of Singapore was very proactive in its *processes* to modify the population growth. As Singapore is small, the policy was successful in reaching the target population, thus *change* was effective.



► **Figure 7.13**
A population poster for Singapore from the 1970s

► ACTIVITIES

- Study figure 7.10. Outline the trend shown in relation to the number of single people in Singapore in 2001 and 2011.
 - Suggest three reasons to account for the number of singles in the 25–29 age group.
 - Suggest three reasons to account for the number of singles in the 40–44 age group.
 - Describe the impacts this singles trend may have on society in the long term.
- Study figure 7.11. Construct a timeline showing the major policy *changes* introduced in Singapore. Include dates and state whether the policy is pro-natalist or anti-natalist.
 - How effective have these policies been in moderating population growth in Singapore?
 - What other factors could have played a part in the decrease in population growth?
 - Why do you think it was necessary to introduce a series of pro-natalist policies in 1987?
 - Have these pro-natalist policies since 1987 been successful? Justify your answer.
- Refer to figures 7.11 and 7.12. For each of the major phases shown in the table, name the population policy put in place to alter the trend in population growth.
- On a blank diagram of the Population Demographic Transition model, plot the characteristics shown in figure 7.11.
- Find current population data for Singapore. At what stage do you think Singapore fits? Justify your choice.

Technology-based initiatives for Singapore

Innovative small-scale and technology-based strategies have also been used to boost the idea of family. An online site called 'Hey Baby' was begun in 2013. It aimed to highlight the positive side of parenting and publish stories about babies and children that would appeal to young couples. Incentives for increasing the number of children were given priority; for example, first-time married couples with children (including those expecting a child) were given priority allocation for their housing development flats. The website clearly set out the monetary benefits for which each family is eligible, such as the baby bonus scheme of up to \$6000. This type of technology use is similar to social media and thus is appealing to the modern technology-savvy population.

At a local scale action was taken in 2015 to support all babies born in this special year. The SG50 Baby Jubilee Gift is a community initiative led by the National Population and Talent Division to commemorate Singapore's Golden Jubilee. The gift consists of a small set of meaningful items from all Singaporeans to welcome every Singapore citizen baby born in 2015. It was a small incentive but one that patriotic people were encouraged to take advantage of.

For each Singapore citizen child born on or after 26 August 2012, the Baby Bonus cash gift has been enhanced. Figure 7.14 outlines the monetary enhancement for all births.

Alongside incentives for a higher birth rate, there has also been a movement towards addressing the challenges of an ageing population. The Singapore Programme for Integrated Care for the Elderly (SPICE) is a model of care developed by the Agency for Integrated Care (AIC) to provide comprehensive, integrated centre- and home-based services to support the care of the frail elderly. SPICE enables older people who have high care needs, and are eligible for admissions into nursing homes, to receive nursing and medical care and to age within the community. Ultimately, there is a need to build more nursing homes, an issue that Singapore needs to address. At present there are only 60 nursing homes — this needs to double by 2030.

It is also necessary for workplaces to accept more aged workers as Singapore reviews the pension age for the future. In 2014, a retirement age of 70 was suggested by a former labour chief as the way forward. This change would keep the dependency ratio at acceptable levels longer and would give older persons a feeling of being wanted beyond the current retirement age of 62. Print media technology is being used to alter the negative perceptions that companies may have of the employment of older people, as shown in figure 7.15.



◀ **Figure 7.15**
A poster promoting ageing in Singapore, 2014

The future of Singapore rests with the acceptance of older people in the workforce and the raising of the birth rate to replacement level. These measures will ensure the workforce remains a renewable resource, and the economic benefits will be seen in a sustainable economic future for Singapore. The more difficult strategy may be lifting of the birth rate sufficiently, as this would mean asking women to take time out of the workforce rather than just asking the existing workforce to stay at work for another few years.

▼ **Figure 7.14** Monetary incentives for a higher birth rate in Singapore

BIRTH ORDER	BORN ON OR AFTER 1 JANUARY (for each child)	
	ENHANCEMENTS	TOTAL ENHANCED BABY BONUS GIFT
1st and 2nd	\$2000 Baby Bonus Plus	\$8000
3rd and 4th	\$2000 Baby Bonus Plus	\$10 000
5th and subsequent	\$8000 Cash Gift and \$2000 Baby Bonus Plus	\$10 000

Australia

Australia is multicultural society with a growing yet ageing population. The number of Australians aged 65 and over is projected to more than double by 2054–55, with one in 1000 people projected to be aged over 100. Australia has maintained a steady population increase over time, mainly due to immigration on a large *scale*. Large-scale movement of people into Australia is a major strategy used by the government to keep the population at a *sustainable* level, and it is the *regional* nations that are the source of many of the immigrants. Australia is a large continent with a comparatively small population, making it the least densely populated nation in the world — unlike close neighbour, Singapore.

What are the geographic characteristics of Australia?

Seventy-five per cent of Australia is desert or semiarid. Only the south-east and south-west *regions* have a temperate climate and moderately fertile soil. The northern *region* has a tropical climate, with a variety of tropical rainforests, grasslands, and areas that are part desert. The uncertainty of climate is one factor that has affected Australia's population *distribution*, with approximately 80 per cent living close to the eastern seaboard, as shown in figure 7.16. Other factors, such as historical, physical and cultural preferences, have also influenced the *distribution* of the population.

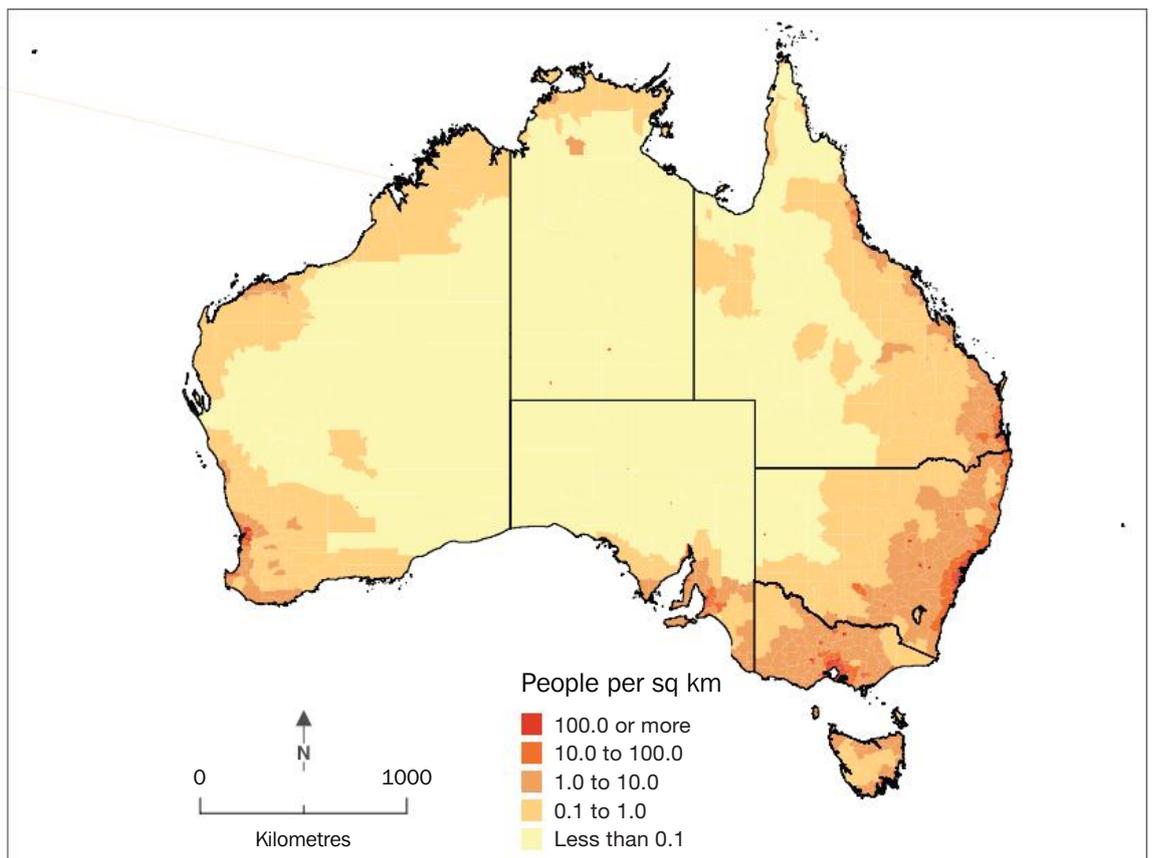
For example:

- ▶ social factors such as employment, choice of schools, living closer to hospitals and shopping
- ▶ facilities provide some incentives for people to choose a better location for their families

- ▶ economic factors may be related to employment in a specific field such as mining, a greater choice in renting shop facilities and relocation to larger markets may offer incentives to some people. Australia generally has a low unemployment figure, making it an attractive place for skilled migrants to live. In 2015 the ABS has stated that the unemployment rate is just 6.3 per cent, while countries such as Greece stands at 26 per cent and Italy has 12.6 per cent unemployed in 2015
- ▶ environmental factors are those that offer incentives of a specific nature, such as, living in a green suburb, or relocation away from a potential source of pollution such as a power station
- ▶ political factors may provide some people with a reason to move but as the government in Australia is stable and democratic, it does not offer the same appeal as others from non-stable countries
- ▶ for immigrants coming to Australia, the reasons may be a combination of many factors or "better opportunities".

The population density of Australia is just 2.7 per square kilometre overall. However, there is a lot of variation creating an uneven population *distribution* pattern. Greater Melbourne has a population density of 440 people per square kilometre; Victoria has 25 people per square kilometre, which is the second highest of all states and territories; and the Australian Capital Territory has 160 people per square kilometre. The highest number of people per square kilometre within Melbourne is inner-city Melbourne, with 12 400 people per square kilometre.

▶ **Figure 7.16**
Distribution of Australia's population



What are Australia's population characteristics?

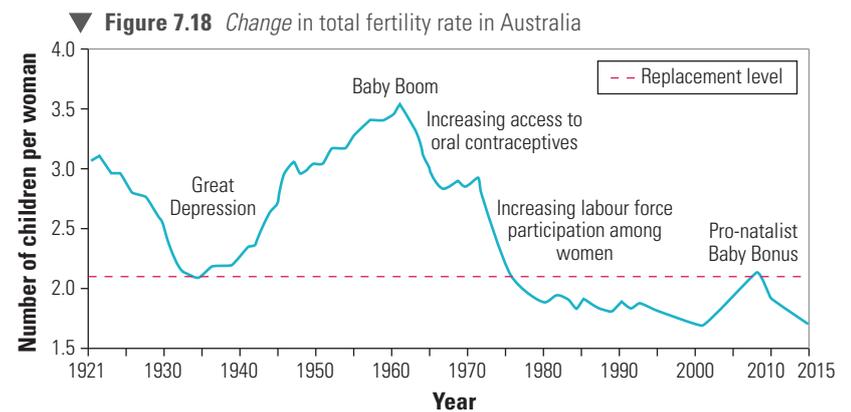
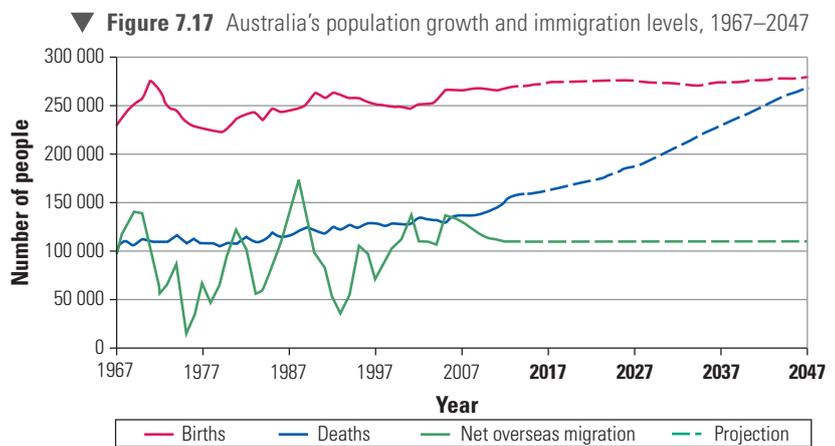
Australia's population was approximately 23 600 000 in 2015 and is slowly increasing. It is represented by 200 different nationalities and religions. It is a country with an average Gross Domestic Product (GDP) of \$43 000 (in 2015). This wealth is a contributing factor to the lowering fertility rate, an increase in the number of ageing people and the high standard of living overall.

Immigration has been one of the ways that Australia's population growth has been maintained. Australian Bureau of Statistics (ABS) data shows that, in 2015, the proportion of Australians who were born overseas was at its highest in 120 years. Twenty-eight per cent of Australia's population, or 6.6 million people, were born overseas. A further 48 per cent have at least one parent being born overseas. Since 2005–06, overseas migration has contributed more than 50 per cent of the population growth in Australia. Traditionally, migrants came from the United Kingdom and New Zealand; this has now shifted with people from countries such as China and India choosing to live in Australia. Australia has an HDI figure of two, making it one of the healthiest and better educated countries globally.

Each year the Australian government sets the level of immigration. For the year 2014–15 Australia accepted 190 000 migrants and 14 000 displaced persons. On arrival, immigrants tend to settle in established *regions* within coastal cities, placing pressure on housing availability and overall infrastructure. Factors accounting for this trend towards city living include social and economic factors. Figure 7.17 highlights the contribution that migrants are making to the population growth in Australia. Net Overseas Migration (NOM) shows fluctuation over time but the natural increase, despite early fluctuations, remains steady.

Without permanent overseas arrivals, Australia's population growth would be low and closely aligned to many European countries with declining populations. The total fertility rate (TFR) has fluctuated over time but mainly at a small *scale* as shown in figure 7.18. The *process* of lowering the fertility rate has largely been due to the *changing* attitudes of women and not due to anti-natal policies, such as the One Child Policy in China and Singapore's 'Stop at Two'.

The trend shown in figure 7.18 mirrors historical events, such as wars, economic downturns and government policies. Since 1976, the total fertility rate for Australia has been below replacement level, which is 2.1 births per woman. In 2013, Australia's total fertility rate was 1.88 babies per woman. The TFR reached a low of 1.74 babies per woman in 2001 before increasing to a thirty-year high of 2.02 babies per woman in 2008. The TFR therefore shows minor fluctuations, but is still below replacement level of 2.1. The age at which women have their first baby has changed. In 2015, there was a greater number of 40-year-old women having their first child than women in their teens. Fertility rates remained highest for women who were aged 30–34 years, recording 124 babies per 1000 women. This was a decrease from 127 babies per 1000 women in the previous year.



▶ ACTIVITIES

- Describe the *distribution* of population within Australia, as shown in figure 7.16.
- Compare the distribution pattern of Victoria and New South Wales as shown in figure 7.16.
- Study figure 7.17.
 - Identify the trend for total population growth since 1967. Justify your answer with use of the specific data from the graph.
 - Describe the trend for natural increase in population, including data in your answer.
 - Outline the net overseas pattern (NOM) since 1967.
 - Suggest reasons to account for the fluctuating pattern in the NOM as shown in figure 7.17.
 - Suggest reasons to account for the changes in the natural birth rate over time.
- Various peaks have occurred showing population *change* in figure 7.18. Identify a methodology to account for these *changes*.
 - A peak in fertility rates in 2005 was in response to a change in government incentives in Australia. Research this time period and identify the change the government was implementing.
 - What is the name of the incentive scheme introduced by the government? What was the incentive and how effective was this national response overall in changing fertility rates in Australia in the short and long term?
- Study figure 7.18. To what extent do you agree with the statement 'Total fertility rates simply reflect the community at any given time'?
- As a class discuss why total fertility rates have declined over time in Australia. Use SHEEP factors to help you answer this question.
- Based on the data shown in figure 7.18, in which stage of the Demographic Transition model would Australia fit in 2011? Give evidence to support your answer.

Factors responsible for population *change* in Australia

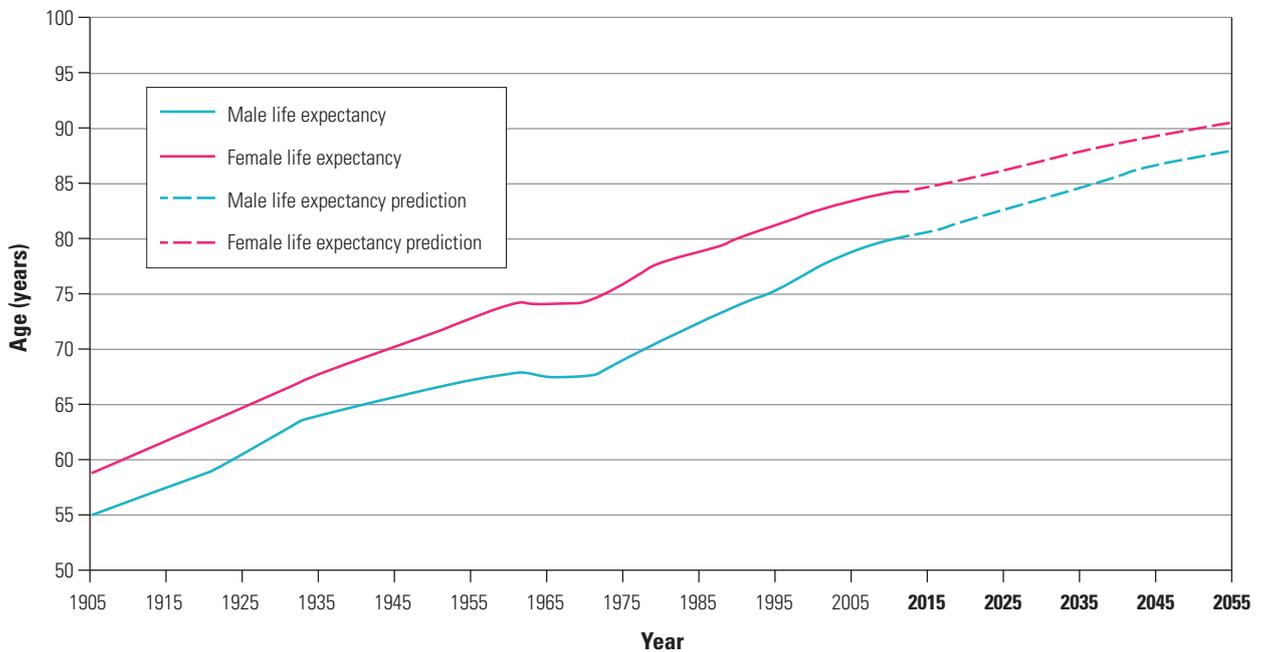
Since 1947, fertility rates have declined whereas life expectancy has increased significantly as shown in figure 7.19. There are many factors responsible for this *change*. Up until 1932, infectious and parasitic diseases caused at least 10 per cent of all deaths each year, with rates highest among the very young and very old. This can be seen in the age–sex profile in figure 7.20. Living conditions in the early twentieth century improved, due to better and more reliable water supplies, sewerage systems, food quality and health education, leading to lower death rates and longer life expectancy at all ages.

In the second part of the twentieth century, degenerative diseases such as heart disease, stroke and cancer replaced infectious and parasitic diseases as the main cause of death of older people. Despite

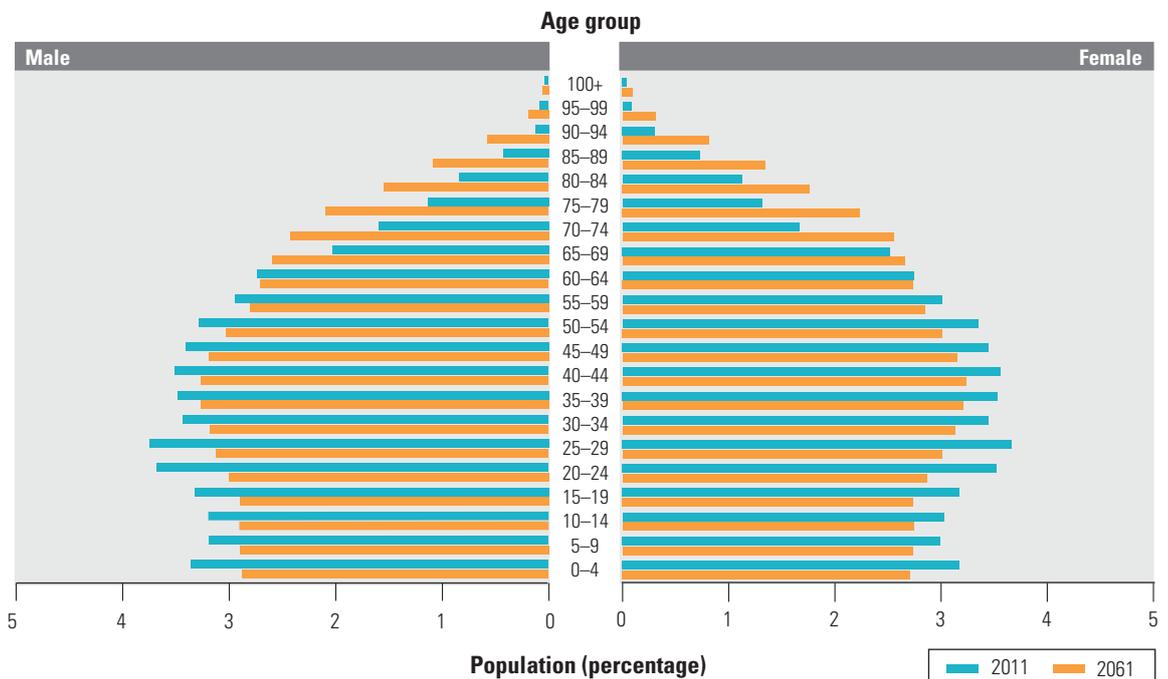
these illnesses increasing, continued improvement in social conditions and advances in medical technology have led to longer life expectancies overall.

The age–sex profile shows that the number of children over time will decrease from approximately 6.6 per cent of the population in 2011 to approximately 5.7 per cent of the population in 2061. Figure 7.21 shows the steady decrease in infant mortality rates in Australia. In 1901 the death of infants less than one year of age was approximately 104 deaths per 1000 and in 2015 it was around four deaths per thousand. This steady decline enhances life expectancy averages. As one declines, the other increases. The factors responsible for the sharp decrease in infant deaths and an increase in life expectancy can be attributed to social, economic, environmental and political factors.

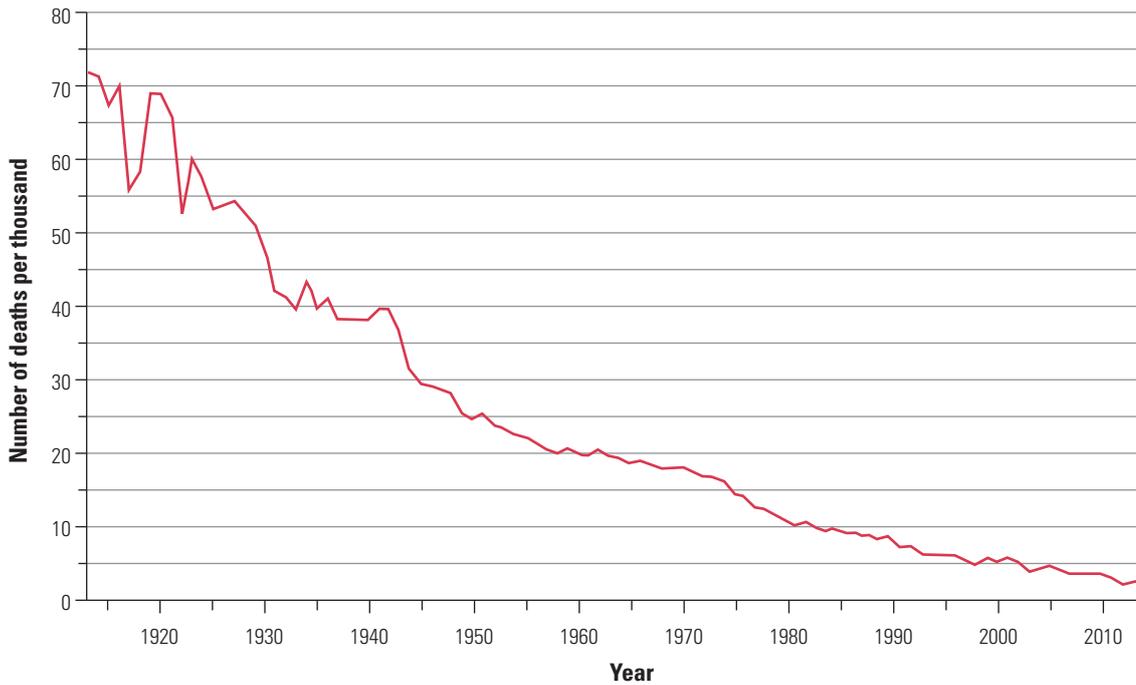
▼ **Figure 7.19** Male and female life expectancy, 1905–2055



▼ **Figure 7.20** Population structure of Australia in 2011 and 2061



▼ **Figure 7.21** Infant mortality rate, 1913–2013



▶ ACTIVITIES

1. Study figure 7.19.
 - a. Describe the trends in both female and male life expectancy in Australia.
 - b. In small groups discuss these trends and suggest factors to account for them.
 - c. Which one factor identified in 1 (b) do you consider to be the most important in increasing life expectancy? Justify your choice.
 - d. Predict what the graph would look like in 2050 and identify the issues the government will have to deal with in the future based on your predictions.
2. Study figure 7.20.
 - a. Describe the population structure for 2011.
 - b. Describe the population structure for 2061.
 - c. Identify and explain the main differences between the two pyramids.
 - d. Suggest reasons to account for the *change* in the population structure between these two time periods.
 - e. In small groups, discuss these *changes*. Identify the main issues (such as social and economic) that would arise from the *changes* and write a strategy to cope with them.
3. a. Describe the trend in infant mortality rate in Australia, as shown in figure 7.21.
 - b. In which 10-year period did the greatest change occur?
 - c. Suggest reasons to account for your answer in question 3(b).
 - d. Based on the graph, predict what may occur over the next 40 years. Provide reasons to support your answer.
4. a. Use the internet to find a blank Demographic Transition model diagram. Using the information you have learnt so far, annotate this graph to determine what stage in the model Australia has reached.
 - b. Justify your answer from 4 (a).

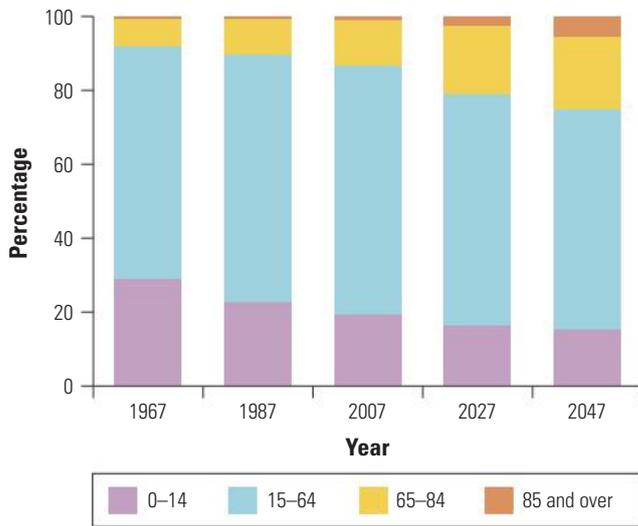
Identifying the issues related to the population of Australia

By 2047, the number of people aged 65–84 in Australia will have increased substantially, as shown in figure 7.22. There will be seven million Australians aged 65–84, compared to 3.1 million in 2015. This would represent approximately 18 per cent of the total population, compared with 13 per cent in 2014–15. In 1974, only 1.2 million people were aged over 65, or just nine per cent of the total population.

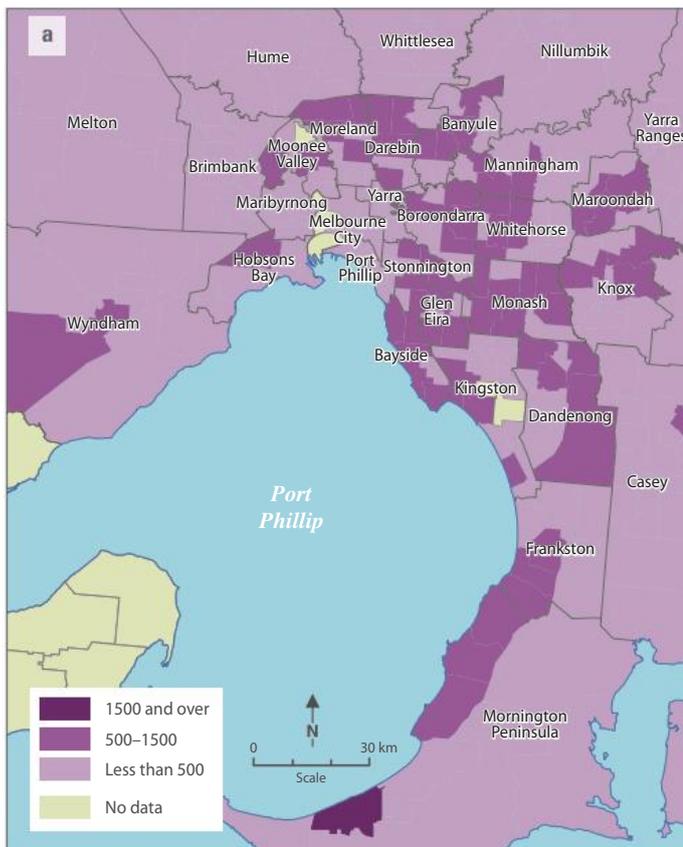
The Australian government conducts a population census at four-yearly intervals. In 2016 a census will be taken to ascertain the recent trends in fertility rates, income, education levels and age of the population, for example. This data will be analysed and the knowledge gained may be mapped to establish patterns and help predict needs for the future. Figures 7.23(a) and 7.23(b) are examples of spatial technology used to help planners predict where aged care facilities should be built in the future. By using the known and current information in figure 7.23(a), the future map of 2031, figure 7.23(b), compares and highlights the *distribution* of aged people and thus gives the government and related bodies time to adjust and build what is needed to accommodate aged people in the future.

Currently around 11 per cent of older residents live in outer *regional* and remote *regions* of Australia. Aged care facilities are often located in cities, and those located in rural areas often lack the range of facilities and adequate bed numbers found in the urban areas. This dilemma provides a significant challenge to governments. In 2015, some aged care providers asked for a deposit of \$1.5 million prior to an older person being admitted as a resident. This is uneconomical for many families who may opt for in-home care or to cohabit with relatives. An older population means that more people will be living with diseases and disabilities, and other health issues associated with ageing. This will place pressure on health services such as hospitals and rehabilitation centres. The government has prioritised healthy ageing and is trying to find ways to keep the population in the workforce for as long as possible.

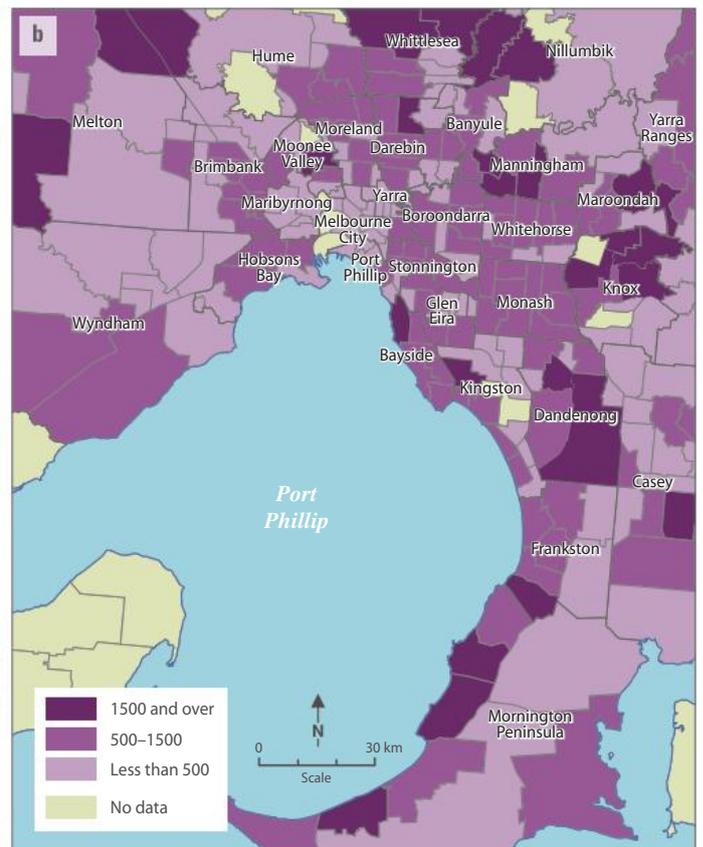
▼ **Figure 7.22** The ageing of Australia, 1967 to 2047



▼ **Figure 7.23 (a)** Distribution of aged people in Melbourne, 2013



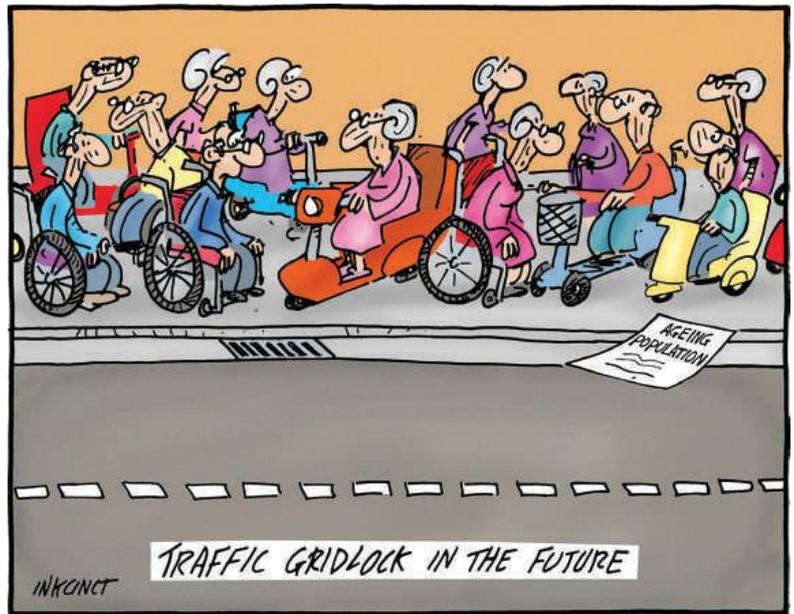
▼ **Figure 7.23 (b)** Distribution of aged people in Melbourne, 2031



What are the challenges associated with locations?

Farmland surrounding major towns and cities is in strong demand as urban areas spread outwards. Developers buy the land to build a range of affordable housing but these developments are often lacking in infrastructure when the houses and land packages are released for sale. The median house price in Melbourne in 2015 was \$669 000 and in Sydney it is predicted that by 2017 the median price of a house will be \$1 million. Planning shows that Melbourne will need to build an extra 720 000 homes over the next 20 years to help accommodate a predicted future population of six million people. The urban sprawl associated with the growing city population is literally eating into valuable farm land at a rapid pace — and threatening Victoria's long-term food security. Melbourne's fringe, which produces 40–50 per cent of Victoria's vegetables, is at risk of disappearing. This scenario is being reproduced in all other capital cities around Australia.

The growth in population in major cities and *regional* centres has placed pressure on schools and employment. Sydney needs an extra 230 public primary and secondary schools while Melbourne needs to plan for an extra 550 public primary and secondary schools over the next 20 years to accommodate population growth. This will involve massive spending on infrastructure and innovative planning.



▲ Figure 7.24 The future of Australia's population



▲ Figure 7.25 (a) Special parking is needed to provide services for the ageing population.



▲ Figure 7.25 (b) There is an increase in demand to provide aged care accommodation and facilities.

▶ ACTIVITIES

- Study figure 7.23 (a).
 - Describe the *distribution* of aged people in Melbourne in 2013 in the 500–1500 category.
 - Suggest reasons why the coastal strip along the Mornington Peninsula is popular for older people.
- Study figure 7.23(a) and figure 7.23(b).
 - Describe the *distribution* of aged people in Melbourne in 2013 in the 1500 and over category.
 - In small groups discuss why the population density of older people has increased and created the distribution pattern shown on the map for 2031.
 - Identify any other major differences between the 2013 and 2031 maps.
- Describe the degree of *spatial association* between the 2013 and 2031 maps.
 - Account for the degree of *spatial association* you described in 3(a).
- Figure 7.24 highlights an ageing population. Based on the data presented in this chapter, to what extent do you agree with this scenario?
 - What implications are there for local councils in providing safe access for the ageing populations?
- Draw up a table and list the benefits and costs of the 65+ age group to society in Australia.
 - Write a suitable response to the ageing population that you think a local council could adopt. It should contain an aim, some strategies as to how to implement this response (or policy) and what benefits the policy and its strategies would deliver in the future.

What are the population strategies at a range of scales?

Australia is a pro-natalist country and has had a range of policies to increase population over time. This strategy, used in conjunction with a strong immigration policy, ensures the population continues to grow to offset the low total fertility rate and the ageing population.

Australia was influenced by the Immigration Restriction Act of 1901 which gave preference to immigrants from an Anglo-Celtic background, ensuring most immigrants were from Europe. The total fertility rate began to decline from 3.5 babies per woman at the beginning of the twentieth century to a low of 2.1 in 1934, during the Great Depression. During World War II, fertility rates rose to 2.25 babies per woman but it was a priority of the government to bring about a higher population growth, as a way to ensure economic growth and long-term *sustainability*.

The post-war period from 1946 to 1960 was tagged 'Populate or Perish'. It was believed that Australia needed more people to protect it from a threat of invasion and to strengthen its economy. The government set a target of one per cent annual increase through increased immigration. Migration to Australia was high, but there was also growth due to natural increase. Fertility rates rose to 3.5 babies per woman and Australia had a baby boom. A greater proportion of the population married and had children, and women started and completed their childbearing earlier. During this phase, migration added 1.2 million people to Australia's population. The *distribution* of the new migrants was uneven, with over 80 per cent selecting Melbourne or Sydney as their new home. Fertility rates were high among the migrant population, which further boosted population growth.

In 2002, a national-*scale* Baby Bonus Scheme was introduced to help counter declining fertility rates (at their lowest levels in 2001) of 1.7 babies per woman. The aim of the scheme was to increase fertility rates and offset the peak of Australia's ageing population. The incentives included monetary rewards through tax cuts of \$2500 per year for parents of newborns, amended to a lump sum of \$3000 in 2004 and increasing to \$5000 in 2013. It was amended in 2014 so that a mother could choose to have the baby bonus or paid parental leave, but not both.

As a result of the Baby Bonus Scheme, *change* occurred. The fertility rate rose to two babies per woman in 2008 and, in 2011, births exceeded 300 000. Overall, 3.1 million babies were born after the introduction of the Baby Bonus Scheme, creating a mini baby boom.

Different incentives were introduced to try to increase the populations of declining rural towns. Rather than encouraging higher birth rates, towns offered incentives on a local *scale* for families to move to their communities. This has been successful in some *locations*. For example, Trundle in central western New South Wales offered homes to newcomers for a nominal rent of \$1 a week. Richmond, in Queensland, offered house lots for sale at \$1. Similar schemes have been used in every state in Australia to counter the *movement* of people from small towns in rural *regions*.

The future trends in population predicted by the ABS show that Australia's population is projected to double to 46 million by 2075. The ageing of Australia's population as a result of sustained low fertility combined with increasing life expectancy is likely to continue. In addition, the number of people 65 and over is projected to double, from 3.2 million people (14 per cent of the population) in 2012 to 6.8 million (20 per cent) by 2040. Similarly, the number of people aged 85 years and over is projected to almost triple by 2040, increasing by 770 000 people to reach 1.2 million in 2040. By then, people aged 85 years or over will make up four per cent of Australia's population, compared to only 2 per cent in 2012.

▶ ACTIVITIES

- Create a table listing the population policies discussed in this chapter. For each policy outline the characteristics and the aim of the policy.
 - Identify two policies which have similar characteristics from two countries you have studied. Justify your choice.
- Compare the 'Populate or Perish' policy with the 'Baby Bonus Policy'. Establish the aims of each policy, any strategies discussed and name the target group.
 - Evaluate the success of both policies. Did they achieve their aims? Were there any unrelated consequences?
- Select one population policy implemented in Singapore and compare it to one policy implemented in Australia. State the policy name and the similarities and differences.



CAREER PROFILE

Bernard Salt **Partner KPMG** **and Social Editor** ***The Australian***

I was inspired to study Geography by my secondary school teacher, Trevor Wickham, now retired. After high school, I completed a Masters in Arts/Geography under Joe Powell at Monash University in 1985. Joe taught me to write. Joe would prompt me to ask the big-picture questions. I knew I was well trained because I had been taught by the best.

My current work involves geographic analysis and social observation for business and the media. I initially moved into consulting by investigating shopping centre catchment areas — a very geographical topic. At that time, the writing standard in consulting was poor as reports were dictated. I crafted my reports with care and clients responded to the higher quality result. I moved to management consulting and continued providing demographic advice to the business sector. It was during this time that I conceived a national report on population trends and convinced the firm I was working for to back it — which they did by allocating \$20 000 in PR access and media training. The report gained national coverage overnight and was the most exposure the firm had ever received. This process was repeated every year in the 1990s.

I apply Geography skills and knowledge in my work. I have the ability to remember population figures and to compare and contrast suburbs and towns. Businesses deal with geographic issues in sales, distribution and investment, and the media wants a commentator who can talk knowledgeably about every region and every suburb in Australia. In 2001, I wrote a book in which I predicted the ‘sea change’ shift. That book, *The Big Shift*, put me in a different space to every other consultant and provided opportunities for public speaking and presentations, and also writing columns in *The Australian* and other publications around the world. I have spoken to business audiences on the geography of business in 30 global cities including New York City, London, Rome and Buenos Aires. Although I employ two other geographers at my workplace, there are also great prospects in working with large data sets and in GIS.

I believe the secret to my success is having better skills than others (in writing and speaking), being bold in my vision of where I wanted to go with my career (you can go anywhere — all that holds you back is a lack of vision) and, of course, hard work and determination.



Glossary

- age-specific death rate:** death rate of a specific age group such as infants (under 1 year) or over 65 years
- aged society:** according to the United Nations, when 14–20 per cent of the population are 65 years or older
- ageing population:** a population where older people become a proportionately larger share of the total population. According to the United Nations, this is when 7–14 per cent of the population are 65 years or older.
- agrarian:** refers to the cultivation of the land, thus a rural lifestyle based on agriculture
- annual growth rate:** also known as annual population growth rate; the *change* in the number of people that reside in a country, state, county, or city over one year. The formula used to calculate this is: birth rate – death rate + or – net migration.
- anti-natalist policy:** aims to decrease the crude birth rate, in order to slow population growth
- asylum seeker:** a person who leaves their own country because they fear for their safety, so they seek protection in another country
- baby bonus:** a payment offered by government authorities to help offset the cost of birthing and raising young children and to stimulate births
- baby boom:** a marked increase in the birth rates following a period of lower birth rates. Often occurs after a war or serious economic depression.
- brain drain:** term used to describe the migration of people from their original country to another where they see their skills being used in a way that brings monetary or social rewards. This may result in their original country being depleted in people with qualifications in particular areas, e.g. science.
- child-bearing age:** usually regarded as between 15 and 49 years
- child mortality rate:** average number of deaths of children aged 1 to 5 per 1000 children aged 1 to 5 in a year
- country of destination:** the country that is an endpoint for migratory flows (host country, receiving country)
- country of origin:** the country that is a source of migratory flows (sending country, source country)
- crude birth rate:** also referred to as birth rate; the number of births in a total population in a year, given as a rate per 1000 people
- crude death rate:** also referred to as death rate; the number of deaths in a total population in a year, given as a rate per 1000 people
- declining population:** occurs when the crude death rate exceeds crude birth rate, or an excess of births is offset by out-migration
- demographic dividend:** the large working age population produced by a baby bonus or fall in the crude death rate that can benefit a country's economic development
- Demographic Transition Model (DTM):** a general model of population *change* which covers four to five stages
- Demography:** the study of the growth, *change* and structure of the human population
- dependency population:** the proportion of the population not in the workforce and therefore dependent on families, their own means and/or government support
- dependency ratio:** the ratio between those of working age and those of non-working age
- dependent population:** those who rely on the working population for support, typically the young (under 15 years) and elderly (over 65 years)
- desalination plant:** where the removal of salt crystals from water to make it potable for human consumption takes place
- donor country:** the country that immigrants come from
- donor host country:** the country receiving immigrants
- doubling rate:** the number of years needed for a population to double its numbers at a particular rate of natural increase
- emigrant:** person who moves from their existing country of residence to live somewhere else
- emigration:** the act of leaving one's own country to settle permanently in another
- European Union (EU):** an alliance of 28 countries located in Europe
- expatriate worker:** any person living in another country often for work purposes. The worker does not have citizenship of the country they are working in.
- family re-unification:** an accepted reason for immigration in many countries so that one or more family members in a certain country can apply to have other family members immigrate to that country as well
- fertility rate:** also called general fertility rate; the number of live births per 1000 women ages 15–44 or 15–49 years in a given year
- homogenous:** where the characteristics are alike or very similar

- Human Development Index (HDI):** the United Nations developed a *process* whereby countries could be ranked against each other using life expectancy at birth, years of schooling, expected years of schooling and the gross national income per head of population
- hyper-aged society:** according to the United Nations, when more than 20 per cent of the population are 65 years or older
- immigrant:** a person who comes to live permanently in a foreign country
- immigration:** the *movement* of people into a country to which they are not native in order to settle there
- infant mortality rate:** the number of deaths of children under one year old per 1000 live births in a year
- internal migration:** the *movement* to a new home within one country
- internally displaced person:** according to UNHCR 'persons or groups of persons who have been forced to flee, or leave, their homes or *places* of habitual residence as a result of armed conflict, internal strife, and habitual violations of human rights, as well as natural or man-made disasters involving one or more of these elements, and who have not crossed an internationally recognised state border'
- international migration:** the *movement* from one country to another
- irregular migrant:** a migrant without documented approval to remain in a country. Sometimes they are also called an illegal or unauthorised migrant. They entered a country illegally or have overstayed the duration of their visa. A refugee or asylum seeker is generally not considered an illegal immigrant as their refugee status has not been determined.
- labour migration:** *movement* of persons from one nation state to another for the purpose of employment
- life expectancy:** the average number of years a person might be expected to live, measured from any age but usually from birth
- maternal mortality:** the number of mothers who die because of child birth related conditions per 100 000 live births in a year
- migrant worker:** refers to any people working outside of their home country
- migration:** the *movement* of people from one *place* of residence to another
- monsoon:** winds that occur in tropical *regions* and reverse their direction as the seasons *change*. They can bring dry or humid and wet conditions depending on the origin of the winds.
- natural decrease:** the difference between crude birth rate and crude death rate of a population, with deaths exceeding births, usually expressed as a percentage
- natural increase:** the difference between crude birth rate and crude death rate of a population, with births exceeding deaths, usually expressed as a percentage
- net migration:** the number of people arriving in a country minus those departing from that country usually reported over a 12-month period
- net overseas migration (NOM):** where the loss of population and immigration to a country is calculated so that the net number of migrants to country is accounted for
- peak child:** due to improved health and education prospects globally, fertility rates are falling overall. In total, 40 per cent of the world's population has two children or fewer per woman. The term refers to the largest proportion of population dominated by the population in the lowest age bracket.
- population:** the number of people who reside in a country, state, county, or city
- population density:** the number of people per area, such as a square kilometre
- population distribution:** the location of a population at global, continental, national, *regional* and or local *scales*
- population growth:** the natural increase or decrease of a population, including the effects of emigration and immigration
- population growth rate (PGR):** the increase in a country's population during a period of time, usually one year, expressed as a percentage of the population at the start of that period. It reflects the number of births and deaths during the period and the number of people migrating to and from a country
- population issues:** refers to an impact which may result from an increasing or decreasing population, such as overcrowding. The identified issue needs to have a response and be acted upon. It can be addressed by a global, national, *regional* or local-*scale* policy with strategies.
- population pyramid:** a diagram made up of a series of bars or histograms representing different male and female age groups. Pyramids may represent a population by total numbers or as a percentage of the total population. May also be referred to as an age-sex pyramid, an age-structure diagram and a population profile.
- pro-natalist policy:** a policy that aims to increase the birth rate of a country
- pull factor:** a force that draws people to immigrate to a *place*
- push factor:** a force that drives people away from a *place*
- neo-Malthusian:** views based on Malthus' theory of population but adapted to contemporary conditions
- refugee:** the 1951 Convention Relating to the Status of Refugees describes a refugee as a person who 'owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country'
- remittances:** monies earned or acquired by non-nationals that are transferred back to their country of origin, usually sent to family members
- rural-urban migration:** the *movement* of people from countryside to a city
- skilled migrant:** a migrant worker who, because of his or her skills or acquired professional experience, is usually granted preferential treatment regarding admission to a host country (and is therefore subject to fewer restrictions regarding length of stay, *change* of employment and family reunification)
- slum or shanty settlement:** an area that is characterised by informal housing. Most lack reliable supply of water, sanitation, and basic services.
- total fertility rate:** the average number of children a woman is likely to have if she lives to the end of child-bearing age
- tree-changers:** people who make an urban to rural migration for lifestyle reasons
- urban sprawl:** the land *change* of use on previously underdeveloped land or farming land as urban developments spread and land use *changes*



Index

- 'Abenomics', Japan 108
- absolute locations 3
- age–sex structures *see* population pyramids
- ageing populations 34–5
 - Australia 124, 128, 129, 130
 - by region 101
 - China 88
 - Germany 110, 111, 112–14
 - global 100–1
 - Japan 105–9
 - and life expectancy 35, 101
 - Singapore 120, 123
- analysing and interpreting data 18
- asylum seekers 43, 53, 54, 55, 62, 111
 - definition 62
- Australia 124
 - ageing population 124, 128, 129, 130
 - Baby Bonus Scheme 130
 - challenges associated with locations 129
 - geographic characteristics 124
 - immigration patterns 59–61, 125, 130
 - infant mortality rate 6, 126, 127
 - life expectancy 118, 126
 - 'Populate or Perish' policy 130
 - population 130
 - population changes 126–7
 - population characteristics 125
 - population density 124
 - population distribution 21–2, 124
 - population issues 128
 - population strategies at a range of scales 130
 - population structure 126
 - reversing rural town decline 130
 - total fertility rate 86, 125, 126, 130
- Baby Bonus Scheme 130
- Bangladesh
 - changes in population growth, factors 73
 - dependency ratio 69
 - education for girls 76
 - education level 72, 74
 - flooding 67, 73, 74
 - geographic characteristics 67, 116
 - infant and child mortality rates 72, 76
 - labour migration from 73
 - life expectancy 71–2
 - location 66
 - population changes 13, 67
 - population characteristics 68, 73
 - population density 68, 74
 - population issues 74
 - population strategies 76
 - population structure 11, 12, 68–9
 - total fertility rate 71, 76
 - vulnerability to hazards 75
- Bedouin Arabs 78
- birth rates 23, 24, 26–8, 29, 100
 - by regions 27
 - interconnecting reasons affecting 27
 - see also* crude birth rates
- Bunn, Jane, meteorologist 70
- calorie supply, and population growth 38
- career profiles 22, 65, 70, 94, 115, 131
- change 11
 - see also* population change
- child-bearing age 29
- child marriage 76
- child mortality rates 32
 - Bangladesh 72, 74
 - Saudi Arabia 79
- China
 - birth rates 27
 - demographic cycle 91
 - Demographic Transition 90
 - dependency ratio 88
 - family size 27
 - gender imbalance 88–9, 91
 - health issues 89
 - life expectancy 85, 88
 - living standards 89
 - One Child Policy 85–9
 - population 84
 - population control policy 86–9
 - population distribution 84
 - population growth 85
 - population issues and challenges 85–7, 91
 - population movements in 90
 - population structure 87
 - proportion of population over 60 years 88
 - rural–urban migration 90–1
 - total fertility rate 29, 86
 - welfare for the elderly 88
- Chinese students 47
- Choka, Vieli, settlement case worker 65
- climate change 74
- contraception 73, 76, 86, 110
- crude birth rates 26–8, 35
 - Bangladesh 71
 - changing by country 26–7
 - Germany 111, 113
 - Japan 102, 103, 108
 - Saudi Arabia 77, 78

- Singapore 118, 120, 121, 123
- United States 93
- crude death rates (CDR). 30, 35
 - Bangladesh 71
 - changing by country 29
 - Germany 110, 111
 - and infant mortality rate 32
 - Japan 102, 103
 - and life expectancy 32, 33
 - and maternal mortality 32
 - reasons for fall 30
 - Saudi Arabia 78, 81
 - Singapore 118
 - United States 93
- cultural factors influencing population movement 52
- data, analysing and interpreting 18
- death rates 23, 24, 29–30, 100
 - see also* crude death rates
- demographic dividend 29
- Demographic Transition
 - China 90
 - United Kingdom 40
- Demographic Transition model 13, 39–40
 - and associated population pyramids 40
- dependency population 35
- dependency ratios 35
 - Bangladesh 69
 - China 88
 - Japan 105
 - Saudi Arabia 78
 - Singapore 120
 - United States 96
- desalination plants 81, 82
- Dhaka, Bangladesh 49
- displacees 52
- distance 3, 9
- distribution 5, 9–10, 15
 - natural population growth and decline 24–5
- donor country of labour migrants 56, 57
- drinking water supplies 31, 74, 81
- Dubai
 - age–sex distribution 10, 11
 - population change 14
 - urbanisation 13, 14
- economic development, and birth rates 26
- economic factors
 - influencing population characteristics 66, 73
 - influencing population movements 52
- economic impacts
 - of immigration, USA 98
 - of population change, Japan 104–5
- economic migration 52
- economically active population 35
- education
 - Bangladesh 72, 74, 76
 - Saudi Arabia 79
 - Singapore 118, 119, 121
- environmental factors
 - influencing population characteristics 66
 - influencing population movements 52
- environmental impacts of immigration, USA 99
- family migration 52
- family planning
 - Bangladesh 73, 76
 - China 85–7
- family size 27, 28
- famine 30
- fertility rate *see* total fertility rate
- flooding, Bangladesh 67, 73, 74
- forcibly displaced people 62
- gender differences in life expectancy 33
- gender imbalance, China 88–9, 91
- geographical concepts 2–15
- Germany
 - ageing population 110, 111
 - distribution 112
 - local-scale responses 114
 - national-scale responses 113
 - asylum seekers 111
 - birth and death rates 110, 111, 113
 - health and social welfare system 111, 113
 - immigrants 110, 113
 - impacts of population changes 111–12
 - population dynamics 110–11
 - population structure 111, 112
 - total fertility rate 110, 113
 - women in the workforce 110
- global population distribution 9, 20, 21
- global population growth 23, 24
- global scale 6, 7
- global-scale ageing 100–1
 - responses to 101
- glossary 132–3
- Greek emigrants 56
- Green Card (USA) 97
- Green Revolution 30, 73
- Gross National Income (GNI) per capita 14, 15
- Gulf countries, labour migration to 10, 56–7
- health initiatives
 - Bangladesh 76
 - Germany 111
 - Japan 104, 108
 - Saudi Arabia 79
 - Singapore 118, 119
- high agency 52
- Hispanic population, USA 92–3
- historical factors influencing population characteristics 66
- host country for labour migrants 56, 57
- household composition, Japan 106, 107
- housing, Saudi Arabia 80, 82
- illegal immigrants 53, 98
- illiteracy 74
- immigrants
 - Australia 59–61, 125, 130
 - Germany 110, 113
 - Japan 108
 - Singapore 120
 - USA 97, 98, 99
 - see also* migrants
- immigration impacts, USA 98–9
- immigration system, USA 97
- indefinite migration 45
- India
 - birth rates 27
 - changing population statistics 33
 - total fertility rate 86
- Indigenous Australians
 - infant mortality rate 6
 - maternal death rate 6

infant mortality rates (IMR)	32	Keele, Svenja, PhD candidate in Political Environmental Geography	22, 23	migrant workers	10, 56
Australia	6, 126, 127			benefits and disadvantages	57
Bangladesh	72, 76			impact on donor and host countries	57
China	85	labour migration	10	in Saudi Arabia	80, 82, 83
Singapore	118	from Bangladesh	73	in United Arab Emirates	56–7
instructional terms in Geography	18–19	to Saudi Arabia	80, 82, 83	in United States	97
inter-scale relationships	6	to Singapore	120	migrants	
internal migration	43, 45	to United Arab Emirates	56–7	crossing the Mediterranean in 2015, case study	54–5
Internally Displaced Persons (IDPs)	62	to United States	98	international	10, 42, 43, 44
by conflict and violence, 2015 overview	64	large-scale maps	5, 6	remittance money flowing from	11, 51
international migrants		life expectancy (LE)	6, 32–3	who migrates?	44
by development level and major area	42	and ageing	35, 101	<i>see also</i> immigrants	
definition	43	Australia	118, 126	migration	42–4
distribution	43, 44	Bangladesh	71–2	irregular	53–5
international migration	42, 45	China	85	push and pull factors leading to	48–50
international scale	6, 7	gender differences	33	reasons for	51–2
international students	43	Japan	104	regional	50
where do they study?	46–7	Saudi Arabia	78, 79	rural–urban	48–50, 90–1, 106
intra-urban migration	45	Singapore	118, 119, 120	to Australia	59–60
irregular migration	53–5	lifestyle migration	52	types of	45
Japan		Limited English Proficient (LEP) residents, USA	98–9	who decides when and where to migrate?	52
‘Abenomics’	108	literacy rates	74, 79, 81, 118	migration patterns, factors	
ageing population	105–7	living conditions	5	influencing	52
local-scale response	109	local scale	6, 7	mobile students	46–7
national-scale responses	108	location	3	movement	11
birth and death rates	102, 103, 109	low agency	52	types of	45–7
dependency ratios	105	low birth rates	26, 29	national scale	6, 7
health initiatives	108	malnutrition	74	natural population increases and decreases	8, 24, 25, 26
household composition	106, 107	Malthus, Thomas, population change theory	38	Neo-Malthusian approach	38, 85, 89
immigration	108	marriage		nomadic peoples	43
impacts of population changes	105–7	Japan	104, 109	non-economically active population	35
labour force participation rate	104	Singapore	121	non-spatial distribution	10
life expectancy	104	maternal mortality (MM)	32, 33	observational scale	5, 7
marriage rate	104, 109	Bangladesh	76	One Child Policy, China	85–6
population dynamics	102–3	Indigenous women	6	how it has affected China	88–9
processes responsible for	104–5	Mediterranean migrant arrivals	54	implications	87
population growth	102	and deaths by route, 2015	55	‘parasite singles’	105
strategies	108, 109	and granted asylum	54, 55	‘peak child’	15, 66
population structure	102, 103	Melbourne		permanent migration	45
pro-natalist policy	108	distribution of aged people	128	Piactla, Mexico, population structure	49
rural–urban migration	106	net migration to	50	pilgrims	81
social security changes	105, 106	urban sprawl	129	places	3–5
total fertility rate	104, 108	meteorologists	70		
women in the workforce	104, 108	migrant agency, continuum of	52		
work ethic	105	migrant population, distribution	43, 44		

political factors		population growth	15	refugees	43, 45, 52, 53, 54
influencing population characteristics	66, 73	Australia	125	countries of origin, 2014	62, 64
influencing population movement	52	Bangladesh	73	definition	62
political impacts		and calorie supply	38	general responses to	63
of immigration, USA	98	China	85	global trends	62
of population change, Japan	106	global	23, 24	hosting countries	64
'Populate or Perish' policy	130	Japan	102	reasons for	63
population		and migration	42	resettlement to a third country	65
Australia	130	natural growth and decline	8, 24–5, 26	regional scale	6, 7
China	84	Saudi Arabia	77–8, 82–3	regional Victoria, net migration to	50
Germany	110	Singapore	117, 121, 122	regions	8
Japan	102	United States	93	at different scales	8
ten most populous countries	84	population movements	42–64	relative distance	9
United States	92	in China	90	relative location	3
population ageing <i>see</i> ageing populations		factors influencing	52	remittance money, flow from migrants	11, 51, 57
population change	20	international migrants	10, 42–4	repatriation	63
Australia	126–7	of remittance money from migrant workers	11	replacement rate	29
Bangladesh	13, 67, 73	in Saudi Arabia	81	resettlement	
Dubai	14	types of	45	into the country to which they have fled	63
Germany, impacts	110, 111–12	United States	97	to a third country	63, 65
Japan, impacts	105–7	population pyramids	7, 10	retirement, and international migration	51
rates of	8	and Demographic Transition model stages	40	robots	109
Singapore	121–2	Indigenous and non-Indigenous Australians	7	Roney, John, urban planning consultant	94
population change over time	38	interpreting	36–7	rural–urban migration	48–50
Demographic Transition model	13, 39–40	population structure		China	90–1
Malthus's theory	15, 38	Australia	126	Japan	106
population characteristics		Bangladesh	11, 12, 68–9	Salt, Bernard, social editor	131
Australia	125	China	87	Saudi Arabia	77
Bangladesh	68, 73	Dubai	10, 11	dependency ratio	78
factors affecting	66, 73	Germany	111, 112	education for women	79
Saudi Arabia	77–8	Japan	102, 103	employment opportunities for women	80
Singapore	117, 119–20, 121	Piactla, Mexico	49	foreign labour	80, 82, 83
population density	5, 6, 21	Saudi Arabia	78, 79	geographic characteristics	77
Australia	124	Singapore	117	housing and building work	80, 82
Bangladesh	68, 74	United States	95	land use	80
China	84	Porter, Libby, academic researcher	115	life expectancy	78, 79
Saudi Arabia	80	poverty	81	location	66
population distribution	21–2	process	13–14	population characteristics	77–8
Australia	21–2, 124	of ageing	35	population control policy	83
China	84	psychological distance	74, 80, 81	population density	80
global	9, 20, 21	rates of population change	8	population distribution	81
Saudi Arabia	81	'raven mothers'	110	population growth	77–8, 82–3
United States	94	recurrent migration	45	population issues	80–1
variations	21	refugee repatriation	63	population movement within	81
population dynamics	20–40	refugee warehousing	63	population strategies	82–3
definition	20			population structure	78, 79
Germany	110–11				
Japan	102–5				

Saudi Arabia <i>continued</i>			
population trends	79		
poverty	81		
total fertility rate	77, 79, 81		
traditional lifestyle	78		
underemployment and unemployment	80, 82		
urbanisation	78, 83		
water supplies	81, 82		
scale	5–7, 8		
seasonal migration	45, 58		
sense of place	3		
settlement case workers	65		
sex-selective abortions	33, 89		
shanty towns	49		
SHEEP factors	66		
Singapore	116		
ageing population	120, 123		
birth and death rates	118, 120, 121, 123		
dependency ratio	120		
education	118, 119, 121		
GDP per capita	119		
geographic characteristics	116		
health initiatives	118		
immigrants	120		
infant mortality rates	118		
life expectancy	118, 119, 120		
literacy rate	118		
location	116		
marriage	121		
older people in the workforce	123		
population			
characteristics	117, 119–20, 121		
population strategies	121–2		
population structure	117		
technology-based initiatives	123		
total fertility rate	118, 120, 122		
women in the workforce	121		
skewed distribution	10		
slavery	52		
slums	48, 75		
small-scale maps	5		
social editors	131		
social factors			
influencing population characteristics	66, 73		
influencing population movements	52		
social impacts of immigration, USA	98–9		
social issues, Bangladesh	74		
social security			
Germany	111, 113		
Japan	105, 106		
spatial association	15		
spatial migration	45		
storm surges	75		
sustainability	15		
Syrian refugee crisis	6, 7, 63		
temporal migration	45		
temporary migration	45, 47		
total fertility rate (TFR)	29, 35, 100		
Australia	86, 125, 126, 130		
Bangladesh	71, 76		
China	29, 86		
Germany	110, 113		
India	86		
Japan	104, 108		
Saudi Arabia	77, 79, 81		
Singapore	118, 120, 122		
United States	86, 92		
trafficking	52		
'tree-changers'	50		
unemployment	80, 82, 120, 124		
United Arab Emirates, labour migration to	56–7		
United Kingdom, Demographic Transition	40		
United Nations High Commissioner for Refugees (UNHCR)	62		
global trends	62		
United States	92		
birth and death rates	93		
demographic characteristics	92–3		
dependency ratios	96		
emigration overseas	99		
foreign-born residents	97		
Hispanic population	92–3		
immigrants	97, 98, 99		
immigration impacts	98–9		
immigration system	97		
internal movements	99		
labour migration to	98		
language barriers	98–9		
'minority' groups	93		
population	93		
population distribution	94		
population growth	93		
population movements	97, 99		
population profiles, urban areas	96		
population structure	95		
total fertility rate	86, 92		
urbanisation	94		
urban areas			
age of migrants to	49		
planning, Australian cities	129		
population profiles, USA	96		
and rural migration	48–9		
Victoria	50		
urban planning consultants	94		
urbanisation			
Dubai	13, 14		
Saudi Arabia	78		
United States	94		
vaccinations	31, 72, 79		
value	3		
voluntary migration	45		
water-borne diseases	31		
wealth	5		
women in the workforce			
Germany	110		
Japan	104, 108		
Saudi Arabia	80		
Singapore	121		
working population	35		



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UNIT
4

Human Population

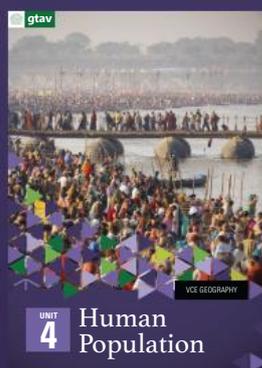
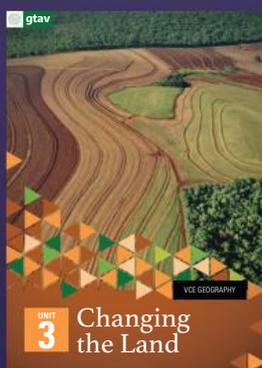
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Developed and published for the VCE Geography Study Design 2016–2020, *Human population* is a comprehensive course book that provides topical case studies that enable students to understand and apply geographical concepts, key knowledge and skills.

Using this textbook, students investigate the geography of human populations. They explore the patterns of population change, movement and distribution, and how governments, organisations and individuals have responded to those changes in different parts of the world. Investigations include a study of two significant population trends that have developed in different parts of the world: a growing population of one country and an ageing population of another country.

Written by experienced VCE Geography teachers, the book incorporates text, case studies, spatial technologies, fieldwork, rich data and activities to assist students to develop an understanding of the content and skills of Geography, and prepare them for success in their VCE assessments.



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