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Can we be sure the world's population will stop rising?

By Richard Knight BBC News



Forecasters expect the world's population to reach 10bn by the year 2050 - but could the figure be a lot, lot higher?

The United Nations Population Fund, UNFPA, recently published [a report describing the world's ageing population](#).

"Today we have one in nine persons aged 60 or over," says the UNFPA's Dr Ann Pawliczko, "but by 2050 it'll be one in five, and by that time there will be more older persons than those under 15 years."

The UN sees these statistics as a cause both for celebration because more people are living longer, and some concern because the change presents an economic and social challenge.

Dr Pawliczko would like see more countries prepare for the coming demographic shift. After all, she says, there is no doubt it is happening.

"We can be very certain about the numbers for 2050 because persons who will be aged 60 in 2050 are already born. This not speculation."

There is, however, another side to the equation: the birth rate. Predicting how that will change is more difficult - and more interesting. For a long time statisticians have seen in the numbers something which they call the "demographic transition", which happens when a society gets wealthier.

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Professor Jane Falkingham Centre for Population Change, Southampton University

"The demographic transition is a shift of birth and death rates from high levels to low levels in a population. And that usually is a result of economic and social development," says Dr Pawliczko.

"Typically we speak of four stages. We have the first stage which is high birth rates and high death rates. Then we have the second stage of high birth rates and falling death rates.

"And then stage three, declining birth rates and relatively low death rates, and this is characterised by a slow growth rate of the population, the growth begins to level off. And then stage four is where you have low birth rates and low death rates, and consequently a low population growth."

So as countries get richer their fertility rates fall. But what happens next? Many statisticians assume that advanced nations will remain in periods of low population growth.

But recent evidence suggests they could be wrong.

"Historically, fertility has been falling across Europe," says Professor Jane Falkingham, director of the ESRC Centre for Population Change at Southampton University. "But actually if we look at the most recent period, the last 10 years or so, we see rises in fertility in the most advanced countries."

Oxford University's Professor Francesco Billari, a leading demographer, says this increase in fertility in highly-developed countries cannot be attributed solely to immigration, as some had assumed.

"We did some calculations," he says, "and basically the new change is not only due to immigration. Also the locals are changing."



Fergus Walsh's 2011 report on hitting the seven billion mark

"Demographers used to be the lucky ones because we thought it was easy to forecast population change. I think that's no longer true. It's no longer true at the global level because recent fertility trends are showing that the future is much more uncertain than we thought. There may be a complete change in the ranking of fertility levels in the world."

Evolutionary biologists might not be surprised by this. The idea that as we get richer we have fewer children is, from their perspective, very odd. Normally natural selection produces individuals who are good at converting their resources into lots of fertile descendants.

It's a demographic paradox that in the past few centuries, developing societies haven't been filled by families who raise as many kids as they can possibly afford.

But putting Darwin to one side, the question is: how much difference might the recently-observed increase in fertility in some developed countries actually make to global population projections?

Dr Pawlizcko at the UNFPA says she doesn't expect it to be very significant. She may well be right. But, then again, neither she nor anyone else can be too sure. Statisticians have a long track record of failing to predict important demographic changes.

"We've actually got population projections wrong consistently over the last 50 years," says Professor Falkingham, "and this is partly because we've underestimated the improvements in mortality, particularly older age mortality, but also we've not been very good at spotting the trends in fertility."

One day we will know whether our population projections beyond 2050 are accurate, whether the so-called "demographic transition" enters a fifth and unexpected stage of higher fertility, or whether huge leaps in life expectancy change the picture completely, as they have in the past.

But forecasting population will always be a highly uncertain science.

In 2004 the UN's department of economic and social affairs [tried to guess what the global population could be in 2300](#).

It said the population would stabilise at around nine billion by 2050 and then remain at that level for the rest of the period. But that was just its medium estimate. Its high estimate was 36.4bn, and its low estimate just 2.3bn.

In other words, when you look beyond existing generations, anything could happen.