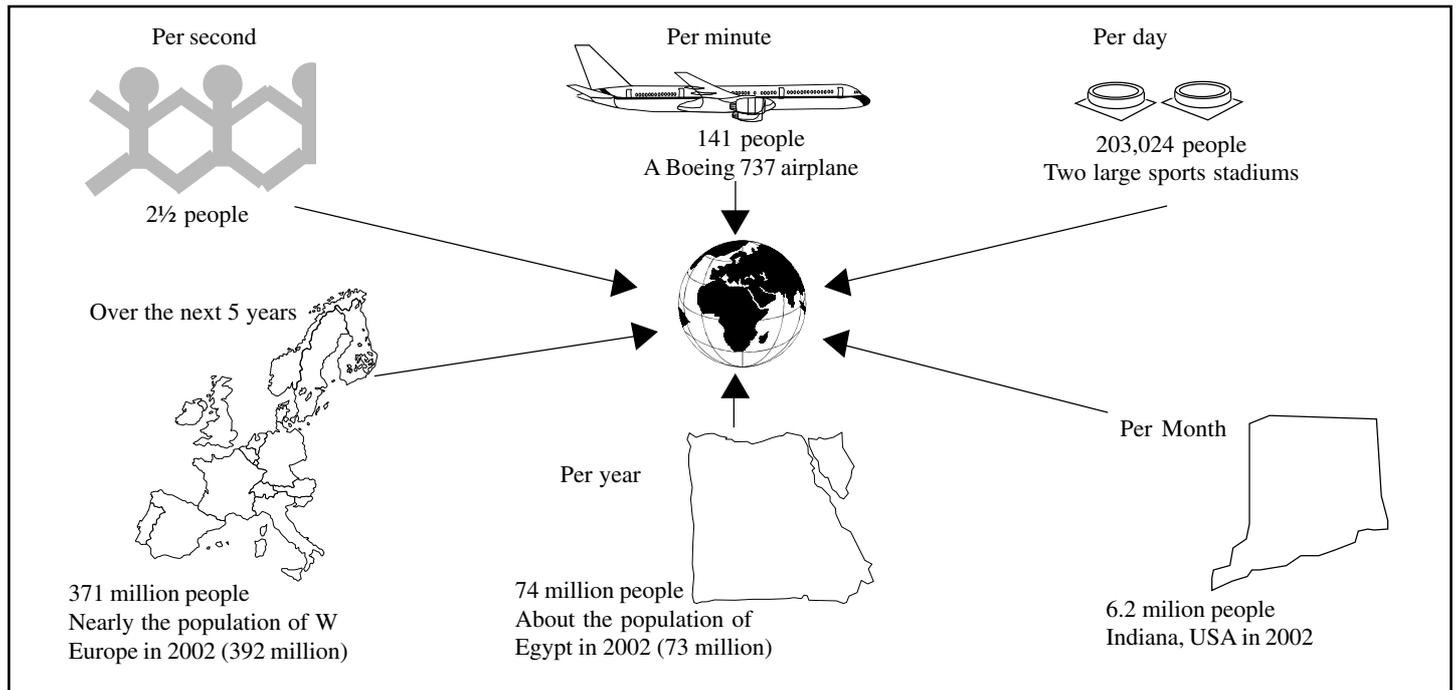




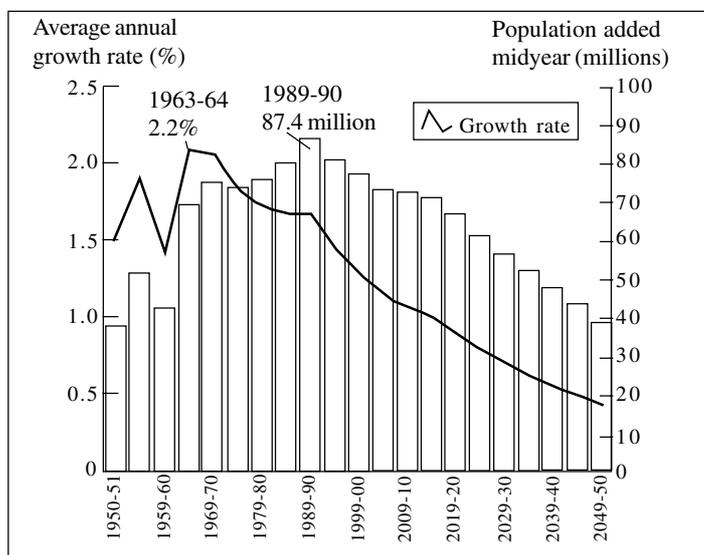
Global Population Trends Towards 2050 - Population Bomb or Birth Dearth?

Fig 1. Net additions to the world (2002)



A recent report from the US Census Bureau predicts that between now and the year 2050, the global population will increase from 6.2 to 9.2 billion - an increment of nearly 50 per cent in as many years. At the end of 2002, there were 74 million more people in the world than at the beginning of that year. Fig 1 shows what that year's net increase meant in terms of the numbers of people added in range of different time spans. Which of the ratios impresses you most?

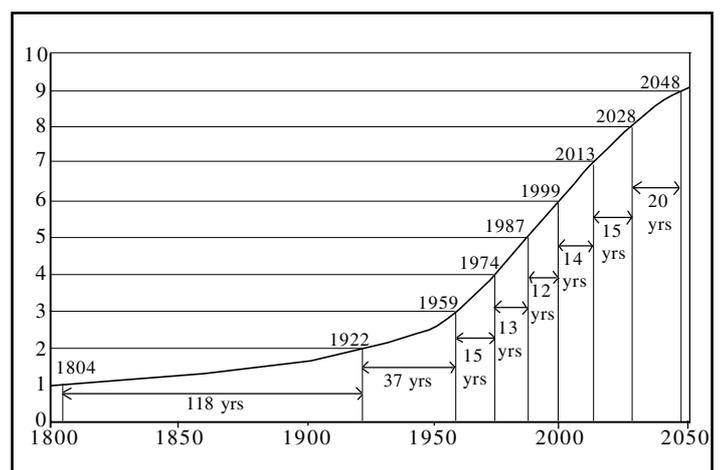
Fig 2 Annual additions/growth rate of global population (1950-2050)



A. Global growth rates

But there may be some hints that the demographic explosion is subsiding. For example, in 1989-90 the annual increment in global population peaked at 87 million (Fig 2) and the growth rate is predicted to drop to 0.5 percent. The annual growth rate today is 1.2 per cent, compared with 2.1 per cent in the 1960s. Fig 3 takes a 250-year look at that growth rate, but in slightly unusual terms, namely the number of years taken to add a billion to the global population. It took 118 years for the world's population to increase from 1 to 2 billion. What the graph clearly shows is the acceleration in the rate up to 1999, when the 6 billion mark was reached. Predictions clearly indicate a slight deceleration between now and 2050.

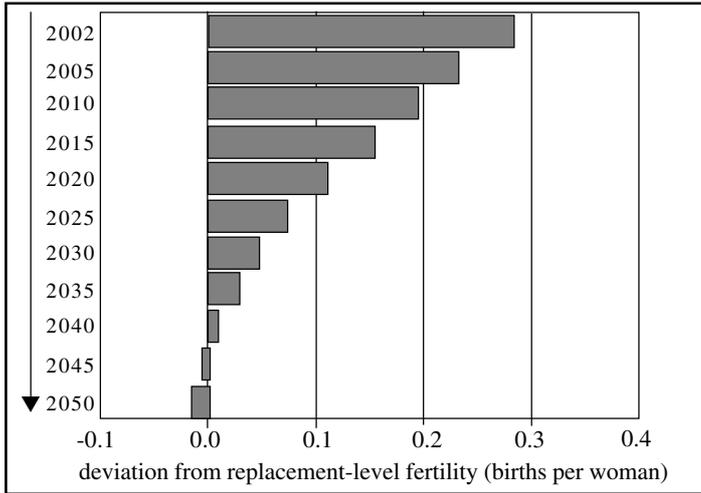
Fig 3 Time to add the next billion to global population (1800-2050)



Fertility rates

Ten years ago, the **total fertility rate** (TFR) was 3.3; today it is 2.6. The TFR is the average number of children that would be born per woman if all women lived to the end of their childbearing years. In the context of population growth, another useful concept is the **replacement level of fertility**. This is the level of fertility at which each successive generation of women produces enough offspring so that the same number of women survives to have children themselves. In general, therefore, the higher the level of mortality in a population, the higher will be the replacement level of fertility.

Fig 4 Global fertility levels relative to replacement level (2002-2050)



It is sometimes said that fertility is at the **replacement level** when the TFR is 2.1 children per woman. In fact, this is the replacement level of a relatively developed country. In 2002, the actual replacement level of fertility for the world as a whole was 2.3 children per woman. In that year, national replacement levels ranged from just over 2.0 in several MEDCs to 3.4 in Mozambique. It is predicted that over the next 45 years, the global replacement level of fertility will gradually decline to reach 2.1 children per woman (Fig 4).

Despite these slowdowns in the rates of both overall growth and fertility, it is certain that the global population will continue to rise. For example, even in 2050, when the growth rate is expected to be a mere 0.5 per cent, there will be an annual addition of just under 40 million people (Figure 2).

Shifting distribution

This rise in global population will be accompanied by **two** fundamental shifts. The first is a geographical one. In a nutshell, **most of the world's richest countries are expected to undergo a 'downsizing' between now and 2050**. A notable exception, though, will be the USA. Its population is expected to rise by some 120 million. Without this particular increase, the total population of the MEDCs would be roughly the same in 2050 as it is now.

Fig 5 Top ten most populous countries (2002 - 50)

Rank	2002	2050
1	China	India
2	India	China
3	USA	USA
4	Indonesia	Indonesia
5	Brazil	Nigeria
6	Pakistan	Bangladesh
7	Russia	Pakistan
8	Bangladesh	Brazil
9	Nigeria	Congo
10	Japan	Mexico

Similar stagnation is expected for Eastern Europe and the Newly Independent States of the former Soviet Union (NIS). In stark contrast, nearly half of the predicted growth will take place in Sub-Saharan Africa. Asia will further consolidate its position as the world's most populous region.

Fig 5 illustrates this shifting distribution of population. In 2002, three MEDCs figured in the top ten rankings. By 2050, only the USA remain, as it maintains its third place. As Russia and Japan drop out of the rankings, they will be replaced by Congo and Mexico. What emerges at this scale is a demographic scenario of 'winners' and 'losers'. This polarity is well illustrated by the divergence of Japan and Nigeria, two countries with roughly similar population totals today of around 130 million. By 2050, Nigeria's population is expected to more than double to over 300 million, whilst Japan's will have shrunk to around 100 million.

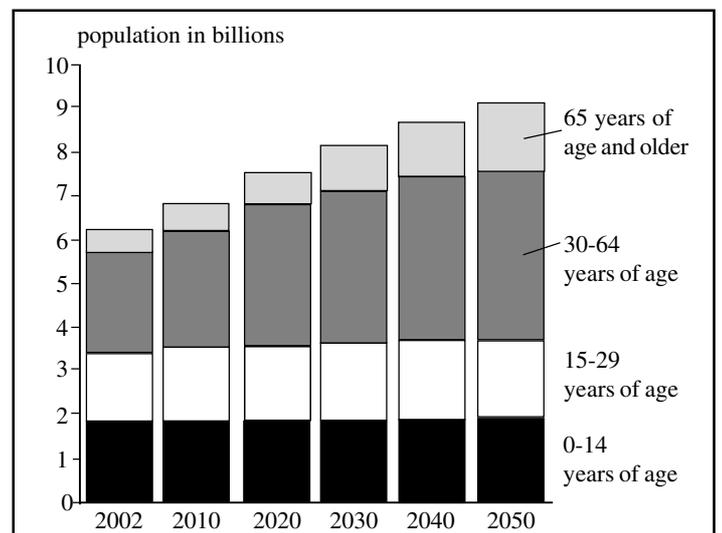
It is estimated that the total populations of some 40 countries will shrink over the next 45 years. The bulk of these will be in Europe and the NIS. Presumably, there are to be seen as countries now in Stage 4 of the Demographic Transition Model (DTM). Perhaps some of them are even pioneering a new Stage 5. However, the list of the top ten percentage losers (Fig 6) includes some surprising entrants. These suggest that there will be factors, other than a general ageing of the population, at work. In the case of Trinidad and Tobago, the decline is perhaps to be explained in terms of net migration loss and the impact of HIV/Aids. The same explanation most likely applies to Surinam. The decline in Botswana and South Africa is clearly related to the HIV/Aids pandemic (see Section C). A closer look at some of the 'winners' and 'losers' will be taken in Section B.

Fig 6 The top ten percentage losers of population (2002 – 2050)

Country	% decline (2002 – 2050)
Trinidad & Tobago	44.7
Botswana	43.6
Bulgaria	41.2
South Africa	27.5
Hungary	22.2
Ukraine	22.0
Czech Republic	21.9
Japan	21.4
Russia	18.4
Surinam	17.5

Shifting age structures

Fig 7 Population growth of specific age groups (2002 – 2050)



Associated with this redistribution of population is the second shift, namely **fundamental changes in age structure**. The populations of those 'downsizing' countries will become even more 'grey'. One in every six people in Western Europe will be over the age of 65 by 2050. Equally, although the age pyramids of Sub-Saharan African and Asian countries will remain broadly based they should show signs of population ageing. In short, **population ageing** will rise in all global regions with the balance between the older and younger age groups shifting towards the former (Fig 7). In 2050:

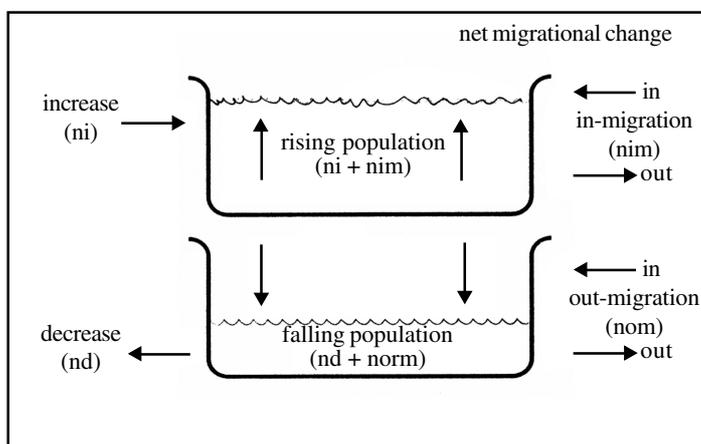
- there will be more than three times as many people aged 65 and over as there are today. Their percentage of the total population will rise from 7 to 17 percent.
- the number of children is expected to remain relatively stable over the next five decades, but their percentage share of global population is expected to decline to 20 percent.
- the number of women in their child-bearing years will increase, but their proportion of the total population should slowly decrease from 26 to 23 percent.

Clearly, there will be a significant remodelling of the global age pyramid.

B. Some country profiles

Having sketched the global scenario for the next 50 years, let us now take a closer look at the idea expressed earlier, namely of 'winners' and 'losers' in this overall shift in population. Each of the demographic achievements will be illustrated by two case studies reflecting slightly different circumstances. At the end of the day, however, it has to be recognised that all population change is the outcome of just two variables: natural change and migration change (Fig 8).

Fig 8 Two contrasting population change scenarios



Population loser - Bulgaria

During the last decade, the population of Bulgaria fell by over half a million to 7.5 million. It is predicted to fall still further. For certain, Bulgaria has one of the fastest contracting populations in Europe. This is the outcome of high net **out-migration** and a **negative rate** of natural change. There has been a huge exodus of mainly young people leaving the economically-troubled country in search of a better life abroad. It is estimated that some 200,000 have left over the past 10 years. It is also claimed that as many as 15 percent of Bulgarians between the ages of 15 and 60 are looking to move abroad. Most of the potential immigrants are young and well-educated. It was the fall of the single-party regime that opened the emigration flood-gates. Many in the first wave of emigration left the country for political reasons, including a significant number of ethnic Turks. Now, however, most people are leaving for economic reasons. More than a third of Bulgarians today say that they live in poverty – a powerful push factor!

Bulgaria was experiencing negative natural change well before the collapse of Communist rule in 1989. Unlike most European countries, Bulgaria had no post-war baby boom. Forced industrialisation and low standards of living persuaded many Bulgarians to limit the size of their families. The financial and social uncertainties that now prevail are strengthening the downward trend in the national birth rate. The downward spiral is, of course, given still more momentum as emigration removes much of the population in the reproductive age range. Small wonder, therefore, that Bulgaria's population is predicted to plunge to 4.8 million by 2050! That plunge may be even deeper. According to a recent UN report, the spread of AIDS is progressing most rapidly in Eastern Europe and Central Asia. The sharing of needles by drug users is to the main route to HIV transmission in these countries.

The situation in Bulgaria is clearly one of a rapidly dwindling population. The government urgently needs to put in place a demographic strategy that both encourages the birth rate and discourages emigration. - joining EU could promote economic migration or lead to economic development in Bulgaria causing mote people to stay!

Population loser - Mozambique

Mozambique is one of five countries in southern Africa whose populations are set to decline before 2010. This will happen if the AIDS pandemic continues to spread at its present rate and this in a country which until recently has shown a natural increase rate of some 20/1000. Over the last 10 years, HIV prevalence has trebled, so that over 1.2 million people (nearly 15 percent of the population) are now affected. The rates of infection are highest in the 15 to 24 age range; female infection is nearly twice that of males. Annual deaths from AIDS have now passed the 100,000 mark.

It is the combination of these demographic facts in a country so poor that it cannot afford the most basic of healthcare that makes the HIV/AIDS cocktail so potentially lethal. It is clear that Mozambique's demographic survival is very much in the balance. A population of about 17 million today stands to be whittled down to who knows what by the year 2050? In short, not all LEDCs can look forward to booming populations.

Population winner- Bangladesh

Bangladesh is one of the world's poorest nations. It is also one of the most crowded and disaster-prone. Figure 10 tells a story of relentless population growth. Particularly high rates of population growth did not become evident until the 1950s. This surge was due a significant lowering of the death rate.

A situation of high growth rates persisted for the next 25 years during which the government tentatively introduced a family planning programme. This was partly financed externally from organisations and agencies such as the World Bank, UNPF, UNDP and the WHO. As a result, the **contraception prevalence rate** (the percentage of women using contraception) has risen from 4 to 49 percent. Clearly, there is still a long way to go.

There remains a tension between this push to promote family planning and delayed marriage on the one hand and traditional Muslim beliefs on the other. The government optimistically hopes to reach the replacement level of fertility in the next 5 years. But even with the help of sizeable emigration, the brake takes a long time to grip. Indeed, the population will more than double to reach the 280 million mark by 2050. In so doing, the country will become the sixth most populous in the world.

Population growth in Bangladesh (1901 – 2001)

Year	Total population (millions)	Annual growth rate (%)
1901	28.9	
1911	31.5	0.87
1921	33.2	0.52
1931	35.6	0.68
1941	41.9	1.65
1951	44.9	0.50
1961	55.2	2.26
1971	79.4	2.48
1981	89.9	2.35
1991	109.8	2.03
2001	130.0	1.83

Population winner - USA

It may surprise many to find the world's leading MEDC in the big time league of 'population powerhouses'. It is predicted that the US population will increase substantially, rising from 294 to 420 million. The USA is expected to retain its third place in the rankings of the most populous countries. But you will be asking: with this anticipated amount of growth, can the USA really be regarded as a Stage 4 country in the DTM?

The apparent discrepancy is explained by five considerations:

- that the population base (the starting point) is a huge one
- that it only takes a mean annual growth rate of less than 1.5 percent to achieve the predicted absolute growth
- that the net migration balance is heavily positive

- that a large proportion of those immigrants are of reproductive age
- that a significant number of those 'reproductive' immigrants are from Hispanic populations that are characterised by relatively higher birth rates.

Alarming though the scale of the predicted growth is, there are few who would doubt that USA's ability to cope generally. However, concern needs to focus on the weaker members of the expanding population. They may well face a future of greater poverty and disaffection. The prospect is of an even more highly polarised society.

As a postscript, the appropriateness of the 'winner' and loser' designations may be called into question. Is it not the case that those countries 'winning' in terms of huge hikes in population are most likely to lose out in terms of development and living standards? It is the population resources equation which is the key.

Conclusion

There are two dynamic factors that could seriously upset the assumptions embedded in its predictions.

Contraceptive prevalence

High fertility is still the dominant factor dictating the future size, growth and composition of the populations of many LEDCs. Contraceptive use is one of the main factors affecting the level of fertility in a population and differences in fertility between populations.

Although contraceptive prevalence (use) has risen dramatically since the 1960s, it is estimated that there are still at least 100 million women in the world's LEDCs who would like to limit their families, but are not using contraception. This 'unmet need for family planning' is greatest in Asia and in Sub-Saharan Africa. Clearly, if family planning programmes in these regions were suddenly to take off and greatly increase contraceptive prevalence, then this could have a significant impact on the population forecasts for 2050. Empowering women is a key factor here.

The AIDS pandemic

Since the beginning of the AIDS pandemic two decades ago, more than 20 million people have died of the disease. Twice that many – 40 million – are now living with HIV, the virus that causes the disease. Barring some major breakthrough, most of these people are expected to die during the next 10 years or so. The forecasts outlined above have been based on pessimistic

assumptions about the spread of the disease. However, there are a few encouraging signs that the situation might change slightly for the better:

- the increasing availability of anti-retroviral drugs, as in Botswana
- the fairly successful programmes preventing mother-to-child transmission
- the effective education programmes, as in Thailand, Senegal and Uganda.

If these signs of hope do not strengthen, then the grim forecasts for Africa will materialise. Levels of mortality will rise so much as to lower average life expectancy at birth down to around 30 years, the level it was at in the late 19th century.

It is possible that either or both of these factors could blow a hole in the US Bureau of Statistics' forecasts. Paradoxically, they would do so in totally different ways, with increase contraceptive prevalence lowering forecasts and a decline in the AIDS pandemic boosting them. It could be said that a scenario of increased family planning and rampant AIDS promises the most effective way of defusing the 'bomb' of global population growth. It is however the **structure** of the world's population not the absolute number which is seen by some as the major concern as workers in relation to the number of ageing/retired people will decline very rapidly, so perhaps there could be a birth death.

Further Reading

Global Population Profile: 2002. Report WP/02. US Government Printing Office (2004). (<http://www.census.gov/ipc/www/wp02.html>)

Birth Death News Week Sept 27 2004

Acknowledgements; This Factsheet was researched and written by Dr. Michael Witherick a well known author who used to lecture at Southampton University. Curriculum Press, Bank House, 105 King Street, Wellington, Shropshire, TF1 1NU. ISSN 1351-5136