



**GEOGRAPHIES
OF HUMAN
WELLBEING**

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Cover photo: Children queue up for their daily meal at the Girl Child Network Project, at Kawangware School in Nairobi, Kenya in March 2009.
Photo: Kate Holt/Africa Practice via AusAID Flickr site



Australian Government

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1

WHAT IS HUMAN WELLBEING?

Human wellbeing is the recognition that everyone around the world, regardless of geography, age, culture, religion or political environment, aspires to live well. Wellbeing is not necessarily bound by income, rather, it is an individual's thoughts and feelings about how well they are doing in life, contentment with material possessions and having relationships that enable them to achieve their goals. Many factors impact upon an individual's ability to live well including war, conflict, social fragmentation, inequality, poverty, malnourishment as well as access to resources.

How can human wellbeing be measured?

Human wellbeing is measured by combining facts and figures with indicators that have a bearing on people's lives. By measuring Gross Domestic Product (GDP), wealth, occupation and housing, and then balancing these with quality of life indicators such as health status, employment rate, work/life balance, education, social connections, civil engagement, personal security and environment quality, a broader picture of an individual's or country's wellbeing can be obtained.

The King of Bhutan stated in 1972 that the goal of happiness was more important than the goal of wealth. His belief that society should be measured by the health, education and contentedness of its people, rather than material indicators, led to the development of Bhutan's Gross National Happiness Index. By measuring the value of the nation's natural, human, social and cultural wealth rather than the manufactured and financial capital, Bhutan has become a role model for the rest of the world, so much so that in April 2012, the nation hosted the United Nations Happiness and Wellbeing conference.

Student Activity



Create a poster or multimedia display promoting the idea of Bhutan's Gross National Happiness Index and the value of natural, human, social and cultural wealth rather than financial wealth. Include how you think wellbeing can be measured.

Using statistics to measure global wellbeing

The global distribution of human wellbeing is unequal. Statistics are one way of measuring the disparities in wellbeing and an important tool to determine action by government and non-government organisations (NGOs) as a response. There are many statistics used to measure wellbeing that can be grouped into the following categories: social, health, economic, environmental, political and technological.



Figure 1.1 Happiness is an important goal in Bhutan

Purchasing Power Parity

Gross Domestic Product can also be expressed in terms of Purchasing Power Parity (PPP) to allow for standard comparison of real prices between countries, and so that exchange rates do not over- or undervalue the PPP of a country or an individual. This measure takes into account price differences between countries, market size, the structure of the economics and what money can actually buy in a country. PPP is often used instead of exchange rates to make comparisons easier.

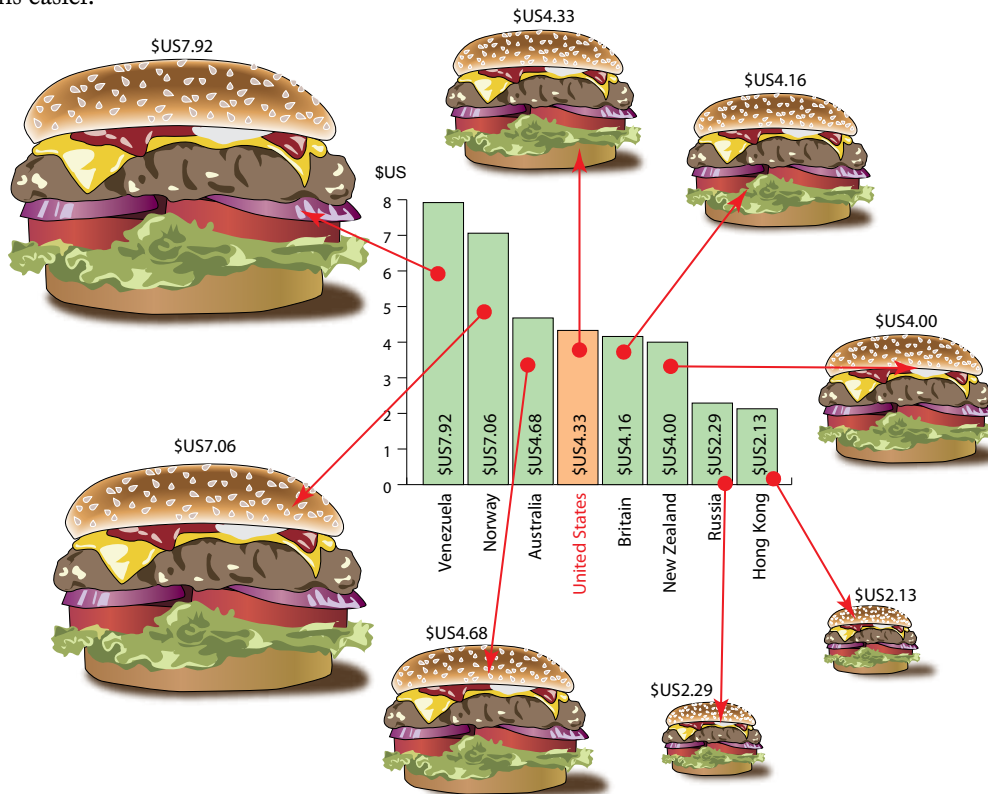


Figure 1.2 Purchasing Power Parity made easy with Burgernomics

In 1986, The Economist developed the Big Mac Index as a lighthearted way to look at PPP – Purchasing Power Parity. The theory behind the Big Mac Index is that the price of a good/s shouldn't vary across markets. For instance, exchange rates adjust so that a basket of goods should cost the same in different countries. This example used a hamburger from McDonald's because it is made to exacting standards using similar ingredients across the world – the company's reputation relies on being able to deliver identical hamburgers in every city!

In July 2012, a Big Mac sold for \$US4.33, whereas in Russia it cost only \$US2.29 or 15 Roubles, suggesting that Russia's Rouble is in financial trouble. The Venezuelan Bolivar is overvalued with the Big Mac costing a \$US7.92 as a result of high inflation. In Australia, at \$4.68, the Big Mac reflects that the Australian Dollar is only slightly overvalued.

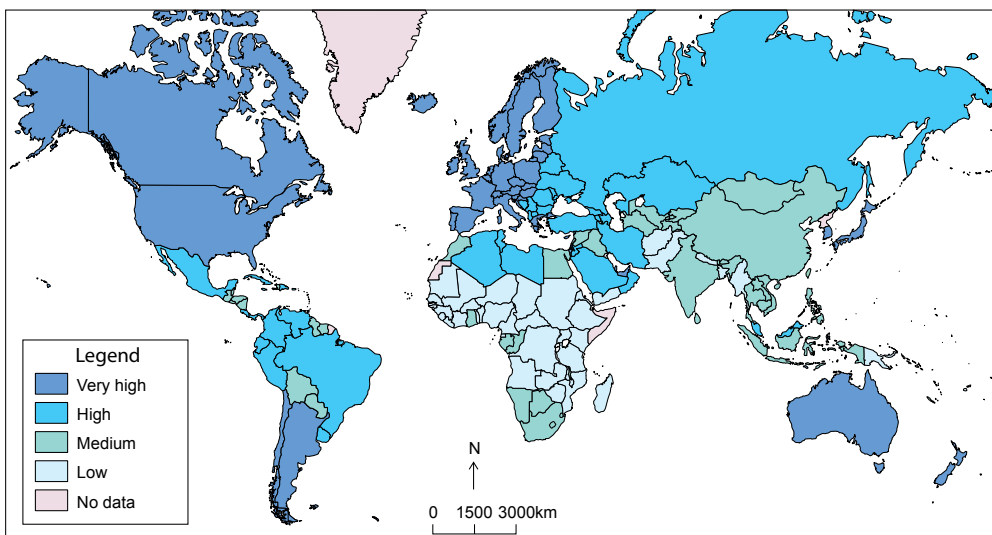


Figure 1.3 Choropleth map showing Human Development Index measuring life expectancy at birth, education and the GNI per capita

Defining terms

- ◆ **Indicator:** Indicators can be either quantitative or qualitative to measure people's living conditions and wellbeing. Quantitative indicators provide accurate and measurable comparisons, such as life expectancy or percentage of population below the poverty line. Qualitative indicators are a description of the quality and characteristics rather than a measurement, such as quality of food supplies and housing.
- ◆ **GDP:** Gross Domestic Product is the total value of the goods and services produced in a country over one year.
- ◆ **GDP per capita:** Gross Domestic Product can be converted into GDP per capita. The total GDP for a country is calculated and divided by the country's total population to determine the per capita amount.
- ◆ **GNI:** Gross National Income is the total income of all citizens of a country including income generated from investment and earning overseas. This is a valuable indicator of the economic strength of a country. The income per capita can also be calculated by dividing a country's GNI by its population.
- ◆ **Life expectancy:** The average number of years a person is estimated to live from birth. Australia's average life expectancy at birth in 2012 was 81.9 years compared to 57 years in Sierra Leone.
- ◆ **HDI:** Human Development Index is a composite index that measures a country's average achievements in three aspects of human development: life expectancy at birth, education (combination of mean years of schooling and expected years of schooling) and the GNI per capita. In 2012, Norway was the highest ranked HDI country in the world followed by Australia, while the Democratic Republic of Congo and Niger had the equal lowest ranking of 186.

Going beyond Gross Domestic Product

The value of goods and services as measured by Gross Domestic Product (GDP) was never intended as a way to measure human wellbeing or quality of life. Gross Domestic Product measurements are useful but they do not always provide an accurate picture of the income of a country. GDP does not take into consideration unpaid labour or tell us how wealth is distributed – the per capita calculation is only an average based on the total population. In relation to human wellbeing, GDP does not provide an accurate reflection of how ordinary people perceive their own lives and the state of their living conditions. When indicators such as people's health status, happiness, personal security, social connectedness and other non-monetary measures are used in conjunction with a country's Gross Domestic Product, a more accurate view of human wellbeing is achieved. Through the OECD's (Organisation for Economic Co-operation and Development) *Better Life Initiative* and the *How's Life – Measuring Wellbeing* publication released in 2011, it is clear that countries with higher GDP per capita also have a higher human wellbeing. However, it is important to note that this relationship becomes weaker as the country's income grows, suggesting that once income reaches a certain level it is less likely to generate more wellbeing.

The happiest place on Earth

According to the Earth Institute's World Happiness report and the Gallup World Poll, the country with the highest average happiness (life as a whole) was Denmark, followed by Finland, Norway and the Netherlands. It is no surprise that these are countries with the highest incomes – in fact the income of these four countries is 40 times higher than the four unhappiest countries, which include Togo, Benin, Central African Republic and Sierra Leone. However, the four happiest countries also have high social equality, social trust and quality governance (system of governing) – all factors which, along with income, contribute to happiness and wellbeing.

Student Activity



Create a database to determine the relationship between HIV/AIDS infection rates and a number of different indicators such as literacy rates, GNI, percentage of the population living on less than \$1 per day, life expectancy etc

Scatter graphs are useful to determine if a relationship exists between the data on the X and Y axis. For instance, the scatter graph of GDP per capita and life expectancy indicates there is, in fact, a relationship between the two indicators as the dots are grouped close together or clustered. If dots are scattered or spread apart, there is no link between the indicators. This scatter graph also shows proportionate circles representing the population size of each country and colours representing different world regions.

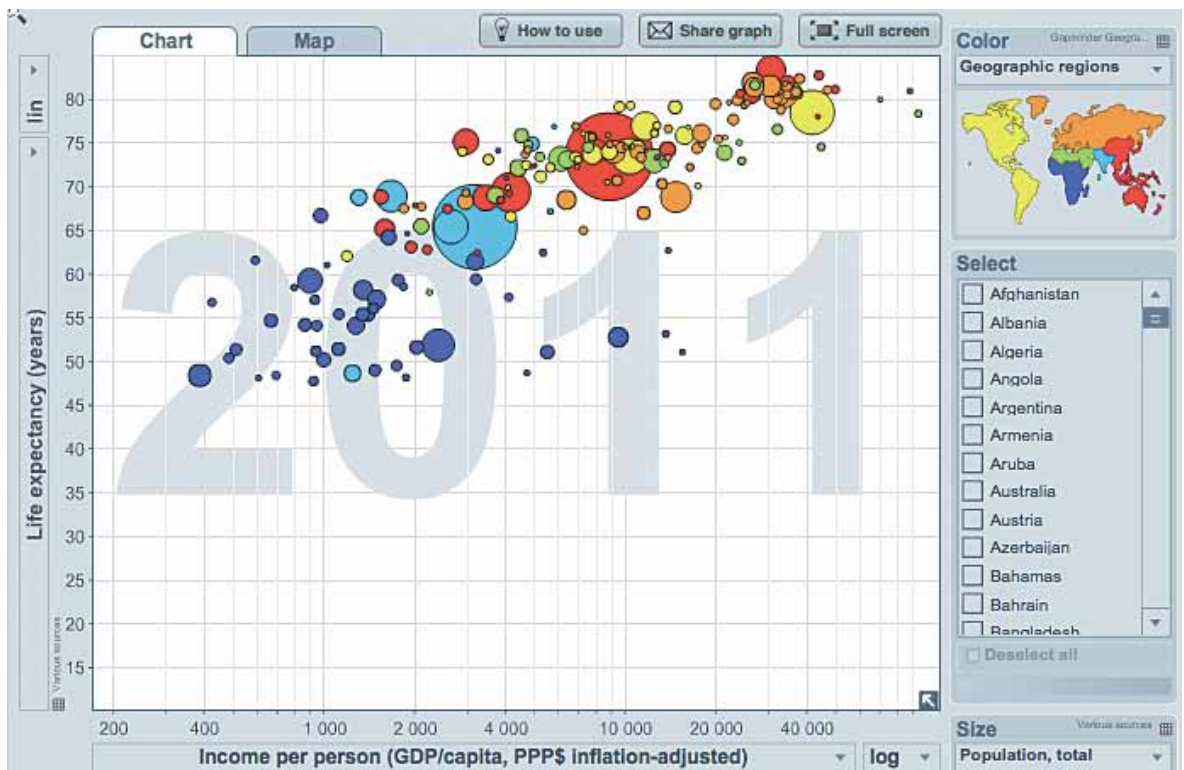


Figure 1.4 Scatter graph: GDP per capita and life expectancy

Did you know?

In 2011, the United Nations General Assembly noted that Gross Domestic Product (GDP) did not accurately reflect the happiness and human wellbeing of the people in a country. The United Nations has highlighted the need for a new economic paradigm based on the principles of happiness and wellbeing, ecological sustainability, efficient use of resources and fair distribution.

Over to you!

In 2011, the OECD (Organisation for Economic Co-operation and Development) released the *Better Life Initiative* and the interactive *Better Life Index*.

Compare and visualise the 11 key factors such as education, housing, social engagement and environment of the OECD countries – 34 of the world’s most developed countries. Go to the *Better Life Index* site and investigate by rating the 11 key factors according to importance to you.

Each of the flowers represents one of the 34 OECD countries, with each of the petals representing one of the 11 topics of wellbeing. The length of the petal shows the country’s score for each of the topics, while the width shows the importance you have given to that topic.

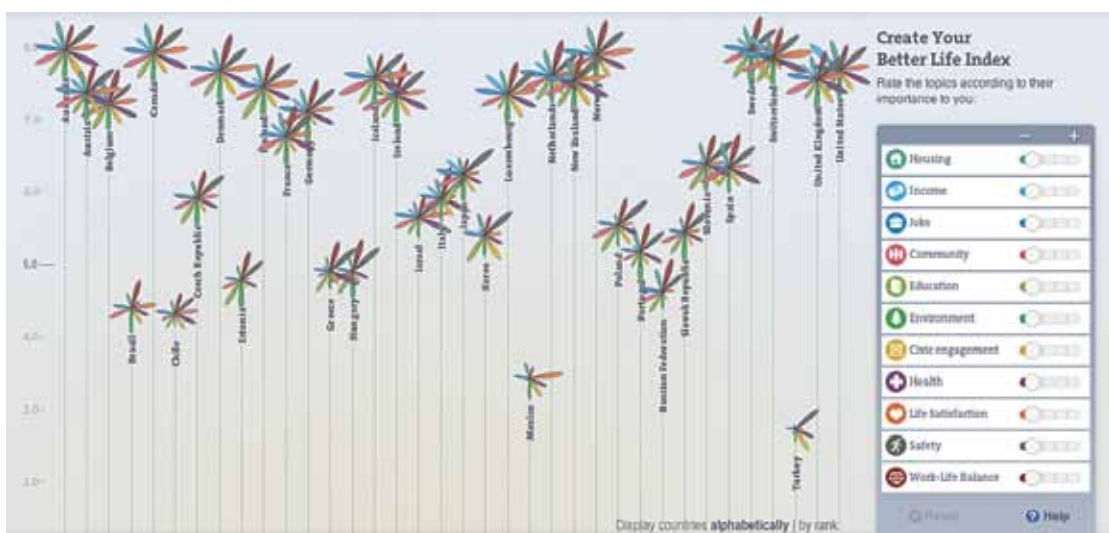


Figure 1.5 The OECD *Better Life Index*

Student Activity



Go to www.oecdbetterlifeindex.org and investigate how altering the topics in the *Better Life Index* can change the ranking of the countries.

1. Record the name of the country with the highest rank for the following topics (increase each of the following topics to the maximum to find out the answers – remember to reset before you move onto the next topic):
 - a. work-life balance
 - b. income
 - c. safety
 - d. health.
2. Record the name of the country with the lowest rank for the following topics (increase each of the following topics to the maximum to find out the answers – remember to reset before you move onto the next topic):
 - a. housing
 - b. life satisfaction
 - c. education
 - d. work-life balance.
3. Compare your index.
 - a. fill in the country and age group and respond to what a better life means to you
 - b. describe how you compare to other male/females in your age group in Australia.
4. Comparing men and women
 - a. only in seven of the OECD countries do men rank higher on the *Better Life Index* than women. List these seven countries.
5. Create your own *Better Life Index*
 - a. rank the topics according to how important each is to you
 - b. justify your ranking. Why do you think some of the topics are more important than others?
 - c. start a class blog to share your *Better Life Index* with the class members
 - d. view the blog as a class and debate some of the rankings.
6. Compare and contrast the *Better Life Index* between Australia and another OECD country.
 - a. go to the “Countries” and “Topics” tab along the top of the home page to gather information on each of the topics for Australia and another OECD country
 - b. write a detailed report comparing and contrasting the *Better Life Index* data for Australia and one other OECD country. Include relevant geographic media.

2

EMPOWERING WOMEN AND GIRLS

In the last century, women's wellbeing has improved, however, there is still much work to do to promote gender equality. In many parts of the world, women are still denied human rights, are subject to violence and oppression, have inadequate access to education and suffer more from extreme poverty. It is through the education of women and young girls that empowerment, and the means to fight poverty and social injustice, can be achieved.

Women and work

At the end of 2010, women made up the majority of the world's workforce – women work approximately two-thirds of the world's working hours and produce half of the world's food, yet they only earn 10 per cent of the world's income and own less than one per cent of the world's property. Women also make up almost 60 per cent of informal and unpaid employment sector.

Examples of gender inequality affecting the wellbeing of women

1. In Saudi Arabia, women are not allowed to drive a car. As recently as June 2011, Saudi women attempted to drive cars in defiance of the official ban on female drivers. One of these women was held in prison for 10 days and only released when she promised to not drive again.
2. In countries such as Iraq, Yemen, Saudi Arabia and Libya, married women do not have the right to travel overseas without their husband's written permission.
3. In many countries across the world, women are victims of violence and have no laws to protect them. In 2013 in Papua New Guinea, new laws were introduced that specifically address domestic violence. This will help reduce statistics that show that over 65 per cent of women are victims of domestic abuse, with this number rising to as much as 100 per cent in some regions of the country.
4. Female infanticide is the unlawful killing of very young or unborn female babies. This is a global issue with the World Bank estimating that two-fifths of girls are never delivered as a result of a preference for sons. China's *One Child Policy* and the unpopularity of daughters resulted in increased abortion, neglect and abandonment of female infants. The ratio of males to females in China is now 114 boys for every 100 girls.



Figure 2.1 Women are responsible for almost 80 per cent of all of the work related to caring for the house and family members



Figure 2.2 Female infanticide is also a human rights issue in India with an estimated 8 million female foetuses aborted in the last decade. Girls are viewed as a financial burden in traditional families as they require large dowries to be married, whereas a son is viewed as a breadwinner and carer for his parents as they age.

More than two-thirds of the world's illiterate adults are women. Despite Afghanistan having a high number of children between the ages of seven and 12 enrolled in education, the literacy rates for young women (18–24 years old) is only 18 per cent compared to over 50 per cent for males in the same age group. Early marriage, security issues, limited access to schools, effects of war, poverty and local traditions prohibit girls from receiving an adequate education.

Education = empowered women and girls

There are clear links between increased education and improved maternal health, lower child mortality, better child health, nutrition, higher life expectancy and lower fertility rates. In addition to this, women who are educated have enhanced self-esteem and wellbeing, and as a result they delay marriage and sexual activity, thus reducing the risk of sexually transmitted diseases such as HIV/AIDS. In fact, for one additional year of education that a young girl receives beyond the average, her health improves by 10 per cent and reduces infant mortality by between 5–10 per cent. Education also gives women the chance to increase their income by up to 20 per cent.

The education of young girls is the most powerful and effective way to address the issue of global poverty. Educated girls develop into women who are independent thinkers and agents of change within their families, communities and countries. Education of young girls and women has the power to break the intergenerational cycle of poverty. Women who are educated value education. As a result they are more likely to send their own children to school thereby creating a positive cycle of development.

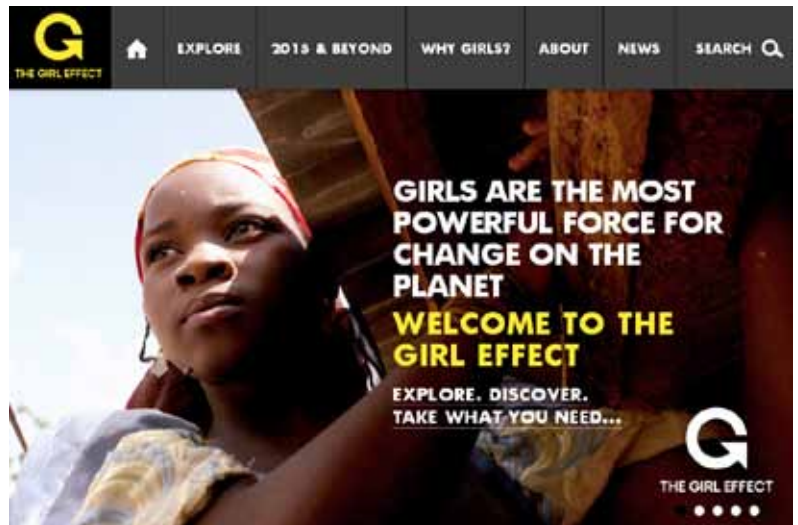


Figure 2.3 The Girl Effect – what happens when a girl gets a chance?

Taking some action

Student Activity



1. Go to www.care.org.au/learn-more and view the video clip CARE Australia's *I am powerful* video.
2. View *The Girl Effect* video clip at www.youtube.com/watch?v=1e8xgF0JtVg
3. Write a critical analysis comparing the two video clips and their responses to the education of women.
 - a. The following points may be helpful in constructing your critical analysis:
 - i. outline the message of each video clip
 - ii. brainstorm the similarities and differences
 - iii. positives and negatives or strength and weaknesses
 - iv. evaluate the effectiveness at delivering the message e.g. music, images, cinematography, emotions generated
 - v. conclusion.
4. In small groups, create your own clip promoting the message of education and women. Use the statistics in this unit and use the Internet to research some more facts and figures.
 - a. watch some other clips on this topic on the CARE website or on YouTube for some more ideas
 - b. present your two to three minute clip using Moviemaker, Photostory, Prezi or PowerPoint
 - c. show your clips to the class to be assessed by your classmates and your teacher
 - d. select the two best clips to show at the next Year Level Assembly to promote the message of the importance of educating women.
5. Investigate the possibility of holding a *Walk in her shoes* fundraising event at your school as outlined on the CARE Australia website.

Developed by the United Nations on behalf of its 191-member countries in 2000, the eight Millennium Development Goals aimed to address global inequality. The United Nations recognised when developing the goals that education is the tool for empowerment and sustainable development, in particular Goals Two and Three as seen in figure 2.4. Education is key to working towards achieving the other six Millennium Development Goals and the Sustainable Development Goals which will follow after 2015.

Goals and Targets	Africa		Asia				Oceania	Latin America & Caribbean	Caucasus & Central Asia
	Northern	Sub-Saharan	Eastern	South-Eastern	Southern	Western			
GOAL 1 Eradicate extreme poverty and hunger									
Reduce extreme poverty by half	low poverty	very high poverty	moderate poverty	high poverty	very high poverty	low poverty	very high poverty	moderate poverty	low poverty
Productive and decent employment	large deficit in decent work	very large deficit in decent work	large deficit in decent work	large deficit in decent work	very large deficit in decent work	large deficit in decent work	very large deficit in decent work	moderate deficit in decent work	moderate deficit in decent work
Reduce hunger by half	low hunger	very high hunger	moderate hunger	moderate hunger	high hunger	moderate hunger	moderate hunger	moderate hunger	moderate hunger
GOAL 2 Achieve universal primary education									
Universal primary schooling	high enrolment	moderate enrolment	high enrolment	high enrolment	high enrolment	high enrolment	–	high enrolment	high enrolment
GOAL 3 Promote gender equality and empower women									
Equal girls' enrolment in primary school	close to parity	close to parity	parity	parity	parity	close to parity	close to parity	parity	parity
Women's share of paid employment	low share	medium share	high share	medium share	low share	low share	medium share	high share	high share
Women's equal representation in national parliaments	low representation	moderate representation	moderate representation	low representation	low representation	low representation	very low representation	moderate representation	low representation
GOAL 4 Reduce child mortality									
Reduce mortality of under-five-year-olds by two thirds	low mortality	high mortality	low mortality	low mortality	moderate mortality	low mortality	moderate mortality	low mortality	moderate mortality
GOAL 5 Improve maternal health									
Reduce maternal mortality by three quarters	low mortality	very high mortality	low mortality	moderate mortality	high mortality	low mortality	high mortality	low mortality	low mortality
Access to reproductive health	moderate access	low access	high access	moderate access	moderate access	moderate access	low access	high access	moderate access
GOAL 6 Combat HIV/AIDS, malaria and other diseases									
Halt and begin to reverse the spread of HIV/AIDS	low incidence	high incidence	low incidence	low incidence	low incidence	low incidence	low incidence	low incidence	low incidence
Halt and reverse the spread of tuberculosis	low mortality	high mortality	low mortality	moderate mortality	moderate mortality	low mortality	high mortality	low mortality	moderate mortality
GOAL 7 Ensure environmental sustainability									
Halve proportion of population without improved drinking water	high coverage	low coverage	high coverage	moderate coverage	high coverage	moderate coverage	low coverage	high coverage	moderate coverage
Halve proportion of population without sanitation	high coverage	very low coverage	low coverage	low coverage	very low coverage	moderate coverage	low coverage	moderate coverage	high coverage
Improve the lives of slum-dwellers	moderate proportion of slum-dwellers	very high proportion of slum-dwellers	moderate proportion of slum-dwellers	high proportion of slum-dwellers	high proportion of slum-dwellers	moderate proportion of slum-dwellers	moderate proportion of slum-dwellers	moderate proportion of slum-dwellers	–
GOAL 8 Develop a global partnership for development									
Internet users	high usage	moderate usage	high usage	moderate usage	low usage	high usage	low usage	high usage	high usage

The progress chart operates on two levels. The words in each box indicate the present degree of compliance with the target. The colours show progress towards the target according to the legend below:

- Target already met or expected to be met by 2015.
- Progress insufficient to reach the target if prevailing trends persist.
- No progress or deterioration.
- Missing or insufficient data.

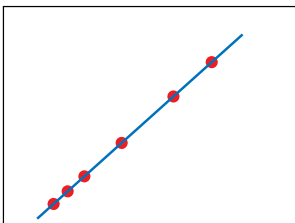
Figure 2.4 Millennium Development Goals and Women – progress in 2012



Figure 2.5 Gapminder – Female literacy versus Income

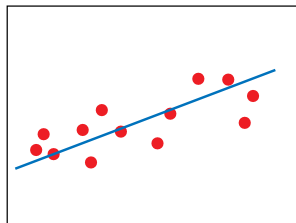
Correlation patterns

The scatter graphs and their accompanying explanations indicate what some correlation patterns could mean.



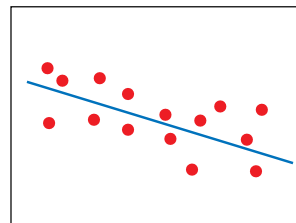
Perfect correlation

- All points lie on the line of best fit.
- The correlation may be positive (as illustrated in the example) or negative.



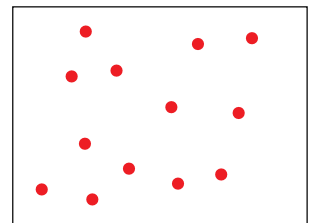
Positive correlation

- The points plotted on the graph run from the bottom left to the top right, and are close to the line of best fit.
- As one of the variables increases in value so does the other.



Negative correlation

- The points plotted on the graph run from the top left to the bottom right.
- As one variable increases in value the other decreases.



No correlation

- The points are scattered at random with no clear trend.
- There is no correlation (relationship) between the variables.

Where a strong positive correlation occurs this does not prove that there is an interaction. In other words, it is not always the case that there is a cause and effect between two variables even if a positive correlation exists.

Individual points that stand out because they do not follow the pattern are called isolates or anomalies.

Figure 2.6 Interpreting a scatter graph

View a tutorial on how to use Gapminder by going to www.gapminder.org, click on Gapminder World and scroll down to click on “Learn to select indicators and more”.

An animated version of this scatter graph from 1800 to 2011 can be viewed at www.gapminder.org

Student activity



1. Visit www.gapminder.org, go to *gapminder* world.
2. Create a series of scatter graphs using the following combinations of indicators:
 - a. maternal deaths – 100 000 live births and Income per person (GDP per capita)
 - b. maternal deaths – 100 000 live births and Female adult literacy rates (% females 15 years and above)
 - c. female adult literacy rates (% females 15 years and above) and Children per woman (total fertility)
 - d. children per woman (total fertility) and Income per person (GDP per capita).
3. Play around with changing the view of the X and Y axis from logarithmic to linear to see how the view of the graph changes. Decide which view you prefer – make sure all of your graphs are in the same format.
4. Take snapshots of each of the graphs you create using the snipping tool or *Print Screen* key on your keyboard.
5. Paste these snapshots into a Word or PowerPoint file.
6. Annotate each of the graphs with a detailed analysis of the data using the following questions:
 - a. explain what the graph is showing
 - b. describe the change over time between the two indicators
 - c. is there a strong or weak relationship between the two indicators? Refer to figure 2.6 about how to interpret scatter graphs to assist with answering this question. Select two countries to illustrate the degree of relationship.
7. Conclude this activity by responding to the following statement:

“Low female literacy and low Gross Domestic Product results in higher fertility rates and higher maternal mortality rates. By improving literacy and education of women this pattern could be changed.”

Your response should be at least half a page in length and include specific examples from the Gapminder graphs you created as well as material from this unit and additional research.

Case study: education of rural women and girls in China

Since the early 1990s the Chinese Government has focussed on improving their education system. Their approach had two objectives, firstly to implement nine years of compulsory education and secondly, to eliminate illiteracy among young and middle aged people, in particular women in rural regions. As a result there has been significant improvements in female literacy rates as can be seen in figure 2.8. However, disparities between male and female literacy rates are still evident and the government is continuing to work with women in rural communities in an effort to improve literacy and education, which will in turn improve quality of life and wellbeing through the economy, cultural qualities and social status.

The lack of education for women in rural communities begins when they are young girls. Gender inequality, poverty and limited access to quality education are some of the reasons that contribute to the high illiteracy rates of women in rural regions. This is an ongoing cycle with young girls accounting for two-thirds of the children in rural China currently not enrolled in primary school.



Photo credit: Lorrie Graham, AusAID

Figure 2.7 Break the cycle – educate girls!

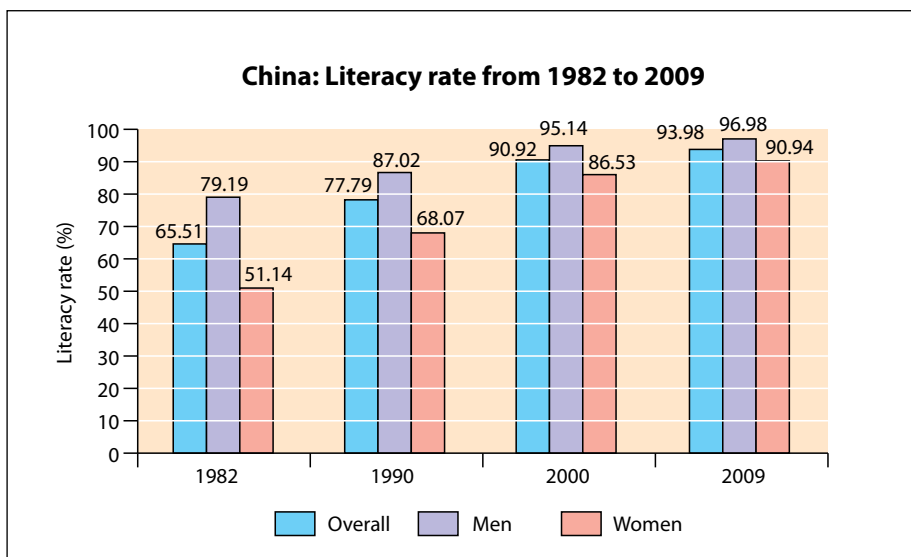


Figure 2.8 China: Adult Literacy rates 1982–2009

Did you know?

China's literacy rate in 2009 was 94 per cent, however, to be considered literate, people living in urban areas need to be able to recognise 2000 of more than 47 000 characters in the Chinese writing, while rural people only need to recognise 1500.

“We aren't asking much,” said Sun Xiaoju. “We just want to know how to read and write our names, our families' names, and some simple and useful words in our daily life ... so that we can go out with confidence and dignity.”

Like many local woman in Shangping village in Hui County, Xiaoju is illiterate and cannot write her own name.

Being the second of six children in her family, 43-year-old Xiaoju dropped out of school before she completed her first year of elementary school. Thirty years later, she remained illiterate.

Xiaoju is not alone; 80 per cent of women in her village are unable to read or write.

“I feel that illiterate people are discriminated against all over the place,” said Xiaoju.

Illiteracy impacts most aspects of Xiaoju's daily life.

When her husband fell ill earlier this year, she took him to the county hospital while all her children were away working in the cities. Unable to find the right departments and offices due to illiteracy, she had to ask the hospital staff for help. The staff members were rude and hesitant to help, she recalls, which made her angry and upset.

When a women's activity centre was established in Shangping village, Xiaoju began to learn from literate women villagers.

“The elderly had mentioned that, many years ago, the government organised evening adult schools teaching villagers how to read and write,” said Xiaoju. “But, there was no opportunity for us to learn until ActionAid helped us to set up a women's activity centre.”

Actually, most men (including Xiaoju's husband) can write, but they often do not teach their wives how to do so.

“I'd rather learn with other women in the activity centre,” said Xiaoju. “My husband doesn't think it's meaningful for women to learn how to write.”

With the establishment of the women's activity centre, women villagers have the opportunity to learn how to read and write from qualified, patient teachers during the off-farm winter season.

Figure 2.9 In her own words

Teaching women

In 1994, the *Spring Bud Program* was launched to assist girls in poor rural communities to return to school after they had dropped out as the benefits of this are not only felt by the individual girls but the community as a whole. The program also safeguards the education rights of children, improves women's quality of life and defends vulnerable ethnic minority groups. Since its establishment, the program has helped well over one million young girls and middle-aged women overcome illiteracy.

Little Sunshine Teacher

Little Sunshine Teacher is a program developed by the international development organisation, ActionAid, in Zhangjiachuan in Gansu province where adult female literacy is low. The program involves young girls teaching their mothers what they learn in school. The aim is for young girls to become the catalyst for illiteracy reduction within their families.

Student Activities



1. Fill in the blanks in the following paragraph:

At the end of _____, women made up the majority of the world's workforce. Women work approximately _____ of the world's working hours and produce _____ of the world's food, yet they only earn _____ per cent of the world's income and own less than _____ per cent of the world's property, further to this women account for almost 60 per cent of _____ and _____ employment sector.

2. Go to <http://hdr.undp.org/en/statistics/gii/>
 - a. select 10 countries and find their Gender Inequality Index (GII)
 - b. create a column graph using Excel. Remember to include SALTS (Scale, Axes, Legend, Title, Source).
 - c. go to the United Nations Human Development Report site <http://hdrstats.undp.org/en/indicators/default.html> to find the HDI – Human Development Index ranking for each of the 10 countries
 - d. is there a connection between GII and HDI? Use some examples from your graph to support your response.
3. Create a mind map on the importance of educating women.
4. Imagine that you are the CEO of an NGO (non-government organisation). Outline a policy and strategies to educate women in a country of your choice. You need to address the following to receive some additional funding:
 - background about the current situation of women in terms of education, access to health care, life expectancy, fertility rates, income etc, as well as other relevant social and demographic information about the population
 - use a selection of indicators from Gapminder to compare the situation in your chosen country with other countries in the world; this will demonstrate the importance of improving the education of women in your chosen country
 - a proposal outlining how you aim to provide women with access to education
 - a mission statement; what does your organisation stand for? What is its purpose?
 - create an advertising campaign to encourage women to become involved in your organisation.

3

POPULATION, POVERTY AND HUMAN WELLBEING

Prior to the beginning of the 20th Century no human ever had lived to see the world's population double in size; however there are people alive today who have seen it triple in size in their lifetime. In late 2011, the United Nations Population Division estimated that the world's population reached 7 billion people. The world's population is predicted to continue increasing, with a further 3 billion added by the end of the century. The main factors contributing to this are improvements in health care, medical science, education, and access to fresh drinking water and sanitation which have resulted in increased life expectancy.

		World	More developed countries	Less developed countries
Population		7 057 075 000	1 243 018 000	5 814 057 000
Births per	Year	140 541 944	13 923 718	126 618 226
	Day	385 046	38 147	346 899
	Minute	267	26	241
Deaths per	Year	56 238 002	12 191 662	44 046 340
	Day	154 077	33 402	120 675
	Minute	107	23	84
Natural increase per	Year	84 303 942	1 732 056	82 571 886
	Day	230 970	4 745	226 224
	Minute	160	3	157
Infant deaths per	Year	5 779 276	72 128	5 707 148
	Day	15 834	198	15 636
	Minute	11	0	11

Figure 3.1 World population at a glance 2012

Student Activity



Go to <http://www.youtube.com/watch?v=sc4HxPxNrZ0&feature=relmfu> and view the National Geographic Clip 7 Billion.

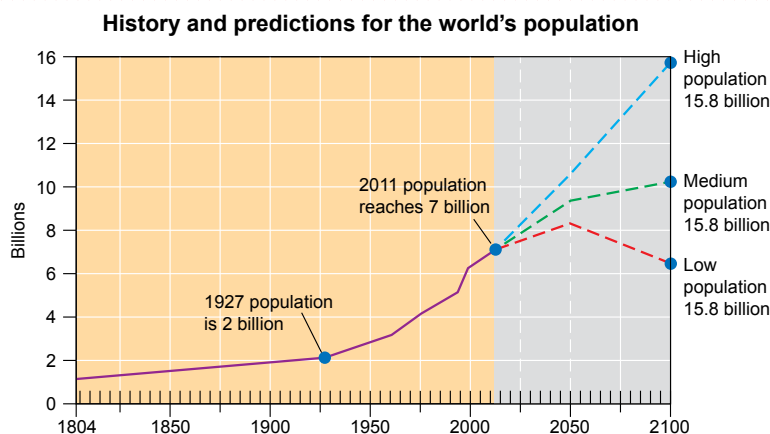


Figure 3.2 Seven billion and counting – United Nations High, Medium and Low 2100 predictions

By 2050 the world's population could be as high as 10.5 billion or it could stop at 8 billion, the difference is one child per woman! The United Nations considers the medium prediction of 9 billion to be their best estimate of future world population.

Student activity



Go to <http://www.7billionandme.org/> and complete the following activities:

1. Your world
 - a. how many people in the entire world's history were born before you?
 - b. what was the total world population on the day you were born?
 - c. was the population mostly young (under age 15) or mostly old (over age 60)?
 - d. how many people have been added to world's population since your birth?
 - e. how old will you be when the world's population reaches 9 billion?
2. Your country of birth
 - a. What was the population of the country of your birth on the day you were born?
 - b. Was the population mostly young (under age 15) or mostly old (over age 60)?
 - c. How many people have been added to your country of birth since you were born?
 - d. What are the average life expectancies for a male/female of your age for your country of birth?
3. Have an older family member or friend, preferably someone who was born in another country, complete this activity. Compare the results in a half-page report.

Population – Birth and Death Rate

Student activity



Go to <http://www.prb.org/Journalists/Webcasts/2010/distilleddemographics3.aspx> watch the Distilled Demographics: The Birth Rate – What it is and why it matters.

Answer the following questions:

1. Explain the difference between birth rate and total fertility rate.
2. Describe what the future population for the Democratic Republic of Congo will be compared to Germany. Note: the number of people below the age of five and the people between the ages of 40–44.
3. Explain how total fertility rate plays a significant role in planning for the future.
4. What is replacement level fertility?
5. Explain how maternal mortality can impact on replacement level fertility.

Go to http://www.prb.org/Journalists/~/_link.aspx?_id=5454A1AF4486494492057F27B3A8108B&_z=z watch the Distilled Demographics: The Death Rate.

1. How did death rates in developing countries such as Costa Rica and Sri Lanka impact world population growth?
2. What is “crude death rate”?
3. Explain the reasons for Germany having a higher crude death rate than the Philippines.
4. What is “natural increase”?
5. What can the rate of natural increase tell us about the future population? Use some examples from the video to support your response.
6. Explain why increased mortality (life expectancy) has been one of the most significant events in human history.

Population and the developing world

The vast majority of the world's future population growth is predicted to occur in developing countries. Developed countries will experience very little population growth; immigration of people from developing countries will be the main source of any population growth.

In 1950, the world's developing countries accounted for 1.7 billion of the world population. By 2050, this figure is estimated to increase to over 8 billion people or 86 per cent of the world's population. Further to this, the United Nations states that the countries with the lowest development in 1950 were home to 200 million people. By 2050, these same countries with especially low income and poor human development indicators will be home to over 2 billion people.

High fertility rates in developing countries present a barrier to reducing the level of poverty. In many developing countries the average total fertility rate is 5.0 compared to Australia's total fertility rate of 1.9.

Lack of access to family planning and modern methods of contraception, as well as the expectation that some children will not survive childhood because of high infant mortality rates, are some reasons that contribute to high fertility rates in the developing world. Large families in these countries are desirable as children are able to work on the family farm or seek employment to contribute financially to the household and they are able to care for ageing parents.

2012

Country	Population (millions)
China	1 350
India	1 260
United States	314
Indonesia	241
Brazil	194
Pakistan	180
Nigeria	170
Bangladesh	153
Russia	143
Japan	128

2050

Country	Population (millions)
India	1 691
China	1 311
United States	423
Nigeria	402
Pakistan	314
Indonesia	309
Bangladesh	226
Brazil	213
Congo, Dem. Rep.	194
Ethiopia	166

Figure 3.3 Most populous countries 2012 and 2050



Photo credit: Dirk Guinan, AusAID

Figure 3.4 One in seven people on Earth currently lives in a slum environment. The United Nations estimates this figure is likely to double by 2030. Providing people with adequate housing and access to education is a great challenge for the future.

Highest	TFR
Niger	7.1
Somalia	6.4
Burundi	6.4
Mali	6.3
Angola	6.3
Congo, Dem. Rep.	6.3
Zambia	6.3
Afghanistan	6.2
Uganda	6.2
Burkina Faso	6.0

Lowest	TFR
Taiwan	1.1
Latvia	1.1
Singapore	1.2
Bosnia-Herzegovina	1.2
South Korea	1.2
Hungary	1.2
Moldova	1.3
Poland	1.3
Romania	1.3
Portugal	1.3

Figure 3.5 Countries with the highest and lowest fertility rate 2012

Student Activity



Go to <http://ngm.nationalgeographic.com/2011/03/age-of-man/map-interactive>. Click on numbers 1–4 to view different pages of information about the world population in different income levels. Write an extended response about the day in the life of a person living in a lower- or low-income-level country. Use all of the indicators to explain what daily life would be like, for example, education, access to information technology, likelihood of disease, fertility and life expectancy.

India – population and poverty case study

India is the most populous democracy in the world with a population of over 1.2 billion people in 2012. The country is divided into 35 states and union territories, from Uttar Pradesh in the north with a population of over 200 million to Lakshadweep Islands with only 64 429 people.

Population growth is one of India's biggest challenges. In 1951, the population was only 361 million; in only 60 years the population has increased fourfold. Campaigns such as *Hum Do, Humare Do* (Two of us, two for us) were introduced to encourage people to reduce family sizes from six children to two. People have traditionally tended to have larger families as they provide additional support on the land or can seek employment to increase the family income. Limited access to education and health care services coupled with high infant mortality has also kept fertility rates high as families anticipate the death of one or more children. India's total fertility rate is slowly declining, with the national average at 2.6 children per female. In some southern states and a few northern states, the total fertility rate is at or below the replacement rate of 2.1. However, in the region known as the "Hindi belt", stretching across the country just south of Delhi, the fertility rate is still three to four children per female. Over half the women in this region are illiterate and marry well before the legal age of 18 years because, for them, having a large family is a means by which to gain social status and they will continue to have children until they have at least one son. Four states within this region, Rajasthan, Madhya Pradesh, Bihar and Uttar Pradesh, currently experience nearly half of India's population growth.

Did you know?

During the 1970s, India declared a state of emergency over the population explosion. The then Prime Minister, Indira Gandhi implemented a program of mass sterilisation. Between 1976 and 1977 over 8 million people – mostly men – were sterilised.

Today sterilisation of predominantly women is still a common form of population control, however, it is not enforced as it was in the 1970s. The government is encouraging more men to have vasectomies as the operation can be performed in seven minutes and at less cost. In addition, the government pays an incentive fee of 1100 Rupees (\$AU19), equivalent to one week's wage for a labourer.

Student Activity



Go to <http://7billionactions.org/data> and investigate the Dashboard to create a visual snapshot of the population and the future of India. Explore the relationship between social and economic indicators as well as the impact of changing birth rates, death rates and the population of children and the elderly.

Population pyramid and India

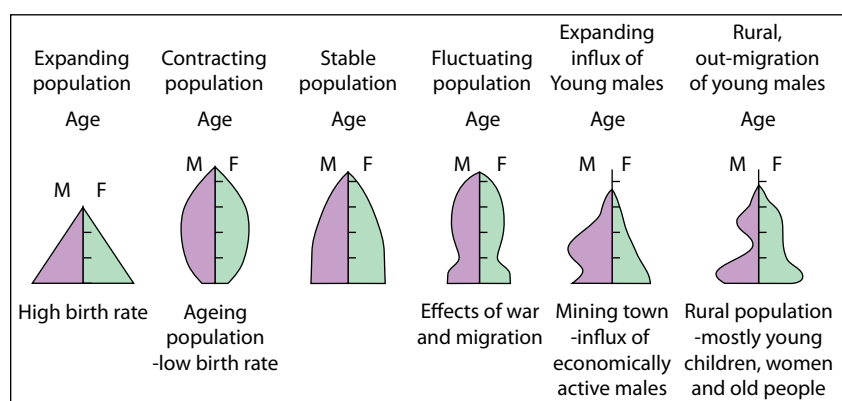


Figure 3.6 Population Pyramid Shapes

Population pyramids are a type of graph showing the age and sex structure of a population. They are a very useful tool in the study of a population as they provide useful information. The shape of a population pyramid can indicate the future patterns of growth and the impact of past events on the population such as war, famine or migration. For example, a pyramid with a wide base which narrows with the age of the population is typical of a population with high birth and death rates, indicating high future growth, as seen in many developing countries. Whereas a pyramid with a narrow base and a slight bulge through the middle age ranges is typical of a population with low birth and death rates, indicating an ageing population, as seen in many developed countries.

Poverty in India

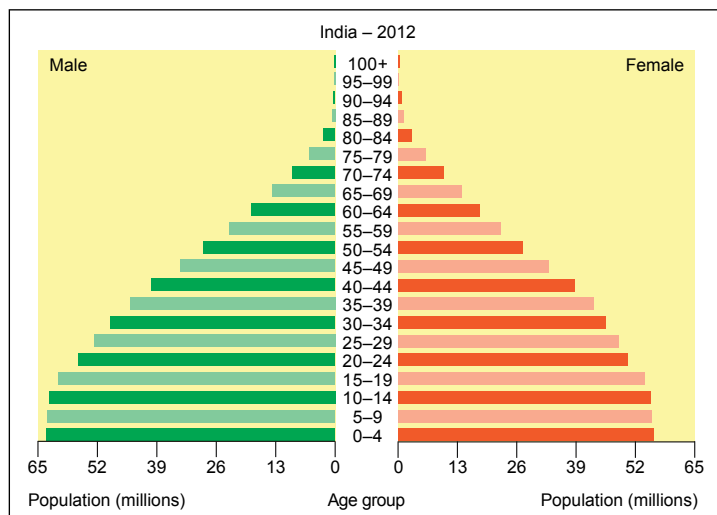


Figure 3.7 India's Population Pyramid 2012

In India, poverty is measured not by income, housing, healthcare or material possession but rather by the ability to purchase the requirements for a minimum daily diet. Over 70 per cent of India's population live in rural areas and they require higher calories because of greater physical activity. The National Planning Commission in India estimates that a monthly income of between 356 and 539 Rupees (\$AU6.20–9.40) is necessary to purchase the required food. This measure of poverty is often criticised as people who do not have access to fresh drinking water, adequate sanitation, education or health care are not considered to be living in poverty if they meet the minimum daily calorie requirements. Using this measure of poverty the Indian Government estimates that 29 per cent of people in rural areas and 26 per cent of people in urban areas are living below the poverty line. A recent government survey measured poverty with an overall minimum income of 20 Rupees per day, resulting in a significantly higher percentage of people living in poverty – 72 per cent in rural areas and 32 per cent in urban areas.

India 2050 - mid-year population by five year age groups and sex

Year	Age	Male population	Female population
2050	Total	849 430 554	807 123 078
2050	0–4	55 954 048	52 769 180
2050	5–9	56 179 280	52 943 537
2050	10–14	56 829 783	53 530 435
2050	15–19	57 780 325	53 895 974
2050	20–24	58 659 452	53 972 094
2050	25–29	59 324 232	53 855 640
2050	30–34	59 717 136	53 478 340
2050	35–39	59 798 328	53 316 842
2050	40–44	59 450 293	53 051 187
2050	45–49	58 878 991	52 744 041
2050	50–54	56 819 378	51 418 870
2050	55–59	51 761 482	47 890 003
2050	60–64	45 183 521	43 950 129
2050	65–69	38 558 780	39 348 781
2050	70–74	30 813 433	33 384 896
2050	75–79	22 256 146	26 237 594
2050	80–84	13 157 059	17 341 013
2050	85–89	5 964 755	9 196 250
2050	90–94	1 915 753	3 664 902
2050	95–99	384 389	974 052
2050	100+	43 990	159 318

Figure 3.8 India's age/sex data for 2050



Photo credit: AusAID

Figure 3.9 The World Bank estimates that India is home to over forty per cent of people living on less than \$1.25 per day and a staggering seventy-five per cent of the population living on less than \$2 per day.

Student activity



Refer to figure 3.7 India's Population Pyramid 2012. Describe the shape of the pyramid and what it tells you about India's population.

Refer to figure 3.8, India's age/sex data for 2050. Construct a population pyramid using this data. Remember to include SALTS (Scale, Axes, Legend, Title, Source).

Compare the two population pyramids. Describe how the population is predicted to change over time. Include references to birth and death rates.

Multidimensional Poverty Index

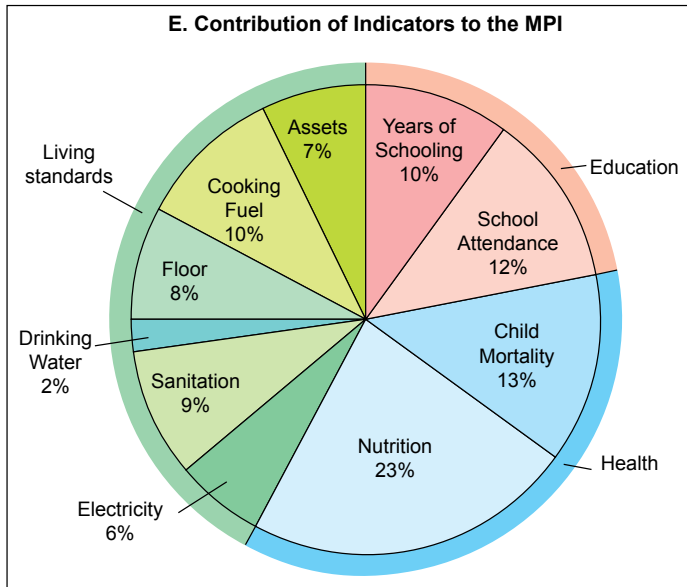


Figure 3.10 How indicators contribute to the Multidimensional Poverty Index (MPI)

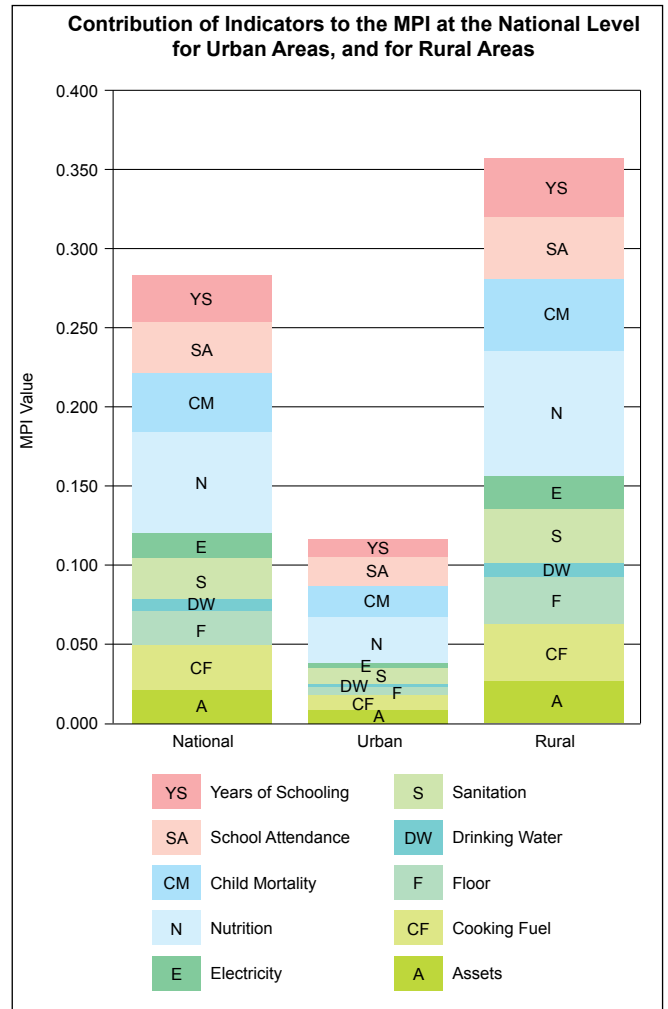


Figure 3.11 Contribution of indicators to the MPI at the national level for urban areas and for rural areas in India 2011

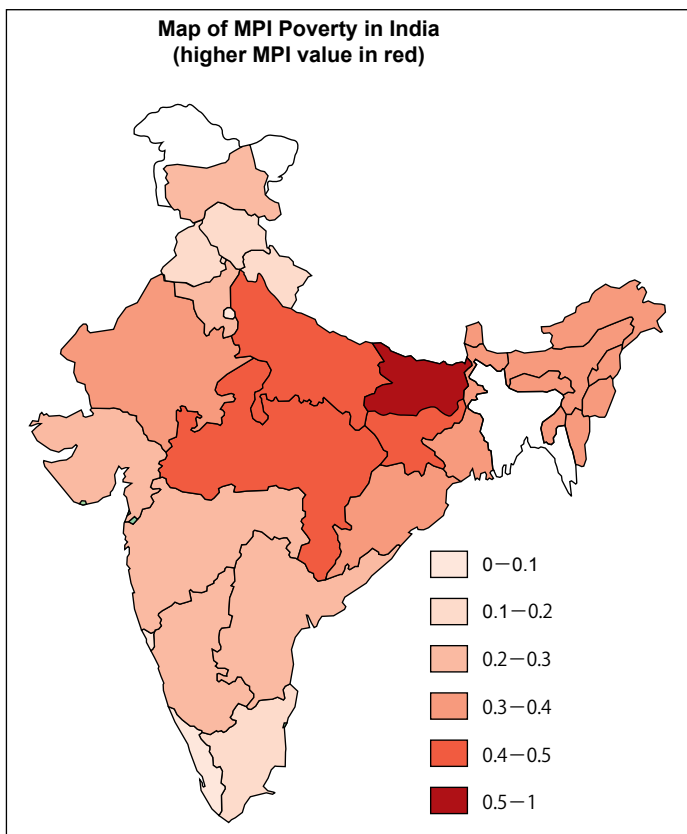


Figure 3.12 Choropleth map of MPI across India's states. The darker the shade the higher the multidimensional poverty

The MPI was developed by Oxford University and the United Nations as a precise and comprehensive way to measure the level and intensity of poverty.

Using the MPI, India has more people considered to be poor and living in eight states, than 26 of the poorest African countries. These eight states are Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal where an estimated 421 million people live in poverty. Despite India experiencing recent strong economic growth, the MPI reflects that there is still acute poverty persisting.



Figure 3.13 Selected indicators for India's 35 states and union territories.

What is a choropleth map?

A choropleth map shows the density of objects or the value in a given area, shown by using shading. The area shown on a choropleth map is shaded or patterned with the legend indicating the value of each shade or pattern. The highest value is shown in the darkest shade and the lowest value shown in the lightest shade. Choropleth maps, or thematic maps as they are referred to in GIS (Geographic Information Systems), can be easily created and interpreted using GIS software. However, if you don't have access to this software, a choropleth map can be drawn by hand.

How to draw a choropleth map

1. Refer to figure 3.13 to create a series of choropleth maps or a base map with overlays using the blank outline map of India's states and union territories found on the inside back cover of this publication.
2. Using the selected numerical data divide the data into suitable categories – three to five categories is the most suitable.
3. Allocate the shade from lightest to darkest for the categories selected.
4. Shade your blank map using your selected shade from lightest for the lowest value category to darkest for the highest value category.

Student activity



1. Refer to figure 3.13 to create a series of choropleth maps or a base map with overlays using the blank outline map of India's states and union territories on the inside back cover.
 - a. female literacy rates: 50–59; 60–69; 70–79; 80–89; 90 and over
 - b. fertility rate: Below 2; 2.1–2.3; 2.4–2.6; 2.7–2.9; 3 and over
 - c. life expectancy: 54–59, 60–64, 65–69, 70–74, 75 and over.
2. Describe the distribution pattern of each of the indicators you have mapped.
3. Look at all of your maps together with the MPI choropleth map shown in figure 3.12 and describe the relationship that exists between them.
4. Respond to the following statement: “The education of women is the key to improving the standard of living e.g. income, life expectancy as well as controlling population growth”. Use specific examples of states/ union territories from the maps you created.

Kerala – turning around the cycle of poverty and population growth

Kerala is a state on the southwest coast of India which has made remarkable reforms and progress through investment, largely in health and education, with programs launched in 1975 to break the cycle of malnutrition and morbidity. These reforms have resulted in higher than average adult literacy, low infant mortality, improved life expectancy, narrowing of gender inequality and stabilisation of population growth. The programs were so effective that by 1981, female literacy was twice the national average and infant mortality was less than a third the rate than for the rest of India.

A number of specific poverty alleviation programs include:

- free midday meal for Primary school children – resulting in a 65 per cent increase in enrolments and a significant decrease in dropout rates
- supplementary nutrition for pregnant women and young children and improved access to immunisation, health checks and education
- granting of old aged pension for rural workers over the age of 65 whose families earn less than 11 000 Rupees per month (\$AU191).

Launched in 1998 by the Kerala Government is a comprehensive poverty alleviation program, focussed upon women. Kudumbashree offers assistance to women through microcredit, entrepreneurship and empowerment. Over 94 per cent of women involved in the programs offered have experienced improved sense of empowerment and status within their families.

Student activities



1. When did the world's population reach 7 billion people?
2. What year is the world population expected to reach 9 billion people?
3. Explain how increasing life expectancy, decreasing child mortality, as well as a large population of women of child-bearing age is setting a pattern for rapid population growth.
4. Investigate the population of China to create a fact file of indicators.

Go to <http://hdrstats.undp.org/en/indicators/default.html> and <https://www.cia.gov/library/publications/the-world-factbook/>

Indicators / statistics		
Total Population		
HDI		
GDP per capita		
Percentage of the population living in poverty		
Total Fertility Rate		
Infant Mortality Rate		
Physicians per 1000 people		
% of adults (15–49) living with HIV/AIDS		
Life Expectancy	M	F
Literacy Rates	M	F

5. Go to <http://www.census.gov/population/international/data/idb/informationGateway.php>
 - a. create a population pyramid for China 2012 and 2050
 - b. explain what it tells us about China's population and its future population
 - c. compare this to India's population pyramids; list the similarities and differences.
6. Investigate China's One Child Policy.
Conduct a class debate about the pros and cons of China's One Child Policy.

4

DISEASE – HIV/AIDS

In 2011, more than 34 million people across the world were living with HIV/AIDS – a significant impact on human wellbeing. The global distribution of this disease shows that 97 per cent of those infected are found in low or middle income countries, with a staggering 68 per cent living in Sub-Saharan Africa.

Student activity



Watch the Gapminder video “HIV: New Facts” (2009) showing the change over time in HIV rates at www.gapminder.org/videos/ted-talk-2009-hans-rosling-hiv-facts/ and fill in the missing words in the passage below.

In 1983 the most infected country in the world was _____ at 5 per cent. The two countries which experienced the fastest rise in infection rates were Uganda and _____. The first country to be heavily infected in Asia was _____ at 1–2 per cent. Uganda’s rates started to _____ whereas Zimbabwe’s _____. Some years later, South Africa had a _____ rise of HIV frequency. India had many infected but at a _____ level. In the last two to three years we have reached a _____ of HIV epidemic in the world. It took _____ years to get there. Steady state _____ means that things are getting better – they have stopped getting _____. Steady state is more or less _____ per cent of the adult world population infected with HIV. This is 30–40 _____ people infected.

Case study: Botswana. Infection rates peaked in _____ and now the rates are falling. The infection rate is only falling slowly but with good _____ and _____ they can manage to treat people. So people can survive. But in the poor or low _____ countries in Africa, the infection rate is falling. But this is because people still die. Focus is now back on _____. Only by stopping the _____ of the infection will the world be able to deal with it.

HIV is very _____ in Africa. The highest rates in the world can be found in Africa but they also have exceptions, for example, _____ that has the same infection rate as the United States. What is causing the difference? Is it war? Is it poverty? One relationship, which exists in some countries, is the more _____ the more HIV. But this is too simplistic. Infection is more common with _____ partners, where there is _____ condom use and where younger women are partners with _____ men.

The highly infected countries are in _____ Africa. These countries hold _____ per cent of the world’s population yet _____ per cent of the world’s HIV infected people.

Summary: having more than _____ partner in the same month is much more dangerous for HIV infection than other factors. We hope that when we act on global problems in the future, we will not only have the _____ we will also use the _____.

The two key messages are that *the global HIV epidemic has reached a “steady state” with 1 per cent of the adult world population infected* and that there are *huge differences in HIV occurrence between and within African countries*. Many African countries have the same, relatively low, HIV levels as can be found in most of the world, whereas 50 per cent of the world’s HIV infected persons live in a few countries in Eastern and Southern Africa (with four per cent of the world population).

HIV/AIDS is a pandemic, a disease that affects every country in the world. HIV is Human Immunodeficiency Virus which weakens the immune system making people susceptible to infections such as influenza and the development of tumours and tuberculosis. When the immune system is severely compromised, an acquired immune deficiency syndrome (AIDS) is reached. HIV is transmitted through direct contact with infected bodily fluids during birth, sexual contact or intravenous drug use. While there is no cure for HIV/AIDS, antiretroviral treatment can reduce death rates and significantly extend the life expectancy of infected individuals.

HIV/AIDS Facts 2011:

- 34.2 million people living with HIV/AIDS
- 1.7 million AIDS-related deaths in 2009
- 2.5 million people newly infected in 2011– 6800 people every day
- 330 000 children born with HIV bringing the total number of children under the age of 15 living with HIV to 3.4 million
- over two-thirds (23.5 million) of those infected with HIV/AIDS live in Sub-Saharan Africa.



Figure 4.1 AusAID supports countries around the world to increase and target HIV prevention and education of high-risk populations

In 2011, less than one per cent of the world's adult population (15–49 year olds) was infected with HIV/AIDS. The world's highest infection rates are found in the southern Africa region – an estimated 34 per cent of people living with HIV/AIDS are located in 10 countries in this region. Eastern Europe has experienced significant change over time in infection rates with the number of people living with HIV/AIDS tripling since 2000, largely as a result of increased intravenous drug use in the region. This is also the cause of a 25 per cent increase in infection rates in Bangladesh and the Philippines in the years between 2001 and 2009.

Regional HIV and AIDS statistics and features | 2011

	Adults and children living with HIV	Adults and children newly infected with HIV	Adult prevalence (15–49) [%]	Adult & child deaths due to AIDS
Sub-Saharan Africa	23.5 million [22.2 million – 24.7 million]	1.7 million [1.6 million – 1.9 million]	4.8% [4.6% – 5.1%]	1.2 million [1.1 million – 1.3 million]
Middle East and North Africa	330 000 [250 000 – 450 000]	39 000 [29 000 – 60 000]	0.2% [0.1% – 0.2%]	25 000 [17 000 – 35 000]
South and South-East Asia	4.2 million [3.1 million – 4.7 million]	300 000 [220 000 – 340 000]	0.3% [0.2% – 0.4%]	270 000 [140 000 – 600 000]
East Asia	830 000 [580 000 – 1.2 million]	89 000 [44 000 – 170 000]	0.1% [0.1% – 0.1%]	60 000 [42 000 – 83 000]
Latin America	1.4 million [1.1 million – 1.7 million]	86 000 [52 000 – 140 000]	0.4% [0.3% – 0.5%]	57 000 [35 000 – 86 000]
Caribbean	230 000 [200 000 – 250 000]	13 000 [9700 – 16 000]	1.0% [0.8% – 1.1%]	10 000 [8200 – 12 000]
Eastern Europe and Central Asia	1.5 million [1.3 million – 1.8 million]	170 000 [110 000 – 220 000]	1.0% [0.8% – 1.1%]	90 000 [74 000 – 110 000]
Western and Central Europe	860 000 [780 000 – 960 000]	30 000 [21 000 – 40 000]	0.2% [0.2% – 0.2%]	9300 [8300 – 10 000]
North America	1.4 million [1.1 million – 2.0 million]	58 000 [21 000 – 130 000]	0.6% [0.5% – 1.0%]	20 000 [16 000 – 27 000]
Oceania	53 000 [47 000 – 60 000]	2900 [2200 – 3800]	0.3% [0.2% – 0.3%]	1300 [<1000 – 1800]
TOTAL	34.2 million [31.8 million – 35.9 million]	2.5 million [2.2 million – 2.8 million]	0.8% [0.7% – 0.8%]	1.7 million [1.6 million – 1.9 million]

The ranges around the estimates in this table define the boundaries within which the actual numbers lie, based on the best available information.



Figure 4.2 Regional HIV/AIDS statistics 2011

Student Activity



Refer to the data in figure 4.2 to complete the following activities:

1. Create a column graph of the number of adults and children living with HIV. Don't forget to include SALTs (Scale, Axes, Legend, Title, Source).
2. Using a blank outline map of the world by region and the same data you used in question 1, create a choropleth map. Refer to page 21 for tips on creating a choropleth map. Don't forget to include BOLTSS (Border, Orientation, Legend, Title, Scale, Source).

Suggested scale for map legend: 10 million and over, 4–9 million, 1–4 million and less than 1 million.

3. When you have completed the graph and the choropleth map, compare the two by answering the following questions:
 - a. Which activity (map or graph) was easier to complete? Explain why.
 - b. Which of the two geographic formats represents the data the most effectively? Explain why.
 - c. Suggest another way of representing this data.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
People living with HIV	29.4 million [27.2–32.1 million]	30.2 million [28–32.8 million]	30.8 million [28.6–33.1 million]	31.2 million [29–33.4 million]	31.5 million [29.4–33.6 million]	31.8 million [29.6–33.8 million]	32.1 million [29.9–34 million]	32.5 million [30.2–34.3 million]	32.9 million [30.5–34.8 million]	33.5 million [31–35.4 million]	34.0 million [31.4–35.9 million]
New HIV infections (total)	3.2 million [2.9–3.4 million]	3.1 million [2.8–3.3 million]	3 million [2.8–3.2 million]	2.9 million [2.7–3.1 million]	2.8 million [2.6–3.0 million]	2.8 million [2.6–3.0 million]	2.7 million [2.5–2.9 million]	2.7 million [2.4–2.9 million]	2.6 million [2.3–2.9 million]	2.6 million [2.3–2.8 million]	2.5 million [2.2–2.8 million]
New HIV infections (adults)	2.6 million [2.4–2.8 million]	2.5 million [2.3–2.7 million]	2.4 million [2.2–2.6 million]	2.4 million [2.2–2.5 million]	2.3 million [2.1–2.5 million]	2.3 million [2.1–2.5 million]	2.3 million [2.0–2.4 million]	2.2 million [2.0–2.4 million]	2.2 million [2.0–2.4 million]	2.2 million [1.9–2.5 million]	2.2 million [1.9–2.4 million]
New infections (children)	550 000 [500 000–640 000]	560 000 [510 000–650 000]	560 000 [510 000–650 000]	550 000 [500 000–630 000]	540 000 [490 000–620 000]	520 000 [470 000–590 000]	490 000 [440 000–550 000]	460 000 [410 000–520 000]	430 000 [370 000–490 000]	370 000 [320 000–430 000]	330 000 [280 000–390 000]
AIDS-related deaths	1.9 million [1.7–2.2 million]	2 million [1.9–2.3 million]	2.2 million [2.0–2.5 million]	2.3 million [2.1–2.6 million]	2.3 million [2.1–2.6 million]	2.3 million [2.1–2.5 million]	2.2 million [2.0–2.4 million]	2.1 million [1.9–2.3 million]	1.9 million [1.8–2.2 million]	1.8 million [1.6–2.0 million]	1.7 million [1.5–1.9 million]

Figure 4.3 2001 – 2011 HIV infection and death rates.

Student Activity



Refer to the data in figure 4.3 to complete the following activities:

1. Create two line graphs – don't forget to include SALTs (Scale, Axes, Legend, Title, Source):
 - a. the number of people living with HIV between 2001 and 2011
 - b. new HIV infections (total) and AIDS-related deaths between 2001 and 2011.
2. Answer the following questions by referring to the two line graphs you have created:
 - a. describe the change over time between 2001 and 2011 in the number of people living with HIV
 - b. describe the difference between the number of people living with HIV and the number of people newly infected with HIV between 2001 and 2011
 - c. describe the change over time in AIDS-related deaths between 2001 and 2011
 - d. suggest some reasons why the future spread of HIV is predicted to slow.

In 1999, the HIV/AIDS pandemic reached its peak. Despite the fact that the number of people living with HIV/AIDS in 2011 is higher than the 26.2 million people in 1999, the spread of the disease is slowing. Infection rates are dropping coupled with the fact that in 2011, more people than ever before were receiving life-prolonging antiretroviral drug treatment, resulting in fewer deaths. However, for every person getting treatment another two people are newly infected, while a further 10 million people still await treatment.

Wellbeing, poverty, education and HIV

In the world's developing countries there are strong associations between HIV infection rates, poverty and low socio-economic indicators such as income, education and literacy rates as well as access to sanitation and health care. Poverty not only increases vulnerability to HIV infection but can also increase the number of people living in poverty, as they often lack access to health services and education that would protect them from infection.

Poverty creates a vicious cycle because education is often unattainable, therefore an accurate understanding of how HIV is contracted and spread is limited. In developing countries, over 60 per cent of young men and 80 per cent of young women have limited understanding or knowledge about HIV. Education is essential in controlling the spread of HIV/AIDS. The United Nations predicts that universal primary education would prevent over 700 000 new infections each year.

Background

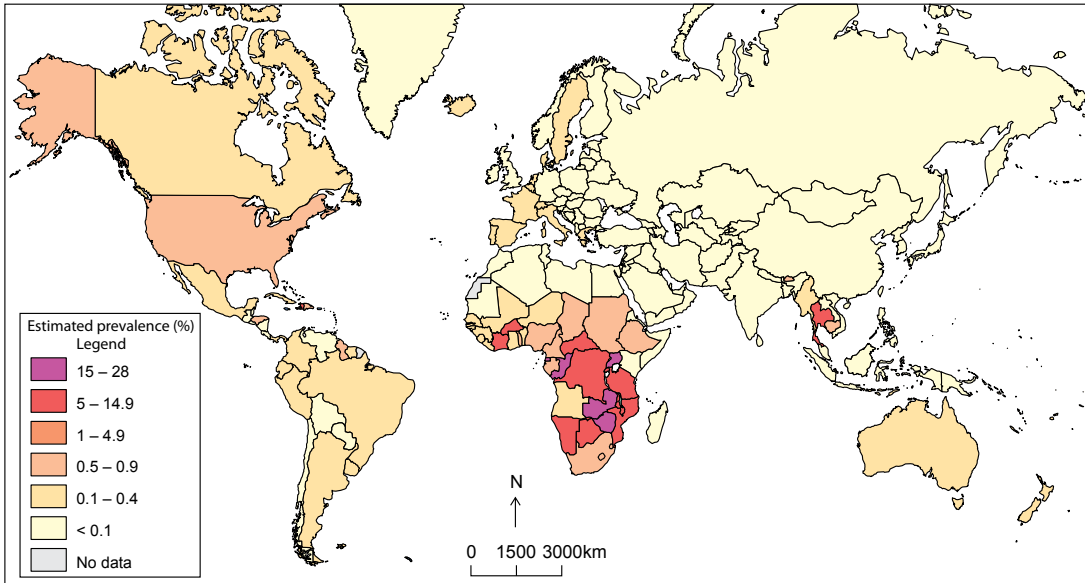


1. Go to www.un.org/en/ecosoc/newfunct/pdf/gapminder_hiv_chart_feb09_a.pdf and download the Gapminder HIV Chart 2009.
 - a. what do you first notice about the graph?
 - b. find something that surprises you. Explain why it surprises you
 - c. complete the table below in pairs. For each region write a statement to explain the relationship between HIV infection and income per person

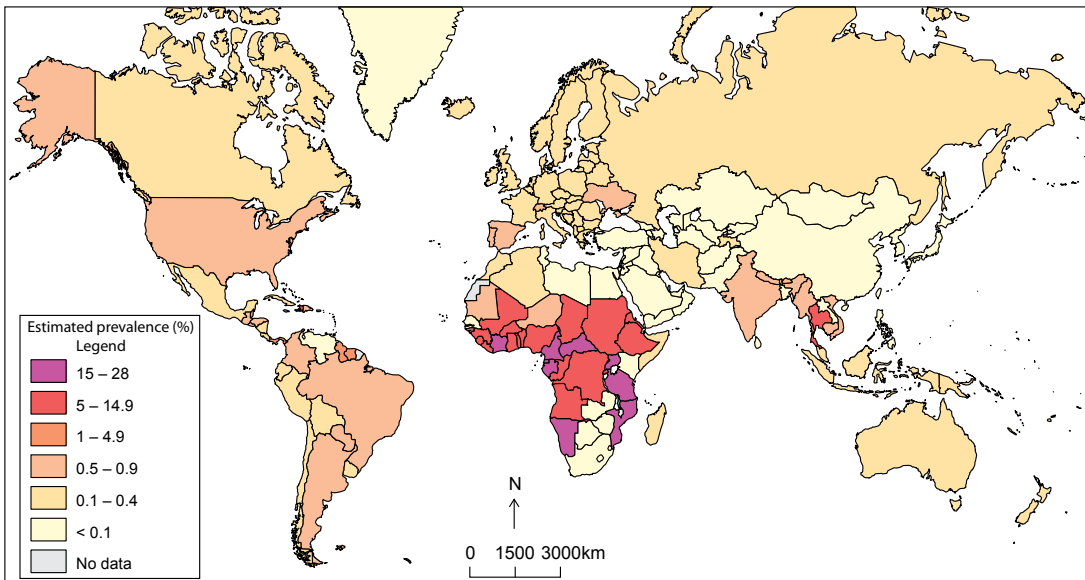
Region of the world	Relationship between HIV infection and income per person
Americas	
Central and Southern Africa	
Northern Africa and the Middle East	
Europe	
Asia and Oceania	

- d. compare your answers to part c with another pair of students. In your group decide which statements best reflect the relationship between HIV infection and income per person for each region. It may be necessary to amend your previous statements after collaboration
 - e. have a class discussion on your findings. Does everyone have the same statements? Explain your findings.
2. HIV-infection estimates 1990, 2000 and 2007.
Using the three world maps on page 27 describe the change over time of the estimated rate of HIV infection among the population aged 15–49 years for 1990, 2000 and 2007.

HIV estimated prevalence among population aged 15–49 years (%), 1990



HIV estimated prevalence among population aged 15–49 years (%), 2000



HIV estimated prevalence among population aged 15–49 years (%), 2007

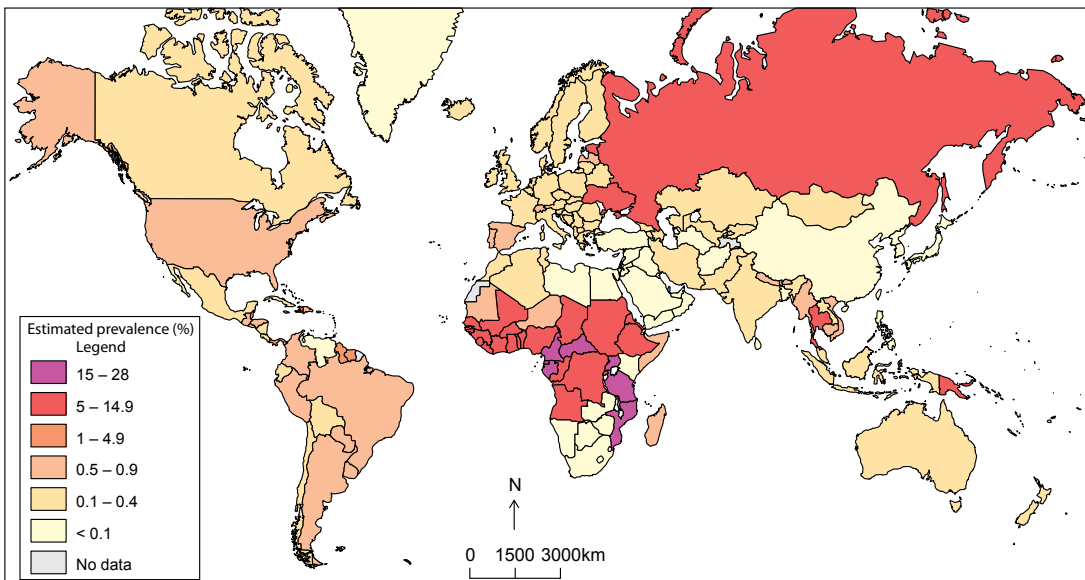


Figure 4.4 HIV estimated prevalence among population aged 15–49

HIV/AIDS – GIS Activity

The Geographic Information Systems (GIS) viewer which will be used for this activity is composed of a database. Each country has data on the following indicators:

Explanation of data fields

Name of data field in the database	Description of data field	Health, economic or demographic?
Rec	<i>Field used to identify the data</i>	
FID	<i>Field used to identify the data</i>	
PLACENAME	Country's name	
CODE	Field used to identify the data	
GDP_mill	The Gross Domestic Product in 2007 – value of goods and services produced in a given year	
Per_ag	Percentage of the population working in agriculture	
Per_IND	Percentage of the population working in industry	
Per_serv	Percentage of the population working in service	
Per_unempl	Percentage of the population unemployed	
Per_bepov	Percentage of the population living below poverty level	
M_age	Average age of the population	
M_agemale	Average age of the male population	
M_ageFe	Average age of the female population	
Brate_2006	The birth rate. The number of babies born per thousand population per year.	
Imr_2006	The infant mortality rate. Number of deaths of infants under one year old in a year per 1000 live births in the same year. This rate is often used as an indicator of the level of health in a country.	
IMR_M2006	The infant mortality rate male only	
IMR_F2006	The infant mortality rate female only	
LIFEEXP – Life Expectancy	The average number of years lived by people born in the same year. Life expectancy is also a measure of overall quality of life in a country and summarises the mortality at all ages.	
LIVEEXP_M	Life expectancy males only	
LIFEEXP_F	Life expectancy females only	
TFR – Total fertility rate	The average number of children that would be born per woman if all women lived to the end of their childbearing years.	
Drs_1000	Number of doctors for every 1000 people	
NUR_1000	Number of nurses for every 1000 people	
Phworker_1	Number of public health workers for every 1000 people	
PerGDP_HTH	Percentage of the GDP spent on health care	
HOSBED_10K	Number of hospital beds for every 10 000 people	
pop09	Estimated population in 2009	
LWHIV07	Number of people living with HIV/AIDS in 2007	
Per_hiv	Percentage of the population living with HIV/AIDS	

Activity



1. Go through the list of indicators above and ensure you understand them all.
2. In small groups, classify each indicator as either being a health-related indicator, an economic-related indicator or a demographic indicator. Record your answers in the table above.
3. Go through the list as a class and discuss your findings. If necessary, amend your answers.

HIV/AIDS using a web-based GIS viewer

Introduction

This activity will use GIS maps to look at patterns of HIV/AIDS.

Computer steps are indicated with a mouse symbol and questions to answer are numbered.

- Open your browser and go to the following website <http://arcgis.lanec.edu/website/hiv aids/viewer.htm>

You will see a map of the world that looks like this.







On the left side of the map is a list of **Tools** and on the right is a list of data **Layers**. In the upper left corner is a small inset map.

- Turn the inset map off by clicking the inset icon located at the top of the tool bar.



Here are some basic tools available for this GIS viewer. Spend a few minutes exploring them.

	Zoom in: you can click or draw a box around the area you want to examine more closely.		Zoom out: you can click or draw a box around the area you want to back out to a larger area.
	Full extent: this will take you to the extent of the map. For this map the full extent is the world.		Zoom to Active Layer: this zooms to the layer with the radio button selected.
	Pan: push the map view around the screen.		Query: this tool is used to select specific data features.

	Find: you can type in a text string (words) and a feature with that text will be located.		Measure: a line is drawn between mouse clicks and the distance is shown at the top of the window. (In this viewer, the measurement is in miles so you will need to convert your answers into kilometres).
	Select by rectangle: this tool selects all the features in the rectangle you draw.		Erase: clear your selections using the erase tool.

Help! Where am I?

If you get totally zoomed in or out and are not sure where you are, you can get back to the original view.

- Click the Full Extent tool to get back to the world map.

Part A

Before starting the activity, ensure you have the correct view.

- If you have the **Legends** menu visible on the right hand side of the map, click the **Layers/Legends** button on the top left hand corner of the map to see the **Layers**. Make all the layers **Visible** by “ticking” the box to the left hand side of each layer.

Ensure the **Active** layer is **Population** by selecting the **Population** radio button.

- Click on **Refresh Map** (found beneath the map Layers).
- Click the **Full Extend** tool to get back to the world map.

The map displayed is a choropleth (or thematic) map showing world population for 2009 (created using data field “pop09”) with a list of different layers of information (or data). Look at the data layers on the right. Each layer has a **Visible** tick box beside it. They should all be ticked. You can only view a data layer if the box is ticked for that layer. Next to the tick box is a circle called a radio button. This makes a data layer **Active**. Only one layer can be active at a time.

- Untick **Population** by clicking the tick in the **Visible** column.
- Then click the **Refresh Map** button.



- What happens to the map? What do you think you are looking at now? – if you need a clue look at the **Layers** menu. Which map is the top visible one?


- Untick all the **Visible** boxes except the **Life Expectancy** and the **% Population with HIV/AIDS** layers.
- Ensure **Life Expectancy** is **Active** and then **Refresh Map**.

Important: You can have multiple layers visible, but only one layer active at a time.

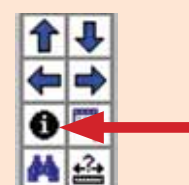
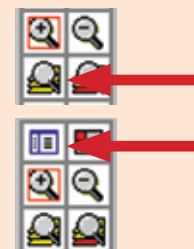
- Click the **Layers/Legends** button once in the top left hand corner to see the map legend. The **Layer** menu has changed to a **Legend** menu. Two legends are visible – one for **Life Expectancy** and one for **% Population with HIV**.

Look at the **Life Expectancy** legend.

- The youngest age group for Life Expectancy on this map is between _____ and _____ years.
- The oldest age group for Life Expectancy on this map is between _____ and _____ years.

- Click on the **Identify** or **ID** tool  from the tool bar.
- Click on **Australia** on the map.

Note: the **ID** tool only works on the layer that is active and visible.




Information about Australia appears in a data table at the bottom of the map. You will need to use the scroll bar at the bottom to see all the information.

4. What was Australia's Life Expectancy in 2009? (look for **LIFEEXP**) _____
5. What was Australia's Male Life Expectancy in 2009? (look for **LIVEEXP_M**) _____
6. What was Australia's Female Life Expectancy in 2009? (look for **LIFEEXP_F**) _____
 - ☞ Use the **ID** tool to locate a different country in the highest Life Expectancy range.
7. What is the name of the country you selected? _____
8. What is the Life Expectancy of the people who live in this country? _____
 - ☞ Use the **ID** tool to locate a country with low Life Expectancy.
9. What is the name of the country you selected? _____
10. What is the Life Expectancy of the people who live in this country? _____
11. Using the world map and the PQE approach below, complete the description of the *spatial distribution* of life expectancy in South America in 2009 by filling in the gaps.
 - P** – describe the general **P**attern shown on the map.
 - Q** – use appropriate examples and statistics to **Q**uantify the pattern.
 - E** – identify any **E**xceptions to the general pattern.

The general pattern of life expectancy in South America is such that the highest life expectancy (age ranges 76–84) is found in the _____ of the continent and includes countries such as Chile and _____ .

In the _____ of the continent the life expectancy is lower, between ____ and ____ years. Bolivia, in the centre of the continent is an exception to this pattern with a life expectancy between ____ and ____ . Other exceptions are the countries of French Guiana and _____. These countries are in the north of the continent but are in the _____ life expectancy range.
12. Using the world map and the PQE approach, describe the *spatial distribution* of life expectancy in Africa in 2009.

Part B

- ☞ Click on the **Legend** button to go back to **Layers**.
 - ☞ Click on the **Erase** tool to clear your selections. (this is the data shown at the bottom of the screen).
- 
- ☞ Untick the **Life Expectancy Visible** layer, make the **% Population with HIV/AIDS** layer **Visible** and **Active** and then **Refresh Map**. (You should have only one Visible and one Active layer selected).
 - ☞ Make the legend visible for this map.
1. Using the world map and the PQE approach, describe the spatial distribution of % Population with HIV/AIDS in Africa in 2009.
 - P** – describe the general **P**attern shown on the map.
 - Q** – use appropriate examples and statistics to **Q**uantify the pattern.
 - E** – identify any **E**xceptions to the general pattern.
- ☞ Click on the **Legend** button to go back to **Layers**.
 - ☞ Click on the **Erase** tool to clear your selections.

Making connections between patterns on maps

GIS is not just a program to make maps, it has tools that can be used to answer questions about relationships between things, (people, places, events) on the Earth's surface. In a GIS, each layer of data (i.e. each map) has information or attributes attached to it that can be accessed, viewed and queried.

Part A

Let's examine the interconnections (or spatial association or spatial relationship) between **Life Expectancy** and the **% Population with HIV/AIDS**.

- Ensure the only **Visible** layers are **Life Expectancy** and **% Population with HIV/AIDS**.
Ensure **Life Expectancy** is the **Active** layer and then **Refresh Map**.

- First click on the **Erase** tool to clear any previous selections

The aim of the following query is to identify which countries have a high incidence of HIV/AIDS i.e. an incident rate greater than 4 per cent of the population.

- Select the **Query** tool
- Set the **Field** to **Per_hiv (% of the population living with HIV/AIDS)**
- Set the **Operator** to **>**
- Type in the **Value** **0.4**
- Click **Add to Query String**
- Click **Execute**



The countries outlined in light blue (and listed below the map) are those which have greater than 4 per cent of their populations living with HIV/AIDS – more than four out of every 100 people.

- Click on the **Layers** button to go back to Legend so that you can see the legend for Life Expectancy.

1. Study the map and then answer the following question:

"Most countries that have a low life expectancy have greater than 4 per cent of the population living with HIV/AIDS."

- Is this statement True or False? _____
- Name a country which displays this relationship. _____
- Name a country which is an exception to this relationship. _____

Part B

Two country profiles – Australia and South Africa

The purpose of this activity is to compare two countries. One country will have less than (<) 0.87 per cent of the population living with HIV/AIDS and the other will have more than (>) 3.55 per cent of the population living with HIV/AIDS.

- Firstly make the **% Population with HIV/AIDS** layer **Visible** and **Active**. Untick all the other layers.
- Refresh** the map.

- Also, click on the **Erase** tool to clear any previous data selections at the bottom of the page.

- Toggle back to the **Legend**.

Creating the country profiles for Australia and South Africa

- Using the map legend identify which country has less than (<) 0.87 per cent of the population living with HIV/AIDS and which country which has more than (>) 9.48 per cent of the population living with HIV/AIDS.
- Using the **ID** tool, click on each country to find the following data. Remember to scroll across if you cannot immediately see the data you need. Record the information in the table below.

- Population in 2009 (**pop09**)
- % Population living with HIV/AIDS (**Per_hiv**)
- Number of people living with HIV/AIDS in 2007 (**LWHIV07**)

1. Record the information in the table below.

	Country name	Population 2009	% Population living with HIV/AIDS	Number of people living with HIV/AIDS in 2007
Field name	PLACENAME	pop09	Per_hiv	LWHIV07
Low incidence of HIV	Australia			
High incidence of HIV	South Africa			

Look at all the other data fields. Using the table you completed at the beginning of this GIS activity, identify two health related indicators, two demographic indicators and two economic indicators that you think are important to enable you to understand your two countries and how HIV/AIDS might impact the country.

2. Write your six chosen indicators in the first column of the table below.

3. Using the **ID** tool, find and record the values of the six indicators for each of your two countries.

Indicator	Australia _____ % of Pop with HIV/AIDS	South Africa _____ % of Pop with HIV/AIDS
1 (health)		
2 (health)		
3 (demographic)		
4 (demographic)		
5 (economic)		
6 (economic)		

Using spatial queries to compare two demographic indicators with countries with a high incidence of HIV/AIDS

A spatial query is where a database is searched (using a statement or logical expression) to select geographic features (or, as in our case here, countries) that meet the specific criteria.

The example below (of life expectancy) outlines the process you must undertake **two** times – once for each demographic indicator you chose in the GIS activity above.

1. First, think about what relationship exists between one chosen indicator and a high incidence of HIV/AIDS. For example, what is the relationship between HIV-incidence and life expectancy? Will a high or low value of your indicator be associated with a high incidence of HIV/AIDS? When you have thought about the relationship, write down the hypothesis.

The hypothesis is that a low life expectancy might be associated with a high incidence of HIV/AIDS.

To test this hypothesis we will conduct a spatial query.

Make sure that **% Population with HIV/AIDS** is the only layer **Visible** and that it is **Active**.

Select the **Query** tool.

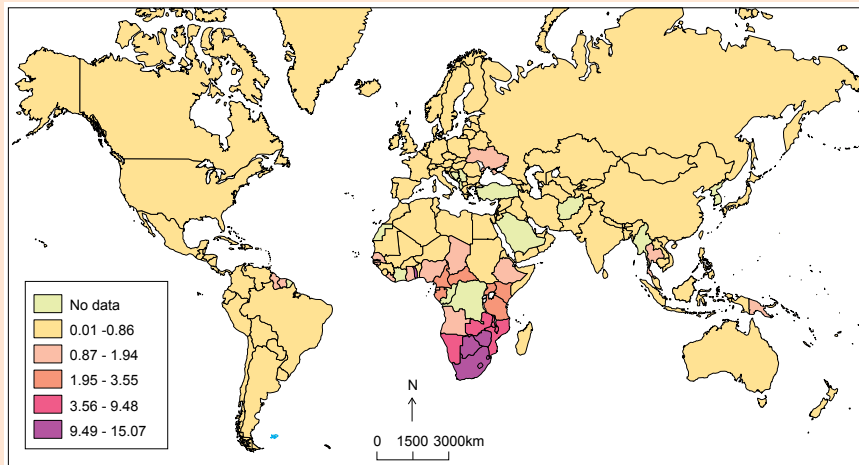
In the **Field** drop-down menu select the demographic indicator you are examining.

The example below shows life expectancy.

- For the **Operator**, choose the appropriate mathematical symbol for your hypothesis. We predict low life expectancy to be associated with a high incidence of HIV/AIDS, so we would choose the symbol (\leq) for low life expectancy. Your equation may stay the same or change to (\geq) depending on your hypothesis for how an indicator affects the HIV/AIDS rate.
- In the **Value** window type in the number you recorded for this indicator for South Africa (the example of a country with a high % Population of HIV/AIDS) and then **Add to Query String**. South Africa has a life expectancy of 42.73 years. By using South Africa's data in the query we can find other countries in the world, which also follow this pattern. The query for the example looks like this:



- Select **Execute**. The result of the life expectancy query is shown below. The countries outlined in light blue are those countries which have a life expectancy less than or equal to 42.73 years. In the viewer the countries are also listed in a table below the map. One thing to note is that if a country does not have data for this particular indicator, it will appear in the map/table as if it has a zero entered for it.



Does the map support or reject the hypothesis that a low life expectancy might be associated with a high incidence of HIV/AIDS?

- Record the two spatial query statements you develop in the table below for your two demographic indicators. For each query discuss the interconnection (or spatial association or spatial relationship) between the chosen demographic indicator and the % Population with HIV/AIDS.

Hypothesis statement	Field (or indicator)	Operator and value	Spatial association identified

- Of the two demographic indicators you chose, which do you think is most affected when there is a high incidence of HIV/AIDS? Explain your answer. (To help with this refer back to your results of the two indicators from the country you chose, which had a **low** level of HIV/AIDS.)
- What are the greatest needs for the population of your chosen country related to combatting HIV/AIDS?
- Research three solutions which would improve the standard of living for people living in countries with a high incidence of HIV/AIDS.

Women – the face of AIDS

More than half of all people living with HIV are women. In Sub-Saharan Africa approximately 60 per cent of the 22.5 million people living with HIV are women. Young women between the ages of 15–24 in this region are eight times more likely to become infected with them accounting for over three quarters of those newly infected.

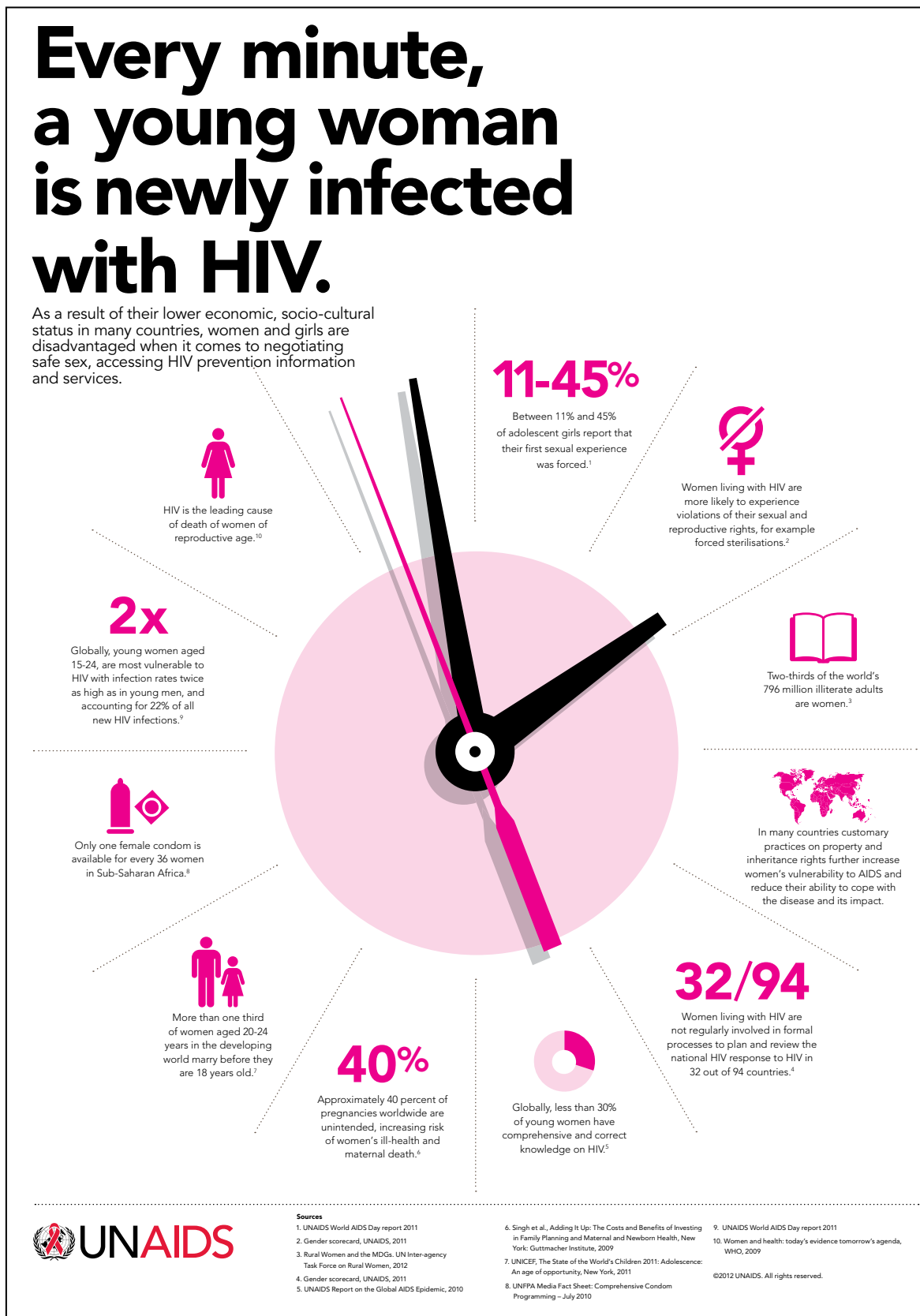


Figure 4.5 Every minute a young woman is newly infected with HIV



Figure 4.6 Believe it. Do it.

Approximately 90 per cent of the 2.5 million children under the age of 15 who are HIV-positive were infected through mother-to-child transmission either in the womb, at the time of birth or when being breastfed. This form of transmission is the largest source of infection for these children. Poverty is a factor in the transmission of HIV during breastfeeding. Poverty limits access to both education and resources; a lack of income and understanding means that women are not educated in the necessity to use baby formulas and clean drinking water to prevent the transmission of HIV from mother to child.

Listen to the podcast entitled Prevention of mother to child transmission by Médecins Sans Frontières (Doctors Without Borders)

The “Believe it. Do it.” campaign was launched by UNAIDS in May 2012 to help reach the goals of the *Global Plan* to end new HIV infections among children and reduce the number of HIV-related maternal deaths by 2015.

Three things that can be done to achieve these goals:

1. Get the Facts.

Each year 390 000 children become infected with HIV in low-to-middle income countries and 42 000 women with HIV die from complications related to HIV and pregnancy. Compare this to high-income countries where the figure is virtually zero.

2. Send a message.

Write to the world. The more people who are educated about this issue the greater the chance of achieving the goals. Send a beautifully illustrated e-card by visiting: <http://www.unaids.org/believeitdoit/send-a-message.html>.

3. Support a mother.

Support great organisations that are working to help pregnant women living with HIV such as Mothers2Mothers, CARITAS, International Community of Women with HIV/AIDS, WHO, UNAIDS and UNICEF.

Did you know?

UNAIDS estimates that nearly 60 countries have some form of travel restrictions for people living with HIV. The USA only recently joined a growing number of countries in removing their HIV-related travel restrictions. Australia does not require tourists to declare their HIV status however, anyone over the age of 15 seeking permanent residency in Australia must be tested and may be rejected if they are found to be HIV-positive. In addition to this, refugees are HIV tested and are automatically refused entry if they are found to be HIV-positive.

People living with HIV should not be discriminated against, including restrictions on their ability to travel between countries. That they are should fill us all with shame.

United Nations Secretary – General Ban Ki-Moon

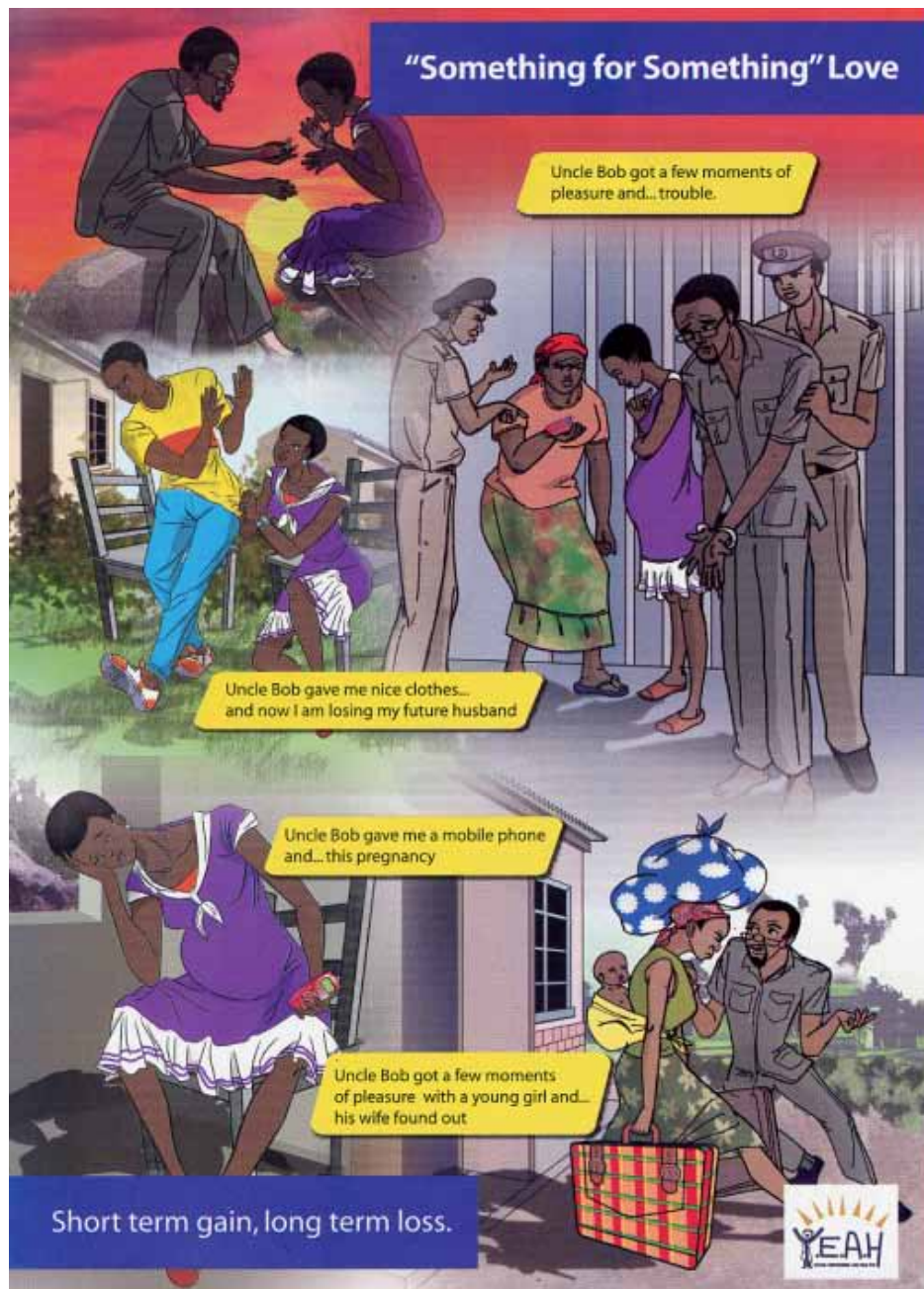


Figure 4.7 The Ugandan Government and non-government agencies, working to control the spread of HIV/AIDS, have identified modifiable factors which contribute to the spread of HIV/AIDS. Inconsistent condom use, people having multiple sexual partners and transactional sex (paid for with money or gifts) are the most significant of these factors. Campaigns such as the *Something for Something Love* aim to raise awareness about transactional sex and change sexual health behaviour. The message is clear about abstaining from sex and not to take gifts or favours in return for sex.

Uganda – response success story

Uganda is a rare HIV/AIDS success story in Sub-Saharan Africa. The country's infection rate in 1986 was estimated at around 2 million people; by 1992, adult HIV prevalence was at 18.5 per cent. However, through the initiation of highly effective responses which took ownership of the problem – and backed by strong political commitment and national coordination – adult HIV prevalence was reduced to 5 per cent by 2000. As a result of the Ugandan Government's comprehensive response and campaign, the infection rate was reduced to 1.2 million in 2010. This is a figure that the Ugandan Government views as unacceptably high. By identifying the main ways in which HIV is transmitted, the Ugandan Government has been able to develop strategies to educate and reduce infection rates. Approximately 80 per cent of the infections are the result of unprotected sex between heterosexuals, with the remaining 20 per cent through Mother-to-Child Transmission (MTCT).

Did you know?

In 2004, Uganda was the second African country (Botswana was the first) country to provide free antiretroviral drug treatment for people living with HIV/AIDS.

Global Responses to HIV/AIDS

Government and non-government organisations across the world are responding to the HIV/AIDS pandemic. Responses range from raising global awareness, to prevention and treatment and funding for scientific research. Results have been positive, but geographically uneven.

- 25 countries have seen a 50 per cent or greater drop in new HIV infections since 2001
- there has been a 42 per cent reduction in new HIV infections in the Caribbean (the second most affected region in the world after sub-Saharan Africa)
- half of all reductions in new HIV infections in the last two years have been among newborn children—showing that elimination of new infections in children is possible.

The Global Fund to fight AIDS, tuberculosis and malaria

The Global Fund is a government organisation partnership between governments, civil societies, the private sector and affected communities. The Global Fund is a unique global public/private partnership dedicated to attracting and dispersing additional resources to prevent and treat HIV/AIDS, malaria and tuberculosis. Since its creation in 2002, over 600 programs in 150 countries have received US\$21.7 billion. The Global Fund provides one quarter of all international funding for AIDS and has helped save the lives of three million people from AIDS through access to treatment. The Australian Government through AusAID will contribute \$210 million between 2011 and 2013 to the Global Fund to fight AIDS, tuberculosis and malaria.

AusAID – Australia's role in a Global Response to HIV/AIDS

The Australian Government recognises the importance of halting and reversing the spread of HIV. In 2009, AusAID launched Australia's International Development Strategy for HIV – *Intensifying the Response: Halting the spread of HIV*. The strategy focusses on six priorities:

- intensifying HIV prevention
- optimising the role of health services within HIV responses
- strengthening coordination and capacity to scale up HIV responses
- reviewing legal and policy frameworks to enable effective responses to HIV
- building the evidence base for an effective HIV response
- demonstrating and fostering leadership on HIV.

Australia also works with the World Trade Organization (WTO) and the World Health Organization (WHO) to improve the accessibility and affordability of essential HIV/AIDS drugs.

The United Nations established UNAIDS in 1996 to coordinate the actions of 10 United Nations organisations in their response to the HIV/AIDS pandemic and to provide access to prevention, treatment and support. The vision of UNAIDS is to achieve zero new HIV infections, zero discrimination and zero AIDS-related deaths. Over the three years between 2009 and 2012, AusAID contributed \$25.5 million to UNAIDS as part of the Australia-UNAIDS Partnership Agreement.

Student activities



1. Why is education a critical factor in slowing the spread of HIV/AIDS?
2. Create a mind map using the statement – *Poverty is a major factor in the spread of HIV/AIDS*.
3. Select one other country and compare your chosen country's current HIV/AIDS situation and effectiveness of responses with those of Uganda.
4. Select one of the global responses/organisations to investigate further. Discuss some of the specific actions being taken in different countries to respond to the spread of HIV/AIDS.
5. Evaluate the effectiveness of the responses using a set of criteria. Justify your final outcome.

5

HUMAN WELLBEING STUDENT INQUIRY

Throughout this study you have investigated a number of definitions and measures of human wellbeing across the world and in both local and regional case studies. The relationships between indicators of wellbeing and other factors have been highlighted, as have the responses to manage and ameliorate impacts on human wellbeing. It is your task to select one other aspect of human wellbeing to investigate in depth and present a detailed inquiry.

Suggested topics

Select one of the following topics or suggest your own in consultation with your teacher.

- food security
- water and sanitation
- human rights
- disease (malaria or tuberculosis)
- child soldiers
- poverty
- child labour
- human trafficking
- civil war
- impact of natural disasters on human wellbeing.



Figure 5.1 Access to safe drinking water – a group of girls drawing water from a hand-built well on the outskirts of a village in Niger

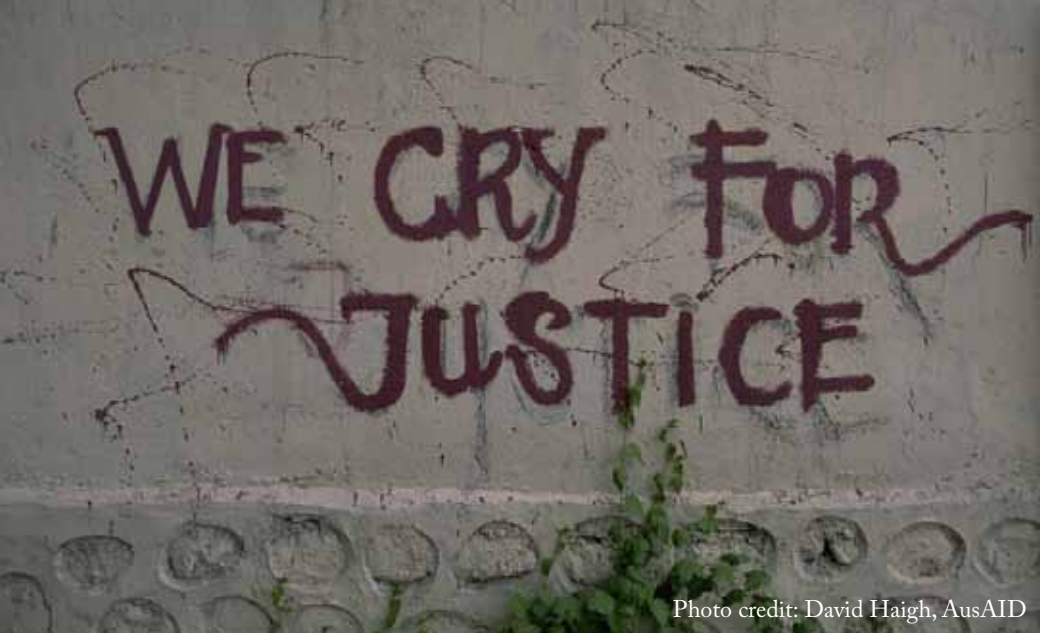


Photo credit: David Haigh, AusAID

Figure 5.2 Civil War – the struggle of rebuilding East Timor after many years of conflict



Photo credit: Heather Pillans, AusAID

Figure 5.3 Natural disasters – in 2010, 20 per cent of Pakistan was covered in floodwaters which affected the lives of 20 million people



Photo credit: Jeremy Miller, AusAID

Figure 5.4 Disease – malaria infection rates in the Solomon Islands has dropped from 199 cases per 1000 people in 2002 to just 46 cases per 1000 people in 2012 as a result of community education, insect spraying and the use of treated bed nets – largely funded by the Australian Government



Figure 5.5 Food security – approximately one billion people in the world do not have enough to eat and 98 per cent of these people live in developing countries. These farmers in Thailand are threshing or separating the rice seeds from the stalks and husks – Thailand is the world’s largest exporter of rice. However, access to sufficient food is unevenly spread through the country, communities and households.

Inquiry plan

Beginning a detailed inquiry can be a little daunting, however, by following the steps outlined below you will be able to plan, investigate, research and present a report of your findings.

1. Observing, questioning and planning

Aims

What is an aim?

An aim is a statement about what you intend to achieve through your inquiry.

Geographical question/s

Develop a number of geographical questions specific to the topic you have chosen to provide a framework for a detailed inquiry. Using the following headings as a guide will provide enough detail for your inquiry and to achieve the aim you have developed.

1. Factors and indicators contributing to variations of human wellbeing
2. Impacts on human wellbeing
3. Future patterns
4. Responses at varying scales by government and non-government organisations (NGOs)
5. Plan of action – propose a course of action.

2. Collecting, recording, evaluating and representing

For this inquiry, your data collection is going to be from secondary sources which have been collected and processed by another person with sources ranging from Internet, media articles, podcasts, reports, videos, books, journals or magazines.

Utilise some of the sources introduced throughout this study – Gapminder, United Nations Human Development Reports, Population Reference Bureau, OECD *Better Life Index* and photo sites such as Flickr etc.

Did you know?

It is always a good idea to check the source of your secondary data for reliability. For instance, Wikipedia can provide an overview of a topic, however, keep in mind that it is a free encyclopaedia that anyone can edit it – sometimes the information is not always accurate.

Creating and interpreting

Once you have gathered useful information, data and statistics from a variety of sources, you will need to begin creating graphic representations to illustrate the patterns of human wellbeing and to respond to the geographical questions you have developed.

Using the data you have collected, select the most appropriate forms of geographic media to manipulate and represent your data. These can be representations that you create yourself, such as choropleth maps, scatter graphs and other graphs, and tables of data as well as representations that you create online using GIS programs, Gapminder or the *Better Life Index*.

Look throughout this resource for examples of data representation such as scatter graphs, tables, population pyramids, choropleth maps and GIS maps.

Interpreting the data

3. Body of your inquiry: analysing and concluding

It is in this section that you will gather all of your research together – investigation and geographic representations. Use the geographical questions you created as subheadings to break up the body of your inquiry. This will help give you some structure to work with and help with finding the appropriate location for the geographic representations e.g. maps, graphs, and charts. Ensure that you refer to each of the geographic representations within the body of your response or in a descriptive paragraph outlining and explaining the content and significance to your geographical questions.

Use the geographic representations and the information you have gathered to draw conclusions and address the geographical questions.

Throughout your inquiry, ensure that you incorporate geographical concepts. Using these concepts as part of your inquiry will encourage you to think geographically and ensure that you are investigating and addressing the geographical questions you have developed. The concepts are:

Place, Space, Environment, Interconnection, Sustainability, Scale and Change

4. Communicating

A creative and engaging inquiry can be constructed using a combination of a written report accompanied by a Prezi, PowerPoint presentation, movie clip or website incorporating the geographic representations you created.

You can negotiate presentation formats with your teacher and share them with your class via blogs, Wikis etc.

5. Reflecting and responding

Critically evaluating your inquiry at the end of the process is valuable to reflect upon what you have learnt about your chosen issue of human wellbeing as well as to identify any areas where you could have modified or improved your inquiry. In this reflection, address your use of geographic concepts and methodology to support your response to your geographical questions.

Australian Curriculum links

Geography Year 10, Unit 2: Geographies of human wellbeing

Geographical Knowledge and Understanding

The different ways of measuring and mapping human wellbeing and development, and how these can be applied to measure differences between places ACHGK076

The reasons for spatial variations between countries in selected indicators of human wellbeing ACHGK077

The issues affecting the development of places and their impact on human wellbeing, drawing on a study from a developing country or region in Africa, South America or the Pacific Islands ACHGK078

The reasons for and consequences of spatial variations in human wellbeing on a regional scale within India or another country of the Asia region ACHGK079

The role of international and national government and non-government organisations' initiatives in improving human wellbeing in Australia and other countries ACHGK081

Geographical Inquiry and Skills

Develop geographically significant questions and plan an inquiry that identifies and applies appropriate geographical methodologies and concepts ACHGS072

Collect, select, record and organise relevant data and geographical information, using ethical protocols, from a range of appropriate primary and secondary sources ACHGS073

Evaluate sources for their reliability, bias and usefulness and represent multi-variable data in a range of appropriate forms, for example, scatter plots, tables, field sketches and annotated diagrams with and without the use of digital and spatial technologies ACHGS074

Represent the spatial distribution of geographical phenomena by constructing special purpose maps that conform to cartographic conventions, using spatial technologies as appropriate ACHGS075

Evaluate multi-variable data and other geographical information using qualitative and quantitative methods and digital and spatial technologies as appropriate to make generalisations and inferences, propose explanations for patterns, trends, relationships and anomalies, and predict outcomes ACHGS076

Apply geographical concepts to synthesise information from various sources and draw conclusions based on the analysis of data and information, taking into account alternative points of view ACHGS077

Identify how geographical information systems (GIS) might be used to analyse geographical data and make predictions ACHGS078

Present findings, arguments and explanations in a range of appropriate communication forms selected for their effectiveness and to suit audience and purpose, using relevant geographical terminology and digital technologies as appropriate ACHGS079

Reflect on and evaluate the findings of the inquiry to propose individual and collective action in response to a contemporary geographical challenge, taking account of environmental, economic and social considerations; and explain the predicted outcomes and consequences of their proposal ACHGS080

Health and human development

At the time of publication, the Australian Curriculum for health and physical education were in draft stage. Senior health studies (years 11 and 12) across Australia will be able to make use of this resource in their classes.

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- 3.12: Alkire, S. and Santos, M.E. (2010). Multidimensional Poverty Index 2010: Research Brief. Oxford Poverty & Human Development Initiative (OPHI).
- 3.13: www.imaginmor.com/ and Population Reference Bureau
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